PADRE ISLAND NATIONAL SEASHORE

RESOURCES MANAGEMENT PLAN

1996

Approved: _____ Date: _____

Superintendent, Padre Island National Seashore

DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

PADRE ISLAND NATIONAL SEASHORE

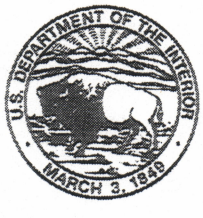
RESOURCES MANAGEMENT PLAN

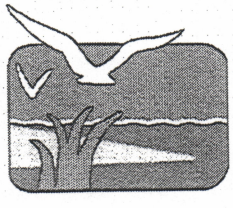
1996

Approved: _____ Date: _____

Superintendent, Padre Island National Seashore

DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE





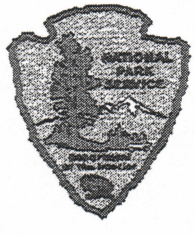


TABLE OF CONTENTS

1.0 INTRODUCTION 1
- 1.1 Park Purpose and Significance 2
- 1.2 Description 2
- 1.3 Resource Management Goals and Objectives 7

2.0 NATURAL RESOURCE STATUS 8
- 2.1 Natural Resource Baseline Information 8
  - 2.1.1 Vegetation 8
  - 2.1.2 Animals 9
  - 2.1.3 Water Resources 11
  - 2.1.4 Air Resources 13
  - 2.1.5 Geologic Resources 13
  - 2.1.6 Aesthetic Resources 13
- 2.2 Natural Resource Condition and Major Threats 14
  - 2.2.1 Vegetation 14
  - 2.2.2 Animals 15
  - 2.2.3 Water Resources 15
  - 2.2.4 Air Resources 17
  - 2.2.5 Geologic Resources 17
  - 2.2.6 Aesthetic Resources 17
- 2.3 Overview of Natural Resource Management Program and Needs 17

3.0 CULTURAL RESOURCE MANAGEMENT PROGRAM 20
- 3.1 Cultural Resources Overview 20
- 3.2 Cultural Resources Baseline Information 22
  - 3.2.1 Planning Documents 22
  - 3.2.2 Servicewide Inventories, Lists, Catalogs, and Registers 22
  - 3.2.3 Basic Cultural Resource Documents 23
  - 3.2.4 Special Resource Studies and Plans 23
- 3.3 Cultural Resources 24
  - 3.3.1 Archeology 24
  - 3.3.2 Historic Structures 24
  - 3.3.3 Ethnology 25
  - 3.3.4 Museum Collections 25
  - 3.3.5 Cultural Landscapes 26
  - 3.3.6 Cultural Context/Themes 26
- 3.4 Overview of Current Program and Needs 27
  - 3.4.1 Archeology 27
  - 3.4.2 Historic Structures 28
  - 3.4.3 Ethnology 28
  - 3.4.4 Museum Collections 28
  - 3.4.5 Cultural Landscapes 29

3.4.6 Cultural Context/Themes 29

4.0 RESOURCES MANAGEMENT PROJECT STATEMENTS 30

5.0 APPENDICES

Cultural Resources A-1
Annual Project Status and Accomplishments B-1
Bibliography C-1

1.0 INTRODUCTION

Padre Island National Seashore's (PAIS) Resource Management Plan (RMP) describes, documents, and prioritizes resource management issues, problems, and actions required to preserve and protect cultural and natural resources occurring at PAIS. The RMP will also be utilized to achieve stated management objectives in the years 1994 through 1998. The RMP provides a summary of the purpose and values of PAIS and provides the foundation for budgetary needs, and for measuring accomplishments against stated management goals and commitments. The RMP, a planning document, is used in the development and implementation of short and long-term management strategies. The Plan is dynamic and will be revised as information and expertise is advanced.

The RMP, a public document, will be utilized by the park, region and WASO staffs, and will also be made available for public review. The RMP is a dynamic document which will be modified as goals are accomplished and priorities change.

This RMP is significantly different than earlier versions. The first RMP was written in 1969, and was revised in 1979, 1981, 1984, 1986, and again in 1989. Project statements still make up the bulk of this document. These statements have been constructed according to national guidelines (NPS 1989) and are more concise than in previous versions. Most resource management activities conducted in the park are now accounted for in the RMP, including administrative activities. This means that the Plan has a more programmatic approach and achievements will be tracked. In depth exploration of management issues and alternatives has been relegated specific action plans, which are developed on an as needed basis. These action plans are addenda to the RMP. Compliance needs for specific actions are identified within each project statement; this RMP is not subject to a single environmental review process as it has been in the past.

This Plan goes from the broad to the specific. Initially, legislative mandates and management objectives are introduced. The condition or "status" of each resource "type" is summarized, a list of needs is identified and specific actions prescribed. Finally, funding needs and potential funding sources are identified using programming sheets which are updated annually.

Fifteen major issues have been identified. More than 35 na tural and five cultural resources program statements are included. All activities are prioritized based on where they fall within the following management strategies:

1) Minimize the loss of resources/information
2) Meet legal requirements
3) Mitigate management and visitor caused impacts
4) Mitigate external impacts

Protecting from and preventing the loss of cultural and natural resources is the prime management directive. However, some resources may be more or less sensitive or critical than others, just as some legal requirements may be more applicable than others. For this reason, some activities may shift in priority.

This Plan documents the condition and threats to the natural and cultural resources of Padre Island National Seashore, and prescribes actions designed to protect them. A wide variety of activities, including baseline inventories, long-term monitoring, experimentation or manipulative studies, resource maintenance, visitor education, and management and enforcement functions are integrated into a comprehensive resource management program. By describing current natural and cultural resource programs/projects and proposed future program needs, this Plan serves as the park's primary plan for addressing critical resource issues and problems.

1.1 Park Purpose and Significance

The legislation enacted by the Senate and House of Representatives establishing Padre Island National Seashore in 1962 (76 Stat. 650) stated that the park was created "...in order to save and preserve, for purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped...".

The purpose of Padre Island National Seashore is further delineated in the National Park Service (NPS) Organic Act of 1916 which states that the primary purpose for which lands and properties are entrusted to the NPS is "...to conserve the scenery, the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for future generations".

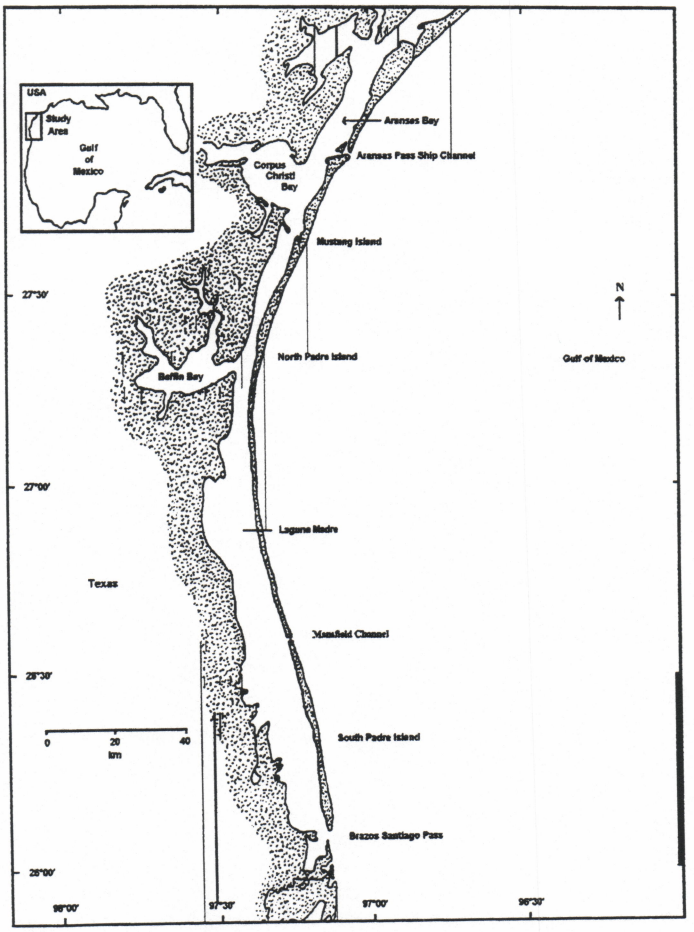
In addition to the aforementioned legislation, Padre Island National Seashore's significance lies in its incomparable combination of natural, recreational, and wilderness values.

Padre Island is acclaimed as the longest undeveloped barrier island in the United States. The park encompasses tens-of-thousands of pristine wetlands, 29 rookery islands, and 70 miles of undeveloped sandy beaches.

1.2 Description

Padre Island National Seashore consists of approximately 130,000 acres of land and water. The National Seashore is approximately 70 miles-in-length and from 1/2 to three miles-in-width. The park is bordered on the east by the Gulf of Mexico and is separated

from the Texas mainland, to the west, by the Laguna Madre, a shallow, hypersaline body of water. With the longest stretch of undeveloped ocean beach in the country, PAIS provides a rare opportunity for primitive beach recreation.



A barrier island--Padre Island National Seashore is a dynamic system--which was formed and is continually being reshaped by the action of wind, currents, and waves. The seashore's landscape changes from broad sandy beaches, to ridges of fore-island dunes, then to grassy flats separated by smaller dunes, ephemeral ponds, and wetlands. The western portion of the Seashore is defined by back-island dunes and wind tidal flats that merge with the waters of the Laguna Madre.

The park encompasses tens-of-thousands of acres of pristine wetlands that are important habitat for numerous flora and fauna species. Approximately 80-90 percent of the area behind the gulf dune line, to the Laguna Madre, is comprised of a rich variety of wetlands, including estuarine emergent wetlands, freshwater ponds, wind tidal algae flats, Laguna Madre intertidal zone, lagoonal sea grass beds, and marshes.

The foredune ridge occurs immediately west of the beach. Foredune height in the area ranges 2.0 meters and 7.0 meters. Foredune plant composition in this area is specifically adapted for the harsh environment. Halophilic species such as the sea oat (*Uniola paniculata*), bitter panicum (*Panicum amarum*), goatfoot morning glory (*Ipomoia pescaprae*), fiddleleaf morning glory (*I. stolonifera*), beach and partridge pea (*Cassia fasciculata*) will be found in the foredune area.

The wildlife composition of the foredunes is fairly diverse. Two rodent species, the kangaroo rat (*Dipodomys compactus*), and the spotted ground squirrel (*Spermophilus spilosoma*), are quite prevalent in the foredune environment. Secondary rodent species include the South Texas Pocket Gopher (*Geomys personatus*), Pygmy Mouse (*Baiomys taylori*), and the Cotton Rat (*Sigmodon hispidus*). Additional mammalian species infrequently sighted in the area are the California Jackrabbit (*Lepus californicus*), and the Coyote (*Canis latrans*).

Foredune habitat supports a moderate number of reptilian species. The most common reptile associated with this environment is the Keeled Earless Lizard (*Holbrookia propinqua*). The Six-lined Racerunner (*Cnemidophorus sexlineatus*) is also fairly common. Snakes common to the foredunes and vegetated barrier flat consist of the Western Diamondback Rattlesnake (*Crotalus atrox*), Western Coachwhip (*Mastcophis flagellum*), Eastern Hognose Snake (*Heterodon platyrhinos*), Mexican Milk Snake (*Lampropeltis triangulum*), Gulf Coast Ribbon Snake (*Thamnophis proximus*), and the Rio Grande Racer (*Coluber constrictor*).

The mid-island vegetated barrier flat environment occurs immediately west of the foredune ridge system. Dominant characteristics of this environmental zone are sandy soils, a thick vegetation cover, local ponds, and isolated stabilized dunes.

The vegetated barrier flat is characterized by plant species which are less halophilic than those on the foredunes. These plants form a thick cover in most places and stabilize the sand from further movement. The plants of these barrier flats tend to form associations based on elevation. Sedges, rushes and hydrophilic plants occupy the low, wet areas and species more related to dune communities occupy the hummocks and low coastal sands. This environment is generally not very salty, nor is blowing sand or intensive salt spray an environmental factor.

Important plant species occupying the heavily vegetated barrier flat are as follows: sea coast bluestem (*Andropogon littoralis*), beach evening-primrose (*Oenothera drimmondii*), sea oat (*Uniola paniculata*), Gulfdune paspalum (*Paspalum monostachyum*), partridge pea (*Cassia fascuculata*), sumpweed (*Iva angustifolia*), betonyleaf eupatorium (*Eupatorium betonicifolium*), wiily stemodia (*Stemodia tomentosa*) and *Panicum angustifolium*.

Hydrophilic species occupying low, moist areas include water-hyssop (*Bacopa monnieri*), needlepod rush (*Juncus scirpoides*) and American bulrush (*Scirpus americanus*).

Wildlife populations, as mentioned earlier, are very similar to the foredune complex; however, amphibious reptiles are more frequently observed in the low elevation aquatic areas of the barrier flat. Species infrequently observed include the Rio Grande Leopard

Frog (*Rana pipiens berlandieri*) and the Green Tree Frog (*Hyla cinerea*).

Avian species which frequent this area of the park consist of the Marsh Hawk (*Circus Cyaneus*), Bobwhite Quail (*Colinus virginianus*), Western Meadowlark (*Sturnella neglecta*), Eastern Meadowlark (*Sturnella magna*), Long-billed Curlew (*Numenius americanus*), Killdeer (*Charadrius vociferus*), Mottled Duck (*Anas fulvigula*), and various passerines.

As the vegetated barrier flat merges into the wind tidal flats the vegetative communities consist of isolated, low hummocks, interspaced in the mud flat area. The wind tidal/mud flats are made up of barren sand covered by algae. Most of the time the area is dry except when the area is covered by seasonal tides with water from the Laguna Madre.

Migratory wildlife observed in this vicinity consists of the Sandhill Crane (*Grus canadensis*), Snow Geese (*Chen caerulescens*) and Canada Geese (*Branta canadensis*). Migratory endangered species include the Peregrine Falcon (*Falco peregrinus tundries*) and (*Falco peregrinus anatum*) and the Piping Plover (*Charadrius melodus*). These species prefer the isolated back island habitat. The mud flats serve as a major staging area for the peregrine falcon during its migration.

Vegetative species found along the edges of the mud flats consists of seashore saltgrass (*Distichlis soucata*), marshhay cordgrass (*Spartina patens*), sea lavender (*Limonium nashii*), glasswort (*salicornia virginica*) and sea ox-eye daisy (*Borrichia frutescens*).

The Laguna Madre is noted as one of the few hypersaline bodies of water in the country with salinity levels typically higher than the Gulf waters. This salinity content is attributed to high evaporation and low freshwater infusion into the laguna due to limited runoff and scarcity of freshwater systems emptying into the laguna. The Laguna Madre is one of the most productive estuarine systems in the United States.

Two natural and 27 man-made spoil islands in the Laguna Madre provide prime habitat for the colonial nesting birds. Park islands are particularly significant to nesting birds because cabins can not be erected on them and human disturbance is minimal.

The climate at Padre Island National Seashore is subtropical with an average rainfall of 28.5 inches. However, over the past four years, the rainfall has exceeded average annual amounts and, subsequent, the increased rainfall has raised the water table and promoted dune field growth at the expense of sediment export (Kocurek et al., 1992).

Persistent southeasterly winds occur from March to September, and north-northeasterly winds occur from October to February. Weather on the island is changeable and often dramatic, with high tides and winds, and sudden temperature changes. The hurricane season begins June 1 through October. In any given year, the probability of tropical

storms or hurricanes is 34 percent, with an average of 5-10 years between hurricanes along this stretch of coastline.

Padre Island remains a relatively natural landscape. However, as a result of hurricanes, the landscape can be dramatically altered. That is, the barrier island takes the full force of a hurricane's high-energy assault. Typically, hurricanes are responsible for the erosion of beaches, sand dunes are breached, and overwash passes are cut across the island. Where the fore-island dune ridge is developed, the barrier island blocks the storm's tidal surge and dissipates wave energy, providing a major defense for the mainland.

Padre Island National Seashore has a total of 140 flora species, including 27 grasses, 15 grasslike, 92 forbs, 3 cacti, and 3 woody species. There are no state or federally listed threatened or endangered plant species known to occur within the National Seashore (Drawe, 1992).

Numerous types of fauna species inhabit the park, including over 350 species of birds. Finfish are found in the gulf and laguna waters. The nearshore and beach, environments of harsh tide and wave action, are inhabited by animals that burrow in the bottom sand. These animals, the most visible of which are ghost crabs, are supported in greatest numbers on the forebeach, where they serve as food for a number and variety of shorebirds. On the foredunes, the diversity of wildlife increases with the vegetative cover. Rodents, other mammals, and reptiles inhabit the dunes.

Similar wildlife is found on the barrier flats and back-island dunes. Amphibians and fish are often found in the low-lying ponds. These ephemeral ponds serve as important feeding and watering habitats for a variety of wildlife species are certain times of the year.

Several animals found at the National Seashore are federally listed as threatened or endangered species: peregrine falcons (E); eastern brown pelican (E); piping plover (E), green sea turtle (T), Kemp's ridley sea turtle (E), loggerhead sea turtle (T), leatherback sea turtle (E), and the hawksbill sea turtle (T). Additionally, the reddish egret, the white-faced ibis, and the osprey are state listed species that either nest or reside at the Seashore.

The southern portion of the park is unique in that it is the migration route "staging area" for peregrine falcons. This particular area (mile marker 30-68) of the National Seashore is their most important peregrine falcon habitat on the Gulf Coast and is considered as critical habitat by the Peregrine Fund. From actual count, more than 2000 peregrine falcons utilize this area annually during their fall migration. A dramatic increase in peregrine falcon use has been documented over the past 10 years.

Peregrine falcons are observed on the wind tidal flats or sand dunes on the western side of the Seashore. The falcons tend to avoid areas of intense recreational use and vehicular

traffic. Padre Island is the only known locality in the Western Hemisphere where peregrine falcons can be found in concentrations during their spring migration.

The loggerhead, green, and kemp's ridley sea turtles are found in the adjacent marine waters. Kemp's ridley, green and loggerhead sea turtles nest sporadically on Padre Island. The southernmost portion of the park, Mansfield Channel, is important habitat for juvenile green sea turtles.

As stated, Padre Island National Seashore serves as important habitat area for a wide range of flora and fauna. Over 320 species of birds, including ten threatened/endangered and state protected bird species, utilize the park. The park serves as an important rookery area for thousands of colonial waterbirds. As growth and expanding development continue in the coastal bend areas of South Texas, the park has become increasingly more significant as important habitat area for colonial nesting waterbirds, neotropical migrants, and threatened/endangered bird species.

1.3 Resource Management Goals and Objectives

Padre Island National Seashore's broad resource management goals are to:

1. Preserve, understand, protect, and manage the cultural and natural resources of the park within naturally functioning ecosystems, consistent with cultural resource preservation.

2. Provide the means and opportunity for people to study, understand and enjoy the resources of the seashore without compromising the resources or ethnographic values.

The park's cultural resource management objectives are to:

1. Maintain the historic and prehistoric resources of the park for research and public enjoyment. (Loss of the resource due to natural decay is acceptable, but any loss due to past or present human actions is not acceptable.

2. Further understanding of how prehistoric and historic peoples of the Padre Island area interacted with their environment and resource base.

The park's natural resource management objectives are to:

1. Restore and sustain natural ecosystem conditions and processes unimpaired from human influence, to the degree practical given landscape, insuring visitor safety, and cultural resource constraints.

2. Carry out a management program which preserves and restores resource conditions and values defined by law and policy and is compatible with cultural resource objectives.

3. Preserve a comprehensive natural resource base for its innate value to promote scientific and educational interest.

2.0 NATURAL RESOURCE STATUS

2.1 Natural Resource Baseline Information

2.1.1 Vegetation

Terrestrial

To date, mapping of the park's vegetation has been concentrated in a few specific areas -- focused on establishing a baseline inventory, maintaining a working herbarium, and studying the effects of the numerous anthropogenic impacts on the park's vegetative communities.

Baseline inventories on the park's vegetative communities have been completed a number of times, including Recenthin and Passey (1966), Higginbotham (1972), Kattner (1973), Rabalais (1975), Carangelo (1988), Brown et al. (1989), Drawe (1990), Drawe (1992).

A checklist of plant species occurring on Padre Island was completed in 1966 (Jones and Kattner 1966). Additionally, in 1975 the park completed a thorough inventory of the park's threatened flora.

In 1970, Drawe established five permanent transects across the island to analyze -- on a long-term basis -- the succession of the park's vegetative communities and plant composition. These transects are sampled every five years, providing long-term baseline on the status of the park's vegetation communities. In 1990, Drawe collected data along four additional transects within the park to compare with previously collected data.

A variety of research projects have addressed human impacts on different vegetation communities found within the park, including Behrens (1975), McAtee (1975), Carls et al. (1987), Drawe (1988). The park is in the process of establishing a master herbarium and associated database. The collection of plant species is ongoing and current efforts are being integrated with previous work.

A map of the anatomical and vegetational features of the park's spoil islands was completed in 1974 (Mendoza 1974). An adequate inventory of the vascular plant

distribution remains incomplete, primarily due to the dynamic successional patterns of the island's vegetation. The effects of prescribed fire upon vegetation have not been adequately studied, but it is anticipated that during the 1995 burning season a comprehensive monitoring program will begin.

A preliminary assessment of the cumulative impacts of oil and gas operations on the soil and vegetation resources of Padre Island National Seashore was completed by the CPSU at Texas A&M University in 1987. This study was limited to the assessment of impacts on soil and vegetation that was associated with oil/gas drilling and processing sites, access corridors, and pipelines (Cumulative Impacts of Oil and Gas Operations on the Soil and Vegetation Resources of Padre Island National Seashore, Technical Report No. 9, 1987).

A comprehensive mapping of the park's current and historical vegetation patterns with subsequent integration into a database and Geographical Information System (GIS) has not been completed.

Aquatic
Merkord (1978) studied the distribution of seagrass species within the Laguna Madre. A checklist of benthic plants inhabiting the Laguna Madre was developed by Conover (1963). Nekton and Plankton of the Laguna Madre were surveyed by Chaney (1987).

Inventory and Monitoring Status

Phase I: Inventory standards for the historical database have not been met. Currently, the geography standard is being completed.

Phase II: Monitoring standards for populations and communities have been met in small part. The monitoring standard for geography will be met during 1995.

No other standards have been met for vegetation.

2.1.2 Animals

Mammals
A number of baseline mammal studies were completed at PAIS -- the majority of which have focused on the park's rodent population. In 1974, Baccus completed a three year baseline inventory study on small rodents residing in the park. Yzaquirre (1974) performed research on the distribution and variation of rodents in different vegetation communities and terrain types at Padre Island. Harris (1988) performed a limited inventory of small rodents, deer and bobcats. Zehmer (1985) observed and studied the occurrence of Eastern pipistrel within the park. A checklist of marine mammals utilizing park waters or stranding on park beaches was completed by the Schmidly (1974).

Additionally, from 1968 through 1994, a number of wildlife observations were made at PAIS. Currently these observations are being entered into a database.

Amphibians

A baseline inventory has not been completed on amphibians residing within the park. An amphibian checklist for the entire state of Texas was prepared by the Texas Parks and Wildlife Department (1975).

Reptiles

Since 1978 numerous projects have been initiated to inventory sea turtle species that utilize the park's water for foraging and the Gulf of Mexico shoreline for nesting. An inshore sea turtle study began in 1990 to establish a baseline inventory on the number of sea turtles utilizing the Mansfield Channel to forage (Shaver 1990). Long-term monitoring of these populations will continue.

Ongoing monitoring efforts are documenting the occurrences of sea turtles nesting along the park's Gulf of Mexico shoreline (Shaver 1990). A comprehensive inventory has not been completed for reptile communities at PAIS.

Fish

Caudle (1992) inventoried fish residing in the freshwater ponds of the park. A checklist of fish inhabiting these ponds has been compiled. A project was completed in 1984 which inventoried all finfish inhabiting the park's Gulf of Mexico shoreline (Shaver 1984). Shaver (1984) also studied the effects of redtide on finfish within the Gulf of Mexico. An inventory of finfish which utilize the park's portion of the Laguna Madre has not been completed.

Birds

Colonial Waterbirds

Since 1969, a yearly survey -- in coordination with regionwide surveys -- has been conducted on the spoil islands to monitor bird populations (Chaney et al. 1978). A complete habitat assessment of all park spoil islands was completed in 1978.

Shorebirds

Numerous inventory studies have been performed on the park's shorebird populations, including Chapman (1979), Chapman (1981), Chaney (1993), Chaney (1993). Comprehensive inventories have been completed along the park's Gulf of Mexico and Laguna Madre shorelines. The abundance and distribution of sensitive species inhabiting these areas has been compiled in a long-term database which is utilized in conjunction with GIS to better manage shorebird populations.

Raptors

Since 1978, monitoring of the peregrine falcon population has occurred on a bi-yearly basis. Reports include: Ward (1978), Hunt (1980) Riddle (1983), Maechtle (1988), Maechtle (1989), Maechtle (1990), Maechtle (1991), Maechtle (1992), Maechtle (1993).

Hunt (1980), utilizing radio telemetry, examined the migration patterns of the park's peregrine falcon populations.

Neotropicals

A pilot project was initiated in 1993 to inventory and assess the health of neotropical birds that utilize the park during migration (Chaney 1993). In the spring of 1994, a more comprehensive survey was completed to inventory and assess the health of neotropical bird populations (Bartles 1994).

Invertebrates

Payen (1978) collected arthropods in the upland areas of PAIS and formulated a checklist. Blanchard comprehensively surveyed for moths in 1979. This work provides some baseline information on arthropod species diversity within PAIS.

A study was done in 1993 (Tunnel and Rocha 1993) which inventoried the seasonal abundance and distribution of benthic invertebrates along PAIS sandy beaches (Gulf of Mexico shoreline). Withers (1993) determined the abundance and distribution of benthic invertebrates and shoreline birds on one large Blue-green algal flat. Wichsten et al (1990) determined the abundance and distribution of benthic invertebrates along the Bird Island Basin wind tidal flat. Muncy (1984), Regan (1985), Anderson (1985), Lasalle et al (1985), Sutter et al (1986) studied the life histories of a variety of benthic invertebrates inhabiting the Gulf of Mexico Shoreline.

A mollusk inventory was completed in 1977 (Woods 1977) on the north jetty at Port Mansfield Channel. Ghost crab response to man was studied by Teerling (1970) for a two year period from 1968-1969.

Inventory and Monitoring Status

Certain phases have been met for some animal populations, but considered as an entire group Phase I, II, and III have not been met for this resource category.

2.1.3 Water Resources

The Federal Water Pollution Act (Clean Water Act of 1972 and 1977 and 1990 amendments) establishes regulations that are designed to "...restore and maintain the chemical, physical, and biological integrity of the Nation's waters...". In addition, water quality is protected by provisions of the Safe Drinking Water Act of 1974; the Resource Conservation and Recovery Act of 1976, and as amended in 1980; the Oil Pollution Act of 1990; and the Comprehensive Environmental Response, Compensation, and Liability

Act of 1980. Surrounded by the Laguna Madre and the Gulf of Mexico, the park encompasses approximately 50,000 acres of surface water, and intertidal lands.

Laguna Madre

Fisk (1959) developed a composite of changes that have occurred in the Laguna Madre, including an inventory of the Laguna Madre's water quality. A circulation model of the Laguna Madre was prepared by Smith (1976).

Gulf of Mexico

An inventory of water quality has not been performed for the park's Gulf of Mexico surface waters.

Freshwater Ponds

Sissom (1990) completed a baseline study on the three largest freshwater ponds. This research included: a comprehensive inventory of baseline water quality parameters; and, an inventory of the floral and faunal communities inhabiting the ponds.

Groundwater

Historical data from the cattle ranching era and previous minerals development at Padre Island National Seashore indicates that the near surface groundwater is a lens of freshwater, approximately 30 feet thick, that overlies saltwater. Data indicates that this lens of freshwater is at least two miles-in-width. The park's groundwater is recharged by precipitation events and saltwater wave surges. Although the hydrology of the area has not been completely assessed, it has been theorized that the groundwater flows in an easterly orientation from the Laguna Madre to the Gulf of Mexico.
Wetlands and freshwater ponds in the park serve as sensitive habitat areas for a variety of aquatic invertebrates and algae, and also provide a source of drinking water for mammals and sensitive avifauna.

A complete hydrogeologic characterization of the park's groundwater resources was developed by Sharp et al. (1992). The hydrogeologic resources located in the northern portion of the park -- between the 10 mile mark and the park's northern boundary -- were surveyed in 1986 (Boylon 1986).

Berkebile (1993) installed 12 monitoring wells along four transects at the national seashore. These wells are monitored monthly to assess the water quality of the groundwater and to model water flow. The major recharge of the freshwater aquifer is from rain and surface seeps. Monitoring will identify seasonal variation in groundwater levels; thereby, allowing a full analysis of the seasonal groundwater flow regime.

Inventory and Monitoring Status

Phase I inventory standards met in part -- excluding the surface waters of the Gulf of Mexico. Phase II monitoring standards are partially met for groundwater resources; but,

monitoring standards are not being met for all other water resources.

2.1.4 Air Resources

Currently and historically, an air quality monitoring has not been initiated done at PAIS. Following implementation of the park's Fire Management Plan, the park will initiate an air quality monitoring program.

Inventory and Monitoring Status
Phase I and II standards have not been met for air resources.

2.1.5 Geologic Resources

Brown et al. (1976) produced an environmental geologic atlas of the Texas coastal zone. This atlas included the park's geologic resources. The Bureau of Economic Geology (1976) generated a geologic atlas of Texas at the scale of 1:250,000. A field guide summarizing the park's geologic resources was developed by the Corpus Christi Geological Society (1972).

Cole (1980) described the geologic processes occurring at PAIS. Dickinson (1971) analyzed sand grain size distribution and the depositional history of Padre Island. Historical changes in Padre Island's shoreline were documented by Morton and Pieper (1977). Prouty and Prouty (1988-1991), utilizing permanently marked transects, analyzed historical shoreline erosion occurring at Bird Island Basin.

Numerous studies, including Gundlock (1981) and Dahl et al (1981), have investigated the effects of hurricane Allen on the geomorphology of the island. Inventory and monitoring of the general dune morphology on Padre Island has been examined by Baker (1956), Dahl et al (1976), and Mckee (1981).

The soil properties of nine different habitat types were documented by Drawe et al. (1981) and McFarland (1973).

Inventory and Monitoring Status
Phase I inventory standards have been met for geology, but not for soils. Phase II and III standards have not been met.

2.1.6 Aesthetic Resources

NPS Management Policies NPS 1988; Chapter 1:3) states that ·parks contain various tangible natural and cultural features.... [and] also have intangible qualities, such as natural quiet, solitude, scenery, a sense of history, sounds of nature, and clear night skies, that are important components of the overall park experience and have received

congressional recognition.

A House of Representatives committee report (House Report No. 2179, 87th Congress, August 13, 1962) concluded that the area "...presents one of the finest and last remaining opportunities for seashore conservation. It possesses the qualities of unspoiled nature, of spaciousness and remoteness that are capable of providing relaxation, inspiration, and enjoyment....These characteristics make Padre Island unique and potentially one of our Nation's outstanding national seashores.

The aesthetic values essential to the park purpose are its undeveloped shoreline, unspoiled beaches, spaciousness, and remoteness. Preservation of the aesthetic resources is essential to the protection of the park's natural and cultural resources.

Inventory and Monitoring Status
No inventory or monitoring standards are met.

2.2 Natural Resource Condition and Major Threats

2.2.1 Vegetation

Historical records indicate that the vegetation of Padre Island at the time of Spanish explorations (circa 1520) was quite different than it is today. According to interviews and publications (after 1850), a vast, low, wind-swept Virginia live oak motte existed along the northern back-island section of the park. The motte adjacent to Bird Island Basin is believed to be a remnant of this back-island forest. Scattered patches of these oaks remain in the park today. There are indications that the disappearance of this forest resulted from changes to the islands topography brought about by man's activities.

The majority of vegetation in the park has been altered by various historic land-use practices, primarily the grazing of domestic livestock prior to the park's enactment. Consequently, since 1968 -- when all the cattle were removed from the island -- the park's vegetation communities have changed dramatically in species composition, and relative abundance (Drawe 1993). To date, the park's fire management strategies have been mainly those of active suppression. This has greatly altered the structure and composition of vegetation communities.

Oil and gas exploration, production, and transportation predate the establishment of Padre Island National Seashore. Some localized loss of vegetative cover is associated with oil and gas development. Restoration of areas impacted by oil and gas operations development has been quite successful in mitigating the initial removal of vegetative cover.

Natural succession has mitigated many of the impacts to native plant communities that resulted from historical use of Padre Island National Seashore. At present, plant communities within the park are recovering from historical uses and progressing towards climax vegetation types. Oil spills affecting the park could result in irreversible impacts to these recovering wetland and tidal plant communities.

Park visitor use, facilities development., and maintenance activities continue to have localized impacts upon upland and wetland vegetation.

2.2.2 Animals

The fauna of Padre Island are affected by numerous internal and external anthropogenic influences. Inventories of the distribution of mammal, reptile, amphibian, and insect populations remain unachieved -- without adequate inventories the affects of human-caused influences on these populations cannot determined. Bird species utilizing the park are continually monitored to assess the condition of the population and appropriate management action is taken to protect them.

The primary threats to the park's animal species that have been identified include:

- Changing land use patterns on adjoining lands surrounding the park have caused habitat fragmentation, with unassessed effects on the viability of landscape-wide populations of park fauna.

- Habitat degradation caused by continued oil and gas development, visitor use, facilities development, and park maintenance activities.

- Inundation of the park's shoreline by oil/hazardous material spills from transport operations along the Laguna Madre and the Gulf of Mexico.

- Habitat destruction caused by vehicular use on the park's sensitive wind tidal flats.

- Fishery declines associated with the proliferation of brown-tide within the Laguna Madre.

- Vegetative succession occurring on the park's spoil islands resulting in habitat loss for some species of nesting colonial waterbirds. Predators gaining access to some spoil islands have impacted nesting colonies.

- Fragmentation in the forests of the U.S.A. and Canada coupled with a loss of habitat in tropical wintering areas are negatively impacting populations of neotropical migratory birds.

2.2.3 Water Resources

The condition and threats to the quality and integrity of the water resources are related to visitor use, internal oil and gas development, dredging activities, transportation of oil/hazardous materials within the Gulf of Mexico and the Laguna Madre, and external land management practices.

Dredging activities are periodically conducted in or adjacent to park waters. The Gulf Intracoastal Waterway and Mansfield Channel are dredged every 1-3 years to maintain navigable depths. Oil and gas companies dredge channels to access their operations in the Laguna Madre and sometimes dredge within the Laguna Madre and Gulf of Mexico to lay production pipelines. The material removed during dredging activities ("spoil") is placed on spoil islands, upland sites, and in the water. The water quality and flow regime of the Laguna Madre are affected by dredging and spoil disposal operations.

Over 24,000 oil tankers regularly travel within the Gulf of Mexico, in close proximity to Padre Island National Seashore. In addition, on the Laguna Madre's western boundary, hundreds of barges carrying petroleum products and hazardous materials travel the Gulf Intracoastal Waterway (GIWW) between Corpus Christi and Brownsville, Texas. Approximately 70 miles of the ICW is adjacent to the park's western shoreline. These barges which carry petroleum and hazardous materials regularly enter these waters and instances of collisions, resulting in spilled fuel, have been documented. In the past Padre Island National Seashore has experienced oil spill events which have inundated areas along both the Gulf of Mexico and the Laguna Madre shoreline.

Due to the shallow nature of the groundwater at PAIS, the potential for impacts to wetland communities and ephemeral ponds from hydrocarbon and heavy metal contamination of the aquifer is considerable. The freshwater and ephemeral ponds in the park are utilized as a primary source of drinking water for the many species of wildlife inhabiting the park.

Mineral exploration on Padre Island began in 1951, prior to the park's enactment, and oil/gas operations have been generally continuous since that time. As of January 1994, there were seven active and 44 abandoned oil/gas operations. Oil/natural gas exploration and production pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in or near the park. In particular, the park is concerned with the long-term cumulative impacts on the groundwater of PAIS. These impacts have resulted from hydrocarbon spills, improper disposal of drilling muds and sump discharges.

In 1993, two production sites at PAIS, one abandoned and another in operation, were identified as having hydrocarbon contamination of both soil and groundwater in the area.

Forty-four abandoned oil/gas sites in the park have not been delineated nor characterized for hydrocarbon or heavy metal contamination.

2.2.4 Air Resources

Due to the lack of baseline data on the air quality of Padre Island it is not feasible to assess the condition of this resource category. Air quality and visibility in the region are threatened by increases in the number and extent of petrochemical industries and related increases of emissions in the Houston and Corpus Christi areas.

2.2.5 Geologic Resources

Due to the dynamic nature of a barrier island -- erosion of the shoreline, accretion of sand from active dune fields -- natural phenomena (e.g., hurricanes) will continue to play the primary role in the ever changing geology and morphology of the national seashore.

2.2.6 Aesthetic Resources

External and internal threats exist for the aesthetic resources of Padre Island. External development of condominiums, hotels, and resort communities will eventually be visible along the park's western boundary. The short-term affects of oil and gas development on the aesthetic resources of the park are mitigated to the extent possible; however, oil/gas exploration will continue to impact on the aesthetic resources by increasing ambient noise levels (e.g., use of heavy equipment, and compressor operation) and augmenting traffic (heavy equipment) along the beach. (impacting on the amount of beach.

2.3 Overview of Natural Resource Management Program and Needs

The nature and magnitude of natural resource problems at Padre Island National Seashore reflect:

- The park's geographic and administrative setting
- Development in the surrounding community
- Oil and gas development within the park
- Threats from external sources
- Historic land use patterns
- Marine Pollution in the Gulf of Mexico

The management programs that follow in this Plan are directed toward protecting and restoring "natural" conditions to the maximum extent possible and toward documenting and mitigating impacts caused by external sources. Recommended actions are designed to minimize management, visitor, and external impacts to the resource while providing

for a reasonable level of public and research use. Management strategies in this Plan emphasize the use of ecological processes to accomplish management objectives. Manipulation may be used under certain conditions to alleviate adverse anthropogenic trends.

In most cases, management will not proceed to take an action unless sound, defensible data is available. Inevitably actions will sometimes be taken if there are information gaps, but every effort w ill be made to monitor and evaluate the effects of the actions.

Management actions, including future requests for funds will be based on an integration of cultural and natural resource protection needs. In general, work will be framed around the following strategic resource priorities:

I. Minimize loss of information/resources

1. Inventory and monitor natural resources
    A. Sensitive species
    B. Ecosystem trends and processes
    C. Landscape, populations, and communities
2. Inventory and monitor cultural resources
    A. Sites
    B. Historic Buildings
    C. Collections
3. Manage database information and integrate into decision making
    A. Spatial Data
    B. Maintain Quality Assurance and Quality Control for all acquired data
    C. Abide by servicewide metadata standards
4. Restore fire dependent ecosystems
5. Maintain region-wide database on marine debris

II. Legal requirements

1. NEPA
2. Endangered Species Act
3. Clean Water Act
4. NPS Oil and Gas regulations (36 CFR 9b)
5. Hazardous Material Laws
6. Oil Pollution Act
7. Executive Order 10988 - Floodplain Protection
8. Executive Order 10990 - Wetlands Protection
9. Executive Order 11644 & 11989 - Use of Off-Road Vehicles on Public Lands
10. NHPA/ARPA

III. Mitigate management and visitor caused impacts

1. Eliminate vehicle impacts to tidal flat communities.
2. Prevent and suppress wildfires
3. Restore abandoned oil and gas sites
4. Prevent poaching
5. Control non-native plants
6. Maintain trails and campsites
7. Remove trespass livestock
8. Prevent visitor use of primary dunes

IV. Mitigate External Caused Impacts

1. Monitor and work in partnership with other federal and state agencies to decrease the amount of marine pollution in the Gulf of Mexico.
2. Monitor and respond to state, regional, and global land management agencies.

The current natural resource program has 8.7 FTE, with 4.0 permanent staff and 4.7 seasonal/temporary employees. The staff includes 2.0 FTE for the marine debris project, .5 FTE for information management, and 1.0 FTE for oil and gas program management. Much of the park's resource management activities are dependent on soft monies, but which are expected to decline significantly after FY 95. Despite these increases, there are many needs that currently remain unfilled, more specifically:

1. Need for 1.0 FTE for program management/information management (GIS Operations).

2. Need for .5 FTE for a research ornithologist.

3. Need for ONPS base increase to fund acquire baseline inventory information.

3.0 CULTURAL RESOURCE MANAGEMENT PROGRAM

3.1 Cultural Resources Overview

While the prehistory of central Texas is one of long occupation by native American peoples and is fairly well understood, the culture history of the south Texas archeological region is considered to be largely conjectural. Even the definition of cultural regions is polemical (Hester 1980).

It is known that two cultural groups, the Coahuiltecans (present primarily on the mainland), and the Karankawa, were inhabiting the Coastal Bend region during the primary contact phase with Europeans (A.D. 1500 - 1600) . Newcomb (1961 :39) stresses the material poverty of the former, who depended for subsistence on the bow-and-arrow, perishable fishnets, temporary sapling huts and baskets. Following initial European contact, Indian populations were severely depleted by diseases.

It will be a formidable task to separate Karankawan and Coahuiltecan remains on the island as their material culture, subsistence, etc., were essentially the same. As an aid to any such attempt we have extracted data from pertinent ethnological material on the historic Indians of the Texas coast.

For purposes of temporal and spatial comparison, data on coastal bands from Galveston Bay to the mouth of the Rio Grande recorded by Europeans from 1528 to the third quarter of the 19th century are presented. The first European record of the Karankawa, who ranged from the west side of Galveston Bay along the coast to Corpus Christi Bay, including the offshore islands, was made by Cabeza de Vaca in 1536 (Bandelier 1922). This and later European accounts identified at least five Karankawan bands: the Capoques and Hans on the north; the Kohanis around the mouth of the Colorado; the Karankawa proper-Karenkake, Clamcoets, Carancaguacas--on Matagorda Bay and Matagorda Island, the Kopanos along Copano Bay and on St. Joseph Island (Newcomb 1961: 59-60).

The aborigines south of Corpus Christi Bay are poorly documented, although they were probably Coahuiltecan. The Coahuiltecan band, Orejon, lived to the west of Corpus Christi Bay; the Malaquite occupied the coast from Corpus Christi Bay to Baffin Bay; and a related group, the Borrado, ranged from there to the Rio Grande (Newcomb 1961).

The period is sometimes placed in the bracket of prehistoric sequences, although some historical documents are available for this incipient era of Spanish exploration. Two such historical events include 1) Alonso Alvarez de Pineda as the first European to explore and map the Texas coast in 1519, although he may not have set foot on Padre Island itself (Sheire 1971: 15,16) and, 2) the loss of three Spanish plate fleet ships carrying

bullion near the island in 1554 on their trip from Vera Cruz to Havana. The three vessels wrecked off Padre Island during a storm and, although 300 people survived the wreck, all but two died trying to get back to Mexico (Casterieda 1936: 145). It appears that no Europeans visited Padre Island for the next 131 years.

In the mid 1680's world politics exerted some influence Padre Island. Following the Frenchman La Salle's discovery of the mouth of the Mississippi River, he convinced the King of France to establish a fort on the Texas coast. La Salle himself carried this act out in 1865, establishing Fort Louis on Lavaca Bay. Because of the threat of French expansion into the northeast portion of their territory, Spanish units were sent north to patrol the coastline. These expeditions included three by sea in 1686, 1687 and 1688 without finding the French fort. In 1686, 1687 and 1689, as well, Spanish land expeditions (entradas), were carried out, the final one locating the fort which had been abandoned by that time. All of these expeditions undoubtedly saw, or perhaps touched on, Padre Island but the consensus was the island was not habitable and was of very little use.

For 57 years, the Spanish avoided the region of Padre Island. Then, in 1746, Jose de Escandon was granted the opportunity to settle the area at the mouth of the Rio Grande. Padre Island itself was used for cattle grazing, but was not settled. In 1766, Diego Ortiz Parrilla sent a group of soldiers and Indians, who forded Laguna Madre to Padre Island, to reconnaissance the island. Parrilla described the island as unsuited for military installations because of a lack of building material and unsuited for cattle raising because of insufficient grass and lack of adequate freshwater. He also reported flotsam cast upon the beach.

The first recorded permanent habitation of Padre Island by Europeans did not occur until 1821, 16 years after Padre Nicolas Balli (for whom the island was named) received a land grant for the island. At this time, Balli established a ranch and moved to the island, but died several years later. Cattle ranching, by one owner or another, continued as the primary use of the island from that time until the 1970's, after the park was established.

The Mexican-American War was the next major event to touch Padre Island. In February 1846, General Zachery Taylor sent two scouting parties out to locate the best route to Matamoras; one down the mainland coast and the other down Padre Island. The island troops were commanded by Captain William Hardee whose report convinced Taylor to take the inland route (Sheire 1971:33). Later, in May, on their way to the initial battle of the Mexican-American War north of Matamoros, a volunteer contingent known as McCullough's Texas Rangers left Corpus Christi for Zachery Taylor's camp at Port Isabel, marching the length of Padre Island (Reid 1970:39). Even later another group of Taylor's volunteers were shipwrecked on the southern end of the island on their way to war (Smith 1857: 15).

The Civil War had little impact on Padre Island with only one skirmish known to have occurred on its northern end (Sheire 1971:37-38). This episode was followed through the next 30 years by nascent attempts at cattle ranching, until the arrival of Patrick Dunn in 1879.

The entire island came under the control of cattle rancher Patrick Dunn in 1879 (Sheire 1971 :43-53). Cowboy camps were created in the ensuing years, being phased out for the most part by World War II when the area was used as a bombing range for military training. Recreational as well as oil and gas related economic development has continued from the 1950's to the present.

3.2 Cultural Resources Baseline Information

3.2.1 Planning Documents

Since its inclusion into the National Park Service, Padre Island National Seashore has developed a number of plans to assist park staff in the management of the park and associated resources.

The park's Master Plan was completed in March 1973.

A General Management Plan (GMP) was completed in April 1983.

A Development Concept Plan (DCP) to investigate options for park development is near completion by the Office of Planning, Southwest Regional Office and should be completed by early 1995.

The Statement for Management was approved in May 1976 and should be revisited in the near future to address environmental changes that have occurred within the past 18 years.

The Resources Management Plan is currently in draft form and should be approved by early 1995.

The Interpretive Perspectus is current and approved in 1989.

3.2.2 Servicewide Inventories, Lists, Catalogs, and Registers

The National Register of Historic Places includes all National Park System properties. The National Register was created in 1966 as part of the National Historic Preservation Act. This Act, as well as Executive Order 11953, dictates the evaluation and documentation of all sites on federal land which may qualify for inclusion to the National Register. The park only has one structure (Dunn Ranch - Novillo Line Camp) listed in

this Register.

A Cultural Resources Bibliography (CRBIB) is currently incomplete and needs revision.

The National Catalog of Museum Objects is located in the National Catalog Records Center maintained by the National Park Service in Harper's Ferry, West Virginia.

3.2.3 Basic Cultural Resource Documents

An Archeological Overview and Assessment and Historic Base map was completed in 1974. However, Archeological Identification and Evaluation Studies are either incomplete or needed.

An Ethnographic Resources Assessment may be needed, but should be first assessed by the Regional Division of Anthropology as to its pertinence to the park. However, a comprehensive study of oral histories is needed.

A Historic Resources Study was completed in 1971.

The Scope of Collections was first written in 1985 and was rewritten in 1992. This document will be submitted to the Regional Office for review and expected to be approval in March, 1995.

The Departmental Checklist for Preservation, Protection, and Documentation of museum Property (formerly Special Directive 80-1) was updated in 1993.

A Conservation Needs Assessment Survey was conducted in 1992. Additional survey and assessment work is needed.

A Park Administrative History is completed in draft form. This document is expected to be approved by early 1995.

3.2.4 Special Resource Studies and Plans

Only five archeological surveys have been initiated in the park (Campbell, 1964; Story, 1967; Scurlock, 1974; Ice, Bradford, Anderson, 1981; New World Research, 1984). These surveys represent approximately 10 percent of the park. Due to the fact that past degradation of the island's vegetation resulted in the sand dunes moving and, subsequently, covered all known and unknown archeological sites, additional archeological surveys would be extremely difficult to initiate.

The Historic Structures Report is current and approved in 1979. A Historic Structure

Preservation Guide needs to be initiated.

The Collections Management Plan, Collection Storage Plan, and Condition Survey is in draft form, with expected completion in 1995.

The Exhibit Plan was completed and approved in June 1994.

An Historic Landscape Study is technically required (NPS-28) to establish the appropriate landscape maintenance strategies for the Novillo Line Camp. However, this study would be difficult to initiate since all historic structures (excluding the Novillo Line Camp) have been destroyed by hurricanes and dunal movement.

An Ethnohistory was completed in 1974. However, a Traditional Use Study may be needed, but should be assessed by the regional Division of Anthropology as to its pertinence to the park.

3.3 Cultural Resources

3.3.1 Archeology

The earliest archeological studies of Padre Island was the work of Campbell (1964) who located 15 sites on Padre Island and Scurlock (1974) who recorded an additional 13 archeological sites on the island. In addition, an elaborate east/west random transect survey of all physiographic zones was mounted in the mid-1980's (New World Research 1984). These sectors of Padre Island were intensely scrutinized, resulting in the location of seven low density, minimal use areas. With the possible exception of one Angostura-like projectile point (Campbell 1964), Padre Island has yet to reveal any indications of Paleoindian or Early Archaic habitation (New World Research 1984).

In April 1554, three Spanish ships wrecked on Padre Island. An underwater archeological salvage project was initiated in 1976 to excavate artifacts from the remains of these ships (Arnold 1976; Arnold and Weddle 1978).

