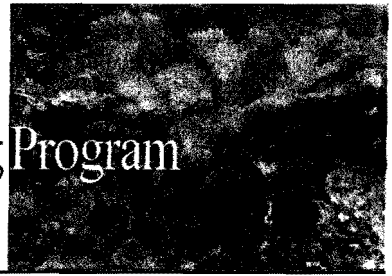


Biscayne National Park

Resource Management Inventory & Monitoring Program Reef Habitat Classification 2000



Biscayne National Park's coral reefs are one of the rare and beautiful areas that the park was created to protect and preserve. The park's Inventory and Monitoring Program (I&M) has been tasked with tracking the changes happening within this ecosystem. The inventory effort has begun by first looking at the stony corals, the animals which provide the structure for this habitat that plays host to the thousands of other biological residents. The Resource Management division began collecting data about the park's coral reef resources in 1998 using underwater videography. Twenty-five meter long transects were videoed along the reef for archival records and analysis. In 1998 and 1999 eight sites were surveyed (5 offshore bank reefs and three patch reefs). These videos were reviewed, stony coral colonies were counted, and density was estimated.

In 2000, the survey was expanded in two ways, both spatially and in the types of data collected. Surveys were conducted at 11 sites (four patch reefs and seven offshore bank reefs). Two methods were used, 25 meter long underwater video transects and 2m by 25m quadrats where stony coral censuses were conducted. Each site was sampled ten times with both methods. The underwater video transect is important for archival purposes, and allows for further analysis of various types including percent cover of the various biologic communities. Underwater video of coral reef systems underestimates the amount of coral due to the cryptic nature of some species. The importance of the coral census is that it provides a more robust estimate of species richness for the area, and allows for more exact species identification in the field, which becomes much harder in the lab from the video tape. The coral census also collects data on coral bleaching, black band disease, white diseases, other diseases, and the number of *Diadema antillarum* urchins. These urchins were a keystone species in the coral reef ecosystem due to their voracious grazing ability. The urchins were heavily impacted in the early 1980's throughout the Caribbean, and are now making a slow comeback. During the urchin population decline, many reefs were impacted by increased levels of algae.

The data from this habitat classification survey will be used to help determine the most efficient monitoring strategy for this important area. Power analysis will identify the number of transects necessary to quantify the condition of the reef. The fact that the species richness is fairly consistent along the entire latitudinal range of the park was the first question answered by this survey. The hypothesis was that there was an increasing gradient of species richness as sites increased in distance from Miami. This was not the case. The park's I&M focus for coral reefs is currently limited to the stony coral species and benthic assemblage cover values. This will hopefully be expanded to octocorals, sponges, reef fish, recruitment, and growth rates as the I&M program matures.

The five most common coral species seen during the 2000 survey were Encrusting Fire Coral (*Millepora alcicornis*, 107 observations), Massive starlet coral (*Siderastrea siderea*, 104 observations), Finger coral (*Porites porites*, 102 observations), Elliptical star coral (*Dichocoenia stokesii*, 95 observations), and Lettuce coral (*Agaricia agaricites*, 94 observations). Staghorn coral (*Acropora cervicornis*) was seen at 12 stations during the survey (Figure 1.). This species was present along the Florida reef tract and within Biscayne National Park in much high densities in the past, and was severely reduced during the past 15-20 years. Many young colonies may signify that this species may be making a comeback.

The average number of stony coral taxa seen at each site was about 19, with 23 taxa seen at both Alina's Reef (patch reef) and Ball Buoy Reef (Offshore bank reef) (Figure 2.). Anniversary Reef (patch reef) had the lowest species richness with 14 taxa. Total number of species for the site is the

combination of the species seen at all 10 transects. Minimum, mean and maximum values are based on single transect data.

Coral bleaching and disease were rare occurrences during the survey. The only occurrence of coral bleaching was seen at Bache Shoal on two finger coral (*Porites porites*) colonies. Black band disease was seen on great star coral (*Montastrea cavernosa*) at Alina's Reef and Long Reef. Elliptical star coral (*Dichocoenia stokesii*) was seen at Brewster Reef, Elkhorn Reef, and Long Reef with white disease or other disease. White disease was also noted at Marker "21" patch reef on symmetrical brain coral (*Diploria strigosa*) and at Star Reef on lesser starlet coral (*Siderastrea radians*). The black long spined urchin was seen during surveys, however it was never seen within the sampling quadrat.

