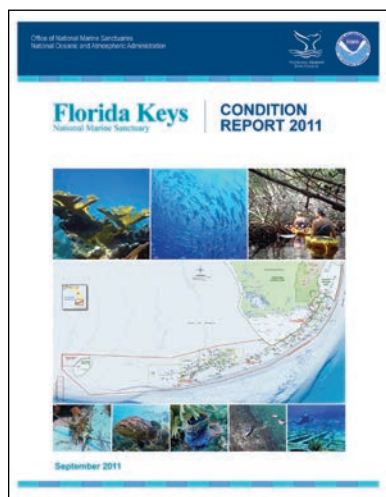


Condition Report Overview

Linking Science to Management



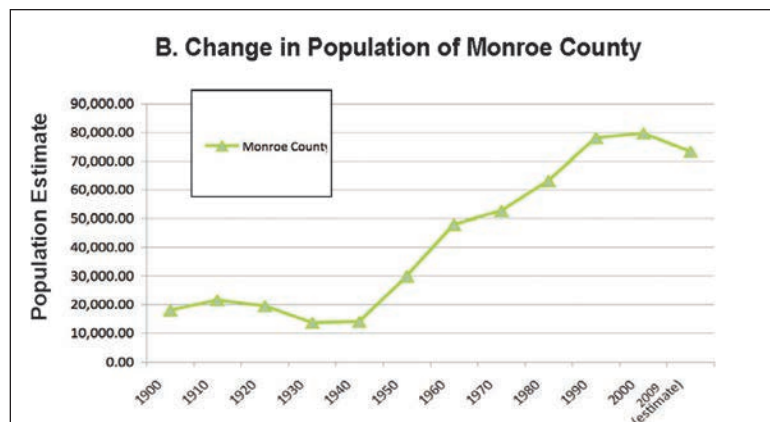
The Florida Keys National Marine Sanctuary is one of the largest marine protected areas in the United States, encompassing 2,896 square nautical miles. It was created and exists under federal law, and became effective in state waters with the consent of the State of Florida. Marine zones for multiple uses, including 24 highly protected “no-take” areas (6% of the sanctuary), have been in place since 1997. The sanctuary helps protect more than 6,000 species of marine life, including the nation’s only bank-barrier coral reef that lies adjacent to the continent, and one of the largest seagrass communities in this hemisphere. An estimated 400 underwater historical sites are also within sanctuary waters, 14 of which are listed in the Department of Interior’s National Register of Historic Places.

Though the sanctuary surrounds much of the Florida Reef Tract, this subtropical region also sustains many other inter-dependent habitats including fringing mangroves, seagrass meadows, hard bottom regions, and patch reefs. Together, this diverse set of habitats supports significant commercial and recreational activities including SCUBA diving, fishing, and other water-based tourism.

Historical Perspective and Today’s Pressures

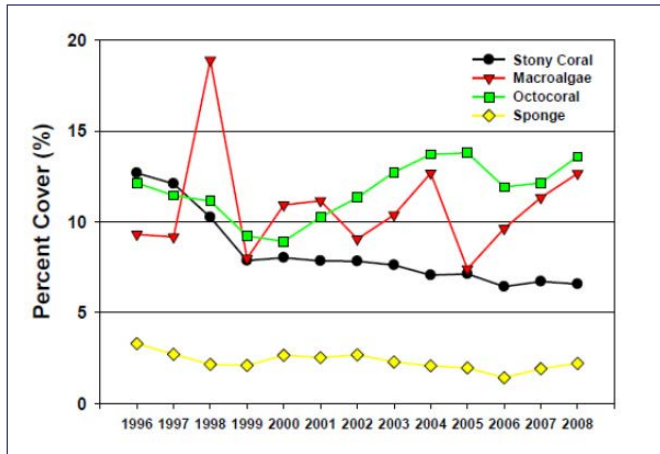
The Florida Keys and its environs have a long history (>100 years) of exploitation, thus many pressures on sanctuary resources are chronic, and to some degree cumulative. A historical perspective of sanctuary biodiversity suggests that many of the higher trophic level species, such as marine mammals and predatory fishes, were dramatically reduced by hunting and fishing prior to the sanctuary’s designation. Today, pressures to the resources include commercial and recreational fishing, disturbances to wildlife, coastal development, harmful algal blooms, marine debris, vessel groundings, the introduction of non-indigenous species, and vessel traffic. Anthropogenically driven factors such as climate change, sea level rise, and ocean acidification are large-scale issues that may also affect sanctuary resources.