Despite the problems in locating and retaining terrestrial site information, comprehensive information as to maritime cultural resources was obtained. Ship registries were investigated in some detail, demonstrating not only the number of wrecks, but, where possible, annotated descriptions (Bradford, 1981).

3.3.2 Historic Structures

Scurlock (1974) recorded four historic sites in the park. Three of the latter sites are line camps built to accommodate cattle operations of the Dunn Ranch, while one is

interpreted as a campsite for the Mexican-American War troops. Of these four historic sites, only one (Novillo Line Camp) has survived recent hurricanes and dunal movement.

3.3.3 Ethnology

An Indian Ethnohistory was written as part of the Archeological Assessment (Scurlock, 1974). The relationship of archeological materials and sites to specific historic Indian groups of the Texas coast is not well understood at this time. Artifactual evidence that the Rockport focus, in part, is attributable to the late prehistoric and historic Karankawan groups has been recovered, however. Rockport focus sites have been found south of Corpus Christi Bay which is within the range of the Orejon and Borrado bands of the Coahuiltecans, although the Karankawa were reported living within the area at Rancho Santa Petronilla south of Corpus Christi in 1824.

Considering this and reports that bands from both cultural groups probably frequented Padre Island and the adjacent mainland, archeologists will find not only island and adjacent mainland sites attributable to either Karankawan or Coahuiltecan occupation, but perhaps sites manifesting artifacts and features of subsequent or contemporaneous occupations by each cultural group (Campbell 1958:150 and 1964:10).

Other than periodic Spanish explorations in the 16th-18th centuries, the first permanent habitation, of European affiliation with Padre Island, was that of Padre Nicolas Balli and his nephew Juan Jose Balli who, in 1805, established Rancho Santa Cruz de Buena Vista on the southern end of the island. The exact location of this ranch has never been verified, but is known to be located approximately 60 miles south of the park. (Stambaugh 1954:43).

Padre Balli died in 1828. By May 1846, McCulloch's Texas Ranger detachment traveled from Corpus Christi to Point Isabel (down the length of Padre Island). The only person that was encountered during their trip was a man who was salvaging debris cast upon the shore (Reid 1935:39).

In 1878, the island was purchased by Patrick Dunn for the purpose of cattle ranching. Dunn lived on the island, but had both of the his houses destroyed by hurricanes. By 1926, Patrick Dunn sold the surface rights to Padre Island and, subsequently, the hostile climatic conditions thwarted all additional attempts at habitating the area of Padre Island that is now the National Seashore.

3.3.4 Museum Collections

The park's collections contain 6765 museum catalog records, totaling more than 29,300 objects. Approximately 80% of these museum objects represent archival documentation.

The remainder of the collection contains: archeological artifacts; Spanish and Anglo objects; and natural history objects including a herbarium, reptile collection, shell collection, insect collection, and rodent/bird specimens.

3.3.5 Cultural Landscapes

Because PAIS is a barrier island, it is a highly dynamic system and constantly in a state of movement. That is, both sides of the island are in a natural state of egress (700' at Bird Island Basin since 1945) and ingress due to wind deflation, wave action and precipitation; the park has numerous active dune fields that are constantly shifting and moving (as much as 4-5'/day); the soil consists of sand and shell which is constantly moving and being redeposited across the island (some historic deposits have exceeded 30' in height); and tropical storms/hurricanes have historically destroyed sections of the park. Tropical storms/hurricanes also devastate large areas of vegetation, due to the vegetation being inundated by salt from the storms. Due to these reasons, previous cultural landscapes have been destroyed. However, historic records have indicated that the present day landscape of the park is quite similar to the historic landscape of 200-300 years ago.

3.3.6 Cultural Context/Themes

The enabling legislation did not recognize any particular cultural context. However, the cultural context for Padre Island National Seashore would relate to 400 years of sporadic human activity associated with early indian use, Spanish exploration, and near impossible attempts to settle on the island and acclimate to the harsh environmental conditions of a barrier island.

The following themes can be associated to events in Padre Island National Seashore history for which resources are available.

a. Cultural Development: Indigenous American Populations
   1) Earliest Inhabitants

b. Spanish Exploration (1519-1766)
   1) Earliest Expeditions (1519-1550)
   2) Spanish Shipwrecks (1554)
   3) Expeditions (1685-1766)

c. Early European Settlement (1821-1840)

d. Ranching (1878-1973)

e. Military Presence (1940-62)

1) Use as a bombing range

f. Business (1950's - present)
   1) oil and gas production

g. Recreation (1962 - present)
   1) Establishment of PAIS (1962)

3.4 Overview of Current Program and Needs

Other than maintaining the museum collection, the park does not have an active cultural resource management program. However, as elaborated in the following sections, the park does have several listed needs to insure compliance with applicable laws, policies, and Executive Orders.

3.4.1 Archeology

Only five archeological surveys have been initiated at the park (Campbell, 1964; Story, 1967; Scurlock, 1974; Ice, Bradford, Anderson, 1981; New World Research, 1984). These surveys resulted in locating 35 archeological sites, all apparently minimal use from transient indian groups. These sites represent approximately 10 percent of the park. Additional surveys would be extremely difficult, or futile, to initiate, due to the fact that past degradation of the island's vegetation resulted in massive sand movement and deposition across the island. The dune movement resulted in extreme deposition of sand covering all known and unknown archeological sites. In the past two decades, vegetation has again become reestablished. The combination of dunal movement and vegetation restoration has resulted in the creation of extensive wetland communities covering approximately 90% of the northern section of the park. For these reasons, it would be an almost impossible task to locate additional archeological sites.

Due to the fact that all sites have been covered by sand and are mostly located in wetland areas, the park does not experience impact problems due to "pot hunting" activities. However, the park is subject to periodic hurricanes which may result in exposing either archeological sites or artifacts. The park, in conjunction with Regional input, needs to develop a Service Strategy Plan to address new archeological discoveries resulting from future storms.

The shoreline of Padre Island is a dynamic landscape that encompasses the remains of historical shipwrecks dating as early as the 16th century. The park periodically encounters treasure hunters searching areas of the beach for historic shipwreck artifacts. It is difficult to predict if ship remains will be located, wholly or in park, in the water or

on the beach. A comprehensive survey of the seashore waters to a depth of at least 12 feet, with cooperation of the State of Texas, is recommended. There are two historical sites associated with the 1554 shipwrecks (the survivor's camp and the salvager's camp). As yet, these two sites have not been located, but, if located, may yield exceptionally useful cultural resources information. In association with this offshore work, a beach survey should also be conducted using essentially the same instrumentation and research design configured for land applications. The beach survey would assist the park in locating unknown shipwrecks and associated artifacts (that have washed onto the beach and, over time, been covered by sand) and possibly the survivor's and salvager's camps.

3.4.2 Historic Structures

Although there were several historic attempts to establish residences or resorts on Padre Island, all known structures within the park, except for the remaining structures of the Novillo Line Camp, have been destroyed by a combination of hurricanes; the extremely harsh environment of a barrier island; sand movement; and, beach combing activities. The Novillo Line Camp is approximately 50% intact and is managed by benign neglect. A Structures Preservation Program needs to be developed and implemented.

3.4.3 Ethnology

The park has never systematically assessed its ethnographic resources. However, due to the sporadic, and extremely minimal, utilization and habitation of Padre Island, and the fact that all protohistory indian tribes are now extinct, a Cultural Affiliation Study and Traditional Use Study have not been initiated. With the assistance of regional cultural resources staff, these two studies need to be assessed as to their applicability to the park.

3.4.4 Museum Collections

Padre Island National Seashore only has one Interpretive Specialist working with the Museum Collections. Due to a host of other duties, this individual spends less that .1 FTE to accession, catalog and inventory the collection. The parks needs a minimum of an additional .5 FTE of museum specialist/curator assistance.

Currently, the museum collection is housed at the Headquarters building, located on the mainland. The building is solidly built, but is designed as an office facility, not a collections storage facility. This building has an small area that is utilized for the storage of the collection, but there is no work space or research area available.

The collections storage room is poorly sealed against entry of water and pests; the roof has had recurring leakage around the skylights; and the two exterior breaks in the walls may allow pest entry. For the air circulation system to function. interior doors cannot be

sealed to prohibit pests infestation.

The Dunn wagon is presently being stored in the garage. The garage only provides shelter from wind and rain for the objects stored inside, but is not sealed or climate controlled. Deterioration of the stored objects is inevitable unless a storage facility is purchased for the museum collection.

The museum collection is incomplete in several categories. To complete these categories, a larger storage facility and additional storage cabinets are needed. In its present condition, many of the museum objects are crowded into cabinets or stored in cabinets not designed for their weight. Several cabinets are old and need to be replaced.

There are approximately 10,000 prints and negatives which need to be accessioned and cataloged. These items are presently stored in a fire proof cabinet, in acid free folders and mylar sleeves, but are in a disorganized state. These items need to be separated in order to match the prints with the negatives. It would be preferable that each print and corresponding negative, or set of negatives, be stored in separate sleeves.

A new storage building will allow for climate and pest control. New storage cabinets would alleviate overcrowding among existing cabinets and allow for collections expansion. Casters and dust covers are needed to correct existing deficiencies. An additional .5 FTE will be needed to accession and catalog the negatives and prints.

3.4.5 Cultural Landscapes

The area surrounding the Novillo Line Camp have been managed by benign neglect. A Landscape Maintenance Program needs to be assessed as to its applicability for the site and a Level 2 Cultural Landscape Inventory may need to be initiated.

3.4.6 Cultural Context/Themes

There is no affiliation between historic indian tribes to present day tribes. For this reason, the American Indian Religious Freedom Act is not applicable to PAIS. The park's Interpretive Division has an active program of using the various themes to develop interpretive programs. The park has interviewed several persons who experienced early development of the park, but needs to find and interview additional persons for interviews.

RESOURCES MANAGEMENT

PROJECT STATEMENTS

Active Filter: (No filter)

Output Selections:
Sorted by: Priority
Years: All years
No subtotals

03/06/97
13:23:57

PROJECT LIST

PRIORITY	PROJECT NUMBER	PROJECT TITLE	SUB-TITLE	FUNDED	UNFUNDED	PROP YEAR	LAST UPDATE
1	PAIS-C-001.000	MAINTENANCE OF NOVILLO LINE CAMP		0.00	20.00	1993	02/26/97
1	PAIS-N-002.000	DEVELOP A MINERALS MANAGEMENT PLAN FOR PADRE IS		138.00	90.00	1994	04/12/96
2	PAIS-C-003.000	MANAGEMENT OF COLLECTIONS		11.60	55.40	1994	02/26/97
2	PAIS-N-036.000	IDENTIFY AFFECTS OF IMPACTS TO WIND TIDAL FLATS		0.00	80.00	1995	04/12/96
3	PAIS-C-002.000	SURVEY OF HISTORIC SITES AND ARTIFACTS		0.00	195.00	1994	04/12/96
3	PAIS-N-022.000	MONITORING MARINE DEBRIS AND POINT SOURCE POLLU		279.60	0.00	1992	02/26/97
4	PAIS-C-004.000	DEVELOP STRATEGY PLAN FOR HISTORICAL ARTIFACTS		0.00	5.00	1994	02/26/97
4	PAIS-N-024.000	INVENTORY AND MONITORING WETLAND COMMUNITIES		19.00	57.00	1994	02/26/97
5	PAIS-C-005.000	SURVEY OF CULTURAL LANDSCAPES		0.00	5.00	1994	03/26/95
5	PAIS-N-003.000	PATROLS FOR NESTING SEA TURTLES		73.00	30.00	1994	02/26/97
6	PAIS-N-021.000	SURVEY NEOTROPICAL MIGRATORY BIRDS		24.70	18.00	1993	02/26/97
6	PAIS-N-035.000	CONDUCT AN ANALYSIS OF WETLANDS RECOVERY		0.00	22.50	1994	05/08/96
7	PAIS-N-026.000	SURVEY OF SEA TURTLE MOVEMENTS IN PARK WATERS		16.00	30.00	1993	02/26/97
9	PAIS-N-019.000	SURVEY HERPETOLOGICAL COMMUNITIES		0.00	24.00	1994	02/26/97
10	PAIS-N-020.000	SURVEY MAMMALIAN COMMUNITIES		0.00	24.00	1994	02/26/97
11	PAIS-N-034.000	SURVEY FOR CONTAMINANTS IN BIORECEPTORS		0.00	15.00	1994	02/26/97
12	PAIS-N-001.000	WILDLAND/PRESCRIBED FIRE MANAGEMENT		4.70	60.00	1994	02/26/97
13	PAIS-N-004.000	INSHORE SEA TURTLE STUDY		32.00	19.00	1994	04/11/96
14	PAIS-N-013.000	SURVEY BENTHIC INVERTEBRATES (MUD/ALGAE FLATS)		16.20	15.00	1992	04/12/96
15	PAIS-N-030.000	GIS DATA ACQUISITION AND ANALYSIS		65.25	60.80	1994	02/26/97
16	PAIS-N-015.000	SURVEY OF GROUNDWATER RESOURCES AT PAIS		49.00	25.00	1993	02/26/97
17	PAIS-N-025.000	SURVEY OF GROUNDWATER FOR CONTAMINANTS		14.30	107.00	1994	02/26/97
18	PAIS-N-027.000	SEA TURTLE MARINE DEBRIS INGESTION AND FOOD HAB		21.00	5.00	1993	02/26/97
19	PAIS-N-028.000	ACQUISITION OF GEOGRAPHIC DATA FOR GAP ANALYSIS		49.00	10.00	1994	02/26/97
20	PAIS-N-023.000	WATER QUALITY MONITORING		10.00	75.00	1994	02/26/97
21	PAIS-N-005.000	SEA TURTLE REHABILITATION		26.00	8.00	1994	02/26/97
22	PAIS-N-006.000	NATIVE PLANT RESTORATION		25.00	16.00	1994	04/11/96
23	PAIS-N-032.000	ACQUIRE PERMANENT RESOURCE MANAGEMENT SPECIALIS		0.00	180.00	1994	02/26/97
24	PAIS-N-033.000	ACQUIRE ADDITIONAL PERMANENT RESOURCE MGMT. STA		0.00	164.00	1994	02/26/97
25	PAIS-N-010.000	MANAGEMENT OF DIGITAL DATA AND HARDWARE REQUIRE		81.70	20.00	1994	02/26/97
26	PAIS-N-017.000	BASELINE INVENTORY OF VEGETATION		13.10	6.50	1994	02/26/97
27	PAIS-N-007.000	COLONIAL WATERBIRD SURVEY/MANAGEMENT		35.00	8.00	1994	02/26/97
28	PAIS-N-009.000	DREDGE/SPOIL MANAGEMENT AND MONITORING		15.00	8.00	1994	02/26/97
29	PAIS-N-012.000	SURVEY BENTHIC INVERTEBRATES (GULF BEACH)		26.00	19.00	1992	02/26/97
30	PAIS-N-011.000	HYDROCARBON AND CONTAMINANTS BASELINE SOIL ANAL		33.00	7.50	1993	02/26/97
31	PAIS-N-018.000	SURVEY OF T&E AVIFAUNA (LAGUNA MADRE SHORELINE)		10.50	10.00	1994	02/26/97
32	PAIS-N-031.000	MANAGEMENT OF MULTIMEDIA LIBRARY		20.40	9.00	1994	02/26/97
99	PAIS-N-008.000	INTEGRATED PEST MANAGEMENT		9.00	0.00	1992	02/26/97
99	PAIS-N-014.000	SURVEY AVIFAUNA (GULF BEACH)		9.50	12.00	1992	04/10/96
99	PAIS-N-016.000	SURVEY OF MARINE FLORA AT THE MANSFIELD CHANNEL		7.00	5.00	1993	02/26/97
99	PAIS-N-029.000	ACQUIRING CLIMATOLOGICAL DATA		2.60	0.00	1994	02/26/97

41 projects printed

Active Filter: (No filter)

Output Selections:
Resource types included: CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
Initial fiscal year: 1996
Include projects even if no funding data entered

03/06/97
13:25:42

PROGRAMMING SHEET 1
CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
FUNDED ACTIVITIES
($ in thousands)

FY: 1996
Park: PAIS
Cluster: SWSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM-WIDE ISSUE	FUNDING SOURCE	ACT TYP	T Y P	CURRENT YEAR 1996 $$	CURRENT YEAR 1996 FTE	OUTYEAR 1 1997 $$	OUTYEAR 1 1997 FTE	OUTYEAR 2 1998 $$	OUTYEAR 2 1998 FTE	OUTYEAR 3 1999 $$	OUTYEAR 3 1999 FTE	TOTAL $$	TOTAL FTE
001.000 C	MAINTENANCE OF NOVILLO LINE CAMP		STRC	C13	No funded data												
002.000 C	SURVEY OF HISTORIC SITES AND ARTIFACTS		SITE	C02 C04	No funded data												
003.000 C	MANAGEMENT OF COLLECTIONS		OBJC	C46 C47	PKBASE-CR	ADM	R	3.20	0.10	3.20	0.10	.00	.00	.00	.00	6.40	0.20
004.000 C	DEVELOP STRATEGY PLAN FOR HISTORICAL ARTIFACTS		SITE	C02 C01	No funded data												
005.000 C	SURVEY OF CULTURAL LANDSCAPES		CULL	C10 C11	No funded data												
001.000 N	WILDLAND/PRESCRIBED FIRE MANAGEMENT			N07	No funded data												
002.000 N	DEVELOP A MINERALS MANAGEMENT PLAN FOR PADRE ISLAND			N10	PKBASE-OT	MON	R	14.00	0.40	.00	.00	.00	.00	.00	.00	14.00	0.40
					PKBASE-OT	ADM	R	22.00	0.60	.00	.00	.00	.00	.00	.00	22.00	0.60
					PKBASE-NR	MON	R	.00	.00	7.00	0.20	.00	.00	.00	.00	7.00	0.20
					PKBASE-NR	ADM	R	.00	.00	29.00	0.80	.00	.00	.00	.00	29.00	0.80
					Subtotal			36.00	1.00	36.00	1.00	.00	.00	.00	.00	72.00	2.00
003.000 N	PATROLS FOR NESTING SEA TURTLES			N02 N17	FED-OTHER	MON	O	22.50	0.80	.00	.00	.00	.00	.00	.00	22.50	0.80
					VOL-IN-PK	MON	R	2.00	0.10	2.00	0.10	.00	.00	.00	.00	4.00	0.20
					PKBASE-NR	MON	R	4.00	0.20	4.00	0.20	.00	.00	.00	.00	8.00	0.40
					Subtotal			28.50	1.10	6.00	0.30	.00	.00	.00	.00	34.50	1.40
004.000 N	INSHORE SEA TURTLE STUDY			N02 N20	FED-OTHER	RES	R	4.00	0.20	.00	.00	.00	.00	.00	.00	4.00	0.20
					PKBASE-NR	ADM	R	2.00	0.10	2.00	0.10	.00	.00	.00	.00	4.00	0.20
					FED-OTHER	ADM	R	2.00	0.10	2.00	0.10	.00	.00	.00	.00	4.00	0.20
					PKBASE-NR	RES	R	.00	.00	4.00	0.20	.00	.00	.00	.00	4.00	0.20
					Subtotal			8.00	0.40	8.00	0.40	.00	.00	.00	.00	16.00	0.80
005.000 N	SEA TURTLE REHABILITATION			N02 N17	PKBASE-NR	PRO	R	4.00	0.20	4.00	0.20	.00	.00	.00	.00	8.00	0.40
					VOL-IN-PK	PRO	R	0.50	0.10	0.50	0.10	.00	.00	.00	.00	1.00	0.20
					PKBASE-NR	ADM	R	2.00	.00	2.00	.00	.00	.00	.00	.00	4.00	0.00
					Subtotal			6.50	0.30	6.50	0.30	.00	.00	.00	.00	13.00	0.60
006.000 N	NATIVE PLANT RESTORATION			N17 N06	PKBASE-NR	RES	R	5.00	0.20	5.00	0.20	5.00	0.20	.00	.00	15.00	0.60
007.000 N	COLONIAL WATERBIRD SURVEY/MANAGEMENT			N20 N17	PKBASE-NR	MON	R	3.00	0.10	3.00	0.10	3.00	0.10	.00	.00	9.00	0.30
					PKBASE-NR	MIT	R	4.00	0.20	4.00	0.20	4.00	0.20	.00	.00	12.00	0.60
					Subtotal			7.00	0.30	7.00	0.30	7.00	0.30	.00	.00	21.00	0.90

008.000 N	INTEGRATED PEST MANAGEMENT	N01 N04	PKBASE-NR MON	R	0.50	0.02	0.50	0.02	0.50	0.02	0.50	0.10	2.00	0.16
			PKBASE-NR MIT	R	0.50	0.02	0.50	0.02	0.50	0.02	0.50	.00	2.00	0.06
			Subtotal		1.00	0.04	1.00	0.04	1.00	0.04	1.00	0.10	4.00	0.22
009.000 N	DREDGE/SPOIL MANAGEMENT AND MONITORING	N09 N10	PKBASE-NR ADM	R	3.00	0.10	3.00	0.10	3.00	0.10	.00	.00	9.00	0.30
010.000 N	MANAGEMENT OF DIGITAL DATA AND HARDWARE REQUIREMENT	N17 N20	PKBASE-NR ADM	R	9.00	0.30	9.00	0.30	9.00	0.30	.00	.00	27.00	0.90
			PKBASE-NR RES	R	6.50	0.20	6.50	0.20	6.50	0.20	.00	.00	19.50	0.60
			Subtotal		15.50	0.50	15.50	0.50	15.50	0.50	.00	.00	46.50	1.50
011.000 N	HYDROCARBON AND CONTAMINANTS BASELINE SOIL ANALYSIS	N10 N20	No funded data											
012.000 N	SURVEY BENTHIC INVERTEBRATES (GULF BEACH)	N10 N20	No funded data											
013.000 N	SURVEY BENTHIC INVERTEBRATES (MUD/ALGAE FLATS)	N10 N20	No funded data											
014.000 N	SURVEY AVIFAUNA (GULF BEACH)	N10 N20	No funded data											
015.000 N	SURVEY OF GROUNDWATER RESOURCES AT PAIS	N10 N20	PKBASE-NR MON	R	4.00	0.20	4.00	0.20	4.00	0.20	.00	.00	12.00	0.60
016.000 N	SURVEY OF MARINE FLORA AT THE MANSFIELD CHANNEL	N20 N17	No funded data											
017.000 N	BASELINE INVENTORY OF VEGETATION	N17 N20	PKBASE-NR ADM	O	3.30	0.10	.00	.00	.00	.00	.00	.00	3.30	0.10
018.000 N	SURVEY OF T&E AVIFAUNA (LAGUNA MADRE SHORELINE)	N02 N20	No funded data											
019.000 N	SURVEY HERPETOLOGICAL COMMUNITIES	N10 N20	No funded data											
020.000 N	SURVEY MAMMALIAN COMMUNITIES	N10 N20	No funded data											
021.000 N	SURVEY NEOTROPICAL MIGRATORY BIRDS	N17 N20	No funded data											
022.000 N	MONITORING MARINE DEBRIS AND POINT SOURCE POLLUTERS	N09 N20	No funded data											

023.000 WATER QUALITY MONITORING	N11 N20	No funded data													
N															
024.000 INVENTORY AND MONITORING WETLAND COMMUNITIES	C02 N12	PKBASE-NR MON R	7.00	0.20	7.00	0.30	.00	.00	.00	.00	14.00	0.50
N															
025.000 SURVEY OF GROUNDWATER FOR CONTAMINANTS	N11 N10	PKBASE-NR ADM R	3.00	0.10	3.00	0.10	.00	.00	.00	.00	6.00	0.20
N															
026.000 SURVEY OF SEA TURTLE MOVEMENTS IN PARK WATERS	N02 N17	FED-OTHER RES O	12.00	.00	.00	.00	.00	.00	.00	.00	12.00	0.00
N		FED-OTHER ADM O	4.00	0.20	.00	.00	.00	.00	.00	.00	4.00	0.20
		Subtotal	16.00	0.20	.00	.00	.00	.00	.00	.00	16.00	0.20
027.000 SEA TURTLE MARINE DEBRIS INGESTION AND FOOD HABITS	N02 N17	No funded data													
N															
028.000 ACQUISITION OF GEOGRAPHIC DATA FOR GAP ANALYSIS	N20 N24	PKBASE-NR ADM R	6.50	0.20	6.50	0.20	.00	.00	.00	.00	13.00	0.40
N		PKBASE-NR MON R	4.00	0.20	4.00	0.20	.00	.00	.00	.00	8.00	0.40
		Subtotal	10.50	0.40	10.50	0.40	.00	.00	.00	.00	21.00	0.80
029.000 ACQUIRING CLIMATOLOGICAL DATA	N20	PKBASE-NR ADM O	2.00	0.10	.00	.00	.00	.00	.00	.00	2.00	0.10
N															
030.000 GIS DATA ACQUISITION AND ANALYSIS	N20 N09	PKBASE-NR ADM R	16.25	0.50	16.50	0.50	.00	.00	.00	.00	32.75	1.00
N															
031.000 MANAGEMENT OF MULTIMEDIA LIBRARY	N24	No funded data													
N															
032.000 ACQUIRE PERMANENT RESOURCE MANAGEMENT SPECIALIST	N24	No funded data													
N															
033.000 ACQUIRE ADDITIONAL PERMANENT RESOURCE MGMT. STAFF	N24	No funded data													
N															
034.000 SURVEY FOR CONTAMINANTS IN BIORECEPTORS	N20 N24	No funded data													
N															
035.000 CONDUCT AN ANALYSIS OF WETLANDS RECOVERY	N09 N24	No funded data													
N															
036.000 IDENTIFY AFFECTS OF IMPACTS TO WIND TIDAL FLATS	N20 C70	No funded data													
N															
41 projects printed															
		Grand Total $$	175.75		132.20		35.50		1.00		344.45	
		Grand Total FTE	5.84		4.74		1.34		0.10		12.02	

Active Filter: (No filter)

Output Selections:
Resource types included:
CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
Initial fiscal year: 1996

03/06/97
13:27:59

FUNDED TABLE
CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
FUNDED AMOUNTS
($ in thousands - by activity type)

FY: 1996
Park: PAIS
Cluster: SWSO

FUNDING SOURCE	TOTAL	RES	MIT	MON	PRO	INT	ADM
NFED	44.50	16.00	0.00	22.50	0.00	0.00	6.00
PCR1	3.20	0.00	0.00	0.00	0.00	0.00	3.20
PNR1	89.55	11.50	4.50	22.50	4.00	0.00	47.05
POF1	36.00	0.00	0.00	14.00	0.00	0.00	22.00
RVIP	2.50	0.00	0.00	2.00	0.50	0.00	0.00
TOTAL	175.75	27.50	4.50	61.00	4.50	0.00	78.25

Active Filter: (No filter)

Output Selections:
Funded data only
Initial fiscal year: 1996
Summary Report: Funded $ by Activity & Resource Type

03/06/97 RMP Summary Report
13:30:17 Funded $ by Activity & Resource Type FY: 1996-1999
Park: PAIS
Cluster: SWSO

ACTIVITY	Cultural	Integrated	Natural	Subsistence	TOTAL
Research	0	0	54,500	0	54,500
Mitigation	0	0	14,000	0	14,000
Monitoring	0	0	100,500	0	100,500
Protection	0	0	9,000	0	9,000
Interpretation	0	0	0	0	0
Administration	6,400	0	160,050	0	166,450
-=<<TOTALS>>=-	6,400	0	338,050	0	344,450

Active Filter: (No filter)

Output Selections:
Funded data only
Initial fiscal year: 1996
Summary Report: Funded $ by Issue Codes

03/06/97
13:31:00

RMP Summary Report
Funded $ by Issue Codes

FY: 1996-1999
Park: PAIS
Cluster: SWSO

ISSUE CODES	1996	1997	1998	1999	TOTAL
C01 OVERVIEW	0	0	0	0	0
C02 ID & EVAL	7,000	7,000	0	0	14,000
C03 SITE DOC	0	0	0	0	0
C04 DATA RECOV	0	0	0	0	0
C05 TREATMENTS	0	0	0	0	0
C06 SITE MONIT	0	0	0	0	0
C07 SITE PROTCT	0	0	0	0	0
C08 SPEC STUDY	0	0	0	0	0
C10 INVENTORY	0	0	0	0	0
C11 REPORT	0	0	0	0	0
C12 ICAP	0	0	0	0	0
C13 EMERG STABL	0	0	0	0	0
C14 MAINTENANCE	0	0	0	0	0
C15 REHAB ETC.	0	0	0	0	0
C16 VEG SURVEY	0	0	0	0	0
C17 VEG MGT PLN	0	0	0	0	0
C18 IPM	0	0	0	0	0
C19 SPEC STUDY	0	0	0	0	0
C20 PRGM DEV	0	0	0	0	0
C21 OVERVIEW	0	0	0	0	0
C22 USE STUDY	0	0	0	0	0
C23 REAP	0	0	0	0	0
C24 LANDSCAPE	0	0	0	0	0
C25 CULT. AFFIL	0	0	0	0	0
C26 ETHNOHIST	0	0	0	0	0
C27 ORAL HIST	0	0	0	0	0
C28 ERI	0	0	0	0	0
C29 PRGM STRATG	0	0	0	0	0
C30 CONSULTATN	0	0	0	0	0
C31 SPEC STUDY	0	0	0	0	0
C35 HRS	0	0	0	0	0

C36 NR DOCMNT	0	0	0	0	0
C37 ADMIN HIS	0	0	0	0	0
C38 SPEC STUDY	0	0	0	0	0
C39 HERTAGE ED	0	0	0	0	0
C40 SOC STATMT	0	0	0	0	0
C41 CMP	0	0	0	0	0
C42 CSP	0	0	0	0	0
C43 CONDIT SVY	0	0	0	0	0
C44 HIS FURN	0	0	0	0	0
C45 HOUSKP PLN	0	0	0	0	0
C46 ACCOUNTBLY	3,200	3,200	0	0	6,400
C47 STORAGE	3,200	3,200	0	0	6,400
C48 TREATMENT	0	0	0	0	0
C49 ENVIRONMNT	0	0	0	0	0
C50 SECTY&FIRE	0	0	0	0	0
C51 LCS	0	0	0	0	0
C52 HSR	0	0	0	0	0
C53 ICAP	0	0	0	0	0
C54 EMERG STABL	0	0	0	0	0
C55 MAINTENANCE	0	0	0	0	0
C56 REHAB, ETC.	0	0	0	0	0
C57 SPEC STUDY	0	0	0	0	0
C58 PRGM DEV	0	0	0	0	0
C60 CRBIB	0	0	0	0	0
C61 LEASING	0	0	0	0	0
C62 GIS	0	0	0	0	0
C63 HIS BASE MP	0	0	0	0	0
C70 ENVRM IMPCT	0	0	0	0	0
C71 VISIT IMPCT	0	0	0	0	0
C72 PROTECTION	0	0	0	0	0
C73 ADJ LANDUSE	0	0	0	0	0
C80 ARCHEOLOGY	0	0	0	0	0
C81 COLLECTIONS	0	0	0	0	0
C82 LANDSCAPES	0	0	0	0	0
C83 GEN CR MNGT	0	0	0	0	0
C84 ETHNOGRAPHY	0	0	0	0	0
C85 STRUCTURES	0	0	0	0	0
C86 HISTORY	0	0	0	0	0
C87 LAW ENFORCE	0	0	0	0	0
C90 ARCHEOLOGY	0	0	0	0	0
C91 ARCHIVES	0	0	0	0	0
C92 ETHNOGRAPHY	0	0	0	0	0
C93 CR MANAGEMT	0	0	0	0	0
C94 LANDSCAPES	0	0	0	0	0

C95 INTERPRET	0	0	0	0	0
C96 ENFORCE, ETC	0	0	0	0	0
C97 MUSEUM MGMT	0	0	0	0	0
C98 SECTION 106	0	0	0	0	0
C99 STRC PRESRV	0	0	0	0	0
N00 FISHERIES	0	0	0	0	0
N01 NAT ANML OVPOP	1,000	1,000	1,000	1,000	4,000
N02 T&E ANIMAL	59,000	20,500	0	0	79,500
N03 T&E PLANTS	0	0	0	0	0
N04 NON-NAT ANIMAL	1,000	1,000	1,000	1,000	4,000
N05 NON-NAT PLANTS	0	0	0	0	0
N06 LAND USE PRAC	5,000	5,000	5,000	0	15,000
N07 NAT FIRE REGM	0	0	0	0	0
N08 CULT LANDSCAPE	0	0	0	0	0
N09 COASTAL DYNAM	19,250	19,500	3,000	0	41,750
N10 MINRL/GEOTHERM	46,000	46,000	7,000	0	99,000
N11 WATER QUAL-EXT	3,000	3,000	0	0	6,000
N12 WATER FLOW	7,000	7,000	0	0	14,000
N13 WATER RIGHTS	0	0	0	0	0
N14 AIR POLLUTION	0	0	0	0	0
N15 AIRCRFT OVRFLT	0	0	0	0	0
N16 NEAR-PARK DEV	0	0	0	0	0
N17 BIODIVERSITY	81,800	40,000	27,500	0	149,300
N18 VIS USE-BCTRY	0	0	0	0	0
N19 CONSUMPT USE	0	0	0	0	0
N20 BASELINE DATA	66,550	61,500	26,500	0	154,550
N21 CAVE RESOURCES	0	0	0	0	0
N22 VIS USE-DEV ZN	0	0	0	0	0
N23 PALEONTOLOGY	0	0	0	0	0
N24 OTHER (NATURAL)	10,500	10,500	0	0	21,000

Active Filter: (No filter)

Output Selections:
Funded data only
Initial fiscal year: 1996
Summary Report: Funded $ by N-RMAP Program Codes

03/06/97 RMP Summary Report
13:32:00 Funded $ by N-RMAP Program Codes FY: 1996-1999
Park: PAIS
Cluster: SWSO

PROGRAM CODES	1996	1997	1998	1999	TOTAL
A00 AIR RES. MGT	0	0	0	0	0
A01 AIR QUAL. MGT	0	0	0	0	0
A02 AIR QUAL. MON	0	0	0	0	0
A03 METEOR. MON	0	0	0	0	0
A04 AIRCRFT OVERFLT	0	0	0	0	0
C00 CLCT.&DATA MGT	45,450	45,700	15,500	0	106,650
C01 NAT. RES. CLCT	0	0	0	0	0
C02 NAT. RES. LIB.	3,200	3,200	0	0	6,400
C03 GIS/DATA MGT	15,500	15,500	15,500	0	46,500
D00 DIS. AREA/REHAB	5,000	5,000	5,000	0	15,000
E00 ENV. PLN&CMP.	39,000	39,000	3,000	0	81,000
F00 PRESC. FIRE MGT	0	0	0	0	0
F01 PRESC. BURN OP.	0	0	0	0	0
F02 PRESC. BURN MON.	0	0	0	0	0
F03 WILDFIRE MONITOR	0	0	0	0	0
G00 GEO. RES. MGT	7,000	7,000	4,000	0	18,000
G01 CAVE MGT	0	0	0	0	0
G02 MINING/MINERAL	4,000	4,000	4,000	0	12,000
G03 GEOTHERMAL	0	0	0	0	0
G04 VOLCANIC	0	0	0	0	0
G05 SHORELINE	0	0	0	0	0
H00 PEST HARZ. MGT	1,000	1,000	1,000	1,000	4,000
H01 INT. PEST MGT	1,000	1,000	1,000	1,000	4,000
H02 HAZARD WASTE	0	0	0	0	0
H03 HARZARD TREE	0	0	0	0	0
I00 INT. NAT. RES.	0	0	0	0	0
M00 FENCE MAINT.	0	0	0	0	0
N00 RES.&VISIT USE	2,000	0	0	0	2,000
N01 CNTRL PCH/THEFT	0	0	0	0	0
N02 PAT. BKTRY/RIV	0	0	0	0	0
N03 PAT. FRNT/TRAIL	0	0	0	0	0

N04 BOAT PATROL	0	0	0	0	0
N05 BKCTRY/WILD PER	0	0	0	0	0
N06 ROCK CLIMBING	0	0	0	0	0
N07 ALPINE CLMBNG	0	0	0	0	0
N08 FISHING ENF.	0	0	0	0	0
N09 HUNT/TRAP ENF	0	0	0	0	0
N10 GRAZING TRSPASS	0	0	0	0	0
N11 RIGHTS OF WAY	0	0	0	0	0
OTH OTHER	0	0	0	0	0
P00 PALEO. RES. MGT	0	0	0	0	0
Q00 WATER RES. MGT	0	0	0	0	0
Q01 WATER RES. MGT	0	0	0	0	0
Q02 WATER RIGHTS	0	0	0	0	0
R00 SOC. SCI. RES.	0	0	0	0	0
S00 SCIENCE CONS	8,000	8,000	0	0	16,000
V00 VEGETATION MGT	10,300	7,000	0	0	17,300
V01 TERRES. PLANTS	3,300	0	0	0	3,300
V02 AQUATIC PLANTS	0	0	0	0	0
V03 T&E PLANTS	0	0	0	0	0
V04 EXOTIC PLANTS	0	0	0	0	0
V05 REINTRO. PLTS	0	0	0	0	0
V06 SUBSIS. PLTS	0	0	0	0	0
V07 AGRIC. PLTS	0	0	0	0	0
W00 WILDLIFE MGT	58,000	19,500	7,000	0	84,500
W01 TERR. ANMLS	42,000	19,500	7,000	0	68,500
W02 AQUA. ANMLS	16,000	0	0	0	16,000
W03 T&E ANIMALS	0	0	0	0	0
W04 REINTRO ANML	0	0	0	0	0
W05 EXOTIC ANMLS	0	0	0	0	0
W06 NATIVE ANML POP	0	0	0	0	0
W07 BEAR MGT	0	0	0	0	0
W08 FISHERIES MGT	0	0	0	0	0
W09 HUNT/TRAP MGT	0	0	0	0	0
W10 SUBSIS. ANMLS	0	0	0	0	0
Z00 GRAZING MGT	0	0	0	0	0

Active Filter: (No filter)

Output Selections:
 Funded data only
 Initial fiscal year: 1996
 Summary Report: Funded # by Activity & Resource Type

03/06/97 RMP Summary Report
13:37:55 Funded # by Activity & Resource Type FY: 1996-1999
Park: PAIS
Cluster: SWSO

ACTIVITY	Cultural	Integrated	Natural	Subsistence	TOTAL
Research	0	0	9	0	9
Mitigation	0	0	7	0	7
Monitoring	0	0	21	0	21
Protection	0	0	4	0	4
Interpretation	0	0	0	0	0
Administration	2	0	23	0	25
-=<<TOTALS>>=-	2	0	64	0	66

Active Filter: (No filter)

Output Selections:
Funded data only
Initial fiscal year: 1996
Summary Report: Funded # by Issue Codes

03/06/97
13:38:34

RMP Summary Report
Funded # by Issue Codes

FY: 1996-1999
Park: PAIS
Cluster: SWSO

ISSUE CODES	1996	1997	1998	1999	TOTAL
C01 OVERVIEW	0	0	0	0	0
C02 ID & EVAL	1	1	0	0	2
C03 SITE DOC	0	0	0	0	0
C04 DATA RECOV	0	0	0	0	0
C05 TREATMENTS	0	0	0	0	0
C06 SITE MONIT	0	0	0	0	0
C07 SITE PROTCT	0	0	0	0	0
C08 SPEC STUDY	0	0	0	0	0
C10 INVENTORY	0	0	0	0	0
C11 REPORT	0	0	0	0	0
C12 ICAP	0	0	0	0	0
C13 EMERG STABL	0	0	0	0	0
C14 MAINTENANCE	0	0	0	0	0
C15 REHAB ETC.	0	0	0	0	0
C16 VEG SURVEY	0	0	0	0	0
C17 VEG MGT PLN	0	0	0	0	0
C18 IPM	0	0	0	0	0
C19 SPEC STUDY	0	0	0	0	0
C20 PRGM DEV	0	0	0	0	0
C21 OVERVIEW	0	0	0	0	0
C22 USE STUDY	0	0	0	0	0
C23 REAP	0	0	0	0	0
C24 LANDSCAPE	0	0	0	0	0
C25 CULT. AFFIL	0	0	0	0	0
C26 ETHNOHIST	0	0	0	0	0
C27 ORAL HIST	0	0	0	0	0
C28 ERI	0	0	0	0	0
C29 PRGM STRATG	0	0	0	0	0
C30 CONSULTATN	0	0	0	0	0
C31 SPEC STUDY	0	0	0	0	0
C35 HRS	0	0	0	0	0

C36 NR DOCMNT	0	0	0	0	0
C37 ADMIN HIS	0	0	0	0	0
C38 SPEC STUDY	0	0	0	0	0
C39 HERTAGE ED	0	0	0	0	0
C40 SOC STATMT	0	0	0	0	0
C41 CMP	0	0	0	0	0
C42 CSP	0	0	0	0	0
C43 CONDIT SVY	0	0	0	0	0
C44 HIS FURN	0	0	0	0	0
C45 HOUSKP PLN	0	0	0	0	0
C46 ACCOUNTBLY	1	1	0	0	2
C47 STORAGE	1	1	0	0	2
C48 TREATMENT	0	0	0	0	0
C49 ENVIRONMNT	0	0	0	0	0
C50 SECTY&FIRE	0	0	0	0	0
C51 LCS	0	0	0	0	0
C52 HSR	0	0	0	0	0
C53 ICAP	0	0	0	0	0
C54 EMERG STABL	0	0	0	0	0
C55 MAINTENANCE	0	0	0	0	0
C56 REHAB, ETC.	0	0	0	0	0
C57 SPEC STUDY	0	0	0	0	0
C58 PRGM DEV	0	0	0	0	0
C60 CRBIB	0	0	0	0	0
C61 LEASING	0	0	0	0	0
C62 GIS	0	0	0	0	0
C63 HIS BASE MP	0	0	0	0	0
C70 ENVRM IMPCT	0	0	0	0	0
C71 VISIT IMPCT	0	0	0	0	0
C72 PROTECTION	0	0	0	0	0
C73 ADJ LANDUSE	0	0	0	0	0
C80 ARCHEOLOGY	0	0	0	0	0
C81 COLLECTIONS	0	0	0	0	0
C82 LANDSCAPES	0	0	0	0	0
C83 GEN CR MNGT	0	0	0	0	0
C84 ETHNOGRAPHY	0	0	0	0	0
C85 STRUCTURES	0	0	0	0	0
C86 HISTORY	0	0	0	0	0
C87 LAW ENFORCE	0	0	0	0	0
C90 ARCHEOLOGY	0	0	0	0	0
C91 ARCHIVES	0	0	0	0	0
C92 ETHNOGRAPHY	0	0	0	0	0
C93 CR MANAGEMT	0	0	0	0	0
C94 LANDSCAPES	0	0	0	0	0

C95 INTERPRET	0	0	0	0	0
C96 ENFORCE, ETC	0	0	0	0	0
C97 MUSEUM MGMT	0	0	0	0	0
C98 SECTION 106	0	0	0	0	0
C99 STRC PRESRV	0	0	0	0	0
N00 FISHERIES	0	0	0	0	0
N01 NAT ANML OVPOP	2	2	2	2	8
N02 T&E ANIMAL	11	8	0	0	19
N03 T&E PLANTS	0	0	0	0	0
N04 NON-NAT ANIMAL	2	2	2	2	8
N05 NON-NAT PLANTS	0	0	0	0	0
N06 LAND USE PRAC	1	1	1	0	3
N07 NAT FIRE REGM	0	0	0	0	0
N08 CULT LANDSCAPE	0	0	0	0	0
N09 COASTAL DYNAM	2	2	1	0	5
N10 MINRL/GEOTHERM	5	5	2	0	12
N11 WATER QUAL-EXT	1	1	0	0	2
N12 WATER FLOW	1	1	0	0	2
N13 WATER RIGHTS	0	0	0	0	0
N14 AIR POLLUTION	0	0	0	0	0
N15 AIRCRFT OVRFLT	0	0	0	0	0
N16 NEAR-PARK DEV	0	0	0	0	0
N17 BIODIVERSITY	14	10	5	0	29
N18 VIS USE-BCTRY	0	0	0	0	0
N19 CONSUMPT USE	0	0	0	0	0
N20 BASELINE DATA	13	11	5	0	29
N21 CAVE RESOURCES	0	0	0	0	0
N22 VIS USE-DEV ZN	0	0	0	0	0
N23 PALEONTOLOGY	0	0	0	0	0
N24 OTHER (NATURAL)	2	2	0	0	4

Active Filter: (No filter)

Output Selections:
Funded data only
Initial fiscal year: 1996
Summary Report: Funded # by N-RMAP Program Codes

03/06/97 RMP Summary Report
13:39:37 Funded # by N-RMAP Program Codes FY: 1996-1999
Park: PAIS
Cluster: SWSO

PROGRAM CODES	1996	1997	1998	1999	TOTAL
A00 AIR RES. MGT	0	0	0	0	0
A01 AIR QUAL. MGT	0	0	0	0	0
A02 AIR QUAL. MON	0	0	0	0	0
A03 METEOR. MON	0	0	0	0	0
A04 AIRCRFT OVERFLT	0	0	0	0	0
C00 CLCT.&DATA MGT	6	6	2	0	14
C01 NAT. RES. CLCT	0	0	0	0	0
C02 NAT. RES. LIB.	1	1	0	0	2
C03 GIS/DATA MGT	2	2	2	0	6
D00 DIS. AREA/REHAB	1	1	1	0	3
E00 ENV. PLN&CMP.	3	3	1	0	7
F00 PRESC. FIRE MGT	0	0	0	0	0
F01 PRESC. BURN OP.	0	0	0	0	0
F02 PRESC. BURN MON.	0	0	0	0	0
F03 WILDFIRE MONITOR	0	0	0	0	0
G00 GEO. RES. MGT	2	2	1	0	5
G01 CAVE MGT	0	0	0	0	0
G02 MINING/MINERAL	1	1	1	0	3
G03 GEOTHERMAL	0	0	0	0	0
G04 VOLCANIC	0	0	0	0	0
G05 SHORELINE	0	0	0	0	0
H00 PEST HARZ. MGT	2	2	2	2	8
H01 INT. PEST MGT	2	2	2	2	8
H02 HAZARD WASTE	0	0	0	0	0
H03 HARZARD TREE	0	0	0	0	0
I00 INT. NAT. RES.	0	0	0	0	0
M00 FENCE MAINT.	0	0	0	0	0
N00 RES.&VISIT USE	1	0	0	0	1
N01 CNTRL PCH/THEFT	0	0	0	0	0
N02 PAT. BKTRY/RIV	0	0	0	0	0
N03 PAT. FRNT/TRAIL	0	0	0	0	0

N04 BOAT PATROL	0	0	0	0	0
N05 BKCTRY/WILD PER	0	0	0	0	0
N06 ROCK CLIMBING	0	0	0	0	0
N07 ALPINE CLMBNG	0	0	0	0	0
N08 FISHING ENF.	0	0	0	0	0
N09 HUNT/TRAP ENF	0	0	0	0	0
N10 GRAZING TRSPASS	0	0	0	0	0
N11 RIGHTS OF WAY	0	0	0	0	0
OTH OTHER	0	0	0	0	0
P00 PALEO. RES. MGT	0	0	0	0	0
Q00 WATER RES. MGT	0	0	0	0	0
Q01 WATER RES. MGT	0	0	0	0	0
Q02 WATER RIGHTS	0	0	0	0	0
R00 SOC. SCI. RES.	0	0	0	0	0
S00 SCIENCE CONS	3	3	0	0	6
V00 VEGETATION MGT	2	1	0	0	3
V01 TERRES. PLANTS	1	0	0	0	1
V02 AQUATIC PLANTS	0	0	0	0	0
V03 T&E PLANTS	0	0	0	0	0
V04 EXOTIC PLANTS	0	0	0	0	0
V05 REINTRO. PLTS	0	0	0	0	0
V06 SUBSIS. PLTS	0	0	0	0	0
V07 AGRIC. PLTS	0	0	0	0	0
W00 WILDLIFE MGT	10	7	2	0	19
W01 TERR. ANMLS	8	7	2	0	17
W02 AQUA. ANMLS	2	0	0	0	2
W03 T&E ANIMALS	0	0	0	0	0
W04 REINTRO ANML	0	0	0	0	0
W05 EXOTIC ANMLS	0	0	0	0	0
W06 NATIVE ANML POP	0	0	0	0	0
W07 BEAR MGT	0	0	0	0	0
W08 FISHERIES MGT	0	0	0	0	0
W09 HUNT/TRAP MGT	0	0	0	0	0
W10 SUBSIS. ANMLS	0	0	0	0	0
Z00 GRAZING MGT	0	0	0	0	0

Active Filter: (No filter)

Output Selections:
Resource types included: CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
Initial fiscal year: 1996
Sort by PRIORITY within each park and type
Include projects even if no funding data entered

03/06/97
13:26:51

PROGRAMMING SHEET 2
CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
UNFUNDED ACTIVITIES
($ in thousands)

