National Park Service
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Biscayne National Park
Homestead, Florida

Biscayne National Park

The History of a Unique Park on the "Edge"

An Administrative History

Leslie Kemp Poole

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In Partnership with
the Organization of American Historians

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About the front cover: *View of the Boca Chita lighthouse, Boca Chita Key. Photographer: National Park Service.*

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Administrative History
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Introduction

In the 1960s, a small group of South Florida citizens responded in outrage to proposals that would destroy their beloved Biscayne Bay. In these sparkling waters, they snorkeled with their children, struggled to catch sports fish, sailed into sunsets, and breathed in sheer beauty. From their passion, tireless energy, and media savvy, a movement arose and expanded, eventually leading to the creation of Biscayne National Monument. In 1980, the monument was expanded into a national park that, unlike others in the United States, was 95 percent underwater. Its unique natural formations and biota were to be protected for all time, along with a host of cultural artifacts from pioneer homesteads to shipwrecks.

Americans today inherit the work of these activists, and the stewardship of Biscayne National Park (BNP) is anything but easy. Located on the edge of the booming Miami metropolis, the park contends with a host of of issues that few other national parks face, including a nearby solid waste disposal facility, an adjacent nuclear power facility, urban development, seasonal storms and hurricanes, and a battle for water resources that may persist for decades. BNP is particularly threatened by climate change, which may inundate its biologically rich, low-lying islands and mangroves and damage its coral reefs. Additionally, the open border of the park makes law enforcement of everything from drug smuggling to illegal fishing to drunk boating logistically difficult. These challenges are compounded by the fact that many of the half million people who visit BNP every year simply may not know that they are in a national park—a complex public-identity issue the park has been working to resolve to maintain and expand its base of citizen supporters.

This administrative history explores BNP's natural and cultural resources while highlighting the many programs and issues that have affected the park. The story relies on abundant resources that include park annual reports, National Park Service reports, media and internet sources, and oral histories with park superintendents, employees, visitors, and community partners. Many of these reports are rich with information that cannot be fully surveyed here, so all sources are footnoted to expedite further exploration. Additionally, photographs, maps, and appendices appear alongside the text to enhance understanding of the value and complexities of the park's past.

This account is intended to be a concise guide to BNP's history, management, and important challenges the park has experienced—as well as others that it will likely deal with in the years to come. This knowledge, together with lessons from the past, hopefully will inform future decisions so that Biscayne National Park will long remain a prized natural wonderland.

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Chapter One

Introduction to the Park and Its Resources

Biscayne National Park (BNP) is one of America's jewels, a place of exquisite beauty that contains a wealth of aesthetic, historic, and biological riches. Its aquamarine waters—often described as gin-clear in quality—stretch twenty-two miles in southeast Florida from Key Biscayne in the north to Key Largo in the south, providing habitat for a myriad of creatures and recreational activities for its human visitors. But rapid urban growth from the nearby multicultural Miami metropolis has led to the park's 2015 description as one of "the five most endangered parks in America."[1] Over the park's history, managers have dealt with complex issues that have combined to create great challenges: an adjacent nuclear power plant, a major municipal solid waste facility, endangered species, water pollution, hurricanes, overfishing, inebriated and inexperienced boaters, drug running, shipwreck looting, coral reef damage, salinity problems, lack of boundary enclosures, and the threat of climate change and rising seas.

And yet, its splendor still catches one's breath.

Biscayne National Park is the largest marine national park in the United States—95 percent of its approximately 173,000 acres are underwater—and has more than a half-million visitors annually. It is home to four distinct ecosystems: the longest stretch of mangrove forest on Florida's east coast; the northern portion of the Florida coral reef, the largest reef tract in the United States and a portion of the third-largest in the world; the northern end of the Florida Keys, a long string of more than forty limestone and coral-based islands; and the bay bottom, an important seagrass estuary. The park is the scene of ten thousand years of human history that included native people, pirates, wreckers, pioneers, drug runners, and refugees. In waters where US presidents fished, the remains of more than forty shipwrecks litter the bottom—with dozens more known to have wrecked in the area. Early twentieth-century private clubs on the park's outer islands were the scene of many raucous parties—and maybe even the hatching of the 1920s Teapot Dome Scandal.

Still, from its beginning into the twenty-first century, BNP suffers from a lack of public cognizance. Few of its visitors or neighbors realize that it is a national park, although they are greatly aware that Everglades National Park lies just a few miles to the west, drawing international attention for its biodiversity and importance to the South Florida

[1] Max Foller, "The Five Most Endangered Parks in America," TakePart, December 9, 2015. http://www.takepart.com/article/2010/04/20/five-most-endangered-parks-america.

water system. In 1987, the news media even called BNP the "other national park" in South Florida—a reference to the Everglades' dominance in recognition and tourism.[2]

Figure 1.1. Map showing the 1968 national monument boundaries and their expansion with the 1980 designation as a national park. Graphic from the NPS and BNP.

Geology, Climate, and Biota

Despite its perceived lesser image, this "park at the edge" of both urbanization and nature holds great value for its rare and important subtropical natural resources. BNP encompasses the southern portion of Biscayne Bay, located southeast of Miami. Its upper keys were coral reefs approximately 100,000 (or more) years ago, but they were exposed and died during a subsequent glacial period, leaving limestone as the bedrock of the area. According to historians Jennifer Brown Leynes and David Cullison, Biscayne Bay was "a freshwater marsh or lake" when the earliest humans came to the area about 10,000 years ago, but it became a saltwater body about 4,000 years ago when the last of the glaciers

[2] Darrell Nicholson, "Park preserves the past, protects the future," *Islander News*, August 20, 1987, 16.

disappeared. The twenty-first century landscape of the bay and its borders, including the island keys, was likely set about 2,000 years earlier. Since then, it has weathered changes brought on by tides, human intrusion, and especially hurricanes that often inundated the small islands, destroyed structures, and affected biota.[3]

Eight miles of shoals known as the Safety Valve (along with the sole island of Soldier Key) stretch south from the northern park boundary. Beyond the Safety Valve, the Ragged Keys—low, rocky rises separated by channels—continue southward. At their southern end is Boca Chita Key, a twenty-nine-acre island that has been the site of much human activity. From there, Sands Key and Elliott Key, the largest island in the park, extends south to a group of small isles at Caesar Creek and Jones Lagoon. The largest of these is Old Rhodes Key, with islands to the west and south reaching the southern boundary of the park. The park extends east into the Florida Straits, where it contains the northern extension of the Florida Reef, the nation's northernmost living coral reef.[4]

The western border of the park includes 4,825 acres of largely undeveloped red mangrove forest. This western edge was historically where fresh surface water flowed seaward from the Everglades system into the bay, mixing with saltwater and creating an important estuarine habitat that supported abundant plant and animal life. The Everglades flow also feeds the Biscayne Aquifer, a vast underground reservoir reaching depths between 60 and 160 feet below sea level. Historically, the aquifer provided water for a number of springs in the area, including spring flow directly from the bay bottom, a unique natural feature. Records from the nineteenth century indicate that, during heavy water flow, seagoing sailors and local residents collected fresh water from different springs in the middle of the bay. Former BNP Superintendent Richard "Dick" Frost recalled a rare "torrential" multi-day rain event during his 1993-2000 tenure that caused a freshwater upwelling in the bay—evident because of seagrass and coral damage. This feature had largely disappeared by the twenty-first century, owing to mid-twentieth century construction of drainage canals that diverted water once absorbed into the aquifer system. Fresh water now enters through a canal system rather than by sheet flow—an effect that has dramatically changed salinity levels in the bay and has been a point of major concern. Some, including Frost, believe that the bay has largely become a saltwater lagoon because of the lack of consistent flows of fresh water—a critical problem for this habitat.[5]

Overall, Biscayne Bay is a shallow body of water with an average depth of six to ten

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[3] Richard Frost, "Biscayne: A Park at the Edge," speech given January 17, 1996, by Biscayne Superintendent Richard Frost to the University Yacht Club. Frost frequently used this description during his tenure to help his audiences understand BNP's location and challenges. See also Richard Frost, interview by author, Homestead, FL, June 6, 2014; Jennifer Brown Leynes and David Cullison, *Biscayne National Park: Historic Resource Study* (Atlanta: National Park Service [NPS] Southeast Region, 1998), 3, 7.

[4] Leynes and Cullison, *BNP Historic Resource Study*, 7-9.

[5] Leynes and Cullison, *BNP Historic Resource Study*, 1; Richard W. Alleman et al., *Biscayne Bay Surface Water Improvement and Management Technical Supporting Document* (West Palm Beach: South Florida Water Management District Planning Department, 1995), 1, 3, 25; Frost, interview.

feet, with some dredged areas of greater depth. South Florida's subtropical climate brings an average annual rainfall of 58 inches, which varies from 35 to 84 inches. The wet season typically runs through the warm months of June to October, which also represent much of hurricane season. The bay's unique features are the wellspring of life for a wide variety of marine and terrestrial plants and animals living in the park, some of which are extremely rare and in danger of extinction. Many such species are found on shorelines, low-lying keys, reefs, and the bay's bottom, which vary from grass-covered to sandy. As of 2017, state and/or federal authorities listed thirty-six animal species in the park as endangered, threatened, or species of special concern. These included corals, butterflies, fish, sea turtles, birds, whales, manatees, and a species of snake. The park's unique location also makes it one of the few places in the nation where both alligators and crocodiles can occasionally be found. Additionally, the park is home to a number of species that are protected from harvest in order to ensure their survival, including rays, groupers, corals, sea stars, sharks, sponges, and lobster; the latter two have especially stringent protections in the modern park era. Lastly, the park is home to a variety of rare plant species, notably Sargent's Cherry Palm, the rarest species of palm tree in Florida.[6]

Native People

The earliest humans reached the area at least 10,000 years ago. Their remains and artifacts might have been inundated at the end of the last ice age 4,000 years ago, perhaps still to be found on the reefs and bay bottom. It is clear that by 2,500 years ago, the area's native people had given up nomadic ways in favor of more permanent settlements. These people, known by archeologists as the Glades culture, feasted on the area's rich shellfish supply, their dinner discards creating shell middens that remained important archeological study areas for twenty-first-century scholars. The Glades culture divided into smaller groups that formed extensive trade systems and had the time to develop art and religion. Native artifacts are found throughout the area, including in the Totten Key Complex and Sands Key, and middens indicating that native people lived on Sands Key as early as 1000 CE, with pottery sherds dating until around 1650 CE and Spanish exploration. An area called the Miami Circle, near the mouth of the Miami River at the bay, was an important early ceremonial site and village; it likely housed inhabitants before the arrival of Spanish explorer Christopher Columbus and had been preserved as a historic site as of 2017.[7]

Sixteenth-century Spanish explorers of the "New World" came to call the native

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[6] Alleman et al., *Biscayne Bay Surface Water*, 1-23; NPS, "Threatened and Endangered Animals in Biscayne National Park," BNP website, accessed February 12, 2019, http://www.nps.gov/bisc/naturescience/threatened-and-endangered-animals.htm; NPS, "Plants," BNP website, accessed August 1, 2014, http://www.nps.gov/bisc/naturescience/plants.htm.

[7] Leynes and Cullison, *BNP Historic Resource Study*, 9-10; NPS, "Native Peoples," BNP website, accessed February 12, 2019, http://www.nps.gov/bisc/historyculture/native-peoples.htm; Greg Allen, "Once an Ancient Village, Soon an Entertainment Complex?" National Public Radio, November 15, 2013, http://www.npr.org/2013/11/15/245181127/once-an-ancient-village-soon-an-entertainment-complex.

dwellers in the bay region the "Tekesta"—a term they thought the native peoples used; these people were later commonly referred to as the Tequesta. Juan Ponce de Leon first met them in 1513 as he returned from Florida's west coast during his exploratory voyage to the area. They lived in an area extending from the northern Keys up the coast to Miami and into the interior, with possibly related groups living as far north as Boca Raton. According to historians Jerald T. Milanich and Charles Hudson, the Spanish also referred to native people by their location; they cite a 1675 account describing native people living at the mouth of the Miami River as "Vizcayanos, from which modern Biscayne Bay received its name." Milanich and Hudson posited that the Tequesta and Vizcayanos likely were closely related groups. The Tequesta did not pursue agriculture but instead found food among native plants and animals in inland areas and on offshore islands. Author Marjory Stoneman Douglas noted that, "like the intelligent people they were," the native people adapted their lifestyles and clothing to the hot, humid climate: women used tree moss for light skirts, and men wore plaited pieces of palmetto strips as well as moss and raccoon tails hanging from a belt for coverage. They used the tip of Key Biscayne as a "favorite feasting place," often lighting fires there to roast fish, turtle eggs, and crawfish.[8] One shipwrecked Spaniard, who spent almost two decades living among the Calusa people on the western side of the Everglades, recounted that the Tequesta used the root of the coontie plant to make bread to supplement their diet of nuts, fruit, deer, snakes, alligators, and other wild animals.[9]

Although there were several Spanish accounts of the Tequesta, as well as attempts to build missions in their lands, within two centuries most Tequesta were gone. In the 1770s, English cartographer Bernard Romans reported the "area as having only empty, unpopulated villages," possibly the result of European-borne diseases like smallpox and measles that devastated native populations across the Americas. In 1946, historian John R. Swanton suggested that, when Spain ceded Florida to Great Britain in 1763, eighty native families who headed to Cuba with the Spanish may have been the "last remnants of the Tequesta."[10]

While native tribes disappeared across Florida, other groups, including the Oconee tribe and related peoples, moved south from areas such as Alabama and Georgia into vacated lands along the bay and into the nearby Everglades, gaining the name Mikasuki or Miccosukee. In the late 1700s and early 1800s, immigrants from Lower Creek towns in southern Alabama and along the Gulf coast—many fleeing conflicts involving native groups and federal troops—joined the Miccosukee, who came to be widely known as the Seminoles. While the origin of

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[8] Jerald T. Milanich and Charles Hudson, *Hernando de Soto and the Indians of Florida* (Gainesville: University Press of Florida, 1993), 21, 114, 116; Marjory Stoneman Douglas, *The Everglades: River of Grass*, 50th Anniversary Edition (Sarasota: Pineapple Press, 1997) 68-69, 169; Leynes and Cullison, *BNP Historic Resource Study*, 10.

[9] Michael Grunwald, *The Swamp: The Everglades, Florida, and the Politics of Paradise* (New York: Simon & Schuster Paperbacks, 2006), 21-22.

[10] Milanich and Hudson, *Hernando de Soto*, 114-16; John R. Swanton, *The Indians of the Southeastern United States* (1946; reprint Washington: Smithsonian Institution, 1979), 192, cited in Leynes and Cullison, *BNP Historic Resource Study*, 10-11; NPS, "Native Peoples."

the name Seminole has been greatly debated, it likely meant "fugitive." The Seminoles farmed and raised cattle, but they probably did not live on any lands now included in BNP. Their descendants remained in South Florida, although no federal reservations were found in or adjacent to the park as of 2017.[11]

Spanish Exploration and Trade Routes

The Spanish, who may have been looking to enslave native people for labor on plantations in Cuba and Hispaniola, were the earliest explorers to reach Biscayne Bay. Juan Ponce de Leon led an expedition to the area in 1513 and named the state "La Florida" because of its lush greenery and in honor of Pascua Florida, the Easter season then occurring. During his travels along the eastern Florida coast, Ponce's ships likely reached Biscayne Bay and its islands. He called these islands "Los Mártires" ("the martyrs") because, as Spanish chronicler Antonio de Herrera y Tordesillas described and historian Michael Gannon quotes, "viewed from afar the rocks as they rose up seemed like men who are suffering." Ponce likely also reached Key Biscayne, naming it "Santa Marta," and Key Largo, which he named "Pola." The Spanish encountered the Tequesta at the mouth of the Miami River, at the north ofthe bay, as well as other native groups, as they explored part of Florida's southwest coast and the Dry Tortugas; according to Gannon, Ponce called these islands "Las Tortugas" for the turtles the natives used to provision their boats. During a subsequent trip in 1521 to La Florida, a native arrow struck Ponce in the thigh, leading to an infection that eventually killed him.[12]

Although the Spanish established a missionary post and accompanying garrison on the bay at the Miami River, their main settlements were in north Florida, particularly at St. Augustine on the northeast Atlantic coast. Spanish interest in South Florida focused mainly on its importance as a travel and commerce route. The Florida Strait, a waterway between Florida and the Bahamas and Cuba, was vital to the Spanish transoceanic exchange between Europe and the New World. There, the strong, warm Gulf Stream flows north from the Caribbean towards Europe, speeding ships laden with goods from Spanish colonies; precious metals and gemstones in particular brought great wealth to the Spanish monarchy. But the route was fraught with danger owing to the Strait's narrow borders and shallow coral reefs—and to sailors' poor navigational abilities. Strong ocean currents, violent storms, and hurricanes forced many a ship onto treacherous shoals, often within the boundaries of today's BNP. Among these are the *Nuestra Señora de Populo*, a Spanish colonial messenger ship that wrecked in 1733, and the HMS *Fowey*, a British warship that went down in 1748. Chapter 6 discusses these shipwrecks and many others discovered, analyzed, and preserved at the park.[13]

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[11] Milanich and Hudson, *Hernando de Soto*, 114-16; Leynes and Cullison, *BNP Historic Resource Study*, 10-11; NPS, "Native Peoples."

[12] Michael Gannon, "First European Contacts," in *The New History of Florida*, ed. Michael Gannon (Gainesville: University Press of Florida, 1996), 17-21.

[13] Eugene Lyon, "Settlement and Survival," in *The New History of Florida*, ed. Michael Gannon (Gainesville: University Press of Florida, 1996), 49; Leynes and Cullison, *BNP Historic Resource Study*, 11.

Figure 1.2. Divers explore the HMS *Fowey* shipwreck, one of many vessels found within BNP waters. NPS photo, BNP archives.

The Wreckers

The great riches to be found in these shipwrecks drew a variety of people, including natives, Spaniards, Bahamians, and Americans who capitalized on seagoing misfortunes. These "wreckers" helped sailors salvage their goods from sinking vessels and refloat stranded boats. They often were rewarded financially with a percentage of the value of the cargo; other times they simply claimed it for themselves. Historian John Viele recounts how natives of the keys "paddled out to the reef to investigate and plunder shipwrecks" as early as the 1500s. "If there were any survivors," he continues, "the natives usually killed or enslaved them." Later, Spanish expedition members—which included African slaves and keys natives who acted as salvage divers—came to recover goods lost in their galleons. According to Viele, Bahamian "wrackers" followed, "[operating] in the Keys for nearly one hundred years before the Americans took possession and forced them to leave." Islands later within BNP likely served as "temporary salvage camps" for "native Americans, Spaniards, Bahamians and Americans" who engaged in the salvage business, write historians Jennifer Brown Leynes and David Cullison. Havana, Cuba, was the center for Spanish wrecking, but in later years the salvaging

centered on the Bahamas, where a British Admiralty Court operated in Nassau from the 1600s until 1825.[14]

In Nassau, salvaged goods were auctioned, with proceeds used to pay customs duties, tithes to the governor, and court fees (if goods went unclaimed). The salvage business was extremely profitable, as Viele notes: "After the end of the War of 1812, the annual revenue from duties, estimated at fifteen thousand pounds sterling, became the principal means of economic support for the town of Nassau." Wrecker boats usually were awarded from 40 to 60 percent of the cargo's value, which was split evenly between the wrecker owner and crew members.[15]

The industry came under US government scrutiny in the early nineteenth century following accusations that wreckers had deliberately misguided ships onto dangerous reefs and shoals in order to profit from the devastation. Leynes and Cullison write that in 1825 Congress mandated that all wrecks "salvaged in American waters be brought to an American port for adjudication." They continue, "The federal government established a court in Key West, and many Bahamians moved to the Florida Keys soon thereafter, turning the area into a well-known center for wrecking." Viele observes that, in doing so, Congress "effectively excluded the Bahamians from salvaging wrecks in the keys" while also creating an additional source of income for the government. Wrecking soon became the city's most profitable business—in 1845 the city received twenty-six ships that had wrecked on the reef, and a year later there were fifty-five ships with the same fate. As a result, Key West became one of the wealthiest cities in the nation, and many Bahamian salvagers immigrated to Florida.[16]

Wrecking captains and boats in the Keys had to be licensed by a federal court judge "who also had the power to revoke those licenses for wrongdoing," writes Viele. He adds that salvagers in many areas waited in port until wrecks were reported, but in the Keys "wrecking vessels stationed themselves where the incidence of wrecks was the highest and conducted searches for wrecks along the reef on a daily basis." Consequently, wreckers sometimes worked as rescuers for newly stranded crews.[17]

During his 1832 travels in South Florida, including to the Florida Keys, noted avian artist John James Audubon stayed as a guest in the home of a Key West wrecker. The reputation of wreckers "had deeply prejudiced me against them," Audubon admitted. "Often had I been informed of the cruel and cowardly methods which it was alleged they employed to allure vessels of all nations to the dreaded reefs, that they might plunder their cargoes, and rob

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[14] John Viele, *The Wreckers,* vol. 3 of *The Florida Keys* series (Sarasota: Pineapple Press, 2001), xii; Leynes and Cullison, *BNP Historic Resource Study*, 11-13.

[15] Viele, *Wreckers*, 22.

[16] Leynes and Cullison, *BNP Historic Resource Study,* 12-13; Charlton W. Tebeau, *A History of Florida* (Coral Gables, FL: University of Miami Press, 1971), 142; Lisa Simundson, *Miami and the Florida Keys* (Edison, NJ: Hunter Publishing, 2008), 6, https://books.google.com/books?id=BPeuWv0RZeYC&pg; Viele, *Wreckers*, 27-28.

[17] Viele, *Wreckers*, xii-xiii, 18-19.

their crews and passengers of their effects." After meeting and sailing with members of the profession, however, Audubon's opinion changed dramatically: "The crews were hearty, well-drest, and honest-looking men."[18]

The American wrecking business was short lived. The construction of lighthouses along the Florida reef between 1852 and 1878, along with technology that shifted ships from wind to steam power, decreased the number of maritime accidents along the coast. Before 1878, the main lighthouse for passing ships was the Cape Florida lighthouse, located in what is now Bill Baggs Cape Florida State Park on Key Biscayne, just north of BNP. Built in 1825, this lighthouse was burned by Seminoles in 1836 but rebuilt in 1846. Although the Biscayne Bay area was not a center for wrecking activity, its eastern islands likely served as temporary campsites for those involved in the business.[19]

The *Alicia* wrecked in 1906 near the Fowey Rocks on Ajax Reef. Also called the *Alecia*, this was the last of the "good wrecks," writes modern-day treasure hunter Martin Meylach in *Diving to a Flash of Gold*. The damaged boat, "flattened out along the twenty-foot-deep rocky bottom," provided a trove of goods for wreckers:

> All manner of trade goods, household provisions, furniture and even pianos were aboard. The wreckers were elegant in newly recovered brocades and silk. Their women fingered through cases of fine lace. As cask after cask of wine and rum emerged, cooled by the water in the submerged hold, one was damaged. Cool, red liquid trickled out. The hot bite of Spanish rum in the workers' bellies slowed the job. But then, as they sang and heaved away, they thought, "So what, we have forever." The olden days were no more, and the Alecia was the last.[20]

Piracy

The cargoes Meylach describes also drew people to piracy in the area, including a legendary buccaneer known as "Black Caesar." Although no evidence supports Black Caesar's existence and he may have been merely an apocryphal legend handed down by early settlers, he nonetheless came to have a place name in the national park. According to journalist Alan F. Troop, different tales depicted him as the "biggest and meanest buccaneer who ever sailed the Spanish Main" and possibly as a "black man who sailed with Blackbeard and was captured and hanged in Virginia in the early 1700s." The character was also described as an African chief who lived on Elliott Key, where he kept prisoners and captured women, and as a tri-lingual pirate who raided slave vessels and freed the human cargo. In the mid-1700s,

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[18] Kathryn Hall Proby, *Audubon in Florida* (Coral Gables: University of Miami Press, 1974), 83-84, 337, 340.

[19] Leynes and Cullison, *BNP Historic Resource Study*, 12-13; Florida State Parks, "Bill Baggs Cape Florida State Park," Florida State Parks website, accessed December 8, 2014, https://www.floridastateparks.org/parks-and-trails/bill-baggs-cape-florida-state-park.

[20] Martin Meylach in collaboration with Charles Whited, *Diving to a Flash of Gold* (Port Salerno, FL: Florida Classics Library, 1986), 281-82.

during English ownership of Florida, maps indicated a small inlet south ofElliott Key to be "Black Caesar's Creek"; as of 2019 it was simply Caesar Creek. Many combed the area looking for evidence of buried pirate's treasure, but if they found anything, they never revealed it.[21]

Whether a pirate called Black Caesar ever lived is uncertain; however, it was common for any black pirate in the eighteenth and nineteenth centuries to have this moniker, so there may have been more than one buccaneer known by that name. Historian Devin Leigh notes that the "content of the legend refers to the GoldenAge of Piracy in the early eighteenth century when a black pirate named Caesar actually sailed with Blackbeard off North Carolina; however, there is no evidence, either textual or material, to suggest that the Florida legends are based in fact. For this reason, they are best understood as an 'invented tradition' of the conch people who visited the peninsula in the early-modern era."[22]

Regardless of facts, tales of Black Caesar flourished. As Leigh notes, the legend follows a "particular literary trope: the Western educated, African chief who is seized into slavery and then, as a result of his exceptional and royal status, becomes a type of social bandit in the New World." American homesteaders in the late 1800s likely heard the legend from local Bahamians, and it became "almost a rite of passage for transplants" of the era, who then repeated it for many more generations as "history." Tales that Black Caesar may have made punch with his crew in an actual area dug out of rock or that he buried treasure in the area added spice to the narrative.[23]

Settlement and Agriculture

After the Spanish ceded Florida to the United States in 1821 and the area began to develop a new identity as part of the nation, permanent establishments—mostly in the northern part of the territory—emerged and attracted immigrants from many areas. The first census, taken in 1825, counted only 317 people in South Florida; five years later the population had grown to 517 people.[24]

Key West, home to wreckers, pirates, and those working in the sponge industry, had no permanent residents listed in 1821. By the time it was chartered in 1828, however, the city had grown in importance, becoming the seat of the federal court (in part due to wrecking activities) and an important military and shipping center. Naval and merchant vessels kept the port busy, as did the still-thriving wrecking business. To stop piracy in nearby waters, in

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[21] Alan F. Troop, "The Legends of Black Caesar," *South Florida SunSentinel,* October 6, 1991, http://articles.sun-sentinel.com/1991-10-06/features/9102090910_1_blackbeard-black-man-legends; Lloyd Miller, *Biscayne National Park: It Almost Wasn't* (Redland, FL: LEMDOT, 2008), 7-10.

[22] Troop, "Legends of Black Caesar"; Devin Leigh, "Black Caesar's Klan: Albert Payson Terhune, the Birth of Miami, and the Cultural Battle for an Old Bahamian Legend," *Tequesta: The Journal of HistoryMiami Museum* XXLV (2015): 68.

[23] Leigh, "Black Caesar's Klan," 68-69.

[24] Tebeau, *History of Florida*, 134, 146.

1822 the US government spent $500,000 to build up a naval force that eventually included small schooners, ships, and the Navy's second steam-powered vessel. The force was ultimately effective in making the waters of the Keys and Caribbean safer for commerce.[25]

Immigrants to South Florida included people moving from the Bahamas, known as "Conchs," whose settlements extended from Key West to Elliott Key to the east of Biscayne Bay. Few established residents lived in the Biscayne area, and many fled to Key West during the Second Seminole War in the 1830s.[26]

Even before the Spanish gave up Florida, the US government sought to control Florida's Seminole tribe, who had long harbored runaway slaves from bordering states. General Andrew Jackson, who would later become Florida's territorial governor and a US president, made several incursions into Florida to fight the Seminoles, leading to the 1817 outbreak of the First Seminole War. Three Seminole wars were fought by 1858, and by that time, most of the native peoples had left the state with only a remnant population of approximately two hundred residing deep in the Everglades. Although much of the action occurred in north and central Florida, a bloody outbreak in the Keys took place on August 7, 1840, when a group of warriors led by Seminole Indian chief Chekika raided Indian Key. There they killed seven people, including Dr. Henry Perrine, a physician and horticulturist. Homesteaders who moved southwest into the Keys toward Key Vaca and Key West during the hostilities moved back into the upper Keys when the Seminoles withdrew into the Everglades.[27]

The Florida Keys also played a role in the Underground Railroad, as many escaped slaves left from the islands for the freedom of the British-owned Bahamas. Cape Florida, later Bill Baggs Cape Florida State Park, was a debarkation point for many southern blacks escaping slavery. (In recognition, the state park was designated a National Underground Railroad Network to Freedom site in 2004.) Escapees, often accompanied by Seminoles and black Seminoles (descendants of Seminoles and either free blacks or escaped slaves), met Bahamian captains who transported an estimated 100 to 300 people to freedom. Inspired by that data, BNP ranger Gary Bremen researched the park's possible role in the Underground Railroad for a 2012 BNP program called "Finding Freedom on Biscayne Bay." One story was that of Captain Jonathan Walker, whose hand was branded with

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[25] Tebeau, *History of Florida*, 142, 146-47; E. Carter Burrus, Jr., "A History of the Islands and Waters of the Biscayne National Park – A Multi-Media Interpretive Program" (PhD diss., University of Miami, 1984), 33-34.

[26] Leynes and Cullison, *BNP Historic Resource Study*, 13.

[27] John K. Mahon and Brent R. Weisman, "Florida's Seminole and Miccosukee Peoples," in *The New History of Florida*, ed. Michael Gannon (Gainesville: University Press of Florida, 1996), 190-92, 201; Tebeau, *History of Florida*, 140, 167; Jane Nordt, *Elliott Key Park* (Miami: Metro Dade County Park and Recreation, n.d.), 6.

"SS" for "slave stealer" after he was caught smuggling seven slaves at Cape Florida in 1845—an event that may very well have taken place in BNP waters.[28]

When the Civil War broke out in 1861, Florida joined the Confederate forces. Robert E. Lee, commander of the Confederate forces, had visited Biscayne Bay in 1849 to consider where to place military operations, but, as Leynes and Cullison note, the tip of the peninsula was ultimately of little military consequence:

> South Florida, with the exception of the port and fortress of Key West (which was held in Union hands), was of little strategic significance to either the Union or the Confederacy during the war. Although the proximity to the ports of the Caribbean and many secluded islands and streams along the coast might have provided refuge for Confederate blockade-runners and their contraband, the lack of overland transportation routes to the north made running goods through the state impractical. For the most part, blockade-runners sailed for Savannah and other points farther north.[29]

Biscayne Bay did play a small part in the immediate postwar period when a fleeing John C. Breckinridge, the Confederacy's Secretary of War and a former US Vice President, arrived by boat in the bay on June 7, 1865—two months after the South had surrendered. He and his companions anchored in the bay two nights before heading to Cuba, where he began a three-year exile until the government granted amnesty for Confederates.[30]

While the Miami area began to grow in the late nineteenth century, most of the development in the Biscayne area that eventually became part of the park involved harvest of natural resources and agriculture. Looking to the bay's bountiful marine life, former wreckers gathered sponges and fish. Turtles also provided much-needed sustenance to local residents and native people, as did their eggs, which were buried on sandy beaches on summer nights. The netting of sea turtles, commonly known as "turtling," was a lucrative enterprise throughout the Keys. The large animals were typically captured in nets and then hauled by boat to Key West, where they were kept in holding pens before being slaughtered for their meat, skin, and shells. A cannery was built in Key West in 1895 specifically to preserve green turtle meat, but it closed in the 1960s when legislation ended turtling in order to protect the species, then determined to be in danger of extinction.[31]

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[28] Margo Harakas, "Underground Railroad made tracks to Bahamas," *Chicago Tribune*, April 14, 2005, http://articles.chicagotribune.com/2005-04-14/features/0504130367_1_freedom-seekers-cape-florida-lighthouse-slave; Laura Yepes, "Ranger develops 'freedom on bay' project," *Our National Parks*, December 5, 2012, http://www.ournationalparks.us/south_florida/biscayne/ranger_develops_finding_freedom_on_bay_project.

[29] Leynes and Cullison, *BNP Historic Resource Study*, 13; Tebeau, *History of Florida*, 202.

[30] Nordt, *Elliott Key Park*, 6; Leynes and Cullison, *BNP Historic Resource Study*, 13-14; United States Senate, "John Cabell Breckinridge, 14th Vice President of the United States (1857-1861)," US Senate website, accessed September 1, 2014, https://www.senate.gov/artandhistory/history/common/generic/VP_John_Breckinridge.htm.

[31] Leynes and Cullison, *BNP Historic Resource Study*, 14-17; Burrus, "History of the Islands and Waters," 50-52.

Other settlers, particularly after the Civil War, cleared the northern Keys of their mahogany and hardwoods in order to grow guavas, limes, pineapples, tomatoes, sapodillas, and avocados. It was a hardscrabble life. On Elliott Key, pioneers built their wooden homes with materials scavenged from wrecks. According to historian E. Carter Burrus Jr., they positioned their houses on an island ridge facing the ocean, behind sand dunes for protection from high tides. "In addition," Burrus writes, "the frame houses were ground-pinned to the rock to withstand high winds by anchoring the framework of the house to hardwood logs buried in ditches at the corners and parallel to the sides." Most homes, painted white "if painted at all," had no porches but featured shutters that occupants opened for daytime breezes and closed at night to stave off mosquitos. Many homeowners also used "smudge pots" of smoking materials to ward off the insects—and spent many a long, hot night in dark, smoky quarters. Cooking was done in an outbuilding or outdoors. Every home had a long dock reaching into the ocean or bay, connecting the people to the local marine bounty and transportation of goods.[32]

Figure 1.3. Key limes became an important agricultural crop for early settlers in BNP's islands. The fruit could tolerate the salty, sandy soil and was in demand in northern markets. NPS photo, BNP archives.

With no refrigeration technology to allow shipments of perishable goods to northern markets, many settlers began growing pineapples, which survived longer seagoing trips. In 1860, Captain Benjamin Baker, a Key West wrecker, planted pineapple cuttings from Mexico on Plantation Key and Key Largo. While tending them, he also looked for ships that had succumbed to reefs in the area. The tropical fruits did well in the limestone soil of the islands, and within thirty years they were being grown on keys from Matecumbe northward to Elliott.

[32] Burrus, "History of the Islands and Waters," 71-72.

Pineapple cultivation required intensive labor, including that of African American workers who helped harvest and pack the spiny fruit while fending off mosquitoes in the Florida heat. The fruit was transported by boat to Key West and then shipped on large boats to northern markets.[33]

By the 1880s, a variety of crops were grown in the Keys; these included melons, potatoes, and carrots in addition to tropical fruit such as bananas and citrus. In 1884, it was reported that pineapple shipments would amount to $200,000—cultivation of this fruit was clearly a very lucrative business. One wrecker used his schooner to transport pineapples from Key Largo and Elliott Key to New Jersey, a trip that took five and a half days. The most successful farming community grew pineapples on the western side of Elliott Key. The estimated ninety residents, including fourteen families of Bahamian descent, lived in cabins and houses, shopped at a general store, sent their children to an island school, collected rainwater in cisterns, and produced goods for a local packinghouse. They ate fish and shellfish from the bay and did some wrecking on the side. One extended family originally from the Bahamas, the Sweetings, came to Elliott Key in 1882 and claimed 154.4 acres under the US Homestead Act of 1862. The site eventually grew to 239.8 acres. The Sweetings cleared enough land to plant 100 acres, mostly with pineapples and key limes. They got their drinking water from springs in the bay and on the mainland until they built a 6,280-gallon rain cistern on their property—the remains of which could still be seen on the island as of 2017. The Sweeting homestead was added to the National Register of Historic Places in 1997, and BNP studied homesteads on other islands for possible listing (see Chapter 6).[34]

In the late 1880s, a cannery opened in Key West to take advantage of the local crops, but the biggest impact on the Keys' pineapple and produce market came with the extension of railroad lines that could carry produce to northern consumers. After the soil started to lose its richness and a hurricane hit in 1906, much of the pineapple industry ended, leading residents to move into key lime production. Limes from Mexico were first introduced on Indian Key in 1838 by horticulturist Henry Perrine and were primarily used by locals. However, the fall of the pineapple industry triggered a surge in lime growing, particularly in the early twentieth century. Early accounts report 60,000 crates of limes being shipped from the upper Keys, but by 1931 that number had dropped to 10,000 crates. On Elliott Key, key limes became the most important crop, producing 7,500 barrels of fruit at prices that fluctuated between $5.50 and $60 a barrel, depending on demand. As Burrus notes, the popularity of "gin and lime drinks (Gin Rickeys) in northern nightclubs after the turn of the century, [provided] a ready market for Elliott Key limes until Prohibition substantially killed the cocktails, and the lime market."

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[33] Leynes and Cullison, *BNP Historic Resource Study*, 14-17; Jerry Wilkinson, "The History of Farming," Keys Historeum, Historical Preservation Society of the Upper Keys, accessed September 1, 2014, http://www.keyshistory.org/farming.html; Peg Niemiec, "The Sweeting Homestead on Elliott Key," *Tequesta* LVI (1996), 25-29, 41, a, http://digitalcollections.fiu.edu/tequesta/files/1996/96_1_02.pdf.

[34] Leynes and Cullison, *BNP Historic Resource Study*, 14-17; Wilkinson, "History of Farming"; Niemiec, "Sweeting Homestead," 25-29, 41.

Prohibition and price drops during the Great Depression made life on Elliott Key difficult; even the Sweetings, who had endured bad weather and trying times, left for the mainland in 1932, leaving behind their homestead and plantings of periwinkle flowers, which were still blooming as of the 2010s.[35]

Keys historian Jerry Wilkinson blames a hurricane for the eventual decline of island agriculture: "The 1935 hurricane gave the coup de grace, and 1935 can be considered as the beginning of the end of the Keys' farming industry." He continues:

> This of course was not the end of small holdings of one to five acres, but even these began to give way to development. The farms got smaller, but the work remained just as hard. In my opinion, farming died in the Upper Keys when Hector Emanuel Clark of Newport "just got too old to do it." Hector came from Grand Turk Island to Miami in 1924 and settled on Key Largo in 1933. He hacked out a few acres in Newport and grew just about everything, but specialized in Keys tomatoes.[36]

There were commercial plantings of key limes in Miami-Dade County in the late twentieth century, but by the twenty-first century there was "little to no commercial key lime production in Florida," according to the University of Florida. Most production came from Mexico, with other producers in Egypt, India, Brazil, and countries in the West Indies. Key limes growing in Florida as of 2017 were mostly located in private yards.[37]

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[35] Leynes and Cullison, *BNP Historic Resource Study*, 15-16; Wilkinson, "History of Farming"; Niemiec, "Sweeting Homestead," 39-41; Burrus, "History of the Islands and Waters," 64.

[36] Wilkinson, "History of Farming."

[37] Jonathan H. Crane, "Key Lime Growing in the Florida Landscape," University of Florida IFAS Extension, published February 1991, revised December 2010 and November 2016, http://edis.ifas.ufl.edu/ch092.

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Chapter Two

Florida and Miami Boom – Development of Biscayne Bay (1920-1960)

Legend has it that the story of modern Miami, the booming international city that came to dominate South Florida and Biscayne Bay, began with a box of fresh orange blossoms. In the winter of 1894-95, devastating freezes destroyed many of Florida's citrus groves, leaving their fruit ruined and trees dead. The storm was a disaster for the state's growers, whose production decreased to 150,000 boxes of fruit from what had been 5.5 million boxes. Miami, however, was spared. There, Julia De Forest Sturtevant Tuttle—a shrewd woman originally from Cleveland—packaged up orange blossoms and sent them to railroad titan Henry Morrison Flagler. Her floral message said it all: Miami was a frost-free haven for tropical biota—and rich tourists.[38]

Flagler, a former partner of Standard Oil's John D. Rockefeller, had invested his substantial wealth in bringing a railroad line to Florida's east coast and, with it, luxury hotels in St. Augustine and Palm Beach. Tuttle's gift piqued his interest, and he soon turned his attention to Miami, where he extended the rail line in 1896.[39]

Writing in 1970, Miami author Polly Redford described Flagler's coming to Miami as following a common Florida development plot with four elements:

> First, a pretty place blessed with a lovely climate. Second, a rich man from up north—usually some kind of tycoon who retired too early. When things get dull he comes south to enjoy himself. Waiting for him at the dock or the depot is the third element, a local person with large tracts of land and even bigger ideas. All he lacks is cash. Fourth is the improvement, some technological change—railroad, causeway, bridge, factory, gambling house, airport, seaport, or combination of all these—that the tycoon promises the local person in return for part of his land. Historically, this is always referred to as The Dream; and if it makes money, the tycoon sooner or later becomes a Founding Father. The local person then becomes a Pioneer. This is why Miami has a Julia Tuttle Causeway and why all its streets are numbered from Flagler Street.[40]

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[38] Polly Redford, *Billion-Dollar Sandbar: A Biography of Miami Beach* (New York: E. P. Dutton, 1970), 27-29.

[39] Ibid.

[40] Ibid., 28.

Indeed, this plot played out repeatedly in the story of Biscayne Bay over the next six decades—ceasing only when many of the bay's waters and islands were preserved as Biscayne National Monument in 1968 and as Biscayne National Park (BNP) in 1980.

Miami was incorporated in 1896. At that time, the city had fewer than five hundred residents and still went by the name of Fort Dallas—a Seminole War outpost that the US Army had built on the Miami River in what later became the city's downtown. Tuttle had inherited riverfront property and added to its acreage, aiming to build a hotel at the mouth of Biscayne Bay. Redford described this site as "unparalleled, for the Miami River was then an extraordinarily clear and beautiful stream and Biscayne Bay an unspoiled tropical lagoon, but unfortunately Miami was accessible only by small, shallow-draft boats from Palm Beach or Key West. To get tourists, Mrs. Tuttle needed transportation." To entice Flagler to extend his railroad another ninety miles south, Tuttle offered him 320 acres and also talked the Brickell family into offering land.[41]

Ultimately, Flagler (not Tuttle) opened the Royal Palm Hotel in 1897. He built it on the north side of the river in his usual grand style, removing a large Tequesta burial mound to make room for the hotel veranda—Miami's newest expansion was already taking its toll on the area's natural and cultural resources. By its fourteenth birthday in 1910, Miami had ten thousand residents, a deep-water channel through the shallow bay connected the river to the ocean for ship traffic, and the Miami River was mucky and filled with debris and sewage. The river once had rapids, but they were dynamited in efforts to drain the Everglades, and the bay suffered from the river's degradation: "it was no longer the clear, clean salt lake it had been ten years earlier," Redford wrote, adding that locals instead used a barrier island beach for their swimming recreation. Miami was a rapidly developing city on the edge of wilderness, and the problems accompanying this clash would become evident in coming years. But at the time, Miami's growth looked like progress to most people and quickly earned it the local nickname of "Magic City."[42]

Flagler's railroad altered not only Miami but the entire landscape of South Florida. To Flagler, more residents meant more commerce for his rail business, which relied on tourists and freight traffic. And Flagler wasn't finished at Miami—he wanted to take his rail line 128 miles from Homestead to Key West, the farthest reach of Florida. There, shipping could extend to Cuba and far into the Caribbean to the planned Panama Canal. It was a project that some Key West residents had wanted since at least 1835. Initially, Flagler considered two routes: through the Everglades to Cape Sable and across Florida Bay, or along the ocean linking through the Florida Keys. He settled on a line that ran through twenty-nine islands (excluding the upper Keys) and across forty-three bodies of water. It used a series of bridges, one seven miles long, as well as three drawbridges. Author Michael Grunwald

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[41] Ibid., 27-29; Jack E. Davis, *An Everglades Providence: Marjorie Stoneman Douglas and the American Environmental Century* (Athens: University of Georgia Press, 2009), 106.

[42] Redford, *Billion-Dollar Sandbar*, 29-30, 38; Davis, *Everglades Providence*, 106, 117.

describes the task as "unthinkable, impractical, impossible, but easier than slashing through the Everglades." Begun in 1905, Flagler's Overseas Railroad met with a number of obstacles, including three hurricanes that cost many railroad workers their lives, and a 1906 storm that caused the wreck of the *St. Lucie*, a wooden paddle-wheeler that carried workers and equipment. At least twenty-one men drowned when the *St. Lucie* went down near Elliott Key. Some of its remains were still scattered along BNP bottomlands as of 2017. During the five to six years of the greatest construction effort, some forty thousand men labored at various times, including Italians from New York, Menorcans, Spaniards, and Cayman Islanders. The laborers were plagued by mosquitos and sand flies, and many returned home without ever stepping foot on the mainland. Engineers, doctors, and other professionals also participated in the enormous project.[43]

The railroad reached Key West on January 22, 1912, connecting the port by land to the eastern seaboard. Although Flagler's dream of creating an important port in Key West never materialized, the Keys would never be the same. Trains carried people and goods (including Keys produce) up and down the line until a devastating 1935 Labor Day hurricane and changing economics led to its abandonment. In response to the growing dominance of cars over trains, the line was subsequently converted to the Overseas Highway for automobile use.[44]

But Flagler's rail line had a far greater impact than just its bridges and tracks. Grunwald observes that bringing the line through South Florida meant "transforming the eastern rim of the Everglades" by removing pinelands and hardwood hammocks—critical habitat for many species. And far greater damage was about to occur to the west with increasingly bold efforts to drain the Everglades, then considered useless wastelands. Politicians and landowners believed that rerouting water flow into channels and off the land would open vast new agricultural lands—an "improvement" vision few disagreed with. This was the ideal of the Progressive Era, which advocated wise use and scientific management of natural resources to best serve humans. The misunderstood Everglades seemed to be of little value in their natural state.[45]

The Everglades

A number of drainage projects were started, halted, and resumed in the early twentieth century—and many books detailed these campaigns. Biscayne Bay was dramatically affected by projects manipulating water flows through South Florida. The expansive Everglades watershed historically sent sheet flows of fresh water into the bay to mix with salt

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[43] Grunwald, *The Swamp*, 114-116; Carlton J. Corliss, "Building the Overseas Highway," *Tequesta* XIII (1953): 4, 6, 8, 10, 15-17, http://digitalcollections.fiu.edu/tequesta/files/1953/53_1_01.pdf.

[44] Tebeau, *History of Florida*, 342; NPS, "Archeology Program: Shipwrecks in the National Register of Historic Places," NPS website, accessed July 13, 2016, https://www.nps.gov/archeology/submerged/NRShips.htm; BNP staff, "BISC Administrative History Review Comments from BISC Staff" (hereafter referred to as "BNP staff, Administrative History Comments, 2016"), in Cynthia Walton email to author, "Re: Biscayne NP Administrative History," March 18, 2016.

[45] Grunwald, *The Swamp*, 109-13.

water and create productive estuarine conditions. Disruption of this water movement exacted a major toll on the estuary and its biota. As early as the mid-nineteenth century, state leaders had talked about draining the Everglades, but the project received little serious attention before new technologies made the work possible. These technologies, together with growing public concern in response to devastating hurricanes, proved to be the catalysts for these drainage projects.[46]

Figure 2.1. BNP is part of the watershed of the Everglades system. These vast wetlands supply fresh water across South Florida and into the park. Photo by Kim den Beste.

In 1926 and 1928, hurricanes hit southeast Florida and caused flooding from Lake Okeechobee, a massive water body that is part of the Everglades system. The hurricanes claimed hundreds of lives, and the federal government decided to take action. Congress dedicated millions of dollars to drainage work that included building a thirty-one-foot dike on the lake and channeling two major rivers that carried water away from the Everglades to the ocean and Gulf of Mexico. But the biggest impetus came after World War II, when flooding led to a massive new federal drainage plan and creation of the Central and Southern Florida Flood Control District. The district worked with the US Army Corps of Engineers to develop

[46] For detailed information about the history of Florida's efforts to drain and "improve" the Everglades, please see Grunwald, *The Swamp*; Davis, *Everglades Providence*; Luther J. Carter, *The Florida Experience: Land and water policy in a growth state* (Baltimore: Johns Hopkins University Press, 1974); and Nelson M. Blake, *Land into Water—Water into Land: A History of Water Management in Florida* (Tallahassee: University Presses of Florida, 1980).

a program that ran from the lake to Biscayne Bay. Its main goal was to rapidly remove excess water during flood periods; other features promised to store excess water, protect urban areas, allow development, prevent saltwater intrusion into underground water supplies, and provide wildlife habitat, according to historian Charlton W. Tebeau. The project—an engineering feat—was enormously efficient in accomplishing its drainage goals but ultimately caused environmental upheaval, heavily damaging Everglades and Biscayne Bay flora and fauna. These impacts would be addressed in the twenty-first century with the largest environmental restoration program in the world—a subject that will be discussed in Chapter 10.[47]

At the same time that engineers, politicians, and local boosters were working to drain the Everglades, a number of South Florida activists and scientists began to realize its biological value and made an earnest effort to save part of it as a national park. The Florida Federation of Women's Clubs persistently lobbied the state legislature, and in 1916 they secured a small area, once known as Paradise Key, for preservation as Florida's first state park: Royal Palm State Park. In the ensuing decades, under the leadership of Ernest Coe and the Tropic Everglades Park Association, the push for a national park finally secured Everglades National Park, dedicated in 1947. The park story is a rich one that will not be recounted here except to note that, if Ernest Coe had had his way, Biscayne Bay and its islands would have been included in the original park boundaries. But a series of compromises gradually shrank the park's proposed borders, removing Biscayne from protection. Coe was unhappy about the reduced final park area, which accounted for fewer than two thousand square miles (only 7 percent of the total Everglades). Coe's foresight proved accurate, and Grunwald writes that during the remainder of the twentieth century environmentalists fought "some of their toughest battles to save areas Coe had originally included within his park boundaries"—including areas that eventually became Big Cypress National Preserve, John Pennekamp Coral Reef State Park, and BNP.[48]

John Pennekamp Coral Reef State Park, the nation's first undersea park, was established in 1960 in an effort to stop degradation of the living coral reef. The state park covers approximately "70 nautical miles" of important marine habitat south of BNP. Its namesake, John Pennekamp, was a *Miami Herald* editor who championed creating Everglades National Park and the reef area that was to become the state park. But the park's creation did not solve all the problems in the reef, and the designation of other preserved areas followed: these included nearby Key Largo National Marine Sanctuary in 1975 and Looe Key National Marine Sanctuary in 1981. In response to additional threats such as possible offshore oil drilling and declining water quality, in 1990 the Florida Keys National Marine Sanctuary (FKNMS) was created adjacent to BNP. It incorporated the Key Largo and Looe Key sanctuaries and other areas to cover 2,900 nautical miles from south of Miami (and east of BNP) through the Keys to areas near Dry Tortugas National Park. As of 2019, the

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[47] Tebeau, *History of Florida*, 351-54.

[48] Grunwald, *The Swamp*, 206-14; Davis, *Everglades Providence*, 332, 404.

National Oceanic & Atmospheric Administration (NOAA) administered FKNMS in joint management with the State of Florida and worked closely with BNP managers on many issues.[49]

Miami Booms

While others contended with Everglades issues, Miami developers and promoters had only dollars in their sights, and rightly so. Propelled by a post-World War I population explosion, the city's population hit 15,000 by 1915, doubled to 30,000 by 1920, and reached 71,000 in 1925. As historians Leynes and Cullison note, a number of factors contributed to this "phenomenal growth": the subtropical climate, railroad access, and the war, which brought many wealthy tourists who avoided their usual Mediterranean vacation spots in favor of "playgrounds closer to home. South Florida became the destination ofchoice for many of these people."[50]

The area also attracted regular folks who could now drive their cars on new highways extending across the nation and all the way to Miami. Advertisers and promoters broadcast the area's attributes, leading to a statewide land boom from 1922 to 1926. In Miami, Carl Fisher turned an offshore spit of an island into Miami Beach by constructing a bridge from the spit into the city and dredging six million cubic yards of fill from the bay side to build up the island. It was "Florida's first large tract of reclaimed land," wrote Redford. By 1919, Fisher was selling lots on the island, which soon featured hotels and private estates. Soaring real estate prices—in Miami Beach some property values jumped two hundred times—also swelled values in the Keys and Biscayne Bay. This boom extended throughout Florida and its new resorts, but, according to Redford, Miami Beach was the "best publicized, and, most important, it best reflected the spirit of the decade that later came to be known as the Roaring Twenties."[51]

Between 1917 and 1945, Fisher's success with Miami Beach led to a number of other dredging projects that created artificial islands in the upper bay (north of what is now BNP), including a series of islands that supported the Venetian Causeway, which connected Miami and the beach. Other developers began plans for more manmade islands and to "expand shorelines in lower Biscayne Bay," including on Boca Chita, Adams, and Elliott Keys, write Leynes and Cullison. "The result of dredging and the creation of artificial islands in Biscayne Bay during the first half of the twentieth century was dramatic."[52]

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[49] Florida State Parks, "Welcome to John Pennekamp Coral Reef State Park," Florida State Parks website, accessed July 13, 2016, https://www.floridastateparks.org/park/Pennekamp; National Oceanic & Atmospheric Administration (NOAA), "History of Florida Keys National Marine Sanctuary," Florida Keys National Marine Sanctuary website, accessed July 13, 2016, http://floridakeys.noaa.gov/history.html.

[50] Leynes and Cullison, *BNP Historic Resource Study*, 19.

[51] Ibid., 20-21; Redford, *Billion-Dollar Sandbar*, 69-70, 112.

[52] Leynes and Cullison, *BNP Historic Resource Study*, 22.

Few people opposed these projects, which were seen as "improvements" of nature that accommodated the thirst for waterfront land and profits. Among the few who did was Ralph Munroe, an early resident of the Coconut Grove community who had visited and photographed South Florida since 1877. During the South Florida land boom of the 1920s, Munroe "took on the developers," writes historian Arva Moore Parks. Munroe—known as "Commodore" for his leadership of the Biscayne Bay Yacht Club—wrote in his autobiography that the boom led to a number of development proposals that would have hurt the bay and Coconut Grove. These included the dumping of raw sewage and dredge and fill projects in the bay. In one scheme, a "syndicate was formed to fill in certain sections of the coral banks, south of Cape Florida, and establish a windswept community there between bay and sea." However, Munroe's long experience with hurricanes and storms in the area convinced him that filling in these areas would instead make the region more susceptible to damage from backwash as hurricanes passed. Munroe argued that storm and tidal waters needed a "seaward outlet" to escape to the ocean—something the projects would hinder.[53]

To stop the project, "interested landowners" sought a court injunction; and, during a subsequent hearing in the mid-1920s, Munroe testified about the dangers that island development might create. Monroe's friend Vincent Gilpin reported the scene in a history they wrote together: after making several references to the important seaward outlets over coral flats between Cape Florida and Elliott Key, the presiding judge asked Munroe if the area had a name.

> "No," he answered, "I never heard any name applied to it, but if one were needed, I should suggest 'The Safety Valve' since that is its function to the whole of Biscayne Bay," and there the matter of name rested for the time.

An engineer who helped build the Key West railroad supported Munroe's testimony, and their statements gained an injunction to stop the project. According to Gilpin, that decision was later "confirmed by the Supreme Court, and the absurd coral-bank islands were averted."[54] Gilpin continues:

> About a year after this hearing, the Commodore was notified that the name 'Safety Valve,' which he so casually suggested, had been formally proposed to the government's Geographic Board and duly adopted, so that all future charts of the Bay will have this warning title engraved across the face of the banks.. . . So the worst of the island-building was headed off, at least temporarily, for had the wild pace of the big boom been maintained, it is more than probable that these and other similar schemes would have been forced through, such is the power of unlimited money, and the lure of fabulous profits.[55]

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[53] Arva Moore Parks, *The Forgotten Frontier: Florida Through the Lens of Ralph Middleton Munroe* (Miami: Banyan Books, 1977), 2, 171; Ralph Middleton Munroe and Vincent Gilpin, *The Commodore's Story* (New York: Ives Washburn, 1930), 334-36, 338-40.

[54] Munroe and Gilpin, *Commodore's Story*, 340-42.

[55] Ibid., 342-43.

Development slowed in 1926 for a number of reasons: property prices had soared far higher than actual value and eventually plummeted; bank withdrawals and bank failures occurred; a host of fraudulent land deals gave the state bad press; rails into Miami closed for repairs; and the Miami harbor was blocked by an incapacitated ship. The final blow was a September 1926 hurricane that hit an exploding population where few had experienced such a storm. It left 392 people dead, 6,281 injured, and destruction in its wake, including a breached Lake Okeechobee dike. A powerful 1928 storm caused even greater damage, adding to Florida's economic woes and driving a depression that was soon to reach national proportions.[56]

But Miami rallied after the storm. Determined residents rebuilt their homes, and hoteliers and developers invested in new projects in the city and on Miami Beach. While the rest of the country suffered, an estimated six hundred millionaires—many from the Midwest—wintered at Miami Beach, described in 1939 as "a world of moneyed industrialists, boulevardiers, and stars of stage and screen, its atmosphere gay, carefree, and expensive." This glittering success would soon focus on possibilities that waited on other islands, including those in lower Biscayne Bay.[57]

Playground of the Wealthy

One of the Miami area's major attractions had always been its proximity to sport fishing. Just a few miles offshore, the warm waters of the Gulf Stream drew a number of large trophy fish, including marlin and sailfish. Deep holes and reefs hosted tasty grouper, snapper, and mackerel, while the shallow flats of Biscayne Bay were a paradise for those in search of hard-fighting bonefish and tarpon. Many of these fish lurked between the islands of the upper Keys, especially in Caesar Creek, just thirty miles south of Miami. In the early twentieth century, such fish were magnets for the wealthy, who could power up their boats for day trips or, better yet, create their own exclusive clubs to support their recreational ventures.[58]

Railroad tycoon Flagler led the way when he purchased 2.5-acre Soldier Key in 1903. He built a fishing lodge, famed for its shark fishing tournaments, and cottages to entertain his guests at the Royal Palm Hotel in Miami, with daily steamship runs connecting the two. In later years, Soldier Key was used by the US Navy and then returned to private ownership. The last of its buildings were destroyed by Hurricane Andrew in 1992.[59]

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[56] Leynes and Cullison, *BNP Historic Resource Study*, 20-21; Tebeau, *History of Florida*, 385-87.

[57] Leynes and Cullison, *BNP Historic Resource Study*, 21-22.

[58] Redford, *Billion-Dollar Sandbar*, 102.

[59] Leynes and Cullison, *BNP Historic Resource Study*, 23; Jim Adams and Terence L. Helmers, "History of Soldier Key: A Preliminary Historical Study and Annotated Listing of Historical References," January 1996, BISC 5520, 1-2, BNP, Homestead, FL.

Figure 2.2. In the early twentieth century, Soldier Key, one of BNP's islands, was a playground for the wealthy and the site of the Soldier Key Club. Photo of postcard (Hugh C. Leighton, circa 1910) from HistoryMiami Museum.

Expanding his development success in Miami Beach to other bay isles, Carl Fisher teamed with Charles W. Kotcher, a Detroit yachtsman, and his development partner Jim Snowden to buy Adams Key. There they built a "millionaire's fishing club," named the Cocolobo Cay Club for *Coccoloba diversifolia*—the pigeon plum, a native tree. The two-story, ten-bedroom building relied on batteries and a generator for its electricity and obtained water from its seventy thousand gallon cistern. Fisher used motorboat trips to the club to lure new buyers to his Miami Beach properties, hoping they would make a real estate transaction after experiencing all the beauty and recreational pursuits to be found in the area. "Anyone who was not sold on Miami Beach already found it hard to resist such a glorious combination of sun and seas, and since Carl had fallen for it himself he was confident everyone else would too," wrote Redford, noting that some of Fisher's guests included US President Warren G. Harding, Secretary of the Interior Albert Fall, personality Will Rogers, fighter Jack Dempsey, and Delaware businessman and Senator Coleman du Pont.[60]

But visiting Cocolobo may have been the undoing of Fall and Harding. As this famous park legend goes, while enjoying the island in 1921, they may have hatched a plan that led to the Teapot Dome Scandal, in which exclusive leases to federal oil reserves in Wyoming and California were given to private entities in exchange for bribes. The US Supreme Court

[60] Leynes and Cullison, *BNP Historic Resource Study*, 23-24; Redford, *Billion-Dollar Sandbar*, 102.

nullified the leases and imprisoned Fall for accepting bribes. For years, a large photo of Harding, Fall, and some of their boating friends hung above the fireplace at the Cocolobo Cay Club, where many elite businessmen were members—a sobering reminder of one of the era's worst cases of governmental corruption.[61]

Cocolobo's glory days were over by the Great Depression, and the club broke up and was sold to Gar Wood, a "wealthy inventor and speedboat racer." He "eventually disbanded" the club, using it instead for personal recreation, and later sold it to a group that included US Senator Robert Smathers of Florida and Charles G. "Bebe" Rebozo—a close associate of President Richard M. Nixon, who also visited the property. Other notable visitors included Presidents Herbert Hoover and Lyndon B. Johnson. In 1968, the property became part of the National Park Service (NPS) with the creation of Biscayne National Monument.[62] More information about the Rebozo connection to BNP is found in Chapter 4.

BNP includes a number of islands that were once seashore playgrounds. In 1936, Charles Brookfield, an official with the National Audubon Society, used twenty acres on Elliott Key to build a fishing haven known as Ledbury Lodge. Brookfield built his eight-bedroom structure for $1,000 using driftwood and wreckage timbers. Dr. John C. Gifford, a University of Miami biologist who had been growing limes on Elliott Key since the turn of the century, sold twenty-acre lots to buyers who built weekend retreats. And there was potential for even greater development. As early as the 1890s, a series of proposals called for causeway roads linking the island to the mainland. To fully capitalize on their waterfront holdings, Elliott Key landowners needed a link to the land (Flagler's rail line, subsequently the Overseas Highway, had bypassed it). One proposal in 1917 called for a causeway from Elliott Key to Florida City on the mainland, and dozens of other proposals followed. In 1929, a group calling itself the Upper Keys Improvement Association started pressing for a road linking Elliott Key southward to Key Largo. A highway that would make the connection via two bridges and fill—a venture that likely would have raised real estate prices in coming decades—was approved in 1936 but never built. Despite these efforts, the upper Keys never endured the massive development that encompassed Miami, likely due to their distance from shore and lack of an overland tie. This may have frustrated landowners, but it ultimately saved the area's natural beauty for the future.[63]

Boca Chita Key was another sunny haven for the rich and well-connected in American society. Here, Miami Beach's Fisher teamed up with associates to buy the island in 1916; these included Frank Seiberling of Seiberling Rubber Company, a Cocolobo member and cofounder of the Goodyear Tire & Rubber Company. Seiberling likely led development of the island, which included a bulkhead and buildings before the 1926 hurricane destroyed them.

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[61] Miller, *BNP: It Almost Wasn't*, 19-21; David Hodges Stratton, *Tempest over Teapot Dome: The Story of Albert B. Fall* (Norman, OK: University of Oklahoma Press, 1998), 197, https://books.google.com/books?id=6AUheO3cCDsC&source=gbs_navlinks_s.

[62] Burrus, "History of the Islands and Waters," 82-83.

[63] Leynes and Cullison, *BNP Historic Resource Study*, 23-24; Miller, *BNP: It Almost Wasn't*, 14, 17-18, 22.

Milton W. Harrison bought the island that year and made several improvements, including a two-story home, steel bulkheads, and a boat basin. In 1937, he sold the land to Mark C. Honeywell, founder of Honeywell Industries, who wanted a watery retreat from his Miami Beach winter home. Honeywell and his wife, Olive, (both from Indiana) mixed with elite Miami socialites and had big plans for their island.[64]

Figure 2.3. Mark and Olive Honeywell built an elaborate retreat on Boca Chita Key that included a decorative lighthouse that stood into the twenty-first century. Photo by Kim den Beste.

The Honeywell couple kept Harrison's wooden house but added a chapel, picnic pavilion, engine house, garage, and lighthouse, the latter of which was designed by the noted Miami architectural firm of August Geiger. Built on the north end of Boca Chita near the mooring site for visiting boats, the sixty-five foot limestone lighthouse was a notable landmark. Legend has it that after a single lighting, the US Coast Guard forced Honeywell to stop using the lighthouse because it was not an official maritime structure; however, the lack of any hardware indicates that the lighthouse was purely ornamental and of little use for navigation. The lighthouse wasn't the only show in store for guests. The Honeywells used their three yachts to bring friends to the island for festivities, often welcoming them with cannon fire. Every year the popular couple hosted a charity party that featured the Who's Who of Miami. A photograph of one Boca Chita party shows an elephant in the midst of festivities; the animal may have been Rosie, whom Fisher kept at Miami Beach. After Olive died in 1939, Mark Honeywell continued to host the party but "lost interest in the property," Leynes and Cullison write. He sold the property in 1945, three years after remarrying, and it

[64] Leynes and Cullison, *BNP Historic Resource Study*, 26-27; Goodyear Tire and Rubber, "Frank A. Seiberling," Goodyear website, accessed September 14, 2014. http://www.goodyear.com/corporate/bios/seiberling.html (page unavailable).

would later become part of Biscayne National Monument. The Boca Chita Key Historic District, with its iconic lighthouse and easy boat accessibility for the curious, was later listed in the National Register of Historic Places. Major repairs to the lighthouse were completed in 2013.[65]

One of Boca Chita Key's most interesting features is a cannon located on the northwest tip of the island near the base of the lighthouse. It was salvaged along with several others from the wreckage of the HMS *Winchester*, a British man-of-war that sank in 1695 on Carysfort Reef east of Key Largo. The wreck was discovered in 1938 by fishermen who then contacted Brookfield on Elliott Key. He hired divers to salvage the cargo, which included anchors, coins, marked cannonballs, and cannons. Honeywell was building Boca Chita at the same time and incorporated one of the cannons there.[66]

Figure 2.4. The name "Stiltsville" was given to a group of elevated structures that were built in the northern part of the bay and that residents used as weekend getaways. NPS photo, BNP archives.

Another site of some raucous parties was the area that became known as Stiltsville. Located just south of Key Biscayne in the northern part of BNP, Stiltsville is just that—a group of airy, wooden structures built atop tall pilings or sunken barges and ships in shallow

[65] Leynes and Cullison, *BNP Historic Resource Study*, 26-37; National Parks Conservation Association (NPCA), *State of the Parks: Biscayne National Park* (Washington, DC: NPCA, January 2006), 33-34; Matt Johnson, "Historic Boca Chita Key Lighthouse Undergoing Repairs," NPS, July 25, 2013, https://www.nps.gov/bisc/learn/news/historic-boca-chita-key-lighthouse-undergoing-repairs.htm.

