



Knowledge, Attitudes and Perceptions of Florida Keys National Marine Sanctuary ZONES

Introduction

The information presented here is from a larger study of three user groups: commercial fishers, dive operators and environmental group members on their knowledge, attitudes and perceptions of management strategies and regulations in the Florida Keys National Marine Sanctuary (FKNMS). The study profiles these user groups and provides information on user group knowledge, attitudes and perceptions of FKNMS management strategies and regulations in the baseline 1995-96 period and how things have changed over a 10-year time period. Some new baselines are also established on new management strategies and regulations.

This fact sheet focuses on information obtained from commercial fishers on the FKNMS zones and includes zone definitions; commercial fishers' knowledge of the purpose of the FKNMS zones; commercial fishers' perceptions on the beneficiaries of the FKNMS zones; and commercial fishers' views on FKNMS zone outcomes. On this latter topic, information is reported on commercial fishers' views on FKNMS zone objectives and their support for FKNMS zones.

Purpose of Zones

In the baseline study, three purposes of the FKNMS zones were assessed, while five purposes were assessed in the 10-year replication. Also, in the baseline, there was no differentiation by type of zone, while in the 10-year replication three types of zones were assessed: Ecological Reserves (ERs), Sanctuary Preservation Areas (SPAs), and Wildlife Management Areas (WMAs). ERs and SPAs are two different forms of no-take areas. See inset box for definitions.

Zone Definitions

Ecological Reserves (ERs) encompass large, contiguous, diverse habitats, in order to protect and enhance natural spawning, nursery, and permanent-residence areas for the replenishment and genetic protection of fish and other marine life. Regulations for Ecological reserves are designed to meet the objectives of these zones by limiting consumptive activities while continuing to allow non-consumptive activities only where such activities are compatible with resource protection. There are currently two Ecological Reserves in the Sanctuary, the Western Sambos Ecological Reserve and the Tortugas Ecological Reserve.

Sanctuary Preservation Areas (SPAs) encompass discrete, biologically important areas and are designed to reduce user conflicts and sustain critical marine species and habitats. Regulations for SPAs are designed to limit consumptive activities while continuing to allow activities that do not threaten resource protection. There are 18 SPAs in the FKNMS.

Wildlife Management Areas (WMAs) include bird nesting, resting, or feeding areas, turtle-nesting beaches, and other sensitive habitats. Regulations are designed to protect these species or the habitat while providing for public use. Access restrictions may include no-access buffers, no-motor zones, idle-speed only/no wake zones, and closed zones. Some restrictions may apply to time periods, others to areas. There are currently 27 WMAs, of which 7 are managed exclusively by the FKNMS (the FKNMS co-manages the others with the US Fish and Wildlife Service).

Purpose of Zones	— 1996 —	— 2006 —		
	All Zones	ERs	SPAs	WMAs
1. Increasing overall fish stocks and biomass inside the zones.	44.3%	40.5%	35.4%	16.7%
2. Increasing overall fish stocks and biomass outside the zones.	23.1%	22.5%	26.2%	15.0%
3. Conserving and protecting corals, fish, and other marine life.	39.0%	42.9%	51.4%	25.5%
4. Resolving user group conflicts.	N/A	8.2%	12.9%	8.8%
5. Supporting scientific research.	N/A	22.8%	25.5%	15.0%

The percentages are not comparable across years because in the baseline respondents were simply asked if each of the purposes was a purpose of the zones, while in the 10-year replication respondents were asked which one of the five purposes was the main purpose of each type of zone. Thus, no statistical tests for differences were conducted.



Despite the limitations in direct comparisons, one can still make relative comparisons on what commercial fishers believed was the purpose of the zones, or in the 10-year replication, what was the purpose of each type of zone. Here new baselines are also established for future monitoring of the different types of zones.

In the baseline, a majority of commercial fishers did not believe that the FKNMS zones would accomplish any of the purposes stated. In the 10-year replication, when asked for the “main” purposes of the FKNMS zones, a majority of commercial fishers thought that “conserving and protecting corals, fish, and other marine life” was a main purpose of the SPAs. SPAs were the only type of zone in either time period for which a majority of commercial fishers thought that one of the purposes of the zones was a true purpose. One explanation for this is that there was very little displacement of fishing effort from the SPAs, except possibly for marine life collectors (aquarium trade).

Commercial fishers were generally negative on ERs in both periods, especially the idea of the “replenishment effect” of ERs or “increasing overall fish stocks and biomass outside the zones”. The ERs were first proposed as “Replenishment Reserves” in the Draft Management Plan for the FKNMS that existed at the time of the baseline survey. The purposes and name were changed in the Final Management Plan. Commercial fishermen were displaced from the ERs and they still don’t buy the argument that the ERs will have replenishment effects.

The WMAs are not used by the commercial fishers and so these zones are of less interest to them. A high proportion of survey respondents answered “don’t know” for most questions about WMAs.

Perceived Beneficiaries of the FKNMS Zones

The study surveys identified four potential beneficiaries of the FKNMS zones and asked survey respondents which of these groups they thought were the beneficiaries of the zones. Again, in the baseline study all types of zones were combined, whereas this was asked for each type of zone in the 10-year replication. The four groups of potential beneficiaries were commercial fishers, recreational/sport fishers, commercial dive operators, and recreational (local & tourist) divers. Commercial fishers were surveyed and therefore were asked how their group perceived themselves as benefiting from the zones.