FY: 1996
Park: PAIS
Cluster: SWSO

PK PRI	PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM-WIDE ISSUE	ACT TYP	T Y P	CURRENT YEAR 1996 $$	CURRENT YEAR 1996 FTE	OUTYEAR 1 1997 $$	OUTYEAR 1 1997 FTE	OUTYEAR 2 1998 $$	OUTYEAR 2 1998 FTE	OUTYEAR 3 1999 $$	OUTYEAR 3 1999 FTE	TOTAL $$	TOTAL FTE
1 C	001.000	MAINTENANCE OF NOVILLO LINE CAMP		STRC	C13	PRO	R	5.00	0.10	5.00	0.10	5.00	0.10	5.00	0.10	20.00	0.40
2 C	003.000	MANAGEMENT OF COLLECTIONS		OBJC	C46 C47	MIT	O	.00	.00	35.10	.00	.00	.00	.00	.00	35.10	0.00
						ADM	R	.00	.00	20.30	1.00	.00	.00	.00	.00	20.30	1.00
			Subtotal					.00	.00	55.40	1.00	.00	.00	.00	.00	55.40	1.00
3 C	002.000	SURVEY OF HISTORIC SITES AND ARTIFACTS		SITE	C02 C04	RES	O	.00	.00	90.00	.00	90.00	.00	.00	.00	180.00	0.00
						ADM	O	.00	.00	.00	.00	.00	.00	15.00	.00	15.00	0.00
			Subtotal					.00	.00	90.00	.00	90.00	.00	15.00	.00	195.00	0.00
4 C	004.000	DEVELOP STRATEGY PLAN FOR HISTORICAL ARTIFACTS		SITE	C02 C01	MON	O	.00	.00	5.00	.00	.00	.00	.00	.00	5.00	0.00
5 C	005.000	SURVEY OF CULTURAL LANDSCAPES		CULL	C10 C11	RES	O	5.00	.00	.00	.00	.00	.00	.00	.00	5.00	0.00
1 N	002.000	DEVELOP A MINERALS MANAGEMENT PLAN FOR PADRE ISLAND			N10	RES	O	90.00	.00	.00	.00	.00	.00	.00	.00	90.00	0.00
2 N	036.000	IDENTIFY AFFECTS OF IMPACTS TO WIND TIDAL FLATS			N20 C70	RES	O	80.00	.00	.00	.00	.00	.00	.00	.00	80.00	0.00
3 N	022.000	MONITORING MARINE DEBRIS AND POINT SOURCE POLLUTERS			N09 N20	No unfunded data											
4 N	024.000	INVENTORY AND MONITORING WETLAND COMMUNITIES			C02 N12	MON	O	.00	.00	50.00	.00	7.00	.00	.00	.00	57.00	0.00
5 N	003.000	PATROLS FOR NESTING SEA TURTLES			N02 N17	MON	R	10.00	0.50	10.00	0.50	10.00	0.50	.00	.00	30.00	1.50
6 N	021.000	SURVEY NEOTROPICAL MIGRATORY BIRDS			N17 N20	ADM	R	.00	.00	1.00	0.05	1.00	0.05	1.00	0.05	3.00	0.15
						RES	R	.00	.00	5.00	.00	5.00	.00	5.00	.00	15.00	0.00
			Subtotal					.00	.00	6.00	0.05	6.00	0.05	6.00	0.05	18.00	0.15
6 N	035.000	CONDUCT AN ANALYSIS OF WETLANDS RECOVERY			N09 N24	RES	O	22.50	.00	.00	.00	.00	.00	.00	.00	22.50	0.00
7 N	026.000	SURVEY OF SEA TURTLE MOVEMENTS IN PARK WATERS			N02 N17	RES	R	10.00	0.50	10.00	0.50	10.00	0.50	.00	.00	30.00	1.50
9 N	019.000	SURVEY HERPETOLOGICAL COMMUNITIES			N10 N20	RES	O	20.00	.00	.00	.00	.00	.00	.00	.00	20.00	0.00
						ADM	O	4.00	0.20	.00	.00	.00	.00	.00	.00	4.00	0.20
			Subtotal					24.00	0.20	.00	.00	.00	.00	.00	.00	24.00	0.20

10	020.000	SURVEY MAMMALIAN COMMUNITIES	N	N10	N20	RES	O	20.00	.00	.00	.00	.00	.00	.00	.00	20.00	0.00
						ADM	O	4.00	0.20	.00	.00	.00	.00	.00	.00	4.00	0.20
				Subtotal				24.00	0.20	.00	.00	.00	.00	.00	.00	24.00	0.20
11	034.000	SURVEY FOR CONTAMINANTS IN BIORECEPTORS	N	N20	N24	RES	O	15.00	.00	.00	.00	.00	.00	.00	.00	15.00	0.00
12	001.000	WILDLAND/PRESCRIBED FIRE MANAGEMENT	N	N07		MON	C	5.00	.00	.00	.00	5.00	.00	.00	.00	10.00	0.00
						PRO	C	20.00	0.50	.00	.00	20.00	0.50	.00	.00	40.00	1.00
						ADM	C	5.00	0.10	.00	.00	5.00	0.10	.00	.00	10.00	0.20
				Subtotal				30.00	0.60	.00	.00	30.00	0.60	.00	.00	60.00	1.20
13	004.000	INSHORE SEA TURTLE STUDY	N	N02	N20	MON	R	4.00	0.10	4.00	0.10	4.00	0.10	7.00	0.20	19.00	0.50
14	013.000	SURVEY BENTHIC INVERTEBRATES (MUD/ALGAE FLATS)	N	N10	N20	RES	O	.00	.00	.00	.00	.00	.00	15.00	.00	15.00	0.00
15	030.000	GIS DATA ACQUISITION AND ANALYSIS	N	N20	N09	MON	R	15.20	0.50	15.20	0.50	15.20	0.50	15.20	0.50	60.80	2.00
16	015.000	SURVEY OF GROUNDWATER RESOURCES AT PAIS	N	N10	N20	MON	R	.00	.00	15.00	.00	5.00	.00	5.00	.00	25.00	0.00
17	025.000	SURVEY OF GROUNDWATER FOR CONTAMINANTS	N	N11	N10	RES	O	.00	.00	92.00	2.00	10.00	.00	5.00	.00	107.00	2.00
18	027.000	SEA TURTLE MARINE DEBRIS INGESTION AND FOOD HABITS	N	N02	N17	RES	O	.00	.00	5.00	.00	.00	.00	.00	.00	5.00	0.00
19	028.000	ACQUISITION OF GEOGRAPHIC DATA FOR GAP ANALYSIS	N	N20	N24	RES	O	.00	.00	.00	.00	.00	.00	10.00	.00	10.00	0.00
20	023.000	WATER QUALITY MONITORING	N	N11	N20	RES	O	25.00	.00	.00	.00	.00	.00	.00	.00	25.00	0.00
						MON	O	.00	.00	25.00	.00	25.00	.00	.00	.00	50.00	0.00
				Subtotal				25.00	.00	25.00	.00	25.00	.00	.00	.00	75.00	0.00
21	005.000	SEA TURTLE REHABILITATION	N	N02	N17	PRO	O	4.00	0.20	4.00	0.20	.00	.00	.00	.00	8.00	0.40
22	006.000	NATIVE PLANT RESTORATION	N	N17	N06	MIT	O	6.00	0.20	8.00	.00	.00	.00	.00	.00	14.00	0.20
						MON	O	.00	.00	2.00	0.10	.00	.00	.00	.00	2.00	0.10
				Subtotal				6.00	0.20	10.00	0.10	.00	.00	.00	.00	16.00	0.30
23	032.000	ACQUIRE PERMANENT RESOURCE MANAGEMENT SPECIALIST	N	N24		ADM	R	45.00	1.00	45.00	1.00	45.00	1.00	45.00	1.00	180.00	4.00
24	033.000	ACQUIRE ADDITIONAL PERMANENT RESOURCE MGMT. STAFF	N	N24		ADM	R	41.00	2.00	41.00	2.00	41.00	2.00	41.00	2.00	164.00	8.00
25	010.000	MANAGEMENT OF DIGITAL DATA AND HARDWARE REQUIREMENT	N	N17	N20	RES	C	.00	.00	10.00	.00	.00	.00	10.00	.00	20.00	0.00
26	017.000	BASELINE INVENTORY OF VEGETATION	N	N17	N20	MON	C	.00	.00	.00	.00	6.50	.00	.00	.00	6.50	0.00
27	007.000	COLONIAL WATERBIRD SURVEY/MANAGEMENT	N	N20	N17	MIT	O	.00	.00	8.00	.00	.00	.00	.00	.00	8.00	0.00
28	009.000	DREDGE/SPOIL MANAGEMENT AND MONITORING	N	N09	N10	MON	C	4.00	0.20	.00	.00	4.00	0.20	.00	.00	8.00	0.40

29	012.000	SURVEY BENTHIC INVERTEBRATES (GULF BEACH)	N10	N20	MON	C	.00	.00	.00	.00	9.50	.00	9.50	.00	19.00	0.00
30	011.000	HYDROCARBON AND CONTAMINANTS BASELINE SOIL ANALYSIS	N10	N20	MON	C	.00	.00	.00	.00	.00	.00	7.50	.00	7.50	0.00
31	018.000	SURVEY OF T&E AVIFAUNA (LAGUNA MADRE SHORELINE)	N02	N20	RES	C	.00	.00	.00	.00	10.00	.00	.00	.00	10.00	0.00
32	031.000	MANAGEMENT OF MULTIMEDIA LIBRARY	N24		ADM	O	9.00	.00	.00	.00	.00	.00	.00	.00	9.00	0.00
99	008.000	INTEGRATED PEST MANAGEMENT	N01	N04	No unfunded data											
99	014.000	SURVEY AVIFAUNA (GULF BEACH)	N10	N20	MON	C	.00	.00	.00	.00	6.00	.00	6.00	.00	12.00	0.00
99	016.000	SURVEY OF MARINE FLORA AT THE MANSFIELD CHANNEL	N20	N17	MON	C	.00	.00	.00	.00	5.00	.00	.00	.00	5.00	0.00
99	029.000	ACQUIRING CLIMATOLOGICAL DATA	N20		No unfunded data											

41 projects printed

Grand Total $$	468.70	505.60	344.20	202.20	1520.70
Grand Total FTE	6.30	8.05	5.55	3.85	23.75

Active Filter: (No filter)

Output Selections:
 Resource types included:
CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE
 Initial fiscal year: 1996-1999

03/06/97 UNFUNDED TABLE
13:29:14 CULTURAL/INTEGRATED/NATURAL/SUBSISTENCE FY: 1996-1999
UNFUNDED AMOUNTS Park: PAIS
($ in thousands - by funding type) Cluster: SWSO

FUNDING TYPE	TOTAL	RES	MIT	MON	PRO	INT	ADM
Cyclic	148.00	30.00	0.00	68.00	40.00	0.00	10.00
Onetime	805.60	594.50	57.10	114.00	8.00	0.00	32.00
Recur.	567.10	45.00	0.00	134.80	20.00	0.00	367.30
TOTAL	1520.70	669.50	57.10	316.80	68.00	0.00	409.30

Active Filter: (No filter)

Output Selections:
 Unfunded data only
 Initial fiscal year: 1996
 Summary Report: Unfunded $ by Activity & Resource Type

03/06/97 RMP Summary Report
13:32:56 Unfunded $ by Activity & Resource Type FY: 1-4
Park: PAIS
Cluster: SWSO

ACTIVITY	Cultural	Integrated	Natural	Subsistence	TOTAL
Research	185,000	0	484,500	0	669,500
Mitigation	35,100	0	22,000	0	57,100
Monitoring	5,000	0	311,800	0	316,800
Protection	20,000	0	48,000	0	68,000
Interpretation	0	0	0	0	0
Administration	35,300	0	374,000	0	409,300
-=<<TOTALS>>=-	280,400	0	1,240,300	0	1,520,700

Active Filter: (No filter)

Output Selections:
Unfunded data only
Initial fiscal year: 1996
Summary Report: Unfunded $ by Issue Codes

03/06/97 RMP Summary Report
13:33:54 Unfunded $ by Issue Codes FY: 1-4
Park: PAIS
Cluster: SWSO

ISSUE CODES	1	2	3	4	TOTAL
C01 OVERVIEW	0	5,000	0	0	5,000
C02 ID & EVAL	0	145,000	97,000	15,000	257,000
C03 SITE DOC	0	0	0	0	0
C04 DATA RECOV	0	90,000	90,000	15,000	195,000
C05 TREATMENTS	0	0	0	0	0
C06 SITE MONIT	0	0	0	0	0
C07 SITE PROTCT	0	0	0	0	0
C08 SPEC STUDY	0	0	0	0	0
C10 INVENTORY	5,000	0	0	0	5,000
C11 REPORT	5,000	0	0	0	5,000
C12 ICAP	0	0	0	0	0
C13 EMERG STABL	5,000	5,000	5,000	5,000	20,000
C14 MAINTENANCE	0	0	0	0	0
C15 REHAB ETC.	0	0	0	0	0
C16 VEG SURVEY	0	0	0	0	0
C17 VEG MGT PLN	0	0	0	0	0
C18 IPM	0	0	0	0	0
C19 SPEC STUDY	0	0	0	0	0
C20 PRGM DEV	0	0	0	0	0
C21 OVERVIEW	0	0	0	0	0
C22 USE STUDY	0	0	0	0	0
C23 REAP	0	0	0	0	0
C24 LANDSCAPE	0	0	0	0	0
C25 CULT. AFFIL	0	0	0	0	0
C26 ETHNOHIST	0	0	0	0	0
C27 ORAL HIST	0	0	0	0	0
C28 ERI	0	0	0	0	0
C29 PRGM STRATG	0	0	0	0	0
C30 CONSULTATN	0	0	0	0	0
C31 SPEC STUDY	0	0	0	0	0
C35 HRS	0	0	0	0	0

C36 NR DOCMNT	0	0	0	0	0
C37 ADMIN HIS	0	0	0	0	0
C38 SPEC STUDY	0	0	0	0	0
C39 HERTAGE ED	0	0	0	0	0
C40 SOC STATMT	0	0	0	0	0
C41 CMP	0	0	0	0	0
C42 CSP	0	0	0	0	0
C43 CONDIT SVY	0	0	0	0	0
C44 HIS FURN	0	0	0	0	0
C45 HOUSKP PLN	0	0	0	0	0
C46 ACCOUNTBLY	0	55,400	0	0	55,400
C47 STORAGE	0	55,400	0	0	55,400
C48 TREATMENT	0	0	0	0	0
C49 ENVIRONMNT	0	0	0	0	0
C50 SECTY&FIRE	0	0	0	0	0
C51 LCS	0	0	0	0	0
C52 HSR	0	0	0	0	0
C53 ICAP	0	0	0	0	0
C54 EMERG STABL	0	0	0	0	0
C55 MAINTENANCE	0	0	0	0	0
C56 REHAB, ETC.	0	0	0	0	0
C57 SPEC STUDY	0	0	0	0	0
C58 PRGM DEV	0	0	0	0	0
C60 CRBIB	0	0	0	0	0
C61 LEASING	0	0	0	0	0
C62 GIS	0	0	0	0	0
C63 HIS BASE MP	0	0	0	0	0
C70 ENVRM IMPCT	80,000	0	0	0	80,000
C71 VISIT IMPCT	0	0	0	0	0
C72 PROTECTION	0	0	0	0	0
C73 ADJ LANDUSE	0	0	0	0	0
C80 ARCHEOLOGY	0	0	0	0	0
C81 COLLECTIONS	0	0	0	0	0
C82 LANDSCAPES	0	0	0	0	0
C83 GEN CR MNGT	0	0	0	0	0
C84 ETHNOGRAPHY	0	0	0	0	0
C85 STRUCTURES	0	0	0	0	0
C86 HISTORY	0	0	0	0	0
C87 LAW ENFORCE	0	0	0	0	0
C90 ARCHEOLOGY	0	0	0	0	0
C91 ARCHIVES	0	0	0	0	0
C92 ETHNOGRAPHY	0	0	0	0	0
C93 CR MANAGEMT	0	0	0	0	0
C94 LANDSCAPES	0	0	0	0	0

C95 INTERPRET	0	0	0	0	0
C96 ENFORCE, ETC	0	0	0	0	0
C97 MUSEUM MGMT	0	0	0	0	0
C98 SECTION 106	0	0	0	0	0
C99 STRC PRESRV	0	0	0	0	0
N00 FISHERIES	0	0	0	0	0
N01 NAT ANML OVPOP	0	0	0	0	0
N02 T&E ANIMAL	28,000	33,000	34,000	7,000	102,000
N03 T&E PLANTS	0	0	0	0	0
N04 NON-NAT ANIMAL	0	0	0	0	0
N05 NON-NAT PLANTS	0	0	0	0	0
N06 LAND USE PRAC	6,000	10,000	0	0	16,000
N07 NAT FIRE REGM	30,000	0	30,000	0	60,000
N08 CULT LANDSCAPE	0	0	0	0	0
N09 COASTAL DYNAM	41,700	15,200	19,200	15,200	91,300
N10 MINRL/GEOTHERM	142,000	107,000	34,500	48,000	331,500
N11 WATER QUAL-EXT	25,000	117,000	35,000	5,000	182,000
N12 WATER FLOW	0	50,000	7,000	0	57,000
N13 WATER RIGHTS	0	0	0	0	0
N14 AIR POLLUTION	0	0	0	0	0
N15 AIRCRFT OVRFLT	0	0	0	0	0
N16 NEAR-PARK DEV	0	0	0	0	0
N17 BIODIVERSITY	30,000	63,000	37,500	16,000	146,500
N18 VIS USE-BCTRY	0	0	0	0	0
N19 CONSUMPT USE	0	0	0	0	0
N20 BASELINE DATA	187,200	83,200	92,200	91,200	453,800
N21 CAVE RESOURCES	0	0	0	0	0
N22 VIS USE-DEV ZN	0	0	0	0	0
N23 PALEONTOLOGY	0	0	0	0	0
N24 OTHER (NATURAL)	132,500	86,000	86,000	96,000	400,500

Active Filter: (No filter)

Output Selections:
Unfunded data only
Initial fiscal year: 1996
Summary Report: Unfunded $ by N-RMAP Program Codes

03/06/97
13:34:42

RMP Summary Report
Unfunded $ by N-RMAP Program Codes

FY: 1-4
Park: PAIS
Cluster: SWSO

PROGRAM CODES	1	2	3	4	TOTAL
A00 AIR RES. MGT	0	0	0	0	0
A01 AIR QUAL. MGT	0	0	0	0	0
A02 AIR QUAL. MON	0	0	0	0	0
A03 METEOR. MON	0	0	0	0	0
A04 AIRCRFT OVERFLT	0	0	0	0	0
C00 CLCT.&DATA MGT	15,200	85,600	15,200	35,200	151,200
C01 NAT. RES. CLCT	0	0	0	0	0
C02 NAT. RES. LIB.	0	60,400	0	0	60,400
C03 GIS/DATA MGT	0	10,000	0	10,000	20,000
D00 DIS. AREA/REHAB	28,500	10,000	0	0	38,500
E00 ENV. PLN&CMP.	174,000	0	4,000	0	178,000
F00 PRESC. FIRE MGT	30,000	0	30,000	0	60,000
F01 PRESC. BURN OP.	30,000	0	30,000	0	60,000
F02 PRESC. BURN MON.	0	0	0	0	0
F03 WILDFIRE MONITOR	0	0	0	0	0
G00 GEO. RES. MGT	48,000	107,000	24,500	27,000	206,500
G01 CAVE MGT	0	0	0	0	0
G02 MINING/MINERAL	24,000	15,000	14,500	22,000	75,500
G03 GEOTHERMAL	0	0	0	0	0
G04 VOLCANIC	0	0	0	0	0
G05 SHORELINE	0	0	0	0	0
H00 PEST HARZ. MGT	0	0	0	0	0
H01 INT. PEST MGT	0	0	0	0	0
H02 HAZARD WASTE	0	0	0	0	0
H03 HARZARD TREE	0	0	0	0	0
I00 INT. NAT. RES.	9,000	0	0	0	9,000
M00 FENCE MAINT.	0	0	0	0	0
N00 RES.&VISIT USE	96,000	181,000	187,000	127,000	591,000
N01 CNTRL PCH/THEFT	0	0	0	0	0
N02 PAT. BKTRY/RIV	0	0	0	0	0
N03 PAT. FRNT/TRAIL	0	0	0	0	0

N04 BOAT PATROL	0	0	0	0	0
N05 BKCTRY/WILD PER	0	0	0	0	0
N06 ROCK CLIMBING	0	0	0	0	0
N07 ALPINE CLMBNG	0	0	0	0	0
N08 FISHING ENF.	0	0	0	0	0
N09 HUNT/TRAP ENF	0	0	0	0	0
N10 GRAZING TRSPASS	0	0	0	0	0
N11 RIGHTS OF WAY	0	0	0	0	0
OTH OTHER	0	0	0	0	0
P00 PALEO. RES. MGT	0	0	0	0	0
Q00 WATER RES. MGT	25,000	25,000	25,000	0	75,000
Q01 WATER RES. MGT	0	0	0	0	0
Q02 WATER RIGHTS	0	0	0	0	0
R00 SOC. SCI. RES.	0	0	0	0	0
S00 SCIENCE CONS	4,000	4,000	4,000	7,000	19,000
V00 VEGETATION MGT	0	50,000	18,500	0	68,500
V01 TERRES. PLANTS	0	0	6,500	0	6,500
V02 AQUATIC PLANTS	0	0	5,000	0	5,000
V03 T&E PLANTS	0	0	0	0	0
V04 EXOTIC PLANTS	0	0	0	0	0
V05 REINTRO. PLTS	0	0	0	0	0
V06 SUBSIS. PLTS	0	0	0	0	0
V07 AGRIC. PLTS	0	0	0	0	0
W00 WILDLIFE MGT	39,000	43,000	36,000	6,000	124,000
W01 TERR. ANMLS	14,000	28,000	16,000	6,000	64,000
W02 AQUA. ANMLS	10,000	15,000	10,000	0	35,000
W03 T&E ANIMALS	0	0	10,000	0	10,000
W04 REINTRO ANML	0	0	0	0	0
W05 EXOTIC ANMLS	0	0	0	0	0
W06 NATIVE ANML POP	0	0	0	0	0
W07 BEAR MGT	0	0	0	0	0
W08 FISHERIES MGT	0	0	0	0	0
W09 HUNT/TRAP MGT	0	0	0	0	0
W10 SUBSIS. ANMLS	0	0	0	0	0
Z00 GRAZING MGT	0	0	0	0	0

Active Filter: (No filter)

Output Selections:
Unfunded data only
Initial fiscal year: 1996
Summary Report: Unfunded # by Activity & Resource Type

03/06/97
13:35:37

RMP Summary Report
Unfunded # by Activity & Resource Type

FY: 1-4
Park: PAIS
Cluster: SWSO

ACTIVITY	Cultural	Integrated	Natural	Subsistence	TOTAL
Research	3	0	24	0	27
Mitigation	1	0	3	0	4
Monitoring	1	0	34	0	35
Protection	4	0	6	0	10
Interpretation	0	0	0	0	0
Administration	2	0	16	0	18
-=<<TOTALS>>=-	11	0	83	0	94

Active Filter: (No filter)

Output Selections:
Unfunded data only
Initial fiscal year: 1996
Summary Report: Unfunded # by Issue Codes

03/06/97
13:36:19

RMP Summary Report
Unfunded # by Issue Codes

FY: 1-4
Park: PAIS
Cluster: SWSO

ISSUE CODES	1	2	3	4	TOTAL
C01 OVERVIEW	0	1	0	0	1
C02 ID & EVAL	0	3	2	1	6
C03 SITE DOC	0	0	0	0	0
C04 DATA RECOV	0	1	1	1	3
C05 TREATMENTS	0	0	0	0	0
C06 SITE MONIT	0	0	0	0	0
C07 SITE PROTCT	0	0	0	0	0
C08 SPEC STUDY	0	0	0	0	0
C10 INVENTORY	1	0	0	0	1
C11 REPORT	1	0	0	0	1
C12 ICAP	0	0	0	0	0
C13 EMERG STABL	1	1	1	1	4
C14 MAINTENANCE	0	0	0	0	0
C15 REHAB ETC.	0	0	0	0	0
C16 VEG SURVEY	0	0	0	0	0
C17 VEG MGT PLN	0	0	0	0	0
C18 IPM	0	0	0	0	0
C19 SPEC STUDY	0	0	0	0	0
C20 PRGM DEV	0	0	0	0	0
C21 OVERVIEW	0	0	0	0	0
C22 USE STUDY	0	0	0	0	0
C23 REAP	0	0	0	0	0
C24 LANDSCAPE	0	0	0	0	0
C25 CULT. AFFIL	0	0	0	0	0
C26 ETHNOHIST	0	0	0	0	0
C27 ORAL HIST	0	0	0	0	0
C28 ERI	0	0	0	0	0
C29 PRGM STRATG	0	0	0	0	0
C30 CONSULTATN	0	0	0	0	0
C31 SPEC STUDY	0	0	0	0	0
C35 HRS	0	0	0	0	0

C36 NR DOCMNT	0	0	0	0	0
C37 ADMIN HIS	0	0	0	0	0
C38 SPEC STUDY	0	0	0	0	0
C39 HERTAGE ED	0	0	0	0	0
C40 SOC STATMT	0	0	0	0	0
C41 CMP	0	0	0	0	0
C42 CSP	0	0	0	0	0
C43 CONDIT SVY	0	0	0	0	0
C44 HIS FURN	0	0	0	0	0
C45 HOUSKP PLN	0	0	0	0	0
C46 ACCOUNTBLY	0	2	0	0	2
C47 STORAGE	0	2	0	0	2
C48 TREATMENT	0	0	0	0	0
C49 ENVIRONMNT	0	0	0	0	0
C50 SECTY&FIRE	0	0	0	0	0
C51 LCS	0	0	0	0	0
C52 HSR	0	0	0	0	0
C53 ICAP	0	0	0	0	0
C54 EMERG STABL	0	0	0	0	0
C55 MAINTENANCE	0	0	0	0	0
C56 REHAB, ETC.	0	0	0	0	0
C57 SPEC STUDY	0	0	0	0	0
C58 PRGM DEV	0	0	0	0	0
C60 CRBIB	0	0	0	0	0
C61 LEASING	0	0	0	0	0
C62 GIS	0	0	0	0	0
C63 HIS BASE MP	0	0	0	0	0
C70 ENVRM IMPCT	1	0	0	0	1
C71 VISIT IMPCT	0	0	0	0	0
C72 PROTECTION	0	0	0	0	0
C73 ADJ LANDUSE	0	0	0	0	0
C80 ARCHEOLOGY	0	0	0	0	0
C81 COLLECTIONS	0	0	0	0	0
C82 LANDSCAPES	0	0	0	0	0
C83 GEN CR MNGT	0	0	0	0	0
C84 ETHNOGRAPHY	0	0	0	0	0
C85 STRUCTURES	0	0	0	0	0
C86 HISTORY	0	0	0	0	0
C87 LAW ENFORCE	0	0	0	0	0
C90 ARCHEOLOGY	0	0	0	0	0
C91 ARCHIVES	0	0	0	0	0
C92 ETHNOGRAPHY	0	0	0	0	0
C93 CR MANAGEMT	0	0	0	0	0
C94 LANDSCAPES	0	0	0	0	0

C95 INTERPRET	0	0	0	0	0
C96 ENFORCE, ETC	0	0	0	0	0
C97 MUSEUM MGMT	0	0	0	0	0
C98 SECTION 106	0	0	0	0	0
C99 STRC PRESRV	0	0	0	0	0
N00 FISHERIES	0	0	0	0	0
N01 NAT ANML OVPOP	0	0	0	0	0
N02 T&E ANIMAL	4	5	4	1	14
N03 T&E PLANTS	0	0	0	0	0
N04 NON-NAT ANIMAL	0	0	0	0	0
N05 NON-NAT PLANTS	0	0	0	0	0
N06 LAND USE PRAC	1	2	0	0	3
N07 NAT FIRE REGM	4	0	4	0	8
N08 CULT LANDSCAPE	0	0	0	0	0
N09 COASTAL DYNAM	4	2	3	2	11
N10 MINRL/GEOTHERM	6	4	5	6	21
N11 WATER QUAL-EXT	1	4	2	1	8
N12 WATER FLOW	0	1	1	0	2
N13 WATER RIGHTS	0	0	0	0	0
N14 AIR POLLUTION	0	0	0	0	0
N15 AIRCRFT OVRFLT	0	0	0	0	0
N16 NEAR-PARK DEV	0	0	0	0	0
N17 BIODIVERSITY	4	10	6	3	23
N18 VIS USE-BCTRY	0	0	0	0	0
N19 CONSUMPT USE	0	0	0	0	0
N20 BASELINE DATA	10	9	12	12	43
N21 CAVE RESOURCES	0	0	0	0	0
N22 VIS USE-DEV ZN	0	0	0	0	0
N23 PALEONTOLOGY	0	0	0	0	0
N24 OTHER (NATURAL)	5	2	2	3	12

Active Filter: (No filter)

Output Selections:
Unfunded data only
Initial fiscal year: 1996
Summary Report: Unfunded # by N-RMAP Program Codes

03/06/97 RMP Summary Report
13:37:08 Unfunded # by N-RMAP Program Codes FY: 1-4
Park: PAIS
Cluster: SWSO

PROGRAM CODES	1	2	3	4	TOTAL
A00 AIR RES. MGT	0	0	0	0	0
A01 AIR QUAL. MGT	0	0	0	0	0
A02 AIR QUAL. MON	0	0	0	0	0
A03 METEOR. MON	0	0	0	0	0
A04 AIRCRFT OVERFLT	0	0	0	0	0
C00 CLCT.&DATA MGT	2	6	2	4	14
C01 NAT. RES. CLCT	0	0	0	0	0
C02 NAT. RES. LIB.	0	3	0	0	3
C03 GIS/DATA MGT	0	1	0	1	2
D00 DIS. AREA/REHAB	2	2	0	0	4
E00 ENV. PLN&CMP.	3	0	1	0	4
F00 PRESC. FIRE MGT	4	0	4	0	8
F01 PRESC. BURN OP.	4	0	4	0	8
F02 PRESC. BURN MON.	0	0	0	0	0
F03 WILDFIRE MONITOR	0	0	0	0	0
G00 GEO. RES. MGT	4	4	3	4	15
G01 CAVE MGT	0	0	0	0	0
G02 MINING/MINERAL	2	1	2	3	8
G03 GEOTHERMAL	0	0	0	0	0
G04 VOLCANIC	0	0	0	0	0
G05 SHORELINE	0	0	0	0	0
H00 PEST HARZ. MGT	0	0	0	0	0
H01 INT. PEST MGT	0	0	0	0	0
H02 HAZARD WASTE	0	0	0	0	0
H03 HARZARD TREE	0	0	0	0	0
I00 INT. NAT. RES.	1	0	0	0	1
M00 FENCE MAINT.	0	0	0	0	0
N00 RES.&VISIT USE	4	4	5	6	19
N01 CNTRL PCH/THEFT	0	0	0	0	0
N02 PAT. BKTRY/RIV	0	0	0	0	0
N03 PAT. FRNT/TRAIL	0	0	0	0	0

N04 BOAT PATROL	0	0	0	0	0
N05 BKCTRY/WILD PER	0	0	0	0	0
N06 ROCK CLIMBING	0	0	0	0	0
N07 ALPINE CLMBNG	0	0	0	0	0
N08 FISHING ENF.	0	0	0	0	0
N09 HUNT/TRAP ENF	0	0	0	0	0
N10 GRAZING TRSPASS	0	0	0	0	0
N11 RIGHTS OF WAY	0	0	0	0	0
OTH OTHER	0	0	0	0	0
P00 PALEO. RES. MGT	0	0	0	0	0
Q00 WATER RES. MGT	1	1	1	0	3
Q01 WATER RES. MGT	0	0	0	0	0
Q02 WATER RIGHTS	0	0	0	0	0
R00 SOC. SCI. RES.	0	0	0	0	0
S00 SCIENCE CONS	1	1	1	1	4
V00 VEGETATION MGT	0	1	3	0	4
V01 TERRES. PLANTS	0	0	1	0	1
V02 AQUATIC PLANTS	0	0	1	0	1
V03 T&E PLANTS	0	0	0	0	0
V04 EXOTIC PLANTS	0	0	0	0	0
V05 REINTRO. PLTS	0	0	0	0	0
V06 SUBSIS. PLTS	0	0	0	0	0
V07 AGRIC. PLTS	0	0	0	0	0
W00 WILDLIFE MGT	4	7	5	2	18
W01 TERR. ANMLS	2	5	3	2	12
W02 AQUA. ANMLS	1	2	1	0	4
W03 T&E ANIMALS	0	0	1	0	1
W04 REINTRO ANML	0	0	0	0	0
W05 EXOTIC ANMLS	0	0	0	0	0
W06 NATIVE ANML POP	0	0	0	0	0
W07 BEAR MGT	0	0	0	0	0
W08 FISHERIES MGT	0	0	0	0	0
W09 HUNT/TRAP MGT	0	0	0	0	0
W10 SUBSIS. ANMLS	0	0	0	0	0
Z00 GRAZING MGT	0	0	0	0	0

Project Statement PAIS-C-001.000

Last Update: 02/26/97 Priority: 1
Initial Proposal: 1993

Title : MAINTENANCE OF NOVILLO LINE CAMP

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C13 (EMERG STABL)

Cultural Resource Type: STRC (Structure)
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

The Novillo Line Camp is a cultural resource representing the period of cattle ranching on Padre Island. The 1979 Historic Structure Report for this site recommends that some minimal preservation efforts should be initiated. Currently, only limited management of this site is occurring and additional measures must be taken to ensure its protection and interpretation.

- Background:
From 1805 until 1971, Padre Island was used primarily for raising cattle and the Novillo Line Camp is the best remaining remnant of that activity. On October 1, 1974, the Novillo Line Camp was added to the National Register of Historic Places. The 1979 Historic Structures Report recommended that some minimal preservation efforts be initiated at the site. These recommended efforts included: 1) annual renailing or resecuring of wood where necessary to keep the structural components standing for as long as site interpretation is desired; and 2) regular maintenance of grounds by cutting grasses around structures to minimize moisture deterioration and threat from fire or infill of sand. Additionally, it was recommended that Novillo Line Camp be relisted under Category D of the List of Classified Structures (LCS) and be placed under the jurisdiction of Padre Island National Seashore to be administered, maintained, and interpreted as seen fit by the park.

- Current Management Action:
Current preservation efforts are limited to monthly mowing around the structures and grounds for fire protection.

- Legal Authority:
16 USC 1 - National Park Service Organic Act of 1916
NPS Management Policy, 1988
28, HSR, Novillo Line Camp

Description of Recommended Project or Activity

The recommended course of action is to increase National Park Service involvement. This action complies with NPS Management Policy and NPS-28 but requires additional funding and support. All Novillo Line Camp buildings, structures, and appurtances should be stabilized and vegetation in the area should be controlled. This action would allow for interpretation of the Line Camp via a wayside exhibit trail system or guided programs.

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	PRO	Recurring	5.00	0.10
Year 2:	PRO	Recurring	5.00	0.10
Year 3:	PRO	Recurring	5.00	0.10
Year 4:	PRO	Recurring	5.00	0.10
		Total:	20.00	0.40

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
The no action alternative implies that no attempt would be made to stabilize or protect this cultural resource. Deterioration of this

structure through neglect would eliminate any efforts to interpret this site due to structural failure and degredation of the historic scene. This alternative does not conform with federal legislation or NPS Management Policy.

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
ARPA (ARCH. RES. PROT. ACT.)

Explanation: 516 DM2 APP. 2, 1.7

Project Statement PAIS-C-002.000

Last Update: 04/12/96 Priority: 3
Initial Proposal: 1994

Title : SURVEY OF HISTORIC SITES AND ARTIFACTS

Funding Status: Funded: 0.00 Unfunded: 195.00

Servicewide Issues : C02 (ID & EVAL)
C04 (DATA RECOV)

Cultural Resource Type: SITE (Archeological Site)
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

The shoreline of Padre Island is a dynamic landscape that encompasses the remains of historical shipwrecks dating as early as the 16th century. In April 1554, four ships sailed from Vera Cruz to Havana enroute to Spain. This fleet of Spanish plate ships, carrying a large bullion shipment and other cargo, encountered a Gulf storm causing three of the vessels to be wrecked off of Padre Island, near the present Mansfield Pass. In June 1554, Captain Angel de Villafana from Vera Cruz arrived at the wreck site to salvage as much of the gold and silver cargo as possible. However, only two of the three ship wrecks were located and salvaged. The third wreck was never located, and subsequently, has caused the park numerous problems with treasure hunters searching the park's near shore waters and beach for the lost bullion shipment. In 1970, an underwater archeological salvage project was initiated by the State to excavate artifacts from the remains of these ships (Arnold 1976; Arnold and Weddle 1978).

The park periodically encounters treasure hunters searching areas of the beach for historic shipwreck artifacts. In particular, these treasure hunters are searching for the gold and silver cargo of the third 1554 shipwreck that was not located by Captain Villafana. It is difficult to predict if ship remains will be located, wholly or in park, in the water, but comprehensive information as to maritime cultural resources has been obtained. Ship registries have been investigated in some detail, demonstrating not only the number of wrecks, but, where possible, annotated descriptions (Bradford, 1981). A comprehensive survey of the seashore waters to a depth of at least 12 feet, with cooperation of the State of Texas, is recommended.

There are two historical sites associated with the 1554 shipwrecks. Of the 1000 or so passengers and crew members that were on the three ships, only 300 made it alive to the shores of Padre Island. Some provisions were washed ashore and the castaways remained in sight of the vessels for six days (Clausen, 1974). This area is now known as the "Survivor's Camp". An area in the same vicinity was then used by Captain Villafana during his salvage operation. As yet, these two sites have not been located, but, if located, may yield exceptionally useful cultural resources information.

In association with the proposed offshore survey, a beach survey should also be conducted using essentially the same instrumentation and research design configured for land applications. The beach survey would assist the park in locating unknown shipwrecks and associated artifacts (that have washed onto the beach and, over time, been covered by sand) and possibly the survivor's and salvager's camps.

Description of Recommended Project or Activity

This water and beach survey would be initiated by the Regional Submerged Cultural Resource Unit. The proposed survey will be successful in locating historical remains of ships and historic site, but will not be effective for the location of prehistoric sites which is essentially a different archeological problem.Recent developments in differential global positioning and magnetometer hardware and software interfaces, the conducting of such surveys has achieved a level of cost-effectiveness never before possible. It is now feasible to acquire highly accurate magnetic values, bathymettry and positioning in GIS compatible formats.

Tow D-GPS positioned magnetometer, depth sounder, and Rox Ann unit (scientific instrument that determines nature and consistency of bottom) over 30 meter lanes for the length of Seashore.

All information would be gathered as digitized data streams in GIS compatible formats. The park would be left with a CD-ROM data package, which displays all layers of information including bottom composition, bathymettry and significant magnetic anomalies in user-friendly fashion. Diver would then ground truth select anomalies.

The beach survey would be conducted using the magnetometer and GPS. All information would be render into reports. The surveyor's would then train park resources management staff in use of GIS software.

The total cost for this multi-year project is $290,000.

Year 1
Water survey - $75,000
Ground truth selected anomalies - $30,000
Beach survey - $65,000

Year 2
Water survey - $75,000
Ground truth selected anomalies - $30,000

Year 3
CD-Rom data package/train park staff - $15,000

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	RES	One-time	90.00	0.00
Year 3:	RES	One-time	90.00	0.00
Year 4:	ADM	One-time	15.00	0.00
		Total:	195.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(1)

Project Statement PAIS-C-003.000

Last Update: 02/26/97 Priority: 2
Initial Proposal: 1994

Title : MANAGEMENT OF COLLECTIONS

Funding Status: Funded: 11.60 Unfunded: 55.40

Servicewide Issues : C46 (ACCOUNTBLY)
C47 (STORAGE)

Cultural Resource Type: OBJC (Object)
N-RMAP Program codes : C00 (Collections and Data Management)
C02 (Natural Resource Library Collections Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore preserves a dynamic barrier island ecosystem that offers outstanding opportunities for shoreline recreation, natural history study, and contemplation of past and present uses of the coastline. The seashore was authorized by an act of Congress on September 28, 1962. The enabling legislation states that Padre Island National Seashore was established "in order to save and preserve, for purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped...".

The museum collection exist to provide information about processes, events, and interactions among the cultures, individuals, and the environment for interpretive and resource management programs.

Currently, the museum collection is housed at the park's Headquarters building, located on the mainland. The building is solidly built, but is designed as an office facility, not a collections storage facility. Within this facility space has been allotted for collections storage, but there is no space or research area available.

Of curatorial concern is the poorly sealed exterior walls of the structure and the ventilation system. The walls are poorly sealed against entry of water and pests; the roof has had recurring leakage around the skylights; and, the two exterior breaks in the walls may allow pest entry. For the air circulation system to function, interior doors cannot be sealed to prevent pest entry.

The garage provides shelter from wind and rain for the objects stored inside, but the garage is not sealed or climate controlled and has small holes in the walls. The Dunn wagon is presently being stored in the garage.

The museum collection is incomplete in several categories. In addition, many objects are crowded in cabinets or stored in cabinets not designed for their weight. Several cabinets are old and need to be replaced. To complete these categories, a larger storage facility and additional storage cabinets would be needed.

There are approximately 10,000 prints and negatives which need to be accessioned and cataloged. These archival materials are presently stored in a fire proof cabinet in acid free folders and mylar sleeves. However, these items need to be separated to combine specific prints to the corresponding negatives. It would be ideal if each print and each negative, or set of negatives, be stored in separate sleeves.

Description of Recommended Project or Activity

A new storage building and additional storage cabinets needs to be purchased to allow for climate and pest control. New storage cabinets would alleviate overcrowding among existing cabinets and to make room for collection expansion. Casters and dust covers are needed to correct existing deficiencies. Additionally, a .5 FTE is needed to accession and catalog the negatives and prints.

Equipment

Balli Building (includes installation) - $30,000.00
Geology cabinets - $2850.00
Casters (raise cabinets off floor) -$150.00
Archival cabinet - $2000.00
Dust covers $100.00

SUBTOTAL $35,100.00

Personnel

Museum Technician (1.0 FTE) GS-5 $20,300.00

TOTAL $55,400.00

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-CR	ADM	Recurring	2.00	0.10
1995:	PKBASE-CR	ADM	Recurring	3.20	0.10
1996:	PKBASE-CR	ADM	Recurring	3.20	0.10
1997:	PKBASE-CR	ADM	Recurring	3.20	0.10
			Total:	11.60	0.40

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	MIT	One-time	35.10	0.00
	ADM	Recurring	20.30	1.00
		Subtotal:	55.40	1.00
		Total:	55.40	1.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

Project Statement PAIS-C-004.000

Last Update: 02/26/97 Priority: 4
Initial Proposal: 1994

Title : DEVELOP STRATEGY PLAN FOR HISTORICAL ARTIFACTS

Funding Status: Funded: 0.00 Unfunded: 5.00

Servicewide Issues : C02 (ID & EVAL)
C01 (OVERVIEW)

Cultural Resource Type: SITE (Archeological Site)
N-RMAP Program codes : C00 (Collections and Data Management)
C02 (Natural Resource Library Collections Management)

10-238 Package Number :

Problem Statement

Only five archeological surveys have been initiated at the park (Campbell, 1964; Story, 1967; Scurlock, 1974; Ice, Bradford, Anderson, 1981; New World Research, 1984). These surveys resulted in locating 35 archeological sites, all apparently minimal use from transient indian groups. These sites represent approximately 10 percent of the park. Additional surveys would be extremely difficult, or futile, to initiate, due to the fact that past degradation of the island's vegetation resulted in massive sand movement and deposition across the island. The dune movement resulted in extreme deposition of sand covering all known and unknown archeological sites. In the past two decades, vegetation has again become reestablished. The combination of dunal movement and vegetation restoration has resulted in the creation of extensive wetland communities covering approximately 90% of the northern section of the park. For these reasons, it would be an almost impossible task to locate additional archeological sites.

The shoreline of Padre Island is a dynamic landscape that encompasses the remains of historical shipwrecks dating as early as the 16th century. In April 1554, four ships sailed from Vera Cruz to Havana enroute to Spain. This fleet of Spanish plate ships, carrying a large bullion shipment and other cargo, encountered a Gulf storm causing three of the vessels to be wrecked off of Padre Island, near the present Mansfield Pass. In June 1554, Captain Angel de Villafana from Vera Cruz arrived at the wreck site to salvage as much of the gold and silver cargo as possible.

The park periodically encounters treasure hunters searching areas of the beach for historic shipwreck artifacts. In particular, these treasure hunters are searching for the gold and silver cargo of the third 1554 shipwreck that was not located by Captain Villafana. It is difficult to predict if ship remains will be located, wholly or in park, in the water, but comprehensive information as to maritime cultural resources has been obtained. Ship registries have been investigated in some detail, demonstrating not only the number of wrecks, but, where possible, annotated descriptions (Bradford, 1981).

There are two historical sites associated with the 1554 shipwrecks. Of the 1000 or so passengers and crew members that were on the three ships, only 300 made it alive to the shores of Padre Island. Some provisions were washed ashore and the castaways remained in sight of the vessels for six days (Clausen, 1974). This area is now known as the "Survivor's Camp". An area in the same vicinity was then used by Captain Villafana during his salvage operation. As yet, these two sites have not been located, but, if located, may yield exceptionally useful cultural resources information.

Due to the fact that all sites have been covered by sand and are mostly located in wetland areas, the park does not experience impact problems due to "pot hunting" activities (excluding beach treasure hunters). However, the park is subject to periodic hurricanes which may result in exposing either archeological sites or artifacts. The park, in conjunction with Regional input, needs to develop a Service Strategy Plan to address new archeological discoveries resulting from future storms.

Description of Recommended Project or Activity

Immediately following a hurricane, Regional cultural resources management staff would come to the park and survey the length of the beach and other areas impacted by the storm for artifacts that have been uncovered. If artifacts, shipwrecks, or sites are located, GPU points would be taken and an archeological investigation/salvage project would be considered or initiated. All artifacts would then be cleaned and treated for inclusion into the museum collection.

Costs associated with this project is totally dependent on number, if any, artifacts, shipwrecks, or sites discovered during the survey. Initial costs would include travel and per diem for Regional staff.

Travel/per diem for Four staff @ 7 days - $2400

BUDGET AND FTEs:

FUNDED				
Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED				
	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	MON	One-time	5.00	0.00
		Total:	5.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(9)

Project Statement PAIS-C-005.000

Last Update: 03/26/95 Priority: 5
Initial Proposal: 1994

Title : SURVEY OF CULTURAL LANDSCAPES

Funding Status: Funded: 0.00 Unfunded: 5.00

Servicewide Issues : C10 (INVENTORY)
C11 (REPORT)

Cultural Resource Type: CULL (Cultural Landscape)
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) is located off the Southeast coast of Texas and is the longest undeveloped barrier island in the United States. The park encompasses 130,000 acres, is approximately 70 miles in length, and extends from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico.

While the prehistory of central Texas is one of long occupation by native American peoples and is fairly well understood, the culture history of the south Texas archeological region is considered to be largely conjectural. Even the definition of cultural regions is polemical (Hester 1980).

It is known that two cultural groups, the Coahuiltecans (present primarily on the mainland), and the Karankawa, were inhabiting the Coastal Bend region during the primary contact phase with Europeans (A.D. 1500 - 1600) . Newcomb (1961 :39) stresses the material poverty of the former, who depended for subsistence on the bow-and-arrow, perishable fishnets, temporary sapling huts and baskets. Following initial European contact, Indian populations were severely depleted by diseases.

It will be a formidable task to separate Karankawan and Coahuiltecan remains on the island as their material culture, subsistence, etc., were essentially the same. As an aid to any such attempt we have extracted data from pertinent ethnological material on the historic Indians of the Texas coast.

For purposes of temporal and spatial comparison, data on coastal bands from Galveston Bay to the mouth of the Rio Grande recorded by Europeans from 1528 to the third quarter of the 19th century are presented. The first European record of the Karankawa, who ranged from the west side of Galveston Bay along the coast to Corpus Christi Bay, including the offshore islands, was made by Cabeza de Vaca in 1536 (Bandelier 1922). This and later European accounts identified at least five Karankawan bands: the Capoques and Hans on the north; the Kohanis around the mouth of the Colorado; the Karankawa proper-Karenkake, Clamcoets, Carancaguacas--on Matagorda Bay and Matagorda Island, the Kopanos along Copano Bay and on St. Joseph Island (Newcomb 1961: 59-60).

The aborigines south of Corpus Christi Bay are poorly documented, although they were probably Coahuiltecan. The Coahuiltecan band, Orejon, lived to the west of Corpus Christi Bay; the Malaquite occupied the coast from Corpus Christi Bay to Baffin Bay; and a related group, the Borrado, ranged from there to the Rio Grande (Newcomb 1961).

The period is sometimes placed in the bracket of prehistoric sequences, although some historical documents are available for this incipient era of Spanish exploration. Two such historical events include 1) Alonso Alvarez de Pineda as the first European to explore and map the Texas coast in 1519, although he may not have set foot on Padre Island itself (Sheire 1971: 15,16) and, 2) the loss of three Spanish plate fleet ships carrying bullion near the island in 1554 on their trip from Vera Cruz to Havana. The three vessels wrecked off Padre Island during a storm and, although 300 people survived the wreck, all but two died trying to get back to Mexico (Casterieda 1936: 145). It appears that no Europeans visited Padre Island for the next 131 years.

The first recorded permanent habitation of Padre Island by Europeans did not occur until 1821, 16 years after Padre Nicolas Balli (for whom the island was named) received a land grant for the island. At this time, Balli established a ranch and moved to the island, but died several years later. Cattle ranching, by one owner or another, continued as the primary use of the island from that time until the 1970's, after the park was established.

The park has never systematically assessed its ethnographic resources. However, due to the sporadic, and extremely minimal, utilization and habitation of Padre Island, and the fact that all protohistory indian tribes are now extinct, a Ethnographic Overview and Assessment, Cultural Affiliation Study, and Traditional Use Study have not been initiated. With the assistance of Regional cultural resources staff, these two studies need to be assessed as to their applicability to the park.

Description of Recommended Project or Activity

If these studies are deemed needed by PAIS, a Regional Ethnographic specialist would need to come to the park, scrutinize historic documents, and assist park staff in development of the required documentation. Costs associated with this project would include on travel and per diem for Regional personnel.