[66] Shipwreck Expo, "Florida Keys Shipwrecks: HMS Winchester Wreck: Pennekamp Park," Shipwreck Expo website, accessed July 14, 2016, http://www.shipwreckexpo.com/fkwinchester.htm.

waters. The first structure was built in the 1930s by Captain Eddie "Crawfish" Walker, known for his chowder made of crawfish (actually spiny lobster) from local waters. Others soon joined Walker in building stilt homes. By April 1945, Stiltsville, as it came to be known, included twelve private homes and two clubs, and during the coming decades the town would grow to include sixteen to twenty buildings. Many families leased bay bottom from the State of Florida in order to build the homes, which were accessible only by water.[67]

Stiltsville parties could be lively, sometimes featuring illegal alcohol and gambling. The most famous of the party houses was the Quarterdeck Club, a fourteen by eighteen foot clubhouse that opened in 1940 at an estimated cost of $40,000. The Quarterdeck Club gained much local media attention for its parties and events for the social elite. Infamously, a 1954 sheriff's raid revealed much more going on at the club than parties, including gambling and enjoyment of strippers and lewd literature.[68]

During subsequent years, many of the Stiltsville buildings were damaged or destroyed by hurricanes and storms.[69] The ownership and use of these buildings became a hot-button issue in the early twenty-first century; NPS negotiations and decisions about Stiltsville are highlighted in Chapter 4.

Prohibition, Smuggling, and Illegal Activities

The upper Biscayne Bay keys' location at the edge of civilization historically made them havens for a variety of illegal activities. From the days of Spanish galleons and piracy to the twentieth century, the islands were central points for the import of outlawed drugs, alcohol, and aliens.

The federal passage of the Volstead Act—which was also known as the Prohibition Act and went into effect in January 1920—breathed new energy into island liquor smuggling. The myriad of keys and their easy proximity to Bimini and other Bahamian islands, the British West Indies, and Cuba made them central to bootlegging activities during the thirteen year ban on the manufacture, sale, and importation of liquor into the United States. And with Miami tourists demanding liquor, there was serious money to be made from it. As historian Tebeau notes, "Local authorities proved indifferent if not outright hostile to enforcement, which was left to federal agents of whom there were never enough. Floridians resented federal interference with individual freedom and feared that enforcement would harm the tourist industry."[70]

Although some liquor came from local moonshining—an abandoned still was found on Elliott Key in 1975—most of it was imported. Tebeau writes that annual liquor imports in

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[67] Leynes and Cullison, *BNP Historic Resource Study*, 24; Jim Adams, "The History of Stiltsville," September 1996, BISC 5520, 3-5, BNP, Homestead, FL.

[68] Ibid.

[69] Ibid.

[70] Tebeau, *History of Florida*, 390.

the Bahamas went from fifty thousand gallons to 1.2 million gallons in 1922. He adds that "the greater part of it reached the United States through Florida," usually arriving in small boats, although some cargo "changed hands just outside the three-mile limit" on Atlantic Ocean waters. As author Victoria Shearer notes, local rumrunners knew the land and waterscape of the area so well they were able to use fast, unlit boats to outwit authorities. "Liquor washed over Key West during Prohibition like a high tide under a full moon," Shearer writes, adding that all of the Keys became central distribution points for the booty: "Rumrunning became a cottage industry in the Keys."[71]

Along with illegal liquor came illegal aliens, whose plight was made riskier (and therefore more profitable for smugglers) with 1920s federal immigration restrictions. A variety of foreigners, including Asians and Europeans, arrived on Florida shores through human smuggling—many of them taking routes through Cuba. One US Customs official declared that immigrant smuggling or "bootlegging aliens" was second only to liquor smuggling in the state. Historian Lisa Lindquist Dorr writes, "From around the world, these migrants converged in Havana, and participated in a market that offered passage to Florida, and thus the Promised Land." Much of the smuggling ended with the demise of Prohibition in 1933 and the Great Depression of the 1930s.[72]

Charlotte Arpin Niedhauk, who lived with her husband for two years at the northern end of Elliott Key, recalled meeting smugglers as well as federal agents in her memoir, *Charlotte's Story: A Florida Keys Diary 1934 & 1935*. She spent one terrifying night hiding alone in her locked, darkened house, holding a loaded gun as she listened to people passing by her home:

> It seemed hours before I heard the roar of a loud motor in the cut. It came from the bayside. The talking got louder and I thought I heard an American-sounding voice telling them to hurry. The motor off now, I heard voices and the clanking sound of metal. It was quite some time later before the motor started and I heard the boat return in the direction from which it had come.
>
> I sat and quivered in the silence now. I realized that it had been a group of aliens shepherded by Americans.[73] I remembered a recent conversation with the Border Patrol during which they had told us of having captured some smugglers with aliens aboard their boat. This had been only a few weeks before.[74]

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[71] Ibid., 390-91; Burrus, "History of the Islands and Waters," 66; Victoria Shearer, *It Happened in the Florida Keys* (Guilford, CT: Morris Book Publishing, 2008), 50-52.

[72] Lisa Lindquist Dorr, "Bootlegging Aliens: Unsanctioned Immigration and the Underground Economy of Smuggling from Cuba during Prohibition," *Florida Historical Quarterly* 93, no. 1 (Summer 2014), 45-48.

[73] Asians were smuggled by way of Cuba, which had no immigration quotas.

[74] Charlotte Arpin Niedhauk, *Charlotte's Story: A Florida Keys Diary 1934 & 1935*, 2nd ed. (Lower Sugarloaf Key, FL: Laurel & Herbert, 1998), 118-19.

As the sun rose, Border Patrol agents arrived by boat, and Niedhauk greeted them, sharing her coffee and telling them about her night. She later learned that the agents, using her information, captured eighteen aliens on a vessel that had been disguised as a crawfish boat.[75]

Other illegal goods were traded in the Keys. The 1895 Cuban revolution against Spain drew a number of American sympathizers—and gunrunners who supplied needed firepower for the insurrection. Boats laden with guns, ammunition, and volunteers anchored off keys now in BNP, including Elliott Key, while making their transfers. A noted gunrunner of the era was Napoleon Bonaparte Broward, who became Florida's governor in 1905.[76] As of the 2010s, illegal drugs and aliens continued to enter the state through the bay and its archipelago of islands, making law enforcement difficult—an issue that will be discussed in Chapter 9.

The Cold War

As the century progressed, relations with Cuba remained a central focus in South Florida, particularly during the Cold War, which lasted from 1945 to 1989 and featured rising US fears of the spread of communism and the Soviet Union's growing nuclear arsenal. As historian Steve Hach notes, the area "served as a forward command center for the projection of US power into the Western Hemisphere throughout the conflict. The region's proximity to Latin America made it an operational center for both covert and overt activities as the United States pursued its policy of containing communism." Air stations in South Florida, including one in Homestead, as well as Key West naval facilities, were the center of many of the operations that, Hach writes, "affected events in Guatemala, Cuba, Nicaragua, and other nations throughout Latin America. From Miami to Key West, quiet residential neighborhoods were havens for undercover operatives while the swamps and forests served as training grounds." The Cuba-centered activities were incited by the 1959 overthrow of Cuba's government by revolutionary Fidel Castro, whose communist government and close ties with the Soviet Union unsettled many Americans, particularly during the 1962 Cuban Missile Crisis. A relic of this tension remained in the park long afterward; Charles "Chuck" Lawson, former BNP cultural resources manager, noted in 2016 that "the sunken probable remains of a vessel once involved in Cuban revolution arms smuggling, the tug *Alexander Jones*, was recently discovered on the seafloor in the park."[77]

Several areas within what is now BNP were centers of activities where "unofficial Cuban exile military groups" trained for missions and tasks, including demolitions and possibly plans to assassinate Castro, largely under US Central Intelligence Agency (CIA) purview. The CIA also operated maritime sites, bases, and safe houses in the area, Hach writes, adding that "scores of Cuban refugees fleeing Castro landed on the many large and

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[75] Ibid., 120-21.

[76] Burrus, "History of the Islands and Waters," 65-66.

[77] Steve Hach, *Cold War in South Florida: Historic Resource Study* (Atlanta: Cultural Resources Southeast Region NPS, 2004), 1; BNP staff, Administrative History Comments, 2016.

small keys" in BNP, where they sought sanctuary. Many CIA operatives and Cuban exiles trained on Elliott Key for the ill-fated 1961 Bay of Pigs invasion of Cuba; they used boat docks for supplies and transportation, the Ledbury Lodge hotel for lodging, and an old residence as a safe house. "Trainees would build mock-ups of Cuban targets in the interior of Elliott Key and then practice locating and destroying them with simulated explosives," writes Hach, adding that Elliott Key residents sometimes happened upon Cuban squads training for guerilla warfare. Although the CIA ended activities there in the 1960s, Hach notes that in "1988 a group of exiles selected Elliott Key as its primary target in a mock invasion of Cuba and tried to land there with their 'fleet.' They were arrested." Issues with drug smuggling, weapons, and illegal aliens continued to be problematic for park personnel in this area into the twenty-first century.[78]

A Place of Beauty and Recreation For All

Despite the many torrid tales, for most Miami residents, Biscayne Bay was always a refuge of beauty—an escape from the rapidly growing metropolitan area. Longtime residents tell stories of teeming fish, clear waters, and unparalleled recreation.

John Pistorino moved to the Miami area in 1942 with his parents. As a small child and member of the Coconut Grove Sailing Club, he spent many hours sailing across the bay with friends in small, wooden boats. In a 2014 interview, he described how, as an eight-year-old boy, he was "pretty much given free rein," because, as his parents believed, "there's nothing much that can happen to you out on Biscayne Bay." He continued, "My parents thought I'd be safer there than over in the woods in Miami where you'd get bitten by coral snakes or eaten by wildcats."[79]

Pistorino remembered a bay populated mostly by sailboats and very few powerboats. He and his friends snorkeled, fished, and "basically lived off the area," catching fish and lobster to eat. "The water was so clear," he said. He and his friends—usually six boys in two boats—explored the Ragged Keys, Boca Chita, and Elliott Key, cooking fish on their boats, where they also slept at night. When the wind died, they "slept submerged," jumping into the water to avoid hordes of mosquitoes. They continued their bay trips through high school, an experience that continued to bond them long after they had grown up.[80]

Polly Redford and her husband, Jim, bought a house in Coconut Grove in 1961 after visiting the area where her great-aunt lived. There they raised their two sons and enjoyed sailing, fishing, and snorkeling on Biscayne Bay. Polly Redford's affection for the bay ran deep. She recalled taking her sons to its islands and their waters for "long, lazy afternoons of shallow water fish-watching." She wrote, "Here my usually talkative children lie silent and weightless on the surface of the water, hovering over a nine-inch coral head watching tiny gobies and

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[78] Hach, *Cold War*, 35-36.

[79] John Pistorino, interview with author, Miami, Florida, June 2, 2014.

[80] Ibid.

sergeant-majors dart around the top, or perhaps a comical cowfish grazing around the base." It was a beautiful picture that Redford worried might disappear as development proposals in the early 1960s threatened the bay and its islands. She lamented that island forests, bird rookeries, beaches, and "unique marine life will give way to motels and parking lots, and we will have to take our boys to the museum to see needlefish, pipefish and seahorses safely behind glass where children can no longer handle them."[81] Those very threats would ultimately prompt BNP's preservation, saving it for everyone.

[81] Jim Redford, interview with author, Coconut Grove, FL, June 3, 2014; Polly Redford, "A Letter to Mr. Wirth," *Izaak Walton Outdoor America*, April 1965, 6-7.

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Chapter Three

From Crisis Comes Protection

As park advocate Lloyd Miller declared, Biscayne National Park (BNP) was a park that "almost wasn't."[82] Development schemes as far back as the 1940s—including plans to build causeways to the islands, proposals for an island city to rival Miami Beach, creation of an industrial seaport with an oil refinery, and hopes to dredge a forty-foot-deep channel across the shallow bay—would have irreversibly damaged the park. In another place and time, these grand proposals might have succeeded, but a grassroots effort triggered by the development plans fought to protect the bay and its keys. BNP's creation is a tale of determined citizens, environmental activists, journalists, and politicians who used a variety of techniques to redirect what had been a local pro-development agenda into one of preservation. In many ways, this story is not only BNP's but that of a new environmental consciousness that emerged in Florida and the nation in the twentieth century.

By the 1940s and 1950s, developers were targeting Biscayne Bay's outer islands for connection to the mainland by causeways. One plan would have used causeways and bridges to link Key Biscayne with Key Largo; another causeway proposal would have connected Elliott Key with what later became Homestead Bayfront Park with a series of bridges and fills all the way to Key Largo. Another scheme—designed to provide a rising population with much-desired waterfront property—would have dredged bay bottom to create five artificial islands, each four thousand feet wide, effectively creating another Miami Beach-sized development. At the dawn of the twentieth century, Miami boasted a meager 1,681 residents. With the post-World War II population shift into the nation's southern states, however, by 1950 this number had soared by 1,000 percent to 172,000 people.[83]

Although it would seem unthinkable by the twenty-first century, at the time, this type of development was occurring across the state. Miami Beach had been dredged out of mangroves three decades earlier, earning the celebrated moniker "Billion-Dollar Sandbar." On the west coast in St. Petersburg's abundant marine estuary, Boca Ciega Bay, developers planned to fill hundreds of acres of bay bottom. And in 1953, dredges started digging canals on the New River in Ft. Lauderdale to give newcomers a place by the sea—and hopefully help the city live up to its nickname: the "Venice of America."[84]

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[82] Miller, *BNP: It Almost Wasn't*, 152.

[83] Ibid., 23; NPS, "The Birth of Biscayne National Park," BNP website, accessed March 26, 2014, http://www.nps.gov/bisc/historyculture/the-birth-of-biscayne-national-park.htm; Paul S. George, "Miami: One Hundred Years of History," HistoryMiami, accessed June 17, 2014, http://historymiamiarchives.org/pdfs/sfh-1996-2.pdf.

[84] Redford, *Billion-Dollar Sandbar*; Gary R. Mormino, *Land of Sunshine, State of Dreams: A Social History of Modern Florida* (Gainesville: University Press of Florida, 2005, 340-42.

Development Proposals

In 1953, a proposal to construct a road to connect Key Biscayne with Key Largo gained the endorsement of local government leaders. The project, similar to previously mentioned ventures, would build causeways connected by small bridges and fill islands; the latter would be created by dredging up an estimated five thousand acres of bay bottom. Touting the value of potential growth and recreation, Dade County commissioners approved the plan and asked the State of Florida to donate the needed bay bottom. However, the project had strong opposition from a newly formed group of one hundred people who called them-selves the Biscayne Bay Conservation Association (BBCA). The group's vice president, R. Hardy Matheson—a Miami attorney whose family had once owned much of Key Largo—announced that the association was committed to fighting "causeways and island building in the bay." The BBCA was the first organized citizen's group to oppose proposals that might damage the bay.[85]

BBCA members used a variety of arguments in challenging the plans. The group warned that the project would obstruct bay views, affect tidal flow and thereby hamper dispersal of pollution, hinder boating and sailing navigation, destroy fish spawning grounds, and increase automobile traffic to the area. They argued that "the sole remaining natural area of Dade County [would] be destroyed and commercialized." The group also cautioned that construction of the road and accompanying canals would prevent natural water flow, creating additional flooding and erosion hazards during hurricanes. The Marine Industries Association, who was a part of the BBCA coalition, asked the state to refuse to sell the bay bottom, citing many of the same issues but adding that the "public has not been fully informed of the proposed plan and has had no opportunity to study it in full detail." In his own letter to the state, Wirth M. Munroe, a Coconut Grove native and yacht designer, warned about hurricane damage from impeded water flow, adding, "Just remember that throughout the world, whenever Man has tried to improve on nature it has cost him dearly in both lives and money." Ultimately the road was never built, hindered by its estimated $31 million price tag and financing issues.[86]

But the bay's water quality, impacted in large part by untreated municipal sewage dumped directly into it, was already alarming citizens. In a 1949 article for *Look* magazine, Miami author Philip Wylie described the bay as a murky, "dirty marinescape" that was polluted by human waste from septic tanks, boats, and outflow from the city of Miami. Wylie

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[85] Miller, *BNP: It Almost Wasn't*, 23-24; Board of County Commissioners, Dade County, FL, letter to Trustees of the Internal Improvement Funds of the State of Florida, November 16, 1953, copy from the Robert Matheson Papers provided by Robert "Bob" Matheson to the author.

[86] Wirth M. Munroe to Internal Improvement Board of the State of Florida, September 10, 1953, Matheson Papers; Marine Industries Association, "Resolution," September 10, 1953, Matheson Papers; "Memorandum of Objections to Building an Island Causeway Between Key Biscayne and Key Largo," n.d., Matheson Papers; Jack W. Roberts, "Causeway Prospects 'Gloomy,'" *Miami Daily News*, October 24, 1955, 8A, Matheson Papers.

wrote that the water, once "clean and clear as gin," had become the color of "mildew," with visibility extending only inches deep. "Shoals are appearing in it—shoals of sludge or sewage," he lamented. The state of the bay also disgusted Miami journalist Helen Muir, who described it in 1953:

> Out of sight, out of mind would be Miami's treatment of sewage through the years until the day would come when she had fouled up her clear, sweet river and her blue shining bay to such an extent that it was no longer out of sight and fish would die and sea gardens would disappear and the beautiful Biscayne Bay would lie, a pollution between man and God.

The sewage problem would continue for many years until the city built its first wastewater treatment plant to address the issue in 1956.[87]

Through the 1950s and into the 1960s, a number of other bay development pitches were proposed but never realized, including various causeways and a jetport to be created out of eight thousand acres of dredged bay bottom. Local politicians and economists supported these development projects, but the plans eventually "fizzled" from lack of financing.[88] One project, however, began to take shape: three hundred landowners on the bay's thirty islands proposed creating a high-end housing, tourist, and marina complex known as Islandia, and securing a causeway from the mainland to access it. Islandia would soar from the flat islands like the high-rise towers of Miami Beach, with resorts, homes, and stores catering to a wealthier and more mobile American public. With permission from Metro-Dade commissioners, the landowners voted to incorporate the city of Islandia, despite the fact that it lacked roads, electricity, or infrastructure. Writing in 1974, historian Luther J. Carter labeled the July 1961 incorporation a "charade," explaining that "as prescribed by law, a voting machine was set up on these isolated, virtually uninhabited keys to permit about a dozen persons, all at least nominally residents of the keys, to decide whether they wanted Islandia incorporated as a city or not." By being incorporated, Islandia would have "control of zoning on the keys" and be able to issue municipal bonds to build the causeway.[89]

Initially, local environmentalists expected the causeway to be built and worried that it would impede bay water circulation. Joe Browder, then with the National Audubon Society, recalled in a 2007 interview how environmentalists urged developers to design the roadway to have minimal water impact:

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[87] Philip Wylie, "Florida: Polluted Paradise," *Miami Daily News*, March 20, 1949, A-1, A-4; Helen Muir, *Miami, U.S.A.* (New York: Henry Holt and Company, 1953), 67; Davis, *Everglades Providence*, 442.

[88] Miller, *BNP: It Almost Wasn't*, 24-26.

[89] Ibid., 28; Davis, *Everglades Providence*, 445; Dayton Duncan and Ken Burns, *The National Parks: America's Best Idea* (New York: Alfred A. Knopf, 2011), 350; Luther J. Carter, *Florida Experience*, 155. Note: the name 'Metropolitan Dade County' (referred to as "Metro-Dade") was established in the late 1950s, but voters changed its title to 'Miami-Dade' in 1997. Name usage in this document will reflect the appropriate time period.

> So for a couple of years, all of us—the Audubon, Izaak Walton League, the high-end fishermen, everyone who was involved were just pressing these people to at least have some openings in the causeway.... And it was when they would not do that—when they wouldn't even agree to design a causeway that would provide some minimum circulation of the Bay, that we decided we were going to have to stop the development. And that took us two years of fighting for a decent causeway, to reach the point of saying, "Okay, we're going to stop the development."[90]

Browder speculated that, had the Islandia investors capitulated to requests for better causeway construction and met the "original low expectations" of environmental activists, BNP might never have been created and the upper keys might have become another Miami Beach. Instead, the "selfish and shortsighted" developers ignored the requests and overreached in their desire for profits, setting off the movement that led to BNP protection.[91]

Islandia and Seadade

Islandia alarmed many people already worried about the health of the bay. But what really galvanized local citizens into a united group of activists was a proposal by billionaire Daniel K. Ludwig to create a deep-water port and oil refinery on the bay's edge east of Homestead Air Force Base. Ludwig, a noted shipping entrepreneur known as the "American Onassis," started buying parcels of land in 1959 for the project, which would include a forty foot deep shipping channel cut across the shallow bay and through the outer coral reef and islands. The refinery, Ludwig claimed, would produce 50,000 barrels a day while employing 18,540 people with an annual payroll of $130 million.[92] The project was supported by the Greater Miami Chamber of Commerce and two local Miami newspapers: the *Miami Herald* and the *Miami News*. In 1962, Metro-Dade commissioners approved Ludwig's Seadade Realty Inc. refinery venture—hereafter referred to as "Seadade." Although several people spoke in opposition, the commissioners readily approved Seadade. In response, the dissenters—many of them members of the local conservationist Izaak Walton League—organized the Safe Progress Association (SPA), which began meeting within days, operating off a measly initial budget of $11.05. The SPA did not have many members or a big budget, but what they did have was talent, passion, organizing skills, and time.[93]

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[90] Joe Browder, interview by Nancy Russell, December 7, 2007 (hereafter "Browder, interview"), accession EVER-1410, catalogue EVER 56622, South Florida Collections Management Center (SFCMC), Everglades National Park (EVER archives), Homestead, FL.

[91] Ibid.

[92] Davis, *Everglades Providence*, 440-41.

[93] Ibid., 441; Carter, *Florida Experience*, 158-59; Polly Redford, "Small Rebellion in Miami," *Harper's*, February 1964, 96-97.

The SPA's leader was Lloyd Miller, a Pan American Airways employee in Miami and an avid fisherman. Miller founded the Mangrove Chapter of the Izaak Walton League in 1959 "in an effort to raise public awareness" about bay impacts from sewage and runoff pollution, as well as "deterioration" of the nearby Everglades. A wide variety of people joined the SPA effort: author Wylie; University of Miami marine researcher Donald P. deSylva; Polly (writer and Audubon liaison) and Jim Redford; Belle Scheffel, described as a "short, rotund and feisty garden clubber and Nature Conservancy stalwart"; and local attorney Ed Corlett. Lain Guthrie, an Eastern Airlines pilot, came up with creative ways to help the group publicize the bay's problems, including flushing orange-colored peanuts down a local power plant's toilets to prove (as they bobbed up in the bay) that the plant was dumping untreated sewage. A bumper sticker reading "NUTS to Dirty Industry" resulted from that stunt.[94]

Figure 3.1. This bumper sticker was produced by the Safe Progress Association, the organization that successfully fought development of an oil refinery in Biscayne Bay, leading to the creation of the national monument. Image from the NPS and BNP.

The SPA focused on three main points: that Biscayne Bay would be harmed by industrial pollution; that trade winds would likely blow air pollution from the refinery and petrochemical plants over the county; and that dirty industry was not compatible with the quality of life that Dade County residents desired. Despite the developers' assurances to the contrary, the SPA argued that no refinery could be pollution free. In his 2008 book, *Biscayne National Park: It Almost Wasn't*, Miller recalled that, in response, Seadade invited "local industry leaders" to visit a refinery in Anacortes (a coastal city located on Fidalgo Island in northwestern Washington) and upon their return spoke "glowingly about what a fine factory it was and how lucky [they] were to be getting one just as good." Of course, Seadade failed to mention that the Anacortes refinery "five years earlier had spilled 20,000 gallons of crude into Puget Sound when someone turned the wrong valve." To allay fears, in 1963 Metro-Dade commissioners adopted what they touted to be the toughest pollution-control ordinance in the United States—an act that did little to comfort SPA members. But it ultimately helped the SPA's efforts, as developing the county ordinance delayed the building permit for the project and Seadade had trouble getting a dredging permit from Metro-Dade to dig a

[94] Miller, *BNP: It Almost Wasn't*, 25-26, 30, 32; Carter, *Florida Experience*, 158-59.

channel—hurdles that gave opponents time to organize, grow, and rally before any dredging could begin. In the meantime, the fact that Savannah, Jacksonville, and West Palm Beach had all turned down oil refinery projects proposed by Ludwig did not go without notice.[95]

SPA members used all of their contacts and talents to raise public awareness. Writing about the project for *Harper's Magazine* in February 1964, Polly Redford reported that Scheffel constituted the SPA Women's Division, "and a heavy-armored one at that," because of her contacts with numerous environmental and garden groups that were coming to adopt the new ecological ethic and could raise a ruckus with their large membership. Because "garden-club ladies are also women's-club ladies," Redford noted, "it wasn't too long before women's groups began passing anti-refinery resolutions, too." At the same time, male SPA members visited community groups with more male-based membership, including sports clubs, exchange clubs, chambers of commerce, and service clubs, helping to share their convictions with every organization possible. Jim Redford recalled in a 2014 interview, "We got a system where all of us…sort of got ourselves signed up as speakers at various clubs, I mean including women's clubs, chambers of commerce, even religious groups, and occupational groups and so forth." He continued, "And luckily they're always looking for somebody to say something, you know at a meeting, a speaker of some kind. And we all did that at various groups."[96]

Figure 3.2. James Redford, one of the activists/founders of Biscayne National Monument. Photo by author.

[95] Davis, *Everglades Providence*, 441-44; Carter, *Florida Experience*, 158-60; Miller, *BNP: It Almost Wasn't*, 32-33.

[96] Polly Redford, "Small Rebellion," 100-101; Jim Redford, interview with author, Coconut Grove, FL, June 3, 2014.

Jim Redford used his personal experience as a US Merchant Marine to consider the possible damage from a refinery and its ships and to warn citizen groups about dangers from fuel and oil spills in the bay. "I just kept thinking, 45-foot channel for oil?" Redford said, concluding that the channel would have to be more than 100 feet wide to accommodate tug boats that would have to travel beside the tanker ships:

> And then further, they'd get into the refinery and they'd go into it headfirst, normally, so when they came out, they're not gonna back the miles you had to go all the way there, so they're gonna have to turn around. Well, turning a ship like that around, you probably would need close to 1,500 feet, so you're gonna have to dig a turning basin in South Bay that diameter to get out. And I thought to myself, well, that would destroy the whole bay.

He decided that, had the project been realized, the dredging and digging necessary to create the ship infrastructure would have "effectively" destroyed marine life and recreation in Biscayne Bay. The SPA came to learn that "a lot of people were against this project," Redford said, "but they were not organized." The SPA was.[97]

The group eventually gathered the support of an estimated four hundred thousand people in Dade and Monroe counties. Polly Redford put her pen to work. In the article for *Harper's,* she stated that the SPA was not against industry, just industry that was "dirty." And the refinery clearly would not exist alone—several other associated petrochemical industries would likely be constructed in its vicinity. "Miamians, then," Redford warned, "had reason to fear several square miles of stack industry on south bay just where prevailing winds and currents would spread its effluents over most of Dade County."[98]

In its campaign, the SPA invoked the science of ecology (which was becoming part of the public conversation with the 1962 publication of Rachel Carson's *Silent Spring,* a groundbreaking book about chemicals harming the environment) while also appealing to concerns about the effect of environmental degradation on the economy. The SPA turned to scientific experts to support its concerns, compiling reports and statistics from various researchers to gain public backing. When an oil tanker spilled five thousand gallons of crude oil on Puerto Rican beaches in July 1962, the SPA distributed five thousand flyers about it. But the science had little impact, wrote Polly Redford: "Few people read or listened. We found that whenever science is mentioned the public eye grows glassy." Additionally, Ludwig's Seadade team quickly disputed the SPA's research, and "the fact that no thorough scientific survey of Biscayne Bay" had been made also complicated SPA efforts.[99]

The SPA tried a new tactic: making the refinery a political issue just in time for county commission elections. By throwing its support to anti-refinery candidates, the group gave

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[97] Jim Redford, interview.

[98] Polly Redford, "Small Rebellion," 97, 101.

[99] Ibid., 99-100; Miller, *BNP: It Almost Wasn't*, 36.

the issue public prominence and forced newspapers to recognize the growing opposition to Seadade. Juanita Greene, a reporter for the *Miami Herald*, began writing articles about the controversy, and the newspaper gave the topic increasing attention, eventually changing its editorial stance to oppose the refinery.[100]

In a 1996 interview for a documentary film about Biscayne National Monument's founding, Greene said her initial interest in the bay's future started with the Islandia project and was fueled by her "passion of defending public land, public resources." Furthermore, her investigations into state sales of submerged lands revealed a scandal in which county officials had convinced the state to donate submerged lands—when the true intent was for the lands to be sold to some county employees and a prominent attorney for private development. The location was "a place called Black Point" and Greene's investigation showed that Black Point was to be the mainland end of a proposed causeway to Islandia. "Well, that upset me," Greene said, since submerged lands were supposed to be public lands "which belong to all of us." Greene hoped that if Islandia was built, some portion of oceanfront would stay accessible to the public. She decided to talk to *Miami Herald* publisher John Knight about it.[101]

Greene said that one day, while Knight was in the "press room talking to the editor about the horse races," Greene introduced herself and told him about the Islandia development that would "shut out" the public. She asked if they could "get this into a campaign." Knight said he would talk to an editor about it, and a few days later when Greene caught Knight on an elevator, he told her to proceed with the campaign. "We started writing about it, we put in the public's mind the feeling that they had a stake in those islands, and their stake should be protected. I think that is the major contribution the *Herald* made in this," Greene reflected. Despite its initial pro-Islandia stand, the newspaper let Greene write about the natural environment of the islands—an environment that would disappear with Islandia development. Greene noted that the articles "educated the public on the value of [the islands], and they influenced the decision makers, about what decision they were going to make."[102]

A Proposal for Protection and Support in Washington

In the course of her work for the *Herald*, Greene met Miller, who was battling nearby Seadade. Recognizing the myriad of threats facing the bay and its islands, Greene, Miller, and Arthur Marshall of the US Fish and Wildlife Service gathered around Greene's dining table in the summer of 1962. "At that time we seemed to be the only group trying to save the bay as well as the islands," Miller wrote. "There was no expressed interest from the county or

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[100] Polly Redford, "Small Rebellion," 100; Curtis Morgan, "The Bay Brigade," *Miami Herald*, October 19, 2003, 1B; Lizette Alvarez, "A Florida City That Never Was," *New York Times*, February 8, 2012, http://www.nytimes.com/2012/02/08/us/islandia-a-florida-city-that-never-was.html.

[101] Juanita Greene, transcript of documentary interview, 6-7, BISC archives; Gimleteye, "Juanita Greene, former Herald reporter, environmentalist, and exemplary citizen leaves Miami," *Eye on Miami*, April 30, 2009, https://eyeonmiami.blogspot.com/2009/04/juanita-greene-former-herald-reporter.html.

[102] Greene, interview, tape 6 (transcript, 1, 7-8).

the state so we wondered if we could interest the Federal Government." Marshall, who had advised many local environmental advocacy groups and would later be heavily involved in the battle to stop a jetport in the Everglades (now Big Cypress National Preserve), came up with the idea of preserving the area. Greene recalled, "[Marshall] said to me that [the] Federal Government had just passed a law that would give money to the community to buy sea shore." She continued, "So I went back to the office, and I wrote an editorial saying that we should apply for some funds from the Federal Government to buy the sea shore of the islands. That was the beginning of the whole crusade, right there, that one editorial."[103]

The next day, Miller, who according to Redford "was very good at stirring up things," called Joe Penfold, Washington, DC, lobbyist for the national Izaak Walton League. Penfold knew his way around the nation's capital and was a friend of Secretary of the Interior Stewart Udall. With Penfold's help, bay supporters appealed to Udall for some form of federal preservation to remove the area from development. Jim Redford credited Penfold with the idea of a park: "We were succeeding and it looked as if we might win," he recalled. "But then Penfold said, 'You never permanently win until you become some kind of a monument or a park.'" The group agreed.[104]

Although those involved in the initial efforts have differing versions of events, they all agreed that Udall's office seriously considered preserving the Biscayne Bay area. Udall requested that all Seadade permits be withheld until provisions could be made to ensure that a refinery would not pollute the bay, nearby Everglades National Park, John Pennekamp Coral Reef Preserve (established as a state park in 1963), or adjacent coral reefs. Miller wrote, "In my opinion, that was the most significant action of the campaign and signaled there would be no digging in the bay until the Secretary had the assurances he wanted to protect all the area resources." He continued, "No matter what blustering and posturing Seadade, Islandia or the county might try, there would be no dredging in Biscayne Bay. Our little troop of Quixotic warriors was emboldened to believe the bay AND the islands just might be saved after all."[105]

By autumn 1963, Udall's office announced it would consider the bay and Islandia properties for monument but not park status. Udall explained why during an almost three hour November blimp ride over the area—it was his practice to visit all proposed National Park Service (NPS) additions. Milt Sosin of the *Miami News* reported on Udall's conversation with the news media: "This would make a fine addition to the National Park System," Udall told reporters, adding that, while it wasn't large enough to be designated a national park, it might instead be named a national monument or fit the newly created category of national seashore. Sosin described the scene: "'Congressman Fascell is trying to get me to make my decision here

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[103] Morgan, "Bay Brigade"; Miller, *BNP: It Almost Wasn't*, 38; Carter, *Florida Experience*, 160; Greene, interview.

[104] Greene, interview; Jim Redford, interview.

[105] Davis, *Everglades Providence*, 445; Miller, *BNP: It Almost Wasn't*, 39; George B. Hartzog, Jr., *Battling for the National Parks* (Mt. Kisco, NY: Moyer Bell, 1988), xi.

and now,' Udall laughingly told the newsmen, 'but all I'm going to say at this point is that I like what I'm seeing and I will probably ask Congress to introduce a bill to buy the land.'"[106]

While publicly promoting the Biscayne cause, Udall also provided inspiration for the ongoing grassroots effort. In response to Polly Redford's request for encouragement for her group and for other conservationists battling big business and agriculture across the country, Udall told SPA members to keep going, stating, "We are losing the battle to keep America beautiful. You must band together more to make a stronger fight for conservation. It is not cheap, it's not easy but I say to you—persist, work hard, work together." Miller noted that Udall's answer "is just as compelling today as it was then."[107]

US representative Dante Fascell, a Democrat who represented Miami and rode with Udall in the blimp, was also working hard for preservation of the bay. Federal officials, he learned, determined that the area under consideration was too small for national park status—national parks typically featured extraordinary scenery—and was therefore not suited to be a national recreation area. Biscayne, or Islandia as it often was identified, best fit the requirements for a national monument, where, according to a 1963 Fascell memorandum, "the primary emphasis is on preservation of the natural condition without regard to scenery and where the features are economic, biological and geological and there is unusual flora and fauna." Fascell wrote that "evidently there has been determined [sic] that Islandia is just not big enough in size to be considered a National Park." Fascell, who became the BNP champion in Congress, noted that many national parks began as monuments—presaging his later efforts to enlarge the monument and change its status to a national park. Miller told Fascell that supporting the monument would help him politically, and although they disagreed about some of the future monument's provisions, Fascell became critical to its establishment.[108]

Fascell later recalled in an interview that he initially wasn't concerned about Islandia, but the Seadade proposal and a visit by Miller, the Redfords, and others opposed to the refinery gained his attention. "Well, I listened to what they had to say and immediately agreed with the fact that we needed to do something in terms of preservation of the natural things that we had in Dade County because the county was growing so fast," he said. "I saw this as a continuous struggle with respect of preserving our environment, our way of life, if you will, and that we couldn't just become another big industrial area." Fascell initially hoped to reconcile environmentalists and developers by getting island property set aside for parks, but Udall's visit was the turning point that led to consideration of federal protection. "So that was the real beginning," Fascell recalled, "and I think that it was absolutely essential to

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[106] Milt Sosin, "Udall Inspects Islandia And Likes What He Sees," *Miami News*, November 10, 1963, Papers of Stewart L. Udall, 1950-2010, manuscript collection, AZ 372, University of Arizona Special Collections, Tucson, AZ.

[107] Miller, *BNP: It Almost Wasn't*, 45-46.

[108] Dante B. Fascell, internal memo "Re: Pending- Interior-Islandia National Park," October 10, 1963, Dante B. Fascell Congressional Papers, University of Miami Special Collections, Miami, FL; Lloyd Miller, telephone interview with author, June 24, 2014; Miller, *BNP: It Almost Wasn't*, 54, 56.

get Secretary Udall to come down here and take a look at it." After that, Fascell worked with Udall's office to develop a congressional bill.[109]

By November 1963, the Department of the Interior (DOI) Advisory Board on National Parks, Historic Sites, Buildings and Monuments was considering protecting Biscayne Bay. But despite the area's "national significance" and the belief that it should be saved, concerns about high land acquisition costs made it seem "impracticable," and the board recommended that the issue continue to be studied.[110] By April 1964, however, after studying a revised proposal, the committee endorsed the national monument and urged Udall to act quickly to save it.[111]

The Case for Biscayne National Monument

Historically, national parks and national monuments were designated as such because of clear differences. As previously mentioned, national parks were set aside "because of some outstanding scenic feature or natural phenomena" and must be "sufficiently large to yield to effective administration and broad use," wrote Robert Sterling Yard in *The National Parks Portfolio*, published by the NPS in 1931. National monuments, he said, were reserved "because they contain objects of historic, prehistoric, or scientific interest. Ordinarily established by presidential proclamation under authority of Congress, occasionally these areas also are established by direct action of Congress. Size is unimportant in the case of the national monuments."[112]

The scientific community offered its support for Biscayne National Monument. University of Miami oceanographer C. P. Idyll wrote a seven-page essay entitled "In Defense of the Islandia Monument" to highlight the area's biological value, human threats, and the value of preservation. "Three major advantages of making Islandia a national monument can be listed," he wrote. "First, it will provide a badly needed recreation area. Second, it will preserve an area of beauty and uniqueness, and populations of animals and plants of beauty and uniqueness. Third, it will prevent destructive changes to a much wider area, outside the bounds of Islandia itself." He continued:

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[109] Dante Fascell, transcript from documentary film interview, BISC archives.

[110] Harold Fabian, "Memorandum to Secretary of the Interior. From: Chairman, Advisory Panel on National Parks. Historic Subject: Proposed Islandia National Monument," November 6, 1963, in *Summary Minutes 49th Meeting Advisory Board on National Parks, Historic Sites, Buildings and Monuments*, held in Big Bend National Park, TX, November 4-6, 1963, (Washington, DC: Office of Policy, NPS), 1-2.

[111] Harold P. Fabian, "Memorandum to Secretary of the Interior. From: Chairman, Advisory Board on National Parks, Historic Sites, Buildings and Monuments. Subject: Proposed Islandia National Monument," April 16, 1964, in *Summary Minutes 50th Meeting Advisory Board on National Parks, Historic Sites, Buildings and Monuments*, held in Washington, DC, April 13-16, 1964 (Washington, DC: Office of Policy, NPS), 33.

[112] Robert Sterling Yard, *The National Parks Portfolio*, (Washington, DC: NPS, Government Printing Office, 1931), https://www.nps.gov/parkhistory/online_books/portfolio/index.htm.

> Finally, it seems worthwhile to create Islandia as a national monument for the sake of protecting areas outside the region from destructive changes. If Islandia is not preserved essentially as it is now, there may be profound and detrimental changes in Biscayne Bay—changes in the water, in the vegetation, in the bottom communities of animals, in the fishes, in the birds and other creatures. These changes will take place, as they can in any estuary in Florida and elsewhere, if the bottom of the bay and the edges of the bay are dredged and filled, as they certainly will be if the area is developed for hotels and houses. The changes may also take place if a causeway is built across Biscayne Bay from the mainland to Islandia, and if one is built from Key Biscayne south to connect with Islandia, as has been planned.
>
> Such causeways can have detrimental effects in many ways. They can reduce or alter the circulation of the water in the Bay; they can have detrimental effects on the quality of the water—its clarity and purity; they can have detrimental effects on the salinity. By reducing circulation and fostering stagnation of bay water, causeways can have bad effects on the productivity of the Bay and of the small animals and plants that form the base of the food pyramid; they can thus have detrimental effects on the sport and commercial fishes.

In his conclusion, Idyll appealed to public morals: "We have before us in the Islandia issue a magnificent opportunity to fulfill this aim, to increase the richness of our lives and the lives of those who will inherit our earth. We do not have the right to throw away forever the chance of preserving a small part of this earth, given to us in trust."[113]

On the political scene, Joe Browder said there were advantages to establishing a national monument rather than a national park. "In National Parks," he wrote, "traditional user activities such as sponging, commercial fishing, hunting would…be banned, rather than continued under management designed to protect ecosystems and species, as can be done under Monuments and National Preserves." Had certain marine activities, such as sponging, been banned within the Biscayne boundaries, the proposal might have angered commercial fishing interests and "other commercial interests, who would have aligned with Miami real estate and industrial interests" to fight Fascell's monument legislation.[114]

Beyond public support, however, this national monument would need congressional approval. Under the 1906 Antiquities Act, the US president could designate already-held federal lands or donated lands to be monuments. But because Biscayne included private islands that would have to be federally purchased—part of the Islandia project, for instance—its designation would require the enabling authority and fiscal aid of Congress. Historian Hal

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[113] C. P. Idyll, "In Defense of Islandia National Monument" (Miami: Institute of Marine Sciences), 2-3, 7, electronic version prepared by A. Cantillo (NOAA), accessed July 18, 2016, http://www.aoml.noaa.gov/general/lib/CEDAR_files/cedar8.pdf.

[114] Joe Browder, email message to author, October 25, 2014.

Rothman notes that after 1950 "most new national monuments were created by Congress"; Biscayne National Monument would be no different.[115]

The DOI ordered researchers headed by Marshall of the Fish and Wildlife Service to develop an environmental assessment of the South Bay. Their report revealed that its flora and fauna—including birds, fish, coral, tropical trees, and marine grass beds—were of "national significance." SPA members and Metro-Dade leaders had no idea how rich the bay's natural resources were. Polly Redford likened the county's reaction to the report to someone discovering a "dusty Rembrandt or Stradivarius in the attic."[116]

In 1966 the NPS published a formal proposal for Biscayne National Monument. In the document's foreword, NPS Director George B. Hartzog Jr. wrote, "In their present relatively undeveloped state, the upper Florida Keys and the adjoining waters and submerged lands of Biscayne Bay and the Atlantic Ocean are an environmental element highly important to Florida and a valuable recreation resource for the nation." He noted that, as a result of "interest expressed by the Dade County Board of Supervisors and conservation minded individuals and organizations, the Secretary of the Interior directed the NPS and the Bureau of Outdoor Recreation to study the area. After carefully evaluating the natural and recreational resources, professional park planners strongly recommended preservation of this nationally significant area." Hartzog warned that without such measures, "intensive private development [would] greatly alter existing values of the area."[117]

The proposal noted the creation of the City of Islandia, which included 385 tracts of land owned by 346 people, and plans for "causeways, deep water channels, real estate, and industrial developments" that posed "immediate threats to natural features within the study area." The report stated that although "no industrial development [appeared] to be planned for the Keys, in the proposed area, industrial construction on the mainland—an oil refinery, for example—would probably cause water and air pollution that would damage the monument area's natural values, especially its marine life." The proposal concluded with a truth activists had known for sometime: "The construction and use of a deep water channel or causeway would certainly alter natural conditions, and would materially change the marine ecology."[118]

The formal plan called for establishment of a national monument "of about 100,500 acres; 4,000 acres of which would be land and 96,500 acres water." It would "extend to the 60-foot depth line in the Atlantic Ocean to the east; between Boca Chita and Sands Keys in the north; paralleling the mainland along the west; through Broad Creek and thence along the northern boundary of John Pennekamp Coral Reef State Park on the south. The western

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[115] Fascell, "Internal Memo"; Dale Engquist, email message to author, June 25, 2014; Hal Rothman, *Preserving Different Pasts: The American National Monuments* (Urbana and Chicago: University of Illinois Press, 1989), 224.

[116] Carter, *Florida Experience*, 160; Polly Redford, "Small Rebellion," 102.

[117] NPS, "Biscayne National Monument: A Proposal" (Washington, DC: NPS, 1966), 4, https://www.nps.gov/parkhistory/online_books/bisc/proposal/contents.htm.

[118] Ibid., 18.

boundary of the monument on the shoreward side of Biscayne Bay would lie east of the established bulkhead line at a distance off shore sufficient to allow riparian owners access to their property by water." These boundaries, according to the report, included areas that could be "developed and effectively managed for public use and enjoyment." The report described plans for these developments in detail:

> The plan to accomplish this envisions cooperation with several conservation agencies and Dade and Monroe Counties to provide resources, facilities, interpretation, and protection for visitor use. The State of Florida administers John Pennekamp Coral Reef State Park which lies immediately south of the proposed monument. The State Park would not become a part of the national monument. Two units of the Dade County Park System are also found in the vicinity. On Elliott Key a 90-acre primitive area known as Elliott Key Park has been proposed for eventual inclusion in the national monument. Nearby on the mainland, Homestead Bayfront Park would maintain its separate status as a county park and the monument's mainland headquarters would be located in the vicinity of the county park area. A secondary visitor contact station would be located along Card Sound in the northern part of Key Largo to provide access to the monument from the south.[119]

Fascell led the charge in Washington, DC, to make these plans a reality, introducing a bill for the monument in 1966 that quickly met resistance. Charles Rebozo, friend to President Nixon and Elliott Key landowner, asked Fascell to "withdraw the bill," according to historian Jack E. Davis. "It was a polite request from an old acquaintance, but Fascell politely declined, instead asking Browder, National Audubon's southeastern representative, to come up from Miami and work with his staff on the campaign for the bill."[120]

As Browder later described him in an interview, Fascell was "fearless:"

> He put his political career on the line from the very beginning, both for Everglades National Park and for the Bay, over and over and over. The local real estate developers [and speculators and] the other folks who really wanted to turn the Bay into an industrial bay were relentless in running people against Dante. And a couple of times it was close. But Dante was so good.

Additional support came from national union groups, including the Machinists Union and the Steelworkers Union. They used their influence in Congress to broaden support for Fascell's bill. "[So] it wasn't just a few people from Florida who wanted it," Browder recalled, adding that although there wasn't much manufacturing activity in the state, there were plenty of union members from these industries who retired or vacationed in Florida and had an interest in its future.[121]

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[119] Ibid., 22.

[120] Davis, *Everglades Providence,* 446.

[121] Browder, interview.

Gathering Support for the Monument

While Fascell had been making progress in Washington, local public opinion had begun to side with the SPA. Soon, additional support was coming from the *Miami News*, the Cities of Miami and Miami Beach, and more than three dozen civic groups. Miami City commissioner Alice Wainwright, an ardent environmentalist, introduced a resolution—which passed the commission unanimously in 1963—asking Udall to designate Islandia as a national monument. In a letter to Fascell, she wrote: "Our tourism depends on offering areas of natural beauty for public enjoyment. As an individual, I am of the opinion that this area should be preserved for the public and not developed as Miami Beach has been." Wainwright later became president of the local Tropical Audubon Society, which fought Islandia and Seadade. At the same time, the potential impact of Seadade's refinery and its nearby "highway of oil tankers" on the Islandia project began to worry island developers, adding to the rising tide of concern.[122]

Despite rising public support, the battles were far from over for SPA proponents. In late 1963, the SPA learned that Florida Power and Light (FP&L) wanted to build two oil-fired power units on bay-front property at Turkey Point. The utility's plans generated a host of concerns, particularly about its warm water discharge into the bay. These plans, however, materialized, and today, the FP&L plant includes two nuclear energy generators, which will be discussed in Chapter 4.[123]

SPA members continued their campaign, creating pamphlets, bumper stickers, and publicity for their cause, and increasingly building momentum. They relied heavily on gathering and disseminating scientific facts to back their claims and warned that pollution from Seadade could damage the local tourist industry. Their work clearly alarmed the opposition, some of whom retaliated with attempts to intimidate the SPA: Miller's car was damaged, his dog was poisoned, and many tried to get him fired from his job.[124]

The SPA's cause received a big boost when Herbert Hoover Jr. of the same-named vacuum company joined the fray and supported the plan to create a national monument. Hoover had developed a love of the area through frequent family vacations but still surprised many of his friends by getting involved. "I got into it because so few people were doing anything," he told *Sports Illustrated* in 1966. "I was appalled to see the lethargy of many people who should have been involved." In 1965, Hoover "threw the resources of his company into the battle and unleashed what he [called] the Hoover Task Force," wrote journalist Robert H. Boyle. "Company executives surveyed the area, and PR men sent out a blizzard of bumper stickers (e.g., ISLANDIA'S FOR THE BIRDS—LET'S KEEP IT THAT WAY) and postcards to be mailed to congressmen. Hoover brought down Assistant

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[122] Alice Wainwright to Dante Fascell, November 12, 1963, Dante B. Fascell Congressional Papers, University of Miami Special Collections, Miami, FL; Davis, *Everglades Providence*, 445.

[123] Miller, *BNP: It Almost Wasn't*, 46, 48.

[124] Davis, *Everglades Providence*, 444-45.

Secretary of the Interior Stanley A. Cain, a world-renowned ecologist whose department oversaw fish, wildlife, and parks, for a look at the islands and the bay; moreover, Hoover pledged $100,000 to help acquire the land."[125]

Just as important were Hoover's personal contacts with potential monument supporters, as Cain observed to Udall in a confidential report sent in November 1965. Hoover had pledged the $100,000 at a Miami luncheon he had organized. Reflecting on the event, Cain wrote, "It seems to me, however, that two other offers are of greater significance": Hoover's promise to contact foundations to seek help for the monument and his pledge to seek local and national political backing.[126]

Miller wrote that Hoover's support was timely and "provided a big boost to [their] efforts because of his knowledge of and access to the proper folks in the nation's capitol." For example, six influential congressmen flew on Hoover's company plane to Biscayne in 1965 and toured the islands. They included Fascell; Wayne Aspinall, Democratic US Representative from Colorado (D-Colorado) and Chair of the House Committee on Interior and Insular Affairs; Joseph Skubitz (R-Kansas) and Laurence Burton (R-Utah), both members of Aspinall's committee; Ben Reifel (R-South Dakota), who served on the House Appropriations Committee with Fascell; and Al Ullman (D-Oregon), a member of the House Ways and Means Committee. Hoover also talked to Lady Bird Johnson, the First Lady, about the project.[127]

In the meantime, Fascell acted as the bill's "spear carrier"—the person in charge of taking it through the maze of Congress. It became one of "the most difficult struggles" he endured in politics, he later recalled. During the course of the legislation, Fascell twice had to run for office against an anti-monument candidate, and the bill became "a football in the Congress itself," with many members siding with development interests. The monument proposal created "a sharp division that created two sides in the issue, and the last thing you want in legislation is to have that sharp division and that kind of opposition," he remembered.[128]

Getting politicians out on the water proved to be a successful way to gain congressional support for the monument. One of the key congressional "catches" for the campaign was Representative John Saylor (R-Pennsylvania). Saylor was a major conservationist and member of the House Interior and Insular Affairs Committee but a skeptic of the Biscayne project. He nonetheless became a monument proponent after a fishing trip on Jim Redford's boat into the Atlantic Ocean near the Fowey Rocks Light. Norm Duncan captained the boat, and Miller and Browder acted as "mates" while Saylor delighted in catching a sailfish. "I unashamedly told Mr. Saylor he caught the billfish in Biscayne Bay," Miller admitted. "I

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[125] Robert H. Boyle, "Keeping Islandia Isolated," *Sports Illustrated*, October 17, 1966.

[126] Stanley A. Cain to Stewart Udall, "Confidential Report on the luncheon held by Mr. Herbert W. Hoover, Jr," November 26, 1965, Papers of Stewart L. Udall, 1950-2010 (manuscript collection, AZ 372), University of Arizona Special Collections, Tucson, AZ.

[127] Boyle, "Keeping Islandia Isolated"; Miller, *BNP: It Almost Wasn't*, 51-52, 63.

[128] Fascell, interview.

do think he believed me and I hope I will be forgiven." Saylor's support was critical: as a Republican leader he could help Fascell power the monument issue through Congress.[129]

Figure3.3. Biscayne National Monument promoters gained the critical support of US Rep. John Saylor of Pennsylvania during a fishing trip in which Saylor landed a sailfish. NPS photo, BNP archives.

Browder photographed Saylor's fishing excursion, recalling that it made "some really good pictures." He and Miller afterwards made a photo album of the trip for Saylor, who was sold and began telling skeptical Republicans that the bay should be part of the park system. Duncan filleted the sailfish and took it to a smokehouse; the sailfish bill was also preserved. Then the bill and smoked fish were sent to Saylor's Washington, DC, office, where he distributed the meat to members of his committee—the fish has since been referred to as the "sailfish that saved the park."[130]

Securing the national monument meant a long political struggle, said Browder, who had a front row seat to the action while working with Fascell:

> I got to watch week after week while Dante was taking information that Polly Redford and a whole bunch of other people pulled together and I helped

[129] Miller, *BNP: It Almost Wasn't,* 56-57; Davis, *Everglades Providence*, 446-447; Browder, interview.

[130] Joe Browder, transcript of oral history interview, December 10, 2008, box BISC 5526, "Congressman Saylor's Fishing Trip Reunion," BNP, Homestead, FL (hereafter "Browder, fishing interview").

> assemble this. But Dante just took this to this target, that to that target. It was a really tremendous effort and there are good reasons why the visitor center at Biscayne is named after Dante. So he's the one who really did the Bay. The rest of us—I always worked hard, but Dante is the one who really did it.[131]

Changing Politics

The advent of new local government leaders also helped save the bay. The Metro-Dade Commission had to consent to the national monument or the state government might not have been willing to hand over ninety-two thousand acres of submerged lands within the proposed monument area to the federal government. The 1964 election of Matheson of the BBCA and Chuck Hall, another bay preservation supporter, to the Metro-Dade Commission signaled defeat for Seadade and a boost in support for the monument. Matheson, whose campaign literature touted him as a person to "strengthen and protect" the community's economy, ran as an anti-refinery candidate and handily won. With new commissioners on board, Metro-Dade denied Ludwig's building permit and endorsed the national monument. Matheson also donated a 50 by 145-foot lot near the south end of Elliott Key to the Tropical Audubon Society, giving the group legal standing to file suit contesting Islandia's incorporation; a judge later ruled that fifteen of the eighteen Islandia voters were ineligible because they didn't live on the islands. That same year, Seadade withdrew its plans for a refinery, instead proposing an industrial seaport. It was a battle won, but not yet a full victory.[132]

Islandia owners continued to try to thwart preservation plans and lobbied vigorously to get their development approved. Their strategy now was to get a four-lane causeway—perhaps a toll road—built through the islands, knowing full well that Udall considered such work incompatible with a national monument. Miller of the SPA fought this project, noting that the work "would destroy 50 percent of the marine biology and choke off 200 square miles of bay bottom"; and the state's conservation director, Randolph Hodges, estimated that the "fish breeding grounds in the area were worth at least $500 per acre." The causeways were never approved.[133]

Florida Governor Claude Kirk, a quirky character and the first Republican governor of the state since Reconstruction, also joined the cause, along with his influential environmental advisor, Nathaniel Reed. During his 1966 campaign, Kirk had opposed federal bay protection, siding with corporate interests who, according to historian Jack E. Davis, viewed it as a "federal takeover of state property and an egregious insult to John Pennekamp State Park."

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[131] Ibid.

[132] Miller, *BNP: It Almost Wasn't*, 47-48, 53, 56; Davis, *Everglades Providence*, 446; Carter, *Florida Experience*, 161; "Get Dade's Economy Moving Up with Hardy Matheson," campaign brochure, in author's possession; Rich Archbold, "Audubon Aim: Kill City of Islandia," *Miami Herald*, February 8, 1966; Boyle, "Keeping Islandia Isolated."

[133] Miller, *BNP: It Almost Wasn't*, 52.

But Reed, who had long enjoyed fishing trips on the bay with his wife, had a different perspective. In a 2015 essay, Reed explained how he worked to sway Kirk's mind:

> After the election ended, Kirk told me that he planned to take a multi-day sailboat cruise on Biscayne Bay with the lovely "Madame X," who Kirk later married. Her real name was Erika Mattfeld, but Kirk told the press her name was Madame X and they ate it up. At the time, I said, "Governor, are you really capable of sailing a 38-foot boat alone?" I pointed out the area's treacherous tides, shoals and reefs that could be troublesome. When Kirk admitted that he might need some help, I set him up with a Marine Patrol friend. I advised the Marine Patrol officer, Lt. Ed Little, that at some point "you're going to find a moment to tell him (Kirk) how beautiful the islands are and how important they are and they shouldn't become another Miami Beach." I had told Kirk about the issues in the bay, particularly the island development scheme, which I called "the mythical land of Islandia," hoping to get him to change his mind on the issue. Kirk liked to see things in black and white, in good versus evil, so I tried to frame the Islandia controversy in this way.
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> As expected, Kirk and his lady friend became bored after a couple of days and managed to run the boat hard aground as they tried to navigate Card Sound. There was nothing to do but wait for three hours for the tide to rise; Madame X went down below and Kirk sat down and drank beer with the officer. Little took this opportunity to inform Kirk about the bay and its beauty and wildlife and the threats that would come from dredges, causeways, and refineries. Kirk came to believe that an evil empire was behind the potential destruction of this chain of pearls. When he came back on land he accused me of setting it all up—I laughed—and then we launched a state/federal effort to protect the bay, which included the state denying any permits for causeways or dredging—the very things that Islandia developers needed. Kirk's change of heart was critical and now Islandia was sunk. Kirk was completely on board with saving the bay, wondering, "How could those greedy so-and-so's want to create another Miami Beach? They don't realize they will destroy one of the most beautiful bays in the world! Let's get going and save Biscayne Bay!"[134]

Reed, who later served as Assistant Secretary of the Interior during the Richard M. Nixon and Gerald Ford presidencies, believed that the Biscayne fight inspired other grassroots environmentalists around the state and, as Curtis Morgan of the *Miami Herald* wrote in 2003, "laid the groundwork for a broader, more professional environmental movement that remains formidable in Florida."[135]

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[134] Davis, *Everglades Providence,* 445; Nathaniel Reed, unpublished 2015 essay on Biscayne, in possession of author.

[135] Morgan, "Bay Brigade."

As the national monument bill worked its way through Congress in June 1967, Kirk sent a letter to Udall strongly endorsing it. "The establishment of Biscayne National Monument is of major concern to me," Kirk wrote. "This project would not only preserve Biscayne Bay in its fullest majesty, but would offer a unique monument unrivaled anywhere in the United States. If you are not personally acquainted with the area, please take the time to visit me and let me sail you through this magnificent body of water to these lovely islands."[136]

Two months after Kirk's letter, Udall wrote to Charles L. Schultze, Director of the US Bureau of the Budget, seeking support for the monument. Udall asked Schultze to release a report on Fascell's pending bill. He told Schultze that the DOI would "undertake to keep the total of Park Service actions within the expected funds for the next five years," and he believed there was room for funding for the monument. It was vital, Udall argued, "that some positive expression of interest be made by the Federal Government," adding that the project now had the support of Kirk, the State of Florida, and Metro-Dade commissioners, as well as "widespread public support." There was one exception, Udall noted: "There exists, however, the paper town of Islandia, a real estate development threat, that can be counteracted by our taking a positive step now."[137]

Despite the new political momentum—including the bipartisan support of Democrats Fascell and Udall with Republicans Saylor, Kirk, and Reed—developers continued to press for their longed-for Islandia project, particularly with the Metro-Dade Commission. After unsuccessfully suing to stop the transfer of bay bottom for the monument, they hit on another plan: making the islands undesirable for protection. In February 1968, Islandia mayor Luther Brooks and other landowners brought a bulldozer to Elliott Key. It cut a one hundred foot wide, seven-mile road, now known as Spite Highway, down the center of the island, destroying much of its beauty and more than twenty-six thousand plants and trees. It was a damaging but futile gesture. By that point most politicians and news media supported preservation of the islands as part of a national monument.[138]

The bill making Biscayne Bay a monument gradually wound its way through Congress. Bills in the House of Representatives and Senate had to be discussed in committees and subcommittees before final approval and advancement, and at each stage monument advocates outlined the details of the project's financing and land acquisition while emphasizing a need for quick action. In a September 1968 hearing before the Senate Committee on Interior and Insular Affairs, David S. Black, undersecretary of the DOI, testified:

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[136] Claude J. Kirk, Jr. to Stewart Udall, June 30, 1967, Papers of Stewart L. Udall, 1950-2010, manuscript collection, AZ 372, University of Arizona Special Collections, Tucson, AZ.

[137] Stewart Udall to Charles L. Schultze, August 30, 1967, Papers of Stewart L. Udall, 1950-2010, manuscript collection, AZ 372, University of Arizona Special Collections, Tucson, AZ.

[138] Miller, *BNP: It Almost Wasn't*, 60-61.

Figure 3.4. In a last-ditch effort to prevent creation of a national monument, landowners on Elliott Key cut a large road through the island, later known as "Spite Highway." Nature gradually began reclaiming the area. Photo by Kim den Beste.

> Currently, there are proposals for industry, real estate development and a causeway-bridge access for this area, posing an immediate threat to these ecological and public-use values. It is to my mind remarkable that this area has thus far escaped the change which has characterized most of our country's shoreline. Key Biscayne, lying a very few miles north near Miami, has undergone full development in the last two decades. Without an accurate crystal ball, it is impossible to state with authority what will take place within the proposed area if it is not protected as a national monument. However, by analyzing trends in nearby areas, one can state with some degree of authority what might take place: destruction of the unique natural value by urbanization and incompatible industrialization.[139]

With Hoover's $100,000 pledge and newly forged local, state, and congressional support, Fascell finally got congressional approval of Biscayne National Monument on October 18, 1968.[140] Support from the local government and community that was "demonstrable" and "non-partisan" was critical to the bill's success, Fascell later recalled. "While there was an effort to make it a partisan kind of thing, there were people from all sectors and sides involved, and it had an impact," he added. The bill's voyage through Congress was delayed in 1967 when the House Interior Affairs Committee "virtually adjourned" because of a backlog of land bills—some of them controversial—and an economic downturn. Fascell nonetheless reintroduced it in 1968, a lengthy process that he said had taken "long enough as

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[139] *Biscayne National Monument. Hearings before the Committee on Interior and Insular Affairs, United States Senate*. September 12 and 13, 1968. (Washington, DC: Government Printing Office, 1968), 7.

[140] Ibid., 64-66; Davis, *Everglades Providence*, 446-47.

it was." He continued, "I thought we would never deliver that baby, but it would have been a lot harder without that kind of support."[141]

The new monument, pared down from the originally proposed 100,500 acres, preserved 96,300 acres, including 80 acres for a mainland visitor center and park headquarters, and 40 acres for a Key Largo visitor center. (The latter was never built because it would have resulted in environmental damage with no advantage for travelers and might have duplicated services already offered at nearby John Pennekamp Coral Reef State Park.) At the time, Fascell said that the boundaries were a compromise with seaport development supporters, explaining that "two potential accesses to the ocean would be left open to meet future needs of industrial development in South Dade." One access was through Lewis Cut, just north of Sands Key at the monument's northern boundary. The other was south of Old Rhodes Key, just south of the park. The Ragged Keys—originally included but cut from the final proposal to allow shipping access through the Lewis Cut—were also left out of the monument. But even with these reductions, which would be addressed in future expansions, Biscayne National Monument now existed. It forever ended the Seadade refinery plans and incorporated the Islandia keys into the protection zone. The enacting legislation provided $24.5 million for land acquisition (to come from the recently amended federal Land and Water Conservation Fund Act) and $2.5 million for land development for the new monument. Acquiring those lands would require much attention in coming years. Dealing with the provision that Florida fishing laws were to be followed in the monument's waters, except when state and federal authorities determined that specific species needed special conservation measures, would also be a challenge for the new monument. (Other chapters will address these two subjects and their complications in greater detail.) But for now, Biscayne National Monument had become a reality, created "in order to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty."[142]

A Monument Is Created

In the early evening of October 18, 1968, a group gathered to watch President Lyndon B. Johnson sign the monument bill into law. The group included Fascell, Miller, Browder, Matheson, and Miami-Dade County mayor Chuck Hall. Each received a pen used in the ceremony. At the signing, Johnson lauded the biological richness of Biscayne Bay and noted that, as urban areas grew, it would become increasingly difficult to "preserve these untouched

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[141] Fascell, interview; Peter Laine, "Islandia's Park Plan Delayed Until 1968," *Miami Herald*, October 31, 1967, HistoryMiami Museum, Miami, FL.

[142] Davis, *Everglades Providence*, 443-47; Miller, *BNP: It Almost Wasn't*, 62, 64, 66; NPS, "The 1968 Land and Water Conservation Fund Act Amendment," NPS website, accessed June 25, 2014, http://www.cr.nps.gov/history/online_books/mackintosh3/fees3.htm; Public Law 90-606, 90th Congress, H.R. 551, October 18, 1968; NPS, *General Management Plan, September 1978: Biscayne National Monument*, NPS, BISC archives; Rich Archbold, "Islandia Park, Monument Bill To Be Proposed." *Miami Herald*, September 4, 1966, HistoryMiami Museum, Miami, FL.

areas or to bring them into the public domain." Accomplishing this, he said, required courage, vision, effort, and "a great deal of ability and a knowledge of the public interest and a dedication to it." Johnson, who had visited the Cocolobo Cay Club on Adams Key, pointed to Fascell as a person with those qualities and someone who could "take much of the credit for this treasure."[143]

Figure 3.5. Lloyd Miller, leader of preservation efforts, *left*, shakes hands with President Lyndon B. Johnson, *right*, in celebration of the 1968 creation of Biscayne National Monument. NPS photo, BNP archives.