Generally, the status and trends of the resources protected by Florida Keys National Marine Sanctuary reflect the inherited condition of a system that has been heavily exploited during the last two centuries, more so than the relatively short time frame that these resources have been managed at the current geographic scale. For example, many of this historically abundant megafauna (e.g., green turtles) and biogenic habitats had already been severely altered or reduced. Thus, resource managers are conserving pieces of the former system so that it can be restored to an improved state.



Population change in Monroe County, Florida from 1920 to 2009.
(Source: U.S. Census Bureau)

Managing for the Future--Understanding Change and Reef Resiliency



Graph showing mean annual percent cover for the four major benthic taxa recorded in the Coral Reef Evaluation and Monitoring Program (CREMP) image analysis. A mixed model regression indicates a decreasing trend for stony corals and sponges, an increasing trend for octocorals, and no trend for macroalgae. (Source: Ruzicka et al. 2010)

Understanding the degree of change in biodiversity that has occurred over time and how the coral reef ecosystem functioned in a “pre-exploitive” state can help managers and stakeholders identify realistic ecological and socio-economic targets for maintaining or improving ecosystem services. For example, there are positive signs that some ecosystem services are responding to recent management actions, most notably in the form of recovering fish spawning aggregations, and increasing sizes and abundances of economically important fisheries species inside the larger Ecological Reserves.

In this era of significant decline of coral reefs throughout the world, resilience is the key to survival of this critical ecosystem. It has been estimated that coral cover on reefs in the Caribbean has declined by an average of 80% in the last three decades. It is generally agreed that these declines are not due to a single cause, but have resulted from multiple stressors acting together to alter ecosystem conditions and resulting in widespread deterioration. In turn, resource “managers may be able to

increase the resilience of the system to climate change by reducing impacts of local- and regional-scale stressors, such as fishing, input of nutrients, sedimentation and pollutants, and degraded water quality”. Therefore, it is more important than ever to protect remaining healthy reefs from impacts that can be addressed through management actions, both for their own sake and in order to help us promote the recovery of other coral reefs.



Bleached elkhorn coral (*Acropora palmata*).

Living Resources Status and Trends

Issue	Rating	Basis for Judgment	Description of Findings
Biodiversity	▼	Relative abundance across a spectrum of species has been substantially altered, with the most significant being large reef building corals, large-bodied fish, sea turtles, and many invertebrates, including, the long-spined sea urchin. Recovery is questionable.	Selected biodiversity loss has caused or is likely to cause severe declines in some but not all ecosystem components and reduce ecosystem integrity.
Extracted Species	?	Historical effects of recreational and commercial fishing and collection of both targeted and non-targeted species; it is too early to determine ecosystem effects of new fishery regulations and new ecosystem approaches to fishery management.	Extraction has caused or is likely to cause severe declines in some but not all ecosystem components and reduce ecosystem integrity.
Non-Indigenous Species	▼	Several species are known to exist; lionfish have already invaded and will likely cause ecosystem level impacts; impacts of other non-indigenous species have not been studied.	Non-indigenous species may inhibit full community development and function, and may cause measurable but not severe degradation of ecosystem integrity.
Key Species	—	Reduced abundance of selected key species including corals (many species), queen conch, long-spined sea urchin, groupers and sea turtles.	The reduced abundance of selected keystone species has caused or is likely to cause severe declines in ecosystem integrity; or selected key species are at severely reduced levels, and recovery is unlikely.

This table (left), taken from the sanctuary’s first Condition Report, summarizes the status and trends in living resources in terms of biodiversity, extracted species, non-indigenous and key species. The *Rating* column indicates the condition using color (red, orange, yellow, green) and the trend using a symbol (declining, improving, undetermined, staying the same). The *Basis for Judgment* column provides a short statement or list of criteria used to justify the rating. The *Description of Findings* column presents the statement that best characterizes resource status and corresponds to the assigned color rating. Summary tables for water quality, habitat condition and maritime heritage resources are also available in the Sanctuary’s Condition Report 2011.