Travel/per diem for 1 person @ 14 days $1200

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	5.00	0.00
		Total:	5.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-001.000

Last Update: 02/26/97 Priority: 12
Initial Proposal: 1994

Title : WILDLAND/PRESCRIBED FIRE MANAGEMENT

Funding Status: Funded: 4.70 Unfunded: 60.00

Servicewide Issues : N07 (NAT FIRE REGM)

Cultural Resource Type:
N-RMAP Program codes : F00 (Prescribed Fire Management)
F01 (Prescribed Burn Operations)

10-238 Package Number :

Problem Statement

The objective of fire management is to allow fire to assume its natural role in the ecosystem. However, a balance must be maintained, allowing fire to assume its natural role while protecting park structures and cultural resources (PAIS Fire Management Plan). Wildfire is reduced by a combination of active prevention to include enforcement of park regulations, and interpretive activities to increase public awareness. Park fire suppression activities are undertaken in a prompt, safe, and cost-effective manner.

- Background Information:
Historical records indicate that the vegetation of Padre Island at the time of Spanish explorations (circa 1520) was quite different than it is today. According to interviews and publications (after 1850), a vast, low, wind-swept Virginia live oak motte existed along the northern back-island section of the park. The motte adjacent to Bird Island Basin is believed to be a remnant of this back-island forest. Scattered patches of these oaks remain in the park today. There are indications that the disappearance of this forest resulted from changes to the islands topography brought about by man's activities.

- Current Management Action:
National Park Service Management policy dictates that natural fires "must be permitted to continue to influence the ecosystem if truly natural systems are to be perpetuated". Park roadsides are mowed to prevent ignition of fires by parked vehicles. Fire breaks are mowed around the Gulf Operations Center to protect the structures

from fire. A draft Fire Management Plan has been prepared by the park and is currently pending approval. Subsequent to the approval of this plan, wildfires that do not pose a threat to park structures, cultural resources, human safety, or park boundary escapement will be closely monitored but not actively suppressed. Additionally, upon approval of the Fire Management Plan, prescribed burning will be utilized in order to enhance the restoration of native vegetation types. This program of prescribed burning, will be supervised by a "burn boss" who will be approved by the SWRO. Scheduling of prescribed burns will be on a yearly rotational basis, with burning beginning in the southern sections of the park and extending northward.

- Legal Authority:
16 USC 1b - National Park Service Organic Act
90 Stat. 2743
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to increase National Park Service involvement by conducting the specific actions outlined below. This action complies with NPS Management Policy and the Padre Island Fire Management Plan but requires additional funding and support.

- Increase Fire Weather Monitoring and Mowing:
Fire weather data should be collected and utilized to predict periods of extreme fire danger. Roadsides and Gulf Operatins Center grounds will be mowed to protect park structures and human safety.

- Restore the Role of Fire:
All activities related to fire management should be consistent with the approved Fire Management Plan. Fires which threaten park structures, cultural resources, human safety, and boundary escapement should be suppressed. Other natural fires should be monitored but not suppressed. Information will be gathered on fire history and used in conjunction with the Fire Management Plan to implement a prescribed burning program. Upon approval of the Fire Management Plan, a prescribed burning program will begin at PAIS, under the supervision of a SWRO approved "burn boss". Prescribed burns will be scheduled on a yearly rotational basis, beginning in the southern section of the park and extending northward.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1994:	FIRE-$	PRO	Cyclic	1.50	0.00
	PKBASE-NR	ADM	Cyclic	3.20	0.10
			Subtotal:	4.70	0.10
			Total:	4.70	0.10
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:		MON	Cyclic	5.00	0.00
		PRO	Cyclic	3.00	0.00
		ADM	Cyclic	5.00	0.10
		PRO	Cyclic	17.00	0.50
			Subtotal:	30.00	0.60
Year 3:		MON	Cyclic	5.00	0.00
		PRO	Cyclic	3.00	0.00
		ADM	Cyclic	5.00	0.10
		PRO	Cyclic	17.00	0.50
			Subtotal:	30.00	0.60
			Total:	60.00	1.20

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative implies that the park would not attempt to minimize human-caused fires and no action would be taken to monitor or control wildfires. This alternative does not conform with the park Fire Management Plan or NPS Management Policy. Significant resource damage could occur under this alternative.

- Full Supression Action:
This alternative would require full supression, utilizing aggressive firefighting techniques and all avilable equipment without regard to the cause of the fire or its location. This alternative would be cost prohibitive, result in resource damage,

and restrict fire's natural role in shaping of the ecosystem. This alternative does not conform with the park Fire Management Plan or NPS Management Policy.

- Continue Current Management Action:
Current management action is to actively suppress fires that pose a hazard to developed areas of the park or to the health and safety of the public. Fires occurring outside of these parameters are contained and allowed to extinguish by natural means.

Compliance codes : EA (ENV. ASSESSMENT)

Explanation:

Project Statement PAIS-N-002.000

Last Update: 04/12/96 Priority: 1
Initial Proposal: 1994

Title : DEVELOP A MINERALS MANAGEMENT PLAN FOR PADRE ISLAND

Funding Status: Funded: 138.00 Unfunded: 90.00

Servicewide Issues : N10 (MINRL/GEOTHERM)

Cultural Resource Type:
N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

Documented oil and gas exploration and extraction operations predate the establishment of Padre Island National Seashore by 11 years. Geophysical surveys, exploratory drilling, oil and gas well production, and pipeline transmission of products are the predominant activities conducted. Fifty-one oil and gas drilling/production sites have been identified at Padre Island National Seashore. There are currently five producing gas wells, one saltwater injection well, two support water wells, and one oil well within park boundaries. There are a significant number of well sites within 500 feet of the park boundary. Approximately 12 geophysical survey operations have been conducted since 1974. Approximately 80 miles of oil and gas pipeline and 15.4 miles of access roads cross seashore lands. In order to minimize and/or mitigate significant long-term environmental damage, all oil and gas operations must be properly planned and professionally managed. Oil and gas exploration, production, and transmission pose more threat to natural resources than any other consumptive resource use permitted in Padre Island National Seahshore.- Background Information:Legislation establishing Padre Island National Seashore did not permit the purchase of sub-surface mineral rights and specifically allowed the mineral owners access for exploration, production, and transportation of oil and gas (and other minerals that can be mined in a similar manner). Such activity is to be controlled "...under such regulations as may be prescribed by the Secretary with respect to such mining or removal". These regulations became effective in 1978 and are codified in 36 CFR 9B.The earliest documented oil/gas activity within the area that is now Padre Island National Seashore was a dry hole drilled and

plugged in 1951 at Yarborough Pass. However, the degree of activity was quite low historically and fewer than 10 wells were drilled between 1970 and 1979. In 1980, however, the price of oil (per barrel) increased significantly. Exploration increased accordngly and 10 plans of operations were submitted for that one year. Since that time, activity has been closely tied to the world price of oil.National Park Service Minerals Management Regulations for non-federal oil and gas rights (36 CFR 9B) were promulgated by the Secretary of the Interior in 1978 to minimize environmental impacts associated with oil and gas exploration and production operations. In accordance with the regulations, a "Plan of Operations" must be submitted by an operator for extensive NPS review, National Environmental Policy Act compliance, and approval before any exploration or production operation is undertaken within Padre Island National Seashore. The review, compliance, and approval process provides for incorporation of mitigation actions into each Plan to reduce irreversible or irretrievable environmental impacts from that operation.However, the majority of 36 CFR 9B regulations do not apply to persons conducting oil and gas operations prior to January 8, 1979, in accordance with a valid State of Texas permit issued by the Texas Railroad Commission. All but one production well operations and virtually all pipeline operations are currently operating under such state permits. Although these operators are not required to file a Plan of Operations, unless they sell or up-grade their operations, the Superintendent has the authority (36 CFR 9.33 (c)) to immediatley suspend any operation which poses an immediate threat of significant injury to federally owned or controlled lands or waters.Early park enforcement of the oil and gas regulations was inconsistent, due to lack of manpower and understanding of the regulations. Equipment failures, coupled with inadequate enforcement of regulations and monitoring, resulted in several releases of environmentally damaging substances within the national seashore. All events adversely impacted terrestrial and/or aquatic resources. A research project, to determine the amount of land disturbed and to quantify the persistence and magnitude of disturbance, ws completed in 1987.NPS Management Policies state that "the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other, more altered environments", (Chapter 4:4, 1988). The NPS Division of Mining and Minerals conducted an inventory of all oil and gas operations in the park in 1988. Much closer monitoring of new and existing operations is now assuring better protection of park resources. With increased activity, the potential of significant environmental impact increases greatly and close control is essential. Likewise, the impact of surface facilities on the primary activities and enjoyment of park visitors becomes a serious consideration.-

Current Management Action:Pre-planning meetings are held with proposed operators. These discussions outline the requirements for the Plan of Operations as well as introduce potential operators to pertinent park restrictions. Each operator is provided with information to assist them in preparing a required Plan of Operations and a copy of 36 CFR 9B regulations which they must comply with. Each plan is reviewed for technical adequacy and compliance with regulations and must be approved. An environmental assessment is prepared evaluating impacts to water, air, vegetation, sediment, wildlife, threatened/endangered species, aesthetics, and visitor recreational values. Protection of natural and cultural resources is critically evaluated on each proposed operation. Currently, emphasis is being placed on updating existing Plans of Operations that are deficient in areas of reclaimation and contingency planning.- Legal Authority:16 USC 1 - National Park Service Organic Act, 191616 USC 698 - Redwoods Amendment36 CFR 9B - Regulation of Oil and Gas ActivitiesNational Environmental Policy ActArcheological Resources Protection ActNational Historic Preservation ActEndanered Species ActExecutive Order 11988 - Floodplain ProtectionExecutive Order 11990 - Wetlands Protection

Description of Recommended Project or Activity

The recommended course of action is to continue current management activities by conducting the specific actions outlined below. This action complies with NPS Management Policy and federal endangered species legislation.

I. Intensify Systematic Monitoring Program

Beginning in March 1992, compliance inspections of all facilities should be conducted weekly, rather than bi-weekly. Appropriate staff members should continue to establish and maintain contacts with oil and gas personnel to facilitate productive working relationships between the National Park Service and oil and gas company representatives. To ensure that monitoring of all oil and gas operations/facilities can be accomplished, support from the Hazardous Waste Monitoring Program should be continued.

II. Continue Development of a Minerals Management Plan

Preparation of the Padre Island National Seashore Minerals Management Plan should continue. The plan should detail sensitive resource areas and environmental regulations to protect resources from various activities associated with oil and gas operations (ie. geophysical surveys, exploratory drilling, production facilities,

pipeline construction and operation, and access road construction and maintenance). The plan would require several research projects to be initiated. These projects would include:

Wind tidal flat research

The park's wind tidal flat wetlands are the most sensitive, but least studied, ecosystem in the park. The tidal flats cover approximately 60-70 square miles of the park. A recent study of the macrobenthic invertebrates inhabiting tidal flats in the Laguna Madre found that an abundant and diverse benthic community exists throughout most of the year (Withers 1994).

Detritus from other estuarine habitats, such as seagrass beds, is deposited in large quantities on these flats, and along with algal biomass, is utilized as the primary food source by benthic invertebrates, which are then preyed upon by shorebirds, demersal fish, and crabs.

Consequently, losses of tidal flat productivity caused by anthropogenic impacts are detrimental to both bird and fishery populations.

Research has shown that wind tidal flats are one of the most significant feeding areas for wintering and migrating shorebirds on the Texas Gulf Coast (Withers and Chapman 1993, Withers 1994), particularly the endangered and/or threatened piping and snowy plovers. In 1991, 55% of all piping plovers wintered in Texas and 43% were found on tidal flats (Haig and Plissner 1993). Additionally, tidal flats are also important foraging habitat for reddish egrets, and wintering peregrine falcons, both protected species.

Simply, with the increases in development and continuing impacts to the wind tidal flats of the Laguna Madre, there will be less prime foraging habitat for the many sensitive bird species that utilize these areas. Preserving the remaining wind tidal flat habitats, particularly bluegreen algal flats in the upper Laguna Madre, is essential, because they provide resources that are crucial to the survival of many bird species.

Wind tidal flats harbor a variety of marine and coastal organisms and supplies the primary productivity to the estuarine and nearshore marine food webs. The complex food webs leading to the great diversity of marine life are dependent on the proper functioning of the intertidal ecosystem, and vehicles can significantly alter the intertidal area at the species level, but with even greater long term consequences at the system level threatening this important habitat's very survival.

The scope of this project is to:

1.Initiate a research project to obtain a comprehensive baseline on the distribution and composition of benthic invertebrates.

2.To use stable isotopes of carbon and nitrogen to assess the role of cyanobacterial production on the wind tidal flats.

3.To measure the fluxes of dissolved inorganic nitrogen (DIN) produced from the wind tidal flats and to quantify DIN pool sizes in wind tidal flat pore waters and in the adjacent Laguna Madre.

4.To assess the impact of vehicular traffic and other physical disturbances on the biomass and productivity of cyanobacterial mats.

Wetland research:

Due to the shallow nature of the groundwater at PAIS, the potential for impacts to wetland communities and ephemeral ponds from hydrocarbon and heavy metal contamination, as a direct result of oil and gas development, of the aquifer is considerable. The freshwater and ephemeral ponds in the park are utilized as a primary source of drinking water for most of the many species of wildlife inhabiting the park.

A research project needs to be initiated utilizing historic aerial photographs, to determine the types of wetland communities present; analyze the recovery of abandoned oil and gas sites, measure and map the individual sites, and evaluate each of the sites as to their value. This information would then be categorized to determine areas that could be utilized as wetland compensation sites for future oil and gas exploration.

The overall scope of this project is to:

1) identify historic changes in the island's vegetation communities and their relative biomass

2) identify areas of wetlands establishment and percentages of wetlands created in the park

3) identify dunal movement and the degree of movement caused by historic vegetation impacts

4) identify areas that could be reclaimed into wetlands for compensation under the agency's minimum 2:1 ratio requirement for future oil and gas developments in PAIS.

These data are considered invaluable for defining the ecological

reasons as to why the NPS enforces regulatory policies to protect sensitive resources. That is, in the 1950's until the late 1970's, the park had minimal wetlands and vegetation cover. Consequently, environmental issues such as wetlands impacts, protected species habitat impacts and ground water contamination were not as significant for park protection because development of wetlands and vegetation cover occurred in the past two decades.

A comprehensive minerals and management plan would include baseline inventories of the park's mammal and herptile communities. These types of surveys have not been initiated in the past due to a lack of funding.

The plan would also present reclaimation guidelines and standards, monitoring criteria and procedures, and applicable federal and state laws and regulations.

III. Continue Development and Maintainance of a Geographic Information System:

A Geographic Information System (GIS) should be developed and utilized for minerals management. Maps containing locations of all oil and gas production facilities and pipelines, geophysical surveys, and exploratory wells should be included. Locations of sensitive areas should be incorporated so that these areas can be avoided when selecting exploration and production sites. Equipment necessary for producing maps containing these data layers would need to be purchased. This equipment includes a large format color plotter or printer, PC ARC/INFO, and a bar code reader for the park's GPU. Additionally, copies of past aerial photography or imagery would need to be purchased for inclusion into the park's GIS system and could be used to determine impacts or areas for restitution projects.

BUDGET AND FTEs:

	FUNDED			
	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-OT	MON	Recurring	12.00	0.40
	PKBASE-OT	ADM	Recurring	18.00	0.60
			Subtotal:	30.00	1.00
1995:	PKBASE-OT	MON	Recurring	14.00	0.40
	PKBASE-OT	ADM	Recurring	22.00	0.60

		Subtotal:	36.00	1.00
1996:	PKBASE-OT MON	Recurring	14.00	0.40
	PKBASE-OT ADM	Recurring	22.00	0.60
		Subtotal:	36.00	1.00
1997:	PKBASE-NR MON	Recurring	7.00	0.20
	PKBASE-NR ADM	Recurring	29.00	0.80
		Subtotal:	36.00	1.00
		Total:	138.00	4.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	90.00	0.00
		Total:	90.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This action implies that the NPS would not attempt to regulate and monitor oil and gas activities. It would not comply with the park's establishing legislation, 36 CFR 9B, and other federal legislation. Significant resource damage could occur if this alternative was selected.

- Require a Plan of Operations but Limit Monitoring:
This alternative would provide a considerable amount of control of oil and gas activities but would not ensure adherance to Plan of Operations restrictions. It is likely that many operators would not comply with regulations and unmitigated damage would occur. This alternative does not conform with 36 CFR 9B regulations, NPS Management Policy, or other federal legislation.

Compliance codes : EIS (ENV. IMPACT STATEMENT)
ESA (ENDANGERED SPECIES ACT)

Explanation:

Project Statement PAIS-N-003.000

Last Update: 02/26/97 Priority: 5
Initial Proposal: 1994

Title : PATROLS FOR NESTING SEA TURTLES

Funding Status: Funded: 73.00 Unfunded: 30.00

Servicewide Issues : N02 (T&E ANIMAL)
N17 (BIODIVERSITY)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

Kemp's ridley sea turtle (Lepidochelys kempi) is the most endangered sea turtle species, with only about 400 adult females remaining in the population. A expermental, international, multi-agency program was initiated in 1978 to establish a secondary breeding population of Kemp's ridley at Padre Island National Seashore. The Kemp's Ridley Sea Turtle Recovery Plan lists patrolling/managing Padre Island beaches as a priority 2 recovery task item. Local beaches must be monitored for the foreseeable future to determine if turtles from this project return to nest, to document the successfullness of the project, and to protect the critically endangered nesting turtles, nests, and hatchlings. Wild Kemp's ridley and other sea turtle species nest sporadically on south Texas beaches. These nesting turtles, nests, and hatchlings must also be detected, documented, and protected.

- Background Information:
The Kemp's ridley sea turtle was formally protected as an endangered species by the United States in 1970 (Federal Register, 1970). In 1968, the International Union for Conservation (IUCN) declared the Kemp's ridley to be the most endangered of all sea turtles. The evidence of a critical population decline at Rancho Nuevo, Tamaulipas, Mexico, the primary nesting area, overwhelmingly supported this determination.

In 1947, a nesting aggregation at Rancho Nuevo contained approximately 40,000 females. The population declined to an aggregation of 500 females in 1980, despite protection of the

nesting beach by the Mexican Government since 1966. The drastic population decline has been attributed to: commercial harvesting of eggs, shells, and meat; predation by wild animals on eggs and hatchlings; and incidental catch of subadults and adults during commercial fishing activities.

In order to save the species from extinction, a multi-agency, international "Action Plan" was developed and implemented in 1978. The Action Plan was developed for the express purpose of restoring the Kemp's ridley sea turtle population through enhancement of nesting success and survival at Rancho Nuevo and establishment of a secondary breeding population at Padre Island National Seashore.

The National Park Service provided funding, personnel, and logistical support to fulfill its responsibilities as designated in the "Action Plan". The original restoration plan limited this project to 10 years (1978-1988) and the last egg shipment to the park from Rancho Nuevo was made in 1988. However, the Kemp's Ridley Sea Turtle Working Group decided in 1987 that egg shipment will be reconsidered if turtles from this project return to nest at the park.

Each year, from 1978-1988, approximately 2,000 eggs were gathered at Rancho Nuevo and shipped to the park for incubation (22,507 eggs total). Overall, 77.1% of the eggs hatched. All viable hatchlings were transferred to the National Marine Fisheries Service (NMFS) Laboratory at Galveston, Texas for headstarting. Approximately 14,000 of the hatchlings sent to the NMFS laboratory survived until release as yearlings.

Monitoring of the Kemp's ridley eggs shipped from Rancho Nuevo became progressivley more sophisticated throughout the years of the project. Procedures were developed at the park to more precisely control egg temperatures and sex ratios. A number of parameters were measured for the Kemp's ridley eggs and hatchlings at the park. A large quantity of data, never previously collected for this species, was amassed. Annual reports of findings were prepared and distributed to sea turtle biologists throughout the world. Scientific presentations were delivered at several sea turtle conferences.

It is not known at what age Kemp's ridley turtles mature but estimates range from 10-15 years. Hence, it is possible that Kemp's ridleys from this project may soon return to nest on Texas beaches. However, to date, no confirmed nestings of turtles from this project have occurred on beaches in Texas or Mexico. Although a pair of mating Kemp's ridleys were observed in the Mansfield Channel on 3 June 1991, it could not be determined whether the individuals were part of the restoration project.

Endangered Kemp's ridley and leatherback (Dermochelys coriacea) and threatened loggerhead (Caretta caretta) and green (Chelonia mydas) turtles have nested sporadically on the Texas coast. Twelve sea turtle nests were documented on Texas beaches from 1979-1993 (eight were laid at the park). Kemp's ridley turtles nested more frequently than any other species (six of the 12 nests). Park personnel possessed more expertise in incubating sea turtle eggs than any other individuals or organizations in Texas. Thus, the park was directly involved in incubation and/or monitoring of all documented nests laid on Mustang and Padre islands (11 of the 12 nests). Eggs from nine of the 12 nests were incubated in styrofoam boxes at the park incubation facility. Hatching rates of these eggs ranged from 45-97%. Only 1-2% of the eggs from two clutches incubated in-situ hatched. Another clutch incubated in-situ was not discovered until about two weeks after hatching and yielded at least an 80% hatch. Hatchlings from only one of the 12 clutches were headstarted. Additionally, nine nests laid in captivity, at various facilities in Texas, were incubated at the park incubation facility. No eggs from 10 of these clutches hatched; all were probably infertile. However, eight hatchlings were produced from one nest incubated at the park in 1992, marking the first successful reproduction of Kemp's ridley sea turtles held in captivity in Texas.

In 1986, the park began to address the possiblity of Kemp's ridley sea turtles returning to nest at PAIS. Included in the strategy were public eductaion, monitoring, and planning efforts. Public education programs about the Kemp's ridley project were initiated in 1978 and evolved during the mid-1980's to include messages about nesting activity. Interpretive programs were given at many of the hatchling releases. Posters describing the need to report sightings of sea turtles were widley distributed in south Texas. The project received wide media coverage each year.

The Kemp's Ridley Sea Turtle Recovery Plan lists patrolling/managing the Padre Island nesting beach and addressing related long-term educational needs as priority 2 recovery task items, with the National Park Service being the responsible agency. Monitoring and protection efforts for nesting sea turtles, nests, tracks, and hatchlings began in 1986 and have continued each summer thereafter. Due to the dispersion of previous nestings and uncertainty of where Kemp's ridleys may return to nest at PAIS, monitoring efforts encompassed the entire 65 miles of the park and the 10 miles north of the northern park boundary. Unfortunately, most of this area could only be accessed with a four-wheel drive vehicle and tremendous quantities of marine debris and soft sand greatly impeded monitoring efforts.

The Padre Island National Seashore Sea Turtle Management Plan was approved in July 1992. The plan details threats to nesting sea

turtles, nests, and hatchlings (of all species), measures that can be used to protect them, and recommendations for dealing with eggs and hatchlings from nests laid on local beaches. Recommended actions outlined in this plan serve as a guideline for monitoring and nest protection programs.

Beginning in 1978, the National Park Service, Southwest Regional Office, provided funding to assist with efforts to establish a secondary breeding colony of Kemp's ridley sea turtles at the park. During most fiscal years, from 1978-1992, the regional office provided approximately $10,000/year to support activities. During the first years, monies were utilized to fund egg transport, egg incubation, hatchling transport, beach temperature research, and related equipment and personnel costs.
After 1986, monies also supported patrol efforts and costs incurred to protect/incubate sea turtle clutches that were laid at the park and other areas in Texas (wild and captive). In fiscal years 1992 and 1993, these monies were utilized soley for support of seasonal employees who assisted with monitoring and protection efforts.

- Current Management Action:
Federal and state permits to conduct sea turtle conservation activities are obtained each year. Park beaches are patrolled for nesting activity during the primary nesting season. Standard procedures, consistent with the Sea Turtle Management Plan, are followed at the park. Nests laid at the park (and on other south Texas beaches) that cannot be protected in-situ, are incubated in styrofoam boxes at the park incubation facility and hatchlings are released at the nest site. Efforts are made to educate park visitors about the need to be alert for signs of nesting activity and to report sightings immediately. Annual reports detailing patrol results and scientific findings are prepared and distributed to numerous sea turtle biologists. A park representative attends and participates in each annual Kemp's Ridley Sea Turtle Working Group Meeting.

- Legal Authority:
16 USC 1 - National Park Service Organic Act of 1916
16 USC 698 - Redwoods Amendment
16 USC 1531 et. seq. - Endangered Species Act
National Environmental Policy Act
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to continue National Park Service involvement by conducting the specific actions outlined

below. This action complies with NPS Management Policy and federal endangered species legislation but requires additional funding and support.

- Continue Monitoring and Egg Incubation Efforts:
As per the Kemp's Ridley Sea Turtle Recovery Plan, monitoring of the Padre Island nesting beach for nesting Kemp's ridley sea turtles should continue. Continued monitoring and prompt nest detection should greatly increase the chances of egg survival. Given limitations in funding, staffing, and vehicles, monitoring efforts should encompass as much of the primary nesting, egg incubation, and hatchling stranding season (April-August) and 75 mile target area as possible. As during the 1990-1993 patrol seasons, attempts should be made to focus efforts on dates and locations most likely to result in encountering these animals. To stretch scarce resources, the use of volunteers and loaned, donated, or surplus vehicles should be continued. When possible, "mules" and ATV's should be utilized for patrols because of their effectiveness for this purpose.

Egg incubation/protection efforts should continue. Because of the park staff's expertise with egg incubation and lack of other qualified personnel in Texas, it is imperative that the park maintain care of sea turtle nests to ensure the highest survival possible. Efforts to analyze unhatched eggs for fertility and embryology and analyze dead hatchlings for gender should be continued. These analyses provide important information on the effectiveness of incubation management practices.

Sixteen thousand dollars per year is needed in additional funding to maintain patrol and egg incubation efforts at existing levels. Included in this funding need are costs for seasonal employees to conduct patrols and for periodic maintenance of ATV's.

Additional monies would be needed to fund expansion of patrol coverage. If a secondary breeding population of Kemp's ridley turtles becomes established at the park, monitoring efforts would have to be intensified and substantial increases in funding and manpower would be necessary.

- Continue Public Education Efforts:
As per the Kemp's Ridley Sea Turtle Recovery Plan, efforts to educate the public and train pertinent individuals about nesting sea turtles should continue. It is imperative that beach users be alert for signs of nesting activity and report sightings immediately. Posters and handouts should be distributed as during previous years. Interpretive staff should continue to give interpretive programs for park visitors, community organizations, and school groups.

- Publish Research Findings:
Efforts to publish research findings should continue. It is necessary for the project results to be printed in scientific journals so that these data can be more widely distributed. Much of the pioneering data collected at the park would greatly add to the understanding of the critically endangered Kemp's ridley sea turtle.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-NR	MON	Recurring	8.00	0.40
	VOL-IN-PK	MON	Recurring	2.00	0.50
			Subtotal:	10.00	0.90
1995:	FED-OTHER	MON	One-time	22.50	0.80
	PKBASE-NR	MON	Recurring	4.00	0.20
	VOL-IN-PK	MON	Recurring	2.00	0.10
			Subtotal:	28.50	1.10
1996:	FED-OTHER	MON	One-time	22.50	0.80
	VOL-IN-PK	MON	Recurring	2.00	0.10
	PKBASE-NR	MON	Recurring	4.00	0.20
			Subtotal:	28.50	1.10
1997:	PKBASE-NR	MON	Recurring	4.00	0.20
	VOL-IN-PK	MON	Recurring	2.00	0.10
			Subtotal:	6.00	0.30
			Total:	73.00	3.40

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	MON	Recurring	10.00	0.50
Year 2:	MON	Recurring	10.00	0.50
Year 3:	MON	Recurring	10.00	0.50

Total:	30.00	1.50

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
The no action alternative implies that the National Park Service will not attempt to detect, study, and protect nesting within the park, educate the public about sea turtle conservation, or continue efforts to establish a secondary breeding population of Kemp's ridley turtles at the park. Sea turtle nests and hatchlings would be lost to vehicles, predation, and a variety of other factors. Park visitors would not be aware of the legal protections of sea turtles and would have the opportunity to kill, take possession, and market them. This alternative does not conform with federal legislation or NPS Management Policy. Protection of threatened and endangered sea turtles would not occur.

- Increase Monitoring Efforts:
Monitoring patrols would be increased under this alternative. Currently, patrols do not encompass the entire 75 mile target patrol area or the entire nesting, egg incubation, and hatchling stranding seasons. Under this alternative, patrols would be increased to 5-7 days/week, from April through September, along the entire 75 mile route. It is likely that expanded coverage would result in additional observations of nesting activity and opportunities to protect nests from these threatened and endangered species. Also included in this alternative would be replacement costs of "mules" and ATV's, the primary patrol vehicles. However, since costs to conduct such a comprehensive program would be extremely high, this alternative is currently deemed unrealistic.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 512 DM2 APP. 2, 1.7

Project Statement PAIS-N-004.000

Last Update: 04/11/96 Priority: 13
Initial Proposal: 1994

Title : INSHORE SEA TURTLE STUDY

Funding Status: Funded: 32.00 Unfunded: 19.00

Servicewide Issues : N02 (T&E ANIMAL)
N20 (BASELINE DATA)

Cultural Resource Type:

N-RMAP Program codes : S00 (Science Consultation and Oversight)

10-238 Package Number :

Problem Statement

Previous to 1989, little was known about sea turtles occupying park inshore waters (Laguna Madre and Mansfield Channel). Since June 1989, the park has conducted a study of sea turtles stranded and captured in local inshore waters. Information has been gathered on species composition, seasonality, residency, growth rates, sex ratios, food habits, and tag retention times, addressing several recovery task priority items listed in the Kemp's ridley and green sea turtle recovery plans. A long-term monitoring program should be established for sea turtles at the Mansfield Channel to ensure their adequate protection.

- Background:
Sea turtles were once abundant in Texas inshore waters. However, in the 1800's, a sea turtle processing industry decimated their numbers. For several years, the park has realized that the waters surrounding the Mansfield Channel jetties contain relatively high numbers of sea turtles. Unfortunately, the turtles occupying these waters could be impacted by a number of human activities and natural factors. Similarly, it was suspected that turtles might occur in the Laguna Madre and that they might be affected by boating and dredging.

In 1989, Padre Island National Seashore was funded by the U.S. Fish and Wildlife Service to conduct the first systematic study of sea turtles in Texas inshore waters. The park queried records of turtles stranded in Texas inshore waters and used a variety of means to collect information on turtles sighted in park inshore waters. Additionally, nets were set within the Laguna Madre and

Mansfield Channel in an attempt to capture turtles. During the first year of study (June 1989-May 1990), only one green sea turtle was captured in the Laguna Madre in 289 netting hours, but 40 green sea turtles were captured at the Mansfield Channel in 124 netting hours. After June 1990, netting effort was discontinued in the Laguna Madre, due to the extremely low catch rate encountered there, and restricted to the Mansfield Channel, where the liklihood of captures was much greater. U.S. Fish and Wildlife Service funding of this project was terminated in June 1991. During 1992, the Southwestern Parks and Monuments Association provided partial funding to conduct the study.

From June 1989 through November 1993, 56 green (95 captures) and one hawksbill turtles were captured during monitoring and netting at the Mansfield Channel (554 hours of netting effort). Nearly half of the green turtles were recaptured. The average interval from first to last capture for the recaptured turtles was four months. Capture data indicate that the population at the Mansfield Channel has declined since the inception of the study. Although several possible factors have been implicated in causing the apparent decline (freezing, dredging, increased visitation, spread of sea urchins and exotic mussels, natural fluctuations), none have been proven. Information on seasonality and residency of green turtles in the Mansfield Channel has been inferred from capture data. In 1992, the National Marine Fisheries Service (NMFS) incorporated results from park netting surveys at the Mansfield Channel into their recommendations for dredging at that location. NMFS suggested that more injurious hopper dredges be utilized only during the winter months, when netting captures were typically the fewest.

A pair of mating Kemp's ridley sea turtles was observed and photographed in the Mansfield Channel on 3 June 1991. It was impossible to determine whether the turtles possessed tags, tag scars, or living tags, and hence whether they were wild or head started individuals. Although no sea turtle nests were found along the Texas coast subsequent to the mating, the observation was significant because: 1) this was the first confirmed observation of Kemp's ridley sea turtles mating in Texas waters; 2) this was the first observation of mating by this species in inshore waters; and, 3) this was the first documentation of this species in Willacy County inshore waters (including the Mansfield Channel and Laguna Madre).

Although no Kemp's ridley turtles have been netted at the Mansfield Channel, the observation of mating individuals supports the possibility that this species could be encountered in the area. The survey of sea turtles in park inshore waters addresses several recovery task priority items listed in the Kemp's Ridley Sea Turtle Recovery Plan and Green Sea Turtle Recovery Plan.

- Current Management Action:
Once a month nets are set at the Mansfield Channel to capture and study sea turtles. Each turtle that is caught is identified to species, tagged, weighed, measured, and photographed. When possible, blood is drawn to determine gender and breeding colony of origin. Lavage and fecal samples are taken to determine food habits. Analysis of the Mansfield Channel habitat is being conducted under a separate project statement (see PAIS-N-017.000). Databases are maintained on turtles captured so that growth rates and residency times can be calculated. Capture data are used in the formulation of management plans for sea turtles at the Mansfield Channel (ie. PAIS Sea Turtle Management Plan, dredging restrictions). Netting will continue under National Park Service and National Biological Survey funding through mid-1994, to complete five years of data collection for this project.

- Legal Authority:
16 USC 1 - National Park Service Organic Act of 1916
16 USC 698 - Redwoods Amendment
16 USC 1531 et. seq. - Endangered Species Act
National Environmental Policy Act
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to increase National Park Service involvement by conducting the specific actions outlined below. This action complies with NPS Management Policy and endangered species legislation but requires additional funding and support.

- Develop a Long-Term Monitoring Program for Sea Turtles at the Mansfield Channel:
A long-term monitoring program should be established for sea turtles at the Mansfield Channel. Study location and capture protocol should be the same as from 1989-1994. However, monthly netting might be reduced to April through September (periods of peak turtle abundance), when dredging is conducted in the area, and/or when contracted research on marine vegetation of the Mansfield Channel jetties is conducted. Population trends should be assessed by comparing monthly capture rates with those from previous years.

- Initiate Public Education Efforts:
Efforts should be made to inform visitors to the Mansfield Channel that sea turtles inhabit these waters and that they are legally protected. Signs should be erected stating these facts and what

should be done if turtles are caught on hook-and-line.

- Publish Research Findings:
Monitoring and research results should be published in scientific journals so that these data can be more widely distributed. Much of the data collected would add greatly to the understanding of sea turtle biology.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-NR	RES	Recurring	4.00	0.20
	PKBASE-NR	ADM	Recurring	2.00	0.10
	FED-OTHER	ADM	Recurring	2.00	0.10
			Subtotal:	8.00	0.40
1995:	FED-OTHER	ADM	Recurring	2.00	0.10
	FED-OTHER	RES	Recurring	4.00	0.20
	PKBASE-NR	ADM	Recurring	2.00	0.10
			Subtotal:	8.00	0.40
1996:	FED-OTHER	RES	Recurring	4.00	0.20
	PKBASE-NR	ADM	Recurring	2.00	0.10
	FED-OTHER	ADM	Recurring	2.00	0.10
			Subtotal:	8.00	0.40
1997:	FED-OTHER	ADM	Recurring	2.00	0.10
	PKBASE-NR	RES	Recurring	4.00	0.20
	PKBASE-NR	ADM	Recurring	2.00	0.10
			Subtotal:	8.00	0.40
			Total:	32.00	1.60

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	MON	Recurring	4.00	0.10
Year 2:	MON	Recurring	4.00	0.10

Year 3:	MON	Recurring	4.00	0.10
Year 4:	MON	Recurring	7.00	0.20
		Total:	19.00	0.50

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
The no action alternative implies that the National Park Service will not attempt to detect, study, and protect sea turtles occurring within park inshore waters. Park visitors would not be aware of the legal protections of sea turtles and would have the opportunity to kill, take possession of, and market them. This alternative does not conform with federal legislation or NPS Management Policy. Protection of threatened and endangered sea turtles would not occur.

- Continue Current Management Action:
Under this alternative, netting of sea turtles at the Mansfield Channel would be discontinued after August 1994. No long-term monitoring would be conducted to assess yearly population trends, changes in species composition, or impacts from various factors such as dredging, increased visitation, and spread of exotic mussels. No education efforts would take place and hence turtles would receive less protection. This alternative does not fully meet NPS Management Policy or federal legislation.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 512 DM2 APP. 2, 1.6

Project Statement

PAIS-N-005.000
Priority: 21

Last Update: 02/26/97
Initial Proposal: 1994

Title : SEA TURTLE REHABILITATION

Funding Status: Funded: 26.00 Unfunded: 8.00

Servicewide Issues : N02 (T&E ANIMAL)
N17 (BIODIVERSITY)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

An average of 10 hatchling sea turtles strand on park beaches each year. Endangered Kemp's ridley and hawksbill turtles are the species encountered most frequently. More Kemp's ridley hatchlings wash ashore on park beaches than any other area in the United States. Most hatchlings that strand are injured and suffering from dehydration, hyperthermia, but are alive. The stranded hatchlings are in need of immediate care and stabilization. Beginning in 1990, the park initiated a program to detect and care for stranded hatchling sea turtles.

- Background:
More sea turtle hatchlings stranded during the summer of 1990 than during any summer from 1980-1989. Forty of the 53 hatchlings found in 1990 were alive. Most were injured and in need of immediate care and stabilization. Unfortunately, there was no suitable local facility available where the hatchlings could be taken for rehabilitation.

It was feared that similarly high numbers of hatchlings might strand during successive summers. The park staff and Kemp's Ridley Sea Turtle Working Group concluded that improved, local rehabilitation efforts must be undertaken in the future to ensure the survival of these stranded hatchlings. In May, 1991, EXXON Corporation, USA, donated $30,000 to PAIS for the construction of a sea turtle hatchling rehabilitation facility at the park. The park matched those funds and the permanent facility was completed and fully operational for the 1993 season.

Specific plans for the facility were formulated after consultation with individuals from the U.S. Fish and Wildlife Service and National Marine Fisheries Service who had expertise in the care, maintenance, and rehabilitation of sea turtles. The rehabilitation facility was designed to hold up to 70 hatchlings, each in an individual 75.6 liter aquarium, in sterilized water.

- Current Management Action:
Because of the large number of hatchlings that were found stranded on North Padre and Mustang Islands in 1990, PAIS expended considerable effort to detect stranded hatchlings during 1991 and 1992. All live hatchling sea turtles found stranded at Padre Island National Seashore are rehabilitated at the park facility and then released into the Gulf of Mexico.

Holding conditions, practices, and techniques are similar to those utilized during 1991 and 1992. Each holding container is filled with Gulf of Mexico water that is pumped through a series of filters and an ultraviolet sterilizer to remove inert elements, particles, bacteria, protozoa, and fungi. Each aquarium has an individual, external, biological filter and an under-gravel filter. Water quality was monitored at least once a week.

Injured turtles are transferred to different tanks when necessary to ensure high water quality, important in recuperation of ill turtles (Leong et al., 1989). Additional water was added to the tanks when necessary. During 1993, lids were placed on all aquariums that did not contain turtles, in order to reduce evaporation of water.

Each hatchling is fed small pieces of shrimp and squid and provided a nutritional supplement that contained vitamins, trace elements, and amino acids. Attempts are made to feed turtles using as little human contact as possible.

As recommended for hatchling Kemp's ridley sea turtles (Fontaine et al., 1989), each hatchling held at the PAIS facility is fed approximately 5% of their body weight each day. Hatchling health is closely monitored. Veterinary care is provided by Dr. Mike Hughes, who has previous experience in treating sea turtles.

Stranding locations and dates are noted for each hatchling and all are measured for straight-line carapace length (SLCL), straight-line carapace width (SLCW), curved carapace length (CCL), curved carapace width (CCW), and weight. To access possible age and origin of the hatchlings, each is examined for the presence of an umbilical scar, egg tooth, internal yolk and gut contents (if dead), wounds, and epizoans. Additionally, hatchlings that are found dead or died during rehabilitation are necropsied in an attempt to determine cause of death and remove gonads for

histological sex determination. Gonads are shipped to Dr. Robinson (Texas A&M University, Veterinary Diagnostic Laboratory), who determines gender of the dead hatchlings.

- Legal Authority:
16 USC 1 - NPS Organic Act of 1916
16 USC 698 - Redwood Amendment
16 USC 1531 et. seq. - Endangered Species Act
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to continue National Park Service involvement as listed below. This action complies with NPS Management Policy and federal endangered species legislation.

- Continued operation of Sea Turtle Rehabilitation Facility: However, funding is required for permanent staffing, rehabilitation training, facility supplies, water quality testing equipment, and, office equipment.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
			FUNDED		
1994:	PKBASE-NR	PRO	Recurring	4.00	0.20
	VOL-IN-PK	MON	Recurring	0.50	0.10
	PKBASE-NR	ADM	Recurring	2.00	0.00
			Subtotal:	6.50	0.30
1995:	PKBASE-NR	MON	Recurring	4.00	0.20
	VOL-IN-PK	MON	Recurring	0.50	0.10
	PKBASE-NR	ADM	Recurring	2.00	0.10
			Subtotal:	6.50	0.40
1996:	PKBASE-NR	PRO	Recurring	4.00	0.20
	VOL-IN-PK	PRO	Recurring	0.50	0.10
	PKBASE-NR	ADM	Recurring	2.00	0.00
			Subtotal:	6.50	0.30

1997:	PKBASE-NR PRO	Recurring	4.00	0.20
	VOL-IN-PK PRO	Recurring	0.50	0.10
	PKBASE-NR ADM	Recurring	2.00	0.00
		Subtotal:	6.50	0.30
		Total:	26.00	1.30

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	PRO	One-time	4.00	0.20
Year 2:	PRO	One-time	4.00	0.20
		Total:	8.00	0.40

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
No data collection would be undertaken, resulting in a loss of valuable information. Live stranded protected, threatened, and endangered animals would succumb as a result of park inaction. Park visitors would have the opportunity to illegally take possession of and market these species and their body parts. This alternative does not conform with federal legislation or NPS Management Policy.

- Continue Current Management Action:

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-006.000

Last Update: 04/11/96 Priority: 22
Initial Proposal: 1994

Title : NATIVE PLANT RESTORATION

Funding Status: Funded: 25.00 Unfunded: 16.00

Servicewide Issues : N17 (BIODIVERSITY)
N06 (LAND USE PRAC)

Cultural Resource Type:

N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

Problem Statement

Stretching 120 miles along the lower Texas coast, Padre Island is one of the largest and most unique barrier islands on the North American coastline. Its miles of white powdery beaches, active sand dunes, grasslands and marshes form a fragile, yet resilient, habitat which has survived millennia of natural forces such as hurricanes and droughts and centuries of human activity, including ranching and intentional burning. Padre Island National Seashore now provides a degree of protection from further degradation for a significant segment of the island.

Padre Island is a relatively recent geological phenomenon, gradually emerging from the sea off of the Texas coast during the middle Holocene period, 4,000 to 5,000 years ago. From the earliest period, seeds and spores brought across the broad, yet generally shallow, Laguna Madre by wind, water, birds, animals and the aboriginal human inhabitants of the coastal regions would have begun to establish themselves. In the harsh environmental conditions present on the island, with shifting, coarse sandy soils, brackish wetlands, daily winds and frequent storms, only certain hardy species could be expected to survive.

The species present on the island today are indicative of this restricted environment. Whether these species represent those historically present on the island is not totally certain. The impact of man on the vegetation of the island has been dramatic throughout much of the island's recent history. While development in recent years has drastically altered selected portions of the island, the long term impact of ranching, an important activity on

the island since the early 1800's, has been much more significant, having had a more drastic impact on the vegetation over a much larger area.

The historical record of the last 400 years on the island is sketchy at best. During periods there are fairly good, if general, accounts of the vegetation. At other times, the only available documents are maddeningly vague or seemingly more impressionistic than realistic. The general vegetation trend stands out quite clearly, however. Padre Island has been primarily a grassland since the arrival of Europeans in the area and probably since it rose from the sea several thousand years ago. Arborescent vegetation has been noted infrequently, but most noteably by the 1828 Balli land grant survey and by William Lloyd in 1891.

Natural succession has mitigated many of the impacts to native plant populations that resulted from historical use of Padre Island National Seashore. However, certain long-lived plant species have not had sufficient time to recover and are still relatively rare. Additionally, plant communities continue to be impacted in some areas of high visitor usage. Active efforts to restore particular plant species and habitats are necessary to protect biodiversity and ecosystem function.

Background Information:
The fine sandy sediment of the island supports a coastal grassland or prairie environment which was severely degraded prior to acquisition of the park. Natural environmental perturbations such as hurricanes, droughts, fire, flooding, and high salinity were accentuated by human impact, including overgrazing, burning, military activities, resort development, and oil and gas exploration, in reducing large areas of the island to little more than blowing sand. Since the central portion of the island was taken over by the National Park Service, the park area vegetation has significantly recovered.

It was not until the late nineteenth century that anything approaching a scientific description of the vegetation of Padre Island was undertaken. Relatively unbiased, quantitative scientific studies were not completed until the eve of the creation of the National Seashore. Despite the lack of scientific precision in the early period, there are some excellent general descriptions of the vegetation and wildlife of the island contained in early journals and traveler's accounts.
What is lost in accuracy and quantitative form is more than made up for by the 300-year perspective. Even more important than the length of the historic perspective on the vegetation is the presence of some accounts which detail the vegetation prior to extensive disturbances by European settlement and ranching activities.

The earliest aerial photographs of Padre Island, taken in 1937, mark the beginning of a new dimension in large-scale, quantitative analysis of vegetation change. Through a series of studies published in the mid- and late-1970's by the Bureau of Economic Geology at the University of Texas (Morton and Pieper, 1975; 1977a; 1977b; White et al., 1978), a fifty-year sequence of changes in vegetation lines and vegetative cover, based on aerial photograph interpretations, was undertaken.

According to White et al. (1978), on North Padre Island from 1938 to 1974 vegetation expanded greatly, reducing erosional forms from 19 to 5 percent of the landscape. Vegetated dune and barrier flats spread from 12 to 30 percent of the area, and subaqueous grassflats increased from less than 1 to 16 percent of the area.

White et. al (1978) state that this trend may be a return to the reported greener conditions of the 1800's. They report that vegetation cover in the area is recorded as depleted during the droughts of 1880-1890 and 1895-1905, probably combined with overgrazing, and large areas of Padre Island were barren sand until 1941. North Padre had active dune field covering 18 percent of its area in 1938.

In a series of letters to Robert Whistler, former Chief Naturalist of the Padre Island National Seashore, Eric Warren, a friend of the Dunns who had visited the island as early as the 1920's, recalled the vegetation on the island during the early twentieth century.

"Various writers had reported that the island had never had trees but I had seen many areas of dense brush when I first came here in about 1918 with Mr. Pat Dunn, his cow hands and guests. There was a lot of mesquite, willow, sweet bay and oak. Each seemed to keep its own company except the sweet bay which mixed with the oaks and cactus with the mesquite. Willow was usually around the little fresh water lakes mixed with jaboncillo and salt cedar" (Warren, n.d.)

[Speaking of the area near Yarbrough Pass] "That area, as I remember, was once a cactus, mesquite and rough grass [Sacahuiste] area." (Warren, 1976)

Although there is some variety in the accounts from the hundred years between the maritime explorations of Jose de Evia and the founding of the Dunn Ranch, the general trend seems to indicate that Padre Island and the adjacent mainland were mixed grassland and open dune areas with scattered small oaks and other small shrubby trees. Only one report, the Padre Balli survey, seems to indicate any greater degree of arboreal vegetation. In comparison to the topographic survey of Halter, who spent years on the island, this two-week survey noted a seeming abundance of vegetation.

On the other side of the coin, however, are descriptions such as Reid's (1847), Noakes' (1865) and Halter's which seem to indicate the lack of arboreal species and the general harshness of the environment. Could there have been one or more periods during which arboreal vegetation was more common on the island? The limited description available will not allow an easy answer to this question. Certainly there is some reason to expect that prior to the introduction of grazing by Padre Balli, there may have been a somewhat denser vegetation.

The first unquestionable mention of oaks on Padre Island was by Lloyd (1891), who was told by Curry that they were a recent introduction to the island. Mentions of laurels in earlier sources, including the Balli survey and the Ortiz Parilla reconnaissance in 1766, could be misidentifications of live oak, but laurel is also common on the mainland and occurs on the northern part of the island.

Tharp (1926) classifies the coastal area including the barrier islands as Coastal Prairie, which he describes as a mosaic of grassland and marshes on alluvial soil/sand, with a moisture gradient ranging from 50 inches in the northeast to 30 inches as you move southwest. Regarding oak trees on Padre Island, Tharp states:"Oaks, principally in the form of a shrub, occupies rather large areas. That its occupation of this territory is largely recent appears doubtful, however, for Lindheimer... speaks of having noted its presence as early as 1844. To what extent it is now actively spreading has not been ascertained, but with intensive pasturing and elimination of prairie fires, mottes of it are unquestionably proceeding to attain the dignity of trees. As was suggested... liveoak, scattered or in mottes, constitutes the normal woody inhabitant of the transition zones between coastal prairie and oak forest as far east as the eastern edge of that association." (Tharp, 1926:71-72)

If, as Tharp has argued, oaks followed the disturbance caused by ranching on the coastal plain, then the oaks on Padre Island may be an indication of that disturbance rather than, as some have thought, the survivors of pre-ranching era.

On the other hand, Warren has argued that the oaks are in decline because of the demise of the passenger pigeon which was a main source of disseminating their seeds. The idea of demise, at least with respect to the immediate present, seems viable because of the apparent greater presence of oaks documented on the island previously, through pictures and descriptions of the stump forest (Rawalt, n.d.). There are several existing pictures which verify the existence of this forest which was reportedly in the Bird Island Basin area.