But many factors had contributed to the success. Polly Redford attributed the victory to a "strong showing at public hearings, thousands of letters and telegrams from conservation club members, bumper strips, et cetera, et cetera—the whole paraphernalia of a modern political campaign." Jim Redford said that the monument arose only because of the Islandia and Seadade crises: "It represented the only thing in town that people had really been trying to preserve. As a result, we got a lot more out of the bay than we would normally. There was a certain accidental quality about the way it worked out." With the creation of the monument, he said, there was a collective feeling of "joy and relief."[144]

Juanita Greene, whose journalistic work would later help in the effort to turn Black Point into a county park and marina, reflected, "To tell you the truth, I never thought that they would win the whole chain of islands. I thought we would be lucky if we only got the water front, the ocean front. And to me it was a miracle that we got it all." Greene described the value BNP held for her: "I know that if I need it, I can go to it. It is like having a diamond

[143] Miller, *BNP: It Almost Wasn't*, 64, 66-67; Lyndon B. Johnson, "Remarks Upon Signing Bill to Establish the Biscayne National Monument," in *The Public Papers of the Presidents of the United States*, vol. 2 (Washington, DC: Office of the Federal Register, NARA, 1968), 1054, http://quod.lib.umich.edu/p/ppotpus/4731573.1968.002/360?rgn=full+text;view=image.

[144] Carter, *Florida Experience*, 162; Jim Redford, interview.

necklace, that you keep most of the time in a safety deposit box, but you know it is there, it gives you constant satisfaction, sometimes you use it, or you know you can leave it for your children."[145]

As Miller's book title indicates, Biscayne National Park really was a park that "almost wasn't." Unlike many national parks in the United States, it was not the result of a long-term preservation campaign and plan; rather, it arose to solve a critical, pressing problem. Miller wrote, "If Daniel K. Ludwig and his Seadade Industries hadn't tried to construct an oil refinery and deep water port on the Bay, I doubt there would have been a grass-roots movement to create a Park." He continued, "There wasn't any talk of a national property that I remember. So, as incongruous as it sounds, and as difficult as it is for me to accept, I need to nominate Mr. Ludwig as one of the Park founders."[146]

Biscayne National Monument had been approved in Congress and signed into law. But the issues and politics that had challenged its creation would for many years continue to impact officials' efforts to protect the monument, as well as their efforts to expand its borders into what would one day become Biscayne National Park.

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[145] Greene, interview.

[146] Miller, *BNP: It Almost Wasn't*, 152.

Chapter Four

Putting It all Together and Becoming a National Park

The congressional establishment of Biscayne National Monument marked the conclusion of a long and tumultuous battle for its supporters. But the work of developing the important site and either purchasing or condemning the property inside it had just begun. A number of complicating factors, however, required action to ensure that the monument fulfilled its purpose of preserving this important marine and upland area.

The enacting legislation called for the monument to extend east from the bulkhead line—a demarcation some seven hundred feet offshore from the western side of the bay. The boundary then ran south to (but not including) John Pennekamp Coral Reef State Park, east to the sixty-foot depth line in the Atlantic Ocean, and then north to between Boca Chita and Sands Key. Early plans called for monument headquarters to be established on the mainland adjacent to county-run Homestead Bayfront Park, with a second visitor center (which was never built) to be located in the northern part of Key Largo.

The headquarters site had long been used by the area's African American community during the years of segregation. Use of the adjacent Bayfront Park was limited to whites until 1964, when it was integrated before the establishment of the national monument. Julius Keaton, a longtime member of the park's maintenance staff, recalled in a 2016 interview that black families—often totaling 100 or 150 people—would drive a separate road from Homestead to enjoy "Black Beach," located where the Convoy Point visitor center was eventually built. They spent weekends eating, visiting, and dancing, said Keaton, who had fond childhood memories of the beach.[147]

At the monument's establishment, other visitor sites were proposed for Elliott, Sands, and Adams Keys. Federal funding to purchase targeted lands would be provided during a five-year period. The 1969 federal budget provided $2.5 million for the monument in fiscal year 1970-71, with another $2.5 million from the Department of the Interior (DOI). The DOI also dedicated $311,900 for management and $115,000 for maintenance in the same fiscal year.[148]

Biscayne National Monument promoter Lloyd Miller recalled in 2008 that a number of important issues arose in the early organizing of the monument's boundaries. "We now had our Monument but the very vexing problem of the boundary on the western shore remained

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[147] Julius Keaton, interview with author, Homestead, FL, August 3, 2016.

[148] Carter, *Florida Experience*, 168; Miller, *BNP: It Almost Wasn't*, 60-61, 71; NPS, "BNM: A Proposal."

unresolved," he wrote, noting that the bulkhead line "left the Monument very vulnerable to damage from shoreline development." Moving the delineation landward to the high-water line would require working with state and local government officials. But the Randell Act of 1967, a state law that required completing environmental impact studies before issuing dredge and fill permits, effectively made the bay's bulkhead line "obsolete," according to historian Luther J. Carter. As a result, Metro-Dade had to reconsider where to set the line. State biologists recommended it be the high-water mark, which was "far inshore," but ultimately the county drew it at the vegetation line, Carter writes. It was an improvement but left much of the shoreline's wetlands and mangroves subject to potential development.[149]

In early 1969, owners of land on Old Rhodes Key "expressed a desire to clear the island and build high-rise apartments," Miller noted, adding his belief that "this was an effort to gain a higher price for their land if and when the Feds wanted to include that key in the Monument." That same year, Luther Brooks, a former Islandia "mayor" who owned land at the island's south end, announced plans to build seventy to a hundred homes and two apartment buildings there (plans that were never realized). Then, in May 1969, as promised, the State of Florida gave ninety-six thousand acres of submerged lands to the monument.[150]

The pieces were coming together, and the wheeling and dealing had begun. Federal officials initially estimated that $24.5 million would be needed to buy the designated lands, while some landowners, including Ralph Fossey, mayor of Islandia, contended that $100 million was the true value.[151] Funding may have been secured, but the arduous work of patiently negotiating with landowners and securing property rights still lay ahead.

Land Acquisition

The US Army Corps of Engineers (Corps), designated to handle DOI land negotiations for the monument, opened a Miami office and began working on securing the Islandia properties within the five-year window. The parcels varied in size, elevation, and waterfront footage, so the Corps hired appraisal companies to determine land values. The Corps purchased most of the parcels, acquiring several through legal condemnation. A small Elliott Key tract that was owned by Tropical Audubon—and that gave the organization legal standing in the event of a major lawsuit—was donated to the monument in February 1972.[152]

No two land parcels being the same, these appraisals required careful assessment. For example, when assessing the value for a site of almost half an acre on Elliott Key, appraiser F. Robert Quinlivan had to consider the property's elevation, waterfront size, accessibility,

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[149] Carter, *Florida Experience*, 168-169; Miller, *BNP: It Almost Wasn't*, 71.

[150] Susan Shumaker, "Israel Lafayette 'Parson' Jones, Sir Lancelot Jones, and Biscayne National Park," in *Untold Stories from America's National Parks*, PBS, accessed October 26, 2014, http://www.pbs.org/nationalparks/about/untold-stories (story no longer available); Miller, *BNP: It Almost Wasn't*, 71.

[151] "Rebozo Land Deal May Embarrass Nixon," *Sarasota Herald-Tribune*, February 7, 1969, 12A.

[152] Miller, *BNP: It Almost Wasn't*, 56, 71-72; NPS, Land Resources Division Master Deed Listing, Status of Lands as of March 31, 1992, NPS, BISC archives.

vegetation, and underlying soil, as well as an existing residence (which lacked public utilities), cistern, seawall, and outbuilding. Then Quinlivan considered sales and prices of nearby properties and created a chart showing values per acre of submerged and upland areas. His forty-one page report, which included photographs of the property along with charts and maps, concluded that the 1970 fair market value for the parcel was $40,000—a number that included $7,200 for the value of the land itself and $32,800 of additional value after anticipated improvements had been made. Biscayne records show that the monument purchased that half-acre property for $56,100 on May 12, 1972.[153]

Another appraiser, W. Bates Cole, using much of the same methodology (and a rule of $10,000 per acre) established a value of $2,242,200 for Tract 800. This parcel included almost 345 acres of land on Sands Key, which comprised approximately one third of the island. According to the sixty-page report, canal access into the island also elevated its value. In January 1971, the Corps purchased Tract 800 for the monument from C. B. Kniskern Jr. for $2.25 million.[154]

Some of the more controversial acquisitions involved island property, notably Adams Key, which was owned by Nixon friend and associate Charles Rebozo. Rebozo and Nixon owned neighboring vacation homes north of the monument on Key Biscayne, and many worried that Rebozo might get preferential treatment for his properties. Nonetheless, records show that six Rebozo properties totaling less than seventeen acres were eventually obtained through purchase and condemnation for $132,852—far less than the average general estimate of $10,000 per acre.[155]

The Rebozo land, however, came with a condition: Rebozo's sister, Mary, and her husband, Howard Bouterse. A Miami musician, Bouterse had moved to Adams Key several years before the monument's creation, ailing with what he thought was terminal cancer. "But he didn't die," recalled 1971-73 monument Superintendent Dale B. Engquist in an interview. Instead, Bouterse took up residence in a caretaker's cottage and lived on the island, although Mary lived elsewhere. When the NPS acquired Adams Key, Bouterse became a park employee through an action called a "transfer of function." The couple became "just part of the park family," with Mary bringing dishes to park potluck parties and Howard acting as a greeter to Adams Key visitors. However, there was "one visitor he kept to himself, President Richard Nixon," Engquist said. On several occasions, monument employees were surprised by a large entourage, including US Coast Guard boats and a helicopter, escorting boaters Nixon and Rebozo to the island. "As much as I asked Howard to let us know in advance when he knew the president was coming," Engquist recalled, "he would never divulge those plans."[156]

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[153] F. Robert Quinlivan, "Appraisal Report, Tract 769, Elliott Key," June 9, 1970; NPS, Status of Lands.

[154] Ibid.; W. Bates Cole, "Reviewing Appraiser's Certificate, Appraisal Report, Tract 800," May 1, 1980.

[155] NPS, Land Resources Division Master Deed Listing, 2-6; "Rebozo Land Deal May Embarrass Nixon."

[156] Dale Engquist, telephone interview with author, June 30, 2014; Miller, *BNP: It Almost Wasn't*, 113.

As a result of Nixon's visits, personnel from the federal General Services Administration (GSA) announced intentions to rehabilitate part of the Cocolobo Cay Club on Adams Key "for use by the President as a retreat," Engquist said. Employees had to ferry GSA folks to the island. "I distinctly remember one of the men suggesting that a certain room be papered with the 'president's favorite wallpaper,' one emblazoned with American eagles," he continued. Months later, however, the GSA lost interest, leading Engquist to "suspect that this may have been done without the knowledge of the White House and, when it became known, the plans were quickly abandoned." Nixon left office in 1974, the same year that an electrical fire destroyed Cocolobo's clubhouse. Other island buildings, such as a carriage house used as a visitor center and the caretaker's home, which housed a ranger, continued to be used until Hurricane Andrew destroyed them in 1992.[157]

The Rebozo-Nixon-Bouterse saga likely led to the 1972 ouster of George B. Hartzog Jr. as Director of the NPS. In his 1988 memoir, *Battling for the National Parks*, Hartzog wrote that he inadvertently offended Rebozo when he cancelled a special use permit that allowed Bouterse to stay on the property. It was done in an administrative move that allowed the NPS to get funding to repair Bouterse's termite-damaged house. "He seemed happy," Hartzog said of Bouterse after they spoke of the move. However, Hartzog quickly learned that he was in trouble, recalling that "President Nixon and Mr. Rebozo were deeply offended with my action. . . ." Without the special use permit, Nixon and Rebozo didn't feel "secure in landing at the small dock on Adams Key during their frequent boat trips on the bay," a sentiment Hartzog labeled as "nonsense," as the president was constantly surrounded by Secret Service personnel. Nevertheless, Nixon fired Hartzog. "If, as I believe, my career with the National Park Service ended because I cancelled the special use permit at Biscayne National Monument, I have no regrets; I would do it again," Hartzog wrote.[158]

The Jones Family Legacy

One of the earliest parcels acquired by the monument was owned by Lancelot Jones. Jones's family had been in the area since his father, Israel, a former slave, left North Carolina after the Civil War, worked his way south doing various jobs, and later bought 277 acres on three small islands, where he (along with many nearby islanders) grew key limes, vegetables, and pineapples. Israel built his home on Porgy Key, near the channel named after the pirate Black Caesar. His sons Lancelot (named for a famous literary knight and often referred to as "Sir") and Arthur grew key limes successfully until a series of hurricanes led them to give up farming in 1938 and devote themselves to guiding fishermen through the abundant marine grounds of Biscayne Bay. The Joneses worked with the rich and famous, including presidents,

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[157] Engquist, interview; Miller, *BNP: It Almost Wasn't*, 113-114; Charles Lawson, "Biscayne Consolidated Comments," in email to author, March 18, 2016.

[158] Hartzog, *Battling for the National Parks*, 234-38, 248.

senators, and entrepreneurs, who visited the Cocolobo Cay Club and Boca Chita, while also stocking the clubs with stone crabs, lobster, and seafood.[159]

Figure 4.1. Lancelot Jones was the son of an island settler and became a well known area fishing guide. His family's land was one of the first to be acquired by the national monument. NPS photo, BNP archives.

While financially focused neighbors fought the creation of the national monument, Lancelot Jones instead embraced the bay's preservation—after all, it was his family home. He refused to participate in the Islandia incorporation, correctly anticipating that it would increase his taxes. And while Jones wasn't opposed to development, he was against the Seadade refinery project and refused to sell land to the company, which was then plotting its deep-water channel through Caesar Creek. Jones later sided with preservationists, and he and his brother's widow, Katherine, eventually sold the 277 acres on Totten, Porgy, and Old Rhodes Keys to the federal government for $1.27 million. It has been estimated that, given the opportunity, developers might have paid three times that amount.[160]

Jones requested and received a life estate on part of his property so he could spend his last years at his family home in Porgy Key, with the caveat that he would abide by all NPS regulations as well as state and Coast Guard rules. Engquist recalled that at "first glance, one might think he was a hermit but, while he lived alone with few obvious worldly possessions, this gentleman was much more." Historian Susan Shumaker writes:

> Most of the time, Lancelot's days on Porgy were quiet and uneventful. He continued to guide on occasion and took a trip—every three weeks or so—into Homestead for shopping or to visit friends. He used rainwater for washing, solar

[159] Susan Shumaker, *Untold Stories*, 47-66.

[160] Ibid., 61-64.

> panels for 12-volt electricity, and a sawdust hole housing a block of ice as a refrigerator. The makeshift ice chest kept all he needed cold, other than his favorite indulgence: mint chocolate chip ice cream. Rangers living on Adams Key, on the site of the former Cocolobo Club, remembered frequent visits from Lance, hoping to indulge in the sweet and creamy treat.[161]

The family home burned in a 1982 fire that also burned Jones's arms, but he recovered and chose to stay on the island, living in a former garage about thirty yards from his original house. Then in 1992, Hurricane Andrew destroyed the structure and damaged the island, and Jones, who had evacuated ahead of the storm, never went back to see it. He died in 1997 at age 99 with the knowledge that his beloved bay had been protected for future generations. The Jones home site was listed on the National Register of Historic Places in August 2013, and a bronze plaque that family friends placed on the ruins tells the story of these pioneers. The site became an important reminder of both the history of key homesteading and the African American experience on the keys. A couple years later, on October 12, 2015, Metro-Dade and Monroe counties honored Jones by proclaiming October 12 "Lancelot Jones Day." That same day, the city of Homestead and Miami-Dade County renamed a portion of 328th Street after Jones, incorporating his nickname in the process, so that the street became Sir Lancelot Jones Way. Jones's assistance in the monument's creation was also featured prominently in a portion of the six-part 2009 documentary film series, *The National Parks: America's Best Idea*.[162]

The only other monument residents were Virginia and Paul Tannehill, who bought Elliott Key property in the 1960s and built a cottage there over the course of five years. Eighteen months after they completed their cottage, the monument was approved, but the Tannehills were granted life residency. During their time on the key, the couple collected pottery and bottles that they found while diving around ancient shipwrecks and exploring historic sites on Sands, Totten, and Elliott Keys. They donated a large collection of their findings to the park; notable pieces included carved Spanish icons resembling the Virgin Mary and a conquistador. In a 1987 interview, Virginia Tannehill reported that, while beachcombing after Hurricane Betsy (1965), she and a friend found an iron chest of an estimated five hundred silver coins in a mass of tree roots on the beach at Elliott Key; these, however, were not given to the park. Paul was already deceased when Virginia left the key after Hurricane Andrew.[163]

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[161] Ibid., 64; Miller, *BNP: It Almost Wasn't*, 112.

[162] Shumaker, *Untold Stories*, 65-66; NPS, "The Joneses of Porgy Key: Arthur and Lancelot," BNP website, accessed October 26, 2014, http://www.nps.gov/bisc/historyculture/the-joneses-of-porgy-key-page-3.htm; Miller, *BNP: It Almost Wasn't*, 118; BNP (Facebook page), October 12, 2015, post, https://www.facebook.com/BiscayneNPS.

[163] Gary Bremen, email to author, "Re: Help and Questions," November 2, 2014; Virginia Tannehill, oral interview, July 31, 1987, EVER archives, 1-10; Lawson, "Biscayne Consolidated Comments."

Early Monument Management and the Birth of a New National Park

For its first three years, Biscayne National Monument was managed by staff at nearby Everglades National Park (ENP), including ENP Superintendent Joe Brown, who had helped with the enabling legislation. Brown had previously worked in the Metro-Dade County park system, so he had many local contacts and connections. In April 1971, Brown chose Engquist to be the monument's first superintendent. Engquist, who had served as ENP assistant chief naturalist and then management assistant, experienced many lean early years at the monument, which he later described in an interview. Initially, a handful of employees worked out of a single office housed in a doublewide trailer located on the south side of the county-owned Homestead Bayfront Park marina. Staff used two "hand-me-down boats" from ENP and later acquired a new boat with a diving platform for their park duties. Engquist recalled how he and his staff "had to pretty much beg and borrow things," asking for assistance from ENP staff when necessary. "If we were doing something that needed more than two or three people," he said, "we would get some help in getting it done from Everglades, if they could lend us that."[164]

Initial staff included Engquist, an administrative clerk, and a "couple ofrangers," Engquist remembered. "We borrowed some scientists from Everglades to do some work there. I didn't actually supervise them, but they did research in the park." During Engquist's tenure, "six or seven employees" at most worked at the monument, and very little development took place. The priorities were to work with Metro-Dade to transfer the Elliott Key facilities (once county-owned) to the monument, Engquist said, adding that park staffers were also able to start organizing some early research and begin enforcing "regulations to guard the resources of the park." He remembered how "resources both in the bayand on the coral reefs were being abused. People were stealing coral and fish and all sorts of things."[165]

Engquist and his staff "did double-duty in those days," he recalled. "We had no real maintenance staff, so we would do those chores ourselves. We survived, but I'm glad nobody knew how many mishaps we had trying to do all sorts of jobs without proper training or equipment." Chores included loading and hauling fifty-five gallon drums of diesel fuel for island generators, demolishing structures, and dealing with dignitaries and their entourages who came to the park, including Rebozo, President Nixon, congressmen, and Supreme Court Justice William Rehnquist. Engquist related one incident in which he was working with ranger George Sites to demolish a small, wooden building at Elliott Key. Part of the roof "collapsed on top of [them] both," leaving Sites unconscious and Engquist "dazed and bruised."[166]

Luckily, Sites regained consciousness in a short time, but Engquist worried about what else might have happened on the island in the monument's early years. In a firsthand account composed for Miller's book, Engquist wrote, "The tasks facing our small staff were

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[164] Miller, *BNP: It Almost Wasn't*, 108-109; Engquist, interview.

[165] Ibid.

[166] Miller, *BNP: It Almost Wasn't*, 110-13.

quite intimidating. Two and later only three rangers with 92,000 acres of water to patrol and protect from coral and shipwreck relic hunters, conflicts between varied users (water skiers and power boats vs. fishermen, snorkelers, and scuba divers), illegal fishing and tropical fish collecting." He continued, "At first we were even told that we didn't have jurisdiction for most of the laws that did exist, but that wouldn't work so we just ignored that early advice and we made our enforcement presence known." ENP staff and scientists also helped with crucial research and monitoring work, including analysis of coral, lobster, conch, reefs, and thermal impacts from the Turkey Point power facility.[167]

One of the scientists working on research was Gary Davis, who served as Biscayne National Monument's official marine biologist while also working with the Everglades and Dry Tortugas National Parks. Davis said in an interview that his initial job at the monument was "just to find out what was in the park." Although University of Miami researchers had "done some habitat maps and some inventories," he explained that "we needed to find out where things were and what we had. And so we began some kind of photographic surveys and some inventories of reef, reef fishes. And eventually we did some lobster surveys to figure out how we could better protect lobsters in the park." Davis said the monument's waters "had been fished pretty heavily, but we could routinely see lots of medium and small groupers, snappers. Every dive we would see them. So just those basic inventories were probably pretty important. And I wish now that we had done a little better job of figuring out how to quantitatively sample fishes on reefs." Davis did begin a creel census—a program that had begun at ENP in 1957—for the monument, and as the park grew it hired someone to take over its own marine responsibilities."[168]

In the meantime, Engquist oversaw the beginning of master planning, the transfer of Elliott Key Park from Dade County, and plans to expand the park's boundary south to make it contiguous with the border of John Pennekamp Coral Reef State Park. Previously, a gap had been left between the two areas in order to accommodate a possible shipping channel, but that made protecting reef resources difficult.[169]

Fortunately, a series of purchases enabled the monument to eventually close this gap. During the monument battle, landowner R. B. Swanson of Harpers Ferry, West Virginia, had used his "clout with the (U.S.) House Interior Committee" to prevent his Swan Key property from being included within monument borders. By 1971, however, Swanson, like other landowners, had experienced a change of heart towards the monument. He was offered $1.5 million for the land, which was located below the monument's original southern border, but he was not interested in the long-term financing the sale would involve. Instead, he preferred that the land become part of the monument, stating, "I think it really belongs in the national

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[167] Ibid., 114-15, Engquist, interview.

[168] Gary Davis, interview with Nancy Russell, Everglades National Park, July 19, 2010, EVER-01706, 1-2, 14.

[169] Miller, *BNP: It Almost Wasn't*, 114; Engquist, interview.

monument," and officially left its designation as part of Islandia. Swanson told a reporter that he was then the primary landowner in Islandia, saying that, if the government didn't accept the key, he "might end up being mayor." Just then, Fossey announced that he would retire as Islandia mayor in 1972. And after the monument's creation, former Islandia proponent Luther Brooks "sold his boat and bought an Airstream camper," stating that the Islandia endeavor was "just a business deal" that he "got out of."[170] So Swanson ultimately got his wish.

In 1974, Congress authorized a boundary increase to Biscayne National Monument, which included the addition of 8,738 acres of land and water at Swan Key and Gold Key. The law also increased acquisition funding to $28.3 million. This funding enabled the monument to add all of Swan Key and Gold Key at its southern border where it met with John Pennekamp Coral Reef State Park—including the area that might have become a channel to a possible port. Then, in 1978, Congress increased total monument funding to $6.56 million. The most significant development, however, was the monument's designation as Biscayne National Park (BNP) on June 28, 1980. Congress officially abolished the monument and placed all its holdings within BNP. The new park included submerged lands from the State of Florida and expanded boundaries, which as of 2019 encompassed Soldier Key, the Ragged Keys (including Boca Chita), the Safety Valve shoal area, and additional offshore reef and central bay areas. The new park stretched north to Key Biscayne and six hundred feet inland along the western coast. The authorizing legislation also directed additional funds of up to $8.5 million to be used to acquire new lands with the intent that the transactions be completed within three fiscal years. Again, fishing regulations followed Florida law. In 2019 BNP comprised 173,000 acres, most of it water, making it the largest marine park in the NPS system.[171]

Achieving National Park Status

As previously mentioned, when the bay area was first considered for federal protection in the 1960s, many supporters, including Representative Dante Fascell (D-Miami), hoped it would be designated a national park; but Biscayne's initial smaller size led the DOI to propose that it instead be a national monument. By 1980, however, several changes in governmental leadership were occurring that would pave the way for the monument's designation as a park. Fascell's congressional influence had grown—so much so that in 1984 he became chair of the powerful House Committee on Foreign Affairs, a post he held until 1993. Additionally, more land was proposed for inclusion in the Biscayne preservation area, thanks in part to Nathaniel Reed (Biscayne supporter and Kirk's former advisor), who by 1976 was Assistant Secretary of the Interior and supported adding the Ragged and Soldier Keys to the monument.

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[170] Mike Baxter, "Islandia: The City's In Splinters," *Miami Herald*, October 17, 1971, 2-C, HistoryMiami Museum.

[171] Miller, *BNP: It Almost Wasn't*, 84-85, 116; Public Law 96-287, 96th Congress, June 28, 1980; NPS, "Frequently Asked Questions," BNP website, accessed November 12, 2014, http://www.nps.gov/bisc/faqs.htm; National Parks Conservation Association (NCPA), *State of the Parks: Biscayne National Park* (NPCA, January 2006), 1.

Reed noted another helpful change: by 1980, Representative Wayne Aspinall (D-Colorado), often seen as a hindrance to environmental issues, had left the chairmanship of the House Interior and Insular Affairs Committee, which oversaw national parks. This departure was critical to Biscayne's park designation, as Morris Udall (D-Arizona) became the new chair. Not only was Udall friendly to environmental causes, he was also the brother of Secretary of the Interior Stewart Udall, who had fought for the bay's original monument designation.[172]

As Reed also pointed out, while Fascell had grown in national political power, his local influence had grown, too. "Nothing happened in Dade County without Dante agreeing to it," Reed said. At the same time, public opinion had continued to shift in Biscayne's favor. Monument advocate and National Audubon Society representative Joe Browder observed that "with the passage of time the popularity of a protected Biscayne Bay increased while the influence of would-be Bay developers diminished, enabling Fascell to elevate the status of Biscayne" to a national park with "no serious opposition."[173] (Today, the Dante Fascell Visitor Center, on Convoy Point, honors Fascell's role in the park's creation.)

For some, Biscayne's park designation was a long time coming. James A. Sanders, BNP Superintendent from 1980 to 1993, discussed Biscayne's elevation to park status in an inter-view, stating that, in his opinion, it had always had park-like features: "The difference between a national monument and a national park, primarily in the policy of the National Park Service, is that a monument has at least one nationally significant feature in it. And a national park has to have more than that. So, Biscayne, in my opinion, always was a national park status because of the variety of ecosystems it had and because it contains this complete marine ecosystem." Additionally, the title change would benefit both Biscayne and the surrounding region. Sanders explained, "At that time, in the history of the National Park Service, there was a feeling that national parks got greater public interest than national monuments did and, therefore, for tourism purposes and the economy of the local area it would benefit them if it was designated a national park." Historian Michael M. Geary confirms this idea, noting that national parks "loom much larger in the public imagination and therefore tend to attract more visitors (and thus typically more funding) than national monuments."[174]

Some twenty different titles, from monument to seashore to preserve, evolved to be used as designations for NPS holdings, but the NPS generally reserved the title of national park for "the greatest natural attractions of the National Park System." BNP was not the first national monument to be converted to a national park; other sites had been changed from

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[172] Miller, *BNP: It Almost Wasn't*, 82-84; Nathaniel Reed, telephone interview with author, October 18, 2016, notes in author's possession.

[173] Ibid.; Browder, email; Dante B. Fascell Congressional Papers, University of Miami Special Collections, accessed January 29, 2014, http://proust.library.miami.edu/findingaids/?p=collections/findingaid&id=750 (page not available).

[174] James A. Sanders, telephone interview with author, July 21, 2014; Michael M. Geary, *Sea of Sand: A History of Great Sand Dunes National Park and Preserve* (Norman, OK: University of Oklahoma Press, 2016), 159.

monuments to parks, including Zion, Grand Canyon, and Channel Island National Parks—all of which profited from the greater prestige of being designated as such.[175] Biscayne National Monument's elevation to national park status—Fascell's ultimate goal—would likewise improve its image while also having a positive impact on surrounding communities, making such a change desirable to many.

With park designation decided, the process of choosing more land to include in the park began. Reed described his thoughts while touring the bay's natural features with a fishing guide in the late 1970s: "When I was in the skiff I took a look at the Ragged Keys and I said, 'My god, how can we leave that out?'" Holding a map on his lap, Reed marveled at the bay's beauty, particularly the abundant northern grass flats, which he recommended for inclusion. But Reed did not favor adding Stiltsville to BNP, feeling that taking care of the area's wooden houses built on stilts in the bay's shallows would be a "management nightmare." However, Congress eventually included both areas in the 1980 BNP park legislation.[176]

Stiltsville

As previously mentioned, Stiltsville is a group of elevated structures located in shallow grass flats just south of Key Biscayne; the structures date as far back as the 1930s, possibly the 1920s. They carry with them colorful histories and a strong local following that ultimately objected to BNP's initial plans to raze the structures. "The Shacks," as they were first named, were wooden stilt buildings that may have originated with a beached vessel that sold bait and food to passing boaters. Some of the area's notable denizens included Captain Eddie "Crawfish" Walker, who sold bait, beer, and his famous crawfish chowder (called "chilau") from his shack in the 1930s. The buildings were perfect for weekend retreats and for illicit purposes, which may have included illegal alcohol sales, gambling, and prostitution. The Calvert Club opened in 1938 and was the site of many parties, often attracting Miami's social elite. The Quarterdeck Club, built in 1940 for $40,000 from a barge raised on pilings, was featured in a *Life* magazine article in the 1940s and, as described in Chapter 2, raided by law enforcement in 1954. The club burned to the waterline in 1961, the fire possibly set by an enraged woman after learning that her husband was entertaining his mistress there. Another club opened in 1962 after a 150-foot yacht grounded on the flats and its owner declared it to be the "Bikini Club"—a social club where members could enjoy drinking and a nude sunbathing deck. Other vessels, including a surplus World War II patrol boat were added to the structure to increase the dance floor. The Bikini Club closed in 1965 after state beverage authorities raided it.[177]

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[175] NPS, "Park Designations and How the Sites Are Managed," NPShistory.com, accessed September 11, 2016, http://npshistory.com/publications/parks-etc/index.htm.

[176] Reed, interview.

[177] Miller, *BNP: It Almost Wasn't*, 103-104; *Stiltsville: Generations on the Flats*, film feature at Dante Fascell Visitor Center, BNP, accessed March 4, 2014; Linda Canzanelli, "Stiltsville Chronology," 1, BISC archives.

Figure 4.2. After seeking public input, Biscayne leaders embraced the seven remaining structures at Stiltsville, managed by a local trust. Photo by Kim den Beste.

By 1960, there were twenty-seven buildings in Stiltsville, but hurricanes, fires, and the buildings' location in an open water area took their toll over the years. In 1960, Hurricane Donna destroyed ten homes, and Hurricane Betsy damaged others in 1965. After Betsy, the State of Florida only allowed houses with less than 50 percent damage to remain, and those structures had to meet local building codes. The Metro-Dade County Building and Zoning Department decided that same year to prohibit any new construction on the grass flats. In 1985, the State of Florida formally transferred the bay land underneath Stiltsville to the federal government for the national park. The NPS agreed that building owners could keep the stilt homes until their leases expired on July 1, 1999, at which time it was expected that they would be destroyed, as NPS policy did not permit private use of public lands. The goal was to eventually return the area to its natural condition.[178]

Prior to Hurricane Andrew in 1992, there were fourteen structures remaining in Stiltsville, but after the storm seven houses and a nearby radio tower were destroyed and not replaced—owing to the aforementioned lease provision that if a structure had more than 50 percent damage it could not be rebuilt. According to former BNP Superintendent Linda Canzanelli, the storm left "considerable debris" from the wrecked structures on the bay bottom for three years until a contractor cleaned up the debris at a cost of $454,527, with $61,200 paid by leaseholders that were required to do so in their contracts. With the 1999 deadline approaching, the park expected little controversy.[179]

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[178] Canzanelli, "Stiltsville Chronology," 2; NPS, "Stiltsville," BNP website, accessed November 16, 2014, http://www.nps.gov/bisc/historyculture/stiltsville.htm.

[179] Canzanelli, "Stiltsville Chronology."

But a new storm was brewing. A year before Stiltsville was to be removed, building owners scrambled to find a way to preserve their oases, where many generations had sunned, fished, and played. They convinced the Florida State Historic Preservation Review Board to unanimously nominate Stiltsville for a listing on the National Register of Historic Places, but that nomination was denied a year later. In 1999, then-Superintendent Richard "Dick" Frost met with Stiltsville owners to remind them that NPS expected them to remove the structures when leases expired on July 1.[180] Frost said he was of two minds about removing Stiltsville:

> [It] had some significance in the park history, and I was torn by that. I think probably most of the staff wanted to find a way to keep it without taking it down. But we didn't have the money to maintain it, and we couldn't get the money to maintain it. So if we got it, we were going to have to probably tear those down. And legally, we could require the owners to tear it down.

The NPS stand was that the structures didn't belong in BNP because they were for "exclusive personal use of an area of a national park, and that's not what national parks are for."[181]

When Stiltsville owners realized that the historic preservation approach would not work, they regrouped in a strategy session and developed "another plan of action" involving political and publicity campaigns, as Kevin Mase, a Coral Gables airline pilot, later said in an interview. Mase and a group of high school friends had purchased a rustic stilt home in 1989, affectionately called Bay Chateau, and they believed the iconic homes were worth saving. He described Stiltsville and the home as "a million miles away from civilization but you're ten minutes to the dock." Time at Stiltsville had been special for Mase, who recalled being able to hear dolphins surface and feel a tranquil breeze at night. He and his family had enjoyed fishing on the dock, and it was the site of his first date with his wife.[182]

The Stiltsville supporters created a slogan called "Save Old Stiltsville" ("SOS"), produced bumper stickers and surveys, and, most importantly, collected more than seventy thousand signatures on petitions. These caught the attention of South Florida's Congressional leaders. Mase said, "We believed that this was a national issue, so we involved our local delegation of US House of Representatives that would be supportive of preserving Stiltsville."[183]

The NPS gave Stiltsville a six month extension, and during that time the owners' congressional appeals excited interest, including that of Representative Ileana Ros-Lehtinen, (R-Miami). In October 1999, she introduced a bill in Congress that would have let the state and NPS swap Stiltsville land for other state lands. Canzanelli, who replaced Frost in June

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[180] Ibid.

[181] Richard Frost, interview with author, Homestead, FL, June 6, 2014.

[182] Kevin Mase, telephone interview with author, October 3, 2015.

[183] Mase, interview.

2000 and continued the negotiations, described several other federal proposals made, from returning the Stiltsville property to the State of Florida to creating what would have resembled a "Swiss cheese" with just the area for each structure cut out of the park. Canzanelli pointed out that a number of Stiltsville owners were "incredibly well connected politically, and they contributed to a lot of the political campaigns of politicians in Florida," giving them powerful leverage in Washington, DC. The NPS extended negotiations for another year as the controversy continued to rage.[184]

Frost never believed that Ros-Lehtinen's congressional actions would be enacted, saying that "no Congress was going to vote to meet the desires of a handful of people to carve out a chunk of the national park that they had just voted to expand." Frost believed it was a lot of "noise" that had little chance of making an impact. "It was just hot air. It was just bluster," he said. Nevertheless, the political battle continued in South Florida and Washington, DC, where the NPS found support for its position with Senator Bob Graham (D-Florida) and Representative Peter Deutsch (D-Ft. Lauderdale). "We're not going to allow freeholders to have this property," Deutsch told the *Miami Herald*. "They're not paying for it."[185]

In August 2000, Canzanelli announced that the NPS, based on a reassessment of the importance of the structures to the local community and the lack of impact to BNP other than the loss of seagrass beneath them, had changed its stance on Stiltsville. New plans called for the seven houses to remain but to repurpose those spaces for public use, such as hosting environmental education, artists in residence, and interpretive programs. Three months later, the NPS issued new eviction notices after two engineering consultants raised concerns about the structures' safety and structural integrity. In December, a judge issued a temporary restraining order that extended the evictions, and a congressional appropriations bill also extended the NPS actions until 2001.[186]

In early 2001, Canzanelli created a twenty-one member, citizen-based Stiltsville Committee under the umbrella of the National Park System Advisory Board to report on possible future uses of the buildings. In the meantime, BNP conducted an environmental impact statement on Stiltsville. A year later, another group, building on the work of the first, made recommendations that were eventually incorporated into the 2015 BNP General Management Plan (first written in 1978 and revised in 1983). Canzanelli recalled how establishing a blueprint for the area's future required lengthy negotiations with the community, Stiltsville leaseholders, and others. The result, however, was the 2003 creation of the fifteen-member Stiltsville Trust, a nonprofit that helped manage the maintenance and upkeep of Stiltsville houses for the NPS. Members of the public who wanted to use the structures had

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[184] Ibid.; Miller, *BNP: It Almost Wasn't*, 104-106; Linda Canzanelli, interview, St. Augustine, FL, May 27, 2014; Canzanelli, "Stiltsville Chronology," 2.

[185] Frost, interview; David CM-Azares, "Controversy Floods Stiltsville." *Miami Herald*, September 24, 2000, http://articles.sun-sentinel.com/2000-09-24/news/0009230424_1_canzanelli-biscayne-national-park-park-service.

[186] Canzanelli, "Stiltsville Chronology," 3; Miller, *BNP: It Almost Wasn't*, 105-106.

to apply for a permit through the trust and, depending on the activity, a permit from BNP. As of 2019, the brightly colored buildings continued to attract artists, photographers, and youth groups and garner the interest of people fascinated by their lively history. (See Chapter 8.)[187]

Figure 4.3. Linda Canzanelli, BNP superintendent, 2000-2005. Photo by author.

In announcing the final Stiltsville resolution in 2003, Secretary of the Interior Gale Norton declared it to be "an exciting chapter in the history of Stiltsville." The trust, she said, "[would] open the houses at Stiltsville to the community and the public to showcase the richness of the marine resources of Biscayne National Park. Stiltsville [would] be a place for people from around the country to learn about the history of this magnificent place and the value of our fragile marine environment."[188]

Florida Power & Light Plant at Turkey Point

While the Biscayne monument's creation ended the development plans of Islandia and the Seadade refinery, another enormous project was underway fifteen miles south of Miami on the bay's western shore at a marshy, mangrove-filled site known as Turkey Point. There, the Florida Power and Light Company (FP&L) sought to increase its operating capacity by first installing two oil-fired units and then adding two nuclear plants. FP&L had chosen the 3,200-acre site in 1964 after being refused expansion at a plant at Cutler Ridge to the north. It hoped the more remote Turkey Point site would trigger fewer public objections to its generation of air pollution. The county and the US Atomic Energy Commission approved the site for the new nuclear plants with little discussion of environmental impact, since that consideration was not required by law at the time.[189]

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[187] NPS, "Stiltsville"; Miller, *BNP: It Almost Wasn't*, 106-107, 142, 150; Canzanelli, interview.

[188] NPS, "Interior Department Announces Plan to Save Stiltsville," *InsideNPS*, August 4, 2003 press release, BISC archives.

[189] Carter, *Florida Experience*, 162-63.

The nuclear technology met no resistance, but the environmental community did raise concerns about overheated water being discharged from the FP&L cooling system into the shallow bay. Scientists and activists worried that water discharge at a temperature of 95 degrees or more would cause enormous damage to the bay's seagrass beds and marine life, particularly shrimp, crabs, and turtle grass. Browder recalled that Dr. Oscar "Bud" Owre of the University of Miami, who was also a vice president of the Tropical Audubon Society, was "a real hero" in the effort, organizing university scientists to disprove FP&L claims that the water heating was insignificant. "And it turned ugly in a hurry." Browder said. "Florida Power & Light hired some scientists who... said, 'Oh there's nothing of value in the bottom of Biscayne Bay.'"[190]

Browder also recalled that, with the aid of friends in the National Aeronautics and Space Administration (NASA), Owre arranged for military aircraft flyovers that supplied infrared photographs "showing the footprint of the hot water going out into the Bay"; the hope was that these would provide "irrefutable evidence" of the reach of the hot water. Browder added that, as a result of Seadade, there was a "critical mass of people" ready to take on the FP&L Turkey Point issue.[191]

Davis of ENP said that outside scientists and activists led the campaign against the hot water discharge, the NPS not having the staff capacity to take on the project. Experts reported that the FP&L discharge had raised seawater temperatures 7.2 to 9 degrees Fahrenheit above normal temperatures during "critical" summer months, causing heat stress and death to important plants and marine creatures. This report spurred environmental activists, and before the first nuclear plant was to come online, objections reached Tallahassee and Governor Claude Kirk, who initially had opposed the Biscayne Monument with FP&L's encouragement. Kirk, however, had changed his mind about the monument after spending time in its waters, and, with encouragement from Nathaniel Reed and the knowledge that environmentalists were threatening lawsuits, Kirk asked the federal government to intervene. The Water Pollution Control Administration (WPCA) of the DOI held a federal-state conference in Miami. Historian Jack E. Davis notes that this was the first time that a federal agency looked at thermal discharge as a source of pollution.[192]

Once again, environmental activists joined the battle to preserve the bay. Charles Lee, a young Tropical Audubon Society board member, joined scientists as they measured water temperatures at Turkey Point. He also took newspaper writers and photographers out in his boat to see the area under contention. In 1969, December Duke and Lili Krech, students at the Everglades School for Girls, conducted a study of temperatures of cooling water coming

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[190] Davis, *Everglades Providence*, 450-51; Browder, interview.

[191] Ibid.

[192] Davis, interview; Carter, *Florida Experience*, 163, 165-66; Davis, *Everglades Providence*, 445, 450-51; L. Lee Purkerson, "Thermal Pollution in Lower Biscayne Bay, Florida," BISC archives, 1.

out of the plant; they discovered that the valuable turtle grass was dying—a conclusion that experts supported. Duke followed up on her concerns about sewage discharge with her own experiment—flushing peanuts down a city hall toilet and then watching with city officials as the peanuts bobbed up in coastal waters. Davis notes that, four years later, the city and county created the Metro-Dade Water and Sewer Authority and later expanded a wastewater treatment facility by 50 percent.[193]

Figure 4.4. Florida Power & Light's nuclear plant at Turkey Point abuts the park. Photo by Kim den Beste.

Despite the evidence scientists presented at the packed hearing and a DOI request to protect the new monument or face a possible lawsuit, FP&L decided to proceed. Davis notes that, because the subsequent DOI lawsuit defined pollution "more broadly than visible dirty emissions," it became a "test case" about thermal pollution, gaining attention from businesses and environmental activists. The suit was settled in September 1971, with FP&L agreeing to create an elaborate harp-shaped system that circulated heated discharge into a closed system of canals on about seven thousand acres of land that stretched south from Turkey Point. No water would go into the bay, and the discharge site itself eventually provided an unintended benefit: an important habitat for the endangered American crocodile.[194]

The FP&L settlement inadvertently stopped another project by Seadade Industries. Seadade owned 20,000 acres south of Turkey Point and, according to historian Carter, hoped to turn its salt marsh and mangrove swamps into a new town of "24,000 dwelling units and

[193] Charles Lee, interview with author, Longwood, FL, October 20, 2014; Davis, *Everglades Providence*, 466-69.

[194] Ibid., 453; Carter, *Florida Experience*, 166.

100,000 people." Plans also called for light manufacturing and a seaport. Carter writes, "Now, however, Seadade was helpless to keep use of its lands from being preempted by FP&L," who needed them to build its extensive cooling canals. Carter adds that Seadade ultimately sold the tract to FP&L, of which 2,500 acres of coastal mangroves and salt marsh were donated to the State of Florida. "The effect of Turkey Point," said Charles Lee in an interview, "was to ultimately preserve in large part about twelve miles of the shoreline of south Biscayne Bay." He continued, "While some people don't like nuclear power plants, the upside of Turkey Point is that the security zone and safety zone around the nuclear power plant created a wonderful buffer that kept development out of the area."[195]

Figure 4.5. As a young man and Tropical Audubon Society board member, Charles Lee helped in the fight to save what later became the national monument. Photo by author.

By the late 2010s, the Turkey Point site, easily visible from the main visitor center at Convoy Point, had begun raising a different kind of environmental concern, particularly in the wake of the 1979 partial meltdown at Three Mile Island nuclear facility in Pennsylvania, the devastating 1986 Chernobyl nuclear disaster in Ukraine, and the 2011 tidal wave damage and meltdown at the coastal nuclear plant in Fukushima, Japan. Although the Turkey Point plant was not located in an area with known seismological activity, it was in a zone frequented by hurricanes, and a nuclear problem at the plant would likely shut down the national park. Warning sirens were installed at different points in BNP, and because parts of the park fell within the ten-mile protective zone of the plant, park personnel worked with FP&L to develop an "Emergency Operation Center Procedures Manual" in case of a nuclear event at the plant. The 1999 manual stated that the park would be responsible for alerting visitors to a plant emergency, controlling access into the park, and coordinating public information efforts, among other precautions. The document also assigned BNP personnel specific protocol to follow in the event of a nuclear problem, and prescribed certain equipment the park needed

[195] Ibid., 166-67; Lee, interview.

to keep on hand, such as protective suits and radioactive sensors.[196] As of 2017, the plan had been regularly updated to reflect best practices and industry standards.

BNP personnel also worked with FP&L to monitor groundwater under cooling canals. This monitoring remained especially important in light of FP&L's 2015 application for two new nuclear units at the site. Water resource staff worked extensively with federal, state, and county personnel to review the prospective plants' environmental implications. Areas of inquiry included water sources "for cooling, the effects of the use of various cooling water, the effects of construction of the plants, [and] the effects of the operation of the plant."[197]

In 2015, much opposition arose to FP&L's plans to expand the Turkey Point nuclear facility by adding two new generators and requesting large water allotments for their operation. The Tropical Audubon Society joined with Miami-Dade County, the City of Miami, and a rock-mining company to challenge FP&L's operations of the Turkey Point power facility. They argued that the plant's cooling system used too much fresh water from the Everglades system and had created a plume of salty, industrial waste that was contaminating the bay and threatening well fields—complaints which had already gone unaddressed for several years. In August 2013, the South Florida Water Management District (SFWMD) ordered FP&L to stop the pollution. In response, FP&L started pumping fourteen million gallons of water daily from aquifer and nearby canals into the cooling system. According to Jenny Staletovich of the *Miami Herald*, as summer temperatures rose, "a festering algae bloom spread and the canal water heated up"; as a result, FP&L asked to take one hundred million gallons of fresh water daily to "freshen the system," and state regulators approved a new management plan in December 2014 that local officials said caught them "off-guard." The SFWMD was removed from oversight—an act that upset Tropical Audubon.[198]

Tropical Audubon executive director Laura Reynolds said in an interview that the FP&L fight was one of the most important for BNP's future. In the meantime, Tropical Audubon would continue to fight on behalf of the park, a circumstance Reynolds likened to a "David-and-Goliath fight" against corporate interests.[199]

Other Park Management Challenges and the General Management Plan

The new national park faced a number of challenges in its early years, including what BNP Superintendent Sanders called the need to "overcome an identity problem." When he arrived at the park in June 1980, Sanders found that BNP staff "had not been very active in the

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[196] NPS, "Emergency Operations Center Procedures Manual," NPS, BISC archives.

[197] NPS, *Annual Narrative Biscayne National Park 2010*, NPS, superintendent's files, BISC archives, 36-37.

[198] Jenny Staletovich, "Local government, FPL fight over water for Turkey Point canals," *Miami Herald*, February 12, 2015, http://www.miamiherald.com/news/local/environment/article9924155.html.

[199] Laura Reynolds, telephone interview with author, December 21, 2015.

local community." He continued, "We worked together by informing park users, conservation groups, and government agencies of the park's programs, in an effort to gain their cooperation," and strengthen recognition of the park. "We wanted to show that the park was a good neighbor, was available to assist them, and had the best interests of the community at heart." To engage with public agencies, Sanders participated on local planning and environmental committees, including the Dade County Planning, Environmental Impact, and Management Committee that considered "proposals adjacent to and near the park." This participation enabled him to "head off potential threats to the park before approvals were granted."[200]

One way to attract people to the park was to enhance and increase its public use. In 1981, BNP began using its forty-five foot work boat to offer free four-hour boat tours to Elliott Key on weekends and holidays. Each trip could accommodate up to thirty people. These tours, the first public transportation BNP offered, were "an overwhelming success," Sanders reported. That year, thirty trips carried 799 passengers. Another 8,592 were turned down, leading BNP officials to hope that a private concessionaire might take on the project, which did occur in 1984.[201]

BNP staff launched two important plans during the park's early years. The first General Management Plan (GMP) was completed in 1978, and a second GMP was begun in 1981 to help unite local governments in the Biscayne area and protect the park. As a new national park with expanded boundaries, BNP needed to amend the existing 1978 GMP. After July 1981 scoping meetings, BNP presented four alternatives to the public, and the first public comments were completed in January 1982. BNP staff also developed a hurricane plan that considered what would happen at the Convoy Point area if a storm damaged it.[202]

The 1983 GMP called for:

- establishing boat transportation to get park visitors onto its waters, with access to keys and coral reefs
- improving interpretive programming, including that at the Elliott Key complex
- maintaining without significantly changing park development sites on the keys
- maintaining undeveloped areas in their natural state
- returning the Ragged Keys and Soldier Key to a natural state while also allowing boat access
- designating Boca Chita as a boating day-use area, with minimal development
- establishing more recreational opportunities while minimizing visitor use conflicts and resource damage
- preparing a cultural resource guide to aid management and monitoring of impacts on cultural resources; instituting a program to reduce visitor impact on submerged archeological resources

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[200] Miller, *BNP: It Almost Wasn't*, 117.

[201] Ibid., 117-18, 121.

[202] Ibid., 119-120.

- increasing monitoring of air and water quality; increasing monitoring of commercial and visitor impacts on marine and terrestrial resources; and preserving park resources with particular attention to endangered and threatened biota and environmentally sensitive sites.[203]

The overall response—including a 1983 public hearing that drew 150 people, 160 returned response forms, written comments, and two petitions—favored the park's proposals, particularly the idea of creating ferry travel to Elliott Key and tour boat opportunities to the reef tract and southern keys. Most respondents were local residents who described themselves as "boaters, fishermen, sport divers, or environmentalists." As a result of public input, the NPS agreed to permit overnight primitive camping on land and in boats at Boca Chita, noting that there would not be twenty-four hour NPS staffing at the site. The NPS also mandated that no new wetlands or floodplains would be occupied and that the park would take steps to improve visitor safety and protect property from flood damage.[204]

The 1983 GMP report also included a study of BNP (required in its 1980 national park designation) to determine whether it or any part of it would qualify for protection under the federal 1964 Wilderness Act. According to the report, in order to be eligible, an area "must now or in the foreseeable future, be without the lasting imprint of man, conducive to the experience of solitude or unconfined primitive recreation, and ofsufficient size to make practicable its preservation and use in an unimpaired condition." With certain areas, particularly the mainland, judged ineligible for wilderness protection, BNP investigated Arsenicker Keys, the southern keys and waters south of Caesar Creek, and undeveloped portions of Elliott and Sands Keys. But the report determined that, in "all of these areas, however, the feeling of solitude [was] questionable." It continued, "Because ofthe views of the 415 foot high Turkey Point smokestacks and the activity in the Intracoastal Waterway and Hawk Channel, and the almost constant sounds of low-flying jet aircraft and powerboats, an unconfined 'wilderness experience' may be unattainable." The study concluded that BNP's "proximity—spatially, visually, and acoustically—to major development and well-established motorized activity (airplanes, motorboats, large ships) [was] not conducive to an experience of solitude as intended in the Wilderness Act." The report added that parts of certain keys and channels might merit this designation, should Congress be so inclined.[205]

A New Park With New Facilities

Becoming a national park meant sharing that new status with the community and planning for facilities that could accommodate increasing public demand for the park's recreational offerings. Sanders recalled that all the park's signs were changed to reflect the new

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[203] NPS, *General Management Plan, Development Concept Plan, Wilderness Study and Environmental Assessment* (NPS, January 1983), 1-2, BISC archives.

[204] Ibid., 2-4.

[205] Ibid., 101-105.

status by "drawing a line through 'Monument' and printing the name 'Park' above it. They remained this way for a year until new signs were manufactured and installed.[206]

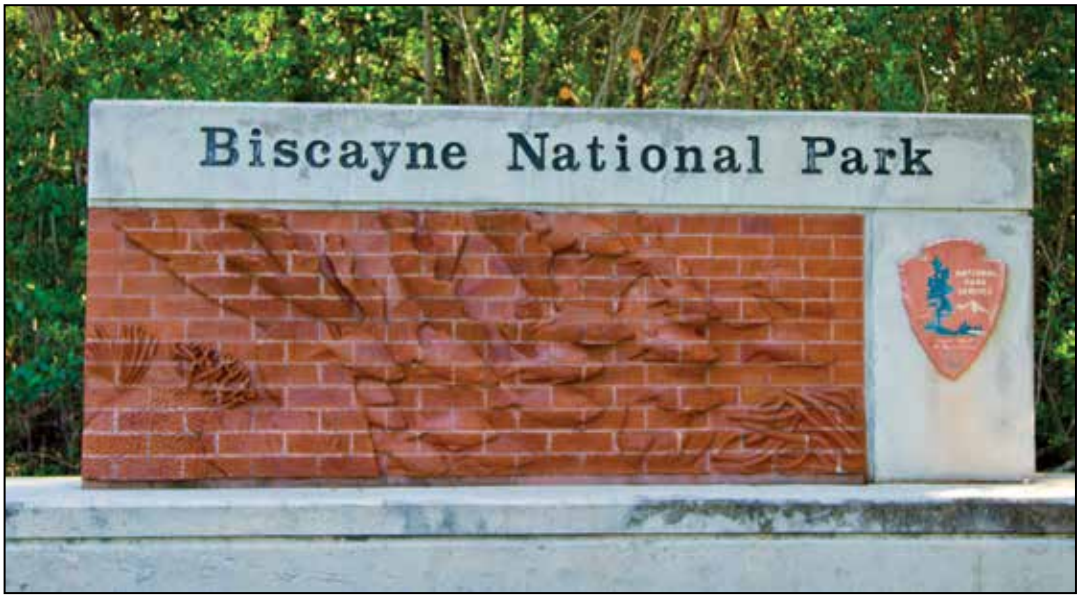

Figure 4.6. The creation of Biscayne National Park in 1980 brought expanded boundaries and a new name. Photo by Kim den Beste.

Changing the signs was a momentous occasion that also indicated the increased need for permanent and expanded park facilities and headquarters, which had been operating from a cramped trailer just north of Homestead Bayfront Park. In 1987, the park made an improvement of sorts for its headquarters by pouring a concrete slab at Convoy Point to support modular buildings that had once been used at Canaveral National Seashore. The doublewide resource management trailer was placed behind the modular buildings, and the old NPS trailer that had been the headquarters and a county bathhouse and restroom were demolished. BNP then had a small headquarters complex and a small visitor center with restrooms and a concessionaire's trailer.[207]

With removal of the previous facility, visitors enjoyed an expansive view of the aquamarine bay and the beauty that had inspired the park's founding. Other work included removing a wood-frame park residence at Adams Key, developing and installing exhibits about shipwrecks and casinos on Adams Key, completing a new sanitation system and restrooms at Boca Chita Key, replacing public restrooms on Elliott Key, and demolishing two old trailers at Elliott Key before constructing two stilt houses in their place for law enforcement rangers. The new park was gradually undergoing a facelift as it prepared to handle an already-increasing stream of visitors.[208]

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[206] Miller, *BNP: It Almost Wasn't*, 116.

[207] Ibid., 126

[208] Ibid., 123-26.

With Fascell's help, BNP was allotted funds to begin designing the spacious visitor center proposed in the GMP. Park managers envisioned a visitor center, a concession store (by the park to offer snorkeling trips and glass-bottom boat tours), new headquarters, a laboratory for testing water quality, a dive locker, a maintenance shop, a duplex for housing, additional parking, underground fuel storage, and a harbor that could handle the demands of park, concessionaire, and public boats. Sanders wrote that, mindful of the subtropical climate, all "structures were to be built to withstand hurricane force winds and tidal surge."[209]

In 1990, the BNP completed the first phase of the Convoy Point project. The new complex was oriented toward the public and included a north shore boardwalk, access to a small beach, a bay overlook area with seating, and a grassy picnic area; Sanders remembered it as "a beautiful kind of opening under the palm trees." That same year, Black Point Park and Marina (located several miles north of the headquarters) opened, offering the public additional access to the bay along with vessel storage facilities. A year later, final design plans for the Convoy Point project were approved, contracts were signed, and construction was underway by the year's end. BNP then assigned a project coordinator from the Denver Service Center to begin planning and design for Phase IV of the development, which included construction of the visitor center, housing, communication system, jetty trail extension, and other amenities. Sanders recalled the construction in an interview: "So, we were following the development concept plan in the General Management Plan," he said. "And that was to build the headquarters site, dive locker, maintenance building, storage facility, and so forth. And we were moving ahead. In 1991, we had the maintenance building and the headquarters under construction."[210]

All the time and talent that had gone into creating modern, permanent facilities for the park was about to be realized. And then, in August 1992, Hurricane Andrew struck.

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[209] Ibid., 120, 126.

[210] Ibid., 129, 131; Sanders, interview.

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Chapter Five

Natural And Human Threats

Hurricane Andrew

With a force rarely felt in Florida's recorded history, Hurricane Andrew barreled through Biscayne National Park (BNP) around five o'clock in the morning on August 24, 1992, leaving an almost unimaginable trail of damage in its wake. BNP was in the bull's eye of the storm's path, and the park and its employees were left reeling from the resulting physical and emotional toll.

Andrew, rated a Category 5 storm (the highest category of wind speed), crossed the northern tip of Elliott Key with winds estimated at 145 miles per hour—the same wind speed it brought to the mainland area of Homestead. Gusts as high as 175 mph were recorded, and the storm surge in the bay ranged from four to six feet—with nineteen feet reported in one area—since the storm arrived at high tide. Andrew churned through the city, dumping up to seven inches of rain, before its eye passed over Everglades National Park (ENP) and Big Cypress National Preserve. It then moved across the Gulf of Mexico to the Louisiana coast. Although it was not the deadliest US storm in terms of human lives—15 people died in Dade County, and officials estimated that 25 to 68 lives were lost indirectly—Andrew was the third-most intense hurricane to hit the United States in the twentieth century. The most intense recorded was a Category 5 Labor Day storm that hit the Keys in 1935, claiming 408 lives.[211]

Hurricane Andrew wreaked havoc on Florida, with damages estimated at $25 billion, making it the costliest storm recorded in the twentieth century. As a result of the storm's damaging winds, some 250,000 people were left temporarily homeless. Damage reports from Kendall to Key Largo counted 25,524 homes destroyed and more than 101,000 damaged. More than 99 percent of Homestead's mobile homes were ruined, and some $500 million in boat losses were reported. According to Ed Rappaport in his report, had the storm crossed land to the north in the populous urban core of Miami, the losses would have been "catastrophic."[212]

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[211] Paul J. Hebert, Jerry D. Jerrell, and Max Mayfield. *The Deadliest, Costliest, and Most Intense United States Hurricanes of This Century (And Other Frequently Requested Hurricane Facts)*, NOAA Technical Memorandum NWS NHC-31 (Coral Gables, FL: National Hurricane Center, 1993), 8-9, 12; G. E. Davis, L. L. Loope, C. T. Roman, G. Smith, J. T. Tilmant, and M. Soukup, *Effects of Hurricane Andrew on Natural and Archeological Resources: Big Cypress Preserve, Biscayne National Park, Everglades National Park* (Denver: DOI, 1996), xiv; Ed Rappaport, "Addendum Hurricane Andrew 16-28 August 1992," National Hurricane Center (NHC), http://www.nhc.noaa.gov/1992andrew_add.html; Ed Rappaport, "Preliminary Report Hurricane Andrew 16-28 August 1992," NHC, http://www.nhc.noaa.gov/1992andrew.html#FOOT2.

[212] Rappaport, "Preliminary Report."

Figure 5.1. The new administration building was one month away from being completed when Hurricane Andrew hit the park in 1992, damaging buildings and displacing boats. NPS photo, BNP archives.

Figure 5.2. The old headquarters were damaged greatly by the storm, and the park closed for two years until needed repairs were completed. NPS photo, BNP archives.

The greatest damage was to manmade structures, which caused park closure for two years, and greatly disrupted the lives of BNP staff. The park was left "in tatters," recalled Richard "Dick" Frost, BNP Superintendent who began his tenure (1993-2000) the year after Andrew hit. The storm surge "inundated every square foot of land in the park," with more than half of the park's "two dozen or so buildings destroyed." Frost added that "those that remained were severely damaged." He goes on to describe the devastation: "Mangrove forests

were shredded as if harvested by a giant, very dull scythe. Equally devastated were the lives of the park's employees living in and around Homestead, many of whom endured the terrifying storm huddled in hallways and bathrooms, in the pitch dark of the power-less night, as their homes blew to pieces around them."[213]

Natural Systems

As might be expected in an ecosystem adapted to such storms, the park's natural systems, while taking a beating, revived quickly after Andrew's departure. According to a post-storm analysis, mangroves and tropical hardwood trees were severely damaged, but many trees "resprouted leaves within weeks of the storm" and rare plants were mostly unaffected. The hurricane had destroyed eagle nests and damaged wading-bird rookeries—the worst loss was two hundred birds, mostly ibis and egrets on Chicken Key in Biscayne Bay outside of the park. While there was no "mass die-off" of wildlife, some non-native species of plants and animals were either dispersed or escaped into the wider area along with the storm.[214]

The marine life in BNP paid a price, too. Andrew's winds scoured the bay's bottom and natural communities while also causing water turbidity that lasted for a month in the western part of the bay. Sponges, octocorals, and corals were hurt, but sea grasses remained relatively intact. One offshore artificial reef that had rested at an ocean depth of seventy-five feet broke up and caused damage to a park reef, and other debris, such as lobster traps, also damaged reefs. Being located on the edge of an urban area, BNP was alerted to the threat of pollution from nearby dumpsites, which contained some twenty million yards of debris (some of it hazardous materials) that had accumulated from the storm's damage on land. Officials worried that BNP and other parks might be affected by pollution from the burning or storage of this debris. Assessing the initial pollution was impossible, since Andrew had also destroyed the park's monitoring equipment.[215]

After the storm, archeologists checked on fourteen of forty known shipwrecks in National Park Service (NPS) sites in south Florida while also looking for new sites. Andrew's wind and water movement exposed artifacts in at least two shipwrecks, including the HMS *Fowey*, where the storm had scoured and exposed the site and two cannons. According to Charles Lawson, former BNP cultural resource manager, these storm impacts "eventually led to extensive discussion about site stabilization, ecological studies associated with site stabilization, and an extensive and controversial archeological project carried out" in the park in following years. Other shipwreck sites in the area were either heavily impacted after being moved hundreds of yards or were obliterated or never relocated, Lawson added. [216]

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[213] Sanders, interview; Miller, *BNP: It Almost Wasn't*, 135.

[214] Davis, et al., *Effects of Hurricane Andrew*, xiv, xviii.

[215] Ibid., xiv, xix-xxi.

[216] Ibid., xxi; Lawson, "Biscayne Consolidated Remarks," 23.

Structural Damage

The new BNP administration building at Convoy Point was one month away from completion when Hurricane Andrew took its toll. The quadruple-wide trailer that had served as temporary headquarters was "totally destroyed," recalled Richard Curry in an interview. Curry worked in various resource management positions at BNP from 1976 to 2010. All buildings on Adams Key were destroyed, including the last of the historic structures from the Cocolobo Cay Club. On Elliott Key, where the storm surge hit 19 feet, only one struc-ture survived intact, Curry said, adding that the mainland had a 16 foot high surge. In the Stiltsville area, only seven structures remained. "Andrew was the first major, major storm to come through and really whack the park," Curry reflected.[217]

Before the storm hit, staff hurried to remove boats and vehicles, taking them to a shelter in the Hole-in-the-Donut, an inland section of Everglades National Park (ENP). Curry had thirty minutes to comb through the park's library and try to save important docu-ments and books. He stuffed vehicles with documents and laboratory gear and took them to Everglades for safekeeping, hoping that papers left behind would survive. "We didn't realize the impact and strength of the storm. That's why we lost as much as we did," he recalled.[218]

The administration building's walls were blown out, leaving just a concrete frame-work, said Mark Lewis in an interview. (A former ENP law enforcement ranger who worked with a NPS detail immediately after the storm, Lewis would later serve as BNP Superintendent from 2005 to 2013.) Water had inundated every building and trailer. Lewis recalled how a large tour boat that had once carried 60-80 park visitors had been lifted from the canal and dumped upside down on the opposite side of the jetty. A thirty-five foot sailboat had also been thrown and was now parked, mast in the air, in the mangroves along the park's entrance road. "Everything was pretty much destroyed. There wasn't any infrastructure left."[219]

The park's long-awaited and almost-finished new administration headquarters survived in "useable condition (the only buildings that remained usable)," remarked Frost. But progress on an adjacent new visitor center that "had been languishing amid difficult design decisions" was further delayed by the storm's "distractions." When some Washington officials "began to take an interest in diverting the unused funds that had been appropriated for the visitor center's construction," Frost, "in the midst of hurricane recovery" had to move ahead with design and construction decisions to keep the project on track. Different "construction difficulties and delays" jeopardized the project several times, Frost recalls, but the "Dante Fascell Visitor Center now stands"—a result of its namesake's support as well as sheer park service tenacity.[220]

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[217] Richard Curry, telephone interview with author, February 5, 2015.

[218] Ibid. NOTE: Many BNP documents were lost when the storm destroyed the headquarters.

[219] Mark Lewis, interview, Homestead, FL, June 4, 2014.

[220] Miller, *BNP: It Almost Wasn't*, 136.

Figure 5.3. In 1998 the Dante Fascell Visitor Center at BNP was named to honor the area congressional representative who championed the park. Photo by author.

The park remained closed until December 26, 1992, when a temporary visitor center was set up to accommodate glass-bottom boat tours. Many BNP volunteers and staff helped with the cleanup, but the park couldn't handle any new volunteers that needed training. Within thirty days of the storm, congressional appropriations of $12.29 million were designated for the park, a NPS Type I Incident Team appeared onsite to help, and on October 25, 1992, the team demobilized and returned command of the park to BNP employees. Staff gradually restored use of park facilities—the Elliott Key marina and campground opened in February 1993—but the park was not back in full service until the following year.[221]

Hurricane Andrew's devastation left a heavy toll that required federal financing, major construction work to repair the damage, as well as constant attention from BNP staff. Cleanup required debris removal; building repairs; replacement of landscaping, equipment, utilities, generators, restrooms, shade structures, and navigational aids; and reconstruction of the park's boardwalks, docks, and jetty. Adams Key and Boca Chita Key were not expected to reopen until 1996. The damage ultimately led to a 46-percent drop in visits to the Convoy Point visitor center, likely because area parks were closed or under repair and few hotel facilities were open. Damage to the BNP environmental education center led to cancelled programs in winter 1993.[222]

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[221] James A. Sanders, *Superintendent's Annual Report Calendar Year 1992*, NPS, 1-4 (some pages not numbered); Miller, *BNP: It Almost Wasn't*, 135-36; Richard Frost, "Memorandum," July 9, 1993, BISC archives.