Figure 1. Common Stony Corals seen at Biscayne National Park

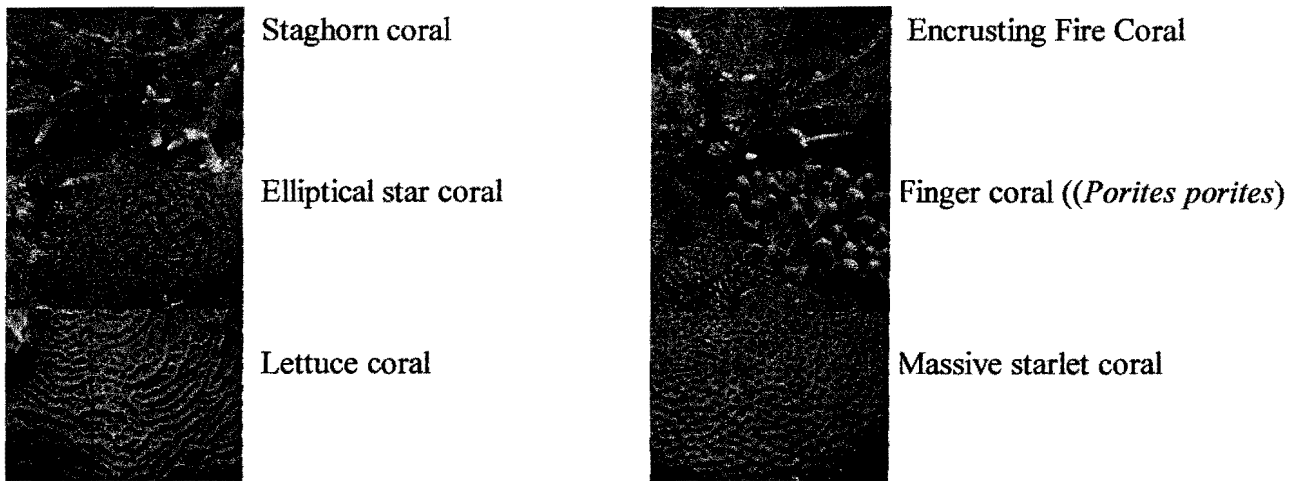
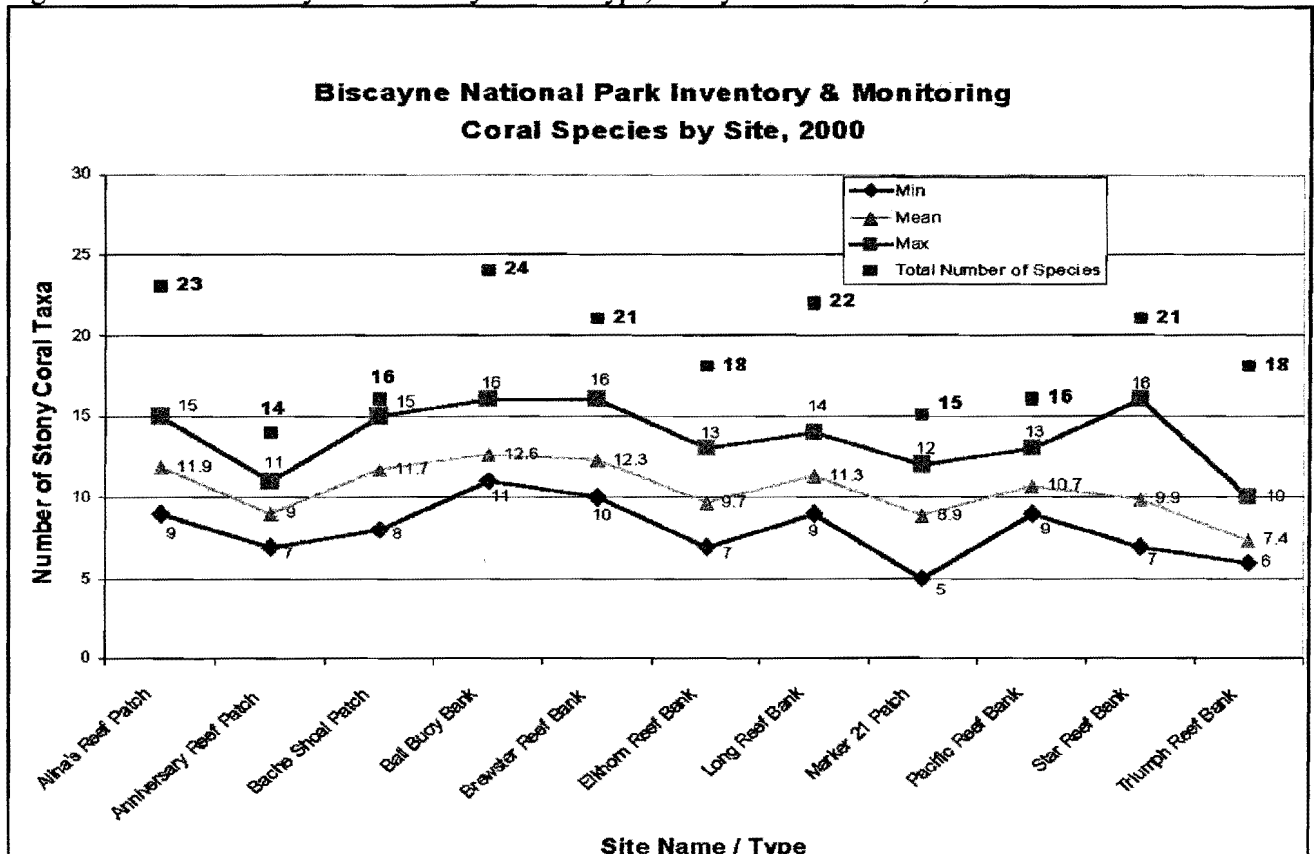
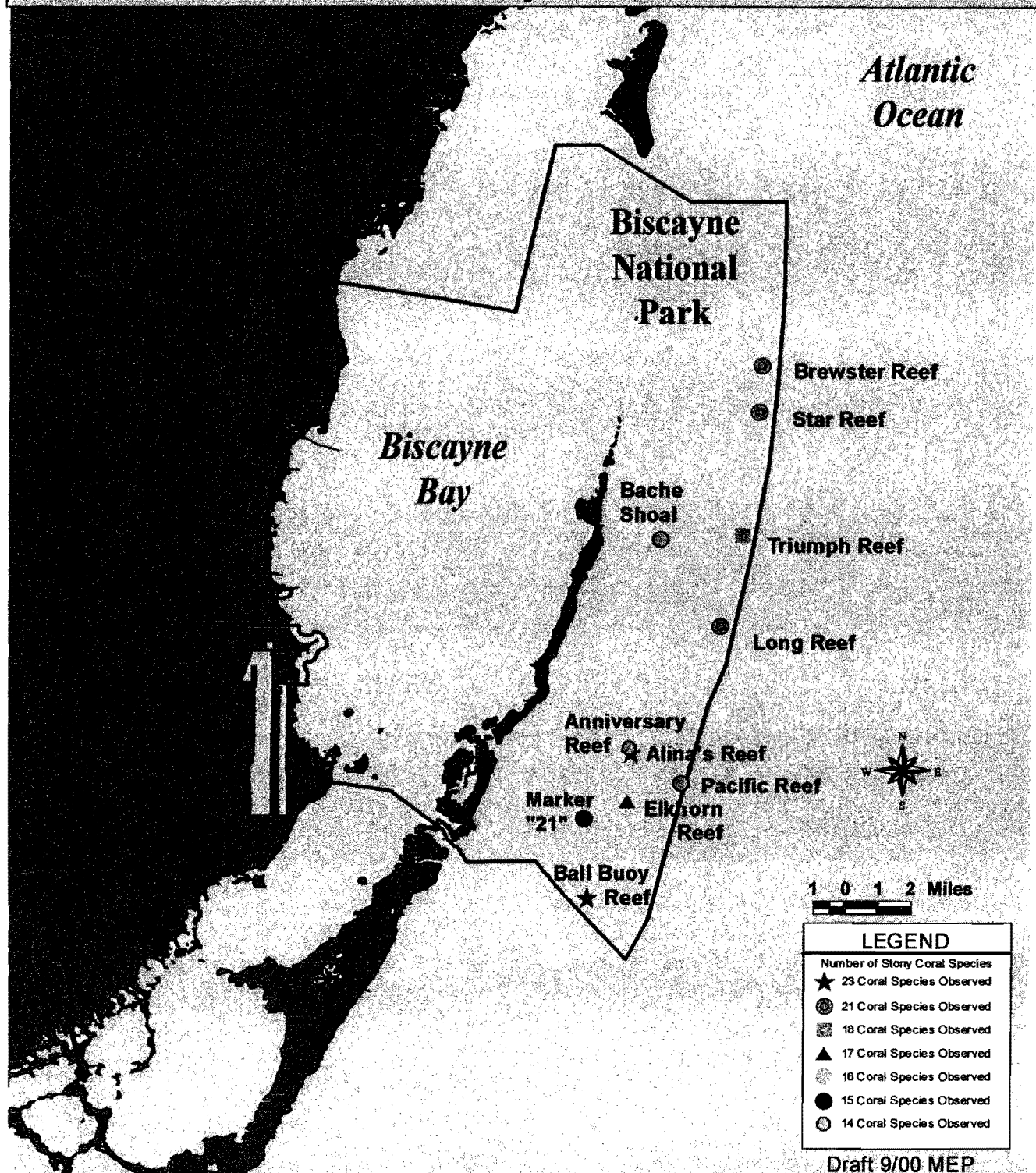


Figure 2. Number of Stony Coral Taxa by Site and Type, Biscayne National Park, 2000.



Biscayne National Park Inventory and Monitoring Program Coral Survey Sites, 2000



Contact Information: Matt Patterson, Biscayne National Park Inventory & Monitoring Coordinator,
matt_patterson@nps.gov, (305) 230-1144 x 3082

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