88Overall it is very difficult to form a clear picture of the history of oaks on the island. Whether the oaks were there prior to ranching or not, there is little evidence to suggest that they were ever a major component of the island's vegetative community. During the nineteenth century, they may have extended their range across the island. If, however, their initial presence was due to ranching, they seem to have begun to vanish long before the cessation of ranching on the island, perhaps during the drought of the 1950's, but probably as early as the 1930's. Perhaps the combination of the extinction of the passenger pigeon and the cutting of the Intracoastal Waterway (which ceased cattle drives across the Laguna Madre), or perhaps natural phenomena such as fires, drought and hurricanes, ultimately caused the apparent decline.

Johnston (1955) also conducted quantitative ecological studies along the eolian plain and associated coastal features of southern Texas, classifying communities that correlate with soil characteristics. He maps Padre Island in his eolian sand and sandy loam region, and characterizes this vegetation as Loose Sand Prairie, which he describes as a fire climax dominated by up to 40 other perennial and annuals, exhibiting little bare ground, and attaining a height of 3 feet in undisturbed stands. The association is not disturbed by salt spray. On higher ground it may grade into liveoak scrub, and on lower ground with Spartina. Johnston discusses oaks as climax formations on loose sand as well, but distinguishes: "live oak scrub is confined to loose sandy soil and occupies only the higher terrain not too greatly subject to salt spray. It is considered an edaphic climax."

Oak trees have been propagated and planted near Bird Island Basin and around the Ranger Station, on a few occasions, during the last decade. In 1990, a cooperative program was established with the U.S. Fish and Wildlife Service to propagate and plant oak trees at the park.

Vegetation has been disturbed at many locations where heavy visitor use occurs. Human disturbance of some sand dunes along South Beach and in front of the Malaquite Pavilion and Campground has injured and/or killed numerous plant species and destabilized underlying sand. Plantings of vegetation and other sand stabilization projects have been undertaken in an attempt to reduce these human impacts. In 1990, a cooperative program was developed with the Soil Conservation Service to propagate and plant a number of vascular plant species in disturbed areas.

- Current Management Action:
All known oak mottes located within the park are visited at least once a year to determine their condition and reproductive status.

Acorns are collected, transported to the park's greenhouse, grown for one year, then transplanted in the general vicinity of Bird Island Basin. Approximately 20 Spanish daggers have been planted in areas historically known to have had this particular plant species. Park personnel are actively participating in cooperative programs with the U.S. Fish and Wildlife Service and Soil Conservation Service to reestablish native vegetation.

- Legal Authority
16 USC 1 - National Park Service Organic Act of 1916
National Environmental Policy Act
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to continue current management activities by conducting the specific actions outlined below. This action complies with NPS Management Policy but requires additional funding and support. Existing oak mottes should be monitored at least annually. Acorns from oak trees located within the park should continue to be collected and propogated. Seedlings should be planted at historic oak motte sites or other suitable habitats within the park. Efforts should also be undertaken to propogate and plant vascular species in areas impacted by visitor activities. However, renovations should be made to the park greenhouse to allow increased capacity for propogation and automation of watering. The upgraded greenhouse could also be used for propogation of vegetation to enhance nesting habitat on rookery islands (PAIS-N-008).

Budget:
Supplies/Materials $8000

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
			FUNDED		
1994:	PKBASE-NR	MIT	Recurring	5.00	0.20
1995:	PKBASE-NR	RES	Recurring	5.00	0.20
1996:	PKBASE-NR	RES	Recurring	5.00	0.20

1997:	PKBASE-NR RES	Recurring	5.00	0.20
1998:	PKBASE-NR RES	Recurring	5.00	0.20
		Total:	25.00	1.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	MIT	One-time	6.00	0.20
Year 2:	MIT	One-time	8.00	0.00
	MON	One-time	2.00	0.10
		Subtotal:	10.00	0.10
		Total:	16.00	0.30

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative relies upon succession to reestablish native vascular plant and woody vegetation. With the elimination of cattle grazing and limited fire suppression at the park, this alternative is feasible. However, numerous years would be required for substantial reestablishment. Additionally, sand destabilized by the loss of trampled vegetation will erode unless active plantings or other measures are used. This alternative does not conform with federal legislation or NPS Management Policy.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-007.000

Last Update: 02/26/97 Priority: 27
Initial Proposal: 1994

Title : COLONIAL WATERBIRD SURVEY/MANAGEMENT

Funding Status: Funded: 35.00 Unfunded: 8.00

Servicewide Issues : N20 (BASELINE DATA)
N17 (BIODIVERSITY)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

Two natural and many man-made spoil islands in the Laguna Madre provide prime habitat for a variety of colonial nesting birds. Park islands are particularly significant to nesting birds because cabins cannot be erected on them and human disturbance is minimal. The park has surveyed nesting colonial waterbirds annually since 1968. However, monitoring data have not been maintained on a computerized database. Colonial waterbirds have specific requirements for nesting. Vegetative succession has taken place on the islands and resulted in habitat loss for some species. Additionally, predators have gained access to some islands and have impacted nesting colonies. Management of nesting habitat and predator reduction could increase nesting success. However, only limited actions are currently being conducted at the park due to funding shortages.

- Background Information:
Large numbers of colonial waterbirds nest on park islands located within the Laguna Madre. Nesting occurs on North and South Bird Islands, which are natural islands, and on spoil islands, which were created as a result of the deposition of sediments excavated during the dredging of the Gulf Intracoastal Waterway (GIWW). During past maintenance dredging activities, additional spoil has been deposited in Laguna Madre waters and on existing spoil islands. Spoil deposition has altered nesting habitat by displacing vegetation and creating barren areas. Open-water disposal of spoil has decreased water depths in some areas and made certain islands more accessible to predators. Continued disturbance

by predators has caused some nesting colonies to move to different islands where disturbance was not as great.

- Current Management Action:
Each spring, in conjunction with the U.S. Fish and Wildlife Service, a Colonial Waterbird Survey is conducted on all park islands located within the Laguna Madre. During this count, all adult birds are enumerated and vegetative cover is noted. Data are forwarded to a national database but are not maintained in a computerized format at the park.

For the last 15 years, "No landing" signs have been erected around the islands to deter visitors from walking on them and disturbing nesting birds. In 1991, park personnel initiated several meetings with individuals from various universities and agencies to obtain recommendations on management strategies for the park rookery islands. It was agreed that modification of nesting habitats could increase nesting numbers and success on some islands. The park undertook several projects to improve nesting habitat for these birds prior to the 1992 nesting season. Additional signs were erected on all islands and projects were initiated to monitor/remove predators and improve vegetative cover.

- Legal Authority:
16 USC 1 - NPS Organic Act
16 USC 698 - Redwoods Act
NPS Management Policy, 1988
Clean Water Act
zational Environmental Policy Act

Description of Recommended Project or Activity

The recommended course of action is to upgrade park knowledge and management by conducting the actions specified below. This action complies with NPS Management Policy but requires additional funding and support.

- Continue Annual Surveys/Establish Database and Geographic Information System (GIS):
Annual surveys of nesting colonial waterbirds should be continued. Results of all previous and future surveys should be entered into a computerized database so that nesting trends and the most significant nesting colonies can be identified. Aerial photographs, recently taken of all rookery islands, should be incorporated into the park Geographic Information System (see PAIS-N-011).

- Develop a Rookery Island Management Plan:

A plan should be developed which details management recommendations for each island used by nesting colonial waterbirds or potentially available for nesting habitat. Nesting bird numbers/trends, habitat reqirements, available habitat, and pertinent literature should be analyzed. Additionally, representatives from various local agencies with expertise/jurisdiction should be consulted. Recommendations should be included for: vegetation, substrate, and water depth manipulation; predator control; and, sign placement. Maps should be included documenting island size, topography, and vegetative cover.

- Control Predators and Manage Habitats:
Control of predators and manipulation of nesting habitats can increase colonial waterbird nesting numbers and success. Islands should be examined to determine if predators are present and measures should be taken to remove and/or eliminate predators which impact nesting birds. Similarly, when deemed appropriate, programs should be initiated to modify habitats to enhance colonial waterbird nesting.

- Increase Protection of Rookery Islands:
Potential and existing rookery islands should be more protected from a variety of threats. Additional "No Landing" and "Area Closed" signs should be placed around and on islands. Patrols should be made to rookery islands at least three times per week during the nesting season to ensure that visitors are not entering the closed areas and disturbing the birds. Fishing and bird watching tours should be closely monitored to ensure that their activities are not impacting nesting. Additonally, the park should provide input on dredging activities conducted within park waters and should monitor their progress/impacts (see PAIS-N-010).

BUDGET AND FTEs:

	FUNDED				
	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-NR	MIT	Recurring	3.00	0.10
	PKBASE-NR	MON	Recurring	4.00	0.20
			Subtotal:	7.00	0.30
1995:	PKBASE-NR	MON	Recurring	3.00	0.10
	PKBASE-NR	MIT	Recurring	4.00	0.20
			Subtotal:	7.00	0.30

1996:	PKBASE-NR MON	Recurring	3.00	0.10
	PKBASE-NR MIT	Recurring	4.00	0.20
		Subtotal:	7.00	0.30
1997:	PKBASE-NR MON	Recurring	3.00	0.10
	PKBASE-NR MIT	Recurring	4.00	0.20
		Subtotal:	7.00	0.30
1998:	PKBASE-NR MON	Recurring	3.00	0.10
	PKBASE-NR MIT	Recurring	4.00	0.20
		Subtotal:	7.00	0.30
		Total:	35.00	1.50

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	MIT	One-time	8.00	0.00
		Total:	8.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative provides for no surveys of nesting colonial waterbirds and no management of nesting colonies. Lack of information and management could be deleterious to nesting populations because adverse impacts to nesting birds would not be identified, quantified, or mitigated. Natural processes and native species could be harmed and hence this action would conflict with NPS Management Policy.

- Continue Current Management Action:
This alternative would involve continued annual monitoring of nesting colonies and maintenance of "No Landing" signs. This alternative would provide informatin on bird numbers and preferred nesting locations. However, a computerized database and GIS would not be maintained, a rookery island management plan would not be developed, and predator control and habitat manipulation projects would not be initiated. Threats would not be identified and mitigated. Since natural processes and native species could be

harmed, this action would conflict with NPS Management Policy.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-008.000

Last Update: 02/26/97 Priority: 99
Initial Proposal: 1992

Title : INTEGRATED PEST MANAGEMENT

Funding Status: Funded: 9.00 Unfunded: 0.00

Servicewide Issues : N01 (NAT ANML OVPOP)
N04 (NON-NAT ANIMAL)

Cultural Resource Type:
N-RMAP Program codes : H00 (Pest and Hazard Management)
H01 (Integrated Pest Management)

10-238 Package Number :

Problem Statement

Populations of cockroaches and fire, pharoah, and odorous ants must be controlled in specific park areas by appropriate mamagement action to protect visitors, employees, and residents. Padre Island National Seashore must ensure that all visitor use areas, employee work spaces, and residential areas are routinely monitored to determine insect pest population levels. If population levels exceed established thresholds, approved Integrated Pest Management (IPM) actions can be implemented.

- Background Information:
Several insect species have reached levels where they are considered "pests" and pose threats to human health. Populations of imported fire ants have increased in recent years at the grounds of the Gulf Operations Center and areas adjacent to residential quarters. Also, pharoah and odorous ants nest within the walls of the Gulf Operations Center. These three ant species deliver painful stings which can cause serious illness in some people. Cockroaches are prevalent in all park work spaces and residential areas. They often carry bacteria which can cause sickness through infection.

Selected pest populations must be monitored to determine their levels and establish thresholds for intervention. Cockroach populations can be reduced to acceptable levels if good sanitary practices are initiated and maintained. However, more active reduction programs are required to control populations of other insects that reach unacceptable levels. Monitoring and control of these insect populations, to ensure the health and protection of

park visitors and residents, is consistent with NPS Management Policies and IPM practices. However, individual control methods, particularly the use of pesticides, must receive prior approval from the Integrated Pest Management Coordinator, Southwest Region.

- Current Management Action:
Efforts are currently underway to develop an Integrated Pest Management Plan for the park and identify pest problems so that monitoring and control activities can commence and/or continue. Approval has been obtained to control fire and populations through the use of Logic pesticide. The park is currently attempting to formulate actions and gain approval to control ants and cockroaches at the Gulf Operations Center. However, the park IPM Coordinator needs to receive the training required to supervise the park IPM program and apply pesticides.

- Legal Authority:
16 USC 1
16 USC 698

Description of Recommended Project or Activity

The recommended course of action is to continue current management activities. This action complies with NPS Management Policy but requires additional funding and support. The park IPM Coordinator should receive additional National Park Service IPM training. Park staff should continually be educated on methods to reduce pest populations by maintaining cleaner areas. Fire ant, pharoah ant, odorous ant, and cockroach populations should be monitored to determine if they exceed threshold levels. Populations should be controlled when necessary and control methods shoud be consistent with IPM practices. Pesticides should be applied only after all other means of pest control have failed and approval has been granted from appropriate officials.

BUDGET AND FTEs:

			FUNDED		
	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	0.50	0.10
	PKBASE-NR	MIT	Recurring	0.50	0.00
			Subtotal:	1.00	0.10

1993:	PKBASE-NR MON	Recurring	0.50	0.10
	PKBASE-NR MIT	Recurring	0.50	0.00
		Subtotal:	1.00	0.10
1994:	PKBASE-NR MON	Recurring	0.50	0.10
	PKBASE-NR MIT	Recurring	0.50	0.00
		Subtotal:	1.00	0.10
1995:	PKBASE-NR MON	Recurring	0.50	0.10
	PKBASE-NR MIT	Recurring	0.50	0.00
		Subtotal:	1.00	0.10
1996:	PKBASE-NR MON	Recurring	0.50	0.02
	PKBASE-NR MIT	Recurring	0.50	0.02
		Subtotal:	1.00	0.04
1997:	PKBASE-NR MON	Recurring	0.50	0.02
	PKBASE-NR MIT	Recurring	0.50	0.02
		Subtotal:	1.00	0.04
1998:	PKBASE-NR MON	Recurring	0.50	0.02
	PKBASE-NR MIT	Recurring	0.50	0.02
		Subtotal:	1.00	0.04
1999:	PKBASE-NR MON	Recurring	0.50	0.10
	PKBASE-NR MIT	Recurring	0.50	0.00
		Subtotal:	1.00	0.10
2000:	PKBASE-NR MON	Recurring	0.50	0.10
	PKBASE-NR MIT	Recurring	0.50	0.00
		Subtotal:	1.00	0.10
		Total:	9.00	0.72

UNFUNDED

Activity	Fund Type	Budget ($1000s)	FTEs
	Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
The no action alternative implies that the National Park Service will not attempt to identify, monitor, or control pest populations. Park employees and visitors would attempt to control pest populations using unapproved actions. In certain instances, human health could be impaired. This alternative does not conform with NPS Management Policy.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 512 DM2 APP. 2, 2.1

Project Statement PAIS-N-009.000

Last Update: 02/26/97 Priority: 28
Initial Proposal: 1994

Title : DREDGE/SPOIL MANAGEMENT AND MONITORING

Funding Status: Funded: 15.00 Unfunded: 8.00

Servicewide Issues : N09 (COASTAL DYNAM)
N10 (MINRL/GEOTHERM)

Cultural Resource Type:
N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

Dredging activities are periodically conducted in or adjacent to park waters. The Gulf Intracoastal Waterway (GIWW) and Mansfield Channel are dredged every 1-3 years to maintain navigable depths. Oil and gas companies sometimes dredge channels to access their operations in the Laguna Madre and sometimes dredge within the Laguna Madre and Gulf of Mexico to lay production pipelines. The material removed during dredging activities ("spoil") is placed on spoil islands, upland sites, and in the water. Marine and terrestrial flora and fauna can be impacted during dredging and spoil disposal. To protect park resources, these activities must be monitored and their impacts minimized and mitigated.

- Background Information:
The U.S. Army Corps of Engineers (COE) is responsible for maintaining the Gulf Intracoastal Waterway and Mansfield Channel. The primary legislative basis for the Corps of Engineers regulatory authority for the disposal of dredged or fill material is the Clean Water Act of 1977. Section 404 of the Act gives authority to the Secretary of the Army, acting through the Chief of Engineers, to regulate the discharge of dredged or fill material into waters of the United States.

The Corps retained a continuous spoil easement zone when the Intracoastal Waterway was established. This 5,000 feet wide strip runs parallel and contiguous to the eastern boundary line of the 900 foot wide GIWW zone. Park lands lying within the zones stretch southward from the western park boundary (approximately marker 87) to about marker 193, a distance of about 15 miles. Additionally,

Presently, park staff members are involved in evaluating local dredging and spoil disposal activities proposed by the U.S. Army Corps of Engineers. Oil and gas company dredging, disposal, and mitigation activities are reviewed and approved by the park. However, data collected on nesting waterbird colonies, fisheries resources, and sea grass beds have not been adequately compiled at the park and utilized during the formulation of management decisions. Also, field monitoring of dredging projects is inconsistent and inadequate.

- Legal Authority:
16 USC 1 - National Park Service Organic Act
16 USC 698 - Redwoods Amendment
NPS Management Policy, 1988
Clean Water Act
National Environmental Policy Act
16 USC 1531 et. seq. - Endangered Species Act

Description of Recommended Project or Activity

The recommended course of action is to upgrade park knowledge and monitoring by conducting the actions specified below. This action complies with NPS Management Policy but requires additional funding and support.

- Increase Monitoring:
Park personnel should closely monitor the progress of all dredging, disposal, and mitigative activities to ensure that they are conducted in the designated areas and time frames and do not result in unforeseen impacts to park resources.

- Upgrade Park Knowledge:
Literature on the flora and fauna of spoil islands and sea grass beds should be reviewed. Data previously collected on colonial waterbird usage of park spoil islands should be computerized and summarized. Maps of spoil islands and sea grass beds should be incorporated into the park Geographic Information System (GIS) (see PAIS-N-008, PAIS-N-011). The literature, data, and GIS could be used to better predict potential impacts from proposed projects, regulate such projects, and propose mitigative actions.

- Develop Rookery Island Management Plan:
Data, literature, and maps should be used to develop a rookery island management plan (see PAIS-N-008). This plan should include specific recommendations for spoil deposition and vegetation management for each island. The plan could provide groundwork for evaluating proposed dredging and disposal projects and serve as a

basis for recommending mitigative actions for such activities.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1994:	PKBASE-NR	ADM	Recurring	3.00	0.10
1995:	PKBASE-NR	ADM	Recurring	3.00	0.10
1996:	PKBASE-NR	ADM	Recurring	3.00	0.10
1997:	PKBASE-NR	ADM	Recurring	3.00	0.10
1998:	PKBASE-NR	ADM	Recurring	3.00	0.10
			Total:	15.00	0.50
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:		MON	Cyclic	4.00	0.20
Year 3:		MON	Cyclic	4.00	0.20
			Total:	8.00	0.40

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative provides for no management action to control dredging and spoil deposition within the park and to protect park resources that could be damaged from these activities. Unregulated dredge and spoil deposition would result in interference with natural processes, harm native species, and hence conflict with NPS Management Policy.

- Continue Current Managment Action:
This alternative would involve continued regulation of in-park dredging, spoil disposal, and mitigation performed by oil and gas companies. However, literature and data on sea grass beds and

colonial waterbirds would not be gathered, summarized, and used while making management decisions. Also, no projects involving dredging, spoil disposal, or mitigation would be adequately monitored and hence resource damage would probably result. This action is in violation of NPS Management Policy.

Compliance codes : EA (ENV. ASSESSMENT)

Explanation: 512 DM2 APP. 2, 2.2

Project Statement PAIS-N-010.000

Last Update: 02/26/97 Priority: 25
Initial Proposal: 1994

Title : MANAGEMENT OF DIGITAL DATA AND HARDWARE REQUIREMENT

Funding Status: Funded: 81.70 Unfunded: 20.00

Servicewide Issues : N17 (BIODIVERSITY)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : C00 (Collections and Data Management)
C03 (GIS/Data Management)

10-238 Package Number :

Problem Statement

Remarkable numbers of rare organisms, unique habitats, and significant cultural resources are located within the boundaries of Padre Island National Seashore. Among these are: peregrine falcon staging areas, sea turtle nesting and stranding locations, colonial waterbird rookery areas, Virginia live oak tree mottes, historical shipwrecks, and line camps. Additionally, several activities and processes (dredging; fishing; bird-watching tours; transportation of hazardous materials; mineral exploration; erosion) threaten these resources.

A functional Geographic Information System (GIS) is needed at Padre Island National Seashore to allow rapid environmental assessment and proper management of these natural and cultural resources. Integration of various resource themes and the location of critical resources is necessary to mitigate the numerous anthropogenic threats. GIS will serve as an important archive for baseline data and will be used to monitor changes in resource condition throughout time. Data management and certain computer hardware are required to facilitate and maximize the potential uses of GIS in the management of Padre Island National Seashore.

- Data Management

The Office of Management and Budget (OMB) produced two circulars, A-16 and A-130, that pertain to the management and archiving of data. These circulars set aside requirements for information gathered by federal agencies and the transferring of this data between other federal, state, and local governments and the general

public.

Circular A-16 requires federal agencies to provide spatial data that follows specific requirements initiated by the Federal Geographic Data Committee (FGDC). These requirements establish a set of criteria and standards that "will enable sharing and efficient transfer of spatial data between producers and users." The FGDC will also produce standards governing the criteria for metadata. PAIS is required to comply with these guidelines in order to effectively utilize the park's GIS information and be able to store and transfer this GIS information to other agencies and the general public.

Circular A-130 requires federal agencies to provide security for digital information systems that will "commensurate with the risk and magnitude of loss or harm that could result from the loss, misuse, or unauthorized access to information contained in those systems." This requirement establishes a need for high volume storage media for the archiving and protecting of spatial, digital, and other types of information gathered for use with the park's GIS.

- Computer Hardware

Padre Island National Seashore currently utilizes three 386/35 computers, all of which are capable of interfacing with the parks GIS software. The primary GIS computer contains an optical disk drive with 1 gigabyte of storage capability, HP Scanjet IIC color page scanner, and a Tektronix 4696 color printer. Due to the present hardware limitations, the archiving of documents and records developed by the division are being done by each individual. This system is not effective due to the possibility and likelihood of documents not being backed up on a regular schedule.

In addition to human intervention, the sizes of the files to be backed up are reaching a size that will no longer fit on the storage media available on each computer. This represents a problem in that only certain files are being backed up and archived. Both of these procedures are not in accordance with the OMB circulars A-16 and A-130. Therefore the purchasing of a local area network will allow for the following: automatic backing up and archiving; regularly scheduled archiving procedures; security of division records and files; efficient use of personnel time; and effective storage media for all division file sizes and types.

Due to the system limitations of the park's GIS, the park needs to upgrade and purchase new equipment for the GIS computers. The file sizes of the satellite images, require increased access speed and larger storage media (i.e., a 3 gigabyte SCSI hard drive, etc.) and the current 35 MHZ computers are not efficient at handling the

large data files. Upgrading the current computer systems will enable the park to efficiently store, display, and utilize existing and forthcoming digital data.

Because of the OMB circulars and the limitations of existing computer hardware, it is necessary to upgrade to a Local Area Network (LAN) as opposed to upgrading each individual computer. The LAN will allow the use of faster computer for GIS applications as well as allowing all Resources Management staff the ability to utilize the necessary hardware required by the parks GIS (i.e., scanners, storage media, printers, etc.).

Description of Recommended Project or Activity

- Data Management

The park requires .5 FTE to provide support for data management and compliance with OMB circulars A-16 and A-130. The utilization of OMB circulars A-16 and A130, will allow the park to establish effective measures for quality control and quality assurance. In order to initiate these measures, the park needs additional training in the use of database management systems, the park's GIS software, and the use of the park's Global Positioning Unit. By providing training in these areas, the park can assure that there will be sufficient understanding of the way data is to be entered into and retrieved out of the parks GIS. This should therefore, provide effective quality control and quality assurance and limit data errors caused by the misuse of software and hardware.

Additionally, the park will specifically address quality assurance and quality control by doing the following:

- Adhering to specific guidelines established in the OMB circulars A-16 and A-130.

- Following the specific guidelines established by the FGDC for spatial and metadata standards.

- Entering data into DBase III or IV compatible software for data management and retrieval.

- Utilizing the same personnel to enter data, thereby reducing the effects of personal bias.

- Archiving digital data with a National Park Service approved software package such as Fastback, EVEREX, etc.

- Archiving digital data on optical disks to eliminate data loss

due to magnetic fields.

- Establishing an archiving schedule that will facilitate the backing up of data on a regular schedule.

By following the above criteria, the park will be able to provide adequate quality assurance and control.

Budget
Personnel: .5 FTE GS-5 Permanent
Cost: $10,140

- Computer Hardware
A Local Area Network is necessary to allow for efficient archiving and storage of digital information which is required by OMB circular A-130. The LAN should consist of the following hardware:

- Budget

1) Pentium dedicated file server consisting of a 3-4 gigabyte SCSI hard drive, 16 megabytes of RAM, CD-ROM drive, 240 megabyte tape backup system, SVGA color card and SVGA monitor.
Cost: $6000

2) LANTASTIC Network cards, software, and cables for 3 division computers.
Cost: $1500

3) Three 486/66 motherboards with 16 megabytes of RAM.
Cost: $3600

Total Cost: $11,100

These items will provide the park with the necessary tools for efficient records management (including archival and retrieval), use of GIS data (PAIS-N-031.002) (large file sizes of satellite images), and security of digital data (backing up of GIS files and other records produced by the Resources Management division).

BUDGET AND FTEs:

FUNDED				
Source	Activity	Fund Type	Budget ($1000s)	FTEs

1994:	PKBASE-NR RES	Cyclic	6.50	0.20
	SVC-OTHER ADM	Recurring	8.00	0.00
	PKBASE-NR ADM	Recurring	3.20	0.00
		Subtotal:	17.70	0.20
1995:	PKBASE-NR ADM	Recurring	11.00	0.50
	PKBASE-NR RES	Recurring	6.50	0.20
		Subtotal:	17.50	0.70
1996:	PKBASE-NR ADM	Recurring	9.00	0.30
	PKBASE-NR RES	Recurring	6.50	0.20
		Subtotal:	15.50	0.50
1997:	PKBASE-NR ADM	Recurring	9.00	0.30
	PKBASE-NR RES	Recurring	6.50	0.20
		Subtotal:	15.50	0.50
1998:	PKBASE-NR ADM	Recurring	9.00	0.30
	PKBASE-NR RES	Recurring	6.50	0.20
		Subtotal:	15.50	0.50
		Total:	81.70	2.40

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	RES	Cyclic	10.00	0.00
Year 4:	RES	Cyclic	10.00	0.00
		Total:	20.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement PAIS-N-011.000

Last Update: 02/26/97 Priority: 30
Initial Proposal: 1993

Title : HYDROCARBON AND CONTAMINANTS BASELINE SOIL ANALYSIS

Funding Status: Funded: 33.00 Unfunded: 7.50

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G02 (Mining and Minerals Management)

10-238 Package Number :

Problem Statement

Spill events resulting from oil and gas exploration, production and transportation pose a significant threat to the natural resources of Padre Island National Seashore. In order to protect park resources, a baseline analysis of hydrocarbon residues in soil and sediment strata must be implemented. In the event of an oil spill, this baseline data would provide the park with comprehensive data to initiate a natural resource damage assessment.

- Background Information:
Padre Island National Seashore is recognized as essential habitat for over 322 bird species. The southern portion of the park is the historic staging area for the Peregrine falcon, with over 1300 individuals counted in the 1991 fall migration. Also, it was estimated that this year between 60-65% of all Piping plovers will winter in South Texas. A total of 437 have been previously surveyed within the limits of the park. Wilson's plover, Snowy plover, and Least terns have been reported to breed and nest in the park. Also, 325 pairs of Reddish egrets nest on islands in or near the boundaries of the park. These birds utilize park resources for foraging, nesting, and staging during migration.

Oil and gas exploration, production, and transportation predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico, in close proximity to Padre Island National Seashore. On the park's Laguna Madre boundary, hundreds of barges carrying petroleum products and hazardous materials travel the Gulf Intracoastal Waterway (GIWW) between Corpus Christi and Brownsville, Texas. Approximately 70

miles of the GIWW is adjacent to the park's western boundary. Petroleum and hazardous materials regularly enter these waters and instances of collisions, resulting in spilled fuel, have been documented. In the past, Padre Island National Seashore has experienced oil spill events which have inundated areas along the Gulf of Mexico and the Laguna Madre shoreline. The park's inshore waters and the 29 corresponding rookery islands have the potential to be significantly impacted from hazardous materials spills. There are 21 species of colonial waterbirds that utilize these rookery islands for nesting, including several protected species.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, or their lost use value occurs as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent natural resources under trusteeship.

National Park Service Management Policies state that ..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention, and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

- Current Management Action:
Resource Management staff have identified baseline data that are necessary to perform natural resource damage assessments. A research contract has been issued to collect minimum baseline data on the level of contaminants and hydrocarbons in soils and sediments along the Laguna Madre and Gulf of Mexico shorelines. However, due to lack of adequate funding, the park's 29 rookery islands are not included in the current project.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection

NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to continue current management policies by conducting the specified actions outlined below.

- Initiate research:
A research contract has recently been awarded to collect baseline data on hydrocarbons and other contaminants in soils and sediments at various areas within the park. This study will include representative hydrocarbon samples from 12 different sites along the Gulf of Mexico and the Laguna Madre shorelines.

- Expand research to other sensitive habitats:
When funding becomes available, research will be expanded to gather additional baseline data on hydrocarbons and other contaminants in soils and sediments at various areas that are considered essential habitat for protected bird species and colonial waterbirds.

BUDGET AND FTEs:

	Source	Activity	FUNDED Fund Type	Budget ($1000s)	FTEs
1993:	SVC-OTHER	RES	Cyclic	7.50	0.00
	PKBASE-NR	ADM	Cyclic	3.50	0.10
			Subtotal:	11.00	0.10
1994:	SVC-OTHER	RES	Cyclic	7.50	0.00
	PKBASE-NR	ADM	Cyclic	3.50	0.10
			Subtotal:	11.00	0.10
1995:	SVC-OTHER	RES	Cyclic	7.50	0.00
	PKBASE-NR	ADM	Cyclic	3.50	0.10
			Subtotal:	11.00	0.10
			Total:	33.00	0.30

----------UNFUNDED----------

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 4:	MON	Cyclic	7.50	0.00
		Total:	7.50	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-012.000

Last Update: 02/26/97 Priority: 29
Initial Proposal: 1992

Title : SURVEY BENTHIC INVERTEBRATES (GULF BEACH)

Funding Status: Funded: 26.00 Unfunded: 19.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G02 (Mining and Minerals Management)

10-238 Package Number :

Problem Statement

There are approximately 3000 oil and gas platforms located in the Gulf of Mexico (GOM). The water currents of the Gulf of Mexico converge off of Padre Island and influence deposition of materials onto park beaches. Due to these currents, petroleum products that are spilled into the Gulf of Mexico have the possibility of impacting park beaches. Approximately 68 miles of park shoreline is located on the GOM. The beach is vulnerable to impacts relating to the discharge of petroleum products and hazardous materials from various sources in the Gulf of Mexico. The beach is utilized by the majority of the 322 species of birds found at Padre Island National Seashore, including three threatened and endangered and seven state protected species. These numerous bird species utilize the benthic invertebrates dwelling in this area as their primary food source. It is critical that the park obtain basic resource inventory data and maintain a long term monitoring program for the invertebrate infauna in this sensitive habitat area in order to determine impacts directly resulting from petroleum spills.

The park lacks baseline data for benthic invertebrates found along the 68 miles of park shoreline. A comprehensive survey should be implemented to gather the baseline data necessary to complete a natural resource damage assessment in the event of a spill.

Background Information:
Padre Island is located off the southeast coast of Texas and the longest undeveloped barrier island in the United States. The National Seashore is comprised of 130,000 acres of important habitat for 322 bird species. Included in these bird species are

three listed threatened or endangered species (T&E) and seven State protected species. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west.

The currents of the Gulf of Mexico (GOM) change directions bi-annually, with debris and oil from Mexico being swept northward during the summer and, similarly those in the northern Gulf swept southward during the winter. As with marine debris, oil spilled from numerous locations and sources in the GOM are transported by currents to park beaches.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, or their lost use value occurs as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent natural resources under trusteeship.

National Park Service Management Policies state that..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

Current Management Action:
In 1992, the park received a multi-year WASO grant specifically designated for obtaining natural resource baseline data to generate a resource damage assessment. A study has been funded to obtain distribution and abundance of benthic invertebrates that occur on the beach, from the dune line to the second sand bar. This baseline data is being collected from five specific areas, approximately 15 miles apart. This will prove invaluable in determining changes resulting from oil spills.

Legal Authority
16 USC 1 - NPS Organic Act
16 USC 698 - Redwoods Act
NPS Management Policy, 1988
National Environmental Policy Act
1990 Oil Pollution Act

the Corps retained an easement which extends about 2,700 feet to the north and about 1,050 feet to the south of the centerline of the Mansfield Channel. Park lands from the beach westward to the western boundary line lie within the northern easement.

The GIWW and Mansfield Channel are dredged every 1-3 years to maintian navigable depths. Spoil from maintenance dredging of the GIWW has been placed on spoil islands and into the open waters of the Laguna Madre. However, after 1991, spoil will be placed on upland sites located on the King and Kenedy ranch shoreleines. Spoil from the maintenance dredging of the Mansfield Channel is placed in spoil disposal sites located offshore from Padre Island and on the beach of Padre Island National Seashore, just north of the northern jetty. Dredging projects performed by oil and gas companies in the park must be approved by the park and permitted by the U.S. Fish and Wildlife Service. The park confirms dredging sites, disposal sites, and mitigative actions.

Dredging and spoil deposition can adversely impact the hydric environment, sea grasses, invertebrates, fish, birds, and sea turtles. Dredging and spoil deposition can interfere with normal water flow patterns and can impact water quality. Dredge spoil is often of fine consistency and flows rather than building mounds or inlands. Also, spoil sometimes contains contaminants such as heavy metals. Spoil deposited in the open water and suspended particulates can smother sea grass beds and kill aquatic organisms. Also, channels cut through sea grass beds can kill these plants and disrupt entire communities resident there. Grass beds are important nursery areas for invertebrates and fish. Adverse impacts to sea grass beds and their fish and invertebrate inhabitants can also have detrimental affects on organisms higher in the food chain such as colonial waterbirds and sea turtles. Sea turtles can be killed during dredging activities if they are caught and trapped by the equipment used.

Many spoil islands in the Laguna Madre have become important colonial waterbird rookery islands (see PAIS-N-008). Islands located in the park are particularly significant for nesting since no cabins are allowed on them and the nesting birds are subject to relatively little human disturbance. The only saltwater nesting colony of white pelicans in the world occurs on a spoil island located within the park. Colonial waterbird species have very specific requirements for nesting cover. Vegetation type and density are particularly important and hence spoil deposition which alters vegetative composition can impact nesting. Also, spoil deposition can decrease water depth around spoil islands and interconnect various islands, allowing easy access of predators to nesting birds.

- Current Management Action:

Description of Recommended Project or Activity

The recommended course of action is to upgrade park knowledge and management by conducting the actions specified below. This complies with NPS Management Policy.

- Continue research:
In 1992, the park received a multi-year WASO grant specifically designated for obtaining natural resource baseline data in order to generate a natural resource damage assessment. A study has been funded to obtain distribution and abundance of benthic invertebrates that occur on the beach, from the dune line to the second sand bar. This baseline data is being collected from five specific areas, approximately 15 miles apart, and will prove invaluable in determining changes resulting from oil spills.

-Expand research:
When funding becomes available, research will be expanded from the original 5 sample locations to additional locations for gathering added baseline data on benthic invertebrates that occur on the beach between the second sand bar to the dune line along the Gulf of Mexico shoreline.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1992:	NR-I&M	RES	Cyclic	9.50	0.00
	PKBASE-NR	ADM	Cyclic	3.50	0.10
			Subtotal:	13.00	0.10
1993:	NR-I&M	RES	Cyclic	9.50	0.00
	PKBASE-NR	ADM	Cyclic	3.50	0.10
			Subtotal:	13.00	0.10
			Total:	26.00	0.20

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 3:	MON	Cyclic	9.50	0.00
Year 4:	MON	Cyclic	9.50	0.00

Total:	19.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-013.000

Last Update: 04/12/96 Priority: 14
Initial Proposal: 1992

Title : SURVEY BENTHIC INVERTEBRATES (MUD/ALGAE FLATS)

Funding Status: Funded: 16.20 Unfunded: 15.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Due to increased barge traffic on the Laguna Madre, there is greater probability of an oil and/or hazardous materials spill impacting on the park's mud/algae tidal flats. An oil or hazardous material spill impacting the tidal flats would probably result in severe impacts to the benthic organisms living in the tidal flats. Subsequently, loss of the benthic invertebrates would also negatively impact the numerous bird species (to include ten protected species) that depend on the benthic invertebrates as a food source.

The park needs to gather comprehensive baseline data on distribution and abundance of benthic invertebrates found along the Laguna Madre, in the wind tidal flats, to initiate a natural resource damage assessment in the event of a spill.

- Background Information:
The wind tidal flats are essential habitat for 23 species of Colonial nesting waterbirds and 10 listed T&E or State protected bird species. These species include: Peregrine falcon, Piping plover, Snowy plover, Wilson's plover, Least tern and Reddish egret. The mud/algae tidal flats are habitat for benthic organisms that live in these flats. These benthic organisms serve as the primary food source for the various birds species.

The park encompasses approximately forty miles of mud/algae tidal flats located on the western portion of the Laguna Madre. Hundreds of barges transverse the Gulf Intracoastal Waterway on the Laguna Madre each year, carrying petroleum and hazardous chemical

products. The most recent incident occurred in 1991 in which a barge discharged 13,000 gallons of toxic chemicals within 1/4 mile of the park's boundary. Had the wind been blowing in a northeastern direction, these chemicals would have washed over the park's most northern mud/algae flat. This particular area is essential habitat for 90 Piping plovers, 60 Snowy plovers, and hundreds of other birds. The spill would have impacted on both protected species and benthic invertebrates.

- Current Management Action:
The park has recently initiated a scientific research contract to obtain distribution and abundance data for bird species that utilize the mud/algae tidal flats and benthic organisms that live in the tidal flats. This particular research project is multi-year and will entail detailed analysis on three of the park's large mud/algae tidal flats.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to continue current management activities by conducting the specific action outlined below. - Initiate research:Continue on-going scientific research to obtain distribution and abundance data for bird species that utilize the mud/algae tidal flats. This particular research project is multi-year and will entail detailed analysis on three of the park's large mud/algae tidal flats.-Expand research:The current research project is written to give the park detailed distribution and abundance data for three mud/algae flats encompasses approximately six miles of park boundary. However, the park has approximately forty miles of mud/algae flats. The entire length of mud/algae flats are essential habitat for thousands of protected and/or other bird species. We are requesting that the current research project be expanded to encompass an additional ten to fifteen miles of mud/algae flats. This additional data would prove invaluable for obtaining a comprehensive baseline on the abundance and

distribution of the benthic organisms.

BUDGET AND FTEs:

FUNDED	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1992:	NR-I&M	RES	One-time	5.00	0.00
1993:	RG-NS-RES	RES	One-time	1.20	0.00
1994:	SVC-OTHER	RES	One-time	10.00	0.00
			Total:	16.20	0.00

UNFUNDED	Activity	Fund Type	Budget ($1000s)	FTEs
Year 4:	RES	One-time	15.00	0.00
		Total:	15.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative implies that the National Park Service will not attempt to gain the necessary scientific data required to arrive at natural resource damage assessments in the event of an oil/chemical spill affecting the park. This alternative does not conform to NPS management policy.

- Continue Current Management Action:
This alternative will allow the park to gather a minimum of baseline data on the abundance and distribution of both bird species and benthic invertebrates that inhabit the mud/algae tidal flats along the Laguna Madre. However, this data would be incomplete to meet the natural resource damage assessment requirements.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-014.000

Last Update: 04/10/96 Priority: 99
Initial Proposal: 1992

Title : SURVEY AVIFAUNA (GULF BEACH)

Funding Status: Funded: 9.50 Unfunded: 12.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore is recognized as essential habitat for over 322 bird species, including 10 threatened, endangered species, or State protected species. Padre Island National Seashore has 19 rookery islands within its boundary. These rookery islands are essential habitat for 21 species of colonial waterbirds. The park is also on the flyway for neotropical migratory birds, having over 120 species that migrate through the park during both spring and winter migration.

Oil and gas exploration, production, and transportation pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in-and -near the park. Exposure to oil spills threatens Padre Island National Seashore avifauna on both the Gulf of Mexico and the Laguna Madre.

- Background Information:
Padre Island is located off the Southeast coast of Texas and is the longest undeveloped barrier island in the United States. The park encompasses 130,000 acres, is approximately 70 miles in length, and extends from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico. Oil and gas exploration, production, and transportation in the park predate the establishment of Padre Island National Seashore.

The southern portion of the park is the historic staging area for both Tundra and Arctic peregrine falcons, with over 2000 individuals counted in the 1993 fall migration. This area is

considered as "critical" habitat by the Peregrine Falcon Recovery Team and is the only are in the United States where peregrine falcons congregate during their annual spring migrations.

It was estimated that this year between 60-65% of all Piping plovers will winter in South Texas. A total of 432 Piping plover have previously been surveyed within the limits of the park. Wilson's plover, Snowy plover, and Least terns have been reported to breed and nest in the park. Also, 325 pairs of Reddish egrets nest on islands in or near the boundaries of the park. These bird species utilize park resources for foraging, nesting, and staging during migration.

Documented oil and gas exploration and extraction operations predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico, in close proximity to Padre Island National Seashore. Additionally, there is approximately 3000 oil and gas platforms located in the Gulf of Mexico.

The current transport processes, that parallel the park, concentrate spilled oil from numerous locations and sources in the Gulf of Mexico onto park beaches. The currents of the Gulf of Mexico (GOM) change directions bi-annually, with debris and oil from Mexico being swept northward during the summer and, similarly those in the Northern Gulf are swept southward during the winter.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, or their lost use value occurs as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent natural resources under trusteeship.

National Park Service Management Policies state that..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

In 1992, the park initiated a contracted avifauna research project to collect baseline data on the distribution and abundance of threatened, endangered, or State protected avifauna along 50 miles of the Gulf beach. Monthly surveys were conducted for a 12 month

time period. The data that was obtained included species diversity and abundance and an attempt to determine the physical factors that are influencing the birds in their occupancy of certain portions of the study area.

- Current Management Action:
The park' Resources Management Division is currently involved in mapping past avifauna research on the eastern (Gulf of Mexico) portion of the park into the divisions GIS computer.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to continue current management activities by conducting the specific action outlined below.

- Initiate research:
The park needs a comprehensive long-term survey of the park for identification of all bird species and associated habitats on the eastern portion of the park. Of special concern are species listed as threatened, endangered, or State protected. In addition to obtaining data on species diversity and abundance; the physical factors that are influencing occupancy of certain portions of the park; recording any observations that might pertain to the life history of each species, data on habitat requirements is paramount to protection of these species. This baseline resource inventory is required to initiate a natural resource damage assessment in the event of an oil spill impacting the Gulf beaches.

- Budget
Funding levels are based on contracted research with local ornithologists to initiate the data collection as listed above.

1994 - $20,000
1996 - $20,000

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1992:	NR-I&M	RES	Cyclic	9.50	0.00
			Total:	9.50	0.00
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 3:		MON	Cyclic	6.00	0.00
Year 4:		MON	Cyclic	6.00	0.00
			Total:	12.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative implies that the National Park Service will not attempt to gain the necessary information necessary to arrive at natural resource damage assessments in the event of an oil/chemical spill impacting the park. This alternative does not conform to NPS management policy.

- Continue Current Management Action:
This alternative will allow the park to complete the gathering of baseline data on the abundance and distribution of bird species found along the eastern (Gulf of Mexico) portion of Padre Island National Seashore.

-Expand Research:
Additional funding will provide for long term monitoring of the avifauna along the Gulf shoreline. Long term resource data collection is necessary to initiate a comprehensive natural resource damage assessment.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-015.000

Last Update: 02/26/97 Priority: 16
Initial Proposal: 1993

Title : SURVEY OF GROUNDWATER RESOURCES AT PAIS

Funding Status: Funded: 49.00 Unfunded: 25.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G02 (Mining and Minerals Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) is located off the southeast coast of Texas and is the longest undeveloped barrier island in the United States. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west. The National Seashore encompasses over 130,000 acres of important habitat for 322 bird species. Included in these bird species are three listed threatened or endangered species (T&E) and seven State protected species. The park also serves as an important staging area for 122 neotropical bird species, including over 2,000 endangered peregrine falcons.

Documented oil and gas exploration and extraction operations predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico. Additionally, there are hundreds of barges that travel the Gulf Intracoastal Waterway between Corpus Christi and Brownsville, Texas, carrying petroleum products and hazardous materials. Oil and Gas exploration, production, and transportation pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in and near the park. Exposure to oil spills threaten Padre Island National Seashore on both the Gulf of Mexico and the Laguna Madre.

Padre Island National Seashore was established in 1962, to: "save and preserve, for the purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped" (PAIS Statement for Management, 1976). The enabling legislation also provides, that all mineral

rights within the National Seashore be retained by the original grantors of the property, and provisions were also made for the exploration and extraction of those minerals.
Mineral exploration on Padre Island began in 1951, prior to the park's enactment, and oil/gas operations have been generally continuous since that time. As of January 1994, there are seven active and 44 abandoned oil/gas operations. Oil/natural gas exploration and production pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in or near the park. In particular, the park is concerned with the long term cumulative impacts on the groundwater of PAIS. These impacts have resulted from hydrocarbon spills, improper disposal of drilling muds and sump discharges.

Historical data from the cattle ranching era and previous minerals development at Padre Island National Seashore indicates that the near surface groundwater is a lens of freshwater, approximately 30 feet thick, that overlies saltwater. This data also indicates that the lens of freshwater is at least two miles-in-width. The park's groundwater is recharged by precipitation events and saltwater wave surges. Although the hydrology of the area has not been completely assessed, it has been theorized that the groundwater flows in an easterly orientation from the Laguna Madre to the Gulf of Mexico.

Wetlands and freshwater ponds in the park serve as sensitive habitat areas for a variety of aquatic invertebrates and algae, and also provide a source of drinking water for mammals and sensitive avifauna. The freshwater and ephemeral ponds in the park are utilized as a primary source of drinking water for the many species of wildlife inhabiting the park.

In 1993, the park, as part of its overall inventory and monitoring program, installed 12 permanent monitoring wells. These wells were located along four transects on the northern portion of PAIS. Each well is sampled for a variety of water quality parameters. Preliminary results have indicated groundwater flow, and provided important baseline data on water quality for groundwater in the study area.

Due to the heterogeneous and anisotropic nature of North Padre island's aquifer, additional permanent monitoring wells and long term monitoring are required to fully characterize the extent of the aquifer, the groundwater flow regime, and acquire baseline data on groundwater quality.

Permanent monitoring wells are also necessary in the areas of the seven active oil and gas production facilities. These wells will provide important baseline data on the groundwater in these areas and assist in the identification of the presence of hydrocarbon contaminants.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

In 1993, the park initiated a research study to characterize and monitor the groundwater resources at PAIS. To date, the park has installed 12 permanent monitoring wells along four transects in the northern portion of the park. Baseline data has been acquired on a variety of water quality parameters for each well and preliminary results have indicated the flow regime of the groundwater in the study area. These 12 wells will be sampled monthly for the foreseeable future.

This research and associated monitoring will identify the location of the freshwater lens in relationship to the beach front; provide water quality data, levels, and seasonal variations; and, will quantify tidal influences on the position of the freshwater/saltwater interface.

- Expand research:
In 1994, additional permanent monitoring wells will be installed in the southern region of the park to provide a comprehensive picture of the aquifer. These wells along with the present 12 wells will provide a multi-year database of water quality parameters; identify freshwater seeps or ponds that are connected to the aquifer; and define the groundwater flow regime of North Padre island.

Fifteen wells will be installed in the areas of the seven active oil and gas operations to provide a means for acquiring baseline data and long-term monitoring of ground water quality in these areas. This long-term monitoring will prove invaluable for natural resource damage assessments. Information that is gathered will be integrated into the park's GIS database.

-Budget Estimate

A. Contract Researcher Cost

1. Installation and Sampling of Additional Groundwater Monitoring Wells in the Southern Region of the Park $20,000

2. Installation and Sampling of Groundwater Monitoring wells around the Park's Seven Active Oil/Gas Production Facilities. $15,000

The proposed contract will include the installation of permanent groundwater monitoring wells in the indicated areas. Sampling will ensue for one year on a monthly basis. Samples will be analyzed for Total Petroleum Hydrocarbons (TPH); Benzene, Toluene, Ethylbenzene, and Xylene (BTEX); pH; conductivity, turbidity; and, dissolved oxygen.