[222] NPS, *Superintendent's Annual Narrative Report Calendar Year 1993*, NPS, no page numbers.

Biscayne National Park Employees

Curry, like most BNP employees, rode out Andrew at his nearby home. Curry considered himself one of the lucky ones; his home survived with minor damage, and the NPS Incident Team arrived immediately after the storm and relocated him to temporary housing in the nearby Florida Keys for a year. The Incident Team's job was to run the park and assist park staff as they tried to get their lives in order, Curry explained.[223]

Five days before Andrew hit, Mark Lewis had left his ENP ranger job. He had packed up his belongings from his Homestead house, put the house on the market, and moved to a new job as district ranger at Gulf Islands National Seashore, Mississippi. After the storm, Lewis was called backed to the area to help with the recovery. He recalled that the landscape on the drive south from Miami unexpectedly looked normal, but by the time he reached the Pinecrest area north of Homestead, "you saw something you never saw before." The scene from the turnpike was vast—no leaves were left on any trees to block the view. "That was my first 'Oh Wow' indicator," Lewis said, likening the Homestead devastation to a war zone. "It had been trashed. There weren't any street signs left and everything looked so different."

By day, Lewis, whose home was left uninhabitable, worked with the NPS emergency incident detail in Homestead supervising rescue and rehabilitation operations at BNP. The detail commandeered an empty park service house at Pine Island in ENP, with members gathering daily for briefings and camping there in sleeping bags. They also set up an incident camp to support the hundreds of people who came to help the NPS with the storm's aftermath. Lewis's main focus was to go out and find BNP employees, many of whom had lost houses and cars in the storm. "At the time, most areas had not thought if there's a really big incident like this how do we get in touch with our employees?" Lewis said. "Hurricane Andrew really changed the way the federal government, particularly the National Park Service, looked at preparing for hurricanes."[224]

With the paper files containing employee location information destroyed by the storm, the team drove around in pickup trucks looking for employees and asking those they found about others' locations. (Eventually the NPS hired a firm to try to piece together all the damaged paperwork.) "We didn't even know where people lived. We went on memory of who the employees were," Lewis said. As they found employees, team members helped locate and deliver any needed medicine and prescriptions, placed protective tarps on roofs, and doled out cash—Lewis even carried a briefcase with $600 to distribute. He served with the detail for three weeks before returning to Gulf Islands.[225]

Like other BNP employees, Superintendent James A. Sanders huddled with his wife and dog underneath a mattress in a bathroom as Andrew thundered into his neighborhood, ripping away most of his roof and damaging power, telephone, and water lines. Sanders's

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[223] Curry, interview.

[224] Ibid.

[225] Ibid.

cars were damaged, trees were missing their limbs, and streets were blocked with debris and dangerous roofing nails. In the following days, the Sanders family slept in a neighbor's garage, with the door cracked to keep an eye out for looters at the damaged home until a family member delivered a trailer. Two days passed before Sanders could communicate with NPS staff via radio; he then joined a meeting with Superintendents of ENP and Big Cypress National Preserve, as well as NPS emergency teams, to assess the situation. The three superintendents signed over their authority to the Incident Command Team, which was better prepared to make objective decisions about post-storm operations while park employees attended to their personal lives. After all, as Sanders explained, after that experience, "You are just blown away."[226]

The NPS teams helped BNP staff find housing, obtain generators, and bring bottled water to the beleaguered employees. "There were people from all over the country and it was just marvelous. They did some pretty lousy, dirty work that had to be done," Sanders said, adding that everyone got tetanus shots as a preventative measure. BNP employees faced many difficulties. Some had no insurance, and others had to leave the state to stay with families, Sanders recalled, adding, "We cried together. It was very emotional." He was also drained by the realization that everything he had worked to accomplish for the last thirteen years was "gone." He stayed at the park until May 1993, helping to put together damage assessments, priorities, and appeals to Congress for needed funding. Then Sanders accepted a NPS offer for a lateral employment move to Voyageurs National Park in Minnesota, where it took almost two years for him to feel fully reenergized after Andrew. "I went as far away as I could get," he said, adding that he and his wife had vacationed in the area and knew it would be a beautiful place where they could recover from the psychological aftermath of the storm.[227]

Frost, who came from Voyageurs with the task of helping BNP recover, succeeded Sanders as superintendent. "It was not until 1994 that all the park's facilities were once again open and operating and it took equally long for many employees to restore their private lives," he recalled.[228]

Other Hurricanes

In the wake of Hurricane Andrew, BNP created and implemented a detailed plan that incorporated lessons learned from the storm. The plan, which gets "fine-tuned" with each approaching storm, calls for "preparations to begin at 72 hours before potential landfall." These include securing and shuttering buildings as well as removing park boats to safety at an inland location. The plan was developed to protect life and property "while at the same time taking into account employees' needs to prepare their own homes and families." Employees were to be released a minimum of twenty-four hours prior to landfall to prepare their homes

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[226] James A. Sanders, telephone interview with author, July 22, 2014.

[227] Ibid.

[228] Miller, *BNP: It Almost Wasn't*, 135-36.

and personal lives for the storm. BNP now keeps the GPS coordinates of employee residences on file so they can be located in the wake of another disaster.[229]

Hurricane Andrew also offered lessons for national emergency responders. A 1993 report compiled by the federal General Accounting Office (GAO) concluded, "As devastating as this disaster was to South Florida, experts agree that we were fortunate it was not far worse both in terms of the loss of life and monetary damage." After a series of hearings, the agency determined that there were "inadequate damage and needs assessments, miscommunication, unclear legislative authority, and unprepared, untrained state and local responders" in the wake of the storm. The report continued, "We have concluded that the nation's disaster response strategy—particularly for devastating, catastrophic disasters—needs substantial, across-the-board improvement." In other words, the federal response and its collaborative response with state and local governments needed to be enhanced before any more disasters took place.[230]

Being located in a hurricane zone, BNP continued to sustain damage from subsequent storms, although to date nothing with Andrew's ferocity has followed. 2005 was a particularly active hurricane year, with four storms impacting the park and its facilities. The storms developed rapidly, leaving little preparation time, and the park sat squarely in each storm's danger zone. As a result, BNP was closed twenty-one days that year, with expenses totaling $1.2 million. The storms listed below offer some insight into different issues that staff faced:

- **Dennis** passed to the west of BNP on July 9. Its wind gusts of 73 knots and sustained winds of 52 knots left the park with no power. No damage to facilities, but the park was closed one and a half days until portable toilets could be installed and the power restored.
- **Katrina** led employees to shut down the park by eleven o'clock in the morning on August 25 so they could be released. The hurricane made landfall at the northern end of Miami-Dade County and moved across the peninsula before crossing the Gulf of Mexico and causing major damage and loss of life on the Louisiana and Mississippi coasts. The storm surge at BNP was more than two feet, and Homestead had more than fourteen inches of rain, causing severe flooding on some BNP entry roads. There was dock and tree damage; the park closed for two and a half days.
- **Rita** passed south of Key West as a Category 2 storm on September 20. Its winds and rain passed over BNP with a storm tide of three to four feet. Anticipating a

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[229] Gary Bremen, "Biscayne National Park Closes In Preparation for Hurricane," NPS website, September 23, 2014, http://home.nps.gov/news/release.htm?id=536 (no longer available); NPS, "Biscayne National Park Hurricane Plan 1995," NPS, BISC archives; Lawson, "Biscayne Consolidated Comments," 24-25.

[230] US General Accounting Office, "Disaster Management: Improving the Nation's Response to Catastrophic Disasters," General Accounting Office Response to Congressional Requesters, July 1993, 11, http://www.gao.gov/assets/220/218231.pdf.

tidal surge, staff moved all electrical equipment to the second floor of park headquarters. Staff only had time to move seven boats to Everglades National Park; the rest were dry-docked at Convoy Point. Since the Florida Keys were evacuated, all island residents were moved to the mainland. The park was closed for two days.

- **Wilma** aimed for Florida just a few weeks after Rita. The park closed on October 20, and staff continued to patrol BNP waters even after the storm stalled over Mexico. Four days later, the storm hit southwest Florida, sending sustained winds of 88 knots to BNP. Amazingly, the strong westerly winds pushed all water out of the bay for several hours and left downed trees, damaged utility poles, solar panels, roofs, screen porches, and docks. In all, the park was closed to the public for fifteen days.[231]

Although Hurricane Sandy didn't make landfall in south Florida, winds and high tides caused damage to BNP in October 2012 before the storm continued north along the Atlantic coast. Tides and waves from the storm damaged the boardwalk at Convoy Point, a prehistoric site on Totten Key, the HMS *Fowey* shipwreck, and other park resources. Elliott Key's harbor and boardwalk were hit particularly hard: the docks separated from the seawall, leading to a redesign of finger piers there. Elliott Key reopened eighteen months later with newly built docks (including a dinghy dock to serve small vessels and kayaks) and improved restrooms and shower facilities—all designed to better withstand future storms. In 2013, Congress appropriated $1.1 million to BNP for Hurricane Sandy damage.[232]

Human Threats

As damaging as weather systems could be to the park, BNP also faced many human threats that infiltrated its borders. These came in many shapes and sizes—from development proposals to pollution from nearby utilities and municipalities to the sheer population growth of the Miami metropolitan area. Even the visitors who regularly used the park—often unaware of its biological riches and delicate natural systems—could be a threat.

Frost called BNP a "national park on the edge," a name describing BNP's proximity to marvelous marine and terrestrial systems, but also the park's urban border. Frost noted that BNP, located just ten miles from downtown Miami, was "closer to a major city than any other national park. This particular edge environment exposes both the park's natural features and

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[231] NPS, *BNP Superintendent's Annual Narrative Report 2005*, NPS, 5-9.

[232] NPS, *Superintendent's Annual Narrative Biscayne National Park CY2012*, NPS, 2; Matt Johnson, "Biscayne National Park's Elliott Key Reopens after 18-month Closure Resulting From Hurricane Sandy," BNP website, NPS, April 15, 2014, http://www.nps.gov/bisc/parknews/biscayne-national-park-elliott-key-reopens-after-18-month-closure-resulting-from-hurricane-sandy.htm; DOI, "Hurricane Sandy Disaster Relief Supplemental Appropriations Spending Plan," DOI website, accessed September 30, 2016, https://www.doi.gov/sites/doi.gov/files/migrated/news/pressreleases/upload/2013_05_06-Hurricane-Sandy-Plan-Sm.pdf.

its visitors to a wide range of problems." These included human effects on water quality and quantity, recreational boating that could lead to grounding and damage to coral reefs and seagrass beds, and boating safety issues.[233] The park also abutted a major nuclear power plant and the nearby South Dade Solid Waste Disposal Facility, issues that few if any other national parks had to address. The remainder of this chapter will highlight some ofthe threats BNP faces—past, present, and future.

Water Quality and Pollution

A century ago, Miami was a subtropical outpost in a state that in many ways was an American frontier. In 1896, the community had just 344 registered voters. But with the arrival of railroads and promotions that touted the area as warm, sunny, and healthy, the city population exploded to 5,500 occupants in 1910—a number that rose to 172,000 by 1950 with the post-war development boom in Florida. The city and county merged governments, and as of 2015 the Miami-Dade County population was estimated at 2.6 million people—a number that was expected to reach three million by 2020 and didn't include tourists and residents of the Keys.[234]

This continuing growth held many ramifications for BNP. In 2006, the National Parks Conservation Association (NPCA) produced a lengthy resource assessment report on BNP entitled *State of the Parks: Biscayne National Park*. This forty-page report described BNP resources and provided data on various issues. The list of issues from 2006 included strains on freshwater supplies, "more water and air pollution," and decreased "groundwater recharge because of impenetrable surfaces such as building, roads, and parking lots." The NPCA report also noted that a "complex matrix of urban, agricultural, and natural areas" surrounded Biscayne and that land use adjacent to the park was an important factor in the "quan-tity and quality of waters" entering BNP.[235]

Starting with the settlement of Miami and into the twenty-first century, BNP's water quality was directly related to humans, whose activities and needs had an enormous impact on Biscayne Bay and its watershed. According to the park's 2015 General Management Plan (GMP), the primary water issues in BNP were "water clarity, nutrient loading and enrichment, bacterial enrichment due to sewage input, unregulated classes of chemical compounds derived from both sewage and industrial uses," and pesticides, as well as "more traditional industrial and stormwater pollutants." These entered BNP through "groundwater seepage, canal inflow, surface runoff, or direct release by boats."[236]

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[233] Frost, "Biscayne: A Park at the Edge."

[234] George, "Miami: One Hundred Years of History"; Census Bureau, "Miami-Dade County Florida," Census Bureau website, accessed February 21, 2015, http://quickfacts.census.gov/qfd/states/12/12086.html (page unavailable); NPCA, *State of the Parks: Biscayne*.

[235] Ibid., 3, 12-13.

[236] NPS, *Biscayne National Park Final General Management Plan/Environmental Impact Statement*, vol. 1, NPS, April 2015, 33.

BNP's freshwater supply once came through the large surface-water sheet flow of the Everglades system that covered the southern part of Florida's peninsula. Biscayne Bay was connected hydrologically to the Everglades through "tributaries, sloughs, and ground-water flow" that created a clear-water estuary of enormous value to marine life. However, human intervention in the Everglades system through a drainage system engineered in the mid-twentieth century greatly altered this water flow and remained a substantial problem in the early twenty-first century. At that point, nineteen canals controlled flow into the western part of the bay, releasing water only to aid drainage and prevent flooding. This drainage regiment lowered water tables, reduced watershed storage, decreased groundwater flow, and altered tributaries into the bay. Reduced freshwater flow affected salinity levels, which in turn impacted the entire estuarine and upland flora and fauna.[237] And the impact could be great.

After major storms, the nineteen canals discharged large amounts of freshwater into the western bay, often resulting in fish kills, turbidity, benthic community die-offs, and a drop in some mollusk species. BNP did not control this surface water flow; it was regulated by agencies outside park boundaries with whom park staff must collaborate.[238] BNP "cannot regulate the water quality. We also cannot regulate the quantity of freshwater impact coming into the park," said Elsa Alvear, BNP chief of resource management, in a 2015 interview. "So freshwater coming into the park is a priority. It's something that our superintendent actually spends a lot of time going to the regulatory agencies, such as the Army Corps of Engineers and the South Florida Water Management District, and trying to reserve freshwater for the park to get more freshwater to the park and reduce the amount of water that is diverted away from the park. . . ."[239]

Groundwater flow into the bay came from the Biscayne Aquifer, a freshwater supply that lay under the bay and lower southeastern Florida and provided drinking water for an area stretching from Boca Raton to the Keys. According to the 2015 GMP, the aquifer's water quality was vulnerable to runoff and saltwater intrusion caused by "changes in water flow characteristics." The BNP Long-Term Hydrographic Project showed that groundwater was "seeping into offshore coral reefs on a tidal cycle"—if that supply got polluted, the reefs could be damaged.[240]

For many decades and into the 2010s, researchers studied the bay's water quality using a "network of surface water monitoring stations in the bay." Agencies engaging in bay water studies included the Miami-Dade County Environmental Resources Management Department, the State of Florida, Florida International University, the US Geological Survey (USGS), the National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the NPS. According to the 2015 GMP, various groups had also tested bay sediments for the past

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[237] Joan A. Browder, Richard Alleman, Susan Markley, Peter Ortner, and Patrick Pitts, "Biscayne Bay Conceptual Ecological Model," *WETLANDS* 24, no. 4 (December 2005): 856-57; NPS, *BNP Final General Management Plan*, 2015, 34.

[238] Ibid., 34.

[239] Elsa Alvear, interview, Homestead, FL, March 5, 2015.

[240] NPS, *BNP Final General Management Plan*, 2015, 34.

twenty years. The state had designated the bay as an "Outstanding Florida Water" and determined that its water quality "generally [met] federal, state, and local standards for recreational uses and propagation of fish and wildlife." However, some parts of the bay had lost wetlands and seagrass communities, and pollution from sewage, chemicals, and nutrients from urban and agricultural areas continued to threaten its freshwater resources. Furthermore, water from developed urban areas generally flowed "more rapidly and over a shorter period of time" than from natural areas, leading to faster runoff and less groundwater recharge. As a result, little overland fresh water reached the northern bay, though it did replenish the southern bay because of the area's coastal wetlands.[241]

The NPCA reported in its 2006 *State of the Parks* report, "Increased adjacent development has long been identified as a threat to Biscayne National Park." It continued, "Establishing a buffer between the park and adjacent development would help mitigate these threats, but funds to support land acquisition have never been allocated." Among the study's biggest concerns for BNP was "poor water quality entering the park along with residential and agricultural development."[242]

Considering the damage such pollution could cause in a delicate estuarine environment, park officials had to be vigilant about different projects that were periodically proposed on or near its boundaries. During Sanders's tenure (1980-93), for example, three proposed development projects required staff attention, opposition, negotiation, and cooperation with local government agencies:

- commercial development of Soldier Key prior to its acquisition into BNP (stopped),
- a proposed Jack Nicklaus eighteen-hole golf course with adjacent housing along BNP mainland mangroves (stopped), and
- construction of the Burger King Corporation world headquarters at the northwest corner of BNP, which included red mangroves that the company wanted removed. Sanders worked with two county departments and the corporation; Burger King didn't damage the mangroves and changed its building design to lessen its impact and make it blend with the environment, lessening its "visual impact to park visitors from within the park."[243]

Sanders and staff also worked with local agencies to establish coastal setbacks and buffers for development, which tightened restrictions on development density and height. BNP also supported "acquisition of environmentally sensitive land to prevent adverse uses," as well as mitigation projects in the park.[244]

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[241] Browder et al., "Biscayne Bay Conceptual Ecological Model," 857; NPS, *BNP Final General Management Plan*, 2015, 33; NPCA, *State of the Parks: Biscayne*, 12-13.

[242] Ibid., 10, 13.

[243] Sanders, interview; Miller, *BNP: It Almost Wasn't*, 86, 131-34.

[244] Ibid.

South Dade Solid Waste Disposal Facility

As of 2019, two of BNP's challenges were easily visible from the Convoy Point headquarters: the adjacent Turkey Point nuclear plant, located to the south (described in Chapter 4), and the two hundred acre South Dade Solid Waste Disposal Facility, north of BNP at Black Point and known locally as "Mount Trashmore." Miami journalist Sean Rowe described the waste disposal facility in 1996 as "a putrid Parnassus" that "looms fifteen stories over a mangrove marsh to form the highest point of land in the flattest place on Earth. The alpinist returning from this verticality will say that from its summit you can see the Everglades, the Keys curving over the horizon, the faraway twinklings of Miami Beach."[245]

Figure 5.4. The two-hundred-acre South Dade Solid Waste Disposal Facility, north of BNP at Black Point. Photo by Kim den Beste.

The landfill opened in 1980 and was composed of five "cells" where the area's garbage was deposited. The two oldest cells, located nearest the bay, were filled and capped; the others, to the west, were used to cope with the demands of the growing population. It was estimated in 1996 that the newer cells might rise to 260 feet—"the highest geological feature along a 1500-mile strip of Atlantic seaboard from Maine to Florida," Rowe wrote.[246]

This site had long concerned park managers, particularly in the early 1990s when it was proposed that the original two-cell landfill be closed and new cells expanded into ninety-two acres of wetlands. At a February 1991 hearing held by the Army Corps of Engineers (Corps), several groups rose in opposition: local homeowners, pollution-control agencies, environmental groups, and BNP officials. Rowe reported on the hearing, noting that among

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[245] Sean Rowe, "Our Garbage, Ourselves," *Miami New Times*, January 25, 1996, http://www.miaminewtimes.com/news/our-garbage-ourselves-6361718.

[246] Ibid.

these groups' concerns was the alarming fact that ammonia levels in canals next to the landfill were "twelve times the legal limit."[247]

According to Sanders, BNP staff—including Richard Curry—and other agencies had already discovered that "significant, and often lethal, levels of unionized ammonia were being carried into the park" from the landfill prior to the expansion proposal. To aid BNP, the NPS Water Resources Division in Fort Collins, Colorado, sent a toxicologist to confirm the pollution; the evidence gave BNP a "very firm case," so they "stuck to [their] guns" and negotiated with the county.[248]

An analysis for Miami-Dade's Department of Solid Waste Management reported that the original facility, open from 1952 to 1979, had disposed of nine hundred thousand tons of solid waste in open trenches below the water table or above the land surface. Meanwhile, a 1991 water quality inspection for the Environmental Protection Agency (EPA) had determined that "lead and ammonia nitrogen concentrations" exceeded county standards. In response, the county developed a closure enhancement project to reduce groundwater impacts. Project recommendations included improving storm-water and groundwater management and wetland mitigation, with an estimated cost of $48 million.[249]

Sanders recalled that BNP worked with other groups, including concerned homeowners from a nearby subdivision, "to effectively stop the expansion of the landfill" until the "county committed to a cleanup, restoration, and monitoring plan acceptable to NPS" for the existing landfill. Sanders spoke at Corps public hearings, solicited support from environmental groups, and negotiated with Miami-Dade County. His efforts paid off: "The County eventually agreed to the park's requirements, the Corps of Engineers agreed with the stipulations," and the landfill expansion was approved. In 1991, acting on behalf of BNP out of concern about "toxic levels of leachate entering the park" from the landfills, the Department of the Interior (DOI) signed an agreement with Miami-Dade County with seven provisions that included the development of a comprehensive management plan for any future landfill expansions, remediation plans for landfill areas, pollution containment engineering to stop ammonia leachate, and continued water quality monitoring, with DOI approval of the monitoring plan.[250]

However, this agreement did not resolve all the challenges resulting from water contamination from the landfill. Four years later, in 1995, BNP staff reported that, although an interceptor trench and groundwater pumping system had been built between the park and the landfill to prevent leachate, it was not operating because the county had not obtained the necessary permits. More than a decade later, the landfill's pollution of BNP waters remained

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[247] Ibid.

[248] Sanders, interview; Miller, *BNP: It Almost Wasn't*, 130.

[249] Brown and Caldwell, "Old South Dade Landfill Closure Enhancement Project Summary," July 1998, prepared for the Miami Dade County Department of Solid Waste Management, BISC archives, 1-3.

[250] Ibid.; Miller, *BNP: It Almost Wasn't*, 130.

a pressing concern. With landfill space expected to run out by 2032, there could be impetus to expand the site, which may have impacts to the park. Waste Management Inc. already made a 2015 push to expand its nearby landfill—a proposal that would put debris and yard waste into an additional 110 acres slated to become part of Everglades restoration efforts.[251]

Sewage Pollution

Concerns about water quality in Biscayne Bay were raised in the mid-twentieth century as Miami's growth boom led to the dumping of untreated sewage into nearby waters. As mentioned in Chapter 3, when in 1949 author Philip Wylie lamented the loss of the bay's former beauty and clarity—which he described as "clean and clear as gin"—and called the current scene a "dirty marinescape" the color of "mildew" with visibility only inches deep and "shoals of sludge or sewage," the message was hard for tourist-centric Miami to ignore.[252] The city removed direct sewage dumping and took other pollution control measures, improving the bay's water quality substantially by the 1970s. But despite these measures, Biscayne Bay's waters remained threatened by pollution from drainage, industry, boats and shipping, canal discharges, and sewage.[253]

During much of its existence, BNP monitored pollution and threatened litigation because of contamination from the South Miami-Dade sewage treatment plant, located next to the large South Dade landfill. Scientific data indicated that injection of treated sewage at the site was leaking into the underground Biscayne Aquifer as of 2003.[254]

In 2012, the EPA filed a lawsuit against Miami-Dade County for a series of sewage violations of the federal Clean Water Act. These included sewage maintenance and operation violations and more than fifty million gallons of "sanitary sewer overflows" from 2007 to 2012. The EPA argued that such actions created "imminent and substantial endangerment claims…to health and welfare of persons, as well as irreparable injury to human health, waters, and property, including animal, plant and aquatic life of the state." In 2013, the county agreed to a settlement with the EPA and the State of Florida that included a civil penalty of $978,000 and the promise of $1.6 billion in repairs to three sewage plants and the county sewage system. The county also agreed to spend $2 million to eliminate septic tanks that might have been contaminating the area's waters.[255]

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[251] Dan B. Kimball, "Memorandum 3/23/95 L54 (479)," BISC archives; Jenny Staletovich, "South Dade landfill wants to expand on wetlands slated for Everglades restoration," *Miami Herald,* November 11, 2015, http://www.miamiherald.com/news/local/article44301993.html.

[252] Wylie, "Florida: Polluted Paradise," A-1, A-4.

[253] Browder et al., "Biscayne Bay Conceptual Ecological Model," 857.

[254] NPCA, *State of the Parks: Biscayne*, 13; EDAW, *Biscayne National Park Ethnographic Overview and Assessment Final Report*, May 2003, 5-29.

[255] Environmental Protection Agency, "Miami-Dade County Clean Water Act Settlement," EPA website, June 6, 2013, https://www.epa.gov/enforcement/miami-dade-county-clean-water-act-settlement.

Homestead Air Force Base—Pollution and Redevelopment

Another long-term concern for BNP was the Homestead Air Force Base—later known as the Homestead Air Reserve Base (HARB). Located two miles west of the park, the HARB had been used for military training and tactical forces since World War II. In the early 1990s, pollution from the site became a concern, and by the end of the decade, plans to redevelop it into an international airport loomed large before they were defeated.

Almost three thousand acres large, the air base was designed to support military, aviation, industrial, commercial, and residential uses. The EPA identified it as a Superfund Cleanup Site, an indicator of serious hazardous waste pollution. Sanders recalled that the site had "an accumulation of uncontrolled disposal of burned jet fuels and various firefighting chemicals used during numerous training exercises." Unfortunately, the base was surrounded by a flood control canal, known as Military Canal, which discharged directly into BNP waters. After "large quantities of heavy metals were found" in canal-bottom sediments in 1991, BNP staff worked with the US Fish and Wildlife Service to monitor a cleanup management plan for the base and the canal.[256]

Two EPA studies, conducted in 1992 and 1995, showed that the two-mile Military Canal's sediments were contaminated by HARB industrial toxins, including "oily wastes, hazardous metals and other chemical pollution." The US Air Force (USAF) contended that the pollution didn't warrant a cleanup, but in 1999 an EPA investigation showed that pollution was coming from a base wastewater treatment plant, including ditches around the plant, an incinerator, landfill, and oil-water separators from areas where airplanes were washed. As a result, the USAF, which was already completing a $45 million cleanup of more than five hundred HARB sites, agreed to take responsibility for cleaning up the canal.[257]

A year after Hurricane Andrew, the federal Department of Defense Base Realignment and Closure Commission recommended that the base, badly damaged by the storm, be converted to an air reserve base, which required only one-third of the original acreage. The remaining 1,632 acres of property was to be transferred by the USAF to Miami-Dade County, which envisioned using the land to develop an international commercial airport that would be up to ten times the size of the original airport. Frost remembered how, in the wake of Andrew's devastation, the project "met with almost universal support among local, state, and federal government agencies as a means of giving the devastated communities a much needed economic boost." The new BNP superintendent had his hands full with recovery and construction at the park—until water management district employees alerted him to the potential environmental toll the airport project might take.[258]

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[256] Miller, *BNP: It Almost Wasn't*, 130-31.

[257] Cyril T. Zaneski, "Contaminated Canal," *Miami Herald*, January 15, 1999, 1-B, BISC archives.

[258] Ibid., 137; National Oceanic and Atmospheric Administration (NOAA), *Biscayne Bay: Environmental History and Annotated Bibliography* (Silver Spring, MD: NOAA, July 2000), 80; Miller, *BNP: It Almost Wasn't*, 137.

Frost later recalled in an interview that after Hurricane Andrew the main focus of government and elected officials was to recover the economy:

> And one of the proposals that had already been developed and, to some extent, accepted was the county had proposed to use the old entire Air Force base, including the part they'd just got from the Air Force to develop into a full-blown commercial airport. And the Air Force was okay with that because everybody was trying to do whatever they could for the area. So the federal government, the Air Force, all the federal agencies, the county, the state, everybody who would've needed to give approvals or cooperation to this very complicated proposal had done so fairly quickly because it—the economic need—was so apparent and so compelling. What had not happened at all was nobody had given any thought to the impact on Biscayne National Park, that they were putting a major airport right on the boundary of a national park. And all the departing or arriving flights were going to go over the middle of the park at low altitude.... And nobody wanted to talk about that. I'd started to ask some questions, but nobody—nobody meaning elected officials or government agencies at any level—wanted to even hint at maybe having some reservation about this development, about this redevelopment of the Air Force base.[259]

Figure 5.5. Richard "Dick" Frost, BNP superintendent, 1993-2000. Photo by author.

At the time, environmental groups were engaged with developing a major Everglades restoration plan, Frost said, crediting Richard Curry with focusing BNP attention on the airport plans. According to Frost, Curry was "primarily the one saying, 'Nobody's paying attention to this.'" Deborah Drum of the South Florida Water Management District was also

[259] Frost, interview.

concerned, and she "started to clue [Frost] in" to public meetings that were part of the base process. Frost continued:

> And I started going to them, and…when public comment time came, I would raise my hand and say, '…have you looked at as far as the impact on Biscayne National Park?' And of course nobody had. And nobody wanted to talk about it. And everybody looked at me like, 'Hey, what are you talking about? We've got something very important going here, and we don't want anybody coming in and asking things at the last minute that might put it in jeopardy.' And like I say, I understand that, but I had to do it. It was my responsibility. That went on for a couple of months, with Deborah's help, just . . . helping me keep track of when these kinds of meetings were happening so that I could at least show up and put the issue out there so nobody could say, 'Well, you never said anything.' And this was still pretty early on, where I was mostly focused on rebuilding the park, but I couldn't let that go.[260]

Along with rebuilding from the hurricane, the HARB airport project became Frost's central focus for the next six years. He waded through data, public hearings, and bureaucratic requirements in his fight for BNP. Even though his superiors at the DOI had approved this reuse of the base, Frost and many others came to believe that the park would be irreparably damaged by pollution and noise from commercial air traffic. In 1994, the USAF prepared an Environmental Impact Statement (EIS) to comply with the National Environmental Policy Act (NEPA) of 1970, which required a study of environmental impacts of federal projects. Confirming Frost's fears, the early EIS determined that the base disposal might cause increased traffic, air pollution, groundwater use, soil erosion, and hazardous water generation, among other issues. Still, the airport appeared to be a done deal, especially since President Bill Clinton had "promised a swift federal approval process and instructed the Air Force to make transferring Homestead Air Force Base an example for future base closures," wrote Monika Mayr in *Everglades Betrayal: The Issue that Defeated Al Gore*. Mayr was BNP's assistant superintendent during most of the HARB battle.[261]

Alarmed that the airport proposal would increase urban encroachment on BNP, Frost realized that the park needed "the cooperation of both policy makers and park users, as well as the broad support of public opinion" to fight it. He said, "I took our plea for help to those in a position to influence outcomes—government officials at all levels, user groups such as boaters, fishermen and divers, community organizations, and the media—only to learn very quickly that Biscayne was at a serious public relations disadvantage." The heart of the problem was that BNP remained "virtually unknown to most public officials and local residents alike. And of those few who knew something about the park, many were

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[260] Ibid.

[261] Ibid.; Monika Mayr, *Everglades Betrayal: The Issue that Defeated Al Gore* (Minneapolis: Two Harbors, 2008), 14; United States Air Force, *Draft: Environmental Impact Statement November 1993 Disposal and Reuse of Homestead Air Force Base Florida*, Homestead AFB Collection, BISC archives.

not sympathetic," owing to public mistrust generated by BNP's creation and other issues with neighboring ENP. Frost recognized the need for a major public relations campaign to promote the park's importance—and he had to do it quickly.[262]

While BNP rangers and naturalists worked to educate the community about the park, Frost visited public officials, attended public hearings, and sought help from more environmental groups. "And finally," he wrote, "we created what amounted to a continuous public relations initiative, organizing events and issuing frequent news releases aimed at generating public (and media) interest in the park." Frost also needed environmental partners, and, fortunately, he received strong support early on from the Tropical Audubon Society. Tropical Audubon, along with several national environmental groups, pressed USAF to reconsider their plans, especially in light of the base redevelopment's proximity and potential impact on *two* national parks. In a 1996 letter to Secretary of Defense William J. Perry, Bradford H. Sewell, attorney for the Everglades Coalition, asked for a Supplemental EIS (SEIS), which was later granted. This SEIS would take into account what the coalition claimed were unexamined impacts of a commercial airport, including greater traffic than originally projected, air and water pollution, and how hundreds of thousands of flights a year would increase park noise levels—the latter concern having been raised as a significant threat to national parks in a recent NPS report. Sewell wrote in the letter, "[W]e believe that the envisioned development—particularly if hasty and poorly planned—could well spell the end of both Biscayne National Park and Everglades National Park in their current state and condition."[263]

The exclusive Ocean Reef Community, an expensive development on Key Largo with influential members from across the United States, also joined the battle, raising $2 million to oppose the airport. The group hired local Sierra Club activist, Alan Farago, as its publicity leader and created a campaign that could rival that of airport supporters. At the same time, the national presidential campaign was in full swing, as was important legislation aimed at restoring the Everglades. Some important congressional leaders began to question whether it would be irresponsible to approve an airport that could greatly impact an area targeted for federal cleanup and protection.[264]

A number of other citizen groups joined the effort. Save the Bay, a group of individuals and organizations "concerned about preserving the integrity of our national parks" opposed the airport, instead supporting a mixed-use development. "If allowed," Save the Bay claimed in a 2000 press release, "the Homestead Airport would be the closest major commercial airport to a national park in the United States," sitting 1.5 miles from BNP, 8.5 miles from ENP, and 10 miles from the Florida Keys National Marine Sanctuary. The release also

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[262] Miller, *BNP: It Almost Wasn't,* 137-39.

[263] Ibid., 138-39; USAF, *Draft: Environmental Impact Statement*.

[264] Mayr, *Everglades Betrayal*, 77, 122, 135.

reported that the Sierra Club had already sent one thousand letters to Clinton opposing the airport project.[265]

"We were very concerned about noise impact from a major commercial airport that would be literally on the edge of Biscayne National Park," recalled Farago in an interview. He elaborated:

> We were concerned about water-quality issues related to the Clean Water Act, and what we were most concerned about was the fact that the environmental impact statement that had originally been done for the air base not only avoided the fact of Biscayne National Park, but on the early maps, or the maps incorporated in the EIS . . . instead of Biscayne National Park it showed the Atlantic Ocean. So there was not even the designation within the EIS or recognition of Biscayne National Park, and I along with many other Floridians and around the country felt that it was a very important campaign to build and to recruit support . . . financial and otherwise. It seemed to me at the time—because I had been very involved through the Everglades Coalition with the early efforts to protect the Everglades through a multi-billion-dollar investment—it seemed that what was happening to Biscayne National Park was a train wreck waiting to happen, and that's why we spent many years educating decision-makers and policymakers and trying to bring the protections that should be afforded to the park to the forefront.[266]

Farago worked hard to make the airport project a political issue in the 2000 presidential campaign, but Democratic candidate Al Gore wouldn't take a stand on the issue, which in Farago's opinion was an error in "strategic judgment" from a party "that [stood] for protecting the environment." Mayr contends that this neglect cost Gore the election, particularly after Republicans came out in opposition to it. She wrote that environmentalists in Florida, the key state in the election results, doubted Gore's stand, which affected him at the polls.[267]

One leading Republican long opposed to the commercial airport was Nathaniel Reed, former advisor to Florida Governor Claude Kirk and supporter of the creation of BNP. Reed, who had also served as Assistant Secretary of the Interior, sent letters to state and federal politicians strongly opposing the project. In a March 2000 email to Clinton, Reed wrote that every scientific review of the SEIS, "plus a dose of old fashioned common sense, concurs that it is impossible not to adversely impact two National Parks, A National Preserve and two National Wildlife Refuges by allowing property owned by all Americans" to become a commercial airport. Reed wrote that no remedial measures could mitigate the airport's impact on Biscayne Bay, concluding, "This is not the kind of blemish that you would want your Administration to

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[265] Save the Bay, "South Dade Homeowners Take Lead to Support Alternative to Airport Development," Save the Bay press release, May 24, 2000, 1-2, BISC archives.

[266] Alan Farago, telephone interview with author, October 1, 2015.

[267] Ibid., Mayr, *Everglades Betrayal*, 132.

project, especially after you personally have invested so much time and effort in the plans to restore the Everglades system."[268]

The full story of BNP's efforts, strategies, participants, and politics related to the proposed commercial airport is lengthy and complex. In short, the tenacious work of Frost (who estimated he spent 45 percent of his time on HARB), BNP staff, and national and local environmental groups paid off. The USAF agreed to conduct a SEIS, and on January 15, 2001 (just two months after the presidential election), the USAF filed its Record of Decision (ROD) based on that SEIS. The ROD stated that it "[would] not allow the environmental impacts of a commercial airport in this unique location when other viable alternatives for economic development and jobs [existed]." There would be no conveyance of land from the federal government for a commercial airport; instead, a mixed-use development was approved. "I can't imagine what it would be like to have that park there with the commercial jets flying over it all the time," said Frost. "It just wouldn't be the same."[269]

Commercial and Recreational Boating Damage

Over the course of BNP's history, most of its visitors arrived by boat, drawn to the park's aquamarine waters and the marine recreation they offered. However, some boaters caused damage in the park—as did commercial vessels that went astray from navigational channels. Left in their wakes were damaged reefs, scarred bay bottom, and seagrass damage. Some injuries could take years, even decades, to be naturally repaired, while some were permanent. The vast majority of incidents included damage to the park's seagrass beds located near cuts providing bay-ocean access or in the "central bay in popular fishing and high traffic areas that [had] complicated and/or shallow depth and topography."[270]

With an estimated two hundred vessel groundings reported, boating accidents were an enormous problem. In response, BNP and DOI staff created a new program, initially called the Damage Recovery Program (DRP) and subsequently renamed the Habitat Restoration Program (HRP). Still active as of 2019, the program operated under the authority of the federal System Unit Resource Protection Act (SURPA), formerly the Park System Resources Protection Act (PSRPA), which was passed by Congress in 1990 and amended in 1996, 2000, and 2014. SURPA "establishes liability for any person or instrumentality that destroys, causes the loss of, or injures any system unit resource."[271]

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[268] Nathaniel Reed, letter emailed to President Bill Clinton at White House, March 7, 2000, BISC archives.

[269] Mayr, *Everglades Betrayal*, 135, 138-39; Frost, interview.

[270] NPCA, *State of the Parks: Biscayne*, 20-21.

[271] NPS, "Briefing Statement," NPS, June 14, 2002, BISC archives; Amanda Bourque, telephone interview, August 2, 2016; BNP staff (Amanda Bourque), "BISC Administrative History Outline NPS Review Comments, Final Draft 2/17/2017," 4, in Cynthia Walton email to author, May 4, 2017 (hereafter "BNP staff, Administrative History Comments, 2017").

Karen Battle, a BNP resource management biologist, served as the park's first grounding case management officer, helping form the new boat grounding program and establishing its methodology for developing damage claims. Battle worked closely with the national NPS office, and its program eventually became the Resource Protection Branch. Battle's work helped set nationwide standards for such cases. Then, in 2003, ecologist Amanda Bourque took charge of the BNP program.[272]

To help staff process boating incidents in an orderly fashion, a "Vessel Grounding Program Policies and Procedures" manual was developed in 1996 and periodically updated. This manual provided protocol, forms, and contact data for staff dealing with groundings.[273] Whenever an incident was reported, visitor protection rangers investigated it and completed a report. Then, resource management staff conducted resource injury assessments. Staff used this information to determine whether to initiate federal criminal or civil actions; some cases went to court while many were settled. As of 2017, settlements ranged as low as $150 or as high as $1 million, depending on the case.[274]

Many factors were involved in groundings, as the following cases demonstrate:

- On January 29, 1999, the *Happy Days V* ran aground on the shallow Middle Featherbed shoal, leaving a 69-foot track, with scars up to 1.1 meter in width. The DRP filed a claim for $188,677 to cover restoration costs. The site was restored by filling grounding excavations and planting seagrass in the area.[275]
- The crew of the *Halcyon* sent out a mayday call in February 2009; the boat was on fire east of Boca Chita Key. Three people were rescued but the boat burned, rolled over, and sank, damaging nearby patch coral reefs. The DRP coordinated action and settlement, recovering $8,963. The funds were assessed to pay for removing boat remains and for a restoration contractor to reattach the injured corals.[276]
- In March 2008, an 84-foot yacht, the *Natalita III*, ran aground, damaging more than 1,000 square meters of coral reef habitat. The federal government "aggressively pursued damages" under SURPA, settling for $505,000—more than 90 percent of the original claim. The funds helped restoration of the damaged area, including removing coral rubble, reattaching broken coral and other reef organisms, and removing boat paint embedded in the reef.[277]

Two of the largest cases resulted in $1 million settlements paid by owners of commercial vessels that caused extensive damage to BNP reefs. In July 1998, the *Allie B*, a tugboat with

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[272] Lawson, "Biscayne Consolidated Comments," 27-28; Bourque, interview.

[273] NPS, *BNP 2003 Annual Report*, 16.

[274] Lawson, "Biscayne Consolidated Comments," 27-28; "Briefing Statement," 2002.

[275] NPS, "Briefing Statement," 2002; BNP staff (Bourque), Administrative History Comments, 2017, 5.

[276] NPS, *Superintendent's Annual Narrative Report, Biscayne National Park, 2009*, 5-6.

[277] Ibid., 6; BNP staff, (Bourque), Administrative History Comments, 2017, 6.

a loaded barge, ran aground on the eastern edge of the park. The barge, tugboat, and tow cable damaged the coral reef and sea floor. This damage was compounded when the tugboat tried to "power off" the bottom, leaving blowholes in it. After a detailed BNP investigation, the boat's owners agreed to pay $1 million to the federal government for restoration.[278]

In October 2000, a $1 million settlement was reached with the owner of a German tanker, *Igloo Moon*, which grounded in the park in November 1996. The tanker was carrying six thousand tons of butadiene, a "highly flammable liquefied petroleum gas" used in rubber processing, from Saudi Arabia to Houston. While in park waters, it grounded on a reef and damaged nearly five hundred square meters of habitat. After almost two weeks, Coast Guard and Florida Department of Environmental Protection personnel were able to refloat the vessel. It took BNP staff nearly three years to assess the coral damage, determine how to restore it and what the costs would be, and prepare litigation in federal court. Both the *Allie B* and *Igloo Moon* grounding sites were restored by stabilizing rubble and displaced reef substrate, sealing and stabilizing fractures in the reef matrix, reattaching broken coral and other reef organisms, and removing boat paint from the reef.[279]

Restoration of a grounding site could be a lengthy, years-long process. Park staff had to document resource injuries and create a viable restoration plan and associated cost estimate. Damages or restitution were sought through a legal process, and settlement funds were deposited in a DOI restoration fund until ready for use by BNP. Staff then had to comply with National Environmental Policy Act regulations and get any necessary permits from local, state, or federal agencies. If environmental contractors were needed to perform the physical restoration work, then BNP proceeded through a contracting process. Park staff provided oversight to contractors during the restoration process, and restoration sites were typically monitored for a period of five or more years to ensure that the sites were stable and the biological communities were recovering.[280] Chapter 7 includes more information about seagrass and coral restoration.

In an effort to protect natural resources, in 2011 BNP's Habitat Restoration Program (HRP) and Law Enforcement Division (LE) jointly developed a "Grounding Awareness Class." The goal of the course was to "foster increased boater awareness on the importance of submerged resources and discourage boaters from running aground in the future." Launched in 2012 with help from a $15,000 grant from the South Florida National Parks Trust, the course was led by LE rangers and targeted to boaters who had received grounding

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[278] NPS, "Allie B. Grounding Site," Administrative Draft Restoration Plan/ Environmental Assessment, NPS, April 2005, AB-1, 1-5, 1-6, irmafiles.nps.gov/reference/holding/474717?accessType=DOWNLOAD.

[279] Joint Stipulation of Settlement between Plaintiff United States of America and Defendant M/V Igloo Moon and its Owner, 1-8, BISC archives; Elinor J. Brecher, "Owner of tanker that damaged reef agrees to pay $1 million," *Miami Herald*, December 12, 2000, BISC archives; "$1 Million Settlement in Coral Reef Grounding Case," NPS media release, December 11, 2000, BISC archives; BNP staff (Bourque), Administrative History Comments, 2017, 6.

[280] Bourque, interview; Bourque, "NPS Review Comments," 6-7.

related citations. By attending the class, violators could have their penalties lessened or waived.[281] The class was also open to the public for free.

According to Bourque, the course, available in English and Spanish, focused on the "ecological and economic significance of seagrass and coral reef ecosystems, grounding impacts to submerged resources, ecological restoration, vessel and navigational safety, and local boating knowledge." Attendees received handouts, navigational charts, copies of fishing regulations, and information about snorkeling, diving, fishing, and marine conservation topics.[282]

In 2014 the class was renamed the "Boating Education Class," and instructors added information for ENP boaters. The class since expanded to include boaters cited with safety, speed zone, and personal watercraft violations. ENP left the program in 2016 when it launched its own park-specific course. State and federal wildlife agencies also sent boaters to the program.[283]

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[281] NPS, *Superintendent's Annual Narrative BNP CY 2012*, 19.

[282] BNP staff (Bourque), Administrative History Comments, 2017.

[283] Ibid.

Chapter Six

Cultural Resource Management

The waters and lands of Biscayne National Park (BNP) hold a wealth of unique cultural resources, including more than 110 known archeological sites (the majority are submerged), fourteen historic structures, one cultural landscape, and six National Register of Historic Places listings. The BNP museum collection has almost one million objects, specimens, and archival documents. It is the responsibility of the BNP Cultural Resource Management Program to document, monitor, protect, and manage these important resources, as well as investigate any others that might be discovered within the park. This work required a multi-talented staff, creative museum collections and displays, and the cooperation of other National Park Service (NPS) units. As a result, BNP is one of a handful of parks in the southeastern NPS region that has a dedicated cultural resource staff and program.

Cultural resource work at the park originated as a one-man operation: Richard Curry. Curry came to BNP (then a monument) in 1976 and retired in 2010, holding titles during those years that ranged from marine technician to chief scientist. When he arrived, monument staff consisted of three law enforcement officers, three seasonal employees, one permanent natural resource management person, a superintendent, three administrators, and six maintenance employees to care for and protect the entire monument.[284]

Curry described his arrival at the monument in an interview: "When I first started, there was no cultural resource program at the park," he said.

> And, you know, during my tenure there we went from not looking at cultural resources at all, other than just recognizing that we had some, to identifying all the shipwrecks that we had in the park and where they were and what condition they were in. So, yes, I started the program, but then it morphed into a bigger and bigger program and we hired people to take care of that. So I started a lot of programs and then other people took them over and carried them to where they are now.[285]

It should be noted that other shipwrecks were found afterward, and BNP officials predicted in 2017 that there could be many more yet undiscovered.[286]

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[284] Richard Curry, telephone interview with author, February 6, 2015.

[285] Ibid.

[286] BNP staff (Charles Lawson), Administrative History Comments, 2017, 7.

The cultural resources program, which was not formally organized with staff and resources until 1996, was sparked by the discovery of the remains of the HMS *Fowey*, a British fifth-rate naval frigate that wrecked on a coral reef in the eighteenth century. Although the staff was somewhat aware of the ship's remains, its importance grew in 1978 when a treasure hunting diver, hoping he had found a "gold-laden Spanish galleon," found the ship and the remains of its cargo, writes historian Cameron Binkley. Instead, the claim led to a complicated, "precedent-setting court battle that would help define and clarify the standards and merits of federal and state protection of submerged cultural artifacts—a gold outcome, even if no gold was ever found," Binkley observes. The battle also spurred a formal BNP cultural resource program and added impetus to the park's working relationship with the NPS Southeast Archeological Center (known as SEAC) to analyze its cultural resources. Eventually, the case also generated an agreement between the United States and the British government regarding management of the site.[287]

HMS *FOWEY*

Figure 6.1. The wreck of the HMS *Fowey,* which hit a coral reef in 1748, was the center of several legal actions. The NPS eventually managed the shipwreck, with title held by the United Kingdom. NPS photo, BNP archives.

[287] Cameron Binkley, *Science, Politics and the "Big Dig:" A History of the Southeast Archeological Center and the Development of Cultural Resources Management in the Southeast* (Tallahassee, FL: NPS Southeast Archeological Center, 2007), 112. Binkley's SEAC history explores many of the relationships between the center and NPS entities, illuminating internal and external efforts to preserve and assess archeological sites, including development of underwater archeology research.

In the summer of 1748, the HMS *Fowey*, a four year old British fifth-rate man-of-war, was traveling north to Virginia with two English merchant vessels. The ship was towing a twenty-gun Spanish ship that it had captured in the Gulf of Mexico—England and Spain were at war at the time. Calamity occurred on June 27 when one of the merchant ships ran aground. In a chain reaction of events, and despite the crew's best efforts, the 150-foot HMS *Fowey* then hit a nearby reef, cutting a hole in its hull. Soon after, the Spanish ship also hit the reef and later sank. The crew—estimated at 250 and captained by Francis William Drake, who was related to the famed sixteenth-century English captain and explorer, Sir Francis Drake—tried to refloat the HMS *Fowey* by tossing cargo and equipment overboard, but their efforts failed. Eventually the merchant ship floated free; however, the HMS *Fowey* met a different fate. In an attempt to make repairs, the crew deliberately grounded the ship on the reef, but instead the vessel dragged over the reef, losing its rudder and further damaging the bilge. The ship sank and settled on its right side in thirty feet of water, its crew and Spanish prisoners having been rescued by merchant ships. There, the man-of-war ship remained largely undisturbed and unidentified for 230 years, until a sport diver found its timbers in a grassy area in what was later called Legare Anchorage, east of Elliott Key.[288]

The diver, Gerald Klein, hoped he had found a sunken Spanish galleon loaded with New World gold and silver. Many such ships found their final resting places along Florida's coastal reefs, where coastal currents and storms, particularly hurricanes, caused them to wreck. At one point, there was speculation that the wreck might be the *Nuestra Señora del Populo* or *El Aviso del Consulado*. These had been part of an ill-fated, twenty-one-boat fleet that left Havana, Cuba, in 1733 and headed for Spain. Two days after setting out, the fleet ran into a hurricane off Florida. Most of the boats were lost, although some managed to return to Havana to inform authorities. Spanish salvage teams sped to the area, hoping to recoup some of the cargo of gold, silver, coins, ceramics, and other materials. According to authors Russell K. Skowronek and George R. Fischer in *HMS Fowey Lost and Found: Being the Discovery, Excavation, and Identification of a British Man-of-War Lost off the Cape of Florida in 1748*, salvors found the wrecks to be "curiously yielding, according to some, more treasure than had originally been registered on the manifest. The hulls were then burnt to the waterline to remove valuable metal fittings and guns." The extra "treasure" found by salvors may have been evidence of smuggling within the plate fleet system.[289]

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[288] Cameron Binkley, *Science, Politics and the "Big Dig:" A History of the Southeast Archeological Center and the Development of Cultural Resources Management in the Southeast* (Tallahassee: NPS Southeast Archeological Center, 2007), 112; NPS Submerged Resources Center, "2013-HMS Fowey, Biscayne National Park" (video), Vimeo, August 22, 2013, https://vimeo.com/72920037 ; Russell K. Skowronek and George R. Fischer, *HMS Fowey Lost and Found: Being the Discovery, Excavation, and Identification of a British Man-of-War Lost off the Cape of Florida in 1748* (Gainesville: University Press of Florida, 2009), xi-xii, 5-7; BNP staff, Administrative History Comments, 2016.

[289] Skowronek and Fischer, *HMS Fowey Lost and Found*, 39, 50, 72; BNP staff (Lawson), Administrative History Comments, 2017, 7.

An investigation later revealed that Klein's wreck was not part of that fleet but was the HMS *Fowey*. However, the remains of the *Nuestra Señora del Populo* were also within BNP boundaries. It was a small vessel that carried some goods, but not the prize that Klein sought. Instead, like the HMS *Fowey* and other shipwrecks, it added to the park's rich cultural heritage.[290]

In October 1979, Klein filed papers in Admiralty Court seeking title to the yet unnamed wreck. If granted title, Klein would have been able to salvage the site and the State of Florida would have received a percentage of the find. State officials notified the NPS because the site appeared to be near BNP. Indeed, archeologist George Fischer—who had chronicled the cultural resources of what was then the national monument—had listed an unnamed ship's remains in a 1975 SEAC report, but he only offered a vague location for it. The NPS quickly claimed the shipwreck as being within BNP, and a legal battle ensued in federal court.[291]

In 1980, the US District Court for the Southern District of Florida issued an injunction giving the NPS title to the shipwreck and ordering Klein to turn over some two hundred artifacts to the NPS. The judge ordered an end to all salvage operations and ordered claimants to give the NPS "all materials removed from the site, which by then they had already partially destroyed using explosives," Binkley writes. However, the case "dragged on" when the claimants argued that the NPS was a competing salvager. In the meantime, the court told the NPS that it must definitively find the wreck, which was difficult given the vague description within the 1975 SEAC report. The salvagers had no obligation to disclose it, and court filings only specified it was "within three thousand yards of a coordinate" within the Legare Anchorage.[292]

The scramble was on to find the shipwreck, designated as the "Legare Anchorage Wreck." The search was funded by the NPS and run by the SEAC, but not before a "heated debate" ensued between the SEAC and officials in the regional office about methodology. The SEAC, located in Tallahassee, Florida, had been working with Florida State University (FSU) on underwater archeology projects, and in a 1979 report Fischer had already suggested how the SEAC, FSU, the Florida Bureau of Historic Sites and Properties, the Florida Institute of Oceanography, the Florida Council of Archeologists, and others might work together on such projects. A number of reports and efforts had gone into improving federal underwater archeological efforts, including use of a "thousand dollar per day Del Norte Positioning

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[290] NPS, "Biscayne National Park Florida" NPS website, accessed May 7, 2015, http://www.nps.gov/nr/travel/american_latino_heritage/Biscayne_National_Park.html. Note: Although the NPS lists *El Aviso* as being within BNP, its wreckage is not within park boundaries, according to Charles Lawson, BNP cultural resource manager. Charles Lawson email to author, "Another Question." November 13, 2016.

[291] Binkley, *Science, Politics and the "Big Dig,"* 112; George R. Fischer, *Preliminary Archeological Assessment Biscayne National Monument Florida* (Tallahassee: Southeast Archeological Center, 1975), 20-25; Skowronek and Fischer, *HMS Fowey Lost and Found*, xi-xii.

[292] Binkley, *Science, Politics and the "Big Dig,"* 114-16; Skowronek and Fischer, *HMS Fowey Lost and Found*, 29.

system in lieu of an older and less expensive system." These would play important roles as the HMS *Fowey* case unfolded. Staff with the NPS Submerged Cultural Resources Unit (SCRU, later renamed the Submerged Resources Center or SRC), then located in Santa Fe, New Mexico (and later in Lakewood, Colorado), also participated in the project. The SCRU, created in 1980, included divers who had been conducting underwater archeological work at different sites within the United States, including important historic sites inundated by dams and reservoirs. The NPS then had two underwater archeology programs, which seemed to indicate "recognition of the field's unique importance for NPS resource management," Binkley writes, adding that it also led to "high-level scrutiny and potential consolidation under certain circumstances." Later, in 1984, the NPS ordered the SEAC to phase out its underwater archeology program, and SCRU assumed those duties. It was a decision, Binkley writes, that "left a legacy of bitter feelings."[293]

Using the new positioning system, the SEAC found the wreck within two weeks, but it still needed to definitively identify it. The subsequent historical investigations of one FSU student cast doubt that the ship was Spanish, but in 1981 another FSU student, Skowronek, suggested it possibly being the HMS *Fowey*. In 1983, SEAC archeologists working with Fischer and FSU archeological field students mapped the remains and artifacts. They also made some excavations and recovered a cannon weighing almost three thousand pounds. The cannon was one of four "nine-pounders" identified there. These findings clearly showed that the wreck was not a Spanish galleon and was most likely the HMS *Fowey*. Later that year, the court agreed that the NPS held jurisdiction over that site and any others within BNP, by then a national park.[294]

The case set important precedents. Testimony from Fischer during the case "established the fact that the removal of artifacts by individuals without proper understanding of scientific methods from underwater cultural sites resulted in the loss of their true value," Binkley writes, noting that this overturned the legal "bias that sunken property was 'in peril.'" The case bolstered the development of the Abandoned Shipwreck Act of 1987, which mandated that title and jurisdiction of historic shipwrecks found in US territorial waters were to go to the federal government, which then delegated their management to adjacent states. The case also highlighted the importance of sound NPS underwater archeological capabilities, the benefit of the SEAC-FSU relationship, and a need for improved BNP cultural resource management (CRM).[295]

The need for a BNP CRM program became more evident later in 1983 when BNP Superintendent James Sanders approved the removal of a second nine-pounder cannon from

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[293] Binkley, *Science, Politics and the "Big Dig,"* 115-16, 120-21, 124-28. This work is an extensive study of the HMS *Fowey* and its NPS repercussions. It details the development of NPS underwater archeology. See also Skowronek and Fischer in *HMS Fowey Lost and Found*; they focus specifically on the investigation and ramifications of that specific shipwreck.

[294] Binkley, *Science, Politics and the "Big Dig,"* 116-18.

[295] Ibid., 118-21; Skowronek and Fischer, *HMS Fowey Lost and Found,* 28.

the HMS *Fowey* site without "archeological controls or supervision," writes Binkley. The cannon "was raised against the explicit advice of SEAC archeologists and its recovery only became known to SEAC after the Archeological Research Laboratory of the Florida Bureau of Archeology mistakenly informed the center about the cannon, which the park had sent to it for electrolysis, a technique to preserve metal long-exposed to salt water." Although Fischer had told Sanders that no one would "pilfer" the four thousand pound cannon, Sanders organized BNP and Everglades National Park (ENP) divers and brought the cannon up in October 1983. Fischer disagreed with the superintendent's action "creating more management headaches related to the HMS *Fowey*."[296]

The HMS *Fowey* issue was far from over. Management of the wreck and its artifacts raised new questions, this time necessitating an agreement between two nations. In August 2013, in the wake of a previous court decision and Federal Register rule that recognized "perpetual rights to foreign nations to wrecked vessels" as well as lengthy work by BNP and NPS Washington Support Office (WASO) staff, the US and United Kingdom signed a memorandum of understanding to guide future handling and protection of the HMS *Fowey*. The agreement recognized British title to the shipwreck and its artifacts but agreed to NPS management of the site, with joint consultation with the British Navy. In a press release, BNP Superintendent Brian Carlstrom described the value that the agreement would have for the park and its resources, saying, "This is the latest step in the continuing preservation effort for *Fowey*, and solidifies our relationship with the British people in protecting our shared heritage for the enjoyment and education of future generations."[297]

The US-United Kingdom agreement was important to establish ownership and management of the artifacts that were under the care of NPS curators. Without proper authority, the BNP would have difficulty managing, loaning, exhibiting, and repairing the artifacts or shipwreck site. In 2002, Brenda Lanzendorf (BNP Cultural Resources) and South Florida Collections Management Center (SFCMC) curator Nancy Russell started prodding various agencies, including federal legal advisors, to secure a formal agreement resolving the issue. When Charles "Chuck" Lawson became the BNP cultural resources manager in 2010, he edited the agreement, worked with Russell, and enlisted the help of the WASO. David Gadsby, a WASO archeologist, worked tirelessly to move the document through the US Department of State, ultimately resulting in the 2013 final agreement.[298]

From the late twentieth century through the early twenty-first century, the HMS *Fowey* was highly protected. A large triangular area in the Legare Anchorage was closed to most human activities, including swimming, diving, snorkeling, and anchoring—even looking

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[296] Binkley, *Science, Politics and the "Big Dig,"* 118-19.

[297] Skowronek and Fischer, *HMS Fowey Lost and Found,* 28-29; NPS, "National Park Service Signs Agreement with Great Britain to Protect 18th-Century Shipwreck," BNP website, August 27, 2013, http://www.nps.gov/bisc/learn/news/fowey-agreement.htm; BNP staff, Administrative History Review Comments, 2016.

[298] Ibid.; BNP staff (Lawson), Administrative History Comments, 2017, 8.

into the water with viewing devices, with fines possible against violators. BNP did permit fishing. The area was made off-limits in 1991 as a result of intentionally destructive actions following the NPS court victory. Perpetrators dragged an anchor through the site, and media reports brought looting and treasure hunting pressures. Publicity continued after closure of the site and enactment of in-water restrictions. In 2002, false media reported that the park was "hiding" emeralds at the site, leading to more destruction by treasure seekers. BNP even had to deny Freedom of Information Act (FOIA) requests by known treasure hunters seeking access to the wreck and information about the site.[299]

Staff explored the wreck's archeology more extensively after Hurricanes Andrew (1992) and Sandy (2013) disturbed it. In 2014, with decades of research having answered most current archeological questions, congressional relief funds associated with Sandy paid for stabilization and burying of the site. Starting with Hurricane Klein in the 1970s, erosion from storms had incrementally damaged the wreck, so preservationists covered it in sand bags and sand in an effort to stabilize the heart of the site. They also recovered artifacts (including a cannon) from the wreck—these were then displayed at the BNP visitor center while others were stored at the SEAC in Tallahassee and at the SFCMC in Everglades National Park.[300]

The Legare Anchorage remained closed to in-water visitation; however, to increase access, the park decreased the size of the closure, advances in GPS technology since 1991 having reduced the need for boats to have visible landmarks to know their location. Following the 2014 stabilization, all that was visible of the wreck was a large sandy area, the graveyard of the HMS *Fowey*, with a few artifacts strewn in nearby seagrass beds. Patrols tried to keep people from taking items from the site, but it was a difficult task given BNP's size and neighboring urban population. "South Florida is a really hard place to be a shipwreck," stated Lawson, who left BNP in 2017 to become a project manager with the NPS Denver Service Center. "People will not leave it alone."[301]

Genesis of the BNP Diving Program

The HMS *Fowey* saga made it clear that BNP staff needed a stronger program to identify and protect its valuable underwater resources, which included dozens of shipwrecks whose remains were strewn across the eastern end of the park. In BNP's early days, with limited staff and the need to construct visitor amenities, the park could pay little attention to these sites. However, in May 1987, a new volunteer arrived at BNP, and his work, which continued into the twenty-first century, proved invaluable.

When Terence L. "Terry" Helmers walked in the door of the park to volunteer his services, he was taken to Richard Curry, then in charge of resource management. Curry learned that Helmers, a University of Miami information technology administrator, was an

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[299] Charles Lawson, telephone interview with author, February 3, 2015.

[300] Ibid.

[301] Ibid.

avid scuba diver with a deep love of the park and experience diving around some of its wreck sites. The two eventually hatched a plan: Helmers, on his own time, would find and document the location of BNP shipwrecks. His guide was a 1984 SEAC document that described such sites but contained vague location information, leaving park staff unable to find many of them. Rediscovering the sites, Helmers later remembered in an interview, required "almost creative skill." Curry basically said, "Go find sites and make sure you can get back [to them]," Helmers recalled.[302]

Figure 6.2. Terence "Terry" Helmers was an important park volunteer, who worked on shipwreck research, fish surveys, and the park's mooring program. Photo by author.

Helmers and a friend took on the challenge, spending most weekends during the next decade looking for wrecks; sketching, photographing, and cataloging them; and collecting data and descriptors to pinpoint their locations. In 1996 Jim Adams, the first official BNP cultural resources manager, took over from Curry and managed the data collection. In the years prior to GPS technology, Helmers's "knack at finding shipwrecks"—almost like a human GPS—was an asset, he said. Helmers recalled taking a trip with then Vice President Al Gore and his son to dive at several sites, including the HMS *Fowey*. "It doesn't do you too much good to know where you have submerged cultural resources and not be able to get to them," he reflected. "That's not a good thing."[303]

The volunteers located wrecks from the SEAC records (which cited thirty-five spots) and "maybe a half dozen more that weren't listed in that document."And they did it the

[302] Terence L. "Terry" Helmers, interview with author, BNP, March 4, 2015.

[303] Ibid.

old-fashioned way. Using his own boat, Helmers pulled a diver (or was himself pulled) behind the boat by a ski rope. This diver looked in the water for indications of wrecks, narrowing down the sites from old documents and other publications and setting up a grid to cover territory. Typically, the team traveled in clear water that was twenty to thirty feet deep, wearing snorkeling equipment and wetsuits. "We learned on the spot" how to find the sites and recognize artifacts amid marine life, Helmers said, adding that some sites required four days of "dragging" to find. They left the wrecks untouched, although most had clearly been disturbed by other humans. Although Helmers used BNP camera gear, he supplied the dive gear and boat fuel to make the operation a success.[304]

After Adams took over underwater archeology, Helmers continued to help as needed and launched the second phase of his BNP volunteerism, which included maintaining mooring buoys to lessen boating impacts on fragile park and reef areas. As of 2017, he was still continuing this work and more. Helmers, who helped with other diving needs, including fish surveys, received awards for his tireless volunteer work, notably a NPS George and Helen Hartzog Award. Why do all this work with no pay? "Working down here I'm not really working for anyone down here at the park. I'm working for the park, for the resources here," he said. "We're working for the environment."[305]

Curry said that, because staff was so small, Helmers and other dive volunteers were "integral" to early park cultural and natural resource management. "It was kind of unheard of—using volunteers to be park divers," Curry admitted. But lack of funding to hire staff drove Curry's decision: "[To] me, the only way to get things done was to look outside the park." Volunteers also helped with fish, coral, and sponge surveys, as well as documentation of boat groundings, Curry said, adding that he would have felt "remiss if [he] didn't take advantage of the talent in the community." In later years, Curry was able to expand the staff, and when BNP developed the Convoy Point site with administration and visitor buildings, he was also able to provide quality dive lockers for staff.[306]

Modern Diving at BNP

As of 2015, the park's modern diving program was the largest in the NPS, which nationwide had twenty-six programs and more than two hundred divers. Some 22 percent of diving in the NPS and 50 percent of diving in the NPS southeast region occurred at BNP, which was a prime location for several national dive trainings, according to BNP biologist Shelby Moneysmith. The park's ten divers and eleven VIP divers (interns and divers from a local university diving under the auspices of their institution and the American Academy of Underwater Sciences) participated in a variety of programs, focusing mainly on cultural and natural resources in order to support park management and operations. They did everything

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[304] Ibid.; BNP staff (Lawson), Administrative History Comments, 2017, 8.

[305] Helmers, interview.

[306] Curry, interview.

from counting fish on coral reefs and restoring seagrass beds to removing invasive lionfish and monitoring shipwrecks. A few also participated in maintenance, helping with buoy installation and upkeep. The park archeology team varied in size (in 2017 there were three, including an intern), and it was charged with doing research, day-to-day monitoring, and any needed compliance projects. "Larger research projects [were] assisted or run with partnerships with universities or by folks at SRC or SEAC," the latter of which added a small dive team in recent years, Lawson explained.[307]

In the BNP organizational structure, the park superintendent had overall responsibility for the dive program and appointed a park dive officer (PDO) to manage it and keep the program in full compliance with all regulations and requirements. The PDO worked with the regional dive officer (RDO), and a NPS diver, who served as technical advisor to the Associate Regional Director for Park Operations. According to Moneysmith, the RDO was a member of the NPS National Diving Control Board (NDCB), an autonomous board that, "in conjunction with the NPS diving safety officer (DSO)," developed "training and safety standards, and dive policy to be implemented nationally and locally." The board also issued interpretations of NPS dive policy as needed. The chain of command rose all the way to the NPS Director and Deputy Director for Operations, who had the "ultimate responsibility to ensure" that the program met NPS and federal Occupational Safety and Health Administration (OSHA) standards.[308]

Park divers completed rigorous training and certification requirements that included medical clearance, dive experience, and refresher courses. Divers were also trained in equipment use and handling. Approved divers were required to be recertified annually, which involved at least twelve dives a year with no six-month gap in diving. Divers participated in a forty-hour NPS Core Dive Workshop within three years of initial approval and then repeated the training every three years. Required medical clearance accompanied these trainings. Other certification included adult CPR, First Aid, and oxygen administration. Some divers also received specialized training to acquire needed expertise.[309]

Dive program equipment was stored at the BNP headquarters building. It featured a dive storage closet, sixteen lockers, and storage for seventy SCUBA cylinders, two bathrooms, and four showers. The park had an air compressor and air fill station to support the program, funded by the park's dive account.[310]

Formal Development of the Cultural Resource Program

BNP's Cultural Resource Management Program was formally designated in 1996, with Jim Adams in charge and Helmers in assistance. Staff began investigating and drafting a plan

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[307] Shelby Moneysmith, email to author, "Re: BISC history help, please," June 22, 2015; Charles Lawson, email to author, "Re: Fowey stuff for you to review," April 24, 2015.

[308] Moneysmith, email.

[309] Ibid.

[310] Ibid.

for the program, also called the "Cultural Resource Management Program" (CRMP) to assess BNP resources and develop management goals and objectives, completing program design two years later, as well as the *Biscayne National Park Historic Resource Study.*[311]

The 1998 *Historic Resource Study* (HRS), written by NPS employees Jennifer Brown Leynes and David Cullison, followed a "field survey of park resources and extensive research" and updated a list of "Classified Structures, developed historic contexts, and prepared new National Register of Historic Places documentation." The authors wrote that the HRS would "serve as a tool for future site planning, resource management, and the continuing development of interpretive programs at the Park." It was meant to "complement" the CRMP and an Archeological Overview and Assessment then being prepared for BNP. The HRS offered a prehistory and history of the Biscayne area as well as information about BNP structures and properties. The authors noted that "few historic buildings survive in the Park" due to the "subtropical climate, hurricanes, and the accidental and purposeful actions of humans. . . ."[312]

Brenda Lanzendorf became the BNP cultural resources manager in 2002 and held the position until her death in 2008. During her tenure, she "helped create and teach a groundbreaking course for law enforcement officials to identify and prosecute underwater archeological crimes." She developed a "model strategy for conducting rapid damage assessments" following disasters such as hurricanes and vessel groundings. During her tenure, BNP also assisted with NPS special resource studies of Virginia Key, a nearby historic African American beach from the 1940s to the 1960s, and the Miami Circle archeological site to determine if they should be included in the NPS system as part of BNP.[313]

In 2008, the NPS Southeast Planning Division produced a Special Resource Study (SRS) of Virginia Key Beach, in which it concluded that the 82.5-acre site did not meet all the NPS criteria for inclusion in the park system. The SRS did note, however, that the key was "an important historical and cultural site" deserving "recognition for its role in the history of civil rights in Miami." In 2002, the beach was placed on the National Register of Historic Places.[314] The NPS Denver Service Center conducted the SRS of the Miami Circle, a rare specimen of two thousand year old Tequesta native architecture, but determined that it did not meet "the purpose of Biscayne National Park, which was established to protect natural resources." The center also found that the site was not "determined to be nationally significant, and therefore

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[311] BNP staff, Administrative History Comments, 2016.

[312] Leynes and Cullison, *BNP Historic Resource Study*, vii, 2-3.

[313] BNP staff, Administrative History Comments, 2016; Brenda Lanzendorf, memo to Jerry Bailey, NPS, January 9, 2004, BISC archives.

[314] NPS, *Virginia Key Beach Park Special Resource Study*, NPS, September 2008, 10, accessed November 12, 2016 on Historic Virginia Key Beach Park Trust, http://virginiakeybeachpark.net/history-2 (page unavailable).

[did] not meet the criteria for inclusion in the national park system." The State of Florida later acquired the site, naming it a National Historic Landmark in 2009.[315]

When Lawson became BNP cultural resource manager in 2010, the program had been unstaffed for two years, although he had temporarily filled the position in a 2008 detail. Lawson had worked for the NPS and SEAC and "had knowledge on what a park program's responsibilities to the administrative part of program management in CRM [were]." Rather than working independently, as Adams and Lanzendorf had, Lawson repaired ties with the SEAC and SCRU while professionalizing the department through new databases, records collection, archeological evaluations, and improved public interpretation of BNP resources. He described the work as "turning the program in the direction of evaluative science instead of exclusively non-invasive condition assessments." His emphasis was on professionalization and "opening up research opportunities to the scientific community."[316]

Figure 6.3. Charles "Chuck" Lawson, former BNP cultural resources manager, helped finalize the park's Maritime Heritage Trail. Photo by author.

Maritime Heritage Trail

Because of their fragility and need to be protected from looting and vandalism, the majority of shipwrecks in the park were too sensitive for visitation. But BNP still wanted to offer the public the opportunity to experience these cultural riches. As a solution, the

[315] NPS, *Miami Circle Special Resource Study*, NPS, 2007, 3, 11, BISC archives; James Pepe for Janus Research, "The Miami Circle Archeological Site," ed. Ellen J. Uguccioni, City of Miami, 2010, 13, accessed November 12, 2016, http://www.historicpreservationmiami.com/pdfs/2011%20designation%20reports%20updates/The_Miami_Circle.pdf; Cynthia Lawson, email to author, "BISC Admin History," January 31, 2017.

[316] BNP staff, Administrative History Comments, 2016.

park developed a Maritime Heritage Trail (MHT), which guided divers and tourists to six different wrecks in the park and was later expanded to include the Fowey Rocks Lighthouse. Envisioned by Lanzendorf and finalized by Lawson, the trail became a popular voyage for park visitors. Brochures and internet resources featured the wrecks, serving the CRMP's mission of providing public access and inspiring people with the park's history. (See Appendix J for a description of the trail.)

First, staff had to determine what sites could best withstand public visitation; most were already known by the diving community. According to Lawson, in choosing sites for inclusion on the trail, staff looked for the following:

- hardened sites with few or no portable artifacts (The sites had been extensively salvaged historically and had concreted into the corals around them; they could withstand visitors and had few things that would tempt thieves.)
- intriguing dive sites (Even people with no interest in shipwrecks would find these sites enjoyable due to abundant sea life and vistas.)
- identified sites with researched histories (to allow stories to be interpreted to the public)
- well documented (so that visitor impacts could be tallied and action taken to reduce visitation if necessary).[317]

National Register of Historic Places

In recognition of the value of these underwater and upland sites, the National Register of Historic Places, the federal government's official list of sites deemed to have historic importance, approved six different BNP sites for listing. The cultural resources staff currently oversees their care and maintenance, which requires a variety of expertise. The six sites are described below.

Offshore Reefs Archeological District – listed in 1984

The Offshore Reefs Archeological District extends north and south for 19.2 kilometers on the east side of Elliott Key to the BNP boundary on the Atlantic Ocean. The district's hard and soft corals are resting places for at least sixteen and as many as forty-two shipwreck sites. According to the nomination form, these sites represent "all phases of American history" from Spanish exploration to English colonization to nineteenth-century American shipping. (Several were included in the Maritime Heritage Trail.) Historical and geographical circumstances—the importance of the area's shipping trade, its use as a route between ports and continents, and its treacherous currents and storms—have conspired to make this district one of the largest collections of shipwrecks on the US southeastern seaboard.The shipwrecks continue to be subject to vandalism and looting despite some being covered in large part by marine and coral life.[318]

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[317] Ibid., 46-47.

[318] NPS, National Register of Historic Places Inventory, Nomination Form DA03219, March 21, 1980, NPS, 1-4.

Looting is one of the CRMP's biggest management challenges. Lawson noted that, "despite regular and frequent looting of shipwrecks," as of 2017, the park had prosecuted only one case (in 1985) under the federal Archeological Resources Protection Act (ARPA). BNP hosts numerous ARPA and law enforcement trainings, and CRM staff regularly monitors sites and conducts site damage assessments to try to cope with the problem. However, the greatest issue was that, according to Lawson, the "general population of South Florida (despite decades of outreach efforts by professional archeologists in the state and federal governments) still primarily [thinks] of shipwrecks as 'treasure chests' and a 'finder's keeper's attitude ruled." As a result, the park has spent "hundreds of thousands of dollars" to hide and bury shipwrecks from the public "out of fear that if publicized they [would] be destroyed."[319]

Boca Chita Key Historic District – listed in 1997

The historic structures on beautiful Boca Chita Key, located mainly at the northwest end of the island, are recognized as important links to the park's history. (See Chapter 2 for more on its human history.) The park contains other remnants of human habitation, but Boca Chita—with its distinctive lighthouse and club complex—earned National Register status by being "locally significant…for its representation of the activities of the wealthy industrial class that emerged between the first and second World Wars, and as a significant example of a retreat constructed by Mark Honeywell, an influential member of this class," according to the 2010 *Historic Structure Report and Cultural Landscape Inventory for Boca Chita Key Historic District*. The report also recognizes the site as "a representative example of the architectural styles and construction methods employed on weekend retreats in the Florida Keys during the 1930s."[320]

The vacation retreat was designed by the firm of noted Miami architect August Geiger and constructed between 1937 and 1940 using limestone, a typical building material of the period and area. Owner Mark Honeywell erected the sixty-five-foot lighthouse "as a beacon to guide himself and his guests to the island," according to Leynes and Cullison in their 1998 BNP historic resource study. They continue, giving greater detail to a story previously alluded to in Chapter 2: "A popular story reports that the United States Coast Guard ordered it shut down after its first lighting in the late 1930s because it was not a registered and approved navigational aid. However, the floor of the lantern at the top of the tower had no attachments for affixing a light and appeared never to have had any, casting doubt on the story."[321]

Other noted structures on Boca Chita include a small chapel, a picnic pavilion, a garage, an engine house and cistern, walls, walkways, a bridge over a small canal, and a cannon set in a stone base. But storms and salt water corrosion have taken their toll,

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[319] BNP staff (Lawson), Administrative History Comments, 2017, 10.

[320] Jaeger Company and Quinn Evans Architects, *Historic Structure Report and Cultural Landscape Inventory for Boca Chita Key Historic District,* NPS Cultural Resources Division, December 2010, 2.

[321] Leynes and Cullison, *Historic Resource Study,* A1-A2.

and a major rehabilitation of the lighthouse and its dome was completed in 2013 at a total cost of $101,995. According to Lawson, as of 2017 Boca Chita was heavily visited for its camping and picnic facilities, and it suffered from usage and vandalism.[322]

Sweeting Homestead – listed in 1997

As mentioned in Chapter 1, Asa Sweeting homesteaded a 154.4-acre site at the north end of Elliott Key in 1882, eventually expanding it to 239.8 acres. The site's nomination form describes it it as a "significant example" of the homesteading and early agriculture era in this region. Although as of 2017 most of the buildings were gone and the site was overgrown with natural vegetation, enough features remained to help archeologists and historians understand the homestead's organization and operation. The site thus provides a "rare opportunity to interpret the settlement of Southeast Florida at the turn of the twentieth century." The homestead also illustrates how humans lived in the island's "hostile environment" and raised successful agricultural crops, including tomatoes and pineapples.[323]

In 2016, a detailed archeological survey of the largely overgrown homestead area was completed. It identified eight of the original twelve structures, four of the original six docks that accompanied them, cisterns and their fragments, and remnants of a school and a "hurricane house" that was used by island residents as a storm refuge. The survey concluded that there was little threat to the site from humans, but future storms and rising sea levels would continue to impact the site.[324]

Nuestra Señora del Populo – *listed in 2006*

The *Nuestra Señora del Populo* was a wooden-hulled Spanish *guerra*, or war scout ship, that was part of the Spanish Plate Fleet and wrecked during a hurricane in 1733. During the storm, the *Populo's* crew cast an anchor in an attempt to prevent the ship from wrecking in the shallows; instead, it swung into coral, eventually sinking. The boat's crew and passengers were rescued by the fleet's dispatch vessel, but the *Populo* was lost. The wreck—mostly ballast and hull pieces—was discovered in 1966 resting in thirty feet of water on hardbottom surrounded by coral reef. Other remains from the vessel included silver pieces of eight, pottery, and cannons. The *Populo* is significant as one of the few positively identified examples of small scouting vessels used to communicate between large galleons during the Spanish exploration and colonization of the Americas.[325]

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[322] BNP staff (Lawson), BISC Administrative History Comments, 2017, 10; Charles Lawson, email to author, "Re: BISC Boca Chita Project," July 17, 2017.

[323] NPS, "Sweeting Homestead," National Register of Historic Places Registration Form, DA06996, Section 7, 1-11.

[324] Joshua Marano and Charles Lawson, *Archeological Survey of the Sweeting Homestead (BISC-67, 8DA6996). Elliott Key, Biscayne National Park, Miami-Dade County, Florida. BISC Acc. 294*, (NPS, July 2016), 1, 11, 22-24.

[325] NPS, National Register of Historic Places Registration Form, NPS, 6-8; Sue M. Cobb, Florida Department of State, letter to the Board of Trustees of the Internal Improvement Fund, July 6, 2006. Both documents contained in DA10759, Populo pdf, BISC archives.

Management of this site, known to the public despite BNP not publishing it, centers on addressing looting and vandalism. Treasure hunters, under the impression that the *Populo* contained riches, have looted it several times.[326]

Fowey Rocks Lighthouse – listed in 2010

Seafarers were no doubt thrilled in 1878 when the Fowey Rocks Lighthouse threw out its first beams, warning of the treacherous rocks and reefs that too often had doomed maritime travelers and merchants. Built as part of a network of six lights that stretched from Key West to Key Biscayne to alert ships to the dangerous Florida Reef, the iron, skeletal lighthouse that rose 130 feet above the water east of Soldier Key had a fascinating history. During the three years it took to construct the light, workers observed many things, including the wreck of the *Arratoon Apcar* on the very rocks they were trying to save ships from hitting (as of 2017, this ship's remains were located just one hundred yards away from the light). Over a century later in 2012, workers completing repairs to the lighthouse during bad weather were unable to reach their base on Soldier Key and had to camp in tents on the lighthouse's platform.[327]

Figure 6.4. In 2010, the Fowey Rocks lighthouse joined the National Register of Historic Places. It was transferred from the US Coast Guard to BNP in 2012. NPS photo, BNP archives.

[326] BNP staff, (Lawson), Administrative History Comments, 2017, 11.

[327] NPS, "Fowey Rocks Lighthouse," BNP website, accessed April 29, 2015, http://www.nps.gov/bisc/learn/historyculture/fowey-rocks-lighthouse.htm; Leynes and Cullison, *BNP Historic Resource Study,* D1-D2; Wiss, Janney, Elstner Associates, "Fowey Rocks Lighthouse Condition Assessment," July 10, 2012, 3, 5, 23, 25.

Visible from Cape Florida and BNP's northern islands, Fowey Rocks Lighthouse was originally lit by a human keeper who lived in quarters inside the lighthouse. The light was automated between 1974 and 1983, eliminating the need for a keeper. Its original lens, later replaced with one powered by solar energy, was visible seventeen miles out to sea, gaining it the moniker of "Eye of Miami." The lighthouse, long owned by the US Coast Guard (USCG) but located inside park boundaries, was transferred to BNP ownership in 2012 under the provisions of the National Historic Lighthouse Preservation Act. The USCG continued to maintain the light, which was approved for National Register recognition in 2010. Although an appreciated addition to the park, the lighthouse transfer came with challenges. When BNP received it, the structure was in poor condition and had hazardous materials such as lead paint, asbestos, and fuel oil waste. Lawson noted in 2016 that, while the lighthouse itself likely had thirty years of "viable life" left in its main structure, "nearly every other part" of it needed repair or replacement—work that could reach several millions of dollars in costs before the lighthouse could open to visitors. Lawson, who pushed for the lighthouse transfer, regretted that the USCG wasn't required to help with the safety and financial concerns of the facility.[328]

Jones Family Homestead – listed in 2013

Members of the Jones family, as noted in Chapter 4, were early supporters of the establishment of Biscayne National Monument, and the home and agricultural sites on the two keys they inhabited were since then protected and acknowledged for their important historic value. The district includes property on Porgy Key, where the African American family, who were successful despite the Jim Crow era of racial prejudice, had homes and grew fruit and vegetables, including key limes and pineapples. Totten Key, which patriarch Israel Jones bought in 1911, was where he and his sons produced key limes. A fire destroyed the house in 1982, but the foundations, some wall structures, and cistern ruins remain. The site is significant for the information it provides about early agriculture in the area and as an important site at the time of BNP establishment. Later, the Jones's sons served as important fishing guides, participating in the bay's recreation boom.[329]

Maintaining the Jones sites, which are subject to natural forces, is an ongoing management issue. Lawson noted that the park's 2015 General Management Plan (GMP) called for opening the home site for visitation, which would require financial investment in both maintenance and improvements to infrastructure.[330]

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[328] Ibid; BNP staff, Administrative History Comments, 2016; BNP staff (Lawson), Administrative History Comments, 2017, 11.

[329] NPS, "Jones Property Ruins, Jones Homestead…" National Register of Historic Places Nomination Form, 1-14.

[330] BNP staff (Lawson), BISC Administrative History Comments, 2017, 11.

Potential National Register Properties and Other Important Sites

BNP contains many other important marine and upland sites—some 135 are identified as having archeological value marking the human history of the area. For example, Tequesta sites on Sands and Totten Keys—extant long before Spanish explorers arrived and in use during the Age of Exploration— were being considered as a potential National Register district as of 2016. Extensive research was ongoing at Totten, which featured a midden. The Sands Key site, excavated in 1989 and found to contain pottery, shells, and bone fragments, was being reanalyzed in conjunction with the Totten findings. According to Lawson, discoveries from these keys could be used to prepare a new district nomination.[331]

By 2016, BNP and the SEAC had begun drafting a Maritime Cultural Landscape (MCL) and National Historic Landmark Theme Study for the Florida Keys Reefs. After its completion, according to Lawson, staff could then develop a MCL proposal for the park as a "historic vernacular landscape," to highlight how maritime activity influenced the reefs and the ways the coral reef landscape affected the people who lived and worked among them.[332] This "big picture" project would go beyond a single site to consideration of the historic impact of a large area and era.

The Stiltsville "neighborhood" of wooden structures—more than than fifty years old as of 2017—may also contain a few potential National Register sites. BNP staff members documented its architecture and the ruins of former homes there, which could also result in a new National Register nomination. (See Chapter 4 for more history of Stiltsville).[333]

The site of BNP's headquarters and the Dante Fascell Visitor Center was once the site of a segregated beach used by African Americans during the Jim Crow era of the 1950s and 1960s. Officially called Homestead Bayfront Park North, the area was commonly known as "Black Beach" (the all-white beach was located south of the existing Homestead Bayfront Park and marina). After the landmark federal Civil Rights Act of 1964, which called for integration, Black Beach was closed and "went into disuse," and its "abandoned facilities" became park headquarters and offices after the establishment of the national monument in 1968, wrote Iyshia Lowman in her 2012 report, *Jim Crow at the Beach: An Oral and Archival History of the Segregated Past at Homestead Bayfront Park*. Lowman continued, "So once the Civil Rights Act had passed and the north side closed, people of different races went to the south side of Homestead Bayfront Beach together, or they went somewhere else entirely."[334]

To manage and preserve artifacts from its different sites, in the late 2010s BNP cultural resources staff worked closely with the SRC and the SEAC, with the latter handling upland

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[331] BNP staff, Administrative History Comments, 2016.

[332] Charles Lawson, email to author, "Maritime Cultural Landscape." November 29, 2016.

[333] BNP staff, Administrative History Comments, 2016.

[334] Iyshia Lowman, *Jim Crow at the Beach: An Oral and Archival History of the Segregated Past at Homestead Bayfront Park*, (Homestead, FL: NPS, 2012), 2, 11.

archeology items. These ongoing relationships were integral to continuing research on valuable sites that could continue to provide important information about the peoples of the Biscayne Bay area for generations to come.

By 2017, the CRMP had expanded to include an archeological technician and a conservation lab, and it also developed a series of wayside displays for park visitors. A partnership between the CRMP and Eastern Carolina University (ECU) resulted in field schools to produce research projects and reports, and BNP's partnership with the Slave Wrecks Project (a Smithsonian-funded project to gather information about the slave trade) provided field experience opportunities for professional archeologists and students while producing quality research for the park. BNP also frequently sponsored interns from underwater archeology programs such as ECU, the University of Miami, and the University of West Florida.[335]

Since its inception, the BNP CRMP evolved significantly. From looking for significant sites and shipwrecks to implementing site evaluations and gaining historic designations on land and in the ocean, the program continued to expand, and, with it, the public's insight and appreciation of the park's cultural treasures. BNP also nurtured professional partnerships and cooperation with volunteer groups, further enriching the public's understanding of the park's history.

BNP Museum Collections and the South Florida Collections Management Center

Diverse items such as coins, cannonballs, coral, bottles, a canoe, plants, and insect specimens were collected, preserved, and catalogued for BNP through the multi-park South Florida Collections Management Center (SFCMC). The center, located in nearby Everglades National Park (ENP), actively stores and handles BNP collections as well as those for ENP, Dry Tortugas National Park, Big Cypress National Preserve, and the De Soto National Memorial. The museum collections enhance research, resource management, interpretation, and accountability for the park, and they fulfill NPS mandates set up through various federal acts.[336]

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[335] BNP staff (Lawson), BISC Administrative History Comments, 2017, 12.

[336] Note: The NPS's legal mandate for acquiring and preserving museum collections is codified as follows: 54 USC 100101: Promotion and Regulation and 54 USC 100301-100302: Establishment, commonly known as the NPS Organic Act; 54 USC 100701 et seq.: System Resource Inventory and Management, formerly the National Parks Omnibus Management Act; 54 USC 300101 et seq.: Historic Preservation, commonly called the National Historic Preservation Act; 54 USC 102501-102504: Museums, formerly known as the Museum Properties Management Act; 54 USC 312501-312508: Preservation of Historical and Archeological Data, formerly called the Archeological and Historic Preservation Act; 54 USC 320301-320303: Monuments, Ruins, Sites, and Objects of Antiquity and 18 USC 1866(b): Historic, Archeologic, or Prehistoric Items and Antiquities, commonly known as the Antiquities Act; 54 USC 321010-320106: American Antiquities [Policy and Administrative Provisions], formerly known as the Historic Sites Act; the Reservoir Salvage Act of 1960, as amended (16 USC 469-469c); the Archeological Resources Protection Act of 1979, as amended (16 USC 470aa-mm); and Title VI, Subtitle D on Paleontological Resources Preservation (123 Stat. 1172, 16 U.S.C. 470aaa), contained within Public Law 111-011 and commonly called the Paleontology Resources Preservation Act of 2009.

The SFCMC's core values and guiding principles include professionalism to ensure stewardship of collections; education of staff and the public through research, accessibility and dissemination of information; leadership within the NPS communityto promote innovation, collaboration, and advocacy; creation of an efficient, accountable, and sustainable organization; and responsive customer service. To accomplish these goals, as of 2016, SFCMC staff included three permanent staff (a curator, archivist, and registrar) and a few support technician positions were in the process of being filled. No staff member was assigned specifically to BNP; rather, the curator and the BNP cultural resources program manager shared management of the park's collection. The staff was supplemented by interns and volunteers who helped with processing materials and creating museum exhibits.[337]

The SFCMC experienced a long evolution. Although ENP was founded in 1947, the park didn't hire a curator until 1987—and only after it first considered giving its collections to an outside university or museum. A NPS assessment of the collection resulted in a 1989 Collections Management Plan and the hiring of a curator and a technician—the first two employees hired specifically for this program, initially called the Everglades Regional Collection Center (ERCC). BNP, originally under the management of ENP, was also handled by this center. From after Hurricane Andrew in 1993 until 1995, there was no ERCC staff, and the next curator was a herpetologist with no training in museum management.[338]

When Nancy J. Russell came to the ERCC in 2002, she was the only museum professional, and she was handling four park collections. What she found was a "disaster, an outright disaster from the facility on down to the records, to storage, to every aspect of the program." Rooms were jammed with boxes of materials, ceiling stains indicated roof leaks, some materials were moldy, and the "cataloguing was terrible," Russell recalled. Security was lax, and many staff members were unaware that the center even had collections. Russell, who moved to another NPS center in 2016, immediately began asking for more funding for the collections program to hire a staff to professionally handle the archives and collections.[339]

Although the multi-park center concept had been in place since the 1980s, according to the 2007 *South Florida Parks Collection Management Plan*, it was not until two decades later that managers from the parks met to determine the "role and function of the SFCMC relative to each park." Managers ultimately decided that the SFCMC would be the "central museum service provider" for four park units (the De Soto National Memorial was added later), and in 2004 they developed a "vision, mission, goals and objectives" for the SFCMC. A board of directors—which included park superintendents, the SFCMC museum curator, and the

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[337] NPS, South Florida Collections Management Center (SFCMC) *FY2013 Annual Report*, NPS, September 30, 2014, 2, 11-13; NPS, SFCMC *FY2014 Annual Report*, NPS, May 28, 2015, 17; Bonnie Ciolino, email to author, "Quick Question," November 16, 2016; NPS, *Scope of Collection Statement, Biscayne National Park*, NPS, March 2007, 1.

[338] Nancy Russell, oral history interview transcript, September 15, 2010, 10-12, EVER-01725.

[339] Ibid., 4-9, 15-17.

regional curator—oversaw the SFCMC, and collection committees at each park collaborated with the SFCMC museum curator.[340]

Although Biscayne National Monument was established in 1968, it wasn't until 1983 that the first museum collections were formally created; these centered on six plant specimens collected that year. Early efforts to organize and accession the BNP collections focused on new and backlogged collections of park biota. The first archeological accessions, made in 1984, contained artifacts found throughout BNP by visitors or park staff. That same year, a former Elliott Key resident (see Chapter 4) donated a collection of 125 bottles and two wooden figures, and park staff found a wooden canoe. The collection grew a year later with a 194-artifact collection from the HMS *Fowey* shipwreck. By 1987, the BNP collection included 552 objects—a number that grew to 8,802 items in 1990. The 2014 collection included 987,943 items, making it the third largest in the SFCMC. (As of 2014, the SFCMC collection totaled 7,207,587 items.) BNP acquisitions and collections included the Doug Biggers collection of artifacts, Boca Chita architectural samples, records and specimens from park research projects, visitor logs, administrative records, maps, fishing impact studies, and objects associated with Afro-Caribbean religious activity in the park. BNP also had more than two thousand biological specimens housed at the SFCMC, the Fairchild Tropical Botanic Garden (Miami), and the Florida Museum of Natural History at the University of Florida (Gainesville). The SEAC, an active partner and repository of BNP, also held some archeological artifacts, valuable for ongoing research and management.[341]

Each park had to carefully document legal title to its collections, and the SFCMC handled this accessioning for BNP. For example, during 2014, BNP added 46 new accessions, bringing its total to 449 accessions and 4,570 new objects. (Note: one accession may include multiple objects.) Accessioning items required accurate documentation, research, database input, and coordination with donors to make sure all necessary paperwork has been correctly signed and processed.[342]

Not all collections were intended for research use; in fact, two percent were on display to the public. In 2013, SFCMC curator Russell, SFCMC registrar Jennifer Stafford, BNP cultural resource manager Lawson, and park interpretive staff worked together to install an exhibit of artifacts from the HMS *Fowey* and shipwreck site known as the English China Wreck. Each night, after the Dante Fascell Visitor Center closed to the public, they worked into the wee hours of the morning to set up and label the displays, which included pottery pieces, bottles, and containers. It was the first time BNP had the opportunity to display shipwreck material since Hurricane Andrew destroyed a similar exhibit on Adams Key. During Lawson's tenure, exhibition work included creating a climate-controlled viewing area for an

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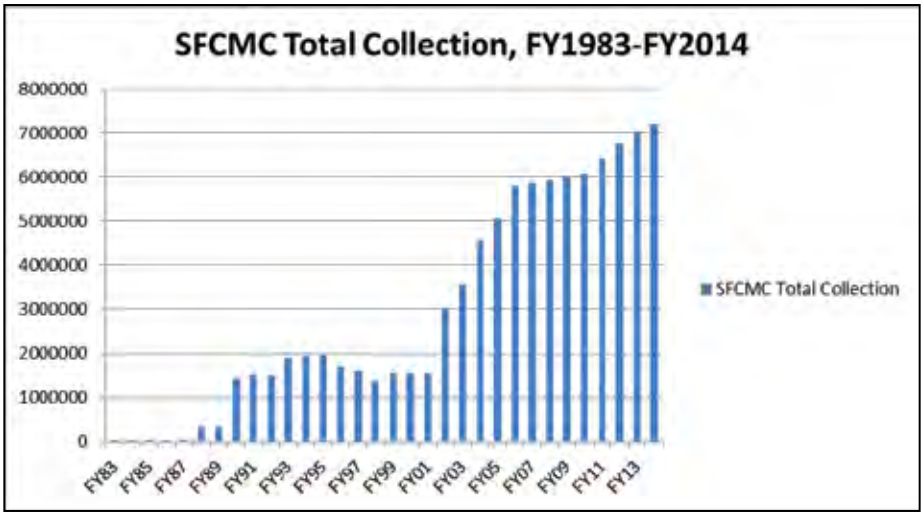
[340] NPS, *South Florida Parks Collection Management Plan* (NPS, December 2007), v-vi.

[341] NPS, SFCMC *FY2013 Annual Report*, 17-18; NPS, SFCMC *FY 2014 Annual Report*, 17-18; NPS, *Scope of Collection*, 1, 6.

[342] NPS, SFCMC *FY2013 Annual Report*, 18-19.

HMS *Fowey* cannon and replica cannon balls, as well as installing interpretive panels about the vessel—all part of joint efforts by BNP and the SFCMC to display and better interpret the park's human history.[343]

Despite having many ideas for projects and expansions, as of 2017 the SFCMC faced a steadily declining budget and possible staff cuts. As museum collections and space demands increase and personnel decrease, the SFCMC could find allocating resources difficult in the future (see graphic below for collection size growth). In 2014, the SFCMC expanded its storage space into the Beard Center Training room at ENP, and the new area helped accommodate expanding collections. However, the SFCMC's annual report for 2014 warned that, at most, "this new space [would] provide up to ten years of collection storage space, largely for the archival collections (although a smaller portion of the space [would] be dedicated to museum objects and specimens)." The report stated that the SFCMC needed a "permanent, long-term solution" and called upon its board for assistance.[344]



[345] Source: NPS, SFCMC *FY 2014 Annual Report*.

[343] Ibid., 31-32; BNP staff, Administrative History Comments, 2016, 51; BNP staff (Lawson), BISC Administrative History Comments, 2017, 13.

[344] NPS, SFCMC *FY2013 Annual Report*, 32; NPS, SFCMC *FY2014 Annual Report*, 11, 38-39.

[345] NPS, SFCMC *FY2014 Annual Report*, 18.

Chapter Seven

Natural Resource Management

Biscayne National Park (BNP) nurtures some of the most important terrestrial and marine natural resources in South Florida. Its mission, written into its enabling legislation, is to "preserve and protect" these resources for present and future generations. Park staff take this duty to heart, recognizing that the decisions made in the past—as well as decisions made today—will determine the health of the system long into the future. This chapter focuses on management of these resources while highlighting issues specific to the park and its rich biota.

Local, state, and federal governments long recognized BNP's value in providing protective designations for local flora and fauna. The creation of the monument and subsequent national park showed the federal government's interest and support, which also required the participation of state and local governments. In the 1970s, the State of Florida assigned BNP status as an Aquatic Preserve and an Outstanding Florida Water, while Miami-Dade County designated it an Aquatic Park and Conservation Area. Importantly, the State of Florida also made the bay portion of the park a lobster sanctuary, which will be discussed later in this chapter.[346]

The US Environmental Protection Agency (EPA) declared BNP an Outstanding National Resource Water (ONRW) in 1989 under the federal Clean Water Act. According to the EPA, this anti-pollution designation was for bodies of water that were "important, unique, or sensitive ecologically." It also carried the mandate that water quality could not be lowered in ONRW areas, which were typically "the highest quality waters in the United States."[347]

First, the Florida Department of Environmental Regulation (DER) had to request the ONRW designation, and initially the DER declined to request any such designations in the state. However, BNP Superintendent James A. Sanders (1980-1993) "wrote comments and justifications" to the DER. He recalled that, after oral testimony before the DER's governing body in 1989, the DER's stance on requesting these designations changed, leading to BNP's designation.[348]

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[346] NPS, *Biscayne National Park General Management Plan, Development Concept Plan, Wilderness Study and Environmental Assessment*, NPS, January 1983, 55.

[347] Environmental Protection Agency (EPA), "Antidegradation Policy," EPA website, accessed June 18, 2015, http://water.epa.gov/scitech/swguidance/standards/adeg.cfm.

[348] Miller, *BNP: It Almost Wasn't*, 132.

National Park Service's Natural Resource Challenge

Late in the twentieth century, science and care of natural resources became stronger focuses for the National Park Service (NPS). In 1997, author Robert Sellars critiqued NPS actions as more utilitarian than scientific in his book *Preserving Nature in the National Parks: A History*. Suddenly "inspired" to recommit to its original mission of preserving "America's natural heritage," the NPS launched its Natural Resource Challenge. According to a 1999 NPS press release, the six-year program's action plan called for "substantially increasing the role of science in decision-making, revitalizing and expanding natural resource programs, gathering baseline data on resource conditions, strengthening partnerships with the scientific community, and sharing knowledge with educational institutions and the public." With that action plan came almost $20 million in new federal funding to help park managers gather "critical baseline data for informed decision making" through natural resource inventories, and to fund preservation and restoration projects.[349]

The challenge resulted in Congress making "an unprecedented funding commitment" of $77.6 million over six years, writes Raymond Sauvajot of the NPS. He continues, "At about the same time, legislation was passed that formally recognized the role of science in the NPS and mandated the NPS to use scientific information to inform its decision-making process."[350]

BNP benefitted from this new focus and funding in a variety of ways. In 2000, the park joined a NPS-funded exotic plant management team called the Florida Partnership, which was hosted by the Southeast Environmental Research Program at Florida International University. The partnership involved eleven parks, including Big Cypress National Preserve, Canaveral National Seashore, Dry Tortugas National Park, and Everglades National Park (ENP).[351] In ensuing years, Florida Partnership projects included developing fisheries management plans, studying combustion engine impacts on seagrass beds, establishing statistical methods to determine water nutrients in BNP waters, and surveying use of the herbicide glyphosate to control vegetation in canals and structures near the park.[352]

Resource Management and Fish and Wildlife Inventory and Monitoring Program

Since its evolution in the 1970s and 1980s, the BNP Fish and Wildlife Inventory and Monitoring Program (FWIMP) oversaw a variety of flora and fauna, helping them flourish

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[349] Robert Sellars, *Preserving Nature in the National Parks: A History* (New Haven & London: Yale University Press, 1997); NPS, "Natural Resource Challenge Original Press Release," NPS website, August 12, 1999, https://www.nps.gov/nature/pressrelease.htm.

[350] Raymond M. Sauvajot, "Science for our National Parks' second century: a view from the top," *ECOSPHERE*, vol. 7 (11) (November 1, 2016), 1.

[351] NPS, *Natural Resource Challenge Funding: The National Park Service's Action Plan for Preserving Natural Resources. A Report to the United States Congress Fiscal Year 2000* (Washington, DC: NPS, July 2001), 23.

[352] Natural Resource Stewardship and Science, *Funding the Natural Resource Challenge. Report to the United States Congress, Fiscal Year 2005* (Washington, DC: NPS), 47, 48, 88, 107, 108.

and protecting them from human and natural threats. Protected species included the sensitive and varied corals found in reefs along offshore islands, endangered butterflies flitting through island vegetation, migrating birds seeking food and shelter, and fish luring visitors to the park's turquoise waters. Protections, however, were as varied as the different species that made BNP their home. The park's open borders especially confounded FWIMP efforts, as they made managing park "people traffic" and its impacts difficult.

The FWIMP focused on a number of areas, including developing a Fishery Management Plan (FMP, discussed later in this chapter), in-water visual censuses of fish, and creel surveys of fishing. FWIMP staff educated park visitors about fishing opportunities, managed threatened and endangered species, administered controls and surveys of non-native and invasive species in BNP, and kept a database of all species in the park. They also responded to wildlife strandings, injuries, deaths, and hurricanes.[353]

As mentioned in Chapter 4, BNP began with a handful of personnel. Everglades National Park (ENP) staff—including Gary Davis, who helped with research and monitoring of fish, coral, and lobster—handled early natural resource work through the South Florida Natural Resources Center (SFNRC). Jim Tilmant, who worked as the park's research biologist and became its first natural resource manager in the 1970s, conducted research on lobster, coral reef fisheries, and commercial fishery impacts before transferring back to the SFNRC in 1981. "When I started it was Jim and Jim alone," recalled Richard Curry, who had been hired with another person by Tilmant in 1976 to help with fishery studies. Curry then concentrated on a water quality program that measured "salinity, temperature, PH, nitrate, nitrite, ammonia, phosphate" and other qualities of the park's waters, in addition to the cultural resource program. Curry used forty-two stations in the park and four stations on coral reefs to collect data, which was analyzed at a laboratory on Adams Key; this laboratory was later moved to the administrative building.[354]

Sellars wrote that the SFNRC's creation in the mid-1970s "resulted mainly from the personal interest and political power of Assistant Secretary of the Interior Nathaniel P. Reed." A proposed 1960s jetport, which threatened the health of ENP and spurred the creation of Big Cypress, left the park service "unprepared and thus compelling it to rush to gather data in hydrology, geology, ornithology, and other fields that would strengthen the park's defense. To many, this effort made clear the need for a strong science program at Everglades." Reed, who had been an early advocate of BNP establishment, pressed the SFNRC to improve science and research in ENP as well as in BNP and Big Cypress. Hurt by stagnant funding and inflation, the center eventually terminated its support for BNP and Big Cypress, but by then BNP had established its own scientific staff.[355] However, sometime in the early 2000s the center began supporting all South Florida parks again.

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[353] NPS, *Annual Narrative BNP 2010*, 28.

[354] Curry, interview (February 5, 2015); Richard Curry, telephone interview with author, December 7, 2016; James Sanders, telephone interview with author, December 11, 2016.

[355] Sellars, *Preserving Nature*, 236-37.

Upon his arrival at BNP in 1980, Sanders had two fulltime natural resource staffers with help from SFNRC staff and summer student researchers. They investigated the impact of commercial fishing, shrimping, crabbing, and sponging—as well as Davis's continuing studies on lobsters in the park. (See specific species later in this chapter.) BNP was also increasingly concerned about Mexican red-bellied squirrels damaging native palm trees, feral cats on Elliott Key and Convoy Point, and dwindling numbers of Schaus swallowtail butterflies (found on Elliott Key), along with species on the federal Endangered Species list. By 1981, the park had developed a resource management plan that looked at water, reef, and endangered species protection but still relied on two staff, SFNRC personnel, and one student—the latter collected research data on sponges. In 1983, BNP had eight staff (three fulltime and five permanent positions subject to furloughs) and four seasonal employees for the division—the full-plan staff level that included a second year of exotic plant control funding. But this staffing bounty was short lived. 1984 hiring freezes within the NPS and a NPS regional review that recommended dismantling the natural resource staff "turned out to be a catastrophe," according to Sanders. In 1985, several staffers transferred to the SFNRC and ENP. Sanders recalled the ensuing developments:

> [The] Division of Resource Management was basically abolished as a separate division, and it was combined with the interpretive and visitor protection sections. There used to be interpretation and visitor protection under one chief. Now under this recommendation, we had interpretation, visitor protection, resource management under one chief, and they called that the Division of Ranger Activities. And then we stopped separating terrestrial and marine sections. That was abolished. So we had three sections under the Division of Ranger Activities.

Curry stayed at BNP and became the resource management specialist in charge of water issues. As a result of the restructuring, research programs were put on hold, including commercial fish surveys and formal exotic plant eradication. Water quality monitoring went from monthly to quarterly and sport fishing creel censuses were reduced, Sanders said.[356]

By 1986, responding to the cutbacks and with concurrence from the NPS regional office, BNP changed job descriptions for staff in what then became the Division of Ranger Activities to meet the demands of a park that had only two people handling resource management. Job descriptions added a 30 percent resource duty to each ranger, which permitted monitoring and surveys to continue. "[We] began to build the program back up to what we had lost," Sanders said, adding that the park also relied on research help from partnering with government agencies and university researchers. Employees were ultimately happy with this job requirement because it made them more marketable to jobs in other parks.[357]

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[356] Sanders, interview (December 11, 2016).

[357] Ibid.

When Richard "Dick" Frost arrived as BNP Superintendent in the wake of Hurricane Andrew, the park's Resource Management and Visitor Protection Division handled natural and cultural resource work along with visitor protection operations. With aid from two seasonal employees, Curry ran a separate Science Division. According to Curry, the divisions were split after the hurricane. The natural resources staff had one permanent employee and two seasonal employees but grew during Curry's tenure. Although repairs from the hurricane and the threat of Homestead Air Force Base loomed large during Frost's time at BNP, he said natural resource issues such as damage from boat groundings, coral depletion from disease and temperature rise, exotic species, fisheries management, and water pollution also required staff attention.[358]

As of early 2017, the Resource Management Division included nine NPS employees, down from eleven in previous years; these included a chief, a supervisory ecologist, an ecologist, a wildlife biologist, and an archeologist. The department also contracted two University of Miami employees as water quality technicians and benefitted from the help of volunteers, including one who worked year round, one seasonal fulltime volunteer, and others who worked during different times of the year.[359]

Coral Reefs and Reef Restoration

BNP coral reefs are important resources for the park, its visitors, and the health of the general marine system in southeast Florida. They serve as the first line of storm defense for the area's coast and provide habitat for fish, invertebrates, and many other organisms. As a result, many conservation initiatives over the years have focused on the park's reefs, the northernmost extension of the Florida coral reef. From the nineteenth century (when Miami's growth really began) continuing into the early 2000s, the park's proximity to a burgeoning urban area (Miami and the Florida Keys) and its human population presented major challenges. Every year, an estimated four million people make outings to Florida's keys, both inside and outside BNP borders. (The park estimates annual visitation to BNP at about 500,000.) Many come to dive in reef areas, and these very humans who love and visit the reefs also bring unintended problems such as vessel groundings, overfishing, and pollution. Poor water quality caused by pollution from nearby cities and inadequate waste management can support algae blooms, and pressures such as climate change, disease, bleaching, and hurricanes add their own damage to the reefs. A 2002 report by the National Oceanic and Atmospheric Administration (NOAA) reported a 37 percent "decline in live coral cover in just five years," likely resulting from these stressors.[360]

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[358] Curry, interview (December 7, 2016); Richard "Dick" Frost email to author, "Re: BISC admin history questions," December 8, 2016.

[359] Elsa Alvear, email to author, "Quick BISC questions," January 3, 2017; Elsa Alvear, email to author, "BISC admin history comments," July 21, 2017.

[360] NPS, *Final General Management Plan*, 2015, 24.

As important as these reefs are to the marine ecosystem, damage to them can be devastating, especially since they grow very slowly. It should be noted that as of 2017 there were no artificial reefs in the park—all the sunken boats were maritime casualties, not deliberately placed structures.

The Habitat Restoration Program (HRP), formerly called the Damage Recovery Program (DRP) and highlighted in Chapter 5, was developed in the early 2000s to legally recover funds to help restore the coral and seagrass beds, but the park needed a complementary scientific restoration plan. To deal with environmental health issues, BNP staff worked for many years to create a Coral Reef Restoration Plan/Programmatic Environmental Impact Statement (RP/EIS). The goal was "to create a stable, self-sustaining reef environment of similar topography and surface complexity to that which existed prior to injury, such that natural processes, enhanced through mitigation, [would] lead to a fully functioning coral reef community with near natural complexity, structure and makeup of organisms." The RP/EIS was intended to guide park managers in the event that coral reefs were damaged and in need of restoration.[361]

As with many NPS requirements, the development of the RP/EIS was a lengthy process. An interdisciplinary team of representatives from BNP, the NPS Washington office, the NPS Environmental Response, Damage Assessment, and Restoration Branch, the NPS Water Resources Division, and contractors met in June 2003 for the initial scoping meeting to establish the plan's goals. They discussed different types of injuries to corals, which could break, crack, or be pulverized from impacts with boats, anchors, and toxic paint from boat hulls. That same year, a NOAA/NPS reef and seagrass restoration workshop was held at BNP. The workshop brought together thirty-six state and federal agencies and staff that held jurisdiction over submerged marine resources extending from South Florida to the Caribbean. The final RP/EIS plan was published in March 2011.[362]

The HRP at BNP most recently manages coral restoration efforts within the park. As of 2015, the team was investigating coral damage, mapping sites, determining the species involved and the extent of the injuries, and developing plans to help heal the coral. Restoration work included many strategies such as reattaching broken corals by using concrete and cable ties or rebuilding the reef structure. Boat hull paint was scraped away to keep it from poisoning reef denizens, which would hopefully recolonize injured sites. Then BNP staff monitored the sites for several years to determine their success or additional needs —important information that could inform the park's strategies.[363]

Under Curry's leadership, for more than fifteen years BNP experimented with growing coral polyps to aid in coral restoration. Curry and volunteers were successful in

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[361] NPS, *Biscayne National Park 2003 Annual Report*, NPS, Superintendent's Files, BISC, 16.

[362] Ibid., 16-17; NPS, *Coral Reef Restoration Plan Final Programmatic Environmental Impact Statement,* NPS, March 2011, C-i.

[363] NPS, "Coral Reef Restoration," BNP website, accessed June 13, 2015, http://www.nps.gov/bisc/learn/nature/coral-reef-restoration.htm.

laboratory settings, but they were not able to grow polyps in underwater labs in the park. One study, with researchers from the University of Miami and NOAA Fisheries, focused specifically on acroporid coral restoration by attaching fragments damaged in a storm to substrate in hopes that they would grow and flourish. The need was pressing: by 2006, both elkhorn and staghorn corals were listed as "threatened" by the federal Endangered Species Act (ESA), approved by Congress in 1973 to protect flora and fauna on the brink of extinction.[364]

In 1993, BNP staff helped create the innovative nonprofit Coral Nursery Club to rescue coral fragments left by careless boaters, to create a stock of coral varieties from the park, and to work with members of the community on reef management and restoration programming. Pieces of coral broken by boat groundings were glued onto small spikes and then put underwater to grow in different marine sites. Transponders were embedded in the transplanted corals. Their identification numbers made it easier to monitor their growth and success. Coral nurseries were set up at Alina's Reef, Boca Chita Key, Adams Key, and at the University of Miami near the Rosenstiel School of Marine and Atmospheric Sciences, funded in part by fines imposed in a coral importation case and directed to the park through the partnership with the South Florida National Parks Trust. The Hoover Foundation also contributed to the effort. In later years, the coral nursery program had problems with weather, bleaching, and boater damage and was eventually discontinued.[365]

BNP involvement in coral reef restoration went far beyond its borders. In 1998, the US Coral Reef Task Force was formed and held its first meeting at the park in October of that year. The group, made up of a number of different federal, state, and territorial agencies, included the NPS as well, since ten of its parks (which ranged from the Virgin Islands to Hawaii) contained coral reefs. The group was organized to provide support for "on-the-ground action" to conserve reefs. BNP also participated in the International Coral Reef Symposium, held every four years.[366]

In 1997, park staff helped establish the Caribbean Marine Protected Areas Management Network and Forum (CaMPAM), an initiative that considered the creation and operation of protected marine areas in locations extending from South Florida through the Caribbean.[367]

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[364] Megan Ondrizek, "Biscayne Bay protection efforts not easy," *Our National Parks*, December 4, 2007, http://www.ournationalparks.us/south_florida/biscayne/biscayne_protection_efforts_not_easy_but_important; NPS, *Biscayne National Park Superintendent's Annual Narrative Report 2006*, NPS, 16.

[365] Ibid., 21; Jonathan Dorsey, "Biscayne National Park's Coral Nursery Club: working to protect Florida's coral reefs," *Shark Research* blog, University of Miami website, accessed June 15, 2015, http://rjd.miami.edu/conservation/biscayne-national-parks-coral-nursery-club-working-to-protect-floridas-coral-reefs (post not available); NPS, *Biscayne National Park 2007 Superintendent's Annual Report*, NPS, 22; NPCA, *State of the Parks: Biscayne*; 5.

[366] United States Coral Reef Task Force (website), accessed June 13, 2015, http://www.coralreef.gov.

[367] CaMPAM Network and Forum (website), accessed June 13, 2015, http://campam.gcfi.org/campam.php.

Seagrass Restoration

Biscayne Bay's important seagrass beds serve as vital nurseries and feeding grounds for marine life, including fish, lobster, shrimp, crabs, sea turtles, manatees, and important recreational fish species. As of 2015, the grasses, which included manatee grass (*Syringodium filiforme*), turtle grass (*Thalassia testudinum*), and shoal grass (*Halodule wrightii*), were found on 64 percent of the total area of the bay. They help stabilize the bay bottom and exchange nutrients with the soil, and since it can take fifteen years or more for damaged areas to be restored, destruction of these plants can mean serious trouble. Other grass species grow at the mouths of canals and rivers. One species, Johnson's seagrass (*Halophila johnsonii),* has been protected since 1998 by the ESA because of its limited numbers. Problems that plague seagrass beds include poor water quality, boat damage, salinity and water temperature changes, turbidity, and damage to coastal wetlands. BNP's HRP included restoration of seagrass beds to return damaged areas to vitality. Many of the park's reef workshops and partnerships also address seagrass restoration.[368]

Figure 7.1. The park's seagrass beds suffered much damage from vessels, with engine props leaving long, white scars where grass once grew.
NPS photo, BNP archives.

Every year since the HRP's creation in the 1990s, the team has been called to spots where boats hit seagrass shoals or run aground in shallow areas. The vessels' attempts to motor their way out of trouble sometimes cause large trenches and "blowholes" in the bay bottom.

[368] NPS, "Seagrass Restoration," BNP website, accessed June 15, 2015, http://www.nps.gov/bisc/learn/management/seagrass-restoration.htm; NPCA, *State of the Parks: Biscayne*, 20.

HRP team members have used a variety of methods to deal with the damage, such as filling holes, transplanting seagrasses, and placing nearby stakes to attract roosting birds. The inevitable bird excrement left behind acts as fertilizer for the sites, which BNP then monitor for several years. Despite these efforts, however, most seagrass groundings are not restored, and, as of 2017, scars in seagrass meadows were still clearly visible through the bay's clear waters.[369]

Other human impacts are more difficult to pinpoint. Miami urbanization in the late twentieth century led to a decline in water quality and freshwater quantity that in turn took a toll on the bay's seagrasses. Although the bay would never again have the same pristine water quality as in pre-urbanization days, efforts in the late twentieth century to control "direct discharge and sewage outfalls" in the bay had by 2006 left the BNP seagrass community "in generally good condition," according to NPCA's 2006 *State of the Parks* report. This was an improvement from the 1950s, when raw sewage dumped into the bay reduced visibility and made the water murky (see Chapter 3).[370]

Fishery Management

Since the 1968 creation of Biscayne National Monument, management of its important fisheries has been a complicated matter. BNP began preparing its first Fishery Management Plan (FMP) in 2000 during the tenure of Superintendent Linda Canzanelli, who wanted "the plan to be prepared jointly by the park and the State of Florida."

To set the framework for the plan, Canzanelli signed a Memorandum of Understanding (MOU) with the Florida Fish and Wildlife Conservation Commission (FWC) in 2002—the first such agreement between the FWC and NPS. (Note: the MOU was renewed in 2007 and 2012 during the long course of the FMP process.) Canzanelli recalled that achieving an FMP through a joint process "took longer," but ultimately was "incredibly beneficial in the success of the plan." She added that, together, the NPS and FWC created a twenty-three member FMP working group, which included "commercial, recreational and guide fishing; scuba divers, scientists, agencies and environmental groups." The working group met six times during 2004 and was able to agree on issues pertaining to fish and shellfish populations, law enforcement education and coordination, commercial and recreational fishing, habitat conditions, and the "recreational fishing experience." The FMP working group developed a list of recommendations that were incorporated into the eventual FMP.[371]

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[369] Ibid.; Bourque, interview.

[370] NPCA, *State of the Parks: Biscayne*.

[371] Miller, BNP: It Almost Wasn't, 143; NPS, Fishery Management Plan Draft Environmental Impact Statement, NPS, November 2008, 8, 189; BNP staff (Vanessa McDonough), BISC Administrative History Comments, 2017, 19.

In order to support the FMP process, the park and FWC gathered baseline data related to fish populations within the park. In 2003, the National Marine Fisheries Service identified red grouper and some twenty-six other species—including goliath grouper, black grouper, red drum, and speckled hind—as overfished. The NPS also reported that legally-taken fish were usually caught at the minimum permissible size. This finding reflected the toll fishing was already taking on populations while also indicating a problem for the population's reproductive capacity: if visitors were taking smaller fish, larger fish, which had exponentially higher reproductive output, must have been few in number. Some experts at the time advocated that BNP create no-take zones that prohibited fishing, but they were never created. A decade later, it was rare to see or catch legally sized grouper or snapper in the park—another indicator of a downward spiral.[372] By 2014, more than five hundred species of fish had been documented in park waters. Species of ecologic and/or economic importance included snappers, groupers, permit, and tarpon.

In November 2008, BNP and the NPS issued a *Fishery Management Plan Draft Environmental Impact Statemen*t (DEIS) with the goal of managing the park's fisheries, many of which were in decline, for the next five to ten years. The plan provided five alternative courses of action that ranged from maintaining the status quo in fish populations to restoring park fisheries to within 20 percent of their historic, pre-exploitation levels.[373] In 2009, the DEIS was distributed to the public and published in the *Federal Register*. During a sixty-day public comment period, more than two thousand recipients were invited to comment and attend public hearings in Miami, Florida City, and Key Largo. BNP received an additional 347 public comments through various media and meetings.[374] However, finalization of the DEIS was placed on hold when the NPS decided to include it as part of an updated General Management Plan (GMP) that was being developed at the same time. (See Chapter 10).[375]

Fisheries Management Plan Final Environmental Impact Statement

In May 2014, after fourteen years of development and research on issues affecting the park's marine life, BNP issued a Final Environmental Impact Statement (EIS) for its FMP. Based in the park's enabling legislation, the plan provided guidance on fishing regulations in the park. Enabling legislation stated that "after consultation with appropriate officials of the State," the Secretary of the Interior could "designate species for which, areas and times within which, and methods by which fishing would be prohibited, limited, or otherwise regulated in the interest of sound conservation to achieve the purposes for which the park was established." Therefore, in specific cases, the NPS had the authority to manage fishing regulations differently than the State of Florida.

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[372] NPS, *Fishery Management Plan, Final*, iv; NPCA, *State of the Parks: Biscayne*, 23-24.

[373] NPS, *Fishery Management Plan Draft*, i, v, x.

[374] NPS, Superintendent's Annual Narrative 2009, 2.

[375] NPS, Superintendent's Annual Narrative 2012, 3-4.

The plan continued, "Complicating this issue, however, is the provision that fishing in expansion areas donated by the State after the Act's effective date must be in conformance with State law." These regulations essentially divided BNP into two zones:

- the boundaries of the original monument where state fishing regulations reigned, although the Secretary of the Interior could enforce additional regulations in consultation with the state; and
- the expansion zone that needed to conform to Florida regulations.

The plan concluded that "it was in the best interest of the public and staff to manage fisheries uniformly within the park to the best extent practicable." The plan also acknowledged a 2008 mandate that required that the park manage recreational fishing "as a sustainable activity"; therefore, park staff were to not only manage but improve fishery resources to ensure that fishing "could continue for this and future generations."[376]

The plan presented five alternatives based on public input accumulated through two public comment periods, two public meetings, and input from the FMP working group; meetings with associated agencies; and environmental and socioeconomic analyses. The alternatives were: 1) maintain the status quo—in other words, no regulatory changes; 2) maintain populations at or above current levels; 3) improve populations over current levels with a goal to improve targeted species by 10 percent over existing conditions; 4) rebuild and conserve park fisheries and resources, which would increase targeted species' size and abundance by 20 percent; 5) restore park fisheries resources, which would seek to "return the sizes and abundance of targeted species within 20 percent of their estimated, historic (pre-exploitation) levels and to prevent further decline in fishing-related habitat impacts."[377]

In October 2014, the NPS issued a formal Record of Decision for the FMP, choosing Alternative 4 as its official "selected alternative." The Record of Decision stated that the NPS and FWC had determined that this alternative "best balanced resource protection and visitor use." Figured into the decision were environmental impacts on fisheries; balancing conservation with "enjoyment and extractive uses" of the park; impacts on recreational and commercial fisheries; socioeconomic impacts; and the feasibility of successfully implementing the chosen goals.[378]

Alternative 4 offered a number of changes, and its goals were lofty and far-reaching, particularly the object of improving the "abundance and average size" of targeted fish and

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[376] NPS, Fishery Management Plan, Final Environmental Impact Statement, NPS, May 2014, ii-iv.

[377] NPS, *Fishery Management Plan, Final*, 6-10; NPS, "Fishery Management Plan," BNP website, updated November 2014, http://www.nps.gov/bisc/learn/management/fishery-management-plan.htm.

[378] NPS, "Record of Decision for the Fishery Management Plan, Biscayne National Park, FL," *Federal Register*, vol. 79, no. 208 (October 28, 2014), 64212-64213, accessed online June 16, 2015, http://www.nps.gov/bisc/learn/management/upload/BISC-FMP-Record-of-Decision.pdf(page unavailable).

invertebrate species by at least 20 percent. While it did not go as far as Alternative 5, which likely would have forced only catch and release fishing for many species, this approach did create more rigorous rules and guidelines for BNP visitors and fishers. Alternative 4 included:

- an end to the two-day lobster sport season (more on lobster history below);
- prohibition of spearfishing with use of air supply or gear with a trigger mechanism;
- development of park-specific fishing regulations with FWC to reach the 20 percent goal;
- establishment of coral reef protection areas (CRPAs), with lobster and crab traps prohibited (Any found within BNP CRPAs could be moved outside the zone, and BNP staff would record the trap numbers so that those with three or more violations might be confiscated);
- consideration of a no-trawl zone within the bay (to protect benthic habitat in the bay);
- phasing out of commercial fishing. This would begin with requirements that all commercial fishers purchase a limited entry, special use permit from BNP. It would be "permanently non-transferable, would require annual renewals, and would be use or lose'" so that it might not be renewed if it wasn't renewed the prior year or no catch was reported the previous year.[379]

Many members of the public were unhappy with the FMP, claiming that the government was curbing their ability to fish by requiring permits. Some argued that the scientific data used to reach conclusions was outdated. Others argued that their actions in a national park shouldn't be restricted. But some welcomed stronger restrictions in the hope that fish populations would recover.[380]

The FMP informed the 2015 BNP General Management Plan (GMP), where more alternatives were eventually proffered. The 2015 GMP, begun in the early 2000s (discussed in Chapter 10), ultimately opted for Alternative 8. This option proposed the creation of a 10,500-acre no-fishing marine reserve located on the eastern side of Elliott Key.

As of 2019, BNP was still working to implement both plans, cooperating with the FWC on drafting new fishery rules in accordance with the FMP. Both agencies agreed that FWC would develop fishing regulations for the entire park and that establishing the proposed marine reserve zone would not be considered as a first option. Instead, the two agencies committed to adaptive management, where management actions could be changed over time, relying on the proposed rules and a science plan to monitor fish populations. In addition, input from a series of 2019 public meetings would shape the proposed fishing rules,

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[379] Ibid.

[380] NPS, *Fishery Management Plan, Final*, 242, 245, 247, 249.

and some recommendations from the FMP Alternative 4 would not be considered during the initial implementation. The proposed regulations aimed to balance commercial use, recreational use, and resource protection within BNP.

Impacts of Pollution, Commercial Fishing, and Shrimping

Pollution also affects fisheries and marine life, often to the point of physical impairments. Surveys cited in the NPCA's 2006 *State of the Parks* found some fish "especially gray snapper" with "stunted or missing fin rays, scale abnormalities, depressions in the dorsal profile, and jaw deformities." The study also reviewed reports of crab and shrimp found around canal discharge areas that had abnormal growth patterns, and it added that researchers had "found a significant relationship between the prevalence of fish deformities and the historical concentrations of hydrocarbon pollutants occurring in the sediments of Biscayne Bay." The report cited vehicle exhaust, power plant emissions, and agricultural runoff as the source of the pollution.[381]

Commercial shrimping and fishing in BNP waters can also have unintended consequences on the overall habitat. A 1985 study of commercial shrimp fishing for bait use showed that the shrimp fleet swept four times a year, affecting approximately 20 percent of the bay's bottom—such activity damaged soft corals and sponges. A 1982 study determined that 80 percent of corals and 50 percent of sponges were "crushed, uprooted, turned over or otherwise damaged by the passage of shrimp roller trawls" in the south part ofthe bay, with damage still evident at least eleven months later. The trawls and their nets also caught and discarded as bycatch some twenty-seven fish considered "recreationally important."[382]

Commercial fishers also sought the park's blue crabs, stone crabs, spiny lobsters, reef fish, and baitfish, species that FWC regulated. Commercial catches were determined largely by reports from FWC trip tickets in which fishers reported catch locations and volumes. The reports offered a view into changing trends: for example, in 2003 some 111 commercial operations reported BNP catches—a number that dropped by 25 percent by 2012. Recent years saw increased activity among finfish and blue crab fishers and fewer commercial landings for stone crabs and spiny lobsters. More recent data, however, indicated an overall surge of commercial fishers operating in the park: 119 and 112 commercial fishers reported harvests from the park in 2014 and 2015, respectively. These numbers were substantially higher than the previous five years, when an average of 87 fishers operated in the park each year.[383]

BNP's three primary trap fisheries—spiny lobster, stone crabs, and blue crabs—can also unintentionally harm the park. Whenever traps are abandoned, damaged, or lost, they can damage the sea floor and reefs and become dangerous to marine creatures that could get

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[381] NPCA, State of the Parks: Biscayne, 24.

[382] NatureServe, "Condition of the Natural Resources of Biscayne National Park" (Arlington, VA: NPCA, 2005), 71-72.

[383] NPS, *Fishery Management Plan, Final*, 34; BNP staff (McDonough), Administrative History Comments, 2017, 19.

stuck in them. Coral reefs in the park have been littered with abandoned lobster and crab traps, as well as trap parts and ropes, which crush, break, and smother reef structures, associated organisms, and cultural resources. Reef injuries are exacerbated during storms and hurricanes.

Since 2007, the park's HRP has worked with contracted biologists and commercial divers to remove traps and debris from the park. According to Amanda Bourque, BNP supervisory ecologist, the State authorized these projects, as special permission was required to handle fishing gear. The divers searched for abandoned traps and debris—including trap lines in shallow waters and on reefs—and then loaded the material on boats and hauled it to onshore dumpsters and landfills. As of 2017, divers had removed tons of debris from BNP reefs since the start of these projects.[384]

Unfortunately, debris removal is a never-ending task; many park reefs cannot be cleaned, and fishing gear and debris is sometimes left to accumulate. Aside from the ongoing reef cleanup program, other NPS efforts to manage marine trash in the park include the work of staff, partner agencies, students, and volunteers that scour mangrove shorelines and turtle nesting beaches. "There are different people working on this [the marine debris issue] from different angles," Bourque said. "It's a huge problem."[385]

Protected Species

The park's waters are home to many protected marine species, including the small-tooth sawfish, which as of 2017 rarely appeared in the park but was found in the waters off South Florida. The smalltooth sawfish was listed as an endangered species under the ESA. The smalltooth sawfish, which is large, slow growing, and slow to reproduce, is in trouble because of degradation of its habitat from urban activities and water pollution. However, the biggest threat to its existence is getting inadvertently caught in fishing nets and lines. In 1993, the State of Florida prohibited fishing, use, or possession of sawfish, but their numbers and range remain low twenty years later.[386]

As of 2015, seven BNP corals were also listed as threatened under the ESA, including elkhorn (*Acropora palmata*) and staghorn (*Acropora cervicornis*) corals, which were common in the park. The corals are in trouble for a variety of reasons, including disease, hurricanes, bleaching, algae overgrowth, sedimentation, variations in water temperature and salinity, low genetic diversity, and predation. In addition, boating incidents have taken a toll, along with overfishing and physical impacts from spear fishers, lobster hunters, divers, and fishing gear.[387]

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[384] Bourque, interview; BNP staff (Amanda Bourque), Administrative History Comments, 2017, 14-15.

[385] Ibid.