BUDGET AND FTEs:

	Source	Activity	FUNDED Fund Type	Budget ($1000s)	FTEs
1993:	SVC-OTHER	RES	One-time	9.50	0.00
	PKBASE-NR	ADM	One-time	3.50	0.10
			Subtotal:	13.00	0.10
1994:	SVC-OTHER	RES	One-time	14.50	0.00
	SVC-OTHER	MON	One-time	2.00	0.00
	PKBASE-NR	ADM	One-time	3.50	0.10
			Subtotal:	20.00	0.10
1995:	PKBASE-NR	MON	Recurring	4.00	0.20
1996:	PKBASE-NR	MON	Recurring	4.00	0.20
1997:	PKBASE-NR	MON	Recurring	4.00	0.20
1998:	PKBASE-NR	MON	Recurring	4.00	0.20
			Total:	49.00	1.00

----------UNFUNDED----------

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	MON	Recurring	15.00	0.00
Year 3:	MON	Recurring	5.00	0.00
Year 4:	MON	Recurring	5.00	0.00
		Total:	25.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-016.000

Last Update: 02/26/97 Priority: 99
Initial Proposal: 1993

Title : SURVEY OF MARINE FLORA AT THE MANSFIELD CHANNEL

Funding Status: Funded: 7.00 Unfunded: 5.00

Servicewide Issues : N20 (BASELINE DATA)
N17 (BIODIVERSITY)

Cultural Resource Type:
N-RMAP Program codes : V00 (Vegetation Management)
V02 (Native Aquatic Plant Management and Monitoring)

10-238 Package Number :

Problem Statement

Spill events resulting from oil and gas exploration, production and transportation pose a significant threat to the natural resources of Padre Island National Seashore, along the Gulf of Mexico and the Laguna Madre shorelines. One area of the park of specific concern is the Port Mansfield Channel on the southern most end of the park. Several listed threatened and endangered species utilize the channel as essential habitat. Several of these species are sea turtles that utilize the marine flora in Mansfield Channel as their primary food source. In the event of an oil spill, the marine flora in Mansfield Channel could be irreversibly impacted. To protect these resources, a baseline study of the distribution and abundance of marine flora must be initiated.

- Background Information:
Oil and gas exploration, production and transportation predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico, in close proximity to Padre Island National Seashore. In addition, on the park's western boundary, hundreds of barges carrying petroleum products and hazardous materials travel the Gulf Intracoastal Waterway (GIWW) between Corpus Christi and Brownsville, Texas. These barges which carry petroleum and hazardous materials regularly enter these waters and instances of collisions, resulting in spilled fuel (13,000 gallons in 1991), have been documented. In the past, Padre Island National Seashore has also experienced devastating oil spill events (1979 - Ixtoc) which have inundated many miles of shoreline with petroleum products.

The Port Mansfield Channel serves as an important habitat area for several listed threatened or endangered species, including three species of sea turtles and the brown pelican. The first documented mating by Kemp's Ridley sea turtles in U.S. waters occurred in the Mansfield Channel. This area has one of the largest concentrations of sea turtles in Texas inshore waters. Macroalgaes and marine plants in this area serve as the primary food source for several of these turtle species. An oil or hazardous materials spill in this particular area could result in irreversible impacts to marine macroalgaes, and plants inhabiting the channel.

- Current Management Action:
As part of the natural resource damage assessment, the park has awarded a research contract to survey the various types of marine macroalgaes and plants occurring in the Port Mansfield Channel. This study will provide baseline data on the abundance and distribution of marine flora in this critical habitat area.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent natural resources under trusteeship.

National Park Service Management Policies state that..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to upgrade the park's knowledge and continue current management activities by conducting the specific actions outlined below. Additional funding and support will be required for long term monitoring.

- Initiate baseline data research:
A contract has been awarded to conduct a comprehensive survey of the various types of marine macroalgaes and plants occurring in the Port Mansfield Channel.

- Expand Research:
Additional funding is necessary in order to increase the number of sampling sites throughout the park. Long term monitoring of these sites is essential in assessing the changes pertaining to the future viability of the macroalgae population including, species composition, density, and general health.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1993:	SVC-OTHER	RES	One-time	7.00	0.00
			Total:	7.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 3:	MON	Cyclic	5.00	0.00
		Total:	5.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative implies that the National Park Service will not attempt to obtain the necessary data to accomplish a natural resource damage assessment in the event of an oil/hazardous material spill which impacts the park's resources. This

alternative does not conform to NPS management policy.

- Continue Current Management Action:
This alternative will allow the park to obtain baseline data on the abundance and distribution of marine macroalgaes in the Port Mansfield Channel area.

- Expand Research:
With additional funding, a long term monitoring of the marine macroalgae and plants in the Port Mansfield Channel area will be accomplished. Also, sampling sites will be expanded to include other areas of the park.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-017.000

Last Update: 02/26/97 Priority: 26
Initial Proposal: 1994

Title : BASELINE INVENTORY OF VEGETATION

Funding Status: Funded: 13.10 Unfunded: 6.50

Servicewide Issues : N17 (BIODIVERSITY)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : V00 (Vegetation Management)
V01 (Native Terrestrial Plant Management and Monitoring)

10-238 Package Number :

Problem Statement

Spill events resulting from oil and gas exploration, production, and transportation pose a significant threat to the natural resources of Padre Island National Seashore, along the Gulf of Mexico and the Laguna Madre shorelines. To protect park resources, a baseline study on the distribution and abundance of plant communities and species diversities must be undertaken. In the event of an oil spill this baseline data would provide the park with comprehensive information to perform a natural resource damage assessment.

- Background Information:
Oil and gas exploration, production, and transportation predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico, in close proximity to Padre Island National Seashore. In addition, on the Laguna Madre's western boundary, hundreds of barges carrying petroleum products and hazardous materials travel the Gulf Intracoastal Waterway (GIWW) between Corpus Christi and Brownsville, Texas. Approximately 70 miles of the ICW is adjacent to the park's western shoreline. These barges which carry petroleum and hazardous materials regularly enter these waters and instances of collisions, resulting in spilled fuel, have been documented. In the past Padre Island National Seashore has experienced oil spill events which have inundated areas along both the Gulf of Mexico and the Laguna Madre shoreline.

The park's inshore waters and the 29 corresponding rookery islands

have the potential to be significantly impacted from hazardous materials spills. One hundred and twenty three species of colonial waterbirds utilize these rookery islands for nesting, including several protected species.

Natural succession has mitigated many of the impacts to native plant communities that resulted from historical use of Padre Island National Seashore. At present, plant communities within the park are recovering from historical uses and progressing towards climax vegetation types. Oil spills affecting the park could result in irreversible impacts to these recovering wetland and tidal plant communities.

- Current Management Action:
Utilizing NRPP funding, the park has contracted a researcher to study vegetative communities. This study is providing baseline data on the abundance, distribution, and species diversity of plant communities in these critical habitat areas.

Currently, the Resources Management Division is developing a Minerals Management Plan (MMP) for the park. In order to produce an accurate and comprehensive MMP, it is imperative that a vegetative map be completed for Padre Island National Seashore. This map will be utilized in the park's Geographical Information System. It will assist resource managers in making decisions relating to the impacts of oil and gas development and what mitigative/restoration measures should be required.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent natural resources under the trusteeship.

National Park Service Management Policies state that..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities

National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to upgrade the park's knowledge and continue current management activities by conducting the specific actions outlined below. Additional funding and support will be required for long term monitoring.

- Initiate baseline data research:
A contract has been awarded to conduct a comprehensive survey of the vegetative communities at Padre Island National Seashore. These inclusive surveys will provide baseline information on differing plant communities and species diversities along four transects of representative communities from the primary dune line to the mud/algae tidal flats. After appropriate funds are made available, a vegetation map of the park in GIS format will be accomplished.

- Expand Research:
Additional funding is necessary in order to increase the number of survey sites and obtain a larger representative sample. Long term monitoring of these sites is essential in assessing the changes in vegetative plant communities including, species composition, and densities.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
			FUNDED		
1994:	SVC-OTHER	RES	One-time	6.50	0.00
	PKBASE-NR	ADM	Cyclic	3.30	0.10
			Subtotal:	9.80	0.10
1996:	PKBASE-NR	ADM	One-time	3.30	0.10

		Total:	13.10	0.20

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 3:	MON	Cyclic	6.50	0.00
		Total:	6.50	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
This alternative implies that the National Park Service will not attempt to obtain the necessary data to accomplish a natural resource damage assessment in the event of an oil/hazardous material spill which impacts the park's resources. This alternative does not conform to NPS management policy.

- Continue Current Management Action:
This alternative will allow the park to obtain baseline data on the abundance, distribution and species diversity of vegetative plant communities at Padre Island National Seashore.

- Expand Research:
With additional funding, a long term monitoring of vegetative plant communities in the park will be established. The number of sample sites will also be expanded to include other areas within the park.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-018.000

Last Update: 02/26/97 Priority: 31
Initial Proposal: 1994

Title : SURVEY OF T&E AVIFAUNA (LAGUNA MADRE SHORELINE)

Funding Status: Funded: 10.50 Unfunded: 10.00

Servicewide Issues : N02 (T&E ANIMAL)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W03 (Threatened & Endangered Animal Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore is recognized as essential habitat for over 322 bird species, including 10 threatened, endangered species, or State protected species. Padre Island National Seashore has 29 rookery islands within its boundary. These rookery islands are essential habitat for 21 species of colonial waterbirds. The park is also on the flyway for neotropical migratory birds, having over 120 species that migrate through the park during both spring and winter migration.

Spill events resulting from oil and gas exploration, production, and transportation pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in-and-near the park. Exposure to oil spills threatens Padre Island National Seashore avifauna on both the Gulf of Mexico and the Laguna Madre.

- Background Information:
Padre Island is located off the Southeast coast of Texas and is the longest undeveloped barrier island in the United States. The park encompasses 130,000 acres, is approximately 70 miles in length, and extends from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico. Oil and gas exploration, production, and transportation in the park predate the establishment of Padre Island National Seashore.

The southern portion of the park is the historic staging area for both Tundra and Arctic peregrine falcons, with over 2000

individuals counted in the 1993 fall migration. This area is considered as "critical" habitat by the Peregrine Falcon Recovery Team and is the only are in the United States where peregrine falcons congregate during their annual spring migrations.

The Laguna Madre shoreline and associated spoil islands serve as an important habitat area for several listed threatened or endangered species, and protected species. The park is recognized as essential habitat for over 322 bird species, including 10 T&E and state protected species. It is estimated that between 60-65% of all Piping plovers will winter in South Texas. A total of 432 Piping plover have been previously surveyed within the park. Wilson's plover, Snowy plover, Least terns, Brown pelicans, and White-faced ibis have been reported to breed and nest on the park's spoil islands within Laguna Madre. Also, 325 breeding pairs of Reddish egrets also nest on these spoil islands. Oil spills in this particular area could result in irreversible impacts to these sensitive species.

Oil and gas exploration, production, and transportation predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico, in close proximity to Padre Island National Seashore. On the park's Laguna Madre boundary, hundreds of barges carrying petroleum products and hazardous materials travel the Intracoastal Waterway (ICW) between Corpus Christi and Brownsville, Texas.

Approximately 70 miles of the ICW is adjacent to the park's western boundary. Petroleum and hazardous materials regularly enter these waters and instances of collisions, resulting in spilled fuel, have been documented. In the past, Padre Island National Seashore has experienced oil spill events which have inundated areas along the Laguna Madre shoreline.

The park's inshore waters and the 29 corresponding rookery islands have the potential to be significantly impacted from hazardous materials spills. There are 21 species of colonial waterbirds that utilize these rookery islands for nesting, including several potected species.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent natural resources under the trusteeship.

National Park Service Management Policies state that..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

In 1992, the park initiated a contracted avifauna research project to collect baseline data on the distribution and abundance of threatened, endangered, or State protected avifauna along 50 miles of the Laguna Madre shoreline. Monthly surveys were conducted for a 12 month time period. The data that was obtained included species diversity and abundance and an attempt to determine the physical factors that are influencing the birds in their occupancy of certain portions of the study area.

- Current Management Action:
The park's Resources Management Division is currently involved in mapping past avifauna research on the western (Laguna Madre) portion of the park into the divisions GIS computer.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to upgrade the park's knowledge and continue current management activities by conducting the specific actions outlined below. Additional funding and support will be required for long term monitoring.

- Initiate Research:
The park needs a comprehensive long-term survey of the park for identification of all bird species and associated habitats. Of special concern are species listed as threatened, endangered, or State protected within the 20 miles of Laguna Madre shoreline that have not as yet been surveyed. In addition to obtaining data on species diversity and abundance; the physical factors that are

influencing occupancy of certain portions of the park; recording any observations that might pertain to the life history of each species, data on habitat requirements is paramount to protection of these species. This baseline resource inventory is required to initiate a natural resource damage assessment in the event of an oil spill impacting the Laguna Madre shorelines.

- Budget:
Funding levels are based on contracted research with local ornithologists.

1994 - $20,000
1996 - $20,000

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1994:	SVC-OTHER	RES	Cyclic	7.00	0.00
	PKBASE-NR	ADM	Cyclic	3.50	0.10
			Subtotal:	10.50	0.10
			Total:	10.50	0.10
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 3:		RES	Cyclic	10.00	0.00
			Total:	10.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-019.000

Last Update: 02/26/97 Priority: 9
Initial Proposal: 1994

Title : SURVEY HERPETOLOGICAL COMMUNITIES

Funding Status: Funded: 0.00 Unfunded: 24.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:

N-RMAP Program codes : G00 (Geologic Resources Management)

10-238 Package Number :

Problem Statement

Documented oil and gas exploration and extraction operations predate the establishment of Padre Island National Seashore. There is approximately 3000 oil and gas platforms located in the Gulf of Mexico (GOM). Over 24,000 oil tankers regularly travel within the GOM to the Port of Corpus Christi, Texas. Additionally, there are hundreds of barges that travel the Gulf Intracoastal Waterway (GIWW) between Corpus Christi and Brownsville, Texas carrying petroleum products and hazardous materials. The currents of the GOM converge off of Padre Island and influence deposition of materials onto park beaches. The beach is vulnerable to impacts relating to the discharge of petroleum products and hazardous materials from various sources into the GOM. Oil and Gas exploration, production, and transportation pose greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in and near the park. Exposure to oil spills threaten Padre Island National Seashore on both the Gulf of Mexico and the Laguna Madre.

A comprehensive inventory and monitoring program for the identification and distribution of the herpetological communities needs to be undertaken. Additionally, analysis of all important and essential habitats should be included in order to perform a natural resource damage assessment in the event of an oil spill. This data will also provide information needed to prepare the park's Minerals Management Plan.

- Background Information:
Padre Island is the longest undeveloped barrier island in the

United States and is located off the southeast coast of Texas. The National Seashore encompasses 130,000 acres of the island and is approximately 70 miles in length and extends from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico and is separated from the Texas mainland to the west by the Laguna Madre, a shallow hypersaline body of water.

The park encompasses tens-of-thousands acres of pristine wetlands that are critically important habitat for 322 bird species. Included in these bird species are 3 listed threatened or endangered species (T&E) and 7 State protected species.

Because of the problems related to logistics and the isolation of areas within the park, park staff have been previously unable to obtain basic resource inventory data. Due to this lack of basic resource data it has not been feasible to complete a Minerals Management Plan for Padre Island National Seashore.

The currents of the Gulf of Mexico (GOM) change directions biannually with debris and oil from Mexico being swept northward during the summer and, similarly those in the Northern Gulf are swept southward during the winter. As with marine debris, current transport processes concentrate spilled oil from numerous locations and sources in the GOM area onto park beaches.

Inshore park waters (Laguna Madre, Gulf Intracoastal Waterway, Port Mansfield Channel) and associated shorelines have the potential to be impacted from hazardous materials spills. Hundreds of barges carrying petroleum and hazardous materials regularly enter these waters and instances of collisions, resulting in spilled fuel, have been documented.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, or their loss use value occurs as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent of the natural resources under the trusteeship.

National Park Service Management Policies state that "the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments", (Chapter 4:4, 1988).

Presently, the park is developing a Minerals Management Plan (MMP) to effectively manage oil and gas operations that occur within park boundaries. In order to complete a comprehensive MMP, baseline resource data should be attained. This will allow for an accurate discussion in the MMP of impacts and mitigative measures for each distinct resource group which will be affected by oil and gas operations.

- Current Management Action:
The Resource Management Staff have identified baseline data deficiencies that are needed to make natural resource damage assessments after an oil spill has occurred. This baseline data is also necessary to prepare a comprehensive and accurate Minerals Management Plan for Padre Island National Seashore. A research contract is being formulated to institute an inventory and monitoring program for herpetological communities.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to upgrade the park's knowledge and continue current management activities by conducting the specific actions outlined below. Additional funding and support will be required for long term monitoring.

- Initiate baseline data research:
After appropriate funds are made available, the park will follow accepted protocol, and design an inventory and monitoring study for herpetological communities in the park. This data is necessary to complete a Minerals Management Plan for Padre Island National Seashore.

- Expand basic study:
With additional funding, the basic study will be expanded to address long term population trends and dynamics which will accurately portray the health of the herpetological community.

BUDGET AND FTEs:

Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED				
		Total:	0.00	0.00
UNFUNDED				
	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	20.00	0.00
	ADM	One-time	4.00	0.20
		Subtotal:	24.00	0.20
		Total:	24.00	0.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-020.000

Last Update: 02/26/97 Priority: 10
Initial Proposal: 1994

Title : SURVEY MAMMALIAN COMMUNITIES

Funding Status: Funded: 0.00 Unfunded: 24.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G02 (Mining and Minerals Management)

10-238 Package Number :

Problem Statement

Documented oil and gas exploration and extraction operations predate the establishment of Padre Island National Seashore. There is approximately 3000 oil and gas platforms located in the Gulf of Mexico (GOM). Over 24,000 oil tankers regularly travel within the GOM to the Port of Corpus Christi, Texas. Additionally, there are hundreds of barges that travel the Gulf Intracoastal Waterway (GIWW) between Corpus Christi and Brownsville, Texas carrying petroleum products and hazardous materials. The currents of the GOM converge off of Padre Island and influence deposition of materials onto park beaches. The beach is vulnerable to impacts relating to the discharge of petroleum products and hazardous martials from various sources into the GOM. Oil and Gas exploration, production, and transportation pose more threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in and near the park. Exposure to oil spills threaten Padre Island National Seashore on both the Gulf of Mexico and the Laguna Madre.

A comprehensive inventory and monitoring program is required to identify the diversity and distribution of mammalian communities within the park. Additionally, analysis of all important and essential habitats should be included, in order to prepare the park's Minerals Management Plan, and to perform a natural resource damage assessment, in the event of an oil spill.

- Background Information:
Padre Island is the longest undeveloped barrier island in the United States and is located off the southeast coast of Texas. The

National Seashore encompasses 130,000 acres of the island and is approximately 70 miles in length extending from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico and to the west by the Laguna Madre, a shallow hypersaline body of water.

Because of problems related to logistics and the general isolation of areas within the park, park staff have previously been unable to obtain basic resource inventory data.

The currents of the Gulf of Mexico (GOM) change directions biannually with debris and oil from Mexico being swept northward during the summer and, similarly, those in the Northern Gulf are swept southward during the winter. As with marine debris, current transport processes concentrate spilled oil from numerous locations and sources in the GOM area onto park beaches.

Inshore park waters (Laguna Madre, Gulf Intracoastal Waterway, Port Mansfield Channel) and associated shorelines have the potential to be impacted from hazardous materials spills. Hundreds of barges carrying petroleum and hazardous materials regularly enter these waters. Documented instances of collisions resulting in spilled fuel and hazardous materials have been documented.

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, or their loss use value occurs as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent of the natural resources under the trusteeship.

National Park Service Management Policies state that "the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments", (Chapter 4:4, 1988).

Currently, park staff are preparing a Minerals Management Plan for oil and gas operations occurring within Padre Island National Seashore. In order to complete this plan, baseline resource data on the mammalian is required. This information will be utilized to assess potential impacts on the population from oil and gas operations.

- Current Management Action:
The Resource Management Staff is currently trying to secure funding for a comprehensive inventory and monitoring study on the mammalian communities in the park. This study will assist in the completion of the park's baseline resource inventory. The data collected from this study will be utilized in the preparation of the park's Mineral Management Plan, and also to perform a natural resource damage assessment in the event of an oil spill.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to upgrade the park's knowledge and continue current management activities by conducting the specific actions outlined below. Additional funding and support will be required for long term monitoring.

- Initiate baseline data research:
After appropriate funds are made available the park will follow accepted protocol and design an inventory and monitoring study for mammal communities in the park.

- Expand basic study:
With additional funding, the basic study will be expanded to address long term population trends and dynamics that will more adequately reflect the overall state of the mammal community.

BUDGET AND FTEs:

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		FUNDED		
		Total:	0.00	0.00

----------UNFUNDED----------

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	20.00	0.00
	ADM	One-time	4.00	0.20
		Subtotal:	24.00	0.20
		Total:	24.00	0.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

Project Statement PAIS-N-021.000

Last Update: 02/26/97 Priority: 6
Initial Proposal: 1993

Title : SURVEY NEOTROPICAL MIGRATORY BIRDS

Funding Status: Funded: 24.70 Unfunded: 18.00

Servicewide Issues : N17 (BIODIVERSITY)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

Many species of birds migrating between North America and the New World tropics are experiencing serious population declines. The primary factors thought to be critical to this decline are the loss and fragmentation of habitat in North America, Mexico, Central and South America, and the Caribbean.

Padre Island is the longest undeveloped barrier island in the United States. The park encompasses approximately 130,000 acres of the island. It is bordered on the east by the Gulf of Mexico and on the west by the Laguna Madre, a hypersaline body of water. The park's location in the southwest region of the Gulf of Mexico and its proximity to Mexico have made the area particulary significant as a central fly-way along the migration route for a large number of neotropical birds.

As part of the park's comprehensive inventory and monitoring program, Padre Island National Seashore (PAIS) is committed to gathering baseline data on the distribution, abundance, and diversity of neotropical birds that utilize the park during their spring and fall migration.

- Background Information:
More than half of all land birds migrate, between breeding habitat in North America and wintering habitat in Latin America and the Caribbean. The scientific community has noted a drastic decline in the populations of neotropical migrants throughout their range. Fragmentation in the forests of the U.S.A. and Canada coupled with

a loss of habitat in tropical wintering areas have been suggested as two factors contributing to this decline. Landscape change and habitat destruction throughout the range of neotropical birds have had a significant detrimental effect on the migratory bird population.

PAIS is located in the central fly-way for the annual migration of 104 species of neotropical migratory birds. Bi-annually, the park serves as an important staging area for arctic peregrine falcons, least terns, and piping plovers. A large number of neotropical migrants utilize the park during the spring and fall migration.

-Current Management Action:
The National Park Service has signed a Memorandum of Understanding with six other federal organizations to foster cooperative efforts for conserving neotropical birds throughout the Western Hemisphere.

In 1993, Padre Island National Seashore implemented seasonal surveys to gather baseline data and to monitor the neotropical bird population during their spring and fall migrations. A pilot project was completed in the fall of 1993. This week-long pilot survey resulted in the training of PAIS staff on mist-netting and banding/measurement procedures in preparation for a more comprehensive program in the future.

In the spring of 1994, an extensive mist-netting survey was completed. Over 1000 neotropical migrants were netted, measured, and banded during April and May.

A proposal to continue this inventory and monitoring work is being developed by PAIS in cooperation with the National Biological Service, U.S. Fish & Wildlife Service, and the Audobon Society.

Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988

Description of Recommended Project or Activity

Beginning with the 1997 spring migration, neotropical surveys will be conducted during the two main seasonal migrations through PAIS. Protocol has been established for the sampling of specific habitat areas within the park. The methodology includes the mist-netting, banding, and identification of neotropical birds in specific habitat areas (live oak mottes, black willow mottes, tall chord grasses, and wetland areas). Previously, the survey was conducted along areas near Bird Island Basin and the Ranger Station.

- Expand Inventory & Monitoring
Neotropical migrants serve as important indicators of the general health of habitat areas in North America and the New World tropics. PAIS is committed to continuing monitoring activities for this critical indicator species. The park plans to initiate the bi-yearly surveys for neotropical migrants and increase the number of survey locations, increase the number of survey days, and incorporate point counts. This expansion of the previous study will be achieved through assistance from non-government organizations, and increased funding.

Surveys will be conducted at areas located in the park that provide structure and protection for migrants. These areas include black willow mottes, live oat mottes, and stands of sea cane. Two general areas will be sampled; one area located near the northern end of the park and one area located near the central portion of the park. Mist nets will be erected in each of the two general areas and sampled every 45 minutes on days that netting is possible. Netting days will be determined by the occurrance of weather fronts. All birds netted will be catalogued, identified, weighed, measured, banded, assesed for fat content, and photographed. Additionally, point counts will be conducted at appropriate times during the spring and fall migrations. This sampling protocol will be conducted for three years provided that funding is made available.

The goals of this project are as follows:

1) Establish a baseline inventory for neotropical migrants at

Padre Island National Seashore.

2) Determine any possible trends associated with neotropical migrants such as the use of particular habitats, changes in species diversity, etc. by comparing current data with past data.

3) Establish PAIS as the baseline for surveying neotropical migratory birds in South Texas coastal areas.

With the increase in development in South Texas, PAIS will continue to gain greater significance as potential habitat for neotropical birds during their bi-annual migration.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1993:	RG-NS-RES	RES	Recurring	1.70	0.00
	PKBASE-NR	RES	Recurring	2.00	0.10
			Subtotal:	3.70	0.10
1994:	RG-NS-RES	RES	Recurring	7.50	0.00
	PKBASE-NR	RES	Recurring	13.50	0.20
			Subtotal:	21.00	0.20
			Total:	24.70	0.30
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:		ADM	Recurring	1.00	0.05
		RES	Recurring	5.00	0.00
			Subtotal:	6.00	0.05
Year 3:		ADM	Recurring	1.00	0.05
		RES	Recurring	5.00	0.00
			Subtotal:	6.00	0.05
Year 4:		ADM	Recurring	1.00	0.05
		RES	Recurring	5.00	0.00
			Subtotal:	6.00	0.05
			Total:	18.00	0.15

(Optional) Alternative Actions/Solutions and Impacts

(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement PAIS-N-022.000

Last Update: 02/26/97 Priority: 3
Initial Proposal: 1992

Title : MONITORING MARINE DEBRIS AND POINT SOURCE POLLUTERS

Funding Status: Funded: 279.60 Unfunded: 0.00

Servicewide Issues : N09 (COASTAL DYNAM)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Padre Island is located off the southeast coast of Texas and is the longest undeveloped barrier island in the United States. The park encompasses 130,000 acres (approximately 70 miles in length, and extends from 1/2 to 3 miles-in-width). The park is bordered on the east by the Gulf of Mexico. The currents of the Gulf of Mexico (GOM) change directions bi-annually, with debris being swept northward during the summer and, similarly, those in the Northern Gulf are swept southward during the winter. It has been estimated that, at certain times of the year, Padre Island National Seashore is inundated by over a ton of debris per mile of beach.

Marine debris is an increasing concern to the general public as well as the scientific community. It is estimated that 6.4 million tons of debris are discarded annually into the world's oceans.

Two major longshore currents of the Gulf of Mexico converge along Padre Island National Seashore. These currents are responsible for the deposition of thousands of pounds of marine debris on the beaches. Padre Island National Seashore is one of the most littered beaches in the United States. The accumulation of the debris on the beaches pose hazards to numerous wildlife species and the visiting public. Additionally, the unsightliness of the debris generates numerous complaint letters.

In an attempt to qualify and quantify the types and amounts of debris littering our beaches, and the long-term trends in ocean pollution, National Marine Fisheries Service (NMFS) and the National Park Service (NPS) undertook a five-year cooperative

research project entitled the National Park Marine Debris Monitoring Program. This cooperative research program was initiated in 1989 and included eight units of the National Park System located along the Atlantic, Pacific, and Gulf coasts.

Padre Island National Seashore has been actively involved in the NPS/NMFS National Marine Debris Survey for the past five years, until the termination of this project in 1993. The quarterly surveys were intended to monitor persistent marine debris on selected beach transacts over a five-year period. However, in view of the particular interest that many agencies have for improving the database on marine debris trends, point sources, and specific MARPOL Annex V compliance monitoring, the park, in coordination and funding assistance from the Environmental Protection Agency, initiated a daily marine debris survey project in June, 1992.

The daily survey were initiated under the hypothesis that the extrapolation and debris totals per quarter appeared to be inaccurate and scientific invalid. That is, because of winds, tidal influences, and currents, each meter of beach if unique as to the total amount of debris that is deposited in a given area and debris items are constantly moved back into the current system, so that a quarterly surveys do not accurately depict 90-days of accumulated debris on a specific site.

Additionally, daily surveys were conducted to determine the specific amounts of debris that actually occur on PAIS beaches. The data is collected from the backshore areas and the foreshore areas. The backshore areas have provided information on the amounts of debris that are actually uncovered by fluctuating winds, as compared to being washed ashore by recent high tides. The foreshore areas are sampled to provide specific data related to the amounts and types of debris that are being deposited by the previous high tide.

These daily surveys are conducted at four locations. Two fifty meter transects that are located on the north and the south side of two quarterly transects sites. These four daily survey sites are sampled every workday by a two person team. All debris encountered in each of the two southern sites are recorded on data sheets and, subsequently, painted with bright marking paint. The painted debris is then left-in-place. When the quarterly surveys are conducted, these daily survey sites are also surveyed to determine what debris item would typically be counted during a quarterly survey. The remaining painted debris items are then collected and added to the database on painted debris to determine the amount to total debris items marked, during the past quarter.

Analysis of the total number of painted debris items, that were painted over the quarterly period, in relationship to the number of

items collected on the day of the quarterly survey indicates the amount of total items that have been redeposited from the transect. By keeping an accurate daily data base on debris items, then it is possible to know the exact number of debris items that accumulated over the 90-day time period and how many debris items remain in the site at the end of the quarterly period.

All debris items in the two northern transect sites are counted, recorded, and removed from the sites. The data gathered from this process results in a scientific valid method of determining the exact number and types of debris items that have been deposited over a quarterly period. This data is then analyzed, in comparison with quarterly data, to determine if the quarterly data is an accurate depiction of debris deposited, and accumulated, over the quarterly period.

Several types of data were collected, to include: debris deposited by tidal action vs. debris that is being uncovered by wind action; debris items that can be associated to a specific source; and, specific debris items washing ashore.

Daily monitoring trend data would include:

1. During certain months, more debris is uncovered from the primary dunes to the coppice dunes, due to changes in wind conditions, than debris that has been washed onto the beach. The process of debris being uncovered, covered, then uncovered again, tends to askew the data as to the actually accumulation of post-MARPOL V debris that is being washed ashore.

2. Certain debris items came ashore in conjunction with the commercial shrimping season. These items (onion sacks, rubber gloves, milk and egg cartons, condiment bottles, light bulbs, oil filters) increased dramatically over the time period that the shrimpers were in the PAIS area. Similarly, these particular items decreased when the shrimping fleet moved out of the area.

3. Numerous tar balls, associated with the specific debris items (#2), washed ashore in mass when the shrimping fleet came within 100 yards of shore. Similarly, the tar balls stopped washing ashore when the fleet left.

However, further analysis of the acquired data is needed to determine specific trends. Marine debris data needed in order to answer the specific questions listed below.

1. What happens when the wind changes direction (occurs during the winter months) from northwest to southeast?

2. What happens when the currents change direction from north to

south then back again? These changes occur every April and October. Will there be a change in specific debris items?

3. Will we be able to discern a distinct change in specific types of debris items when the shrimping season closes? Will these same types of debris items be deposited when the shrimping season opens again in 1994?

In an attempt to document offshore pollution violations, the National Park Service, Federal Bureau of Investigation, Coast Guard, and Texas General Land Office initiated a five day undercover operation using high-tech equipment capable of recording movement at night. Approximately 30 individuals were involved in 24 hours a day surveillance from the park's beaches. Also included in this undercover operation were two Coast Guard airplanes and a helicopter to assist with air surveillance.

Numerous reports and publications have been generated from the marine debris data at Padre Island National Seashore. Reports and publications include:

1. Marine Debris Investigation, Padre Island National Seashore, December 1993
2. Annual Report of Marine Debris Monitoring Program 1989
3. Annual Report of Marine Debris Monitoring Program 1990
4. Annual Report of Marine Debris Monitoring Program 1991
5. Annual Report of Marine Debris Monitoring Program 1992
6. Annual Report of Marine Debris Monitoring Program 1993
7. Marine Debris Monitoring on Padre Island National Seashore 1992

-Current Management Action:
As a result of the data that was obtained from the previous daily research, the current debris monitoring methods have been modified to include daily surveys of eight miles of beachfront. The previous daily research indicated that debris found on the backshore of the beach may not be indicative of post-MARPOL Annex V regulations and, subsequently, will no longer will counted. The current daily surveys collect debris found from the high tide line to the waters edge, indicative of debris that has been deposited within the previous high tide.

Because of funding and personnel requirements, the previous research was only conducted from Monday thru Friday, thereby losing valuable data for Saturdays and Sundays. In response to this data gap, the current research has been initiated on a seven-days-a-week basis.

The marine debris research centers on debris trends, point source pollution, and the effectiveness of MARPOL Annex V regulations. To

meet this objective, 37 debris categories have been selected to be surveyed. These items will be categorized and removed from the eight miles of beach, daily. Ten of the 37 debris items are associated with offshore platforms and will provide scientifically valid data related to platform generated debris entering into the GOM. Twelve of the debris categories are associated with commercial fishing activities. The collection of these 22 categories are directly related to point source MARPOL violators and trends in these categories. The remaining items are not directly related to point source polluters, but will allow for analysis related to the effectiveness of MARPOL regulations.

As part of the park's on-going research, another multi-agency law enforcement undercover operation is planned for July, 1994. This undercover operation will include the use of boats, airplanes, and onshore surveillance personnel.

- Legal Authority
International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) Annex V
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to continue the current management activities by conducting the specific actions outlined below.

As a result of the data that was obtained from the previous daily research, the current debris monitoring methods have been modified to include daily surveys of eight miles of beachfront. The previous daily research indicated that debris found on the backshore of the beach may not be indicative of post-MARPOL Annex V regulations and, subsequently, will no longer will counted. The current daily surveys collect debris found from the high tide line to the waters edge, indicative of debris that has been deposited within the previous high tide.

Because of funding and personnel requirements, the previous

research was only conducted from Monday thru Friday, thereby losing valuable data for Saturdays and Sundays. In response to this data gap, the current research has been initiated on a seven-days-a-week basis.

The marine debris research centers on debris trends, point source pollution, and the effectiveness of MARPOL Annex V regulations. To meet this objective, 37 debris categories have been selected to be surveyed. These items will be categorized and removed from the eight miles of beach, daily. Ten of the 37 debris items are associated with offshore platforms and will provide scientifically valid data related to platform generated debris entering into the GOM. Twelve of the debris categories are associated with commercial fishing activities. The collection of these 22 categories are directly related to point source MARPOL violators and trends in these categories. The remaining items are not directly related to point source polluters, but will allow for analysis related to the effectiveness of MARPOL regulations.

As part of the park's on-going research, another multi-agency law enforcement undercover operation is planned for July, 1994. This undercover operation will include the use of boats, airplanes, and onshore surveillance personnel.

- Budget

Cost	
1. Personnel (3 GS-5/1 @ 26pp)	$60,840
2. Data Analysis (1 GS-7 @ 3 pp)	$2400
3. Transportation (GSA rental @ 300/mo)	$3600
4. Supervision/Administration (GS 9 @ 2 pp)	$2000
Total	$68,840

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
			FUNDED		
1992:	FED-OTHER	RES	Recurring	24.00	1.50
	SVC-OTHER	RES	Recurring	3.80	0.20
	PKBASE-NR	RES	Recurring	15.00	1.00
	PKBASE-NR	ADM	Recurring	6.50	0.20
			Subtotal:	49.30	2.90

1993:	FED-OTHER RES	Recurring	35.00	2.00
	SVC-OTHER RES	Recurring	3.80	0.20
	PKBASE-NR RES	Recurring	20.00	1.00
	PKBASE-NR ADM	Recurring	6.50	0.20
		Subtotal:	65.30	3.40
1994:	PKBASE-NR RES	Recurring	16.00	0.50
	FED-OTHER RES	Recurring	60.00	1.50
	PKBASE-NR ADM	Recurring	16.00	0.50
	PKBASE-NR ADM	Recurring	6.50	0.20
		Subtotal:	98.50	2.70
1995:	FED-OTHER RES	Recurring	60.00	3.00
	PKBASE-NR ADM	Recurring	6.50	0.20
		Subtotal:	66.50	3.20
		Total:	279.60	12.20

UNFUNDED

Activity	Fund Type	Budget ($1000s)	FTEs
	Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement PAIS-N-023.000

Last Update: 02/26/97 Priority: 20
Initial Proposal: 1994

Title : WATER QUALITY MONITORING

Funding Status: Funded: 10.00 Unfunded: 75.00

Servicewide Issues : N11 (WATER QUAL-EXT)
N20 (BASELINE DATA)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)

10-238 Package Number :

Problem Statement

Dredging activities are periodically conducted by the U.S. Army Corps of Engineers in or adjacent to park waters. The Gulf Intracoastal Waterway (GIWW) and Mansfield Channel are dredged every 1-3 years to maintain navigable depths. Oil and gas companies also dredge channels to access their operations in the Laguna Madre and the Gulf of Mexico, and to construct associated production pipelines. The material removed during dredging activities ("spoil") is placed on islands, upland sites, and into the water.

Marine flora and fauna may be impacted uponduring these operations. Dredging and spoil deposition has a documented adverse impact on the hydric environment, seagrasses, invertebrates, fish birds, and sea turtles. Dredging and spoil deposition may interfere with normal water flow patterns and impact water quality in the surrounding areas.

The park also has several oil and gas production facilities located within its boundary, which discharge produced waters into the Laguna Madre. These produced waters contain large concentrations of condensate, dissolved solids, heavy metals, and naturally occurring radioactive materials. Regular discharges of these materials are adversely impacting water quality and marine flora and fauna in the areas adjacent to the production facilities.

The park's wetlands, which are sensitive habitat areas, are utilized by a number of Federally listed threatened and endangered, or state protected, bird species. Water quality in wetland

communities may be adversely impacted by continuing oil and gas operations, vehicles, and high visitor use.

To protect these resources, an inventory and monitoring study of water quality in the Laguna Madre, Port Mansfield Channel, and the park's wetland communities should be initiated.

- Background Information:
Padre Island National Seashore (PAIS) is the largest undeveloped barrier island in the United States. The National Seashore encompasses 130,000 acres of the island and is approximately 70 miles-in-length and from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico and is separated from the Texas mainland to the west by the Laguna Madre, a shallow, hypersaline body of water.

The park encompasses tens-of-thousands of acres of pristine wetlands that are critically important habitat for 322 bird species.

The Port Mansfield Channel serves as an important habitat area for several listed threatened or endangered wildlife species, including three species of sea turtles and the brown pelican. The first documented mating by Kemp's ridley sea turtles in U.S. waters occurred in the Mansfield Channel. This area has one of the largest concentrations of sea turtles in Texas inshore waters.

- Current Management Action:
A comprehensive water quality inventory and long-term monitoring program has not been accomplished at Padre Island National Seashore. It is imperative that a long-term monitoring program be instituted to acquire baseline data and assess the general quality of water in the Laguna Madre, Port Mansfield channel, and wetland communities.

Because of problems related to lack of funding, and the general isolation of areas within the park, park staff have previously been unable to obtain basic resource inventory data.

National Park Service Management Policies state that..."the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with other more altered environments" (Chapter 4:4, 1988).

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities

National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Clean Water Act

Description of Recommended Project or Activity

The recommended course of action is to initiate long-term monitoring as outlined below.

- Initiate Monitoring:
The park is concerned that the park's surface waters may be adversely impacted by continued dredging operations, discharge of produced waters from oil and gas operations, and visitor use activities. Monitoring will be accomplished by utilizing Hydrolabs to acquire in situ water quality data. Hydrolabs will be installed at various locations along the Laguna Madre, Port Mansfield Channel, and wetland communities of the park. Parameters for the proposed monitoring program would include: temperature, pH, dissolved oxygen, conductivity, and turbidity.

- Expand Monitoring Program:
After the first year's data collection, the monitoring program will be expanded to provide a comprehensive, multi-year database of water quality parameters for a variety of areas within the park. The long term monitoring would prove invaluable for natural resource damage assessments and mitigation of potential adverse impacts. Information that is gathered will be included in the GIS database which is maintained by the park.

BUDGET AND FTEs:

	Source	Activity	FUNDED Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-NR	MON	Recurring	5.00	0.20
1995:	PKBASE-NR	MON	Recurring	5.00	0.20
			Total:	10.00	0.40

----------UNFUNDED----------

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	25.00	0.00
Year 2:	MON	One-time	25.00	0.00
Year 3:	MON	One-time	25.00	0.00
		Total:	75.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-024.000

Last Update: 02/26/97 Priority: 4
Initial Proposal: 1994

Title : INVENTORY AND MONITORING WETLAND COMMUNITIES

Funding Status: Funded: 19.00 Unfunded: 57.00

Servicewide Issues : C02 (ID & EVAL)
N12 (WATER FLOW)

Cultural Resource Type:

N-RMAP Program codes : V00 (Vegetation Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) is the largest undeveloped barrier island in the United States. The National Seashore encompasses 130,000 acres of the island and is approximately 70 miles-in-length and from 1/2 to 3 miles-in-width. The park is bordered on the east by the Gulf of Mexico and is separated from the Texas mainland to the west by the Laguna Madre, a shallow, hypersaline body of water.

The park encompasses tens-of-thousands of acres of pristine wetlands that are critically important habitat for 322 bird species. For the purposes of this statement, these wetland areas are divided into 3 different community types.

Salt Marsh - This community type is primarily located in the interior of the island. These inland areas are characterized by halophytic plants, brackish water, lacking exchange of fresh or salt water, and low elevation. Many reptile, mammal and insect species utilize these areas for foraging and protection.

Ephemeral Ponds - The park has numerous freshwater ponds, the majority of which are inundated by water on a year round basis. These ponds contain a variety of unique fish and plankton communities that are not found in other areas of the park.

A variety of vascular plants inhabit the area around the ponds. These plants are uncommon in the park and are exclusively found in areas adjacent to the ponds. Additionally, a variety of mammals utilize these ponds as freshwater source. These include pocket

gophers, blacktailed jackrabbits, bobcat, white-tailed deer, coyotes, badgers, and racoons. Throughout the year, a number of bird species also inhabit these ponds. Terns, gulls and ducks make up more than half the bird fauna found in the pond areas.

Wind Tidal Flats - This community type is one of the most predominant features of Padre Island National Seashore. It is also one of the most sensitive areas in the park to anthropogenic impacts. These areas are characterized by flat areas periodically inundated by water, and a thin surface layer of blue-green algae.

The park's wind tidal flats are inhabited by large numbers of benthic invertebrates (K. Withers 1992). These benthic invertebrates provide an important food source for hundreds of bird species. Federally listed threatened and endangered, or state protected bird species, which utilize these areas include: piping plovers, peregrine falcons, reddish egrets, brown pelicans, white-tailed hawk, wood stork, and sooty terns. Additionally, many of the park's wind tidal flats are considered critical habitat by the Peregrine Fund. Between 1000 to 2000 peregrine falcons utilize this area annually during their spring and fall migrations. This is the only area in the United States where these falcons can be found during their spring migration.

A comprehensive inventory and monitoring program is required to identify the diversity, quality, and distribution of wetland communities within the park. Additionally, analysis of all important and essential habitats will be included, in order to prepare the park's Backcountry Management Plan, Minerals Management Plan, and to perform natural resource damage assessments, in the event of an oil or hazardous materials spill.

- Background Information:
The park's wetland communities are sensitive habitat areas for a number of threatened/endangered or state protected species. These communities are also at the greatest risk from anthropogenic impacts. Potential impacts include oil and gas development, oil and hazardous material spills, and vehicular impacts.

A comprehensive wetland inventory and long-term monitoring program has not been accomplished at Padre Island National Seashore. It is imperative that a long-term monitoring program be instituted to assess the general health of these areas, and to identify potential impacts in order to appropriately mitigate there consequences.

National Park Service Management Policies state that "the NPS will assemble baseline inventory data describing the natural resources under its stewardship and will monitor those resources at regular intervals to detect or predict unnatural changes that may require intervention and to provide reference points for comparison with

other more altered environments", (Chapter 4:4, 1988).

The Oil Pollution Act of 1990 (OPA 1990) provides for the prevention, liability, removal and compensation for the discharge of oil in or upon navigable waters, adjoining shorelines, or the economic zone. In the event that natural resources are injured, lost, destroyed, or their lost use value occurs as a result of a discharge of oil covered by the Act, designated federal officials are authorized to assess natural resource damages, present a claim, recover damages as a result of injury to natural resources, and develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent of the natural resources under the trusteeship.

- Current Management Action:
The Park is requesting funding for a comprehensive inventory and monitoring study on the wetland communities within the park. This study will assist in the completion of the park's baseline resource inventory. This data will be utilized in the preparation of the park's Minerals Management Plan, the Backcountry Management Plan, and also to perform a natural resource damage assessment in the event of an oil spill.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to upgrade the park's knowledge and continue current management activities by conducting the specific actions outlined below. Additional funding and support will be required for long term monitoring.

- Initiate baseline data research:
After appropriate funds are made available, the park will follow accepted protocol and design an inventory and monitoring study for wetland communities in the park. This study will include:

1. Wetland vegetative inventory and monitoring: Vegetation biomass and succession patterns will be completed. This data will be entered into the park's GIS. GIS will be utilized to initiate long-term monitoring on wetland vegetation patterns.

2. Wetland Hydrology

3. Inventory of mammal and herpetological communities which utilize the park's wetland communities.

4. Monitoring of threatened/endangered species which utilize the park's wetland communities and determine critical or essential habitats.

- Expand basic study:
With additional funding, the basic study will be expanded to address long term population trends and dynamics that will more adequately reflect the overall state of wetland communities.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	5.00	0.20
1996:	PKBASE-NR	MON	Recurring	7.00	0.20
1997:	PKBASE-NR	MON	Recurring	7.00	0.30
			Total:	19.00	0.70

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	MON	One-time	50.00	0.00
Year 3:	MON	One-time	7.00	0.00
		Total:	57.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-025.000

Last Update: 02/26/97 Priority: 17
Initial Proposal: 1994

Title : SURVEY OF GROUNDWATER FOR CONTAMINANTS

Funding Status: Funded: 14.30 Unfunded: 107.00

Servicewide Issues : N11 (WATER QUAL-EXT)
N10 (MINRL/GEOTHERM)

Cultural Resource Type:

N-RMAP Program codes : G00 (Geologic Resources Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) is located off the southeast coast of Texas and is the longest undeveloped barrier island in the United States. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west. The National Seashore encompasses over 130,000 acres of important habitat for 322 bird species. Included in these bird species are three listed threatened or endangered species (T&E) and seven State protected species. The park also serves as an important staging area for 122 neotropical bird species, including over 2,000 endangered peregrine falcons.

Padre Island National Seashore was established in 1962, to: "save and preserve, for the purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped" (PAIS Statement for Management, 1976). The enabling legislation also provides, that all mineral rights within the National Seashore be retained by the original grantors of the property, and provisions were also made for the exploration and extraction of those minerals.
Historical data from the cattle ranching era and previous minerals development at Padre Island National Seashore indicates that the near surface groundwater is a lens of freshwater, approximately 30 feet thick, that overlies saltwater. Data indicates that this lens of freshwater is at least two miles-in-width. The park's groundwater is recharged by precipitation events and saltwater wave surges. Although the hydrology of the area has not been completely assessed, it has been theorized that the groundwater flows in an easterly orientation from the Laguna Madre to the Gulf of Mexico.

Wetlands and freshwater ponds in the park serve as sensitive habitat areas for a variety of aquatic invertebrates and algae, and also provide a source of drinking water for mammals and sensitive avifauna.

Due to the shallow nature of the groundwater at PAIS, the potential for impacts to wetland communities and ephemeral ponds from hydrocarbon and heavy metal contamination of the aquifer is considerable. The freshwater and ephemeral ponds in the park are utilized as a primary source of drinking water for the many species of wildlife inhabiting the park.

Mineral exploration on Padre Island began in 1951, prior to the park's enactment, and oil/gas operations have been generally continuous since that time. As of January 1994, there are seven active and 44 abandoned oil/gas operations. Oil/natural gas exploration and production pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in or near the park. In particular, the park is concerned with the long term cumulative impacts on the groundwater of PAIS. These impacts have resulted from hydrocarbon spills, improper disposal of drilling muds and sump discharges.

In 1993, two production sites at PAIS, one abandoned and another in operation, were identified as having hydrocarbon contamination of both soil and groundwater in the area. The responsible parties are completing an Environmental Site Assessment for each affected area. As per appropriate National Park Service (NPS), state, and federal regulations, these sites are being fully delineated, characterized, and sampled for hydrocarbon constituents present and there corresponding concentrations. Currently, the responsible parties are continuing site characterization and designing remediation for the aforementioned sites. After final review of the appropriate plans by the National Park Service, cleanup operations will commence.

Additionally, the park has identified five other active oil and gas production facilities that are probable sites of groundwater and soil contamination by hydrocarbons and heavy metals. The soil in these areas is heavily stained with petroleum products, and on one site an abandoned disposal pit for drilling muds, and tank bottoms is present. The existence of these surface impacts are indicative of soil and groundwater contamination at the five production sites. The NPS has notified the National Response Center, appropriate State agencies, and the responsible parties. A complete site assessment and characterization of these areas will be completed by the responsible party and appropriate remediation measures will be instituted.

A preliminary assessment of the cumulative impacts of oil and gas

operations on the soil and vegetation resources of Padre Island National Seashore was completed by the CPSU at Texas A&M University in 1987. This study was limited to the assessment of impacts on soil and vegetation that was associated with oil/gas drilling and processing sites, access corridors, and pipelines. In the report it was recommended that "an extensive survey of groundwater quality should be conducted at PAIS to evaluate the existence of contamination due to oil/gas activities." (Cumulative Impacts of Oil and Gas Operations on the Soil and Vegetation Resources of Padre Island National Seashore, Technical Report No. 9, 1987).

Forty-four abandoned oil/gas sites in the park have not been delineated nor characterized for hydrocarbon or heavy metal contamination. Due to the sensitive nature of this area, and the numerous species that depend on the park's ephemeral/freshwater ponds for there drinking water, a full assessment of the groundwater quality and soil resources around these abandoned areas is necessary.