[386] NOAA, *Smalltooth Sawfish Recovery Plan*, NOAA Fisheries website, January 2009, http://www.nmfs. noaa.gov/pr/pdfs/recovery/smalltoothsawfish.pdf, I-1-I-2, VI-9.

[387] NOAA, "Elkhorn Coral," NOAA Fisheries website, accessed June 29, 2015, http://www.nmfs.noaa.gov/pr/species/invertebrates/elkhorncoral.htm; NOAA, "NOAA Lists Twenty New Corals As Threatened Under the Endangered Species Act," NOAA Fisheries website, accessed November 27, 2016, http://sero.nmfs.noaa.gov/protected_resources/coral/documents/2014_corals_esa_listing.pdf.

[388] NPS, "Threatened and Endangered Animals in Biscayne National Park," BNP website, http://www.nps.gov/bisc/learn/nature/threatened-and-endangered-animals.htm.

In addition to those on the ESA lists (featured later in this chapter), a number of BNP marine species are also protected from harvest by state, federal, or international regulations, including sea fans, fire corals, certain grouper and rays, and many species of sharks.[388] See Appendices F and G for federally listed species in BNP.

Sponges

Biscayne Bay has long been an important habitat for sponges, which perform many valuable functions that keep the underwater ecosystem healthy. Significantly, these multicellular organisms filter large amounts of substances from bay water. They are capable of filtering the entire bay volume every two weeks, making them key to removing nutrients and pollution. They also host different animals such as crabs, shrimp, urchins, and fish, all of which rely on them for shelter and cover.[389]

Commercial harvest of sponges in the area dates to the late 1800s. An 1896 report noted thirty to forty boats working during a single day in the bay. Schooner crews worked in beds off Elliott Key, Soldier Key, and other areas northward to Miami. Although the bay's sponges were considered to be of excellent quality, the major Florida sponging centers were Tarpon Springs and Key West. Until the 1940s, sponging was a valuable state industry, but a number of factors led to its decline, including a sponge blight that hit in the 1930s and again in the 1940s, the rise of synthetic sponges created by the petrochemical industry, and a ready supply of sponges from Mediterranean markets. In the 1960s, the area saw an influx of "spongers" (human harvesters) with a growing number of Cuban refugee fishermen, but these numbers waned. By 1975, thirty-seven active spongers operated on seven to ten boats in the park daily, a number that declined by the 1980s when only three and sometimes no sponging boats plied the park.[390]

In the late 1980s, BNP saw resurgence in park sponging, attributed to a die-off of Mediterranean sponges that led to a market shortage and rising prices. Some twenty boats, each carrying four harvesters, began scouring the park for sponges. After the harvest, sponges were taken to Pelican Bank, where they were air dried (a smelly business) and prepped for sale. "The rapid growth of this commercial effort was a serious problem and a potential threat to other Bay resources," wrote BNP Superintendent Sanders. The rising number of spongers meant that the "long-term water quality was going to be reduced thus affecting all other marine species."[391] Curry recalled that, when he first arrived at the park, commercial sponge fishers would harvest four species of sponges by hooks, ripping them off the bottom. By the late 1970s, staff was concerned about the impact of harvesting on sponge populations and began a survey. One staff member, three temporary staff, and two volunteers conducted the study.[392]

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[389] James Sanders, untitled speech, BISC archives, 5.

[390] Ibid., 2-5; Cantillo et al., *Biscayne Bay: Environmental History*, 88.

[391] Miller, *BNP: It Almost Wasn't*, 127-29.

[392] Curry, interview, 2016.

The park had done little research and had no formal research funding, but as Sanders said, staff "just knew what the sponges did." He continued, " We knew that if the sponges were decimated in the bay, to the point that they were all taken out, that we were going to have terrible turbidity problems. And the State bought that argument and went forward with it."[393]

Responding to "public concern about this fishery and the essentially unknown impact this fishery might be having on other resources in the park," BNP managers asked the Florida Marine Fisheries Commission to end commercial harvesting in the park. The commission, hearing park managers' concerns, passed a rule to end sponging—an act that was approved by the Florida governor and cabinet on March 14, 1991. BNP then issued commercial permits to twenty-one sponge fishermen, allowing them to fish the first two weeks of each month until December 1, 1991, when all sponging ceased. As a result, the sponge racks at Pelican Bank were removed.[394]

When Hurricane Andrew roared into the park in 1992, many of the park's sponges were devastated. The water turbulence buried and killed many, while in some areas the sponges survived intact.[395] However, BNP natural resource staff continued to study the park's sponge populations. A 1995 study showed low growth among sponges that had been commercially harvested and concluded that "mortality rates under human harvest conditions [had] severe impacts." The report recommended that the fishery remain closed. A few illegal spongers were caught and banned from the park; however, these were considered isolated incidents, and as of the twenty-first century sponging activities in nearby areas were declining. By 2017, no recent studies had been conducted to determine current sponge conditions.[396]

Although banned in BNP and ENP, commercial sponging continued in some parts of Florida (60,000-70,000 pounds annually as of 2016) but eventually became a much smaller industry in the twenty-first century than it had been in the twentieth century, when annual harvests once reached 600,000 pounds. As of 2017, sponging was regulated, and all sponges taken had to be a minimum of five inches in size. Where permitted in the northern Gulf Coast, sponges also had to be cut rather than torn from the bottom.[397]

Lobster

Spiny lobster (*Panulirus argus)*, an important Florida commercial species, is also protected in BNP thanks to the work of park scientists and advocates who realized that the park was an important breeding ground for the creature. Gary Davis, who conducted marine studies for the park while initially assigned to ENP and Dry Tortugas, started looking at the area's lobster populations in the early 1970s as part of efforts to assess the park's natural resources. His

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393 Sanders, interview.

394 Miller, *BNP: It Almost Wasn't*, 129; NPS, "Biscayne National Park, Fiscal Year 1992 Briefing Statement," NPS, 2, BISC archives.

395 Davis et al., *Effects of Hurricane Andrew*, 75-77, 119.

396 EDAW, *BNP Ethnographic*, 4-8—4-9; McDonough, email.

397 John Stevely and Don Sweat, "Florida Marine Sponges: Exploring the Potential and Protecting the Resource," Florida Sea Grant College Program, March 2009, accessed on University of Florida IFAS website, http://edis.ifas.ufl.edu/sg095.

research showed that Biscayne Bay was an important nursery area for juvenile lobsters. Davis used that information to—in his own words—"get the diving community and the commercial fishing communities in the Keys on board to say, you know what, if you stop fishing in the nursery areas you can increase the growth rates of these lobsters and decrease their mortality rate. That means more lobsters in the fishery for you."[398]

Davis's work led park managers to recommend to the State, which oversaw park fishing regulations, that the bay and creeks on the park's west side be made a lobster sanctuary, recalled Sanders, adding that lobsters could still be taken, however, on the reef track and east of the park's islands.[399] In 1980, all of Biscayne Bay from Cape Florida south through Card Sound, including creeks between islands to the east side of the islands, was designated by the State as a lobster sanctuary. It was a big step in preserving spiny lobster by controlling human harvests. As of 2017, no official reports had compared BNP lobster populations before and after the sanctuary was enacted.[400]

The spiny lobster is part of a healthy BNP environment. Young lobsters provide food for the park's fish and larger predators, such as sharks. BNP is an important nursery for this tropical lobster species, especially in the eastern and central bay, where they can be found in hardbottom and grassy habitats. Adults can be found mostly on the eastern side of the park, to the ocean side of the islands.[401]

Historically, BNP allowed unregulated lobster harvests on the ocean side of the chain of islands. By the 2000s, however, seasons were being more heavily regulated for BNP harvests: an annual commercial harvest from August 6 to March 31 that involved trapping, bully-netting, and diving; a regular recreational season from August 6 to March 31; and a two-day "Lobster Sport Season" also known as Lobster Mini-Season for recreational harvesters only on the last consecutive Wednesday and Thursday of July each year. A saltwater products license with the appropriate crawfish endorsement was required to harvest lobster commercially.[402]

Despite these controls, a ten-year study (2002-2011) of the Lobster Mini-Season showed a decline in the fishery despite high compliance with state fishing rules. At the same time, lobsters had come under threat by shrimp trawlers that incidentally captured them. Other problems included hurricanes, climate change, and habitat changes caused by poor water quality and changing salinity levels, which could advance a virus then affecting South Florida.[403] Abandoned or damaged lobster traps were also causing problems, especially in reef areas and shipwreck sites. As previously mentioned, the selected alternative for the FMP called for an end to the two-day sport season to reduce such impacts.

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398 Davis, interview.

399 Sanders, interview.

400 McDonough, email.

401 NPCA, *State of the Parks: Biscayne*, 25.

402 EDAW, *BNP Ethnographic*, 4-5; BNP staff, Administrative History Comments, 2017, 55-56.

403 Vanessa McDonough, *A Ten-Year Assessment of Lobster Mini-Season Trends in Biscayne National Park*, 2002-2011 (Homestead: NPS, March 2012), ix; NPCA, *State of the Parks: Biscayne*, 25.

Fishery Awareness Program

To improve the public's knowledge and understanding of its marine resources, BNP created a Fisheries Awareness Class in 2007. The class was initially intended as training for park visitors who were issued fishing violations. Similar to taking driving school, with the approval of the US Attorney's Office and the arresting law enforcement officer, fishing violators could take the class, which could lead to their fines being reduced or waived. The class grew to include any member of the public interested in fishery rules within the park—a preventative measure to help visitors avoid violations.[404]

The free monthly program was offered in English and Spanish to accommodate South Florida's diverse population. Participants learned about the importance of fishing rules, how to follow and interpret them, and how to identify their catch from the many species found in the park. Instructors also taught students how to catch and release fish and care for fishing tackle, while also providing fishing tips. At the same time, participants learned about the NPS and BNP and the importance of BNP's unique fisheries. A contracted environmental consultant administered the program, and classes were taught by the contractor, a park biologist, and a volunteer fishing guide. By the end of 2015, more than 1,250 people had attended the class.[405]

Wildlife Management

BNP's rich marine and upland areas are home or way stations for a number of different animal species. Sea turtles rely on the sandy beaches of the park's islands to lay their eggs. Butterflies dart through tropical island hammocks. Migrating birds count on the bay's bounteous fisheries, and terns and killdeers nest on its beaches. Crocodiles occasionally glide by the mangrove shores, perhaps eyeing a multitude of wading birds slowly stepping through the shallows looking for fish dinners. The BNP FWIMP oversees these creatures as well as sensitive corals and endangered plants—a huge task but one that aids in the national crusade to prevent species extinction in the United States.

Endangered and Threatened Species

Many imperiled animals use BNP as one of their few refuges. As of June 2015, some thirty-six species were included on the federal ESA or state protection roster. See Appendix F for a listing of the endangered and threatened animals in the park.

American Crocodiles

Occasionally BNP visitors are treated to a sight sure to spark excitement—a large, toothy American crocodile (*Crocodylus acutus)* slowly gliding along the park's shorelines and boardwalk. Listed as endangered in 1975, the creature made a bit of a comeback and

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[404] NPS, "Fisheries Awareness Class," BNP website, accessed June 29, 2015, http://www.nps.gov/bisc/planyourvisit/fisheries-awareness-class.htm.

[405] NPS, *Annual Narrative BNP 2010*, 30; BNP staff, Administrative History Comments, 2016.

was relisted in 2007 to the less critical status of "threatened" by the federal government. As of 2015, the American crocodile's greatest threat was habitat loss and human interference. Capable of growing to 15 feet in length and weighing up to 2,000 pounds, the creature preferred fresh or brackish water—the latter found in park mangrove shorelines. Its close relative, the American alligator *(Alligator mississippiensis),* was much more plentiful in Florida but uncommon in BNP. Eager alligator viewers had much more success at nearby ENP or along the canal roads accessing BNP's mainland.[406]

As of 2017, southern Florida was as far north as the crocodile lived, and its range extended south through the Caribbean into Mexico and northern South America. While these reptiles didn't nest in BNP, the park was an important habitat that enabled young crocodiles to avoid hungry adults while maturing, especially along mangroves and in canals. As such, the FWS designated part of BNP as a "critical habitat" for the creature; this designation required that the zone be protected or managed to aid a species' survival and recovery. Interestingly, as noted in Chapter 4, another important crocodile habitat was Florida Power & Light Company's (FP&L) Turkey Point nuclear power generating station, located just south of the BNP visitor center. Its 5,900 acres of cooling canals were prime nesting areas for crocodiles, an unexpected result of the canal system design but one that the power company came to embrace. Starting in 1978, FP&L began collecting data on the crocodiles, and its ponds offered sanctuary for young crocodiles that could later be relocated to refuges to improve the species' viability.[407]

Should the crocodiles continue to increase in number, the 2015 GMP ensured that staff would be prepared to manage crocodile-human conflicts "on a case-by-case basis in which a variety of regulatory actions, such as temporary restrictions on swimming, fishing, and/or dog access, would be considered and implemented."[408]

Florida Manatees

One of the most beloved species to frequent the park is the endangered Florida manatee (*Trichechus manatus latirostris*)—the same creature that may have inspired the mermaid tales of ancient seafarers. Over the years, many visitors have come to BNP hoping to view the graceful animals, often visible from Black Point and Convoy Point areas. The large, gray mammals, susceptible to disease in cold weather, make the bay's warm, clear waters and wealth of tasty seagrasses a regular and important cruising and dining site. During the winter, manatees also frequent Stiltsville and creeks between the upper islands.[409]

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[406] Florida Power & Light, "American Crocodile," FP&L website, accessed July 6, 2015, https://www.fpl.com/environment/wildlife/crocodiles.html.

[407] Ibid., NPS, *Final General Management Plan*, 2015, 178-79. Note: For more information about the critical habitat designation, see the US Fish and Wildlife Service website at https://www.fws.gov/endangered/esa-library/pdf/critical_habitat.pdf.

[408] NPS, *Final General Management Plan*, 2015, 179.

[409] Ibid., 177.

Some of the greatest threats to manatees are collisions with boat engines and hulls. Most manatees have scars across their backs caused by propeller contact. To avoid such deaths and injuries, the park's 2015 GMP planned a north and south expansion of a slow-speed zone along BNP's mainland coast, which extended outward one thousand feet to be consistent with the Miami-Dade County Manatee Protection Plan and State of Florida manatee protection recommendations. The hope was that boaters would follow these rules and prevent needless collisions. The Miami-Dade County Department of Environmental Resources Management also made quarterly manatee surveys in the park. Its statistics showed that winter was the best time to find manatees in the park, which averaged about one hundred animals per season.[410]

Since 1974, Florida has seen an increase in manatee deaths. Between 1979 and 1991, 406 died from boat impacts, mostly from propellers and hulls. But good news came for the manatee and for Florida: in February 2015, the manatee population in Florida waters was estimated at 6,063 animals, a number derived from winter aerial surveys over areas where manatees typically congregated. The animals were under consideration for down-listing to "threatened" status due to their rising numbers.[411]

Sea Turtles

Figure 7.2. As of the 2000s, loggerhead sea turtles were among the endangered species that relied on the park for nesting. During the summer, loggerheads laid their eggs on the sandy shores of Elliott Key. Photo by Vince Lamb.

As of 2015, five species of sea turtles had been found in BNP waters or on the beaches of its outlying islands, where they occasionally laid nests in summer months. The most frequent visitors were loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), and green (*Chelonia mydas*) sea turtles—the loggerhead was the only species that nested regularly

[410] Ibid.

[411] Save the Manatee, "What is the Status of the Manatee Population?" Save the Manatee website, accessed July 6, 2015, http://www.savethemanatee.org/population.htm.

in the park. Most nest sightings were of loggerheads on Elliott, Boca Chita, and Sands Keys, although turtles probably once used Soldier Key before red mangroves took over the shoreline and prevented nesting.[412]

Since the park's beginning, during nesting season (May through October), Elliott Key beaches have been monitored regularly for any signs of nesting. When a nest is discovered, mesh screens are placed over it to prevent predators such as raccoons and ghost crabs from reaching turtle eggs. When baby turtles hatch, they are able to crawl through the mesh. These predators, along with fire ants, pose great threats to BNP turtle nests; in the last decade, some 51 percent of nests were damaged or destroyed this way. The park has made additional efforts to trap, relocate and sometimes euthanize problematic raccoons, as well. Although BNP was not a major Florida turtle nesting area—other beaches north of the area were far more productive—the turtles' dire situation made every nest important. From 1991 to 2009, the park noted 209 turtle nests and 297 "false crawls"—indications that turtles came ashore but didn't lay eggs. False crawls could be caused by rocks, vegetation, or debris that hindered egg-laying.[413]

Park biologists and interns, when available, monitor nesting beaches and sites daily during nesting season, often with help from volunteers and outside groups. In 2014, two University of Miami graduate students helped study the nests. The same year, the South Florida National Parks Trust funded a $6,500 grant to help pay for daily patrols, which aimed for greater nesting success in BNP.[414]

The park's turtles also receive help from volunteers (many of them high school and college students) who come to the park for Alternative Winter Break and Alternative Spring Break sessions. Starting in the 1990s, from December through March, volunteers have removed enormous amounts of trash that accumulate on important nesting beaches—debris that could cause false crawls and unsuccessful nests or become entrapment hazards or obstructions for newly emerged hatchlings. In 2010, for example, volunteers went to Elliott Key and removed monofilament fishing line that was wrapped around almost every mangrove on the island, filling four thirty-five-gallon garbage bags with the fishing line, which was later recy-cled. Then in 2013, 212 students representing 18 schools provided 2,832 hours of volunteer service for cleanups. As a result, some 100 cubic yards of trash, including plastic bottles, shoes, light bulbs, shipping pallets, furniture, and boating gear, was removed.[415]

"When large amounts of debris clutter the beaches, sea turtles may abandon attempts to nest," said Vanessa McDonough, BNP fishery and wildlife biologist. In 2015, she oversaw

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[412] NPS, *Final General Management Plan*, 2015, 177-78.

[413] Ibid., 178.

[414] South Florida National Parks Trust, "News & Notes from South Florida's National Parks/July 2014" (newsletter), in Don Finefrock email to author, July 22, 2014.

[415] NPS, *Annual Narrative BNP 2010*, 12; Nicky Diaz, "Park hosts Alternative Break cleanup," *Our National Parks*, November 21, 2013, http://www.ournationalparks.us/south_florida/biscayne/park_hosts_students_for_alternative_break_cleanup.

some two hundred volunteers who removed seven tons of solid waste. "The presence of debris on the beaches is also problematic for sea turtle hatchlings. Hatchlings that are unable to overcome debris as they crawl to the ocean will succumb to predation, dehydration, or starvation," she explained.[416]

Figure 7.3. Debris on island beaches could be a danger to the park's creatures, particularly sea turtles. Volunteers annually removed tons of trash from these areas in winter and spring, prior to the summer turtle nesting season. Photo by Kim den Beste.

Butterflies

Despite its limited land area, as of 2012, BNP is a critical home for two very rare and federally endangered butterflies—the Miami blue and the Schaus swallowtail—both of which suffer from South Florida habitat destruction. Chemicals used in mosquito-control spraying operations also hurt their numbers. As of 2017, BNP had never participated in mosquito spraying.[417]

The Miami blue (*Hermiargus thomasi benthunebakeri)*, approximately the size of a nickel, survives in pine rock lands, beach scrub, and tropical hardwood hammocks—all sites of construction and human intrusion in the last century. The butterfly, already low in number, is also jeopardized by threats such as hurricanes, freezes, over-collecting, and low genetic diversity, which could leave it susceptible to disease. BNP biologists worked with lepidopterists at the Florida Museum of Natural History in Gainesville, Florida, to help the

[416] NPS, "Sea Turtle Nesting Beaches in Biscayne National Park Cleared by Alternative Break Volunteers," BNP website, April 30, 2015, http://www.nps.gov/bisc/learn/news/sea-turtle-nesting-beaches-in-biscayne-national-park-cleared-by-alternative-break-volunteers.htm.

[417] US Fish & Wildlife Service (FWS), "Schaus Swallowtail Emergency Action: Questions and Answers," FWS website, June 13, 2012, https://www.fws.gov/southeast/news/2012/033qas.html.

Miami blue recover. One major effort was the reintroduction of thousands of captive-hatched caterpillars onto Elliott Key in hopes of creating an experimental population.[418] As of 2016, Miami blue butterflies were not known to occur within BNP.[419]

The Schaus swallowtail butterfly (*Papilio aristodemus ponceanus)* is a large, dark brown and yellow creature with orange and blue spots on its hind wing. During the Spanish-American War, Miami physician and yellow fever expert William Schaus first described the butterfly. An avid butterfly collector, he reported it as a new species in 1911, and it now bears his name.[420]

During the remainder of the century, Schaus numbers declined to the point that the species was listed as threatened in 1976, then endangered in 1984 because of a continuing drop in numbers. It was the first invertebrate listed on the ESA list. During the late twentieth century, the swallowtail suffered from destruction of tropical hardwood hammocks, its exclusive home; over-harvesting by collectors; and mosquito control practices. By the 2010s, hammocks that had once stretched through South Florida were only found in the upper keys in Miami-Dade and Monroe counties; about 43 percent of the butterfly's most suitable habitat was within BNP. As of 2017, swallowtails were found on Elliott Key, with smaller groups on Adams, Old Rhodes, Swan, and Totten Keys.[421]

Although mosquito spraying in its wider habitat stopped in the 1980s, thus helping its numbers increase, the Schaus swallowtail population was decimated in 1992 when Hurricane Andrew hit the park: a swallowtail community that had once been estimated at more than 1,000 adults then dropped to only 58 individuals. Since then, with the help of captive breeding, the butterfly's population fluctuated from as many as 300 to as few as 69. The latter number was the population found on Elliott Key from 2007 to 2009.[422]

This fragile toehold inspired shock, fear, and immediate action among researchers and BNP staff in 2012, when only four Schaus swallowtails were found in the park, reported Elsa Alvear, BNP chief of resource management. Because researchers no longer had active permits to capture butterflies for captive breeding and rearing programs, which could help counter this apparent collapse, Alvear went into crisis mode, clearing her schedule and calling state and federal authorities for urgent help. Since swallowtails only flew once a year, high up in the dense plant and tree canopy, time was limited to find and collect adults for any breeding program. After four days and a multitude of telephone calls, emails, and paperwork, the FWS declared an emergency action to allow the NPS to issue researchers collection permits for up to four females. According to Alvear, it was the first time that the FWS issued an emergency

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[418] NPS, *Final General Management Plan*, 2015, 180.

[419] BNP staff, Administrative History Comments, 2016, 58.

[420] Thomas C. Emmel, PhD, "Schaus' Swallowtail Butterfly," BISC archives.

[421] NPS, *Final General Management Plan*, 2015, 180.

[422] Ibid.

action on an endangered species in Florida. "This was a big deal," she said. "And we got it done in four days."[423]

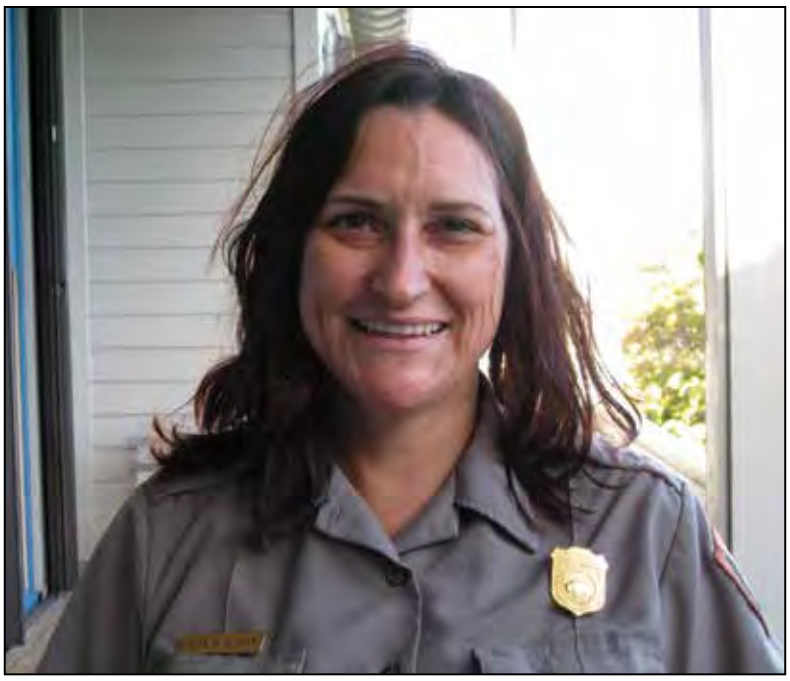

Figure 7.4. Elsa Alvear, BNP chief of resource management and planning. Photo by author.

News media followed the story into the field, but researchers couldn't find any adult butterflies, a disappointing and alarming predicament. "After all that, we found none," Alvear reported. Armed with the necessary permits, BNP biologists had to wait until the next year's flight period, wondering if they would ever see the Schaus again. Luckily, they found two females and five caterpillars in 2013, resulting in several hundred eggs and the subsequent release of a "couple hundred" butterflies in 2014. "Not extinct. Efforts not in vain!" said a joyful Alvear.[424]

In their continuing effort to save both of these butterflies, BNP biologists worked closely with the South Florida/Caribbean Inventory & Monitoring Network (SFCN) and community volunteers to enhance and improve the insects' habitats. The SFCN was one of thirty-two NPS inventory and monitoring networks providing data and research to help parks manage their natural resources, and it was essential in efforts to save butterflies. The SFCN collaborated with seven parks—four in South Florida and three in the US Virgin Islands—to collect long-term data on ecosystems, including coral reefs, seagrass, forests, invasive species, and colonial nesting birds. As a result of SFCN and BNP data collection, plants—particularly torchwood and wild lime, both of which provided food and nectar during all parts of the

[423] Alvear, interview.

[424] Ibid.

butterfly's life cycle—were planted on designated keys, and efforts to remove invasive species affecting these sites were ongoing throughout the 2010s. In 2012, BNP staff, interns, and volunteers spent more than 1,536 hours planting 906 seedlings on Adams Key and 1,426 on Elliott Key, and they devoted additional hours to get rid of weeds that might displace important butterfly plants.[425] The goal was to plant 5,000 seedlings while also increasing public awareness and stewardship. The SFCN, located in Palmetto Bay, Florida, continued to maintain the areas while also collecting seeds and germinating them in a laboratory for later plantings.[426]

Figure 7.5. Native plants important to island species were planted on BNP's keys to enhance the ecosystem. Photo by Kim den Beste.

[425] Jaeson Clayborn, "On Behalf of the Schaus Swallowtail: Habitat Enhancement at Biscayne National Park," Miami Blue Chapter, North American Butterfly Association, September 15, 2014, http://miamiblue.org/schaus-swallowtail-habitat.

[426] NPS, "Butterfly Monitoring," South Florida/Caribbean Inventory & Monitoring Network website, accessed December 4, 2016, http://science.nature.nps.gov/im/units/sfcn/monitor/at_risk/butterflies.cfm (redirects to https://www.nps.gov/im/sfcn/what-we-monitor.htm); NPS, "South Florida/Caribbean Network," NPS website, accessed December 21, 2016, http://science.nature.nps.gov/im/units/sfcn (redirects to https://www.nps.gov/im/sfcn/index.htm); NPS, "Parks and Partners," South Florida/Caribbean Inventory & Monitoring Network website, accessed March 12, 2019, https://www.nps.gov/im/sfcn/parks-partners.htm; NPS, "Colonial Nesting Birds Monitoring, 2016 Summary," report published by BNP, DOI, NPS, Inventory and Monitoring Program, and South Florida/Caribbean Network.

Imperiled Plants

BNP is also home to more than 450 species of plants in its uplands and coastal habitats. Important and rare plant species found there include the endangered semaphore prickly pear cactus and the beach jacquemontia, both of which are blooming plants classified as endangered on ESA lists due to their shrinking coastal habitat. See Appendix F for a listing of endangered and threatened animal species and Appendix G for a list of endangered plants in BNP.

Endangered Plant Species

The semaphore cactus (*Opuntia corallicola*), endemic to Monroe County and its keys and Miami-Dade County, can grow three to five feet in height, sporting spines between one and four inches in length. It sprouts bright, orange-red flowers throughout the year, particularly from December through April. In 2002, BNP announced that this plant, one of the rarest in the world, had been found on Swan Key. Biologists counted 570 plants in the park. Until that point, only nine were known to exist on a lower key, where they were subject to poaching and damaged by the larvae of an introduced moth. The BNP population appeared to be stable as of 2017, making the park an important foothold for the species.[427] At that point, BNP staff believed the park's population to be largely male; its reproduction relied on asexual means, which happened when a fragment of the cactus broke off and became a new plant.[428]

The beach jacquemontia (*Jacquemontia reclinata*), a perennial flowering vine of the morning glory family, appears in small populations along the southeastern Florida coast on lands under pressure for development. The vine, with its white- to light-pink flowers, had been listed as federally endangered since 1993. As of 2015, fewer than one thousand existed, mostly in Miami-Dade, Broward, and Palm Beach Counties. In subsequent years, researchers found fewer and fewer sites of the plant due to commercial and residential construction; populations were also declining in publicly held sites. As of 2017, it was uncertain whether the beach jacquemontia still existed in BNP.[429]

Listed as endangered by the State of Florida, the Sargent's palm, or Sargent's cherry palm (*Pseudophoenix sargentii)*, is thought to be the rarest native palm in the state. The slow-growing palm originally populated Elliott and Sands Keys, but many trees were harvested by collectors who admired their beauty. By 1991, only fifty palms remained on Elliott Key, and many were damaged in Hurricane Andrew a year later. By the 2010s, 16 palms existed on Elliott Key and 123 on Long Key—in large part due to past palm propagation and reintroduction efforts made in conjunction with Fairchild Tropical Botanic Garden, in Coral Gables.

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[427] Florida Natural Areas Inventory, "Semaphore Cactus," Florida Natural Areas Inventory website, accessed July 7, 2015, http://www.fnai.org/FieldGuide/pdf/Opuntia_corallicola.pdf; NPS, "Rare Cactus Discovered in Biscayne National Park" (press release), February 24, 2002, BISC archives; NPS, *Superintendent's Annual Narrative CY 2012*, 20.

[428] BNP staff, BISC Administrative History Comments, 2017, 58.

[429] Ibid.; US Fish & Wildlife Service (FWS), "Beach Jacquemontia," FWS website, accessed July 7, 2015, http://www.fws.gov/verobeach/MSRPPDFs/Beach.PDF.

As of 2019, the only remaining adult tree on Elliott Key exhibited some fungus on the crown shaft. BNP were working with the Montgomery Botanical Center to treat the tree. The small tree, also known as the Buccaneer palm, was also being sold commercially for landscaping in the southern peninsula.[430]

Classified as threatened in 1998, Johnson's seagrass (*Halophila johnsonii*) is the first—and only—marine plant to be included on ESA lists. The green seagrass is naturally found in small numbers (perhaps because of its asexual reproduction), is an invaluable part of a healthy benthic environment, and provides food for endangered green sea turtles and manatees. The seagrass is considered threatened because of its naturally rare occurrence combined with damage from human sources. Water degradation from dredging, erosion, and pollution, in addition to injuries from boating activities such as anchors and propellers cutting into the plants and bay bottom, can be particularly damaging.[431]

Exotic/Invasive Species

As is true in much of the State of Florida, BNP deals with a number of troublesome non-native species that have made the park, its warm climate, and welcoming waters their home. Unfortunately, they compete with and sometimes crowd out native species that are vital to BNP's ecological equilibrium. Most have caused little harm, but in the case of at least one species—the venomous lionfish—park managers worry as the fish becomes increasingly abundant. Over the course of the park's history, managers have spent a good deal of time and funds trying to get rid of or at least manage invasive species so they wouldn't threaten endemic wildlife and plants. BNP manages most exotics on a case-by-case basis but adopted formal management plans for some, as was the case with the green iguana, the Mexican red-bellied squirrel, and the Indo-Pacific lionfish.

As of the twenty-first century, dozens of animal and plant types had invaded the park. Some were pets released by their owners. Others were deliberately introduced by humans with no understanding of their long-term impact. Others escaped accidentally or were dispersed by storm systems. As a result, it was common in BNP to spot giant bufo toads (*Bufo marinus)* as well as habitat-altering Australian pines (*Casuarina equisetifolia)* and Brazilian pepper plants (*Schinus terebinthifolius)*—none of which were part of the natural Florida ecosystem. Indeed, of BNP's more than 450 species of plants, an estimated 130 of them were exotics, of which the Florida Exotic Pest Council considered 14 to be "most invasive species."[432] See Appendices H and I for lists of exotic plants and animals in BNP.[433]

From the park's beginning, as resources allowed, employees worked to eradicate

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[430] NPS, "Plants," BNP website; BNP staff comments on BNP Administrative History, 2019.

[431] NOAA, "Johnson's seagrass," NOAA Fisheries website, accessed July 8, 2015, http://www.nmfs.noaa.gov/pr/species/plants/johnsonsseagrass.htm.

[432] NPCA, *State of the Parks: Biscayne*, 15.

[433] For a full list of animals, see https://www.nps.gov/bisc/learn/nature/park-invasive-species.htm. The list of exotic plant species is available at https://www.nps.gov/bisc/learn/nature/invasive-plants.htm.

the Australian pine—the most problematic invasive species—and exotic plants found on the keys. Residents had planted the pines intentionally, but their effect was to crowd out native hardwoods on the islands, which impacted native species, some of which were endangered. In 1980, BNP adopted an Exotic Plant Control Implementation Plan designed to combat the problem. Superintendent Sanders recalled that one year later, the plan was federally funded, enabling the park to hire four seasonal employees. Those employees, working from May to September, applied or injected herbicide into the pines and their roots to kill them; once dead, the employees cut the trees down, piled them up, and burned them. This work helped get the pines "under control," Sanders said. Unfortunately, in 1984 a reorganization plan left one-third of the resource management positions vacant and ended the exotic plant program. Instead, law enforcement staff checked exotic plant removal sites and removed any sprouts from the unwanted plants. By 1985, most exotics had been removed from Adams, Sands, and Elliott Keys.[434]

On Boca Chita Key, BNP relied upon a management agreement with the Dinner Key Cruising Club, a private nonprofit yachting club. In return for help with safety repairs and exotic plant removal, the park granted the club special use of the boat slips once a month. It was a "win-win for both of us," according to Sanders, and allowed BNP to pursue goals outlined in the 1983 GMP. Those goals included park-wide monitoring of exotic species, removal of exotic plants with EPA- and NPS-approved herbicides, and prescribed burning as needed.[435]

Monitoring and removal continued in this fashion until 1992 when Hurricane Andrew hit. Superintendent Frost recalled that the hurricane removed "most of the small forest of Australian pines from Elliott Key, which would have been too large a problem for us to ever foreseeably deal with." He continued, "However many Australian pines did remain on other islands and other exotic plants were abundant." Few funding and staff resources were available during his 1993-2000 tenure, leaving BNP to rely upon crews of volunteers to remove exotic vegetation. Exotics, Frost said, posed "a serious problem which we could not effectively deal with." [436]

In 2000, the NPS created the Exotic Plant Management Program to support its units in combating nonnative plant species and restoring native habitats. Exotic Plant Management Teams (EPMTs) created plans with partner parks to combat this problem. At BNP, the EPMT began as a partnership between the NPS and the Florida Department of Environmental Protection. Using matching federal and state funds (when available), teams worked to control and eradicate exotic plant species. In 2002, it was estimated that of BNP's 9,100 terrestrial acres, at least 2,750 contained exotic plant species. In 2009, contractors were hired to

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[434] NPS, *Final Environmental Impact Statement, General Management Plan, Biscayne National Monument*, NPS, September 1978, accessed at https://babel.hathitrust.org/cgi/pt?id=ien.35556030163679;view=1up;seq=3; Sanders, interview (December 11, 2016).

[435] Ibid.; Miller, *BNP: It Almost Wasn't*, 122-23; NPS, *General Management Plan*, 1983, 39.

[436] Frost, email.

eradicate plants on Elliott Key, and the park also received a $50,000 grant to treat its mainland areas.[437]

A SFCN 2011 survey of BNP lands—islands, canal banks, and coastal lands—found thirty-two exotic plant species, of which three were new to the park. Most common were portia tree (*Thespesia populnea)*, beach naupaka *(Scaevola sericea),* Brazilian pepper (*Schinus terebinthifolius),* leatherleaf (*Colubrina asiatica)*, and Burma weed (*Neyraudia reynaudiana)*. The new species were bo tree (*Figus religiosa*), karum tree (*Pongamia pinnata*), and Java plum (*Szygium cumini*)—all native to Asian areas.[438]

To deal with nonnative plants, the 2015 GMP called for the park to "implement a noxious weed abatement program as appropriate." This included making sure that any construction related equipment arriving in the park didn't bear any seeds or material that might distribute such species in the park. The GMP also called for "identifying areas of noxious weeds before construction," treating "noxious weeds or noxious weed topsoil before construction," and re-vegetating areas "with appropriate native species."[439]

BNP worked cooperatively with other parks dealing with similar exotic plant issues, and it was one of nine NPS parks included in the 2010 *South Florida and Caribbean Parks Exotic Plant Management Plan*. This plan was developed to guide the monitoring, control, and adaptive management of exotic plants as well as restoration ofnative plant communities. The other parks in the plan included Big Cypress National Preserve, Canaveral National Seashore, Everglades National Park, and Dry Tortugas National Park.[440]

A few exotic species deserve special attention, having become the focus of some vital BNP efforts:

Green Iguanas

These nonnative reptiles are almost ubiquitous in South Florida, adapting to a number of habitats that includes BNP. As an invasive species, the green iguana (*Iguana iguana*) poses several threats: outcompeting native fauna, damaging native plants, and helping spread exotic plants. In addition, if provoked, the iguanas are known to bite, scratch, and tail-whip humans. They are also thought to help spread the poisonous bacteria *Salmonella*, making them a threat to park visitors. BNP adopted a Green Iguana Management Plan in

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[437] NPS, "Meet the Exotic Plant Management Teams," NPS website, accessed December 20, 2016, http://www.nature.nps.gov/biology/invasivespecies/EPMT_teams.cfm (redirects to https://www.nps.gov/subjects/invasive/index.htm); NPS, *Superintendent's Report Biscayne National Park 2002 Annual Report*, NPS, 32; NPS, *Superintendent's Annual Narrative Report*, 2009, 19.

[438] Robert B. Shamblin and Kevin R. T. Whelan, "SFCN Corridors of Invasiveness Summary Report, Biscayne National Park, 2011," Natural Resource Data Series NPS/SFCN/NRDS—2013/526, NPS, 1-2, 17-20.

[439] BNP, *Final General Management Plan*, 2015, 132.

[440] NPS, "South Florida and Caribbean Parks Exotic Plant Management Plan," PEPC Planning, Environment & Public Comment website, accessed July 8, 2015, http://parkplanning.nps.gov/projectHome.cfm?parkID=374&projectID=10033.

2008; it included removal of the reptiles, particularly in the winter when the cold-blooded creatures were "more lethargic and easier to catch."[441]

Indo-Pacific Lionfish

Figure 7.6. Invasive Indo-Pacific lionfish have been a problem on BNP's important reefs, where they are voracious competitors for food with native fish species. NPS photo, BNP archives.

Though fascinating to watch on the reefs and underwater structures, the Indo-Pacific lionfish (*Pterois volitans* and *Pterois miles)* can be a major headache. Rare until 2010, how these creatures got into BNP waters is uncertain; however, they were most likely accidentally released when Hurricane Andrew damaged an aquarium in 1992, or they were released by someone involved in the exotic pet trade. Whatever the source, lionfish have made BNP waters their home, as well as waters throughout the Caribbean and up the eastern Atlantic Coast as far as North Carolina. According to a BNP web page devoted to the lionfish (which demonstrates the priority of this species), as of 2015, the "lionfish in some areas of the Atlantic Ocean [were]…as abundant as many native grouper species." (This statistic is alarming, as grouper were at that time already well integrated into marine ecosystems and highly sought after by food and recreation industries.) Even more concerning is the

[441] NPS, *Superintendent's Annual Narrative Report*, 2009, 19.

lionfish's impact on the environment: not only does this "voracious" fish compete for food with snappers and groupers, but predators avoid it. Furthermore, the lionfish is not afraid of divers and snorkelers who might be harmed by its venomous spines. Although they appear lovely, the striped lionfish sports long spines that could "cause intense pain, swelling, headache, nausea, paralysis, and convulsions" in humans.[442]

Lionfish also damage coral reefs and other habitats that BNP managers are charged with protecting. Although the fish were first seen in South Florida in the 1980s, the species wasn't reported in the park until 2008. By 2010 sightings had become "increasingly common." In response to the 2008 sightings, BNP staff developed a Lionfish Response Plan to locate and remove them, and in 2012 the NPS published its own service-wide Lionfish Plan. A collaborative effort of many NPS units, this plan stated, "[The] recent rapid expansion of the lionfish invasion throughout the southeastern Atlantic seaboard, the Caribbean, and parts of the Gulf of Mexico is of great concern to the National Park Service and other marine resource managers. Their rapid expansion threatens the very resources and values that parks were established to protect, and diminishes the quality of experiences for anglers, divers, snorkelers and other visitors." The NPS created the plan after holding a 2011 workshop "to bring together park resource managers, scientists, and nongovernmental organizations with experience in lionfish biology and control, to assist with developing a Service-wide Lionfish Response Plan with a practical management approach to the lionfish problem."[443]

In the years following publication of these plans, natural resource managers conducted numerous research projects to better understand and manage lionfish populations. These projects explored the feasibility of traps for the fish, ecological impacts on native fish communities, and recolonization rates of juvenile lionfish in shallow baywaters and of lionfish in deeper water reefs and shipwrecks.[444]

BNP also embarked on an intense public education campaign to explain lionfish issues to its visitors. An aquarium in the Convoy Point visitor center often contained a few of the fish, and and the park created flyers to disseminate information. Staff urged park visitors to photograph any lionfish they saw, record details about their location, and then provide the data to the park. Visitors were warned not to touch the species or return it to the water if accidentally landed. Of course, humans could keep as many as they wished. The park even held lionfish tournaments to encourage removal of the fish; the BNP website notes that lionfish, "if properly prepared," are "completely safe (and tasty) to eat!" Perhaps creating a

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[442] NPS, "About the Exotic Indo-Pacific Lionfish," BNP website, accessed July 8, 2015, http://www.nps.gov/bisc/learn/nature/exotic-lionfish.htm.

[443] Ibid.; NPS, *Lionfish Response Plan: A Systematic Approach to Managing Impacts from the Lionfish, an Invasive Species, in Units of the National Park System*, NPS, 2012, ix.

[444] BNP staff, Administrative History Comments, 2016.

consumer market for the proliferating fish might reduce their numbers, although as of 2019, eradication was unlikely.[445]

To train visitors in proper lionfish handling—and to encourage scientific information gathering to help understand the creature's habits and lifestyle—in September 2015 BNP hosted a Lionfish Dissection Workshop as part of its citizen science program. Held in conjunction with National Public Lands Day, the program offered local science teachers instruction on how to de-spine and dissect lionfish and gather scientific data (length, weight, sex, and stomach contents) useful to park scientists. The teachers were then provided with lionfish to take back for classroom dissections. This citizen science program was intended to spread accurate information about the species in order to help control its numbers.[446]

Mexican Red-Bellied Squirrels

They may be cute and fluffy, but since a resident introduced two pairs to Elliott Key in 1938, Mexican red-bellied squirrels *(Sciurus aureogaster)* have been a significant threat to park natural resources. The squirrels adapted quickly to the tropical hammocks and spread from Elliott to Adams and Sands Keys, where they have damaged natural vegetation—including the imperiled Sargent's palm—and have competed with native species for food. They also are suspected of eating the Florida tree snail, a species of special concern in the state. Should their range increase, the squirrels could crowd out endangered species such as the Key Largo woodrat and the Key Largo cotton mouse and cause agricultural crop damage. BNP managers thought the squirrels had been extirpated in 1992 when Hurricane Andrew's tidal surge submerged the islands; however, the hardy squirrels made it through the storm and were since documented on Elliott Key. In a 2005-2007 study, researchers found more than two hundred nests on Elliott and signs that the squirrels might have been on Sands and Old Rhodes Keys, as well. This study raised concerns that the squirrels might spread to the mainland, where they could impact wildlife there as well as the economically important agriculture industry in south Dade County. BNP managers trapped and killed the nocturnal squirrels to control their populations and developed a management plan for the squirrel in 2007. Two years later, through collaborative efforts of the EPMT office with BNP's FWIMP, a total of thirty-five squirrels had been removed. The park continued monitoring by flagging squirrel nests and using wildlife cameras, its ultimate goal being eradication. As of 2016, the squirrels' numbers were believed to be in the single digits.[447]

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[445] NPS, "About the Exotic Indo-Pacific Lionfish"; NPS, *BNP Final General Management Plan*, 2015, 21.

[446] BNP, "Upcoming Event: Citizen Science: Lionfish Dissection Workshop," Facebook, September 12, 2015; BNP staff, Administrative History Comments, 2016.

[447] NPS, "Management Plan for the Introduced Exotic Mexican Red-bellied Squirrel (Sciurus aureogaster) Population of Biscayne National Park, Florida," NPS, July 31, 2007, 1-3, BISC archives; NPS, *Superintendent's Annual Narrative*, 2009, 19; BNP staff, Administrative History Comments, 2016, 61.

Tegu Lizards

One of the newest threats to BNP and to the South Florida ecosystem is the black and white tegu lizard *(Tupinambis merianae)*, a native of South America. The lizard, which has been observed near the park's mainland boundary, probably got a foothold in Florida after pet lizards escaped or were released into the wild. As a result, breeding populations became established in Miami-Dade, Hillsborough, and Polk Counties. According to the FWC, the tegu has a varied palate, eating everything from small animals to eggs of different species. It can reach up to four feet in length, and although it is primarily a land creature, it can swim and stay submerged for long periods of time. The tegu is also aggressive and has sharp teeth and claws to defend itself. The FWC advises anyone who sees the lizard to contact state authorities so that experienced trappers can try to catch the animal.[448]

In 2013, the NPS and the USGS funded and began a five-year study to look at the impact of tegus and other reptiles (including Burmese pythons) and their impacts on NPS units. The project, entitled "An integrated plan for invasive reptile research and management in Everglades National Park, Big Cypress National Preserve, and Biscayne National Park," was begun in an effort to better understand these species and develop ways to control and manage them.[449]

Burmese Pythons

Rumors that these large, exotic snakes slithered through the Everglades have circulated for decades, but by the beginning of the twenty-first century it was clear that they had made the wetlands their home. Although rarely seen in BNP, Burmese pythons *(Python molurus bivittatus)* deserve mention because of the public's growing interest in and fear of these snakes, the largest found on earth, and because of the potential for the reptile to spread far beyond its current range. Either accidentally or deliberately released into the Everglades, the pythons have a huge impact, eating rodents, snakes, birds, small mammals—even alligators and deer—that are integral to the ecosystem. Between 2002 and 2015, more than two thousand pythons were removed from ENP by park managers and in annual python "round up" programs, though this was likely a mere "fraction of the total population." One great concern was that the pythons could harm ENP visitors and spread into adjacent areas, including BNP.[450]

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[448] Florida Fish and Wildlife Conservation Commission (FWC), "Tegus in Florida," accessed July 24, 2015, FWC website, http://www.myfwc.com/media/2380549/Tegu-brochure.pdf (page unavailable; Spanish version at https://myfwc.com/media/17167/brochure_tegu_spanish.pdf).

[449] United States Geological Survey, "An integrated plan for invasive reptile research and management in Everglades National Park, Big Cypress National Preserve, and Biscayne National Park," South Florida Information Access (SOFIA), accessed December 20, 2016, https://sofia.usgs.gov/projects/index.php?project_url=inv_reptile.

[450] NPS, "Burmese Pythons," Everglades National Park website, accessed July 8, 2015, http://www.nps.gov/ever/learn/nature/burmesepythonsintro.htm (page not available; information now at https://www.nps.gov/ever/learn/nature/burmese-python.htm).

Beginning in 2008, numerous pythons were observed near BNP and only a handful in the park itself, but they started appearing more frequently in the 2010s. The first was a swimming juvenile removed from the water at Black Point channel by a park visitor. Then, in 2016 a six-and-a-half foot python was removed from the Convoy Point jetty, a nine foot python was found atop a research platform, and another was spotted on Adams Key. Several were found dead along the canal leading into the park, likely killed by cars. As a result, BNP biologists were trained in the removal and transport of pythons and began working to search and remove them.[451]

As of 2019, the park embraced other methods of python capture by allowing contractors to hunt within the park, training non-resource staff to capture pythons, and becoming part of the South Florida Authorized Agent Python Removal Program, which allowed trained and qualified volunteers to live-capture the snakes in the park. Pythons appear to be expanding their habitat within Biscayne Bay as two pythons were captured in Fall 2019. One was captured swimming in the water, while the second was captured on a sailboat east of Elliott Key.

[451] Jenny Staletovich, "Pythons continue to adapt in Florida," *Orlando Sentinel,* January 2, 2017, B-1, 2.

Chapter Eight

Interpretation, Education, And Partnerships

Engaging the public is always a priority and challenge at Biscayne National Park (BNP) because of its mostly open borders. As of the twenty-first century, a majority of visitors entered it by boat, many of whom are unaware that they are in a national park and may not have any contact with BNP staff, facilities, or programs while there.

Challenges, however, can become opportunities at BNP, which has developed a variety of creative programs to draw visitors into the park by land and engage them in activities aimed at creating an affinity for its vast cultural resources, natural resources, and wildlife. Another tactic has been to work with a variety of local and national organizations for physical, political, and financial support. This chapter will highlight the history of the BNP Interpretation Division and some of the important programs, partnerships, and collaborative groups critical to the park's success.

Interpretation and Programs

As of 2017 Biscayne was the largest marine park in the National Park Service (NPS) system and on a per acre basis got four times as many visitors as Everglades National Park (ENP). However, BNP park ranger Gary Bremen, who became a permanent employee in 1995, observed in a 2014 interview that BNP visitors were so spread out (mostly by boat) over the park's 173,000 acres that reaching them and managing their activities was very difficult. He continued, "Ninety percent of our visitors don't come to the visitor center. So unless they are very well aware they don't know they are in a park because they don't pass a boundary." As a result, Biscayne was "the place that is very well-loved by South Floridians in particular, but they don't know it."[452]

According to Bremen, park rangers and managers need to devise "creative ways to get people interested in the park on a more regular basis—make it fresh and new." He continued, "That has been my goal with many of the programs that I've developed here—give people a reason to come back to Biscayne National Park time and again."[453]

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[452] Gary Bremen, interview, BNP, June 2, 2014.

[453] Ibid.

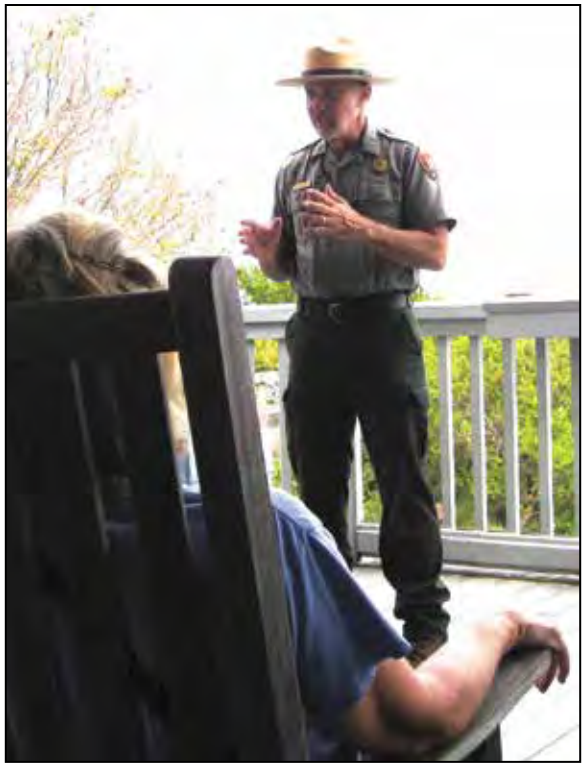

Figure 8.1. Ranger Gary Bremen has spent almost three decades at BNP helping the public understand the park's unique features. Photo by author.

Since its inception, the BNP interpretation staff have developed a number of programs to educate, inspire, and engage visitors who came byland or sea. Programming largely depends on staff size and support, with help from volunteer corps and associated groups that enables the park to expand its offerings to the public.

The NPS proposed creation of interpretive visitor centers at Biscayne in 1968 as part of the development of the national monument. Early plans called for visitor contact areas east of Homestead and on Key Largo, with concessioner-conducted tours for visitors. Facilities on Elliott, Sands, and Adams Keys were also expected to handle boaters, hikers, and divers on the park's reefs. On Elliott, developments potentially included docking facilities, campgrounds, self-guided nature trails, submerged viewing rooms, and glass-bottom boat excursions.[454]

Things were "quite lean" during BNP's early days, and staff accomplished little in terms of interpretation programs, recalled Dale B. Engquist,1971-1973 BNP Superintendent. With support from ENP scientists, the staff of six to seven people was tasked with patrolling and preserving a vast marine park. According to Engquist, their priorities were to organize the park, to enforce regulations to safeguard resources, and to spur early research, so little educational work went on during his tenure. Elliott Key Park was transferred to the

[454] NPS, "Biscayne National Monument: A Proposal," 24.

monument from Dade County in 1972, and a ranger was hired for Elliott Key, while a caretaker on Adams Key oversaw that site.[455]

By the time BNP expanded as a designated national park in 1980, its interpretive division had grown to include two fulltime staff, two technicians, and three volunteers. These volunteers contributed 192 hours of work that year, according to former Superintendent James Sanders. By 1992, the division had five fulltime employees, nine seasonal technicians, and three students who each worked three months in support of BNP.[456]

As previously mentioned, one of Sanders's goals was to increase public awareness of the park. He observed that "park staff had not been very active in the local community," and few members of the public were aware of the park's existence. "We worked together by informing park users, conservation groups, and government agencies of the park's programs, in an effort to gain their cooperation and to overcome an identity problem." As previously mentioned, according to Sanders, BNP staff "wanted to show that the park was a good neighbor, was available to assist [the public] and had the best interests of the community at heart."[457]

During Sanders's tenure, staff began and expanded a number of interpretation programs. BNP established a camp for fifth grade students on Elliott Key (where construction of long-planned visitor facilities and two residences progressed) and later moved to Adams Key, where it included teacher workshops. Park staff began a free boat tour using BNP's forty-five foot workboat to take visitors on four-hour tours to Elliott Key on weekends and holidays. In 1985, BNP awarded a concession contract for tour boat services. (For more on concessions, see Chapter 9.) That same year, BNP created the NPS's first floating visitor center, which was a pontoon boat anchored in the bay; it contained easily stowed exhibits and sported a large, red helium balloon to attract the attention of passersby. This center also became a station for emergencies.[458]

Unfortunately, in 1992 Hurricane Andrew damaged many park facilities that were not reopened completely until 1994. All that was left on Elliott Key, for instance, was a badly damaged ranger station and a visitor center. The last of the Cocolobo Cay Club facilities on Adams Key were also gone, according to Richard "Dick" Frost, who followed Sanders as BNP Superintendent in 1993 and completed his tenure in 2000. As earlier chapters mentioned, Frost concentrated most of his work on restoring the park, building the Convoy Point visitor center and administration building, and fighting a commercial airport plan for nearby Homestead. Like Sanders, he too pressed BNP staff to engage with the community in order to expand the park's image.[459]

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[455] Engquist, interview; Miller, *BNP: It Almost Wasn't*, 109.

[456] James Sanders, email to author, "Re: BISC Interp. Staffing & Cultural Res. Mgmt," December 24, 2016, 1, 5.

[457] Miller, *BNP: It Almost Wasn't*, 117.

[458] Ibid, 117-18, 120-23.

[459] Ibid., 135; Frost, interview.

Frost wrote, "We shifted their [BNP staff's] focus outward and sent rangers and naturalists on a recurring schedule to present programs to meetings of user groups and community organizations, with special attention to the current issues that were confronting the park." He continued, "And finally we created what amounted to a continuous public relations initiative, organizing events and issuing frequent news releases aimed at generating public (and media) interest in the park."[460]

By 2006, there were 7.8 fulltime staff positions with 1.8 non-NPS fulltime positions in interpretive services—very small growth within the previous fourteen years. These slots were supplemented with five seasonal education rangers (paid through grants and special project funding), five seasonal interpretive rangers (funded through grants), a seasonal outreach ranger (shared with ENP and paid through grants), and five "regularly scheduled" visitor center volunteers. Their responsibilities included education, outreach, public information, community affairs, volunteer programs, and work with BNP partners—the latter of which became increasingly important during funding downturns. That year, the park reported 608,837 official visitor contacts. BNP staff acquired this total from on-land surveys and considered it to be low, since it did not include visitors coming into the park by boat.[461]

As BNP grew and evolved, so did the interpretive staff and programming. The following are a few of the programs the park created to engage the public.

Family Fun Fest

Begun in 2000, the BNP Family Fun Fest was geared toward people who visited the park on the weekends, had a picnic and spent the day, but never came into the visitor center, Bremen noted. "We decided to take the park to them."[462]

In its first year, the program included five activity stations featuring different aspects of park biodiversity. Each participant was given a "passport" to take to each station. Participants who got stamps at all stations received buttons. The first event lasted three hours and attracted an estimated 50 people. At the end of the season (Family Fun Fests were held monthly in winter), the program counted 250 participants in educational activities that included touching dead coral samples, coloring and cutting out images, and talking with volunteers. The goal was "fun with a little bit of education inside," said Bremen. "If the whole family does it, perhaps they'll still be talking about Biscayne National Park after they leave." And the buttons, which cost BNP pennies, were very popular—some participants collected and wore them to later Family Fun Fest events.[463]

For example, in 2012, Family Fun Fest was themed "Myth, Magic and Mystery" and featured humorous skits about the park's resources. Skit titles included "Hairy Otter and the

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[460] Miller, *BNP: It Almost Wasn't*, 138.

[461] NPS, *BNP Superintendent's Annual Narrative Report 2006*, 40-42.

[462] Bremen, interview.

[463] Ibid.

Magical Ocean," "Biscayne Wrecktacular," and "Poseidon and Pals." Financial support for the program came from several sources, and a team of thirty volunteers assisted in events.[464]

Figure 8.2. Family Fun Fest was well known for its silly skits containing educational messages. Here, park volunteers John Justice and Mike Hassall lead a troupe of performers selected from the audience for a skit about the wreck of the *Alicia* on Long Reef in 1905. The skit was part of the "Biscayne Wrectacular" Family Fun Fest on March 11, 2012. NPS photo, BNP archives.

By 2014 the program had grown dramatically to include special "junior" stations for toddlers. That year, some 1,600 attended the events, then staffed by five rangers and twenty to twenty-five volunteers at six stations on each occasion. As of 2017, the only limit to Family Fun Fest was the parking lot size, but Bremen noted that even that was supplemented by a recent trolley service, which transported area residents to the park from the nearby city of Homestead. Bremen added that the program was a "staff favorite" and sometimes led to long-term friendships between rangers and youth. "I want them to love this place the way I do," he said. "I want them to carry on and protect the place the way I hope I have."[465]

Community Artists Program

In 1997 the Dante Fascell Visitor Center auditorium began offering a variety of art exhibitions to inform and intrigue park visitors while also featuring local artists. The grand opening, called "A Rare Combination," used language from BNP's federal enabling legislation as its theme. Thirty-three artists offered their interpretation of Biscayne Bay and the

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[464] BNP, *Superintendent's Annual Narrative BNP CY 2012*, 9.

[465] Bremen, interview.

northern keys. The program included sculpture, paintings, photography, video, music, and even furniture made from wood left over from Hurricane Andrew. The two-month exhibition was so popular that BNP decided to make art exhibitions a regular feature. In 2004, in collaboration with Art South in Homestead, BNP started the Biscayne National Park Community Art Gallery, which featured the work of local artists "whose works highlight[ed] the park's resources," according to 2000-2005 Superintendent, Linda Canzanelli. The program enticed people "who have lived in the area their whole lives but have never been to the park's visitor center," she added.[466]

As of the late 2010s, four artists a year displayed their Biscayne-inspired works in the auditorium. With each opening, the park hosted a reception and invited the public to meet the artists. Bremen noted that the diverse art displayed ranged from ceramics to fiber to fish printing to trash sculptures. Several public partners supported this effort.[467]

One special art event took place in 2010, when the South Florida National Parks Trust and Unilever sponsored the installation of 360 flags on the visitor center grounds. The display, *Endangered World*, was composed of flags community volunteers created to illustrate the problems encountered by endangered species around the world. Each of the brightly colored flags represented one degree of longitude around the Earth and featured an endangered or threatened animal found there. The flags were installed in conjunction with a community artist exhibit and opened with a full-moon reception at the visitor center. More than one hundred people attended the opening event.[468]

Bioblitz 2010

Bioblitz was an extension of the NPS Natural Resource Challenge and a collaborative NPS and National Geographic Society initiative to highlight the biodiversity of America's national parks. (See Chapter 7 for more about the Challenge.) The project featured a different national park each year, and BNP was the fourth park chosen. Bioblitz 2010 underscored the importance of BNP's flora and fauna, and BNP welcomed the opportunity to participate, although it required much planning and staff time.[469]

The twenty-four-hour event, held April 30 through May 1, 2010, offered the public the opportunity to work with some 170 scientists looking at park biota ranging from butterflies to coral to fish. This citizen-scientist partnership brought 2,900 visitors to BNP, including 1,300 students and teachers, and sent them to areas throughout the park for their investigations. At the same time, interpreters managed programs, speeches, and musical performances at three different venues in the park. They encouraged, led, and assisted participating local school groups, helped with event logistics, organized volunteers, and arranged for nationwide

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[466] Ibid.; Miller, *BNP: It Almost Wasn't*, 144.

[467] Bremen, interview.

[468] NPS, *Annual Narrative BNP 2010*, 13.

[469] Natural Resource Stewardship and Science, *Preserving Natural Resources in the National Parks: Fiscal Year 2010 Report to Congress* (Washington, DC: NPS and DOI), 48.

organizations to occupy exhibit booths. Interpreters also set up a "Biodiversity University," modeled in part on Family Fun Fest, to inspire youngsters to participate in BioBlitz and learn about BNP and its resources. In addition, 220 people donated 1,800 hours of volunteer time to assist in the event, taking care of logistics such as parking, traffic control, and data entry.[470]

"It was really an amazing event," said Bremen, adding that visitors were "so completely engaged" that it was "one of the best things of my whole career." BioBlitz ultimately documented more than 1,000 species in BNP, of which 324 were new to the park's official species listings. These included 11 species of lichen and 22 species of ants. Most exciting was the identification of a new species of tiny water-dwelling invertebrate commonly known as the water bear, which can withstand extreme temperatures. One of the world's water bear experts found the new water bear on a submerged log near Convoy Point; the species was named after the park: *Archechiniscus biscaynei*.[471]

Education Programs

Starting with its national park designation in the 1980s, BNP regularly hosted students from across the South Florida community in its education programs—another effort to connect the community to the park and offer information about the park's fragile biological resources. All programs were free, making them accessible to all students. In addition, the park made special outreach efforts to connect with underserved audiences, working to partner with organizations and schools. This included overnight and day programs for local students as well as distance learning programs through BNP's website.[472]

Having interpretive staff work with schools was essential for BNP making contact with the community, said Mark Lewis, 2005-2013 Superintendent. At the park, it was "hard for interpreters to see the users, the public," Lewis said, "because people. . .leave their house or the dock or whatever, they go through the water, they go to the reef, or they go to the sandbar, or they go wherever and then they turn around and go back." He added, "And you just don't see very many of those people. So the interpreters decided before I got there that going out to the schools is how we can make the most bang for the buck. We've gotten several awards for our program."[473]

As local schools cut back on field trips due to limited funding, BNP continued its free program thanks to support from the community, specifically the South Florida National Parks Trust. (See more on the Trust below.) For example, in 2012 the Trust supported free bus transportation to over seven hundred students from sixteen Title I schools serving the economically disadvantaged, as well as concession boat charters to Elliott Key for twenty

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[470] Ibid., 22, 48; NPS, *Annual Narrative BNP 2010*, 11, 13.

[471] Natural Resource Stewardship and Science, *Preserving Natural Resources*, 48; Bremen, interview; BNP staff, Administrative History Comments, 2016, 63.

[472] NPS, *Annual Narrative BNP 2010*, 15.

[473] Lewis, interview.

Expedition camps; that year, the park counted 8,238 participants in its education programs, allowing BNP to keep the program accessible to all South Florida communities.[474]

Homestead's National Parks Trolley

To take advantage of its location between two national parks, in January 2014 the city of Homestead began sponsoring free trolley transportation from its downtown to BNP and to ENP. The service ran during the weekends of peak winter visitor seasons. The city, which claimed the designation of "Gateway to Everglades and Biscayne National Parks," offered the popular service as a way to bring local residents into these natural areas, and the trolley was the only public transportation into BNP and ENP. The city's website promoted the trolley and offered programming information about the parks.[475]

Figure 8.3. The City of Homestead's free National Parks Trolley took visitors to BNP and to Everglades National Park during the busy winter season. As of 2017, it was the only public transportation into the parks. Photo by Kim den Beste.

Along with its project partners, Homestead Main Street Inc. and the National Parks Conservation Association, the city won the NPS 2015 Director's Partnership Award, given for "significant accomplishments" achieved by parks and community groups that "provide lasting benefits for parks and communities."[476]

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[474] NPS, *Superintendent's Annual Narrative BNP CY 2012,* 12.

[475] City of Homestead, "Homestead Trolley to the National Parks," City of Homestead website, accessed September 17, 2015, http://www.cityofhomestead.com/index.aspx?nid=357; NPS, "Homestead National Parks Trolley Returns to Meet Growing Demand," BNP website, November 20, 2014, https://www.nps.gov/bisc/learn/news/homestead-national-parks-trolley-returns-to-meet-growing-demand.htm.

[476] South Florida National Parks Trust, "Homestead's National Parks Trolley Earns National Partnership Award," SFNPT newsletter, July 2015.

Figure 8.4. Special areas were designated for trolley service at the park. Photo by Kim den Beste.