The park requires a preliminary site assessment and continual monitoring of these problem areas to identify the extent and concentrations of both light nonaqueous phase liquids (LNAPLs), dense nonaqueous phase liquids (DNAPLs), and heavy metal concentrations. Subsequently, the NPS will develop long-term strategies to monitor and remediate the identified problem areas.

Resource Management staff have identified potential and historical impacts to the freshwater aquifer at PAIS. PAIS is requesting funding support to delineate the affected areas and to characterize the park's groundwater for contaminant concentrations

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990
CERCLA
RCRA
Clean Water Act

Description of Recommended Project or Activity

The recommended course of action is to complete preliminary assessments of the groundwater and soil for the 44 abandoned oil/gas sites. This action complies with NPS Management Policy and a host of other federal regulations.

- Develop Site Assessment Strategies
Initially the 44 abandoned oil/gas sites will be prioritized to facilitate the assessment of the areas with the largest potential for continued contamination. Sampling protocols, and parameters for analysis will be formulated and instituted for the entire survey.

- Site Assessment and Characterization
Each abandoned site will be assessed for the presence of contamination. Samples will be analyzed for:

1. Total Petroleum Hydrocarbon (TPH)
2. Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)
3. Nonmetallic Inorganic Contaminants: Chlorine, Arsenic
4. Metals: Barium, Chromium, Copper, Cadmium, Lead

There are three ways in which monitoring of the volatile organic compounds in the vadose zone will be carried out: (1) direct sampling of the soil, (2) installation of a soil probe to withdraw soil-gas for analysis (3) use of a photoionization detector (PID) to determine the quantity and identity of each volatile component.

Discreet samples will be taken at each site; and, nonmetallic inorganics and heavy metal concentrations will be determined using nuclear magnetic resonance (NMR).

Each site will be fully characterized for groundwater and soil contamination. The extent and gradient of each contaminant plume will be determined and potential bioreceptors will be identified.

-Budget Estimate

Alternative 1

A. Equipment	Cost
Soil Probe Unit	$15,000
Hydraulic Power Conversion Package	$4,500
4 Wheel-Drive Off Road Vehicle (ATV)	$7,500
Water Sampler and Misc. Tools	$6,500
Photoionization Detector	$4,000
Portable Gas Chromatograph	$2,000

SUBTOTAL	$38,500

B. Personnel

Biological Technician (1.0 FTE) GS-5	$20,300
SUBTOTAL	$20,300

The incumbents will be responsible for sampling of contaminants in the impacted areas. These will be a temporary positions lasting approximately one year. Sampling design will be completed by a Resource Management Specialist in consultation with the NPS Water Resources division and the U.S. Geological Survey.

C. Sample Analysis (Completed by an EPA certified lab)

Hydrocarbon (TPH & BTEX)	$7,000
Heavy Metals	$4,000
SUBTOTAL	$11,000

TOTAL PROJECT COST	$69,150

Alternative 2
The project could completed by an local contractor at an estimated cost of $45,000.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
			FUNDED		
1994:	PKBASE-NR	ADM	Recurring	3.30	0.10
1995:	PKBASE-NR	ADM	Recurring	5.00	0.10
1996:	PKBASE-NR	ADM	Recurring	3.00	0.10
1997:	PKBASE-NR	ADM	Recurring	3.00	0.10
			Total:	14.30	0.40

----------UNFUNDED----------

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	RES	One-time	40.00	0.00
	RES	One-time	41.00	2.00
	RES	One-time	11.00	0.00
		Subtotal:	92.00	2.00
Year 3:	RES	One-time	10.00	0.00
Year 4:	RES	One-time	5.00	0.00
		Total:	107.00	2.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-026.000

Last Update: 02/26/97 Priority: 7
Initial Proposal: 1993

Title : SURVEY OF SEA TURTLE MOVEMENTS IN PARK WATERS

Funding Status: Funded: 16.00 Unfunded: 30.00

Servicewide Issues : N02 (T&E ANIMAL)
N17 (BIODIVERSITY)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W02 (Native Aquatic Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

Little is known about movements of sea turtles within park waters. One of the largest concentrations of green sea turtles along the Texas coast occurs within the Mansfield Channel jetty area, at the southern end of the park. Additionally, more Kemp's ridley sea turtles nest on Padre Island than any other beach in the United States. Greater numbers of Kemp's ridley turtles may nest at the park in the future if an experimental project to establish a secondary breeding colony of this species is successful. Sea turtle movements should be followed to determine their precise affinity to, and seasonality within, park waters. Determining migration routes and foraging areas of adult Kemp's ridley turtles has been listed as a priority 1 recovery task item in the Kemp's Ridley Sea Turtle Recovery Plan.

-Background:
A monthly sea turtle netting survey has been conducted at the Mansfield Channel since June 1989 (see PAIS-N-004.000). From June 1989 through November 1993, 56 juvenile green turtles have been netted (N=95 captures). Turtle abundance is greatest during the warmer, summer months. Based upon recapture information, it appears that: 1) a mixture of transient and seasonally resident green turtles utilize the area for foraging and resting habitat; and, 2) turtles remain at the jetties for periods ranging from a few days to a few months and do not return to the area.

In 1992, the National Marine Fisheries Service (NMFS) incorporated results from the park netting surveys at the Mansfield Channel into

their recommendations for dredging at that location. NMFS suggested that more injurious hopper dredges be utilized only during the winter months, when netting captures were typically the fewest. However, netting data could not provide information on whether turtles overwinter in the area and whether they leave the area to avoid dredging. Additionally, movements of green turtles from the Mansfield Channel area are unknown.

It would be necessary to monitor these turtles via tracking (satellite, radio, and sonic) to more precisely determine: behaviors and movements; residency and seasonality of individual turtles; and locations of turtle dispersal after leaving the Mansfield Channel. NMFS has monitored a limited number of green sea turtles in the vicinity of South Padre Island, Texas via radio and sonic transmitters. Based upon these tracking efforts, NMFS has concluded that green turtles in the Brazos Santiago Ship Channel remain close to the jetties and should not be impacted from hopper dredging. However, due to numerous habitat differences, green turtle behavior may be dissimilar at the Mansfield Channel jetties and hopper dredging should not be allowed prior to further study. No attempts have previously been made to study long-distance or long-term movements of green sea turtles within the Gulf of Mexico using satellite transmitters.

Kemp's ridley is the most critically endangered sea turtle species in the world, with only about 400 adult females remaining and most nesting occurring near Rancho Nuevo, Tamaulipas, Mexico. Six confirmed Kemp's ridley nests were located along the Texas coast from 1979-1993. Most of the six nests were located at Padre Island National Seashore and more Kemp's ridley nests have been documented on Padre Island than any other beach in the United States.

From 1978-1988, an experimental attempt to establish a secondary breeding colony of critically endangered Kemp's ridley sea turtles at Padre Island National Seashore was undertaken. Although no Kemp's ridley turtles from the project have been documented nesting in the wild, none may be mature yet. The Kemp's Ridley Sea Turtle Recovery Plan and several documents reviewing the Kemp's ridley sea turtle head-starting project state that it is necessary to determine whether Kemp's ridley sea turtles return to nest on Padre Island and document the fecundity of these turtles. Since 1986, seasonal beach patrols for nesting sea turtles have been conducted by park staff (see PAIS-N-003.000). The patrol season extends from April through August and the route encompasses a liner distance of 75 miles. However, because of limitations in funding, patrol coverage of the entire season and area is incomplete.

Once reaching maturity, Kemp's ridley sea turtles typically nest two to three times per year. Attachment of satellite transmitters to Kemp's ridley sea turtles nesting at the park would allow

efficient monitoring of the long-term and long- distance movements of these animals. Through use of these transmitters, it would be possible to determine the times and locations that Kemp's ridley turtles completed successive nestings at the park, so that staff could immediately locate and protect the nests. Determining migration routes and foraging of adult Kemp's ridley turtles has been listed as a priority 1 recovery task item in the Kemp's Ridley Sea Turtle Recovery Plan.

- Current Management Action:
A lack of funding has prohibited initiation of tracking investigations.

- Legal Authority:
16 USC 1 - National Park Service Organic Act of 1916
16 USC 698 - Redwoods Amendment
16 USC 1531 et. seq. - Endangered Species Act
National Environmental Policy Act
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to increase National Park Service involvement by conducting the specific actions outlined below. This action complies with NPS Management Policy and endangered species legislation but requires additional funding and support.

- Initiate Tracking Studies of Sea Turtles in Park Waters:
A sample of larger green turtles netted at the Mansfield Channel should be tracked to determine their movements, behaviors, residency, and seasonality in the Mansfield Channel. Radio and sonic tracking should be conducted to determine specific locations, depths, surfacing times, foraging territories/home ranges, and residencies. Satellite transmitters should be utilized to assess long-term affinity to, possible overwintering in, and movements after leaving, the Mansfield Channel.

Nesting Kemp's ridley sea turtles should be outfitted with satellite transmitters so that their movements within park waters and times/locations of successive nestings at the park could be monitored. Following these nesting turtles in this manner would allow quicker location and protection of them and their nests.

If funding were received from the National Park Service, it is possible that additional funds might be obtained from the park, National Biological Survey, National Marine Fisheries Service, U.S.

Fish and Wildlife Service, or U.S. Army Corps of Engineers to conduct a cooperative survey.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1996:	FED-OTHER	RES	One-time	12.00	0.00
	FED-OTHER	ADM	One-time	4.00	0.20
			Subtotal:	16.00	0.20
			Total:	16.00	0.20

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	Recurring	10.00	0.50
Year 2:	RES	Recurring	10.00	0.50
Year 3:	RES	Recurring	10.00	0.50
		Total:	30.00	1.50

(Optional) Alternative Actions/Solutions and Impacts

- No Action/Continue Current Management Action:
The no action alternative implies that the National Park Service will not attempt to monitor and study movements of sea turtles within park inshore waters. Tracking of sea turtles to determine their residency, seasonality, movements, behaviors, and locations/dates of successive nestings would not be conducted. No attempt would be made to gather information necessary to assess potential threats to green turtles from dredging at the Mansfield Channel. The liklihood of locating and protecting nesting Kemp's ridley sea turtles and their nests would be diminished. This alternative does not fully conform with federal legislation or NPS Management Policy.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-027.000

Last Update: 02/26/97 Priority: 18
Initial Proposal: 1993

Title : SEA TURTLE MARINE DEBRIS INGESTION AND FOOD HABITS

Funding Status: Funded: 21.00 Unfunded: 5.00

Servicewide Issues : N02 (T&E ANIMAL)
N17 (BIODIVERSITY)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W02 (Native Aquatic Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

Longshore currents convergence on Padre Island National Seashore, depositing massive quantities of marine debris and an average of 50 sea turtles per year on local beaches. An extensive study of marine debris has been conducted at the park since 1989. Much of the marine debris found contains sea turtle bites. Dead sea turtles are necropsied to gather information on marine debris ingestion and entanglement, food habits, sex ratios, and mortality factors. Determining occurrence of marine debris ingestion/entanglement and foraging ecology have been listed as recovery task priority items for the various sea turtle species.
- Background:
A five-year cooperative study of marine debris items on Padre Island National Seashore was undertaken during 1989 (see PAIS-N023.000). In 1992, the park expanded the study to include daily surveys of marine debris and quantification of marine debris items containing turtle bites.

Beginning in 1982, most Kemp's ridley and green turtles that washed ashore dead in south Texas were salvaged for necropsy and specimen retrieval. During 1992, salvage and necropsy efforts were expanded to include all sea turtle species, including hatchlings (see PAIS-N-005.000) and larger individuals. As of November 1993, approximately 140 Kemp's ridley, 50 green, 12 loggerhead, 10 hawksbill, and one leatherback turtles had been necropsied to retrieve gut contents, determine gender, and attempt to determine cause of death. Another researcher examined 88 dead loggerhead turtles found within the same study area between 1986 and 1988.

Effective December 31, 1988, MARPOL Annex V established regulations on discharging ship-generated garbage and prohibited discharging of all plastics at sea. However, large quantities of marine debris still continue to be documented on park beaches and many of the sea turtle gut contents examined still contain marine debris items.

- Current Management Action:
Most sea turtles washed ashore on Padre, Mustang, and South Padre Islands are salvaged and necropsied. During necropsy, attempts are made to: 1) determine gender; 2) determine possible mortality factors; and, 3) remove gut contents. Gut contents are separated, categorized into individual food and anthropogenic items, and weighed. Debris items that contain turtle bites, found during the marine debris survey, are quantified and categorized.

The primary objectives of this project are to determine: 1) food habits for hatchling, juvenile, sub-adult, and adult sea turtles in south Texas waters; 2) marine debris items bitten and/or ingested by these organisms; 3) differences between the amounts and frequency of marine debris items ingested by sea turtles before and after passage of the MARPOL Annex V Treaty; and, 4) sex ratios of these organisms. These objectives address several recovery task priority items for the five sea turtle species.

No studies have previously been conducted comparing pre- and post-MARPOL ingestion of marine debris by sea turtles. Additionally, no studies have been conducted quantifying marine debris items washed ashore that contain turtle bites or comparing turtle bitten items to the items actually ingested. Padre Island National Seashore provides the perfect setting for this investigation because: 1) relatively large numbers of stranded sea turtles and marine debris items wash ashore at PAIS; 2) a base-line of pre-MARPOL marine debris ingestion exists for sea turtles; and, 3) an extensive marine debris survey has been ongoing at PAIS for several years.

- Legal Authority:
16 USC 1 - National Park Service Organic Act of 1916
16 USC 698 - Redwoods Amendment
16 USC 1531 et. seq. - Endangered Species Act
National Environmental Policy Act
NPS Management Policy, 1988

Description of Recommended Project or Activity

The recommended course of action is to continue the current management activities by conducting the specific actions outlined

below. This action complies with NPS Management Policy and endangered species legislation.

- Continue Necropsy and Analysis of Stranded Sea Turtles
Necropsy and analysis of sea turtles found stranded along the south Texas coast should continue. Additionally, efforts should be made to complete analyses of the approximately 45 green sea turtle gut content samples that were collected between 1982 and 1992.

- Continue Marine Debris Surveys for Turtle Bitten Debris
Daily marine debris surveys should be continued in an attempt to quantify and categorize marine debris items containing turtle bites that have washed ashore on park beaches.

Funding required to conduct the general marine debris surveys is presented in project statement PAIS-N-023.000. However, funding required to conduct the remainder of activities detailed under this project statement is presented below.

BUDGET AND FTEs:

	FUNDED				
	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1993:	PKBASE-NR	RES	Cyclic	2.00	0.10
	PKBASE-NR	RES	Cyclic	5.00	0.20
			Subtotal:	7.00	0.30
1994:	PKBASE-NR	RES	Cyclic	5.00	0.20
	FED-OTHER	RES	Cyclic	2.00	0.10
			Subtotal:	7.00	0.30
1995:	PKBASE-NR	RES	Cyclic	2.00	0.10
	FED-OTHER	RES	Cyclic	5.00	0.20
			Subtotal:	7.00	0.30
			Total:	21.00	0.90

	UNFUNDED			
	Activity	Fund Type	Budget ($1000s)	FTEs
Year 2:	RES	One-time	5.00	0.00

Total:	5.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

- No Action:
The no action alternative implies that the National Park Service will not attempt to determine foraging ecology, marine debris ingestion, mortality factors, and sex ratios of stranded sea turtles. No attempt would be made to determine whether MARPOL Annex V regulations have been effective in reducing the amount of marine debris ingested by sea turtles. Additionally, information on foraging ecology of sea turtles and their foraging areas would not be determined from examination of individual food items. This alternative does not conform with federal legislation or NPS Management Policy.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-028.000

Last Update: 02/26/97 Priority: 19
Initial Proposal: 1994

Title : ACQUISITION OF GEOGRAPHIC DATA FOR GAP ANALYSIS

Funding Status: Funded: 49.00 Unfunded: 10.00

Servicewide Issues : N20 (BASELINE DATA)
N24 (OTHER (NATURAL))

Cultural Resource Type:

N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

Problem Statement

Padre Island contains many communities including wetlands, grasslands, coastal beach, and manmade and natural islands. These communities have been impacted by anthropogenic events such as oil and gas operations, visitors, hazardous materials, and development. Because of these impacts, it is critical to obtain accurate information on the environments and the associated impacts. The information associated with impacts includes, oil and gas well and pipeline locations, development, hazardous materials and spills, visitor use areas (i.e., trails, etc.), and other impacts. The environment information includes habitat extent, species locations, resource management projects, and others. To acquire accurate locations for these types of data, it is necessary to utilize a Global Positioning Unit (GPU).

The regional Cooperating Park Studies Unit (CPSU) has been transferring Geographical Information System (GIS) information related to Padre Island National Seashore since 1992. This information consists of boundary, landuse, turtle standings, oil and gas wells, and other information. Padre Island purchased LANDSAT and SPOT satellite images for use in the parks GIS in 1993. Padre Island has begun to utilize all of this information to make better management decisions but, has realized that there are many resource themes that are lacking in the parks GIS. To acquire information on these themes, the park realized the necessity of purchasing a GPU.

Therefore, in August of 1993, Padre Island purchased a Trimble Navigation GPU, radio beacon, and software. The GPU is the

Pathfinder Basic Plus model which is attached to a NavBeacon XL radio beacon. The radio beacon was purchased to provide point locations that are differentially corrected which provided accuracy of between two and five meters. The software associated with the GPU is the PFinder software package. This software allows the importing of data directly into the parks GIS software. The GPU is also equipped for backpack operation, vehicle operation, or stand alone operation.

The park began using the GPU in November of 1993 to acquire point locations of water well sites and transect locations associated with the parks marine debris study. While using the GPU, it was determined that a datalogger should be purchased for gathering information other than the location of a particular item. This information could be different types of soil, vegetation, development, visitor use, or other impact or resource information. Currently, during the acquisition of this data the necessary information must be written down and entered a computer only after points are downloaded into the PFinder software. This has created additional burdens on the park staff and increased the possibility of errors associated with data entry. Both of these problems would be eliminated should a datalogger be made available.

Description of Recommended Project or Activity

Padre Island National Seashore has been gathering information on park resources and the impacts associated with these resources for many years. Since purchasing the GPU in late 1993, the accuracies for these types of data have improved and the ability to gather locational information for park resources has become easier. Though the parks GIS includes several data layers, Padre Island has determined that the following data layers need to be gathered through utilization of GPS technology.

List of Data to be Acquired:

Research Projects

1) Locations of the daily Marine Debris study transects.

2) Locations of permanent long-term vegetation study transects.

3) Locations of hydrocarbon study transects along the Laguna Madre.

4) Locations for vegetative base map transects.

5) Locations for macro algae study transects.

6) Locations for hydrocarbon study transects along the parks man-made and natural islands.

7) Locations of benthic invertebrate species study transects.

8) Locations of beach temperature study transects.

9) Locations of beach erosion study transects at Bird Island Basin.

10) Locations of predator control areas on the parks islands.

11) Locations of re-vegetation projects.

Park Infrastructure

1) Paved and unpaved roads within the park.

2) Locating and marking the parks boundary.

3) Locations of park buildings and structures.

4) Locations of mile marker posts located on the Gulf of Mexico beach.

5) Locations of Gulf Intracoastal Waterway structures.

6) Locations of park utilities.

7) Locations of park signs and gates.

8) Locations of historic roads.

9) Boundaries of parks man-mad and natural islands.

Visitor Use Areas

1) Locations of trails.

2) Locations and boundaries of visitor use areas.

3) Locations of wayside exhibits and kiosks.

Oil and Gas Operations

1) Locations of oil and gas pipeline.

2) Locations of oil and gas well activities.

3) Locations of hazardous materials.

Park Resources

1) Locations of threatened and endangered species habitats on the Gulf of Mexico beach community.

2) Locations of threatened and endangered species habitats along the Laguna Madre.

3) Locations of stranded turtles.

4) Locations of turtle nests and tracks.

5) Locations of exotic plant communities (i.e., Typha sp.)

6) Locations of exotic animal communities (i.e., Perna perna)
7) Locations of ephemeral ponds.

8) Locations of vegetation communities on the parks islands.

9) Locations of cultural resource sites.

10) Locations and extent of all park fires.

Law Enforcement Activities

1) Locations of vehicular accidents.

2) Locations of illegal drug activities and arrests.

Acquiring the above basic data layers will be completed in 1997. However, additional information associated with individual locations, will be difficult if not impossible to acquire with the present equipment. This information would contain soil type, vegetation type, water quality, etc. If current techniques for gathering this information continue, elimination of important specific data layers is inevitable. However, with the purchase of a datalogger, this information will be attained in a timely, efficient, and accurate manner. Subsequently, this will result in the enhancement of the park's GIS for current and future Resource Management decisions.

- Budget

	Cost
Trimble Bar Code for TDC1	$2,000

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1994:	PKBASE-NR	ADM	Recurring	6.50	0.20
	PKBASE-NR	MON	Recurring	11.00	0.50
			Subtotal:	17.50	0.70
1995:	PKBASE-NR	MON	Recurring	4.00	0.20
	PKBASE-NR	ADM	Recurring	6.50	0.20
			Subtotal:	10.50	0.40
1996:	PKBASE-NR	ADM	Recurring	6.50	0.20
	PKBASE-NR	MON	Recurring	4.00	0.20
			Subtotal:	10.50	0.40
1997:	PKBASE-NR	MON	Recurring	4.00	0.20
	PKBASE-NR	ADM	Recurring	6.50	0.20
			Subtotal:	10.50	0.40
			Total:	49.00	1.90
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 4:		RES	One-time	10.00	0.00
			Total:	10.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

Project Statement PAIS-N-029.000

Last Update: 02/26/97 Priority: 99
Initial Proposal: 1994

Title : ACQUIRING CLIMATOLOGICAL DATA

Funding Status: Funded: 2.60 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) has been involved in several resource management projects such as conducting a survey for marine debris (PAIS-N-023), a survey for Gulf of Mexico avifauna (PAIS-N-015), and a survey of Laguna Madre avifauna (PAIS-N-019).

These projects, along with others, require weather data associated with their respective survey project areas. Currently, the nearest weather information center, that is capable of providing necessary weather data, is located approximately 40 miles from the park area. Therefore it is necessary for Padre Island National Seashore to acquire a means of collecting climatic data on or near the research project areas.

This data will be used for addressing associated climatic trends and influences on particular park resources and applicable research studies. This climatic information will also be used to supplement the National Weather Service by providing them with information that would aid in weather forecasting and reporting.

Many Resource Management research projects are currently being conducted or initiated that require the use of climatic data, primarily, the marine debris survey project (PAIS-N-023). This project could be greatly improved by obtaining necessary weather information have an influence on the mechanisms of marine debris deposition and migration. Data needed to provide a comprehensive analysis of natural climatic conditions on marine debris includes:

1. Rainfall amount
2. Rainfall duration

3. Wind speed
4. Wind direction
5. Wind duration
6. Relative humidity
7. Temperature.

All of these weather aspects influence the amount of debris covered, uncovered, or moved which influences quantity and specific trends of marine debris deposition.the amount of data collected for the marine debris survey.

Padre Island National Seashore has been operating a weather gathering station since the early 1970's. This weather station gathered information on wind speed and duration but nothing else. The current weather station has ceased to provide accurate and dependable weather information. Consequently, the National Weather Service suggested that the park purchase a weather station manufactured by Weather Dimensions, Inc.. This weather station provides wind speed, wind duration, wind direction, rainfall amounts, rainfall duration, relative humidity, temperatures, etc. at 12 minute intervals. The information is stored in a personal computer and can provide up to ten years ofh)0*0*0* historical information.

In January 1994, the park's Resource Management and Protection Division's jointly purchased the above mentioned weather station. The park and the National Weather Service have agreed to jointly install the weather station in early 1994.

Description of Recommended Project or Activity

Padre Island National Seashore has purchased a Fourth Dimension weather station and has agreed with the National Weather Service to jointly install the weather station in early 1994. The park will initiate the gathering of reliable weather information as soon as the weather station is installed and calibrated. This information will provide much needed information and will allow for more accurate assessments of environmental trends and their associations with resource field projects.

Additionally, effort will be initiated in entering historical weather data into a computer database for inclusion into the park's comprehensive database. This weather data will be used in a variety of park research projects and other park activities such as gathering fire weather, etc.

BUDGET AND FTEs:

FUNDED

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-NR	MON	One-time	0.60	0.00
1996:	PKBASE-NR	ADM	One-time	2.00	0.10
			Total:	2.60	0.10

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-030.000

Last Update: 02/26/97 Priority: 15
Initial Proposal: 1994

Title : GIS DATA ACQUISITION AND ANALYSIS

Funding Status: Funded: 65.25 Unfunded: 60.80

Servicewide Issues : N20 (BASELINE DATA)
N09 (COASTAL DYNAM)

Cultural Resource Type:

N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

Problem Statement

Remarkable numbers of rare organisms, unique habitats, and significant cultural resources are located within the boundaries of Padre Island National Seashore. Among these are: peregrine falcon staging areas, sea turtle nesting and stranding locations, colonial waterbird rookery areas, Virginia live oak tree mottes, historical shipwrecks, and line camps. Additionally, several activities and processes (dredging; fishing; bird-watching tours; transportation of hazardous materials; mineral exploration; erosion) threaten these resources.

A functional Geographic Information System (GIS) is needed at Padre Island National Seashore to allow rapid environmental assessment and proper management of these natural and cultural resources. Integration of various resource themes and the location of critical resources is necessary to mitigate the numerous anthropogenic threats. GIS will serve as an important archive for baseline data and will be used to monitor changes in resource condition throughout time.

There are currently a number of significant management problems at the park which would be most effectively addressed utilizing GIS. These include the development of a Minerals Management Plan and a Back Country Management Plan. However, without additional digitizing, data conversion, acquisition of hardware equipment, upgrades of existing equipment, and training, GIS cannot be used for these programs and resource impacts are probable. Additional funding is necessary to provide further GIS and remote sensing training to resource management staff. Also, .5 FTE is required to

facilitate the completion of the park's GIS database and continue to update the ever changing resource themes.

- Background Information:

Many significant resource themes for Padre Island National Seashore currently exist in mapped form. The Cooperative Park Studies Unit (CPSU), Southwest Region, began a project to construct a digitized resource database for the park in 1985. Since that time, the CPSU has coordinated the digitizing of maps with the following themes into a GRASS format: vegetation types; abandoned oil and gas locations; active and inactive oil and gas operations; park boundaries; and transportation infrastructure. Much of the digitizing was conducted by Texas A&M University, under contract with the National Park Service. Additionally, an interagency agreement was made between the National Park Service, Southwest Regional Office (SWRO) and U.S. Fish and Wildlife Service, National Wetlands Center, for digitizing Laguna Madre seagrass beds into an ARC-INFO format. The GRASS and ARC-INFO data files were converted in January 1993, into an EPPL7 format which is compatible with existing park computer software.

8The park acquired remote sensing imagery in August 1993, which included both panchromatic SPOT images and thematic LANDSAT images. Files containing each of the LANDSAT bands 1 through 7, a file of the native SPOT image, and a single file of LANDSAT bands 2, 3, and 4, were developed and provided to the park in January 1994 by the CPSU. The CPSU is also developing a combined file of the SPOT image and the LANDSAT bands 2, 3, and 4 as well as a merge file of the native SPOT image superimposed on the native LANDSAT image. These files will be used to develop a vegetative base map for the park. The park should have these files available on GIS by April, 1994.

Padre Island National Seashore currently utilizes three 386/35 computers, all of which are capable of interfacing with the parks GIS software. The primary GIS computer contains an optical disk drive with 1 gigabyte of storage capability and a Tektronix 4696 color printer.

The development and utilization of GIS at Padre Island National Seashore are directly addressed in the following Resources Management Plan project statements: PAIS-N-025 (Inventory and Monitoring of Wetland Communities), PAIS-N-018 (Vegetation Inventory and Monitoring), PAIS-N-019 (Survey of Threatened and Endangered Species), PAIS-N-002 (Minerals Management), PAIS-N-008 (Colonial Waterbird Survey/Management), and PAIS-N-010 (Dredge/Spoil Management and Monitoring). However, many other natural and cultural resource projects described in the Resources Management Plan will utilize GIS to some extent. GIS will also

serve to address Regional and Washington Office initiatives regarding biodiversity, inventory and monitoring, global climate change, and neotropical birds.

- Current Management Action:

Padre Island National Seashore and SWRO are in the process of developing a GIS database for the park. The GIS databases include: boundary, active and inactive oil and gas wells, SPOT and LANDSAT satellite image files, land-use maps, and seagrass beds. By June 1994, all of the remote sensing images will be transferred to PAIS for installation on the primary GIS computer. Park staff require additional training on remote sensing, GPU, and EPPL7 in order to effectively utilize GIS computers for resources management decisions and protection.

Description of Recommended Project or Activity

Research projects have been initiated with NRDA funding to gather information for the assessment of future impacts related to proposed oil and gas development and potential oil spills. The data collected for these projects (threatened and endangered birds, benthic invertebrates, baseline soil hydrocarbons, etc.) will be assimilated into the GIS. Through use of the GIS and GPU, significant habitats will be identified and restrictions placed on visitor entry and oil/gas development. GIS will also be used to predict potential outcomes from catastrophic events such as oil spills, fires, and hurricanes.

The park will also initiate procedures for data archiving, management, and transfer, as per the Office of Management and Budget circulars A-130 and A-16 which is addressed in the project statement PAIS-N-011.

Another of the numerous, urgent GIS applications is management of the colonial waterbird rookery islands. Twenty-six species of colonial waterbirds nest on natural and man-made islands located within the Laguna Madre. Some of the most productive rookery islands on the Texas coast are within the park. However, currently active management activities are not underway to enhance nesting numbers and habitat for nesting colonies that are threatened by various activities. Aerial photographs of the rookery islands, vegetation on the rookery islands, and colonial waterbird nesting numbers (over the past 20 years) should be available as a theme on the park GIS. Without GIS, the rookery islands will be neglected, threats will continue, and nesting numbers will decrease.

The following categories of resource themes to be integrated into GIS are considered necessary to enable managers to make informed decisions:

Vegetative Themes

1) Production of a vegetative base map of the endemic and exotic species of vegetation for the upland communities, the wetland communities, and the coastal Gulf of Mexico communities.

2) Production of a vegetative base map of the endemic and exotic species of vegetation for the man-made and natural island communities.

3) Determination of historical vegetative succession from natural and man-made causes.

4) Calculation of biomass and distribution indices for exotic and endemic species of vegetation for upland, wetland, and Gulf of Mexico communities.

5) Production of a fire fuel model for Padre Island consisting of past natural and prescribed fires.

Geophysical Themes

1) Modeling of historic dune migration.

2) Determination of historical changes in shoreline caused by natural and man-made erosion.

3) Calculation of groundwater and surface water hydrology.

Community Themes

1) Creation of graphical representation of the number and densities of threatened and endangered colonial nesting waterbird species natural and man-made island communities.

2) Creation of graphical representation of the numbers and densities of threatened, endangered, endemic, and exotic mammal, reptile, invertebrate, and bird populations and habitats on natural and man-made island communities.

3) Creation of graphical representation of the numbers and densities of threatened, endangered, endemic, and exotic mammal, reptile, invertebrate, and vegetative populations and habitats in wetland communities.

4) Creation of graphical representation of the numbers and densities of vegetative, invertebrate, and vertebrate populations and habitats for rocky shoreline communities.

5) Creation of graphical representation of numbers and densities of threatened, endangered, endemic, and exotic mammal, reptile, invertebrate, and vegetative populations and habitats in upland communities.

6) Creation of graphical representation of the numbers and densities of threatened, endangered, endemic, and exotic mammal, reptile, invertebrate, and vegetative populations and habitats on the Gulf of Mexico beach community.

Padre Island will continue to gather the above resource themes for use in the park's GIS. However, these themes are not likely to be developed without additional funding. The park has initiated several studies that are expected to address the above themes, however, it is imperative that data be gathered for all themes and eventually integrated into the park's GIS. In order to fully address this need .5 FTE is required to integrate all themes into the park's GIS. This position will enhance the park's ability to proactively utilize and incorporate GIS into management decision making for a variety of differing issues.

- Budget
Personnel: .5 FTE GS-7 Permanent
Cost: $10,140

BUDGET AND FTEs:

	FUNDED				
	Source	Activity	Fund Type	Budget ($1000s)	FTEs
1994:	PKBASE-NR	ADM	Recurring	16.25	0.50
1995:	PKBASE-NR	ADM	Recurring	16.25	0.50
1996:	PKBASE-NR	ADM	Recurring	16.25	0.50
1997:	PKBASE-NR	ADM	Recurring	16.50	0.50
			Total:	65.25	2.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	MON	Recurring	5.00	0.00
	MON	Recurring	10.20	0.50
		Subtotal:	15.20	0.50
Year 2:	MON	Recurring	5.00	0.00
	MON	Recurring	10.20	0.50
		Subtotal:	15.20	0.50
Year 3:	MON	Recurring	10.20	0.50
	MON	Recurring	5.00	0.00
		Subtotal:	15.20	0.50
Year 4:	MON	Recurring	10.20	0.50
	MON	Recurring	5.00	0.00
		Subtotal:	15.20	0.50
		Total:	60.80	2.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

Project Statement PAIS-N-031.000

Last Update: 02/26/97 Priority: 32
Initial Proposal: 1994

Title : MANAGEMENT OF MULTIMEDIA LIBRARY

Funding Status: Funded: 20.40 Unfunded: 9.00

Servicewide Issues : N24 (OTHER (NATURAL))

Cultural Resource Type:

N-RMAP Program codes : I00 (Interp. of Natural Resource Issues)

10-238 Package Number :

Problem Statement

The Resource Management division currently utilizes a variety of media to aid the division in developing research, presentations, reports, and other forms of documentation. These different types of media include the following: documents, maps, videos, photographs, slides, and negatives. These types of media are currently being stored in multiple locations with very minimal organization and indexing. This method of storage has proven to be ineffective when attempting to locate the specific items needed to support ongoing research, grant requests, scientific reports, etc..

Disorganization dramatically increases the amount of time needed to prepare documents requiring visual media or historical background. Frequently, particular items cannot be found, not only from a lack of indexing, but also from the physical loss of items. Loss can be attributed to the removal of items, damage, and degradation due to improper storage (i.e., water damage, mold, etc.).

- Background Information

The Resource Management division has not conducted an initial inventory of the divisions visual media. However, early estimates are approximately 7000 slides, 40 video tapes, 500 color and black and white photographs, 500 black and white aerial photographs, 500 color and black and white maps, 500 documents, and 500 negatives have been accumulated by the division. All of these types of media are not indexed, cataloged, or stored in a usable or secure manner. The division has incurred some loss of slides and documents due to inadequate storage (i.e., mold, water damage, etc.), theft, and

misplacement. Because of these concerns, the division has hired one seasonal part-time employee who has started cataloging the divisions media library. This process will allow division personnel to obtain an idea of what types of media are available and in what condition they are in.

However, personnel will be unable to determine if the media is in a presentable format (i.e., poorly copied, mounted poorly, scratched, damaged, etc.), if the media pertains to the necessary resource, or where the media is located. Acquiring additional storage facilities will allow division personnel to store visual media without risk of damage or loss due to mis-storage. Additionally, purchasing software for storing images of the visual media and documents will allow effective indexing and browsing of this information for incorporation into division documents, publications, and presentations.

Description of Recommended Project or Activity

The Resource Management Division is currently attempting to abide by OMB circulars A-16 and A-130 which specify that government agencies protect, archive, and provide records produced by those agencies. These records include: documents, slides, maps, data files, photographs, etc. Because of these circulars, the Resource Management Division is managing the divisions media library by performing the following:

- Performing an initial inventory of the numbers of slides available to division personnel (100% complete).

- Creating a catalogue and index of the initial categories for grouping division slides (100% complete).

- Initiating the cataloging and indexing of slides (Approximately 30% complete.)

- Ordering a multi-drawer storage cabinet for storing and protecting division slides.

- Refurbishing a salvaged multiplex slide unit for storing and viewing division slides (Approximately 10% complete).

However, to provide a fully functional divisional media library, additional efforts and resources are needed. These are listed as follows:

Efforts:

- Selection of representative samples for duplicating and archiving

- Duplication of representative samples for use in programs, presentations, and image requests.

- Caption and index duplicate slides for inclusion into division media library.

- Inventory, catalogue, index, and store division color and black and white photographs and negatives in an approved archival manner.

- Inventory, catalogue, index, and store division maps in an accessible and secure manner.

- Budget

1. Personnel .5 FTE GS-5 Cost: $10140

2. Multiplex unit for displaying and storing slides
Cost: $1000

3. Software package for displaying stored images of division media for indexing and locating specific media.
Cost: $1000

4. Production of slide duplicates on CD-ROM media for archival purposes. Cost: $7000

5. Purchasing transparency adapter for color page scanner for storage, retrieval, and reproduction of division slides and negatives. Cost: $800

Total Cost: $28,040

By providing the above listed resources and efforts, the Resource Management division will provide division and park personnel the ability to retrieve any form of media needed for publications, research, grant proposals, presentations, etc. This will not only facilitate the documents produced by the division, but will also facilitate other interested divisions as well. A fully functional media library will provide access to all forms of media produced by the Resource Management Division. This library will not only provide a means of archiving information for use in future documents but also allow the Resource Management Division to comply with the Office of Management and Budgets mandate for records management.

BUDGET AND FTEs:

	Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED					
1994:	PKBASE-NR	ADM	One-time	10.20	0.50
1995:	PKBASE-NR	ADM	One-time	10.20	0.50
			Total:	20.40	1.00
UNFUNDED					
		Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:		ADM	One-time	9.00	0.00
			Total:	9.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

Project Statement PAIS-N-032.000

Last Update: 02/26/97 Priority: 23
Initial Proposal: 1994

Title : ACQUIRE PERMANENT RESOURCE MANAGEMENT SPECIALIST

Funding Status: Funded: 0.00 Unfunded: 180.00

Servicewide Issues : N24 (OTHER (NATURAL))

Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Stretching 120 miles along the lower Texas coast, Padre Island is one of the largest and most unique barrier islands on the North American coastline. Its miles of white powdery beaches, active sand dunes, grasslands and marshes form a fragile, yet resilient, habitat which has survived millennia of natural forces such as hurricanes and droughts and centuries of human activity, including ranching and intentional burning.

Padre Island National Seashore (PAIS) is the largest undeveloped barrier island in the United States. The National Seashore is approximately 70 miles-in-length and from 1/2 to 3 miles-inwidth. The park is bordered on the east by the Gulf of Mexico and is separated from the Texas mainland, to the west, by the Laguna Madre, a shallow, hypersaline body of water.

Created by the Congress of the United States in 1962, Padre Island National Seashore consists of approximately 130,000 acres of lands and water. PAIS has an estimated 875,000 visitors annually. Since its establishment, PAIS has had a history of resource protection, extensive research on natural communities, controlled recreational use, and minimal development. These factors taken together have made the park an ideal location for natural resource and visitor use monitoring activities of a barrier island ecosystem.

PAIS has one of the most active research/resources management programs in the NPS. However, recently the park's Resources Management Division had a GS-11 Research Biologist reassigned to the newly formed National Biological Survey (NBS). Except for the

Division Chief, this was the only mid-level resources management position in the Division. Because of the magnitude of the park's resources management program, the loss of this position makes it exceedingly difficult for the Division Chief to efficiently manage the overall program. The park needs to refill this critical position in order to continue the smooth operation of the Resources Management Division. The requested position would be permanent-in-nature and available to the Division for a variety of resource management projects and program supervision. The position would provide overall program support, be responsible for environmental compliance documentation, research administration and oversight, manage the endangered species program, and supervise the Division's Biological Technicians.

- Background Information:
Padre Island National Seashore encompasses tens-of-thousands of acres of pristine wetlands that are critically important habitat for 322 bird species. Included in these bird species are three listed threatened or endangered (T&E) species and seven State of Texas protected species, 21 species of Colonial nesting waterbirds, and 120 species of Neotropical migratory birds.

The park serves as a nesting area for three species of threatened or endangered sea turtles. These include Kemp's ridley, Green, and Loggerhead sea turtles. The southernmost portion of the parkh)0*0*0* is habitat area for the Kemp's ridley, Green, Loggerhead, Leatherback, and Hawksbill sea turtles.

The fine sandy sediment of the island supports a coastal grassland or prairie environment which was severely degraded prior to acquisition of the park. Natural environmental perturbations such as hurricanes, droughts, fire, flooding, and high salinity were accentuated by human impact, including overgrazing, burning, military activities, resort development, and oil and gas exploration, in reducing large areas of the island to little more than blowing sand. Since the central portion of the island was taken over by the National Park Service, the park area vegetation has significantly recovered.

Natural vegetation succession has mitigated many of the impacts to native plant populations that resulted from historical use of Padre Island National Seashore. However, certain long-lived plant species have not had sufficient time to recover and are still relatively rare. Additionally, plant communities continue to be impacted in some areas of high visitor usage. Active efforts to restore particular plant species and habitats are necessary to protect biodiversity and ecosystem function.

Padre Island National Seashore staff have identified the need for a long term monitoring program to preserve and protect the park's

wide array of natural resources. The park's Resources Management Division has completed extensive inventories and has initiated monitoring for 14 projects. Long term monitoring is necessary in order to evaluate the trends for specific resource features, identify impacts to natural resources, and provide management with pertinent information to mitigate these impacts.

PAIS has focused primarily on inventory and monitoring work, due to the extreme ecosystem changes that have occurred in the past 20 years and lack of previous resource base inventories. These data are then utilized in the management of the park's natural resources.

The following is a partial listing of research/resources management projects that were previously administered by the Research Biologist that would be assigned to the new Resource Management Specialist.

1. Sea Turtle Ingestion of Marine Debris:
This research project was initiated in 1982 and expanded in 1993 to quantify types and amounts of marine debris that is ingested by sea turtles. Marine debris found during the marine debris survey, with sea turtle bites, is quantified and compared to the debris found within stranded sea turtles. Also, comparisons are being made between the amounts of marine debris found ingested by all five species of sea turtles preand-post MARPOL ANNEX V regulations.

2. Hydrocarbon and Contaminants Baseline Analysis:
This contract research project was initiated to gather baseline soils and sediment hydrocarbon contaminants data. To date, 120 representative core samples, taken from 30 different site locations along the shoreline of the Laguna Madre have been analyzed. Baseline data will be utilized for natural resource damage assessments following oil or chemical spills within the park boundary of the Laguna Madre. Data will be maintained in GIS format.

3. Hydrogeologic Resources Survey:
Started in 1993, this contract project was initiated to determine the expanse, dynamics, and water quality parameters of the park's underground water resources. This project includes installation of 12 permanent water wells and monthly data analysis. The data will prove to be invaluable regarding impacts to freshwater ponds from petroleum and chemical spills. Data collected and associated maps from this study will be maintained in a GIS format.

4. Avifauna Survey (Gulf of Mexico Shoreline):
This contracted inventory project was initiated to obtain comprehensive baseline data on the distribution and abundance of listed threatened, endangered, and State protected bird species

along the 68 miles of Gulf beach within the park. Monthly surveys were conducted and data will be maintained in GIS format. Data will be utilized for natural resource damage assessments following oil or chemical spills within the park.

5. Avifauna Species (Laguna Madre Shoreline):
This contracted inventory project was initiated to collect comprehensive baseline data on the distribution and abundance of threatened, endangered, and State protected avifauna species along 45 miles of the Laguna Madre shoreline. Monthly surveys were conducted and data will be maintained in GIS format. Data will be utilized for natural resource damage assessments following oil or chemical spills within the park.

6. Benthic Invertebrate Survey (Gulf Beach Area):
Started in 1992, this contract inventory and monitoring study was initiated to provide baseline data on the abundance and distribution of benthic invertebrates along the parks Gulf of Mexico shoreline. Monthly data are being collected from five representative sample sites, 15 miles apart. This project will be completed in May 1994.

7. Benthic Invertebrate Survey (Laguna Madre Shoreline):
This contracted inventory and monitoring project was initiated to provide baseline data on the abundance and distribution of benthic invertebrates along the park's Laguna Madre shoreline. Three mud/algae flats were selected as representative study sites for this research. Samples were gathered monthly for 12 months.

8. Vegetation Survey:
Completed in 1993, this contracted inventory project provided the park with comprehensive data on plant communities and species diversity, inclusive of all habitat types found within the park. The project included obtaining vegetation data from five transects, with each transect located 15 miles apart. Surveys were conducted from the Gulf Beach to the Laguna Madre shoreline. Data will be digitized for inclusion into GIS format as a vegetation base map.

9. Neotropical Migratory Bird Survey:
Started in 1993, this study was initiated to obtain species diversity, abundance, distribution, and habitat preference data for neotropical migratory birds utilizing the park. For the fall migration, four mist nets were utilized over a four day period. Thirty-one birds were caught, weighed, measured, banded and released. This is the first mist-netting program to be initiated on Padre Island.

10. Marine Macroalgae Survey:
This particular contract research study was initiated to determine the species diversity, relative abundance, and distribution of

marine macroalgae at the Port Mansfield Channel. Mansfield Channel is essential habitat for threatened and endangered sea turtles, whose primary food source is the macroalgae. Completion date for this study is May 1994.

11. Inshore Sea Turtle Survey:
Initiated in 1989, in cooperation with U.S. Fish and Wildlife Service, this monitoring project gathers data on the abundance, seasonality, residency, growth, and species diversity of sea turtles along the Port Mansfield jetty area at the southern boundary of the park. This year, 23 green sea turtles were captured and tagged. Information has been integrated into a data base for trend analysis.

12. Colonial Nesting Waterbird Survey:
Initiated in 1972, park resources management staff, in conjunction with U.S. Fish and Wildlife Service, conduct a spring survey of colonial nesting waterbirds on park islands located in the Laguna Madre. During this years survey, adult birds, representing 21 species, were counted and vegetative cover noted. A computerized database has been maintained to analyze nesting and population trends and to identify significant nesting colonies.

13. Stranded Sea Turtle Survey:
Initiated in 1980, in cooperation with NMFS, Padre Island began participating in the sea turtle stranding network. In 1993, 50 sea turtles, representing five species, stranded on PAIS. Most turtles were necropsied to determine gender and retrieve gut contents. Gut contents were analyzed to determine food and marine debris items ingested.

14. Patrols for Nesting Sea Turtles and Injured Hatchlings:
Started in 1986, this project was initiated in cooperation with U.S. Fish & Wildlife Service, U.S. National Marine Fisheries Service, and the Government of Mexico. Patrols are performed five days/week during the primary nesting season (April-Sept.). In 1993, over 2500 hours were spent patrolling at total of 18,000 miles of beachfront. Live hatchling sea turtles
found stranded are rehabilitated at park facilities and released into the Gulf of Mexico.

15. Habitat Restoration/Management:
In 1992, Resources Management staff collected acorns from park oak trees, grew the seedlings for one year, then planted the seedlings at various locations within the park. This year, 100 oak seedlings, 30 yuccas, and 40 mesquite trees were planted.

Vegetation removal was conducted at six rookery islands in the Laguna Madre. Vegetation was removed around the periphery of the islands to increase nesting space for ground nesting species of

colonial waterbirds (black skimmers, terns, etc.).

Also, cattails were removed from the periphery of Pond A, to prevent infestation of this permanent water source.

16. Sea Turtle Hatchling Rehabilitation:
Thirteen injured sea turtle hatchlings were found washed ashore on PAIS or Mustang Island beaches. Ten of the hatchlings were alive and four were transported to PAIS for rehabilitation.

-Current Management Action:
Since the loss of the Research Biologist, all management programs and associated documentation, environmental compliance, field projects, staff supervision, and a multitude of other program management obligations are being addressed by the Division Chief. However, because of the magnitude of the park's resources management/research program, it is almost impossible for the Division Chief to single handedly administer the overall program.

Description of Recommended Project or Activity

The recommended course of action is recruit and hire a permanent GS-11 (0401) Resource Management Specialist for the Resources Management Division. This position would all allow the Division Chief to deligate program responsibilities to the Resource Management Specialist. In particular, the employee would supervise a variety of on-going field projects, work closely with the Division Chief on all management programs and associated documentation, complete required environmental compliance documentation, supervise lower graded employees, and be responsible for a multitude of other program management obligations.

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	ADM	Recurring	45.00	1.00

Year 2:	ADM	Recurring	45.00	1.00
Year 3:	ADM	Recurring	45.00	1.00
Year 4:	ADM	Recurring	45.00	1.00
		Total:	180.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.1

Project Statement PAIS-N-033.000

Last Update: 02/26/97 Priority: 24
Initial Proposal: 1994

Title : ACQUIRE ADDITIONAL PERMANENT RESOURCE MGMT. STAFF

Funding Status: Funded: 0.00 Unfunded: 164.00

Servicewide Issues : N24 (OTHER (NATURAL))

Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use Management)

10-238 Package Number :

Problem Statement

Stretching 120 miles along the lower Texas coast, Padre Island is one of the largest and most unique barrier islands on the North American coastline. Its miles of white powdery beaches, active sand dunes, grasslands and marshes form a fragile, yet resilient, habitat which has survived millennia of natural forces such as hurricanes and droughts and centuries of human activity, including ranching and intentional burning.

Padre Island National Seashore (PAIS) is the largest undeveloped barrier island in the United States. The National Seashore is approximately 70 miles-in-length and from 1/2 to 3 miles-inwidth. The park is bordered on the east by the Gulf of Mexico and is separated from the Texas mainland, to the west, by the Laguna Madre, a shallow, hypersaline body of water.

Created by the Congress of the United States in 1962, Padre Island National Seashore consists of approximately 130,000 acres of lands and water. PAIS has an estimated 875,000 visitors annually. Since its establishment, PAIS has had a history of resource protection, extensive research on natural communities, controlled recreational use, and minimal development. These factors taken together have made the park an ideal location for natural resource and visitor use monitoring activities of a barrier island ecosystem.