Citizenship Ceremonies

In another of its outreach programs, BNP welcomed new citizens—literally as they uttered their first words as US citizens. For several years, the park has partnered with US Citizenship and Immigration Services to host new citizen naturalization ceremonies. As of 2017, more than one thousand people had become citizens at the park, which provided a memorable setting for such an important event and offered a reminder that they were new owners of national parks. The park stated that "building lasting connections through naturalization ceremonies is invaluable for a National Park situated on the doorstep of a city where the majority of residents are foreign born." Hopefully these citizens' time in the park inspired a sense of stewardship, as well.[477]

In February 2015, some three hundred new citizens, children and adults, were welcomed in two days of ceremonies at the park. Festivities included live singing of the national anthem, inspirational speakers, ranger-led programs, and a video montage about the history of US immigration. "National parks speak to who we are as a people and as a nation," said then Superintendent Brian Carlstrom. "Biscayne National Park is an ideal setting for such

[477] NPS, *Superintendent's Annual Narrative BNP CY 2012*, 10; BNP staff, Administrative History Comments 2016.

an important event." The ceremonies were made possible by a grant from the South Florida National Parks Trust.[478]

Figure 8.5. As of 2017, more than one thousand people had been sworn in as US residents at BNP, a memorable setting and reminder of how parks provide important public spaces. NPS photo, BNP archives.

Other Activities

BNP rangers participated in a wide variety of additional activities to engage with the public. "Porch talks" were featured regularly on the second floor balcony of the Dante Fascell Visitor Center. There, rangers interacted with center visitors, discussing a variety of topics about the park. In one popular talk, "Gifts from the Sea," rangers circulated specimens of marine life among gathered people, including shells and seeds that could be found on island beaches, as well as unwanted "gifts" that washed ashore, such as unsightly plastic bottles, cans, and trash with origins in different countries.

As BNP moved into the 2010s, maintaining a digital presence became essential for promoting the park and reaching a more diverse audience. BNP maintained a website through the NPS that featured bright, colorful graphics and photographs, and a team of rangers regularly posted park news articles and calendar events; by 2012, the site was receiving more than one million users annually. Rangers also posted news and events on BNP's Facebook page. Launched in August 2011, by the end of 2015 the page had more than ten thousand "likes" from users who received the park's frequent posts. BNP used its Facebook page to inform (e.g., "it's National Lobster Day") and entertain (e.g., "a pair of rare

[478] Gary Bremen, "Biscayne National Park and the U.S. Citizenship and Immigration Services Welcome 300 New Americans," BNP website, February 11, 2015, http://www.nps.gov/bisc/learn/news/biscayne-national-park-and-us-citizenship-and-immigration-services-welcome-300-new-americans.htm.

mangrove cuckoos were spotted in park"). It also used it to recruit volunteers for park projects, such as planting native vegetation for a restoration project on spoil islands. A video post about the release of hatchlings from a green sea turtle nest "went viral" in 2013 with 88,256 views and 449 shares, sending park news far and wide. The unexpected visit of "Katharine," a tagged great white shark, to BNP waters in 2014 was also a very popular topic on social media, thrilling followers while also giving interpretive rangers the opportunity to comment in a philosophical Facebook post about the existence of large predators in the park. Social media allowed the park to "create connections all around the world," Bremen said. BNP also had thousands of Twitter followers. [479]

Partnerships and Collaborative Groups

Since its inception, Biscayne National Park has relied upon partnerships and collaborations with community and national groups to equip and expand its mission to the public. (See Chapter 10 for more information about park needs and issues.) These organizations addressed concerns that varied from education to archeological investigations to beach cleanups and island restoration. In the course of the park's history, help came from many different groups. BNP has collaborated with numerous private, public, and nonprofit partners, including the South Florida National Parks Trust, Florida National Parks Association, Izaak Walton League, Tropical Audubon Society, Friends of the Everglades, Diving with a Purpose, National Geographic Society, National Parks Foundation, National Parks Conservation Association, Stiltsville Trust, Everglades Association, Florida Fish and Wildlife Conservation Commission (FWC), and the US Coast Guard.

In addition, BNP has collaborated with multiple coral reef agencies and organizations such as the National Coral Reef Environmental Education Foundation, South East Florida Coral Reef Initiative, National Oceanic and Atmospheric Administration, and Florida Keys National Marine Sanctuary. Targeted community groups in South Florida include Hispanic-focused Citizens for a Better South Florida and African American/Haitian American-focused South Florida Community Partners. Others include Miami Dade County Environmental Education Providers, Fairchild Tropical Botanical Gardens, Miami Dade College, Miami Dade County Parks and Recreation, and the Florida Department of Environmental Protection. Many of these relationships endured, and several figured prominently in BNP's history and operations. These are highlighted below: [480]

South Florida National Parks Trust

The South Florida National Parks Trust (SFNPT), founded in 2002 and located in Coral Gables, is BNP's official friends group and the primary fundraising partner for four South Florida national parks: BNP, ENP, Dry Tortugas National Park, and Big Cypress

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[479] NPS, *Superintendent's Annual Narrative BNP CY 2012,*11; Bremen, interview; NPS, *Superintendent's Annual Report 2013*, NPS, 9; BNP staff, Administrative History Comments, 2016.

[480] NPS, *Annual Narrative BNP 2010,* 14.

National Preserve. The nonprofit group seeks financial contributions from individuals, businesses, and foundations to aid park programs such as environmental education, resource protection, visitor services, volunteer activities, and community outreach.[481]

"We function also as a bridge back to the community," said Don Finefrock, SFNPT executive director, in a 2015 interview. The SFNPT board then had nineteen volunteer members, each with extensive contacts in the local community, who helped "broaden the basic support and contacts for the National Park Service in South Florida." The board was an important resource for BNP, as it continued to seek strong connections in the increasingly diverse Miami community.[482]

In addition to helping raise funds and support from the community, the SFNPT offers a competitive program providing annual grants to the local parks. Parks submit proposals for a variety of topics that tend to be heavily oriented toward environmental education. The SFNPT often seeks matching funds to enhance its funding abilities. Funding for BNP and ENP often include support for seasonal rangers and staff to lead programs, though SFNPT has also funded bus transportation for school children to visit the parks. As of 2015, BNP had served approximately 3,000 students a year, Finefrock said, a need that typically received $30,000 to $40,000 annually. In 2014, the SFNPT provided $350,000 in total funding for the four parks, down from about $500,000 in each of the two previous years; more than $5 million has been provided since the grants program was instituted in 2004.[483]

"The park service budget has been stagnant," noted Finefrock. "And there's been a lot of pressure to find outside sources of revenue to support traditional programs. The days when the National Park Service could pay for everything it wanted to do or had previously done in terms of public programs and environmental education and whatnot—those days are really over." He concluded that now most national parks, including the largest, had community partners who could "provide significant sources of funding for them. It's just a new day."[484]

SFNPT projects have varied widely. For BNP, the Trust gave funds to help archeologists develop the Maritime Heritage Trail, funded support interns to monitor and protect sea turtle nesting sites, and funded Alternative Spring Break, which brought college students to BNP during winter and spring breaks to perform volunteer service. The Experience Your Backyard monthly program has brought local residents into the area parks for experiences they might not have had on their own. For instance, at BNP, participants paddled to Jones Lagoon to seek rookeries and clear water, and snorkelers enjoyed watching NPS dive teams map and interpret an underwater shipwreck site.[485]

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[481] South Florida National Parks, "About the South Florida National Parks Trust," South Florida National Parks website, accessed October 4, 2015, http://www.southfloridaparks.org/about.html (page not available).

[482] Don Finefrock, interview with author, BNP, March 3, 2015.

[483] Ibid.

[484] Ibid.

[485] Ibid.

In 2015, SFNPT helped to promote and secure volunteers for a special spoil island restoration project at BNP. The volunteers planted native plants on spoil islands composed of debris left behind from dredge projects in the coastal waters of Biscayne Bay. Left alone, these "islands," often covered with exotic vegetation, would erode from storms and waves, causing turbidity that could degrade water quality and affect seagrasses. BNP staff worked to restore the spoil islands to an environmentally healthy state by removing invasive species and then mulching, planting, and fertilizing new vegetation. The restoration project, which began in October on two islands off the Princeton Canal, aimed to make the manmade islands more ecologically sound so they could offer needed habitat to BNP birds and wildlife.[486]

Figure 8.6. Seeking to have an impact, these students participated at BNP's Alternative Spring Break, helping remove debris harmful to wildlife from park beaches. NPS photo, BNP archives.

Florida National Parks Association

The park's official cooperating association as of 2017, the Florida National Parks Association (FNPA), is a nonprofit organization that supports interpretation and educational services within South Florida's national parks. The FNPA operates bookstores at four NPS parks with profits going to fund park activities. Founded in 1951 as the Everglades Natural History Association to support ENP, the organization expanded in 1985 to include BNP, Dry Tortugas National Park, and Big Cypress National Preserve—areas that covered 2.5 million acres of ecosystems. Items purchased at park stores and online at the association's website—everything from books and shirts to maps and puzzles—help to support "educational,

[486] BNP, "Chipping Away: Spoil Island Restoration in Biscayne National Park," Facebook, August 9, 2015, https://www.facebook.com/BiscayneNPS/posts/931029206919319.

interpretive, and historical and scientific research responsibilities" at the four parks. FNPA is one of more than sixty-five cooperating associations that operate at NPS properties as of 2017.[487]

In 2016, the FNPA expanded its support in the park by establishing an educational field institute. Biscayne National Park Institute (BNPI) provides marine-based educational adventures for park visitors, hosts environmental education groups, and supports youth camps on park islands. BNP authorized the Institute as a fee-for-service operation under a General Agreement for Interpretation and Educational Services. In its first year of operation, BNPI operated six boats seven days a week with more than twenty-two thousand visitors. Since then, the number of visitors continues to increase (See Chapter 9).

As of 2019, BNPI also provides interpretive boat tours to Boca Chita, half-day and full-day snorkel and sailing trips, and guided tours via paddleboard and kayak at Convoy Point and Jones Lagoon. Additional programs are in the works and are regularly proposed to the park management team for approval. All BNPI programs have expanded visitor access to the park. Funds raised in BNPI's public-private partnership are available to the park to support seasonal staff and other special projects.

Friends of the Everglades

Famed author and activist Marjory Stoneman Douglas founded the Friends of the Everglades (FOE) in 1969 with the goal of helping to protect and restore the important wetlands that once flowed through the southern part of the state, including lands leading into Biscayne Bay. As of 2015, that meant operating with a working understanding of science, public policy, community engagement, and the court system in order to seek change and protection.

The FOE has a "long history of being involved in Biscayne National Park issues," said FOE president Alan Farago in a 2015 interview; he was particularly referring to the Turkey Point nuclear power plant and the freshwater supply to BNP. He continued, "Our members recreate and use the waters of Biscayne National Park. We recognize this connection between the park and the Everglades." Farago said that FOE and other environmental colleagues work to protect the parks from pollution and other impacts through court actions, civic activism, and civic engagement."[488]

Farago and the FOE fought to protect BNP and ENP, as he said, so the natural systems could "have a chance. So that we have a chance to show future generations what we have been blessed to experience." He also added that, without whole, healthy natural systems, the parks would lose the constituency and activists that for so long had fought for them. Farago predicted that the top threats to BNP in the future would be water quality and quantity, public indifference, and enforcement of regulations.[489]

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[487] Everglades Association (now Florida National Parks Association) website, accessed December 30, 2016 at https://www.evergladesassociation.org, now at https://floridanationalparksassociation.com

[488] Farago, interview.

[489] Ibid.

Stiltsville Trust

Stiltsville, a unique site in northern BNP showcasing seven elevated wooden structures, is administered by the nonprofit Stiltsville Trust. As discussed in Chapter 4, after the 1980 northern expansion of BNP, the NPS originally intended to remove all of the buildings found in this recreational community. After Hurricane Andrew in 1992, only seven were left standing and were slated for removal by 1999. However, a public outcry and political maneuvering led the NPS to agree in 2000 to keep the remaining structures for public use.

The Stiltsville Trust was established in 2003 to oversee and manage the properties, secure insurance for them, and ensure that they did not degrade the nearby marine environment. The trust's fifteen-member board, composed of caretakers for the seven buildings and eight nonaffiliated members of the public, oversees public access to the structures through a cooperative agreement with the park. This access includes community groups, researchers, artists-in-residence, and other activities. Permits to visit and use the buildings, which are accessible only by boat, have to be obtained from the trust and often require special use permits from BNP. According to Kevin Mase, 2015 chairman of the Stiltsville Trust Board of Directors, the building caretakers, several of whom were former leaseholders, also have access to the properties. In 2015, the trust and BNP signed a ten-year cooperative agreement.[490] Despite the disagreements in the past, "today we have a very good working relationship with the National Park Service," Mase said.[491]

Izaak Walton League

Protecting America's fragile resources has been a goal of the Izaak Walton League of America (IWL) since its founding in 1922. South Florida has three chapters of the organization, all of which concentrate on the area's natural areas and water issues, including BNP. As discussed in Chapter 3, the earliest proponents of saving Biscayne Bay and then protecting it through a federal designation in the 1960s came from IWL ranks, and the group continues to play an important part advocating on behalf of the park in the twenty-first century.

Michael Chenoweth, president of the Florida Keys Chapter and ofthe Florida Division of the IWL, long enjoyed sailing on Biscayne Bayand appreciated its various natural resources. In a 2015 interview, he recounted a fishing trip through Caesar Creek at the south end of Adams Key in the early 1960s. "I had never seen a place that was so spectacularly beautiful before then," he said. "I was just awestruck by the clarity of the water and the multitude of fish and all of the different things you could see from a little boat out there on the water. So that was my introduction to Biscayne Bay."[492]

The group has worked to support new BNP plans and initiatives to protect natural resources. It has also worked with the Everglades Coalition on water quality and supply issues for the park. Water flow, Chenoweth said, was a major issue for BNP and Everglades

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[490] Mase, interview; NPS, "Stiltsville"; Stiltsville Trust website, accessed December 30, 2016, http://stiltsvilletrust.org/pages/stiltsville_miami_fl_biscayne_bay.html.

[491] Mase, interview.

[492] Michael F. Chenoweth, telephone interview with author, October 1, 2015.

restoration. The goal in recent years is to return more freshwater volume into BNP, since much of it has been diverted by drainage in the last century. In the past, the park had to compete with other interests, including the adjacent Turkey Point nuclear power plant, for water usage—part of the constant battle between business and revenue versus natural resources, Chenoweth reflected.[493]

In late 2015, the Florida Division, which represents three different South Florida chapters, sent letters to local congressional leaders supporting the 2015 GMP, which proposed a protected marine area to lessen fishing pressures. Two of the chapters also hosted an annual meeting at John Pennekamp Coral Reef State Park that brought together NPS and refuge managers to meet with community leaders. They discussed and highlighted different "hot" issues and looked for help from the community and the IWL. "Our effort is to support the park wherever we can," Chenoweth said.[494]

Tropical Audubon Society

Tropical Audubon Society, the Miami branch of the National Audubon Society, has supported BNP since it became a national monument. Over the years, its members have rallied to fight development threatening the park and have aided efforts leading to its expansion. Frost credited the group's "unrelenting assistance" in the success of the 1990s campaign to stop a proposed commercial airport in Homestead. After leaving the park, he stayed involved with Tropical Audubon to "fight for sensible land management in South Florida in the face of a great surge in urban development."[495]

Tropical Audubon has four focuses in the twenty-first century: Everglades restoration, Biscayne Bay health, land use, and bird conservation. Those intertwining topics keep BNP at the forefront of many of the group's activities and led to the 2009 creation of the Biscayne Bay Coalition (BBC). Its mission is to "unite the Miami community to help protect, restore and enhance Biscayne Bay for future generations." The group, with membership from at least a dozen area conservation organizations, looked beyond BNP to the entire bay. It worked to increase awareness of the bay's importance, monitor policy and permitting of developments that could affect the bay, support research on the bay's health and impacts, and increase BBC membership. Among its many activities, the BBC opposed a soccer stadium on the bay's edge, advocated for better freshwater flow into the bay, and supported the BNP GMP's proposed no-take fish protection zone. The BBC also focused on the bay's salinity and water use in the bay, particularly in relation to Turkey Point nuclear power plant operations and expansion plans (see Chapter 4). The group vigorously protested the power plant's increased use of fresh water in its cooling canals and in 2014 pointed to a plume of industrial pollution from the utility that threatened water supplies.

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[493] Ibid.

[494] Ibid.

[495] Miller, *BNP: It Almost Wasn't*, 12; NPS, "Statement for Management Biscayne National Monument, June, 1976," NPS, 9.

In July 2016, Tropical Audubon joined the Southern Alliance for Clean Energy in suing the plant's owner, Florida Power & Light Co., arguing that discharges from the electric plant's cooling canals were contaminating the Biscayne Aquifer, the drinking water supply for the Florida Keys.[496]

Tropical Audubon also conducts annual Christmas Bird Counts at BNP and partnered with the park to offer a certificate program for birders. The Biscayne Birding Trail, created in September 2013 and the first of its kind in any national park, was managed and promoted by Tropical Audubon in an effort to "engage birders and spark interest in wildlife watching." BNP visitors kept lists of birds they found in the park, often at sites along the Biscayne Birding Trail, and then took them to the visitor center. A ranger verified the bird species and awarded appropriate certificates—four lifetime achievement levels were possible. At the end of the inaugural year, 18 people earned 42 certificates and noted 180 species of park birds ranging from wading birds to raptors to songbirds.[497]

Diving With a Purpose

An important volunteer BNP diving program is Diving With a Purpose (DWP), an organization of scuba divers affiliated with the National Association of Black Scuba Divers (NABS). Twice a year, DWP divers visit the park to train in underwater archeology and to help BNP staff examine and document shipwrecks.[498]

The award-winning program began in 2005 after a NABS member, Kenneth Stewart, watched a documentary about the *Guerrero*, a slave ship carrying hundreds of slaves to market when it sank in 1827. The shipwreck was believed to be in BNP waters but had never been found. Inquiring about the *Guerrero*, Stewart contacted Brenda Lanzendorf, who had succeeded Adams as BNP cultural resource manager. Stewart learned then that there were many more wrecks to explore. Lanzendorf was the park's sole underwater archeologist at the time, and she welcomed help from the divers, who converted their purely recreational hobby into historical investigation. In recognition of this important partnership and program, in 2009 the Department of the Interior awarded DWP its "Take Pride in America" award—DWP was the first African American group to receive it. The group won White House recognition with a Preserve America Stewardship Designation in 2014. Then in 2015 DWP won the Chairman's Award for Achievement in Historic Preservation from the Advisory Council on Historic Preservation. Since the program's inception, it has grown into a diving certification course and began operating in other NPS units and NOAA marine sanctuaries. As of 2017, it had sent

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[496] Tropical Audubon Society, "Conservation Overview," Tropical Audubon website, accessed October 12, 2015, http://www.tropicalaudubon.org/conservation and http://www.tropicalaudubon. org/conservation/biscayne-bay-coalition; Susan Shapiro, "Biscayne Bay Coalition is Making Waves," Tropical Audubon Society newsletter (summer 2014): 1, 13; Timothy O'Hara, "Groups sue over Turkey Point," *Keysnews.com*, July 14, 2016.

[497] NPS, "Biscayne Birding Trail Certificate Program," BNP website, accessed October 12, 2015, http://www.nps.gov/bisc/planyourvisit/biscayne-birding-trail.htm; NPS, *Superintendent's Annual Report 2013*, 21.

[498] "Diving With a Purpose Summary," no date, electronic files of Charles Lawson.

graduates to archeological projects around the world. In 2012, a new offshoot of the BNP program, Youth DWP, was designed to bring a new generation to investigate the park's resources.[499] "Before this project, I gave diving a meaning solely from the exploration of the beauty of the reefs and the process of introducing as many more African Americans to that beauty as possible," said NABS member Erly Thornton III, adding, "[To] go down and map a piece of history was something that I never thought I would be able to do." [500]

Susan Gonshor, former BNP chief of interpretation, said DWP was a "perfect example of how NPS [could] combine educational and volunteer programs to connect the public to the parks while developing a real sense of stewardship." Since Lanzendorf's death in 2008, Stewart has set up two annual scholarships in her honor to support youth wanting dive training experiences.[501]

National Parks Conservation Association

The nonprofit, nonpartisan National Parks Conservation Association (NPCA), founded in 1919 and headquartered in Washington, DC, works to protect and enhance units within the NPS. The NPCA's involvement with BNP began in the 1980s when the organization participated in the 1983 General Management Plan (GMP), advocating for less construction in the park, increased transportation for visitors to the park's islands, and an end to dumping trash in park's waters.

In 2006, the NPCA produced a lengthy resource assessment report on BNP entitled *State of the Parks: Biscayne National Park*. This forty-page report described BNP resources and came up with a two-page list of key findings.[502] In the 2010s the organization opened their Sun Coast Regional Office, located in Hollywood, Florida, to monitor parks in South Florida as well as the US Virgin Islands and Puerto Rico. It focuses on Everglades restoration, coral reef protection, park funding, and protecting BNP from nuclear power expansion. In late 2015 the NPCA rallied opposition to a proposed expansion of the Florida Power & Light Turkey Point nuclear energy facility, located adjacent to BNP.[503]

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[499] Ibid.; Juliana Accioly, "Black Scuba Divers Win National Award," Diving With a Purpose (press release), accessed April 30, 2015, http://www.divingwithapurpose.org/files/Black%20scuba%20divers%20win%20national%20award.pdf (page unavailable); NOAA, "Diving With A Purpose Receives Chairman's Award for Helping Federal Agencies Accomplish Submerged Resources Stewardship Responsibilities," National Marine Sanctuaries website, accessed December 30, 2016, http://sanctuaries.noaa.gov/news/jul15/chairmans-award.html.

[500] Accioly, "Black Scuba Divers Win National Award."

[501] Ibid.

[502] NPCA, State of the Parks: Biscayne, 1-3, 6-7.

[503] John Adornato III, email to author, "Biscayne history: information please," January 4, 2017; T. Destry Jarvis, letter to BISC Supt. James H. Sanders, March 2, 1983, 1-2, copy in possession of author; NPCA, "Suncoast Regional Office: Who We Are," NPCA website, accessed October 4, 2015, https://www.npca.org/regions/sun-coast; NPCA, "Protecting Biscayne National Park," NPCA website, accessed October 4, 2015, http://www.npca.org/assets/pdf/TurkeyPointExpansionFactSheet.pdf (page unavailable).

More recently, the NPCA promoted Find Your Voice, a 2015 initiative "focused on connecting people to parks and cultivating new park advocates." The friend-raising event gathered volunteers and other interested people, many of whom had never been to a national park, for events in parks across the nation. At BNP, participants enjoyed fishing lessons, boat tours, shoreline walks, and trolley rides.[504]

Other Collaborations

Aside from these groups, BNP staff and managers have worked with a number of other community groups to address specific issues at the park. These include:

- Miami Blue Chapter of the North American Butterfly Association. This group aided in a habitat restoration project at BNP on behalf of the Schaus swallowtail butterfly, an endangered species found on Elliott and Adams Keys. Members worked to remove invasive species, plant host and nectar plants that the butterfly needed, and monitor the health of the plants and the number of caterpillars produced by their efforts.[505]
- Reef Environmental Education Foundation (REEF). BNP worked with this foundation to host Great Annual Fish Count events in park waters. BNP employees trained volunteer divers and snorkelers in fish identification and then headed to several areas to gather data valuable to researchers studying the health of the area's fish.
- The University of Miami's Rosenstiel School of Marine and Atmospheric Sciences. This school partnered with BNP on a number of projects, including coral and seagrass restoration, fishery and habitat assessments, and archeological surveys and assessments.
- Wildlife Rescue of Dade County (WRDC), a local nonprofit wildlife rehabilitation organization. In 2015, BNP partnered with WRDC, who aided staff in responding quickly to wildlife injuries and strandings in the park; this frequently involved working with endangered and threatened species. The Memorandum of Understanding signed with WRDC may serve as a model for BNP in working with other rescue groups, particularly those that specialize in sea turtles, sea birds, and marine mammals.[506]

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[504] NPCA, "National Find Your Voice Initiative Kicks off in Biscayne and Everglades National Parks to Inspire and Empower New Generation of National Park Advocates," NPCA press release, April 17, 2015, https://www.npca.org/articles/806-national-find-your-voice-initiative-kicks-off-in-biscayne-andeverglades.

[505] Jaeson Clayborn, "On Behalf of the Schaus Swallowtail: Habitat Enhancement at Biscayne National Park," Miami Blue Chapter, North American Butterfly Association, accessed July 6, 2015, http://miamiblue.org/schaus-swallowtail-habitat.

[506] NPS, "Biscayne National Park Formalizes Partnership with Wildlife Rescue of Dade County," BNP website, March 16, 2015, http://www.nps.gov/bisc/learn/news/Biscayne-National-Park-Formalizes-Partnership-with-Wildlife-Rescue-of-Dade-County.htm.

- The Archie Carr Center for Sea Turtle Research at the University of Florida. The Center entered into a cooperative management agreement with BNP in 2019. The agreement is to restore sea turtle habitat and reduce threats to turtles through marine debris removal.
- Florida Aquarium (FLAQ). This organization hosts specimens of young corals, collected from BNP. The aquarium cares for the baby corals for up to two years before they are transported back to BNP to be out-planted on park reefs.[507]

[507] NPS, BNP Comments on Draft Administrative History, 2019. Copies of 2019 signed agreements are located on the South Florida (SOFL) National Parks & Preserve SharePoint site.

Chapter Nine

Visitor and Resource Protection and Services

With open waters, a series of islands near an ocean transportation route, a highly urbanized boundary, and some five hundred thousand visitors annually, since its inception Biscayne National Park (BNP) has faced a number of challenges in providing adequate visitor and resource services and protection. Law enforcement is particularly challenging, requiring BNP to forge partnerships with local and federal agencies in order to address issues such as the entry of illegal aliens, drug smuggling, boating accidents, fishing violations, and looting of archeological sites. At the same time, the park struggles to engage concession operations, which are necessary to serve visitors who want to visit BNP's extensive properties and demand specific services to help them enjoy the park. In addition, underfunding (see Appendix E for annual budget numbers) and a shortage of maintenance staff have created backlogs that adversely affected park operations. This chapter will examine some of these circumstances while also illustrating the broad range of obstacles BNP faced in the early decades of the twenty-first century.

Law Enforcement

With a staff of no more than eight people, BNP's Law Enforcement (LE) section has plenty of work patrolling the park, citing violators, and ensuring visitor safety. The park's watery open boundaries allow boaters to freely enter and leave. Many never know they are inside a national park, and those who are aware still might not be savvy to park rules, which can overlap with state and local regulations. Increased attendance on holidays or weekends is also challenging for LE staff, who rely on support from a variety of sources, including local, state, and federal agencies.

As mentioned previously, only a handful of staff worked the park during its early days as a national monument. The first superintendent, Dale Engquist (serving 1971-73), oversaw a staff that initially included two rangers: Don Weir, assigned to Elliott Key, and George Sites, who came from Everglades National Park (ENP) but had previously worked with the State of Florida. Engquist wrote, "Most of the skills I didn't have but that we needed, George had; law enforcement experience on and under the waters of Florida, scuba diver (with experience diving for treasure on shipwrecks), boat operator, and scrounger." He concluded, "I doubt I would have survived without him." Using two and then three boats, all staff did "double-duty," which included maintenance work, hauling cargo, and demolishing

buildings. Even after a third ranger joined the team, patrolling the park's ninety-two thousand acres of water to protect natural and cultural resources remained "intimidating."[508]

The enabling legislation for BNP allowed the State of Florida to set fishing regulations—recreational and commercial—through its Department of Natural Resources, which added to the confusion, recalled Engquist. As previously mentioned, it also led to the park having trouble with enforcement: "At first we were even told we didn't have jurisdiction for most of the laws that did exist, but that wouldn't work so we just ignored that early advice and we made our enforcement presence known. We also began to plan for the types of special regulations we knew we needed for the best resource protection." The Florida Marine Patrol, a state agency, assisted in some of the work, but, as Engquist said, he and his staffhad to tell visitors, "[Look], this is a national monument now. We protect the resources here, and you've got to quit stealing things, including off shipwrecks." He reflected, "It was tough doing that with so few rangers."[509]

During James "Randy" Bidwell's tenure from 1976 to 1985, the LE team included five members and received help from a maintenance employee when they were short staffed. The main goal was always safety. At the time, the state did not require saltwater fishing licenses and had few saltwater regulations other than for commercial fishing. The main regulation LE officers enforced was for lobsters, since the bay portion of BNP had become a lobster sanctuary in 1980. Bidwell, who lived on Elliott and Adams Keys, spent much of his time educating the public about lobsters and what catches were allowed—something he called "law enforcement through education." Commercial fishing boats were monitored by the State, which didn't want BNP LE assistance because, Engquist surmised, "[BNP] did not have the knowledge or tools necessary" to check commercial fishing gear. The State had that expertise.[510]

To improve the response rate to incidents on the reefs and in outer areas, BNP's 1983 General Management Plan (GMP) called for keeping a ranger at Convoy Point and on Elliott and Adams Keys. The GMP also noted the presence and assistance of the Coast Guard, Coast Guard Auxiliary, and the Florida Marine Patrol in park waters while considering LE staffing needs.[511]

BNP's LE faced mounting issues as the park grew alongside the neighboring metropolitan area (see below for more about smuggling and drugs). By 1996, LE reported that it had handled 1,000 incidents, 250 of which involved vessel groundings that badlydamaged the park's resources. (See Chapter 5 for more about boating accidents in BNP.) The park was heavily engaged with other agencies to help with enforcement—for example, the Florida Marine Patrol stationed a boat at the BNP marina, with the added bonus of improved

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[508] Miller, *BNP: It Almost Wasn't*, 109, 110, 114.

[509] Ibid., 114; Engquist, interview; NPS, "Statement for Management Biscayne National Monument, June, 1976," NPS, 3, 4,10.

[510] James "Randy" Bidwell, emails to author: "Re: Biscayne Administrative History" (January 1, 2017), "Administrative History" (January 3, 2017), "Continuation" (January 3, 2017).

[511] NPS, *General Management Plan*, 1983, 26, 44, 89.

relations between the two agencies. LE also assigned four radios to the Florida Marine Patrol to improve communication.[512]

Through the years, LE rangers were called to handle a variety of issues and emergencies other than fishing violations. These included search and rescue missions for missing people, medical emergencies, evacuation of injured people, investigations and/or arrests for boating under the influence, checking for vessel safety requirements, as well as community and media outreach.[513]

Staffing through the years initially grew but flattened more recently. The department included six rangers plus an administrative assistant in 2002, seven rangers plus one administrative assistant and one seasonal ranger in 2004, and eight staff members in 2010; from 2014 to 2016, however, the division had on average four LE rangers, a chief ranger, and a LE specialist. LE incident reports also varied in number over the years: 568 incidents and 167 groundings in 1998, 711 fishing/poaching violations and 591 safety equipment violations in 2010 (33 vessel groundings were handled by the Damage Recovery Program), 173 incidents (50 fisheries violations) in 2015, and 283 incidents (77 fisheries related) in 2016.[514]

When Linda Canzanelli arrived as BNP Superintendent in 2000, the park had seven LE rangers, including the chief ranger, out of a total staff of forty-five "to patrol that international boundary, which was a major entrance route for drug dealers and illegal immigrants and Cuban refugees." She said the LE staff "was a ludicrous number. Plus, we tended to be the station for the Coast Guard because the Coast Guard couldn't staff the southern part of the park so we responded to emergency calls." Canzanelli was "shocked by the complexity of the management challenges, the small size of the staff, the incredibly small size of the park budget and the chal-lenges that faced it." Her solution was to make innovations in staffing and budgeting (looking for grants) while also partnering with other agencies to expand BNP's reach.[515]

In 2003 the US Park Rangers Lodge of the Fraternal Order of Police, an advocacy group, declared BNP to be the sixth-most dangerous park within the National Park Service (NPS) for law-enforcement rangers. The order cited "lots of drug smuggling, illegal fishing, and a nuclear power plant threatened by terrorists" as dangers for "a ranger force that is small and getting smaller." It continued, "While the Coast Guard never sends a boat out at Biscayne with fewer than four officers, the NPS sends the rangers out on the open ocean alone."[516]

[512] NPS, *Annual Narrative of Biscayne National Park for Fiscal Year 1996,* NPS, 12-13.

[513] NPS, *Biscayne National Park 2001 Annual Report*, NPS, 8-10; NPS, *Superintendent's Annual Narrative Report 2006*, 38-39.

[514] NPS, *Annual Narrative Report of BNP for Annual Year 1998*, NPS, 9; NPS, *Superintendent's Report BNP 2002 Annual Report*, 37; NPS, *BNP 2004 Annual Report*, NPS, superintendent's files, BISC archives, 11; NPS, *Annual Narrative BNP 2010*, 23, 38; Elsa Alvear, email to author, "BISC LE Questions," January 3, 2017; Bradon Falls, email to author, "Re: Staff numbers," January 10, 2017.

[515] Canzanelli, interview.

[516] Randall Kendrick, "Rangers Announce Ten Most Dangerous National Parks," press release on Google Groups, June 23, 2003, https://groups.google.com/forum/#!topic/rec.outdoors.rv-travel/6oW88EF6qMM.

In its 2006 publication *State of the Parks: Biscayne National Park*, the advocacy group National Parks Conservation Association (NPCA) noted that the park had eight fulltime LE staffers to protect the "largest marine park" in the NPS. Of the eight, three performed LE work as collateral responsibilities. The LE division had six patrol vessels, many of which were aged, unreliable, and "potentially unsafe." Four rangers lived in the park and used the vessels to respond around the clock.[517]

During the public input phase for the 2015 GMP (see Chapter 10), one criticism made about BNP was that the park needed to increase enforcement of existing regulations for protecting marine resources. Some commenters questioned how the park could enforce a new marine protection zone "when it [was] the perception that the current regulations [were] not enforced." Others supported more LE funding and increased penalties for violators. In response, the GMP included a request for more LE park funding, greater public education, and continued cooperation with other "marine enforcement agencies."[518]

Columbus Day Weekend

The biggest—and most dangerous—annual visitor event at BNP is Columbus Day Weekend, an October celebration that spans a long weekend and draws thousands of boaters who play and party in the park's waters, often just offshore of its islands. In the early years, many boat accidents and groundings occurred, but by improving law enforcement, incidents have decreased in recent years. "Americans set this park aside for its tremendous resources, the splendor of its scenery and the significance of its wildlife," said then Superintendent Brian Carlstrom prior to the 2014 celebration. "We hope that visitors safely enjoy the park as it is, a national treasure."[519]

The Columbus Day celebration began in 1954 when twenty-five sailboats from Coconut Grove raced across Biscayne Bay. At the end of the race, boats tied up at Elliott Key and participating families "ate a steak dinner under a clear, starlit sky," one news account reported. But by 1990, the race had gone from a "cozy collection of boats to the wild, great-excuse-to-get-drunk-and-throw-your-clothes-off party."[520]

In an effort to deal with what the 1996 annual report described as "Sodom and Gomorrah on the bay," BNP staff members originally tried to contain the event. However, by 1996 they decided that the best way to manage it was to issue special regulations and

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[517] NPCA, *State of the Parks: Biscayne*, 38.

[518] NPS, *BNP Final General Management Plan/Environmental Impact Statement,* vol. 2, NPS, April 2015, 9, 304.

[519] NPS, "Improving Columbus Day Weekend in Biscayne National Park," BNP website, September 30, 2014, https://www.nps.gov/bisc/learn/news/improving-columbus-day-weekend-in-biscayne-national-park.htm.

[520] Ralph De La Cruz, "Columbus Day Regatta steers calmer course," *Miami Herald*, October 4, 1990, 9.

create new strategies to monitor it in a positive manner. That year, the park investigated more than seven hundred incidents during the three-day weekend. By 2006, the yacht regatta was rerouted so that it no longer entered the park, but thousands of increasingly rowdy crowds continued to come to BNP during that weekend, usually anchoring near Elliott Key for all-day and all-night parties that featured loud music and intoxication. There were six deaths during Columbus Day celebrations in the last decade, many from boat collisions that may have been complicated by alcohol usage.[521]

In response, BNP has issued strict rules during the weekend: boaters are directed into marked anchorage areas on the northwest side of Elliott Key, no more than five boats can be rafted together in the area, and one hundred feet or more are required between single vessels or groups—a gap that allowed emergency service transports to move safely through the densely boated area. In its 2013 Columbus Day press release, BNP warned that there was "zero tolerance" for boating under the influence of alcohol, excessive noise, possessing illegal drugs, or promoting unauthorized commercial activities. To avoid arrest, fines of $5,000 or more, and the risk of injury, death, and property and resource damage, BNP encouraged visitors to maintain proper safety and navigational equipment, have a designated captain not under the influence of drugs or alcohol, avoid littering, and minimize boat operation at night. The park warned boaters to be alert for swimmers and those operating boats under the influence of drugs or alcohol, and it conducted safety inspections and "boating under the influence" checks throughout the weekend. Agencies that assisted BNP LE during the Columbus Day weekend included the Coast Guard, Customs and Border Protection, Miami-Dade Police Department, Miami-Dade Fire Rescue, Florida Fish and Wildlife Conservation Commission, and other Florida national parks that lent rangers to the effort.[522]

In addition to tightening regulations and enforcement, in anticipation of the event BNP typically conducts a media campaign to alert the public that this is traditionally the park's most crowded and dangerous weekend of the year. The park publishes press releases and a brochure to guide weekend participants to safe practices. Such brochures advise about boat parking, trash control, and using a designated boat captain. In 2012, these messages were also conveyed via bilingual resource management and visitor protection services through "a heavy ranger presence at marinas," Facebook notices, a news conference "featuring boating safety pleas by family members of people killed during previous Columbus Day Weekend events," and information on message boards on marina roads.[523]

In 2013, LE staff tried two new tactics. BNP partnered with the Miami-Dade Police Department's narcotics unit, whose K-9 team made its first drug case on park waters.

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[521] NPS, *Annual Narrative of BNP for FY 1996*, 14; NPS, *BNP 2013 Superintendent's Annual Report*, 18.

[522] NPS, "Improving Columbus Day Weekend in Biscayne National Park"; NPS, *BNP 2013 Superintendent's Annual Report, 18*.

[523] NPS, "Columbus Day," BNP website, accessed October 30, 2015, http://www.nps.gov/bisc/planyourvisit/columbus-day-weekend.htm; NPS, *Superintendent's Annual Narrative BNP CY 2012*, 10.

The park's LE also began processing charges of boating under the influence (BUI) during Columbus Day Weekend through the federal court system instead of through the state and county court system, saving thousands of dollars.[524]

Other Law Enforcement Issues

Columbus Day is not the only day of partying on Biscayne's aquamarine waters. Major holidays also bring boaters into the park, and LE rangers are responsible for regulating everything from vessel and personal watercraft carelessness to fishing violations to crowd control. Historically, LE staffers "felt they were playing the role of a 'bouncer' at a night club whenever they had to deal with the out of control parties" on busy weekends, particularly at sandbars near Stiltsville and another at Sands Cut. That meant dealing with assaults, drugs, and alcohol.[525]

Statistics in the early 2000s demonstrated that the largest number of cases pertained to vessel safety equipment and documentation violations—something that LE rangers checked for on every vessel stop. Other typical issues included prohibited vessel operations, fishing violations, vessel groundings, and BUI offenses. And LE rangers' work didn't end with a citation; they followed up cases in court proceedings, even heading to federal court in cases of groundings that damaged coral reefs and seagrass beds. (For more about groundings and illegal activities in archeological sites, see Chapters 5 and 6.)[526] The lobster sport season also draws many people into the park, and rangers often stop boaters who exceed the allowable take limit or take undersized lobster.

In 2012, the BNP LE staff received a $10,000 grant to purchase new computers. This new equipment, along with its advanced features, enabled the staff to use wireless technology to quickly check for criminal histories and warrants, bypassing the need for a dispatcher. The division also got docking space at Black Point Marina and access to the substation there operated by the Miami-Dade Police Department, resulting in a "better working relationship between the two agencies."[527]

Smuggling in BNP

Boating stops sometimes resulted in drug possession cases, but the bigger problem as of 2017 was smuggling (of both drugs and illegal aliens) off the southeast Florida coast. Smuggling is not new to the area. As previously discussed, during Prohibition the upper Florida Keys were rife with alcohol and illegal alien smuggling, particularly to the Bahamas and Cuba. In the late nineteenth and early twentieth centuries, the Keys were used by people illegally bringing in drugs and aliens (then primarily Asians) and shipping out guns to Cuban

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[524] NPS, *BNP 2013 Superintendent's Annual Report*, 19.

[525] NPS, *BNP Superintendent's Annual Narrative* 2009, 30.

[526] NPS, *BNP Superintendent's Annual Narrative* 2006, 38.

[527] NPS, *Superintendent's Annual Narrative BNP CY 2012*, 22.

revolutionaries. Napoleon Bonaparte Broward, later a Florida Governor, was one of the best known of the gunrunners.[528] By the twenty-first century, BNP smugglers were more likely to be hauling illegal drugs or illegal aliens through the islands, heading for sales and refuge on the Florida peninsula.

Illegal Drugs

By the late 1970s, Bidwell recounted, it was not uncommon for rangers patrolling BNP's keys to find bales of marijuana. LE staff "hauled it out to sea and broke it with machetes and let the seawater inundate" the drugs, he said, adding that the NPS regional office later required that the bales be brought to land for disposal in a federally approved furnace. On one occasion, Bidwell found a boat loaded with marijuana bales tied up to the Adams Key dock. He radioed for another ranger, Corky Farley, and the two of them patrolled the key "with firearms drawn." The rangers found no one on the island, and, as it was night, they were told to go home. A Federal Bureau of Investigation agent/mechanic later recovered the boat and drugs.[529]

By the 1980s, BNP was part of a primary avenue for drug dealers entering the United States. James Sanders, park superintendent from 1980 to 1993, recalled how LE rangers were deputized into the vice president's South Florida Drug Task Force and "worked closely" with the Customs and the federal Drug Enforcement Agency in the area. Sanders remembered how the LE rangers wore bulletproof vests, received automatic rifles, and had "radar tracking beepers mounted on their vessels so the drug task force could identify the law enforcement vessels from others." No night patrols were made alone; for protection, at least two boats had to patrol together. During Sanders's tenure, BNP interdicted "more illegal drugs each year than all NPS units combined."[530]

With the resurgence of illegal drug smuggling in the area, in 1996 all commissioned BNP rangers were trained and certified to be US Customs Agents. As a result, they participated in five interagency drug interdiction missions in the park, including discoveries and seizures of marijuana and cocaine. [531]

Despite cooperation with federal agencies, drug smuggling continued into the 2000s. It was not uncommon for illegal drugs to wash up on park shores, probably having fallen off smuggling vessels operating in the darkness while navigating the area's shoals and shallow waters. Some drugs may have been abandoned or deliberately left by smugglers. In one incident in March 2005, some 32 kilos of cocaine were found near the southend of Caesar's Creek at the southern end of Adams Key. Rangers learned about the cocaine from a good Samaritan who spotted it and made a report. The cocaine was sent to Immigration and Customs Enforcement.[532]

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[528] Leynes and Cullison, *BNP Historic Resource Study*, 24.

[529] Bidwell, email, "Re: Biscayne"; Bidwell, email, "Continuation."

[530] Miller, *BNP: It Almost Wasn't*, 123.

[531] NPS, *Annual Narrative Report of BNP for Fiscal Year 1996*, 12.

[532] NPS, *BNP Superintendent's Annual Narrative Report 2005*, 28.

Illegal Immigrants

As mentioned earlier, waves of illegal immigrants trying to reach American shores also present challenges for BNP rangers. Smugglers have brought their human cargo, mostly from Cuba and Haiti, to the park's islands. According to the "wet foot, dry foot" policy, if Cuban aliens reached dry land, they could earn the opportunity to stay in the US for one year, at which point they might receive resident status. (Haitians did not receive this same opportunity.) This policy was adopted by the US government in 1996 and aimed at "giving political and social relief to Cubans fleeing the island nation's repressive regime and/or political persecution." Immigrants intercepted at sea, however, were usually returned. In 2014, the US government announced its intent to normalize relations with Cuba, which led to an increase in the number of people trying to emigrate illegally from that island nation. In January 2017, President Barack Obama announced an end to the "wet foot, dry foot" policy in an effort to "normalize relations with Cuba and to bring greater consistency to our immigration policy." How these changing policies will affect illegal immigration in the long term, including impacts on BNP LE, is unknown.[533]

Many Cuban migrants have sought assistance from smugglers, who could make close to $10,000 per person in this lucrative but illegal trade. Other migrants have tried to get to the US on homemade rafts—a dangerous journey to make. Over the years, BNP rangers have found abandoned rafts on the upper keys, never knowing what happened to the passengers —or whether they survived the journey at all. As of 2017, BNP rangers were working with the US Immigration and Naturalization Service in dealing with illegal immigrants. They apprehended 65 people in a single stop in 1985, 19 in one group in 2005, and 30 in 2006. It was a problem that staff dealt with on a regular basis.[534]

The Impact on the Park

Historically, smugglers and their practices have also damaged the park's natural resources. Fuel barrels from their boats are often found on the park's many keys. Many have contained about fifteen gallons of gasoline, a toxic fuel that could easily damage sensitive park biota.[535]

In addition, smugglers in fast boats have usually operated late at night without lights. This practice increases their chances of colliding with boats traveling through the park legally. Smuggling vessels are also at risk of running aground in shallow waters, where their boat hulls and propellers damage sea bottom and seagrass. Some smugglers, trying to elude

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[533] Janell Ross, "Why the wet-foot, dry-foot debate could soon be coming to head," *Washington Post*, October 16, 2015, https://www.washingtonpost.com/news/the-fix/wp/2015/10/16/why-the-wet-foot-dry-foot-debate-could-soon-be-coming-to-a-head; Tracy Wilkinson and Christi Parsons, "Obama ends 'wet good, dry foot' policy for Cubans," *Orlando Sentinel,* January 13, 2017, A3.

[534] Ibid.; Miller, *BNP: It Almost Wasn't*, 123-24; NPS, *BNP Superintendent's Annual Narrative Report 2006*, 39.

[535] NPS, *BNP Superintendent's Annual Narrative Report 2006*, 38-39.

law enforcement officers, abandon running boats, leaving them to move in circles until they run aground or the engine fails.[536]

Turkey Point Power Plant and Homeland Security

As mentioned in Chapter 4, BNP is in a challenging position, abutting a major nuclear power facility that sought to expand as of 2015. Risks to the park include a malfunction of the plant's reactors, hurricane damage, and acts of terrorism—the latter of which became a focus after the 9/11 terrorist attacks in 2001 in New York City, Pennsylvania, and Washington, DC.

Immediately in the wake of the 9/11 attacks, BNP rangers participated in Homeland Security-related activities with a number of agencies. BNP staff assisted the Turkey Point plant in setting up twenty-four hour security. The park also hosted a multi-agency meeting to coordinate enforcement of the "Turkey Point security zone and anti-terrorist security." That same year, BNP was ranked as the fourteenth-highest terror threat within the NPS.[537] In 2003, staff participated in Homeland Security training exercises at the Liberty Bell in Independence National Historical Park in Philadelphia. Equipment to deal with weapons of mass destruction was purchased for BNP, and rangers were trained to evacuate visitors from danger zones at the power plant. Rangers responded to other threats, as well, including bomb threats and suspicious activities, at the plant.[538] In 2006, LE rangers were asked to help with homeland security enforcement outside the park, including patrols in the Government Cut near the cruise ship lanes and at Port Everglades.[539]

As of 2017, BNP had sirens to warn of any emergencies at Turkey Point, and park staff worked with the plant's owner, Florida Power & Light, to develop an Emergency Operation Center Procedures Manual in preparation for such events. Park employees had assigned protocol and tasks in the event of a problem at the plant, and the park stored protective suits and radioactive sensors.[540]

Concession Operations

Visitors who want the full BNP experience need boat transportation to snorkel, camp, scuba dive, kayak, fish, island hop, or view birds and other wildlife. As the largest marine NPS park, private or concession-run boats are imperative. While the park placed a strong focus on working with concessionaires, such operations were spotty during the park's history due to obstacles including storms, facilities, and economics. As of 2019, the park has

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[536] Bob Janiskee, "Threats to the Parks: Biscayne National Park," June 20, 2008, *National Parks Traveler*, http://www.nationalparkstraveler.com/2008/06/threats-parks-biscayne-national-park.

[537] NPS, *BNP 2001 Annual Report,* 10.

[538] NPS, *BNP 2003 Annual Report*, 26.

[539] NPS, *BNP Superintendent's Annual Narrative Report 2006*, 39.

[540] NPS, "Emergency Operations Center Procedures Manual."

filled this void through a public-private partnership with the Florida National Parks Association to officially create the Biscayne National Park Institute (See Chapter 8).

As early as 1981, the park began taking visitors onto its waters using its own forty-five foot boat. Visitors got a free, four-hour tour that ventured to Elliott Key, mostly on weekends and holidays when the boat was not in use and tides were high. BNP began the tours in a "thrust to overcome the park's identity crisis and to involve the public in the park…" Sanders recalled. Up to thirty passengers at a time could catch a ride and then either "participate in the interpretive programs or just relax, fish, swim, picnic and explore." This first effort at public transportation in the park's thirteen years was "an overwhelming success," according to Sanders, who, as previously mentioned, tallied a total of 799 passengers, noting that 8,592 people were turned down for trips. This demand for the service led park officials to pursue finding a private entrepreneur to handle boat tours.[541]

By the early 1980s, BNP interpretive staff had begun using a pontoon boat to offer increasingly popular glass-bottom boat tours near the Convoy Point headquarters. In 1983, the park expanded the tours to include snorkeling, which was a big hit—all tours were free and administered through the interpretive program. In 1985, BNP launched a concession contract with Biscayne Aqua-Center Inc. to offer boat service to Elliott Key for "camping, hiking, bird watching and park-guided nature walks." The concessionaire also took visitors to the reef for diving and snorkeling, and into the bay for sunset cruises. The company even offered boat charters and operated a dive shop at Convoy Point. In turn, BNP ended its own glass-bottom and snorkeling tours, and rangers offered information on the concessioner's boat tour. The operations were deemed successful enough that when a development plan was created for the visitor center complex at Convoy Point, it included space for a boat concession store and room for concessionaire boats.[542]

For many years, Ed Davidson operated the concession, running two boats into the park for island, sunset, and picnic cruises as well as reef snorkeling trips, nature walks, and birding trips. Davidson was a media favorite, having championed many environmental causes in Biscayne Bay and in the Florida Keys. In a 1990 newspaper interview, Davidson noted the uniqueness of BNP: "Most national parks are built around some central geographical feature or concentrated resource. Here the primary resource is invisible because it's underwater, and the only way to get to it is by boat." As the newspaper reporter noted, the park made it possible to "imagine the Keys as they were before man littered them with K-marts and Kwik Stops."[543]

Hurricane Andrew's devastation in 1992 left much of the park's infrastructure in ruins, but concessions eventually returned. That year, a new concessionaire, Biscayne

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[541] Miller, *BNP: It Almost Wasn't*, 117-18.

[542] Ibid., 121-22, 126.

[543] NPS, "Biscayne National Park Public Tour Boat" (brochure), NPS, scanned folder 019, [A-60—Visits of International and Other Distinguished Persons] Hoover Environmental Group [1986 February], 12; Sean Rowe, "The Adventures of Eco Man," *Miami New Times*, November 14, 1990, http://www.miaminewtimes.com/news/the-adventures-of-eco-man-6362511.

Underwater Park Inc., began operating boating, snorkeling, and Elliott Key day trips; and in 1996, 534 boat trips carried 8,165 passengers through park waters—the highest level since Andrew. Publicity generated by the concessionaire aided greatly in this increase, as well as a dive/hotel package offered with a hotel in Florida City. In 2005, however, Biscayne Underwater counted 9,307 passengers—down from the previous two years. Four hurricane-related shutdowns in 2005 also hurt the company, although it recouped some of its losses by hauling NPS workers and supplies for facility repairs after the storms.[544]

In December 2013, BNP terminated the concession contract with Biscayne Underwater due to contractual noncompliance, leaving the park without a concessionaire through 2015. The company had previously been working on an annual contract, and typically aided 10,000-15,000 customers a year with island tours, diving and snorkeling trips, and paddle-boat rentals. In 2012, however, it quit offering glass-bottom boat tours, despite a new ten-year NPS contract in 2013 in expectation of long-term operations, causing BNP to terminate the contract.[545]

BNP's 2015 GMP emphasized a need to restore concessions to give visitors access to the entire park. It stated that the NPS was "pursuing concession opportunities for visitors without a boat to access the islands for a fee," without which many would be "unable to simply arrive at the park and visit the Keys." The park sought a commercial operator to run a small retail store with food, travel items, and souvenirs while also offering scuba and snorkeling trips and equipment transport to Elliott and Boca Chita Keys.[546]

In the meantime, BNP developed a significant partnership opportunity with the Florida National Parks Association (FNPA) and Miami-Dade County Parks & Recreation to provide regular interpretive boat tours within the park. Miami-Dade County would operate an under-utilized forty-four passenger boat as a park Commercial Use Authorization, FNPA would support the administrative and ticketing services from the park's bookstore, and BNP would provide interpretive rangers as tour guides. The "Gateway City" of Homestead and the NPCA would provide additional support. The pilot partnership was launched in January 2016, successfully providing access to over four thousand visitors in the first year of operation. Tours included three-hour trips from Thursday through Sunday on a forty-five foot catamaran to Boca Chita. Fees were $35 for adults and $25 for children ages five to twelve. In addition, visitors could book six-hour sailing trips year round through Island Dreamer Sailing out of the Dante Fascell Visitor Center.[547] In December 2016, BNP formalized the public-private partnership to officially create the Biscayne National Park Institute. The institute provided eco-

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[544] NPS, *Annual Narrative Report of BNP for FY 1996*, 7; NPS, *BNP Superintendent's Annual Narrative Report 2005,* 15.

[545] Kurt Reynolds, "Biscayne National Park Loses Concessionaire for Snorkeling, Dive Tours," *National Parks Traveler*, September 18, 2013, http://www.nationalparkstraveler.com/2013/09/biscayne-national-park-loses-concessionaire-snorkeling-dive-tours23955; BNP staff, comments on chapter 8 sent via email during review, May 15, 2018.

[546] NPS, *Biscayne National Park Final General Management Plan*, 27, 72.

[547] NPS, "Guided Tours," BNP website, accessed January 3, 2017, https://www.nps.gov/bisc/planyourvisit/guidedtours.htm; BNP staff, comments on chapter 8, 2018.

educational adventures within the park and operated six boats seven days a week, serving twenty-two thousand visitors within a year of its official launch. Through the institute's island tours and sailing, snorkeling, paddle-boarding, and kayaking services, visitors could once again access the park.[548]

The 2015 GMP also identified a new, northern location to include in the concession operation: Dinner Key Marina, located next to Miami City Hall and at the north end of the park's boundary. The City of Miami owned and operated the area, and in September 2016 BNP and the city signed a Memorandum of Understanding to formalize the city's commitment to provide dock access and facilities at Dinner Key Marina for new park-authorized concessioner boat tours and other visitor services. Carlstrom, who left BNP in late 2015, said the park was considering many opportunities to improve visitor services, including the Dinner Key concession. Convoy Point was a great facility, he said, but its distance from Miami made it hard to directly serve city residents. "Get them interested. Get them on the water" was an important strategy to bring in visitors and make BNP a tourist destination, he said, adding that BNP wanted a concessionaire with a long-term commitment to this venture.[549] Despite the MOU with the City, plans for Dinner Key had stalled as of late 2019.

Maintenance Division

The park's Maintenance Division has played a vital part in operating and maintaining park facilities and equipment. According to the 2015 GMP, these included "utilities (water storage, wastewater, electrical generating systems, and solid waste systems), buildings, grounds, roads, trails, campgrounds, comfort stations, employee housing, docks, boats, and historically significant structures." What had begun as a shoestring crew during Engquist's days—when all park staff (including the superintendent) helped with maintenance projects—grew to ten fulltime employees and four fulltime temporary positions in 1996. But growth in the department was slow . In 2005, the division had eleven employees, but its growth was hampered when four left BNP, leaving a 36 percent reduction in staff and a backlog ofwork.[550]

"In the 2006 NPCA's *State of the Parks: Biscayne National Park* the group noted that among the park's critical needs was "improving the ability to meet recurrent maintenance needs (particularly related to boat repairs)." The report also stated that the park's maintenance staff, a victim of budget restraints, had been cut by 25 percent and lacked preventative maintenance programs for BNP structures.[551]

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[548] BNP staff, comments on chapter 8.

[549] Brian Carlstrom, interview with author, BNP, June 5, 2014.

[550] NPS, *BNP Final General Management Plan*, 2015, 223; NPS, *Annual Narrative Report of BNP for FY 1996*, 19.

[551] NPCA, *State of the Parks: Biscayne*, 6, 32.

Figure 9.1 Julius Keaton, a longtime BNP maintenance division employee, remembered how the site of the main visitor center used to be a "blacks only beach" before integration. Photo by author.

As of late 2015, BNP had fifteen fulltime employees and up to four temporary employees in the Maintenance Division. These included a mainland supervisor, an island supervisor, mechanics, a small craft operator, and two deck hands. Their main station was at the Convoy Point headquarters, but their duties required regular visits to the park's keys and other locations.[552] And when storms or other calamities set in, many maintenance projects were deferred, often leaving the park with a large backlog of work.[553]

Of critical importance was operation and maintenance of some twenty marine vessels, which needed attention on a regular basis. Eight were for law enforcement (although any law enforcement ranger could drive or ride on any boat). Four boats were used by the maintenance staff; another four were for transporting resource management staff conducting research or monitoring areas in the park; and two were used by the interpretation division. Getting new boats at regular intervals would have been a dream come true, but BNP funding was "limited for boat upkeep and related navigational and safety gear," leaving the park to deal with aging vessels under the care of the BNP marine mechanic. As of 2015 the park was

[552] NPS, *BNP Final General Management Plan*, 2015, 223; NPS, *Annual Narrative Report of BNP for FY 1996*, 19; NPS, *BNP Superintendent's Annual Narrative Report 2005,* 17.

[553] NPS, *BNP Final General Management Plan*, 2015, 223.

developing a "cyclic maintenance program to improve the efficiency of vessel repair and maintenance," according to the GMP.[554] By 2019, much had been accomplished and BNP had several new vessels to support park operations.

In addition, the Maintenance Division had undertaken additional major projects. These included improving visitor and comfort facilities, repairing docks and boardwalks, installing generators, and painting the Boca Chita dome and pavilion in 2013.[555] By 2019 the park had also received a large influx of funding related to infrastructure repairs for Hurricane Irma and Hurricane Maria damage. Large-scale repair projects were being planned for the docks, boardwalks and trails at Convoy Point, Boca Chita shoreline and bridge, and dock at Adams Key.

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[554] Ibid., 227.

[555] NPS, *BNP 2013 Superintendent's Annual Report,* 17.

Chapter Ten

Looking to the Future: A New General Management Plan and Park Challenges and Goals

Biscayne National Park (BNP) is a park on the edge—of a sprawling urban area, of a unique system of natural resources and beauty, and of a new direction for its future. Since its inception as a national monument in 1968 and its expansion into a national park in 1980, BNP has faced a number of challenges most other national parks don't experience—partly because there are no other properties in the National Park Service (NPS) quite like it.

With 95 percent of its 173,000 acres under water, BNP is the largest marine park in the NPS. It is home to the northernmost Florida Keys and part of four major ecosystems that include the largest coral reef tract in North America. Endangered plants and animals call its lands and waters home. These are features that inspire visitors and offer experiences found in few other places. And yet, from the main visitor center, across the park's aquamarine waters, one can easily see a major nuclear power plant to the south and a solid waste disposal facility to the north, along with Miami's skyscrapers and towering construction cranes that foretell continuing development.

As the area grows, so does the use of BNP, which draws half a million visitors annually. Some come by car, but most arrive by boat, many oblivious to the fact that they have entered a national park. With them come a host of problems such as the potential for overfishing, coral reef damage, mutilated seagrass beds, and trash. From the nearby metropolitan area come more insidious threats: water and air pollution, competition for freshwater resources, and habitat loss and degradation. BNP decisions about protecting its resources draw strong interest from stakeholders, including elected officials and government agencies, which can postpone and complicate park actions.

Additionally, the growing global threat of climate change that may raise sea levels, increase dangerous storms, and upset long-established ecosystems looms large. And it is not just a BNP problem. Other nearby NPS holdings—Everglades National Park (ENP), Big Cypress National Preserve, and Dry Tortugas National Park—may also be heavily affected by rising waters unless significant international actions are taken to address climate change. Realizing the environmental threats are just one factor that have the potential to impact parks in South Florida, all four NPS units in South Florida were consolidated in 2019 to align resources and staff for efficiency, cost savings, and to focus on the highest priorities.

Reorganizing four park units under one executive leadership team with three separate superintendents and one site manager will have its share of challenges and impacts into the future. This chapter will examine administrative challenges through the years with an eye to the future of BNP, including the park's participation in Everglades restoration programs, plans in its 2015 *Biscayne National Park General Management Plan/Environmental Impact Statement* (GMP), and the recent consolidation of the South Florida NPS parks under one executive leadership team. The 2015 GMP, the first adopted since 1983, garnered much attention because of its sometimes controversial and sometimes divisive management options within broad and diverse park user groups. This chapter will also highlight concerns about the park's future—issues that BNP managers will likely face now that the park has passed its 50th anniversary of protection and looks toward an upcoming century of challenges.

Administration

Since its creation, BNP has morphed and evolved from a park with a shoestring budget and few personnel to a park with an annual budget of more than $4 million. (See Appendix E for budget numbers.) Early park personnel worked out of temporary offices and trailers, located from the Convoy Point area to the spot where the headquarters eventually stood. Hurricane Andrew destroyed many of the structures in 1992, but the first major permanent building in the administration complex survived the storm, and the new Dante Fascell Visitor Center was completed in 1997 and dedicated two years later. By 2019, these buildings were the hub of visitor and staff activity at the park, providing ecology displays, settings for ranger talks, film showings, a bookstore/shop, and a gallery showcasing local artists' work.

Initially under the regulation of ENP, the park gained its first superintendent, Dale B. Engquist, in 1971. He not only shouldered administrative duties, but also took on manual labor alongside his small staff of four. With a trailer for an office and two hand-me-down boats from ENP, Engquist recalled these years as being "quite lean." Scientists from ENP carried out BNP research, which focused largely on lobster and fish populations.[556]

By 1980, with the new designation as a national park, BNP staff and facilities were growing. The park had two natural resource staff members, and although it still operated out of temporary buildings, it was rapidly expanding its duties and oversight. Superintendent James Sanders began the process of updating the 1978 General Management Plan (GMP), mandated as a result of the new park designation. The new GMP was completed in 1983. The park was also chosen as one of five NPS areas to conduct a case study of land protection alternatives—an examination of whether existing regulations could protect the park without requiring additional land acquisition. After one and a half years of research at BNP, Sanders reported to the NPS that land acquisition was necessary. His base budget in 1980 was $555,500, which rose to $1.3 million by 1991.[557]

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[556] Miller, *BNP: It Almost Wasn't*, 101, 109-10.

[557] Ibid., 116-19; Sanders, interview (July 22, 2014).

Figure 10.1. From shipwrecks to marine life to a special art gallery, the Dante Fascell Visitor Center granted the public a view into the varied aspects of the park. Photo by Kim den Beste.

The August 1992 arrival of Hurricane Andrew threw the park into disarray as buildings and papers disappeared and staff worked to put their lives back together. Superintendents changed, park facilities closed, and staff had to restart the planning and construction process for the visitor center.

Sanders and subsequent superintendents (see Appendix D for a list) came to focus many of their energies outside the office, working within the growing metropolitan area to engage with constituents, governmental agencies and bodies, advocacy groups, and news media. Their new concerns: water quality, pollution, dwindling fish resources, urban encroachment, and a changing user demographic. Superintendent Richard "Dick" Frost spent a great deal of time helping with hurricane recovery and then fighting to stop a commercial airport from being built at the former Homestead Air Force Base—a battle he and a large cadre of environmentalists eventually won. At the same time, Frost recognized that BNP "was virtually unknown to most public officials and local residents alike," and of those who knew, "many were not sympathetic. As with many young national parks, there was a lingering ill will among those whose use of the area had been in some way impaired by the park's creation," Frost remembered. So Frost and his staff shifted their focus "outward," going into the public with programming and a "continuous public relations initiative."[558]

A complexity of challenges greeted Linda Canzanelli when she arrived as superintendent in 2000 and found that "most issues extended beyond the park boundary and were controversial." She recalled, " The staff and I spent the majority of our time working to connect with the community, congressional delegations, state and county governments, and

[558] Miller, *BNP: It Almost Wasn't*, 135-38; Frost, interview.

other federal agencies, finding ways to listen, understand concerns and build partnerships to create long-term support for protecting park resources." Along with these "big park" problems, Canzanelli also faced a limited budget that forced a reduction in staff from fifty-five employees to forty-two when she left in 2005. The operating budget "had not kept pace with parks of similar size" or issues, she said, leading staff to create partnerships to fill the financial gap. Volunteers helped to fill the personnel needs, and in fiscal year 2004, staff supplemented an initial park budget of almost $3.5 million with an additional $1.5 million in grants, donations, concessions funding, and support from other agencies.[559]

Canzanelli had three other major focuses in her term: negotiating a cooperative agreement to resolve the Stiltsville issue, beginning a new GMP, and starting BNP's first Fisheries Management Plan (FMP) in conjunction with the State of Florida. These issues required multiple meetings, negotiations, and energy from Canzanelli and staff.[560] With the previous GMP completed in 1983, BNP also needed a new plan to deal with its new challenges, which included a rising human population near the park, changing visitor use patterns, and demand for new recreational activities. These issues, accompanied by the NPS's enhanced "understanding of resources, resource threats, and visitor use," made a new GMP necessary to help guide park management for the "next 15 to 20 years."[561]

When Mark Lewis, superintendent from 2005 to 2013, came to the park, it was underfunded, with a base operating budget that had not seen a significant increase in five years. As a result, 96 percent of the budget went to personnel—a number that should have been 80 percent with 20 percent available for additional costs. "We were paying for our employees, but we didn't have any money to pay for supplies and materials," Lewis said. "So basically we were buying gas for the boats and that was it. When a position became vacant, you just about didn't fill it. I mean it really didn't matter what job it was. You didn't fill it unless it was a really, really critical position. During the years that I was there…I would guess for every four positions that went vacant we would fill one." During his first eighteen months on the job, Lewis said he did not have enough funding to hire a deputy superintendent to handle operations so that he could engage with the community. Lewis worked hard to increase BNP budgets, which rose by more than $800,000 before his departure; annual reports show a 2010 budget of $4.3 million.[562]

During his tenure, Lewis dealt with a wide variety of other issues, including hurricanes and subsequent repairs, urban growth, loss of wetlands, upkeep of park facilities, coral reef and seagrass health, and the looming issue of climate change and its impact on BNP—both then and in the future. While Lewis was "amazed" at all the activities among park employees, he was "constantly dismayed with their inability to solve

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[559] Canzanelli, interview; Miller, *BNP: It Almost Wasn't*, 141-43.

[560] Ibid.

[561] NPS, *BNP Final General Management Plan*, 2015 (hereafter referred to as "*BNP GMP 2015*"), i.

[562] Lewis, interview; NPS, *Annual Narrative BNP 2010*.

cirtical issues and to better prepare people and the park for the changes that [seemed] to constantly deluge [them]." Lewis also continued work on the FMP and on a new GMP.[563]

BNP continued growing and maturing into the twenty-first century. By 2013, the park had divisions that included administration, resource management, interpretation, maintenance, and visitor and resource protection working to address issues such as fisheries, habitat restoration, water quality, safety, and education—all topics that had grown in importance during BNP's existence.[564] The main focus of the park during this time, however, was the completion of the new GMP, overseen by Brian Carlstrom, park superintendent from 2013 to 2015. Meanwhile, staffing levels were maintained as budget allowed.

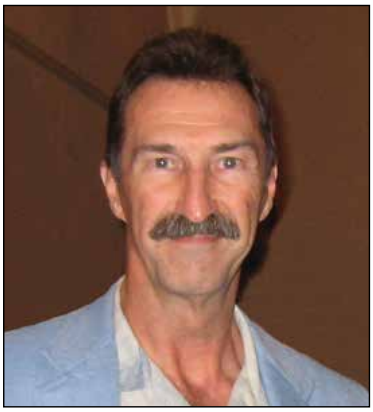

Figure 10.2 (left). Mark Lewis, BNP superintendent, 2005-2013. Photo by author.
Figure 10.3 (right). Brian Carlstrom, BNP superintendent, 2013-2015. Photo by author.

From 2015 to 2019, the park continued to work on a variety of issues, from implementing the General Management Plan and Fishery Management Plan to coordinating with other agencies and partners on nearby land use and water quality issues. In particular Margaret Goodro, BNP superintendent from 2016 to 2019, along with a series of acting Superintendents attended several meetings related to the Fishery Management Plan. Working in collaboration with the Florida Fish and Wildlife Conservation Commission (FWC), the joint proposal included goals to increase the size and abudance of targeted fish species in BNP by 20% and provide for habitat protection within the Park. The goals would be achieved through adaptive management, where the goal remains constant, but actions to achieve that goal can be adaptive over time.

At the end of 2019, BNP had 29 full-time permanent staff, 9 full-time term/seasonal staff, and a operational budget of $4,287,490. The park management team included a superintendent, four division chiefs for natural resources, visitor and resource protection (law enforcement), interpretation, and facilities, and a permits coordinator. Within the natural

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563 Miller, *BNP: It Almost Wasn't*, 145-50.

564 NPS, *BNP Superintendent's Annual Report 2013*, 2.

resources division, staff included five permanent positions (division chief, supervisory ecologist, supervisory wildlife biologist, biologist, and biological science technician) with seven term biological science technicians who focused on debris clean-up. Visitor and resource protection included seven permanent positions (division chief, supervisory park ranger, interpretive ranger, four law enforcement field rangers) and one term position (law enforcement field ranger). The interpretation division included six permanent positions (division chief, supervisory park ranger, two interpretive park rangers, volunteer program coordinator, educational coordinator) and one full-time seasonal position (interpretive park ranger). Facilities was structured similarly with eight full-time permanent positions (division chief, maintenance mechanic supervisor, maintenance mechanic, marine equipment mechanic, utility system repairer/operator, two maintenance workers, facility services assistant). In addition the facilities and interpretive divisions supplemented their staff through interns with the Greening Youth Foundation.

The park's robust organizational structure coupled with limited base funding has led to some financial challenges in recent years. In 2016-2017, BNP's rate of fixed costs were 83.5% and projected to grow to 92% by 2022, meaning that by 2022 approximately 92% of the park base budget would be spent on personnel salary, benefits, utilities, and other required, non-discretionary costs. The park's fixed costs lowered slightly in 2017-2018 to 81.7%, though by 2019 had risen again to approximately 89%. No longer able to afford some staffing positions, Everglades National Park began supporting BNP administrative functions in early 2019.

During that same time, all four NPS units, including BNP, Everglades National Park, Dry Tortugas National Park, and Big Cypress National Preserve, were reorganized to align all South Florida parks under the direction of one group superintendent. Each park would still be managed and overseen by an individual park superintendent, but all would report to the group superintendent and serve as part of an executive leadership team setting the priorities for all parks. Together the team would look for ways to improve operations and rely on each other to reduce costs, improve efficiency, and share staffing. As a result, by the end of 2019, BNP was already sharing staff for administration/budget, information technology, cultural resources, and safety as part of the South Florida National Parks and Preserve reorganization. This consolidation was initially proposed in the 1990s, but was not initiated until 2019. The full transition to a truly reorganized operational structure is anticipated to take at least 2-3 years.

General Management Plan 2015

In 2015, after fifteen years of studies, public hearings, and coordination with community partners and varied governmental agencies, BNP signed a record of decision for its new GMP. After offering and considering a number of options, the NPS decided to adopt Alternative 8. According to the GMP's August 2015 Record of Decision (ROD), this

alternative would provide the "best combination of strategies to protect the park's unique resources and diversity" of visitors and "would be more efficient to implement compared to permits and law enforcement associated with closures."[565]

"The need for this General Management Plan is clear," said Stan Austin, NPS Southeast Regional Director. "It is based on our mission to preserve and protect resources and provide for the enjoyment of visitors. Biscayne National Park is truly a national treasure, and it is important that we work to preserve its extraordinary coral reefs for current and future generations to enjoy."[566]

Brian Carlstrom, BNP superintendent at the time of the ROD's signing (he left in late 2015 to become the Deputy Associate Director for the Natural Resource Stewardship and Science Directorate at NPS headquarters), noted that the GMP was "the culmination of 15 years of effort" that involved "extensive public meetings and workshops, eight different plan alternatives, 43,000 unique public comments and collaboration with local, state, and federal agencies."[567]

BNP's importance to the community—with its visitors spending $32 million in area communities, supporting 459 local jobs with a cumulative economic benefit of almost $45 million annually in the 2010s—made the GMP a hot topic among residents and political leaders who supported different alternatives, including making no changes at all. Ultimately, the NPS chose Alternative 8 because of its "significant advantage in natural resource protection." Its provisions included supplying visitors with a range of recreational opportunities while also increasing protection of marine resources and preserving cultural resources.[568]

Central "and most controversial" to the GMP was the first-time proposal of a marine reserve. Located between Hawk Channel and BNP's eastern boundary and extending from Pacific Reef north to Long Reef, this proposed no-fishing zone would encompass 6 percent of the park's waters—some 10,502 acres. Importantly, it would also include 37 percent of the park's hardbottom communities, where corals grew or could be grown, and would help protect additional Florida reefs, as recommended by the Coral Reef Task Force. Diving and snorkeling would be encouraged, and invasive lionfish could still be taken from the area. Additional protections included an expanded no-motor and idle speed zones to protect bird rookeries and seagrass beds.[569]

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[565] NPS, *Record of Decision, General Management Plan/Environmental Impact Statement* (NPS, DOI, August 31, 2015), 2, 15, available at http://parkplanning.nps.gov/document. cfm?parkID=353&projectID=11168&documentID=68218.

[566] NPS, "Biscayne National Park's General Management Plan Record of Decision is Signed," BNP website, September 8, 2015, https://www.nps.gov/bisc/learn/news/biscayne-national-park-general-management-plan-record-of-decision-is-signed.htm.

[567] Ibid.

[568] Ibid.; NPS, Record of Decision, 2.

[569] NPS, BNP GMP 2015, 126; Jenny Staletovich, "New rules, no-fishing zone for Biscayne National Park," Miami Herald, June 4, 2015, http://www.miamiherald.com/news/local/community/miami-dade/article23137869.html.

Many people were thrilled with the proposed marine reserve. "Although the marine reserve only covers a small portion of the park, it will have a big impact on the health of Biscayne," said Caroline McLaughlin, Biscayne program analyst for the National Parks Conservation Association (NPCA). "Marine reserves are one of the best, most effective ways to protect the park's ailing reefs and to help bring more fish back to Florida, increasing fish size, diversity, and abundance. This decision has been a long time coming and we are thrilled that after more than 15 years of advocating for protection for our coral reefs, this day has finally come."[570]

"I have witnessed firsthand, the degradation of our coral reefs, and the depletion of our fisheries," said Jack Curlett, an avid angler and member of the Florida Keys National Marine Sanctuary Advisory Council. "I've been fishing in Biscayne National Park waters for more than 30 years and the days of plentiful fish are gone. If we don't take steps now to improve these conditions, there won't be fish left for not only us, but our children and grandchildren. Marine reserves work. They help protect marine habitat and can improve local fishing opportunities when larger, more abundant fish "spill over" into areas outside the reserve."[571]

BNP managers had long been concerned about dwindling fish populations and deteriorating coral reefs. The proposed marine reserve zone aimed to provide protection so these creatures would have relief from fishing pressures and an opportunity to increase their numbers, sizes, and let the ecosystem improve. Scientific studies had shown that no-take areas worked far more effectively in coral areas than other restrictions, such as catch and release and/or fish size limits.[572]

Similar strategies had already been employed at other NPS properties. For example, Dry Tortugas National Park's no-take reserve zone, established in 2007, led to increased sizes of certain valuable reef fish species (e.g., red grouper and yellowtail snapper) within the reserve, while numbers and sizes of the same species stayed the same or decreased in nearby unprotected areas. At the same time, however, areas surrounding the reserve still benefited from improved fish populations. As the new GMP stated, "Experience with marine reserves in Florida and elsewhere indicate that a well-designed marine reserve zone is a scientifically valid approach to restoring fish populations and would likely enable visitors to experience larger and more numerous fish at Biscayne National Park."[573]

Carlstrom argued that proof of marine reserve zone's effectiveness "goes way beyond science at Biscayne National Park, throughout the country, and throughout the world" where they had been implemented:

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[570] NPCA, "Victory! New Marine Reserve at Biscayne National Park to Protect Coral Reefs and Replenish Fish Populations," NCPA website, June 5, 2015, http://www.npca.org/news/media-center/press-releases/2015/victory-new-marine-reserve.html.

[571] Ibid.

[572] NPS, *BNP GMP 2015*, 125.

[573] Ibid.

> It's been proven time and time again that the ecosystem recovers, and over time analogies can be made that the larger trophy fish that many anglers are targeting are caught in very close proximity to those same marine reserve zones. So I think, if it were looked at from a broader perspective and not just the fear of change that a no-fishing zone within a National Park adjacent to effectively the boating capital of the country would entail, that some different values might be realized. It would also have the potential to create a world-class coral reef within an easy day trip of over 15 million visitors a year to the Miami metropolitan area, and I think that fact has been greatly discounted throughout the entire process.[574]

Alternative 5, considered to be the environmentally preferable alternative, would have included 21,884 acres and 14 percent of the park's waters in a proposed marine protection zone. However, it wasn't the NPS's final decision because they determined that this choice would "come at some cost to visitor opportunities and flexibility." The proposed protections were reduced to accommodate visitors, likely because of the public outcry that arose during the GMP process.[575]

But those opposed to the proposed marine reserve were as passionate as those supporting it. Many fishing groups and individuals argued that a lack of enforcement was central to BNP issues, not a lack of rules. State wildlife officials, who agreed to other provisions in the GMP, saw the no-fish zone as an action of last resort. Politics also entered the fray, as they had with many BNP issues (Stiltsville, for example) since the park was first established.[576]

US Reps. Ileana Ros-Lehtinen, Carlos Curbelo, and Mario Diaz-Balart, all Republicans from the Miami area, weighed in, arguing that BNP shouldn't restrict public access inside the park. They contended that the GMP would "'close a large portion of the park's water to all fishing activities' and 'bring an end to all commercial fishing activities within the park in at least ten years,'" according to an announcement from the House Committee on Natural Resources, which, in conjunction with the House Small Business Committee, set up an August 2015 hearing on the subject in Homestead. The statement accused the NPS of disregarding state and public input as well as "the economic and environmental ramifications of the plan."[577]

The hearing drew one hundred and fifty people, including Lloyd Miller, then ninety-five, who had led the charge in the 1960s to get the area protected and rose to speak in favor of the protection zone. The hearing pitted conservationists, who argued that the no-take zone was needed to restore BNP's marine ecology, against fishing interests, who contended that

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[574] Brian Carlstrom, telephone interview with author, August 8, 2016.

[575] NPS, *BNP GMP 2015*, 102; NPS, *Record of Decision*, 18.

[576] Staletovich, "New rules, no-fishing zone"; Carlstrom, interview (August 8, 2016).

[577] House Committee on Natural Resources, "Congressional Committees Announce Joint Oversight Hearing on Restricted Access at Biscayne National Park," Natural Resources Committee website, July 22, 2015, accessed December 30, 2015, https://republicans-naturalresources.house.gov/newsroom/documentsingle.aspx?DocumentID=399134.

different rules could accomplish the same goal and that the restrictions would hurt their businesses. Some argued that BNP data was faulty and that conditions weren't as dire as the park depicted.[578]

Despite this opposition, the NPS made the GMP official by signing the ROD in late August—an act that gained a chorus of praises from environmental groups.

"It should have happened a long time ago," said Laura Reynolds, executive director of the Tropical Audubon Society, a longtime BNP stakeholder. She believed the proposed marine reserve zone was the "best solution" and wished it could be larger. Politics, particularly from conservatives who worried about rights being taken away, came into play in this BNP effort, which was geared toward protecting the park for "future generations," she said.[579]

Michael Chenoweth of the Izaak Walton League said that his group, composed of sports people and conservationists, supported the GMP. "We sent a fairly long letter" to Ros-Lehtinen, Curbelo, and Diaz-Balart, who were "attempting to appeal to their constituents who were creating this big fuss about the management plan setting aside 6 percent of the park area for a protected area. And we wrote and explained as best we could how important it [was] and what all the benefits would be not only for the general resources in the park but also for the ability of those fishermen to improve their fishing over time."[580]

In an October 2015 op-ed in the *Miami Herald*, Ros-Lehtinen stated that the proposed marine reserve zone would not remedy problems faced by BNP coral communities: "In fact, the complexity of the environmental issues Biscayne actually faces will ensure that relying on a no-fishing zone as the principal means of protecting coral reef habitat will be an utter failure, with economic and environmental consequences for our community." She continued:

> Putting a no-fishing zone at the forefront of Biscayne's coral-protection strategy would seem to suggest that NPS believes fishing is the primary threat to our reefs. But scientists have determined that poor water quality and periodic extreme water temperatures are responsible for most coral losses in Biscayne over the last two decades. Furthermore, overfishing is just one of five major threats to Biscayne's coral reefs that NPS has identified, including reduced freshwater flows into Biscayne Bay, invasive species, water quality/pollution and climate change.[581]

A few days later, a letter to the newspaper in response to Ros-Lehtinen's column offered an opposing view. Marty Arostegui of Coral Gables wrote, "Our travel and tourism industry is important for our economy. Healthy coral reefs and fisheries attract visitors who stay in our hotels, eat in our restaurants and use local services." He also countered the claim

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[578] Jenny Luna, "Struggle continues over Biscayne National Park marine reserve," *Miami Herald*, August 3, 2015, http://www.miamiherald.com/news/local/environment/article29898148.html.

[579] Reynolds, interview.

[580] Chenoweth, interview.

[581] Ileana Ros-Lehtinen, "No-fishing zone no solution to coral loss," *Miami Herald*, October 8, 2015, http://www.miamiherald.com/opinion/op-ed/article38277918.html.

that the GMP received "little public support," writing," In reality, this decision came after 15 years of extensive public engagement, scientific analysis and interagencycooperation. More than 90 percent of public comments supported the marine reserve, including comments from Miami-Dade County and local dive shops, businesses, and fishing experts."[582]

Although the GMP was signed, ultimately the Secretary of the Interior, in consultation with the State of Florida, held the authority to implement fishery regulations. In addition, the ROD required that a federal regulation be passed before the proposed marine reserve zone could be implemented.[583] As of 2019, no marine reserve zones have been established within BNP; the park is working to protect fish populations through other measures in coordination with FWC.

Comprehensive Everglades Restoration Plan

Critical to BNP's future is the outcome of the multi-billion dollar Comprehensive Everglades Restoration Plan (CERP), launched in 2000 as a federal-state effort to "restore some semblance of the original ecosystem" of South Florida and guide the area "toward sustainability," states author Michael Grunwald. He notes that drainage projects in the early twentieth century "left a tattered battlefield in south Florida. Half the Everglades are gone. The other half is an ecological mess."[584]

CERP is the nation's largest hydrologic restoration program, with a cost estimated at $10.5 billion over a thirty-five year period. It called for a vast re-plumbing of the Everglades water system, which historically supplied critical sheet water flow to Biscayne Bay—and to what later became the national park. In the years after World War II, the US Army Corps of Engineers (Corps) led a federal effort known as the Central and Southern Florida Flood Control Project that re-plumbed the entire Everglades system in order to master the area's waters. It included some two thousand miles of levees and canals to "control just about every drop of rain that landed on the region," an effort that Grunwald describes as the "most elaborate water control system ever built, the largest earth-moving effort since the Panama Canal." The project reclaimed land, developed water storage areas, and generally benefited the agricultural community, which no longer had to worry about floods affecting cattle and crops, particularly sugar cane. But the project proved devastating for natural systems, including Biscayne Bay, where the water flow that once mixed into the estuary was diverted away, leading to ecological deterioration. A massive outcry by the public and environmentalists led to the bipartisan CERP legislation, which Grunwald hails as the "dawn of a new era in conservation—not only for south Florida, but for mankind."[585]

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[582] Marty Arostegui, "Marine Reserve," *Miami Herald*, October 16, 2015, http://www.miamiherald.com/opinion/letters-to-the-editor/article39382311.html.

[583] Charles Lawson, email to author, subject: "Fwd: Miami Herald Op-Ed by U.S. Rep Ileana Ros-Lehtinen re Marine Reserve," October 24, 2015.

[584] Grunwald, *The Swamp*, 6.

[585] Ibid., 6, 221.

CERP proposed to remedy these ills through a massive restoration plan led by the Corps that included creating 180,000 acres of aboveground reservoirs, two reservoirs below ground, and three aquifer wells that, according to Grunwald, would "inject water a quarter mile into the earth to be withdrawn in droughts." He continues, "By capturing new water and reducing seepage losses, CERP would add nearly a trillion gallons a year to the water pie, creating benefits throughout the ecosystem." CERP would also create 35,000 acres of marshes to filter water and improve its quality. Another 2.4 million acres of wetlands would be improved for the same reason. As Grunwald notes, this "reengineered Everglades would not be a natural Everglades; it would still be intensely managed and tightly controlled." It would, however, be substantially better than the ecosystem present at the end of the twentieth century.[586]

Helping to guide the CERP plan and ensure that it met park needs was the NPS South Florida Natural Resources Center (SFNRC). Staff from the SFNRC were charged with making sure that all the area's NPS properties—BNP, ENP, and the Big Cypress National Preserve—would benefit from improved water quality and flow.[587]

CERP's success over its thirty-five year timeframe would depend greatly on federal and state lawmakers regularly financing its projects. But it was widely supported when introduced and would likely be BNP's best hope for improving water resources that as of the 2010s were inadequate for desired park health. BNP also existed with continuing competition for water from the growing Miami-Dade metropolitan area; CERP was intended to protect NPS holdings against these pressures.

Other agencies participating in CERP included the Biscayne Bay Coastal Wetlands (BBCW), RECOVER (Restoration, Coordination, and Verification) Southern Estuaries team, and Florida water regulators.

Implemented in 1999, the BBCW project covered 13,600 acres (the park's mainland) and aimed to restore water flow and its timing into Biscayne Bay to improve estuarine habitat for the marine biota that relied on it. Some of the project's specific goals were reestablishing the oyster reef community, helping the nursery habitat for marine creatures, and reconnecting estuarine and freshwater wetlands. The BBCW project, according to the NPCA in 2006, would "divert canal flow through coastal marshes and creeks, which should help re-establish productive nursery habitat along the shoreline, re-establishing a stable persistent estuarine zone, and reduce the abrupt freshwater discharges that are physiologically stressful to fish and benthic invertebrates in the bay near canal outlets."[588]

Reynolds, of Tropical Audubon, said in an interview that reestablishing regular input of fresh water was essential to BNP's health. Without the sheet flow and timing necessary for brackish estuarine nurseries, BNP more closely acted as a saltwater "lagoon," only

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[586] Grunwald, *The Swamp*, 316-17.

[587] NPS, "Comprehensive Everglades Restoration Plan (CERP)." Everglades National Park website. Accessed December 5, 2015. http://www.nps.gov/ever/learn/nature/cerp.htm.

[588] NPCA, *State of the Parks: Biscayne*, 14.

receiving water through canals when high rainfall threatened to flood the area. This change negatively affected marine life, she added, noting stiff competition for water supplies among residents, businesses, and ENP and Big Cypress National Preserve. Often, BNP was not considered a priority among the contenders—something Reynolds said her organization was working to overcome.[589]

Much of BNP staff involvement with CERP since its launch centered on the BBCW, which offered the park its best opportunity to improve freshwater volume and was of prime importance to the CERP process. Staff members worked on creating performance measures, a scope of work, objectives, and a project design with the goal of determining how much water the park needed. BNP received funding to conduct these studies, create models for measuring park water salinity, and project impacts from changes implemented by the BBCW. Other partners in this effort included the Florida Fish and Wildlife Conservation Commission, the Florida Department of Environmental Protection, Miami-Dade County, and the Environmental Protection Agency (EPA), as well as researchers from Florida International University (FIU).[590]

The Wastewater Reuse Project, a pilot (and therefore untested) project developed in 2004, was also a focus of staff and multi-agency energy. This project would introduce new water into the CERP system using well injections of treated wastewater. But the project raised concerns because treatment might not remove certain pollutants including pharmaceuticals, caffeine, detergents, and degreasers that could end up in the BNP system. The program sparked much study of the possible contaminants and their repercussions on natural systems. Other concerns included which and what type of wetlands the reuse water would be discharged into and identifying funding for necessary studies of these impacts.[591]

The RECOVER program was also part of the programming aimed at monitoring plans and the various impacts of CERP. In the early 2000s, BNP water resources staffers received special project funding to enable them to assess salinity issues and impacts over the long term.[592] This large salinity study provided background information to enhance studies and projections of water needs for the park and the CERP process, aiming at setting minimum flows and levels. According to the 2010 BNP annual report, that year RECOVER "was used to justify the water needs for the Park, to demonstrate and explain the importance of fresh groundwater to the bay, and to justify the request to the South Florida Water Management District to cease the seasonal drawdown at the end of the wet season." The report also noted that the park's water resources division received $181,000 that year for its salinity sampling network.[593]

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589 Reynolds, interview.

590 NPS, *BNP 2004 Annual Report*, 15.

591 Ibid., 2, 15-16.

592 Ibid., 16.

593 NPS, *Annual Narrative BNP 2010*, 35.

Participating in CERP required much staff time and involvement in a broad spectrum of groups and initiatives. As of 2017, BNP was still active in the southern Coastal System Team and the Central Everglades Planning Process Team for CERP. BNP continued to emphasize securing improved water flow and quality for the park and preventing other projects from diverting water away from the park. Staff also helped produce scientific papers, worked on coastal monitoring planning, and helped finalize state water reservation protection rules.[594]

With BNP's long-term health depending on CERP outcomes, the staff's continuing involvement in the project would be critical as the park moved further into the twenty-first century.

Climate Change

The threat posed by climate change will likely be the biggest challenge in BNP's future. In 2009, a report issued by the Rocky Mountain Climate Organization and the Natural Resources Defense Council named BNP as one of twenty-five national parks "most at risk as human activities [continued] to change the climate." In fact, all three NPS parks in South Florida—BNP, ENP, and Dry Tortugas National Park—made the short list in "National Parks in Peril: The Threats of Climate Disruption." Dry Tortugas, the report noted, might be the first national park to completely disappear under rising sea levels. The expected effects in BNP could be, at a minimum, "higher seas and more storms, more downpours and floods, a loss of plant communities, a loss of wildlife, a loss of cultural resources, intolerable heat, more crowding, and a loss of fishing."[595]

With an average elevation of about five feet above sea level for its coastlines and islands, BNP's twenty thousand acres of land could be inundated if sea levels continue to rise. In a 2009 report, scientists estimated that by the century's end, seas could rise 2.3 feet (some predicted up to six feet) and would be accompanied by stronger tropical storms and hurricanes. Such a rise would mean big changes to the landscape and ecosystems of BNP. While the park was mostly under water as of 2017, its land holdings were nonetheless home to many rare and endangered species, including butterflies, plants, and mice; they were also significant nesting sites for endangered sea turtles. Sea level rise would reduce, or possibly destroy, these park habitats. Many of BNP's cultural resources, including Boca Chita Key, the Jones property, and the prehistoric sites on Totten and Sands Keys, could also disappear or become inaccessible.[596]

Meanwhile, already-submerged resources could be damaged or lost. BNP's elegant corals were suited to specific depths of water, but a rise in water levels, temperatures, and

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[594] NPS, *BNP Superintendent's Annual Report 2013*, 13.

[595] Rocky Mountain Climate Organization (RMCO), "National Parks in Peril," RMCO website, accessed December 21, 2015, http://www.rockymountainclimate.org/programs_7.htm; RCMO, "National Parks in Peril: State Fact Sheet," accessed December 21, 2015, http://www.rockymountainclimate.org/website%20pictures/ParksInPeril_FLFacts.pdf.

[596] RMCO, "National Parks in Peril: State Fact Sheet."

ocean acidification brought on by climate change could hasten their already fragile existence. Elkhorn and staghorn corals along the Florida Keys and into Dry Tortugas and the US Virgin Islands had already declined by 97 percent as of 2009. The culprits included "disease, heat-driven bleaching, and damage from hurricanes," which could continue to progress with the climate predictions. As the report noted, when corals died, the entire reef ecosystem and the "larger marine environment [was] affected." Fish lost their habitats and feeding grounds, leading to a decline in their populations.[597]

In 2010, the NPS issued the National Park Service Climate Change Response Strategy, in which then NPS Director Jonathan B. Jarvis wrote, "I believe climate change is fundamentally the greatest threat to the integrity of our national parks that we have ever experienced. The current science confirms the planet is warming and the effects are here and now." Jarvis said the NPS "should be a leader in all aspects of recycling, alternative fuels, energy efficiency, and sustainable design and construction." New NPS employees would be "dealing with climate change their entire career," Jarvis said. "Anything as complex as climate change needs a comprehensive approach that includes budget, organization, policy, science, and actions on the ground." Jarvis also established an NPS working group to address the issue.[598]

By 2019, BNP had started to experience the effects of environmental threats. Sea level rise produced higher than usual king tides that inundated the jetty and paths around the Convoy Point visitor center, along with inundating sections of the adjacent entrance road to Homestead Bayfront Park and Marina. Stronger tropical storms and hurricanes were also becoming the norm with damage resulting from Hurricane Irma in 2017. The storm and storm surge damaged various sites throughout the park, including the shoreline and buildings at Boca Chita and the docks at Adams Key. However, most of the damage was centered at Convoy Point.

Other Challenges for the Future

BNP staff and partners alike agreed that the park would face other daunting challenges in the future. As of 2019, often-mentioned issues included:

- Turkey Point Nuclear Generating Facility. Future operations and expansions of the Florida Power & Light nuclear power plant adjacent to the park could have potential impacts. Any expansion would likely vie for limited fresh water supplies needed in BNP, and park and community activists have already raised concerns that the utility has impacted BNP water quality.

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[597] Ibid.

[598] NPS, *National Park Service Climate Change Response Strategy* (Washington, DC: NPS, September 2010), 1, accessed at https://www.nps.gov/orgs/ccrp/upload/NPS_CCRS.pdf.

- South Dade Solid Waste Disposal Facility. Potential pollution leaching from this large landfill facility, visible from BNP headquarters and abutting its property at Black Point, would require continuous monitoring.
- Land use. Control over nearby development and growth will be central to protecting BNP's water quality as the area continued to develop. This will be a complicated issue, requiring intense monitoring and engagement with local and state governmental, nonprofit, and preservation agencies as well as working relationships with area politicians.
- Budget. The park's operating budget has remained steady at approximately $4.2 million for the past six years; however, fixed costs have also risen during that time. Creative strategies related to staffing and reducing costs will need to be employed to keep the park at or below 85% fixed costs. The park will need to maintain financial flexibility into the future.
- South Florida National Parks & Preserve Reorganization. In 2019, BNP, Everglades National Park, Dry Tortugas National Park, and Big Cypress National Preserve were reorganized to align all South Florida parks under the direction of one group superintendent. As this restructuring process moves forward, it will provide opportunities for all parks to reduce costs, improve efficiency, and share staffing.
- Identity. The metropolitan area's diverse and growing population is largely unaware that BNP exists. The park will need a strong constituency in coming years, and developing ties to different population groups and ethnicities should be a priority. Creative public education and engagement will be crucial to the park's future.
- Law enforcement. Protecting and patrolling the open waters of the park has been a concern and challenge since BNP's inception. Staffing levels and boating equipment and maintenance will need to be sustained or possibly increased to handle this task. Keeping a strong working relationship with local, state, and federal agencies will be vital to enforcing boating safety, fishing violations, looting and vandalism of historic sites, drug running, and immigrant smuggling in the park.

Reflecting on the challenges and opportunities, Tropical Audubon executive director Laura Reynolds said Biscayne National Park was "on the edge in many ways," but it is a place worth fighting for and saving. She has enjoyed the park for decades and has taken relatives there "time and again" to partake of its beauty. "It's really about future generations and protecting species for future generations," she reflected.

"It is a one of a kind. It is an absolutely beautiful water park with coral reefs that will knock your socks off…but they're tremendously diminished from what they were 15 or 20 years ago," stated Lewis, who regularly visited Biscayne waters. "It's a place where if you enjoy boating, if you enjoy outdoor recreation and water, then it's one of the most wonderful places you could ever go to." But, he noted, "it also is right next door to 3.5 or 4 million people, which means it's got 3.5 or 4 million problems."[599]

As the twenty-first century dawns, BNP's many challenges reflect the concerns born from a rising love of the park, the dedication of its employees, and a great desire to preserve and improve it for the future. Complex issues will require community engagement, tough management decisions, and innovative action to keep this treasure sparkling for all.

599 Lewis, interview.

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Appendix A

BNP Map Depicting Original Park Boundaries and Expanded, Current Boundaries

Photo Biscayne National Park, NPS.

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Appendix B

Biscayne National Park Enabling Legislation

US Code TITLE 16 - CONSERVATION CHAPTER[601]
1 - NATIONAL PARKS, MILITARY PARKS, MONUMENTS, AND SEASHORES
SUBCHAPTER LIX-E - BISCAYNE NATIONAL PARK

Sect. 410gg.
Establishment; description of boundary; minor boundary revisions; publication in Federal Register

In order to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty, there is hereby established the Biscayne National Park (hereinafter referred to in this subchapter as the "park") in the State of Florida. The boundary of the park shall include the lands, waters, and interests therein as generally depicted on the map entitled "Boundary Map, Biscayne National Park", numbered 169-90,003, and dated April 1980, which map shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior. The Secretary of the Interior (hereinafter referred to as the "Secretary") shall publish in the Federal Register, not more than one year after June 28, 1980, a detailed description of the boundary established pursuant to this section. Following reasonable notice in writing to the Committee on Natural Resources of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate of his intention to do so, the Secretary may make minor revisions in the boundary of the park by publication of a revised boundary map or other description in the Federal Register.

[601] US Code Title 16, accessed and quoted from NPS, "Enabling Legislation," BNP website, January 8, 2017, https://www.nps.gov/bisc/learn/management/enabling-legislation.htm.

Sect. 410gg-1.
Acquisition of property

a) Authority of Secretary; manner; State lands: donation, reservations, and restrictions; Federal lands: transfer to administrative jurisdiction of National Park Service and Secretary

Within the boundary of the park the Secretary is authorized to acquire lands, waters, and interests therein by donation, purchase with donated or appropriated funds, or exchange, except that property owned by the State of Florida or any political subdivision thereof may be acquired only by donation, and subject to such reservations and restrictions as may be provided by Florida law. Lands, waters, and interests therein within such boundary which are owned by the United States and under the control of the Secretary are hereby transferred to the administrative jurisdiction of the National Park Service to be managed for the purposes of the park. Any federally owned lands within the park which are not under the control of the Secretary shall be transferred to his control for purposes of the park at such time as said lands cease to be needed by the agencies which currently control them.

(b) Acquisition period; consideration by Secretary of prompt acquisition of property

It is the express intent of the Congress that the Secretary shall substantially complete the land acquisition program authorized herein within three complete fiscal years from the effective date of this subchapter. Any owner of property within the park may notify the Secretary of the desire of such owner that his property be promptly acquired, and the Secretary shall give immediate and careful consideration, subject to the availability of funds, to the prompt acquisition of such property.

Sect. 410gg-2.
Administration; fishing; abolition of Biscayne National Monument; monument incorporated within and made part of park; monument funds and appropriations available for park

(a) The Secretary shall preserve and administer the park in accordance with the provisions of sections 1, 2, 3, and 4 of this title, as amended and supplemented. The waters within the park shall continue to be open to fishing in conformity with the laws of the State of Florida except as the Secretary, after consultation with appropriate officials of said State, designates species for which, areas and times within which, and methods by which fishing is prohibited, limited, or otherwise regulated in the interest of sound conservation to achieve the purposes for which the park is established: Provided, That [sic] with respect to lands donated by the State after the effective date of this subchapter, fishing shall be in conformance with State law.

(b) The Biscayne National Monument, as authorized by the Act of October 18, 1968 (82 Stat. 1188; 16 U.S.C. 450qq), as amended, is abolished as such, and all lands, waters, and interests therein acquired or reserved for such monument are hereby incorporated within and made a part of the park. Any funds available for the purposes of such monument are hereby made

available for the purposes of the park, and authorizations of funds for the monument shall continue to be available for the park.

Sect. 410gg-3.
Report as to suitability for designation as wilderness area; compliance with procedure for such designation

Within three complete fiscal years from the effective date of this subchapter, the Secretary shall review the area within the park and shall report to the President and the Congress, in accordance with section (c) and (d) of this title, his recommendations as to the suitability or nonsuitability of any area within the park for designation as wilderness. Any designation of any such areas as wilderness shall be accomplished in accordance with said section (c) and (d).

Sect. 410gg-4.
Revised comprehensive general management plan; submission to Congressional committees

Within two complete fiscal years from the effective date of this subchapter, the Secretary shall submit to the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, a revised comprehensive general management plan for the park consistent with the provisions of this subchapter and pursuant to the provisions of section 1a-7, 1a-7(b)of this title.

Sect. 410gg-5.
Authorization of appropriations; entrance or admission fees prohibition

In addition to the sums previously authorized to be appropriated for Biscayne National Monument, there are authorized to be appropriated such sums as may be necessary for the administration of the park, and not to exceed $8,500,000 for the acquisition of lands and interests therein, as provided in this subchapter. Notwithstanding any other provision of law, no fees shall be charged for entrance or admission to the park.

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Appendix C

Biscayne National Park Chronology

10,000 years before present	First aboriginal people arrive in South Florida.
2,000 years before present	Florida Keys, mainland, and Biscayne Bay gain current geological appearance.
1513	Spaniard Juan Ponce de Leon sails to the peninsula, naming it La Florida; encounters Tequesta natives at Miami River.
1513-1921	Wrecking industry active in Florida Keys.
Early- to mid-1700s	Tequesta and other Florida native people disappear.
1733	Spanish treasure galleon *Nuestra Senora de Populo* sinks in what are now BNP waters.
1763	Great Britain gains control of Florida from Spain.
1748	HMS *Fowey*, a British warship, sinks in northern keys.
1800s	Miccosukee and Seminole people expand into South Florida.
1775-1881	American Revolution
1783	Spain retakes Florida from Britain.
1814-1819	First Seminole War
1821	Florida is ceded from Spain and becomes a US territory.
1822-1865	Settlements grow in the Biscayne keys.
1832	Artist John James Audubon visits Florida and its keys.
1835-1842	Second Seminole War
1838	Dr. Henry Perrine plants first limes in keys.
1845	Florida becomes 27th state.
1858	Third Seminole War
1860-1926	Agricultural products, mainly fruit, grown on upper keys.
1861-1865	US Civil War
1878	First lighthouse illuminated on Fowey Rocks.
1897	Israel Jones buys 63-acre Porgy Key; buys Old Rhodes Key in 1898.
1903	Railway magnate Henry Flagler purchases land on Soldier Key to create first fishing lodge and resort facilities in Biscayne Bay.
1906	Hurricane devastates pineapple crops.
1912	Flagler's Overseas Railroad reaches Key West, connecting rail lines along Florida's east coast.

1915-1925	Miami population grows from 15,000 to 71,000; beginning of the area's tourist trade and real estate boom.
1916	Cocolobo Cay Club is established on Adams Key.
1920-1933	Prohibition is enacted; illegal alcohol running occurs in keys.
1926	Florida land boom crashes; hurricane devastates keys.
1929	Upper Keys Improvement Association calls for road (approved but never built) that links Elliott Key to Key Largo.
1930s	Series of raised structures known as Stiltsville appear.
1936	Ledbury Lodge opens on Elliott Key.
1937	Boca Chita Key is purchased by Mark and Olive Honeywell, who create residences as well as a decorative lighthouse.
1954	First Columbus Day sailing race and celebration
1959	Land purchases begin in anticipation of development of Seadade Oil Refinery on south Biscayne Bay.
1960	Stiltsville is comprised of 27 buildings; ten are destroyed in hurricane that year.
1961	Bay of Pigs invasion in Cuba includes people trained by CIA on Elliott Key.
1961	Landowners on Elliott Key incorporate to create city of Islandia in anticipation of its development as resort.
1962	Metro-Dade Commission approves Seadade refinery; Safe Progress Association organizes to fight the project and Islandia development, proposing preservation instead.
1963	US Department of the Interior announces it is considering creation of national monument in Biscayne Bay.
1966	National Park Service publishes formal proposal for Biscayne National Monument.
1967	Florida Governor Claude Kirk endorses the proposal.
1968	Islandia supporters create "Spite Highway" on Elliott Key; Biscayne National Monument is created with 96,300 acres.
1970	Sale of Jones property to the monument is completed; Israel's son Lancelot is given life estate.
1971	Dale B. Engquist is named first monument superintendent; Florida Power & Light agrees to build cooling canals for its hot water discharges.
1973	James Todd becomes second park superintendent.
1974	Congress authorizes addition of 8,738 acres of land and water to park, including Swan and Gold Keys.
1978	First General Management Plan (GMP) is completed for BNP.

1980	Biscayne National Park is created in Congressional bill sponsored by US Rep. Dante Fascell; BNP expands to 173,000 acres and is included in state lobster sanctuary; James Sanders is named third BNP superintendent; Environmental Education camp (NEED) is established on Elliott Key.
1981	BNP offers experimental free boat tour to Elliott Key.
1983	General Management Plan is updated and adopted for BNP; first museum collections are formally created for the park; staff offer glass-bottom boat and snorkeling tours.
1984	Offshore Reefs Archeological District is listed on the National Register of Historic Places.
1985	BNP contracts with concessionaire to provide boat services and tours to park visitors. BNP law enforcement rangers are deputized into Vice President's South Florida Drug Force to work with US Customs and the Drug Enforcement Agency. US
1989	Environmental Protection Agency names BNP an Outstanding National Resource Water.
1990	First phase of Convoy Point development is completed. Park System Resource Protection Act (PSRPA) is enacted (and amended in 1996); PSRPA authorizes Department of the Interior to recover costs and damages to parks; BNP uses funds for vessel grounding injuries.
1991	Ammonia levels in discharge from South Dade Solid Waste Disposal Facility, known as "Mount Trashmore" raise BNP alarms; state of Florida ends sponging in park.
1992	Convoy Point headquarters building completed. Hurricane Andrew hits in August; headquarters building is still usable. Jones homestead is destroyed along with Adams Key and Cocolobo buildings. Seven Stiltsville buildings survive. Visitor center and park reopen in December, but outer keys remain closed. New concessionaire brought to park.
1993	Proposals for redevelopment of Homestead Air Reserve Base include large commercial airport. BNP opposes; Richard "Dick" Frost becomes fourth superintendent. BNP celebrates its 25th anniversary.
1996	German tanker *Igloo Moon* grounds in BNP. A 2000 settlement would later result in the company paying $1 million for damages. BNP Cultural Resource Management program is established.

1997	Boca Chita Key historic site and Sweeting Homestead are listed on National Register of Historic Places; Community Artists Program begins. New visitor center opens to public.
2000	Linda Canzanelli becomes fifth BNP superintendent; BNP announces it will allow remaining Stiltsville buildings in park; Stiltsville Trust created in 2003 to oversee structures. The Comprehensive Everglades Restoration Plan is launched in federal-state effort to improve water flow in South Florida. First Family Fun Fest takes place. New GMP and first Fisheries Management Plan is launched.
2001	US Air Force files record of decision denying the development of the Homestead commercial airport project.
2003	BNP Damage Recovery Program is established.
2005	Mark Lewis becomes sixth BNP superintendent; four hurricanes affect BNP; park closes for 21 days as a result. Diving with a Purpose program begins.
2006	The *Nuestra Señora de Populo* shipwreck is named to the National Register of Historic Places.
2007	Fisheries Awareness Program is created.
2008	40th anniversary of BNP is hailed with three days of celebrations.
2010	BioBlitz is held at BNP, documenting more than 1,000 species. Fowey Rocks Lighthouse is listed on the National Register of Historic Places.
2011	Maritime Heritage Trail opens.
2013	HMS *Fowey* case results in joint management agreement between the United States and the United Kingdom; Jones Family Historic District is named to the National Register of Historic Places; Brian Carlstrom becomes seventh BNP superintendent.
2014	BNP adopts its first Fisheries Management Plan, which recommends a no-fishing marine reserve. City of Homestead's National Parks Trolley program starts.
2015	New GMP adopted by BNP that includes a marine reserve in 6 percent of the park's waters.
2016	Margaret Goodro becomes BNP's eighth superintendent.
2020	Penelope "Penny" Del Bene becomes BNP's ninth superintendent.

Appendix D

Biscayne Superintendents

Note: Biscayne National Monument (1968-1980)
Biscayne National Park (1980-)

Dale B. Engquist	1971-1973
James Todd	1973-1980
James Sanders	1980-1993
Richard “Dick” Frost	1993-2000
Linda Canzanelli	2000-2005
Mark Lewis	2005-2013
Brian Carlstrom	2013-2015
Margaret Goodro	2016-2019
Penelope "Penny" Del Bene	2020-

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Appendix E

BNP Annual Budgets*

	BASE	FINAL
1980	555,500	587,200
1981	666,500	663,900
1982	862,700	816,600
1983		
1984		
1985	1,034,800	1,074,100
1986	1,013,300	962,400
1987	1,046,100	1,114,800
1988	1,038,800	1,118,400
1989	1,075,400	1,074,300
1990	1,056,900	1,121,900
1991	1,330,600	1,346,400
1992		
1993		
1994		
1995		
1996	2,108,100	2,353,800
1997	2,326,000	2,774,300
1998		
1999		
2000		
2001	3,385,900	
2002	3,456,000	3,869,381
2003	3,467,000	4,457,882
2004	3,344,400	4,168,134
2005	3,434,000	4,734,700
2006	3,531,000	4,909,000
2007	3,588,500	4,469,300
2008	3,645,100	4,869,500
2009	4,183,000	
2010	4,315,490	

	BASE	FINAL
2011		
2012	4,254,000 (estimated)	
2013	3,934,000 (Sequestration, estimated)	
2014	4,145,000 (estimated)	
2015	4,234,000 (estimated)	
2016	4,236,000 (estimated)	
2017	4,357,602 (actual authorized amount)	
2018	4,316,000 (actual authorized amount)	
2019	4,287,490 (actual authorized amount)	
2020	4,375,694 (enacted, adjusted)	

Source: 1980-1991 budgets from James Sanders, email to author, "BISC Budget Figures," December 31,2016. Other budget numbers are provided in annual superintendent reports. 2012-2016 budget taken from South Florida (SOFL) Budget Drive data; 2017-2019 budgets taken from FBMS data. 2012-2019 data provided by Sally Hendricks, SOFL Budget Analyst.

Appendix F

BNP Endangered Animal Species

BNP Endangered and Threatened Animal Species as of June 2015, with a discussion of several specific species to follow:[602]

	Occurrence in Biscayne National Park	Federal Classification Listing	State Classification Listing
MARINE INVERTEBRATES			
Pillar coral	Rare	Threatened	Endangered
Elkhorn coral	Common	Threatened	-
Boulder star coral	Occasional	Threatened	-
Mountainous star coral		Threatened	
Lobed star coral		Threatened	
Rough cactus coral		Threatened	
Staghorn coral		Threatened	
TERRESTRIAL INVERTEBRATES			
Florida tree snail	Occasional	-	Special Concern
Miami blue butterfly	Rare	Endangered	Endangered
Schaus swallowtail butterfly	Rare	Endangered	Endangered
FISH			
Smalltooth sawfish	Rare	Endangered	-
REPTILES			
American alligator	Uncommon	Similarity of appearance	Special Concern
American crocodile	Occasional	Threatened	Endangered
Eastern indigo snake	Rare	Threatened	Endangered
Sea turtle – green	Common	Endangered	Endangered

[602] NPS, "Threatened and Endangered Animals"; *BNP Final General Management Plan/Environmental Impact Statemen*t, vol. 1, NPS, April 2015, 165; BNP staff, Administrative History Comments 2016, 57-58.

Sea turtle – hawksbill	Common	Endangered	Endangered
Sea turtle – Kemp's ridley	Rare	Endangered	Endangered
Sea turtle – leatherback	Rare	Endangered	Endangered
Sea turtle – loggerhead	Common	Threatened	Threatened
BIRDS			
Brown pelican	Common	Delisted – Recovery	Special Concern
Least tern	Occasional	-	Threatened
Little blue heron	Common	-	Special Concern
Osprey	Common	Special Concern	Special Concern
Piping plover	Rare	Threatened	Threatened
Red knot	Rare	Threatened	
Reddish egret	Occasional	Special Concern	Special Concern
Roseate spoonbill	Uncommon	-	Special Concern
Snowy egret	Common	-	Special Concern
Southeastern American kestrel	Uncommon	Special Concern	Threatened
Tricolored heron	Common	-	Special Concern
White ibis	Common	-	Special Concern
White-crowned pigeon	Common	Special Concern	Threatened
Wood stork	Occasional	Endangered	Endangered
MARINE MAMMALS			
Fin (finback) whale	Rare, if at all	Endangered	Endangered
Florida manatee	Common	Endangered	Endangered
Humpback whale	Rare, if at all	Endangered	Endangered
North Atlantic right whale	Rare, if at all	Endangered	Endangered
Sei whale	Rare, if at all	Endangered	Endangered
Sperm whale	Rare, if at all	Endangered	Endangered
TERRESTRIAL MAMMALS			
Key Largo woodrat	Historical, not known to occur presently	Endangered	Endangered
Key Largo cotton mouse	Historical, not known to occur presently	Endangered	Endangered

Appendix G

BNP Endangered and Threatened Plants

Below is a 2015 list of listed plants found in BNP:[603]

Common Name(s)	Federal Classification Listing	State Classification Listing
Bahama ladder brake	-	Threatened
Banded wild-pine (Twisted airplant)	-	Threatened
Beach jacquemontia	Endangered	Endangered
Beach peanut	-	Endangered
Blacktorch	-	Threatened
Brown's Indian rosewood	-	Endangered
Butterflybush (Curacao bush)	-	Endangered
Caribbean princewood	-	Endangered
Cinnamon bark (Pepper cinnamon)	-	Endangered
Cinnecord	-	Endangered
Climbing vine fern	-	Endangered
Coffee colubrina (Greenheart)	-	Endangered
Coral pancium	-	Endangered
Darlingplum	-	Threatened
Dildoe cactus	-	Threatened
Dollar orchid	-	Endangered
Erect pricklypear	-	Threatened
Florida boxwood	-	Endangered
Florida Keys blackbead	-	Threatened
Florida mayten	-	Threatened
Giant wild-pine (Giant airplant)	-	Endangered
Golden leather fern	-	Threatened
Green thatch palm (Florida thatch palm)	-	Endangered
Guiana plum	-	Threatened
Havana greenbrier (Everglades greenbrier)	-	Threatened
Ironwood (Redberry stopper)	-	Endangered

[603] NPCA, *State of the Parks: Biscayne*, 15; NPS, "Threatened and Endangered Plants," BNP website, accessed July 7, 2015, http://www.nps.gov/bisc/learn/nature/threatened-and-endangered-plants.htm.

Joewood	-	Threatened
Johnson's seagrass	Threatened	-
Lignumvitae	-	Endangered
Locustberry	-	Threatened
Mahogany mistletoe	-	Endangered
Manchineel	-	Endangered
Mangrove mallow (Swampbush)	-	Endangered
Marsh's Dutchman's-pipe	-	Endangered
Milkbark (Whitewood)	-	Endangered
Mullein nightshade	-	Threatened
Nakedwood (Soldierwood)	-	Endangered
Parasitic ghostplant	-	Endangered
Paurotis palm	-	Threatened
Pearlberry (Tearshrub)	-	Endangered
Pinepink	-	Threatened
Porter's sandmat	-	Endangered
Prickly applecactus	-	Endangered
Red stopper	-	Endangered
Reflexed wild-pine (Northern needleleaf)	-	Threatened
Sargent's cherry palm (Buccaneer palm)	-	Endangered
Satinleaf	-	Threatened
Sea lavendar	-	Endangered
Semaphore cactus	Endangered	Endangered
Silver palm	-	Threatened
Silver thatch palm (Brittle thatch palm)	-	Endangered
Simpson's applecactus	-	Endangered
Smooth strongback (Bahama strongbark)	-	Endangered
Southern fogfruit	-	Endangered
Spicewood	-	Threatened
Stiff-leaved wild-pine (Cardinal airplant)	-	Endangered
Swartz's snoutbean	-	Endangered
Twindberry (Simpson's stopper)	-	Threatened
West Indian cock's comb	-	Endangered
West Indian mahogany	-	Threatened
West Indian trema (Pain-in-the-back)	-	Endangered
Whiteflower passionflower	-	Endangered
Wild cotton (Upland cotton)	-	Endangered
Wild dilly	-	Threatened
Yellow nicker bean	-	Endangered

Appendix H

BNP Exotic Animals[604]

Type	Scientific Name	Common Name	Frequency in the park
Amphibian	*Bufo marinus*	Giant toad, cane toad	Abundant
Amphibian	*Eleutherodactylus planirostris planirostris*	Greenhouse frog	Common
Amphibian	*Osteopilus septentrionalis*	Cuban tree frog	Common
Bird	*Acridotheres tristis*	Common myna	Occasional
Bird	*Cygnus olor*	Mute swan	Rare
Bird	*Sturnus vulgaris*	European starling	Common
Fish	*Amphilophus citrinellum*	Midas cichlid	Observed in canals along park's western boundary
Fish	*Astronotus ocellatus*	Oscar	Observed in canals along park's western boundary
Fish	*Chromileptes altivelis*	Panther grouper, humpback grouper	A single individual has been reported and removed
Fish	*Cichla ocellaris*	Peacock cichlid, butterfly peacock bass	Observed in canals along park's western boundary
Fish	*Cichlasoma bimaculatum*	Black acara	Observed in canals along park's western boundary
Fish	*Cichlasoma urophthalamus*	Mayan cichlid	Observed in canals along park's western boundary
Fish	*Clarias batrachus*	Walking catfish, clarias catfish	Observed in canals along park's western boundary
Fish	*Ctenopharyngodon idella*	Grass carp	Observed in canals along park's western boundary
Fish	*Hemichromis letourneauxi*	Jewel cichlid	Observed in canals along park's western boundary
Fish	*Hemichromis letourneuxi*	African jewelfish	Observed in canals along park's western boundary
Fish	*Leporinus fasciatus*	Banded leporinus	Observed in canals along park's western boundary

[604] NPS, "Non-native Species in the Park," BNP website, accessed December 4, 2016, https://www.nps.gov/bisc/learn/nature/exotic-animals.htm (page unavailable; information now at https://www.nps.gov/bisc/learn/nature/park-invasive-species.htm).

Fish	*Oreochromis aureus*	Blue tilapia	Observed in canals along park's western boundary
Fish	*Oreochromis mossambicus*	Mozambique tilapia	Observed in canals along park's western boundary
Fish	*Parachromis managuensis*	Jaguar cichlid	Observed in canals along park's western boundary
Fish	*Pterois volitans/miles*	Lionfish (Red lionfish, striped lionfish)	Common and increasing in occurrence.
Fish	*Pterygoplichthys multiradiatus*	Orinoco sailfin catfish	Observed in canals along park's western boundary
Fish	*Tilapia mariae*	Spotted tilapia	Observed in canals along park's western boundary
Fish	*Zanclus cornutus*	Moorish idol	What is believed to be a single individual has been repeatedly observed on reefs along the park's eastern boundary
Insect	*Cactoblastis cactorum*	Prickly pear moth (Cactus moth)	Rare
Insect	*Solenopsis invicta*	Imported red fireant	Common
Mammal	*Felis domesticus*	Feral cat	Occasional
Mammal	*Rattus rattus*	Black rat	Common
Mammal	*Sciurus aureogaster*	Mexican red-bellied squirrel	Rare
Reptile	*Anolis sagrei*	Cuban brown anole	Common to abundant
Reptile	*Agama agama*	Common agama lizard	Rare
Reptile	*Basiliscus vittatus*	Brown basilisk lizard ('Jesus lizard')	Common
Reptile	*Hemidactylus garnotti*	Indo-Pacific gecko	Occasional to common
Reptile	*Hemidactylus mabouia*	Tropical house gecko	Occasional to common
Reptile	*Hemidactylus turcicus*	Mediterranean gecko	Occasional
Reptile	*Iguana iguana*	Green iguana	Common
Reptile	*Python molurus bivittatus*	Burmese python	Rare[605]
Reptile	*Ramphotyphlops braminus*	Brahminy blindsnake	Occasional
Reptile	*Tupinambis merianae*	Black and white tegu lizard	Observed near park's mainland boundary
Reptile	*Varanus invicta*	Monitor lizard	Observed near park's mainland boundary

[605] For more information, visit the Everglades python page at https://www.nps.gov/ever/learn/nature/burmese-python.htm.

Appendix I

BNP Exotic Plants

Species' status with the Florida Exotic Pest Plant Council is noted in the third column. Species marked with an asterisk (*) are or have been cultivated.

Common Name[606]	**Scientific Name**	**2009 FLEPPC Status**
Achicoria azul	*Launaea intybacea*	
African ground orchid, Monk orchid	*Oeceoclades maculata*	
Angelwing jasmine *	*Jasminum nitidum*	
Arabian jasmine *	*Jasminum sambac*	II
Asia crabgrass	*Digitaria bicornis*	
Australian-pine, Horsetail casuarina	*Casuarina equisetifolia*	I
Bahia grass	*Paspalum notatum*	
Beach napuka	*Scaevola sericea*	I
Bermuda grass	*Cynodon dactylon*	
Black medic	*Medicago lupulina*	
Bowstring-hemp, Mother-in-law's tongue	*Sansevieria hyacinthoides*	II
Brazilian-pepper	*Schinus terebinthifolius*	I
Brittleweed, Coatbuttons	*Tridax procumbens*	
Broomcorn	*Sorghum arundinaceum*	
Burmareed, Silkreed	*Neyraudia reynaudiana*	I
Canary Island date palm *	*Phoenix canariensis*	
Castor-bean	*Ricinus communis*	II
Centipede grass	*Eremochloa ophiuroides*	
China brake	*Pteris vittata*	II
Chinese fan palm *	*Livistona chinensis*	
Cinnecord *	*Acacia choriophylla*	
Cochineal cactus	*Opuntia cochenillifera*	

[606] NPS, "Exotic Plants in Biscayne National Park," BNP website, accessed December 4, 2016, https://www.nps.gov/bisc/learn/nature/exotic-plants-in-biscayne-national-park.htm (page unavailable; information now at "Invasive Species," https://www.nps.gov/bisc/learn/nature/invasive-plants.htm).

Coconut palm	*Cocos nucifera*	
Commercial date palm, Date	*Phoenix dactylifera*	
Common dayflower	*Commelina diffusa*	
Common liveleaf, Cathedral bells, Life plant	*Kalanchoe pinnata*	
Common pigweed, Slim amaranth	*Amaranthus hybridus*	
Common plantain	*Plantago major*	
Creeping indigo, Trailing indigo	*Indigofera spicata*	
Creeping wedelia, Creeping oxeye	*Wedelia trilobata*	II
Crow's-foot grass, Durban crowfootgrass	*Dactyloctenium aegyptium*	
Dayflowering jessamine	*Cestrum diurnum*	I
Desert palm, Washington fan palm	*Washingtonia robusta*	
Dwarf banana *	*Musa acuminata*	
Elliptic yellowwood	*Ochrosia elliptica*	
Feather love grass	*Eragrostis amabilis*	
Flattop mille graines	*Hedyotis corymbosa*	
Florida tasselflower	*Emilia fosbergii*	
Fourspike heliotrope	*Heliotropium procumbens*	
Gale-of-wind, Carry-me-seed	*Phyllanthus amarus*	
Globe-amaranth	*Gomphrena serrata*	
Gophertail love grass	*Eragrostis ciliaris*	
Grassleaf spurge	*Euphorbia graminea*	
Green shrimpplant, Browne's blechum	*Blechum pyramidatum*	
Guava	*Psidium guajava*	I
Guineagrass	*Panicum maximum*	
Hurricane sedge, Hurricanegrass	*Fimbristylis cymosa*	
Indian goose grass	*Eleusine indica*	
Itch grass	*Rottboellia cochinchinensis*	
Ivyleaf moriningglory	*Ipomoea hederacea*	
Key lime *	*Citrus aurantifolia*	
King ranch bluestem, Yellow bluestem	*Bothriochloa ischaemum var. songarica*	
Largeflower Mexican clover	*Richardia grandiflora*	
Latherleaf, Asian nakedwood	*Colubrina asiatica*	I
Little ironweed	*Vernonia cinerea*	
Luckynut	*Thevetia peruviana*	
Madagascar-periwinkle	*Catharanthus roseus*	

Mango	*Mangifera indica*	
Manila templegrass, Manilagrass	*Zoysia matrella*	
Marsh parsley	*Cyclospermum leptophyllum*	
Mascarene Island leafflower	*Phyllanthus tenellus*	
Mascarene templegrass	*Zoysia tenuifolia*	
Mauritius-hemp	*Furcraea foetida*	
Mendez's sandmat	*Chamaesyce mendezii*	
Napier grass, Elephantgrass	*Pennisetum purpureum*	I
Nut-grass	*Cyperus rotundus*	
Oleander *	*Nerium oleander*	
Orange geigertree, Largeleaf geigertree	*Cordia sebestena*	
Oysterplant, Moses-in-the-cradle, Boatlily	*Tradescantia spathacea*	II
Papaya	*Carica papaya*	
Paragrass	*Urochloa mutica*	I
Paurotis palm, Everglades palm *	*Acoelorraphe wrightii*	
Pitted bluestem, Pitted beardgrass	*Bothriochloa pertusa*	
Portia tree	*Thespesia populnea*	I
Puncturewed, Burrnut, Jamaican feverplant	*Tribulus cistoides*	II
Road-side flatsedge	*Cyperus sphacelatus*	
Roadside sandmat	*Chamaesyce lasiocarpa*	
Rocketweed, Oriental false hawksbeard	*Youngia japonica*	
Rose Natalgrass	*Rhynchelytrum repens*	I
Royal poinciana, Flamboyant	*Delonix regia*	
Sabicu *	*Lysiloma sabicu*	
Santa Maria, Santa Maria feverfew	*Parthenium hysterophorus*	
Sapodilla	*Manilkara zapota*	I
Seaside mahoe, Sea hibiscus, Mahoe	*Hibiscus tiliaceus*	II
Senegal date palm	*Phoenix reclinata*	II
Shortleaf spikesedge	*Kyllinga brevifolia*	
Shrubby false buttonweed	*Spermacoce verticillata*	
Shrubverbena	*Lantana camara*	I
Signal grass, Tropical signalgrass	*Urochloa subquadripara*	
Sisal-hemp	*Agave sisalana*	II
Slender amaranth	*Amaranthus viridis*	
Smut grass	*Sporobolus indicus*	

Spiny sowthistle	*Sonchus asper*	
Sprenger's asparagus-fern	*Asparagus densiflorus*	I
St. Augustine grass	*Stenotaphrum secundatum*	
Straggler-daisy	*Calyptocarpus vialis*	
Surinam-cherry	*Eugenia uniflora*	I
Swamp fern, Toothed midsorus fern *	*Blechnum serrulatum*	
Tamarind *	*Tamarindus indica*	
Threeflower ticktrefoil	*Desmodium triflorum*	
Three-lobed morningglory, Littlebell	*Ipomoea triloba*	
Torpedo grass	*Panicum repens*	I
Tropical-almond, West Indian-almond	*Terminalia catappa*	II
Tuberous sword fern	*Nephrolepis cordifolia*	I
Twinberry, Simpson's stopper *	*Myrcianthes fragrans*	
Valamuerto	*Senna pendula var. glabrata*	I
Violet wood sorrel, Pink woodsorrel	*Oxalis debilis var. corymbosa*	
Weeping bottlebrush	*Melaleuca viminalis*	
West Indian dropseed	*Sporobolus indicus var. pyramidalis*	
White clover, Dutch clover	*Trifolium repens*	
White leadtree	*Leucaena leucocephala*	II
White moneywort	*Alysicarpus vaginalis*	
White sweetclover	*Melilotus albus*	
Wild-bean, Wild bushbean	*Macroptilium lathyroides*	
Yellow alder, Ramgoat dashalong	*Turnera ulmifolia*	
Yellow nut-grass, Chufa flatsedge	*Cyperus esculentus*	
no common name *	*Coccothrinax barbadensis*	
no common name *	*Cordyline fruticosa*	
no common name *	*Dracaena marginata*	
no common name	*Sophora tomentosa var. occidentalis*	

Appendix J

Maritime Heritage Trail

These six shipwrecks and a lighthouse are featured for Biscayne National Park's visitors.[607]

- ***Alicia*:** Built 1883, this iron-hulled ship carried $1 million in cargo that included everything from shoes to furniture to pianos to wine. The *Alicia* was lost on Long Reef during a 1905 storm. Some seventy groups of wreckers laid claim to the ship and cargo, leading to a revision of US salvage laws. Shoes from its cargo became the popular fashion for men and women from Key West to Miami. Today the shipwreck can be viewed in twenty feet of water.
- ***Arratoon Apcar*:** Built in Scotland in 1861, this 262-foot, iron-hulled steamer was heading to Havana on February 20, 1878, when its captain miscalculated his position and ran aground at Fowey Rocks. Lighthouse construction at this site was well underway at the time, and the steamship narrowly missed the platform where several workers were busy. The crew, unsuccessful at saving its coal-laden ship, was rescued by another boat. Today the *Arratoon Apcar* rests in 10 to 20 feet of water near Fowey Rocks, its coral-encrusted hull and iron beams still visible.
- ***Erl King*:** Long Reef claimed another ship in 1891, this time a Scottish, three-masted steamer that was carrying cargo and fifty passengers. It was heading for New Orleans from Swansea, England, when it hit the reef and suffered irreparable damage. All of the passengers were saved, as well as some of the boat's machinery and cargo. The *Erl King* now lies in eighteen feet of water with some of its artifacts readily visible.
- ***Lugano*:** This English ship was laden with silks, wines, rice, and foods valued at $1 million, as well as 116 passengers bound for Havana, when it grounded on Long Reef in March 1913. Passengers were rescued but foul weather and more than 75 wrecking boats descended, causing the loss of much cargo—including 350 cases of brandy. The remains now lie in 25 feet of water.
- ***Mandalay*:** This US steel-hull auxiliary schooner sank in 1966 while on a luxury cruise from the Bahamas to Miami. In the early hours of New Year's Day, twenty-three vacationers were awakened when the ship ran hard aground on Long

[607] NPS, "Maritime Heritage Trail," BNP website, accessed January 15, 2017, https://www.nps.gov/bisc/learn/historyculture/maritime-heritage-trail.htm.

Reef. The passengers were evacuated by helicopter to nearby Homestead, but scavengers stripped the boat, even taking passengers' private possessions. The ship's skeleton is embedded on Long Reef today.

- **Nineteenth-century Wooden Sailing Vessel:** Very little is known about this ship, which sank off Ajax Reef some time in the 1800s.Undoubtedly stripped by wreckers, its remains are few, but ballast stones that once kept the ship in balance are still visible on the sandy bay bottom. Other elements found at the site indicate that this ship was a small- to medium-sized sailing vessel; many boats of this kind traveled regularly in the Florida Keys during the nineteenth century.
- F***owey Rocks Lighthouse:*** Built in 1878, this lighthouse survived decades of storms and likely "witnessed" many nearby shipwrecks, gaining the moniker "Eye of Miami." It is the newest addition to the Maritime Heritage Trail.

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A Note on Sources

This history relies on a variety of sources to tell the story of Biscayne National Monument and Biscayne National Park (BNP). These include primary sources, information from BNP and Everglades National Park archives (indicated by "BISC" and "EVER," respectively)—both printed and digital—as well as data from other archives, including the National Park Service (NPS) national archives, the University of Miami, and HistoryMiami. This history also gleans information from published academic papers and books and a number of secondary sources, which include news media and internet sites deemed to be reliable and accurate. The bibliography breaks these sources into different categories for ease of use. Of great importance to this administrative history are oral history interviews conducted with past superintendents, staff, founders, park partners, and BNP users, as well as personal papers and emails supplied by individuals intimately connected to the park's founding and operations.

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