PAIS has one of the most active research/resources management programs in the NPS. The Resources Management Division currently has five Biological Technicians working on multiple projects. However, all five of these positions are temporary (NTE 1 year) and

subject to budgetary fluctuations. Three of these positions are funded from Environmental Protection Agency "soft monies" associated with a specific project. At the completion of the project (1994) these monies will no longer be available and the Division will lose these three positions. The requested position would be permanent-in-nature and available to the Division for a variety of resource management field projects.

- Background Information:
Padre Island National Seashore encompasses tens-of-thousands of acres of pristine wetlands that are critically important habitat for 322 bird species. Included in these bird species are three listed threatened or endangered (T&E) species and seven State of Texas protected species, 21 species of Colonial nesting waterbirds, and 120 species of Neotropical migratory birds.

The park serves as a nesting area for three species of threatened or endangered sea turtles. These include Kemp's ridley, Green, and Loggerhead sea turtles. The southernmost portion of the park is habitat area for the Kemp's ridley, Green, Loggerhead, Leatherback, and Hawksbill sea turtles.

The fine sandy sediment of the island supports a coastal grassland or prairie environment which was severely degraded prior to acquisition of the park. Natural environmental perturbations such as hurricanes, droughts, fire, flooding, and high salinity were accentuated by human impact, including overgrazing, burning, military activities, resort development, and oil and gas exploration, in reducing large areas of the island to little more than blowing sand. Since the central portion of the island was taken over by the National Park Service, the park area vegetation has significantly recovered.

Natural vegetation succession has mitigated many of the impacts to native plant populations that resulted from historical use of Padre Island National Seashore. However, certain long-lived plant species have not had sufficient time to recover and are still relatively rare. Additionally, plant communities continue to be impacted in some areas of high visitor usage. Active efforts to restore particular plant species and habitats are necessary to protect biodiversity and ecosystem function.

Padre Island National Seashore staff have identified the need for a long term monitoring program to preserve and protect the park's wide array of natural resources. The park's Resources Management Division has completed extensive inventories and has initiated monitoring for 14 projects. Long term monitoring is necessary in order to evaluate the trends for specific resource features, identify impacts to natural resources, and provide management with pertinent information to mitigate these impacts.

PAIS has focused primarily on inventory and monitoring work, due to the extreme ecosystem changes that have occurred in the past 20 years and lack of previous resource base inventories. These data are then utilized in the management of the park's natural resources.

-Current Management Action:
To collect resources field data, work with field researchers, operate division boats, administer to injured wildlife, and patrol of nesting sea turtles, the park's Resources Management Division rely on five Biological Technicians. In one form or another, these employees are invaluable for the efficient management of multiple field projects.

The following is a partial listing of the park's resources management projects that the divisions Biological Technicians participate in.

1. Marine Debris Survey:
This cooperative NPS/NOAA research study was initiated in 1989. The purpose of the study is to determine debris trends, specific point sources, types, and amounts of debris washing ashore at Padre Island National Seashore, on a quarterly basis. In 1992, park staff, in cooperation with EPA, expanded the research to include daily surveys of four transects. This daily survey was conducted by the three of the divisions Biological Technicians for 18 months. In 1994, the study was again expanded to include daily surveys of eight miles of park beaches. Data have indicated that the shrimping industry is a major source of debris washing onto park beaches from July-September. Also, park resources management staff (to include Biological Technicians), U.S. Coast Guard, and Federal Bureau of Investigation personnel initiated an undercover operation to detect violations of MARPOL Annex V. This was the first multi-agency task force of its type to be initiated for the purpose of investigating marine debris violations.

2. Neotropical Migratory Bird Survey:
Started in 1993, this study was initiated to obtain species diversity, abundance, distribution, and habitat preference data for neotropical migratory birds utilizing the park. For the fall migration, four mist nets were utilized over a four day period. Thirty one birds were caught, weighed, measured, banded and released. This is the first mist-netting program to be initiated on Padre Island. In 1994, this project will be expanded to include using 10 mist nets in various habitats. The divisions five Biological Technicians are responsible for removing the birds from the mist nets, measuring and banding the birds, and final release.

3. Survey for Nesting Sea Turtles and Injured Hatchlings:
Initiated in 1986, in cooperation with U.S. Fish and Wildlife

Service, U.S. National Marine Fisheries Service, and the Government of Mexico, the park incubated and released over 15,000 Kemp's ridley sea turtles. This international project was established to address the possibility of Kemp's ridley sea turtles returning to nest at Padre Island National Seashore as a secondary breeding colony. Included in this strategy is public education, monitoring, and planning efforts. Monitoring, in the form of beach patrols, efforts encompass the entire 70 miles of the park. Patrols are performed by the Biological Technicians on a five days/week basis during the primary nesting season. Approximately 20,000 km. are patrolled each nesting season. Turtles are tagged and eggs are collected for incubation at park facilities.

Live hatchling sea turtles found stranded are rehabilitated at park facilities and released into the Gulf of Mexico.

4. Sea Turtle Hatchling Rehabilitation:
In 1992, Exxon Corporation donated the monies necessary to build a sea turtle hatchling rehabilitation facility in the park. This rehabilitation facility is the only such facility in the United States. This facility is designed to care for as many as 70 sea turtle hatchlings at any given time. In 1991, 40 injured hatchlings washed ashore and required immediate care. The Biological Technicians are responsible for collecting the sea water for the holding tanks, sterilizing the water, administering medicines to the hatchlings, feeding the hatchlings, cleaning the holding tanks, and releasing the hatchlings after rehabilitation. Because of the time requirements necessary to professionally care for these threatened or endangered species, the Biological Technicians are the only staff available in the Resources Management Division to care for them.

5. Habitat Restoration/Management:
In an attempt to restore certain vegetation species back into the park's ecosystem, the Biological Technicians collect acorns from park oak trees, grow the seedlings for one year in the divisions green house, then plant the seedlings at various locations within the park where historically the trees were found. This year, 100 oak seedlings, 30 spanish daggers, and 40 mesquite trees were planted.

Vegetation removal was conducted at six rookery islands in the Laguna Madre. The Biological Technicians removed vegetation from around the periphery of the islands to increase nesting space for ground nesting species of colonial waterbirds (black skimmers, terns, etc.).

Also, the Biological Technicians removed cattails from the periphery of Pond A, to prevent infestation of this permanent water source.

6. Colonial Nesting Waterbirds:
Initiated in 1972, park staff in conjunction with ornithologist from local universities and U.S. Fish and Wildlife Service have conducted annual surveys for colonial nesting waterbirds on all park islands located in the Laguna Madre. During these surveys, adult birds, representing 21 species, are enumerated and vegetative cover is noted. A computerized database has been maintained to analyze nesting and population trends and to identify significant nesting colonies. The Biological Technicians are responsible for operating the boat to access the rookery islands.

7. Stranded Sea Turtle Survey:
Initiated in 1980, in cooperation with NMFS, Padre Island began participating in the sea turtle stranding network. In 1993, 50 sea turtles, representing five species, stranded on PAIS. Most turtles were necropsied to determine gender and retrieve gut contents. Gut contents were analyzed to determine food and marine debris items ingested. The Biological Technicians are responsible for collecting the stranded turtles, keeping a data base on pertinent information, and assisting the Research Biologist in necropsying the turtles.

Padre Island National Seashore has made an extensive effort, in both time and money, to accomplish baseline inventory studies on the multitude of natural resources that occur within the park. These projects would not be accomplished without the assistance of the division's Biological Technicians.

-Legal Authority:
16 USC 1 - National Park Service Organic Act
16 USC 698 - Redwoods Amendment
National Environmental Policy Act
Endangered Species Act

Description of Recommended Project or Activity

The recommended course of action is recruit and hire two permanent GS-5 (0404) Biological Technician for the Resources Management Division. These positions would all allow the division to continue a variety of on-going field projects, after the divisions "soft monies" have been expended.

BUDGET AND FTEs:

Source	Activity	Fund Type	Budget ($1000s)	FTEs
FUNDED				
		Total:	0.00	0.00
UNFUNDED				
	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	ADM	Recurring	41.00	2.00
Year 2:	ADM	Recurring	41.00	2.00
Year 3:	ADM	Recurring	41.00	2.00
Year 4:	ADM	Recurring	41.00	2.00
		Total:	164.00	8.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.1

Project Statement PAIS-N-034.000

Last Update: 02/26/97 Priority: 11
Initial Proposal: 1994

Title : SURVEY FOR CONTAMINANTS IN BIORECEPTORS

Funding Status: Funded: 0.00 Unfunded: 15.00

Servicewide Issues : N20 (BASELINE DATA)
N24 (OTHER (NATURAL))

Cultural Resource Type:

N-RMAP Program codes : W00 (Wildlife Management)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) is located off the southeast coast of Texas and is the longest undeveloped barrier island in the United States. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west. The National Seashore encompasses over 130,000 acres of important habitat for 322 bird species. Included in these bird species are three listed threatened or endangered species (T&E) and seven State protected species. The park also serves as an important staging area for 122 neotropical bird species, including over 2,000 endangered peregrine falcons.

Documented oil and gas exploration and extraction operations predate the establishment of Padre Island National Seashore. Over 24,000 oil tankers regularly travel within the Gulf of Mexico. Additionally, there are hundreds of barges that travel the Gulf Intracoastal Waterway between Corpus Christi and Brownsville, Texas, carrying petroleum products and hazardous materials. Oil and Gas exploration, production, and transportation pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in and near the park. Exposure to oil spills threaten Padre Island National Seashore on both the Gulf of Mexico and the Laguna Madre.

Padre Island National Seashore was established in 1962, to: "save and preserve, for the purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped" (PAIS Statement for Management, 1976). The enabling legislation also provides, that all mineral

rights within the National Seashore be retained by the original grantors of the property, and provisions were also made for the exploration and extraction of those minerals.
Mineral exploration on Padre Island began in 1951, prior to the park's enactment, and oil/gas operations have been generally continuous since that time. As of January 1994, there are seven active and 44 abandoned oil/gas operations. Oil/natural gas exploration and production pose a greater threat to the natural resources of Padre Island National Seashore than any other type of activity that takes place in or near the park. In particular, the park is concerned with the long term cumulative impacts on the groundwater of PAIS. These impacts have resulted from hydrocarbon spills, improper disposal of drilling muds and sump discharges.

In order to fully document the cumulative impacts caused by long-term hydrocarbon/heavy metal contamination, a survey should be completed to assess the extent of contamination in the resident bioreceptor populations of the affected areas. This survey will generate baseline data on the concentrations of different contaminants in benthic invertebrates, avifauna, and mammal communities residing in proximity to the impacted areas.

- Legal Authority
16 USC 1 - National Park Service Organic Act, 1916
16 USC 698 - Redwoods Amendment
36 CFR 9B - Regulation of Oil and Gas Activities
National Environmental Policy Act
National Historic Preservation Act
Endangered Species Act
Executive Order 11988 - Floodplain Protection
Executive Order 11990 - Wetlands Protection
NPS Management Policy, 1988
Oil Pollution Act, 1990

Description of Recommended Project or Activity

The recommended course of action is to complete preliminary assessments of the seven active oil/gas sites for bioreceptor contamination. Subsequent surveys will focus on assessing the 44 abandoned oil/gas sites for the presence of contaminants in bioreceptors residing in those areas.

- Develop Site Assessment Strategies
Initially the seven oil/gas sites will be prioritized to facilitate the assessment of the areas with the largest potential for continued contamination. Sampling protocols, and parameters for analysis will be formulated and instituted for the entire survey.

- Site Assessment and Characterization
Each abandoned site will be assessed for the presence of contamination in avifauna, benthic invertebrate, and mammal populations. Samples will be analyzed for:

1. Total Petroleum Hydrocarbon (TPH)
2. Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)
3. Nonmetallic Inorganic Contaminants: Chlorine, Arsenic
4. Metals: Barium, Chromium, Copper, Cadmium, Lead

-Budget Estimate

Cost	
Sample Collection & Analysis	* $9,000-$15,000

* Budget will vary according to number of areas sampled and relative sample size.

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	15.00	0.00
		Total:	15.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement PAIS-N-035.000

Last Update: 05/08/96 Priority: 6
Initial Proposal: 1994

Title : CONDUCT AN ANALYSIS OF WETLANDS RECOVERY

Funding Status: Funded: 0.00 Unfunded: 22.50

Servicewide Issues : N09 (COASTAL DYNAM)
N24 (OTHER (NATURAL))

Cultural Resource Type:

N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

Problem Statement

Introduction

Padre Island National Seashore (PAIS) is located off the southeast coast of Texas and is reported to be the longest stretch of undeveloped barrier island in the United States. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west. The National Seashore encompasses over 130,000 acres of important habitat for over 320 species of birds, including 120 species of neotropical migratory birds and 21 species of colonial waterbirds.

From past research and historic photographs, it is estimated that 65-75% of the island's vegetation was destroyed by historic land use practices. The impact of man on the vegetation of the island has been evident throughout much of the island's recent history. While development in recent years has drastically altered selected portions of the island, the long term impact of ranching, an important activity on the island since the early 1800's, has been much more significant. Prior to the removal of cattle, the park was denuded of vegetation and sand dunes were in a constant state of movement.

As an example of the dramatic recovery that has occurred to the island since the removal of cattle, in a 1973 vegetation survey of the park, 60 plant species were recorded versus a survey that was completed in 1993 that documented 140 plant species.

In order to understand the ecological implications of continued

landuse practices (e.g., oil & gas development, visitor access to primitive areas, and implementation of the park's Development Concept Plan) on vegetation and wetland recovery, a study of historical changes that have occurred to the park's ecosystem is needed.

Resource Significance

The park includes tens-of-thousands of acres of pristine wetlands that are important habitat for numerous flora and fauna species. Approximately 80-90 percent of the area behind the gulf dune- line to the Laguna Madre is comprised of a rich variety of wetlands, including estuarine emergent wetlands, freshwater ponds, wind tidal algae flats, Laguna Madre intertidal zone,lagoonal sea grass beds and marshes.

The park's wind tidal flat wetlands are the most sensitive, but least studied, ecosystem in the park. The tidal flats cover approximately 60-70 square miles of the park. A recent study of the macrobenthic invertebrates inhabiting tidal flats in the Laguna Madre found that an abundant and diverse benthic community exists throughout most of the year (Withers 1994).

Two thousand endangered Peregrine falcons utilize the diverse wetlands of PAIS during their annual fall migration. Padre Island is the only known locality in the Western Hemisphere where peregrine falcons can be found in large concentrations during their spring migration.

In the 1993 Padre Island Peregrine Falcon Survey Report by Dr. Thomas Maechtle he states:
"Perhaps the most important and challenging problem today is the preservation of staging and wintering habitat used by Arctic peregrine falcons...(and)...conservation of all wind tidal flats that border Padre Island National Seashore west to Laguna Madre is recommended."

Migratory species occurring in the park either listed or candidates for listing include:
American peregrine falcons (E), Arctic peregrine falcon (T), Eastern brown pelican (E), Piping plover (E), Whitetailed hawk (T), Least tern (E), Reddish egret (C2), Longbilled curlew (C2), Whitefaced ibis (C2), snowy plover (C2), Ferruginous hawk (C2) and the Cerulean warbler (C2).

The park's wetlands are the most important habitat for all bird species that reside in the park or migrate through it. The diverse and abundant infauna found in the wetlands provide an important food source for all of the park's bird species.

Severity of Resource Threat

The fine sandy sediment of the island supports a coastal grassland or prairie environment which was severely degraded prior to acquisition of the park. Natural environmental perturbations such as hurricanes, droughts, fire, flooding, and high salinity were accentuated by human impact, including overgrazing, burning, military activities (eg. use of PAIS as a bombing range) and oil and gas exploration, in reducing large areas of the island to little more than blowing sand. Many of the anthropogenic impacts have been removed and the park continues to recover.

However, resort and housing development adjacent to the park, oil & gas exploration and production within the park, and vehicle impacts to park wetlands continue and are cumulative representing a significant threat to the continued health of this habitat.

With increases in external development and continued impacts to the park's wetlands, there will be less prime foraging habitat for the many sensitive bird species that utilize these areas. Preserving the remaining wetland habitats, particularly blue-green algal flats in the upper Laguna Madre, is essential, because they provide resources that are crucial to the survival ofmany bird species.

Little analysis has been completed on the historical landscape-wide impacts that have occurred on the island. The only historical study that has been completed provides documentation on vegetation species diversity from 1973 to present. No studies have been completed that analyze past land-use practices and their affect on the wetland ecosystem of PAIS.

The NPS must obtain a variety of data sets to quantify the threats posed by current impacts to the park's wetlands and the recovery of historically impacted areas. Currently information on the community structure of the park's wetlands is unknown. The NPS must establish the affects of historical impacts to the wetlands in order to understand and manage the current threats to these important habitats.

Description of Recommended Project or Activity

Analyze the historic changes that have occurred in the park's ecosystem with particular emphasis on areas that have been impacted.

Feasibility and Methods

An analysis of the historic changes to the park's ecosystem will address several objectives:

1) Document historic changes in the island's vegetation communities.

2) Identify historical establishment and relative percentages of wetlands at PAIS.

3) Investigate the relationships between current and historic threats to the park's wetland communities and the degree of sand dune movement across the island.

4) Identify impacted areas that could be restored to wetlands for compensation under the NPS policies that require 2:1 compensation for taking of wetlands. This data will be used for future oil and gas development occurring in wetland areas.

To obtain the specific data on ecosystem changes, the park would purchase historic aerial photography with a scale 1:6000 or less (circa 1950 and 1970). These aerials will be digitized and georeferenced to the park's 1994 satellite images and the spatial imagery would then be analyzed using ERDAS to quantify ecosystem changes over time. Imagery analysis would be contracted through the National Biological Service's Spatial Data Analysis Center in Lafayette, Louisiana.

Problem Resolution

The project will provide data to justify current enforcement of NPS policies that protect sensitive wetland areas at PAIS. In the 1950's until the late 1970's, the park had a small percentage of wetlands and very minimal vegetation cover. Consequently, environmental issues such as impacts to wetlands and threats to protected species habitat were not as important historically. However, in the past two decades the park's flora and fauna biomass and diversity have increased dramatically.

In light of the current lawsuit contending the NPS' ability to regulate oil and gas development within its boundaries, it is necessary to demonstrate to all interested parties the historical changes that have occurred to PAIS' ecosystem making it one of the most important areas in the western hemisphere for migrating avifauna.

Cost Effectiveness

The project will be completed in one year . Costs have been identified through conversations with the National Biological Service's Spatial Data Center.

Source	Item	Costs
WRD	Purchase aerial photographs, reprints of completed maps, analysis of data, travel, miscellaneous supplies	$22,500
PAIS	Personnel salaries, vehicles, equipment	$10,000
	TOTAL	$32,500

WRD=Water Resources Division, NPS
PAIS=Padre Island National Seashore

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	22.50	0.00
		Total:	22.50	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E

Project Statement PAIS-N-036.000

Last Update: 04/12/96 Priority: 2
Initial Proposal: 1995

Title : IDENTIFY AFFECTS OF IMPACTS TO WIND TIDAL FLATS

Funding Status: Funded: 0.00 Unfunded: 80.00

Servicewide Issues : N20 (BASELINE DATA)
C70 (ENVRM IMPCT)

Cultural Resource Type:
N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

Padre Island National Seashore (PAIS) is located off the southeast coast of Texas and is reported to be the longest stretch of undeveloped barrier island in the United States. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west.

Padre Island National Seashore (PAIS) is located off the southeast coast of Texas and is reported to be the longest stretch of undeveloped barrier island in the United States. The Gulf of Mexico borders the park on the east and the Laguna Madre, a shallow hypersaline body of water, borders the park on the west. The National Seashore is 68 miles in length and encompasses over 130,000 acres of important habitat for over 350 species of birds, including 120 species of neotropical migratory birds and 21 species of colonial waterbirds.

It has been estimated that between 60-65% of all Piping plovers will winter in South Texas and Wilson's plovers and Snowy plovers have been reported to breed and nest in the park. The park is also home to 325 pair of Reddish egrets. Migratory wildlife observed in the park include the Sandhill crane, Snow geese, Canada geese and various species of duck.

The Seashore serves as important habitat area for a wide range of flora and fauna. Several animals found at the National Seashore are federally listed as threatened or endangered species: American peregrine falcons (E); Arctic peregrine falcon (T); Eastern brown pelican (E); Piping plover (E); Whitetailed hawk (T); Least tern

(E); green sea turtle (T), Kemp's ridley sea turtle (E), Loggerhead sea turtle (T), Leatherback sea turtle (E), and the Hawksbill sea turtle (T). The Reddish egret (C2), Longbilled curlew (C2), Whitefaced ibis (C2), Snowy plover (C2), and the Osprey are state protected species that either nest or reside at the Seashore. Additionally, the Ferruginous hawk (C2) and Cerulean warbler (C2) are yearly migrants through the park.

The southern portion of the park is unique in that it is the migration route "staging area" for peregrine falcons. This particular area (mile marker 30-68) of the National Seashore is the most important peregrine falcon habitat on the Gulf Coast and is considered as critical habitat by the Peregrine Fund. From actual count, more than 2000 peregrine falcons utilize this area annually during their fall migration. Padre Island is the only known locality in the Western Hemisphere where peregrine falcons can be found in concentrations during their spring migration.

The park includes tens of thousands of acres of pristine wetlands that are important habitat for numerous flora and fauna species. Approximately 80-90 percent of the area behind the Gulf dune line to the Laguna Madre is comprised of a rich variety of wetlands, including estuarine emergent wetlands, freshwater ponds, wind tidal algae flats, Laguna Madre intertidal zone, lagoonal sea grass beds and marshes.

The park's wind tidal flat wetlands are the most sensitive, but least studied, ecosystem in the park. The tidal flats cover approximately 60-70 square miles of the park. A recent study of the macrobenthic invertebrates inhabiting tidal flats in the Laguna Madre found that an abundant and diverse benthic community exists throughout most of the year (Withers 1994).

Detritus from other estuarine habitats, such as seagrass beds, is deposited in large quantities on the flats, and along with algal biomass, is utilized a the primary food source by benthic invertebrates, which are then preyed upon by shorebirds, demersal fish, and crabs.

Consequently, losses of tidal flat productivity caused by anthropogenic impacts are detrimental to both bird and fishery populations.

The cyanobacterial (bluegreen algae) mats on the wind tidal flats bordering the hypersaline Laguna Madre are also a major source of reduced inorganic nitrogen and are suspected to play a major role in the high productivity and health of the Laguna.

The Laguna Madre ecosystem ranks first in finfish production in

Texas and contains over 85% of the seagrass cover in the entire state. Because the estuary does not receive significant inputs of nitrogen from fluvial inflows, which is reflected by its hypersalinity, it is suspected that "new" nitrogen is supplied to the system from nitrogen-fixing cyanobacterial mats occurring on the wind tidal flats.

Research has shown that wind tidal flats are one of the most significant feeding areas for wintering and migrating shorebirds on the Texas Gulf Coast (Withers and Chapman 1993, Withers 1994), particularly the endangered and/or threatened piping and snowy plovers. In 1991, 55% of all piping plovers wintered in Texas and 43% were found on tidal flats (Haig and Plissner 1993). Additionally, tidal flats are also important foraging habitat for reddish egrets, and wintering peregrine falcons, both protected species.

The following bird species utilize the wind tidal flats in the upper Laguna Madre for roosting and foraging: Reddish egret (C2 federal; state endangered), Brown pelican (E), Arctic peregrine falcon (T), American peregrine falcon (E), Piping plover (T), Whitetailed hawk (state threatened), Snowy plover (C2 federal), Longbilled curlew (C3 federal), Least tern (E, except within 50 miles of the Gulf), Wilson's plover (state endangered), Osprey (Texas Organization of Endangered Species) (endangered).

In the 1993 Padre Island Peregrine Falcon Survey Report by Dr. Thomas Maechtle he states: "Perhaps the most important and challenging problem today is the preservation of staging and wintering habitat used by Arctic peregrine falcons...(and)...conservation of all wind tidal flats that border Padre Island National Seashore west to Laguna Madre is recommended."

Analysis of aerial photographs have shown significant vehicle scarring to the park's wind tidal

flats. Of all ecosystems studied to date, wind tidal flats are the most severely affected by vehicle impacts (Brodhead and Godfrey 1979). Previous research has indicated that vehicle impacts, as minimal as one pass, have serious adverse affects on the macro and microbiota residing on the wind tidal flats. The cumulative impacts have caused extensive, and possibly irreversible, damage to both the wind tidal flats and cyanobacterial mats. Because of the sensitive nature of the tidal flats, recovery takes a prolonged period of time (30-50 years), providing that vehicle impacts are discontinued.
Bird use patterns based on the proportions of resources (benthic invertebrates) available suggest that the amount of resources were the limiting factor in algal flat habitats which were preferred by piping and snowy plovers. GossCustard and Durrell (1990) suggested that increases in bird density caused by losses of habitat and/or productivity may decrease the quality of remaining habitats by increasing interference between birds.

Simply, with the increases in development and continuing impacts to the wind tidal flats of the Laguna Madre, there will be less prime foraging habitat for the many sensitive bird species that utilize these areas. Preserving the remaining wind tidal flat habitats, particularly bluegreen algal flats in the upper Laguna Madre, is essential, because they provide resources that are crucial to the survival of many bird species.

The relationship between shorebirds and macrobenthic infauna is crucial to understanding the importance of tidal flats to wintering and migrating shorebirds. These relationships are especially significant considering the stress imposed on shorebirds by long distance migration and environmental uncertainty in wintering areas (Kus et al. 1984). Shorebird mortality in winter is thought to be related to food shortages (GossCustard and Durrell 1985). Therefore loss of habitat in wintering and migratory staging areas caused in this case by vehicle impacts poses a threat to shorebirds because birds are likely to be concentrated in a few stopover points separated by great distances where food resources are relatively abundant.

Wind tidal flats harbor a variety of marine and coastal organisms and supplies the primary productivity to the estuarine and nearshore marine food webs. The complex food webs leading to the great diversity of marine life are dependent on the proper functioning of the intertidal ecosystem, and vehicles can significantly alter the intertidal area at the species level, but with even greater long term consequences at the system level threatening this important habitat's very survival.

Description of Recommended Project or Activity

The recommended course of action is to assess the ecological significance of the wind tidal flats of Padre Island National Seashore to the Laguna Madre ecosystem, with special emphasis on carbon and nitrogen production by cyanobacterial mat algae. This proposal research would also examine the linkages between vehicular impacts to the wind tidal flats and cyanobacterial mats, especially with respect to nitrogen exchange.

The overall scope of this project is to:

1. Initiate a research project to obtain a comprehensive baseline on the distribution and composition of benthic invertebrates that encompass ten to fifteen miles of mud/algae flats. This habitat has been determined to be essential to several species of threatened and endangered species of shorebirds.

2. To use stable isotopes of carbon and nitrogen to assess the role of cyanobacterial production on the wind tidal flats to the Laguna Madre ecosystem flora and fauna, including:

   A) The dependence of infaunal and epifaunal organisms on cyanobacterial carbon produced on the tidal flats using carbon as a tracer.

   B) To examine the linkages between the wind tidal flats and Laguna Madre ecosystem components using nitrogen as a tracer of cyanobacterial produced dissolved organic nitrogen.

3. To quantify cyanobacterial primary production (based on in situ carbon uptake studies) and the density and biomass of benthic infaunal animals (particularly meiofauna and macrofauna) on the wind tidal flats.

4. To measure the fluxes of dissolved inorganic nitrogen (DIN) produced from the wind tidal flats and to quantify DIN pool sizes in wind tidal flat pore waters and in the adjacent Laguna Madre.

5. To assess the impact of vehicular traffic and other physical disturbances on the biomass and productivity of cyanobacterial mats.

Timetable and station locations: Measurements to be made on a seasonal basis starting Summer 1996 and extending a period of one year. However, since inter-annual variability is likely to be significant, a two-year effort should strongly be considered. Two stations each in the upper Laguna Madre, the Land Cut, and lower

Laguna Madre.

Budget Estimate

1. Contracted Research		
Benthic invertebrate study		$ 15,000
Laboratory analysis for carbon and nitrogen		$ 18,000
Miscellaneous supplies		$ 3,000
Aerial photography analysis		$ 6,000
2. Transportation/Logistical Support		
2 vehicles @ $ .25 mi/60 mi/trip		$ 360
4 ATV's @ $ .15 mi/160 mi/trip		$ 200
Per Diem @ 4/2.5 days/12 trips		$ 2,500
3. Personnel		
Scientists 2 @ 2.5 days/mo for 1 year		$ 19,200
	SUBTOTAL	$ 64,260
4. Overhead for contracted University @ 25%		$ 17,365
	TOTAL	$ 81,625

BUDGET AND FTEs:

FUNDED

Source	Activity	Fund Type	Budget ($1000s)	FTEs
		Total:	0.00	0.00

UNFUNDED

	Activity	Fund Type	Budget ($1000s)	FTEs
Year 1:	RES	One-time	80.00	0.00
		Total:	80.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

5.0 APPENDICES

Appendix A. Cultural Resources Documentation Checklist

TITLE	CURRENT & APPROVED	INCOMPLETE OR NEEDS REVISIONS	NEEDED
Planning Documents			
Preauthorization & Authorization	1962		
Statement for Management (SFM)	1976	X	
Outline of Planning Requirements (Master Plan & SFM)	1973		
General Management Plan (GMP)	1983		
Development Concept Plans (DCP)	1994		
Resources Management Plan (RMP)	1989	X	
Interpretive Perspectus (IP)			
Servicewide Inventories, Lists, Catalogs, and Registers			
Cultural Resources Bibliography (CRBIB)		X	
Cultural Sites Inventory (CSI)		X	
List of Classified Structures (LCS)	1994		
National Catalog of Museum Objects		X	
National Register of Historic Places	1974		
Basic Cultural Resource Documents			
Archeological Overview and Assessment	1974		
Archeological Identification Studies		X	
Archeological Evaluation Studies			X
Ethnographic Overview and Assessment			X
Ethnographic Oral Histories & Life Histories		X	
Ethnographic Program			X
Historical Base Map	1974		
Historic Resource Study (HRS)	1971		
Park Administrative History	1994		
Scope of Collections Statement	1992		
Special Resource Studies and Plans			

Archeological & Ethnographic Collections Studies			
Archeological Data Recovery Studies			
Collection Management Plan		X	
Collection Storage Plan		X	
Collection Condition Survey		X	
Cultural Landscape Report (CLR)			X
Ethnohistory	1974		
Exhibit Plan			
Historic Furnishings Report	n/a		
Historic Structure Preservation Guide (HSPG)			X
Historic Structure Report	1979		
Social Impact Study			X
Special History Study			X
Traditional Use Study			X

SUMMARY CHART FOR STRUCTURES

Significance		Condition				Impacts				Documentation		
		Good	Fair	Poor	Unknown	Severe	Moderate	Low	Unknown	Good	Fair	Poor
National												
State & Regional												
Local	1			1					1	1		
Not Evaluated												
TOTALS	1			1					1	1		

SUMMARY CHART FOR ARCHEOLOGICAL SITES

Significance		Condition				Impacts				Documentation		
		Good	Fair	Poor	Unknown	Severe	Moderate	Low	Unknown	Good	Fair	Poor
National												
State & Regional												
Local	35				35			35		35		
Not Evaluated												
TOTALS	35				35			35		35		

SUMMARY CHART FOR CULTURAL LANDSCAPES

Significance		Condition				Impacts				Documentation		
		Good	Fair	Poor	Unknown	Severe	Moderate	Low	Unknown	Good	Fair	Poor
National												
State & Regional												
Local												
Not Evaluated	1				1				1			1
TOTALS	1				1				1			1

SUMMARY CHART FOR OBJECTS (FY'94)

DOCUMENTATION	Archeology	Ethnology	History	Archives	Biology	Paleontology	Geology	TOTALS
Registration Data Only	0	0	0	0	0	0	0	0
Registration & Catalog Data	11	0	754	1413	4567	7	13	6765
Total Items Cataloged	11	0	754	1413	4567	7	13	6765
Backlog to be Cataloged	555	0	0	22006	0	0	0	22561
Total Collection Summary	566	0	754	23419	4567	7	7	29326

CONDITION (%)	Archeology	Ethnology	History	Archives	Biology	Paleontology	Geology
Excellent							
Good	90		35	40	25	100	100
Fair			25	20	25		
Poor	10		40	20	50		
Unknown				20			

SUMMARY TABLE OF NATURAL RESOURCES BASELINE INFORMATION

Meets, does not meet, or exceeds the recommended minimal set of natural resources information in Appendix A of NPS-75, the *Natural Resources Inventory and Monitoring Guideline*

INVENTORY COMPONENTS	MEETS	DOES NOT MEET	EXCEEDS
Historical Database		X	
Species Information	X		
Species List	X		
Biological Surveys (Species Field Inventories)		X	
Species Distribution		X	
Vegetation Maps		X	
Cartographic Maps	X		
Soils Map	X		
Geology Map	X		
Water Resources Inventory		X	
Water Quality Data		X	
Air Quality Stations		X	
Air Quality Data		X	
Precip./Meteorological Data	X		

****New inventory components not listed in NPS-75 should be addied to the table as necessary to meet individual park needs.**

For a description of the inventory components see NPS-75, Appendix A.

Appendix B: Investigator's Annual Report 1995-1996

Park Name: Padre Island National Seashore
Activity: Inventory/Mon.
Subject: Ecology

Report Year: 1995
Project Title: Kemp's Ridley Sea Turtle Restoration and Enhancement Program

Investigator(s): Mrs. Donna Shaver-Miller
National Biological Service
9405 S. Padre Island Drive
Corpus Christi, TX 78418

Phone: (512)949-8173
Fax : (512)949-8023
Email: Donna_Shaver@nps.gov

Coinvestigator:

Objective: Since 1978, the primary objective of this project has been to establish a secondary breeding colony of Kemp's ridley sea turtles at PAIS. Another objective has been to document nesting by non-headstarted turtles and protect their nests. Current park efforts include: 1) patrolling local beaches for nesting sea turtles, tracks, nests, and stranded hatchlings; 2) protecting, monitoring, and/or incubating most clutches of sea turtle eggs laid in the wild and captivity in Texas; 3) conducting research associated with egg incubation; 4) training park and other personnel in methods to conduct beach patrols and protect nests; 5) continuing public education efforts regarding this project; 6) rehabilitating hatchling sea turtles that stranded in the local area; and, 7) attempting to determine natal origin of stranded hatchlings.

Findings: To date, no Kemp's ridley turtles from this project have nested in the wild at any location. During 1995, 2,807 hours were spent patrolling a total of 49,235 km of beachfront. Four Kemp's ridley nests were located nesting on Mustang Island and at Padre Island National Seashore. A total of 335 Kemp's Ridley eggs were incubated with 90.1 % hatching and being released. Additionally, one loggerhead nest was found containing 154 eggs. A total of 83.1% of the loggerhead eggs hatched and were released.

A visitor video taped an emergence of a tagged Kemp's ridley at Mustang Island and a volunteer observed a Kemp's ridley turtle reentering the water at Padre Island National Seashore. However, nest were not found at either location. Two additional unsubstantiated reports were made for North

Padre Island this year. Seven stranded sea turtle hatchlings (five Kemp's ridley and two hawksbill) were found on local beaches.

Reports Produced:

Shaver, D. J. 1996. Padre Island National Seashore Kemp's Ridley Sea Turtle Project 1995 Report. Unpublished Technical Report. 33 pp.

Park Name:	Padre Island National Seashore
Activity:	Inventory/Mon.
Subject:	Ecology
Report Year:	1995
Project Title:	Sea Turtles in South Texas Inshore Waters.

Investigator(s): Ms. Donna Shaver-Miller
National Biological Service
9405 S. Padre Island Drive
Corpus Christi, TX 78418

Phone: (512)949-8173
Fax : (512)949-8023
Email: Donna_Shaver@nps.gov

Coinvestigator:

Objective: The primary objective of this project is to determine sea turtle species occurrence, abundance, seasonality, residency, and growth rates at the Mansfield Channel, Texas. Specific objectives for green turtles captured include: 1) identifying nesting colony of origin; 2) determining sex ratios; and, 3) determining food habits.

Findings: Two hawksbill and 219 green sea turtles were captured during 865 hours of netting from June, 1989 through April, 1996. Of the 219 green sea turtles, 82 were turtles that were captured previously. Additionally, cast netting was conducted during the summer months which resulted in 6 additional green sea turtles being captured. The Mansfield Channel jetties are an important foraging and probably resting habitat for transient and seasonally resident green turtles and the channel is probably a migration route between the Gulf of Mexico and the Laguna Madre.

Reports Produced: (None)

Park Name: Padre Island National Seashore
Activity: Research
Subject: Environmental Monitoring

Report Year: 1996
Project Title: Limited Charcterizations on Abandoned Oil & Gas Exploration and Production Sites (Site Characterization, Mapping, and Evaluation)

Investigator(s): Dr. Allan Berkebile
Center for Water Supply Studie
Texas A&M University - CC
6300 Ocean Drive
Corpus Christi, TX 78412

Phone: 512-994-2741
Fax :
Email: alanb@falcon.tamucc.edu

Coinvestigator: Mr. Rick Hay (512)949-5708

Objective: Project objectives are as follows:

1. Field locate sites of historic oil and gas activity on PAIS.

2. Perform an Electromagnetic Survey on all located abandoned sites. An Em31 terrain conductivity meter will be used to map conductivity and inphase anomalies, and interpret these measurements with respect to well head location, buried debris and indications of brine or hydrocarbon disposals

3. Select soil samplig locations for initial screening using analytical techniques.

4. Perform secondary site investigation based on the initial sampling and install five permanent groundwater monitoring wells at five select sites.

5. Prepare a final report and database to PAIS.

Findings: Well heads have been located on many of the sites. Areas have been found indicating a significant amount of metal debris (buried on site) has been left behind by oil/gas operations. No areas have been noted (at least initially) that indicate on-site disposal of hydrocarbons or produced waters by the EM survey. Tar has been observed visually on several sites.

Sites along the Laguna Madre have been problematic due to high conductivity at the surface. This severely limits the depth of penetration of the EM31 ground conductivity meter to perhaps less than 1 meter. One site (Carrl #3) could not be surveyed because a null calivration of the instrument was prohibited by the high near surface conductivity.

Sites have been selected for sampling which should begin in June or July 1996. After which, the monitoring wells will be established.

Reports Produced: (None)

Park Name: Padre Island National Seashore
Activity: Other
Subject: Environmental Monitoring

Report Year: 1996
Project Title: Limited Characterizations on Abandoned Oil and Gas Exploration and Production Sites (Sampling, Evaluation, & Ranking)

Investigator(s): Mr. Rob Hunter
Hunter Environ. Consulting
PO Box 181402
Corpus Christi, Texas 78480

Phone: (512)994-8688
Fax :
Email: RFHVFH@AOL.COM

Coinvestigator: Mr. Rick Hay (512)994-5708

Objective: Objectives for this project are as follows:

The limited characterization of abandoned oil and natural gas exploration and production sites located within the Padre Island National Seashore. The projects objective is to document possible anthropogenic impacts associated with activities undertaken at the subject sites.

1. Determine locations of all abandoned oil and gas sites.

2. Determine soil sampling locations for initial screening by analytical techniques.

3. Collect soil samples from each location and submint for analysis.

4. Evaluate lab results of soil samples to identify 10 sites for further investigation.

5. Prepare final report and database for PAIS.

Findings: The scope of work required a staged approach. Presently, the investigation is approaching the completion of the electromagnetic conductivity phase of the project. The first sample collection (sediment) phase will begin May, 1996. Subsequent to the completion of this phase, following a review of sample results, the groundwater investigation

portion of the project will commence.

Reports Produced: Hunter, R. 1996. Interim Report Documenting Activities To Date on the Limited Site Characterization of Abandoned Oil & Natural Gas Exploration and Production Sites. Technical Publication.

Park Name: Padre Island National Seashore
Activity: Research
Subject: Environmental Monitoring

Report Year: 1996
Project Title: Monitoring Marine Debris and Point Source Polluters

Investigator(s): Mr. John Miller
Padre Island National Seashore
9405 S.P.I.D.
Corpus Christi, TX 78418

Phone: (512)949-8173
Fax : (512)949-8023
Email:

Coinvestigator: Mr. Darrell L. Echols (512)949-8173

Objective: Objectives:

1. Determine the possible point source polluters that occur in the Gulf of Mexico.

Findings: Padre Island National Seashore finished a 2 year endeavor to determine the types of polluters and the amount of debris that is deposited into the Gulf of Mexico by these polluters. The park determined two sources of point source polluters could be identified; the commercial shrimping industry and the offshore drilling industry.

Both of these industries contribute to the marine debris problem that occurs in the Gulf of Mexico. The commercial shrimping industry contributes the largest percentage of debris which amounts to approximately 66%. The offshore drilling industry contributes 13% and 21% is associated with unknown sources. Of these two industries, the offshore drilling industry is attempting to reduce the amounts of debris that is associated with their industry. The shrimping industry is taking a denial approach to the amount of trash that can be attributed to their industry.

Padre Island National Seashore would like to continue the marine debris project to help determine any other point source polluters in the Gulf and to compare debris items and amounts from past surveys to new surveys.

Reports Produced:

Miller, E. J., S. Baker, D. L. Echols. 1995. Marine Debris Point Source Investigation 1994 - 1995 Padre Island National Seashore. Technical Publication. 40 pp.

Miller, E. J., D. L. Echols. 1995. Marine Debris Point Source Investigation March 1994 - September 1995 Padre Island National Seashore. Technical Publication. 29pp.

Park Name:	Padre Island National Seashore
Activity:	Inventory/Mon.
Subject:	Environmental Monitoring
Report Year:	1996
Project Title:	A Study to Evaluate Biological Recovery of Benthic Invertebrates in Reclaimed Oil and Gas Impacted Areas on Wind-tidal Flats of Laguna Madre
Investigator(s):	Dr. Kim Withers Route 2 Box 406-B6 Sinton, TX 78387 Phone: 512-994-5907 Fax : Email:
Coinvestigator:	
Objective:	The project objectives for this project are as follows: Conduct a benthic invertebrate population assessment of reclaimed locations where oil and gas development has impacted wind-tidal flat areas to determine if removal and recontouring of roads, drilling pads, and associated activities of oil and gas development on tidal flats will result in the re-establishment of benthic invertebrate communities.
Findings:	Control and treatment areas (restored, tire tracks) at the Texaco site supported few benthic organisms. Few birds were noted in the area during this study or other studies. This area does not appear to be productive for either birds or benthos, probably because inundation is infrequent and short-lived. However, restoration efforts in this area can be considered successful despite the lack of faunal use because the algal mat is very well developed and when the area is inundated it probably contributes nitrogen and other nutrients to adjacent areas. At Yarborough Pass, control and treatment (restored, tire tracks) all supported benthic invertebrates. The deep water in November and the absence of algae in the restored area may cause birds to bypass the area when searching for foraging areas; as algae develops bird use is likely to increase. The numbers of benthic organisms and community composition at this site closely resembles areas on north Padre Island and Mustang

Island that are very productive for shorebirds (Withers, 1994). Although bird use was not a s high at Yarborough Pass as at the north Padre Island flat, bird abundances were similar to those seen on the Mustang Island flat. Restoration activities at Yarborough Pass can already be judged successful base on the re-establishment of the benthic community; as algae develops the area will likely be used by shorebirds as well.

It was interesting to note that tire track areas at Yarborough Pass appear to act as refugia for benthic organisms. Since tire tracks often continue to retain water after surrounding areas begin to dry, organisms find this environment much more hospitable and are able to persist for a time after they have disappeared from surrounding areas. While initial tracking is detrimental to benthic organisms (Leatherman and Godfrey 1979), it is apparent that organisms are able to recolonize these areas and appear to thrive when impacts cease.

Reports Produced:

Withers, K. 1996. An Evaluation of Recovery of Benthic Invertebrate Communities in Vehicle Tracks and Restored Oil and Gas Impacted Areas on Wind-Tidal Flats in the Upper Laguna Madre, Padre Island National Seashore, Texas. Technical Publication. 15pp.

Park Name: Padre Island National Seashore
Activity: Research
Subject: Geology - Coastal

Report Year: 1997
Project Title: Determination of the Effects of Wind Change on Sand Ripples

Investigator(s): Dr. Gary Kocurek
Dept. of Geological Services
University of Texas
Austin, TX 78713

Phone: 512-471-5855
Fax : 512-471-9425
Email:

Coinvestigator: Cheikh Ould Ahmed Denan 512-471-5855

Objective: Objectives:

Determine the effects of wind on the reorientation of sand ripples.

Findings:

Reports Produced: (None)

Park Name:	Padre Island National Seashore
Activity:	Research
Subject:	Hydrology (Ground)
Report Year:	1995
Project Title:	A research study to determine the quality and quantity of groundwater at the Padre Island National Seashore.
Investigator(s):	Dr. Allan Berkebile Center for Water Supply Studie Texas A&M University - CC 6300 Ocean Drive Corpus Christi, TX 78412 Phone: (512)994-2741 Fax : Email: alanb@falcon.tamucc.edu
Coinvestigator:	
Objective:	This is the second phase of a two phase investigation and will: 1. Establish elevations on each of the monitoring wells, 2.Determine accurate aquifer parameters on each of the installed wells, 3.Install two additional transects of 3 wells each, 4.Investigate relationship between fresh water ponds and groundwater on the Island.
Findings:	Groundwater flow to the Laguna Madre appears to be influenced significantly by the high salinity (high density) water below the wind-tidal flats. Monitor wells along the wind-tidal flats, including the newly installed wells have displayed NH3-N concentrations in ranges from 10-70 mg/L. Extremely high for groundwater. Hydraulic conductivities measure from pumping tests are similar to those calculted using the Hazen Method.

Reports Produced: (None)

Park Name:	Padre Island National Seashore
Activity:	Research
Subject:	Mammalogy
Report Year:	1996
Project Title:	Small Mammal Diversity, Population Sizes, and Plant Community Affinities on Padre Island National Seashore
Investigator(s):	Dr. Allan Nelson TAMU-Kingsville Department of Biology Campus Box 158 Kingsville, Texas 78363 Phone: (512)595-3803 Fax : (512)595-3107 Email: a-nelson@taiu.edu
Coinvestigator:	Dr. Jim Goetze
Objective:	The proposed research will address the following objectives on Padre Island National Seashore (PINS) 1. Assessment of the small mammal biodiversity. 2. Determine the population density of small mammals. 3. Provide a comparative database to mainland populations of small mammals. 4. Examine plant biodiversity in habitats where small mammals are found. 5. Quantify plant community structure. 6. Compare mammalian species occurrences to plant species associations, vegetation density, and topography.
Findings:	Project is expected to begin in June 1996.
Reports Produced:	(None)

Park Name:	Padre Island National Seashore
Activity:	Inventory/Mon.
Subject:	Ornithology
Report Year:	1996
Project Title:	Neotropical Mirgratory Bird Mist Netting Project: Spring 1996
Investigator(s):	Dr. Allan Chaney Ecoservices 1208 W. Richard Kingsville, Texas 78363 Phone: (512)595-5338 Fax : (512)595-5338 Email:
Coinvestigator:	Gene Blacklock (512)882-7232
Coinvestigator:	Sharon Bartles (308)665-1949
Objective:	To determine the species composition and distribution of neotropical migrant birds that occur during the Spring migration. This project is a continuation of a project initiated during the Spring of 1994.
Findings:	Only three surveys have been completed so far this Spring. Approximately, 70 individuals from 30 species have been netted during this time. Further netting is expected with the onset of more frontal systems.
Reports Produced:	(None)

Park Name:	Padre Island National Seashore
Activity:	Inventory/Mon.
Subject:	Ornithology
Report Year:	1995
Project Title:	Abundance and Distribution of Bird Species on the Gulf Beach of PAIS from the Northern Boundary to Yarborough Pass.

Investigator(s): DR. Allan Chaney
EcoServices
1208 W. Richard
Kingsville, TX,
78363

Phone: (512)595-5338
Fax : (512)595-5338
Email:

Coinvestigator: Gene W. Blacklock 512-882-7232
Coinvestigator: Sharon G. Bartels 308-665-1949

Objective: Document use of the gulf beach by birds, exclusive of gulls and passerines, throughout a single year.

Findings: A total of 36.697 birds of 52 species (gulls resident passerines not included) was recorded during 12 survey field days. Thousands of birds, eight protected species included, were recorded each day regardless of tide level, rain fall total, teperature variation, wind speed or direction, testifying to the value of this habitat as a vital link in maintaining a viable and diverse avifauna throughout the western hemisphere and the North American continent.

Reports Produced: Chaney, H. A., G. W. Blacklock, S. G. Bartels. 1996. Gulf Beach Bird Survey Northern Boundary to Yarborough Pass Padre Island National Seashore October 1994 - September 1995. Technical Publication. 112 pp.

Park Name: Padre Island National Seashore
Activity: Research
Subject: Threatened/ Endangered Animals

Report Year: 1996
Project Title: Survey of Sea Turtle Movements in Park Waters

Investigator(s): Mrs. Donna Shaver-Miller
National Biological Service
Padre Island National Seashore
9405 S.P.I.D.
Corpus Christi, TX 78418

Phone: (512)949-8173
Fax : (512)949-8023
Email: Donna_Shaver@nps.gov

Coinvestigator:

Objective: The primary objectives of this investigation are as follows:

1) Outfit larger green sea turtles that are netted at the Mansfield Channel with satelite tags.

2) Plot and track the movements of all satelite tagged turtles.

3) Determine the following:
- behaviors and movements
- residency and seasonality of individual turtles
- locations of turtle dispersal after leaving the mansfield channel.

Findings: Currently 10 turtles have been tagged with 3 different types satelite tags. Two types of tags provide dive, temperature, and position. The other type of tag provides only a surface time counter and position information. Preliminary data suggest that the turtles are traveling primarily in the Laguna Madre with a few venturing out into the Gulf of Mexico. Further data analaysis is being conducted. An additional batch of transmitters will be deployed in the fall of 1996.

Reports Produced: (None)