In both time periods, commercial fishers did not think they would be beneficiaries of the FKNMS zones. However, there was significant movement among commercial fishers in this perception over the ten year period. While only 5.4% of commercial fishers thought they as a group would benefit from the zones, after 10 years 16.3% of commercial fishers thought that they benefited from the ERs and SPAs. In the baseline, a majority of commercial fishers thought that recreational divers would be the main beneficiaries of the zones. In the 10-year replication, a majority of commercial fishers thought this for only the SPAs. In the baseline, dive operators and other recreational divers were lumped together, but they were separated in the 10-year replication. In the 10-year replication, a majority of commercial fishers thought that both dive operators and general recreational divers would be beneficiaries of the SPAs.

Perceived Beneficiaries of Zones	— 1996 —	2006		
	All Zones	ERs	SPAs	WMAs
1. Commercial Fishers	5.4%	16.3%	16.3%	8.8%
2. Recreational/Sport Fishers	32.1%	25.5%	33.7%	19.1%
3. Commercial Dive Operators	N/A	36.4%	46.9%	23.5%
4. Recreational divers (local & tourists)	67.9%	44.6%	59.5%	27.6%

Views on FKNMS Zone Outcomes

FKNMS Zone Objectives. All three user groups were asked a core set of eight questions on their views of zone outcomes both in the baseline and 10-year replication surveys. The first two questions of the eight core questions address whether respondents agreed that the zones have achieved various objectives. Five questions address support for the zones across all regions and within each region of the Florida Keys. The last core question asked whether there should be more zones.



The tense of these questions was different in the baseline and 10-year replication surveys. In the baseline, the questions were worded such that the zones “will” accomplish the objectives, whereas in the 10-year replication the wording is as above assessing if they have accomplished the objectives. Again, a five-point agreement scale was used where 1=strongly agree to 5=strongly disagree. A “Don’t Know” response was also allowed, but was not included in statistical tests for changes in mean scores over the 10-year period. Statistical tests were done to test whether there were statistically significant changes in these views over the 10-year period. A “YES” means statistically significant difference with 95% confidence for each pairwise comparison between 1996 and each type of zone in the 10-year replication. Tests were done for differences in distributions of percent responses and differences in mean scores. In summary tables A= percent that strongly and moderately agree and D=percent that strongly and moderately disagree. An * indicates a high proportion of “Don’t Know” responses, which are eliminated in comparison of mean scores, but retained in percentage responses.

In the baseline, an overwhelming majority of commercial fishers disagreed with both statements posed in questions 1 and 2, 74.8% and 69.3%, respectively and thus did not agree that the zones would accomplish either objective. In the 10-year replication, commercial fishers significantly moderated their views on all the zone types for both objectives of the zones. A plurality of commercial fishers still had a negative view on the objectives of the zones, but there was statistically significant movement in the positive direction over the 10-year period (48% - 57.3% disagreed with objective 1 and 46.7% - 49.7% disagreed with objective 2). A majority of commercial fishers (57.3%) still disagree that the ERs will reduce conflicts between user groups.

Zone Objectives	— 1996 —	— 2006 —			Statistical Difference
	All Zones	ERs	SPAs	WMAs	
1. FKNMS zones have reduced conflicts between different user groups.	74.8% D (4.39)	57.3% D (3.73)	48.4% D (3.45)	48.0% D (3.45)	YES (YES)
2. FKNMS zones have been effective in restoring coral reefs in the Florida Keys to what they use to be.	69.3% D (4.10)	49.7% D (3.42)	46.7% D (3.28)	48.2% D (3.50)	YES (YES)

- mean scores and statistical difference of mean scores in parentheses.

Support for FKNMS Zones. Four statements were used in both the baseline and the 10-year replication on support for the FKNMS zones, while two were only asked in the 10-year replication. Again, the five point agreement scale was used.

Support for Zones	— 1996 —	— 2006 —			Statistical Difference
	All Zones	ERs	SPAs	WMAs	
1. I support the establishment of FKNMS zones as they are currently established.	86.2% D (4.66)	48.3% D (3.23)	45.7% A (2.98)	44.2% A (2.91)	YES (YES)
2. I support the establishment of FKNMS zones in the Upper Keys.	65.1% D (4.00)	44.5% D (3.17)	43.5% A (3.01)	41.5% A (2.97)	YES (YES)
3. I support the establishment of FKNMS zones in the Middle Keys.	71.4% D (4.18)	45.8% D (3.25)	42.2% D (3.04)	39.2% D (3.06)	YES (YES)
4. I support the establishment of zones in the Lower Keys.	70.5% D (4.13)	47.2% D (3.30)	41.4% A (3.07)	38.1% A (3.11)	N/A
5. I support the establishment of zones in the Dry Tortugas.	N/A	49.3% D (3.28)	41.0% D (3.10)	44.4% D (3.22)	N/A
6. There should be more FKNMS zones in the Florida Keys.	N/A	85.8% D (4.50)	82.4% D (4.35)	84.6% D (4.46)	N/A

In the baseline, the overwhelming majority of commercial fishers did not support the zones as they were initially proposed throughout the FKNMS (86.2% disagreed with statement 1). This was also true, but to a lesser extent for the zones in each region of the FKNMS (65.1% in the Upper Keys; 71.4% in the Middle Keys; and 70.5% in the Lower Keys disagreed with the statements).

These negative views were significantly moderated in the 10-year replication. A plurality was against the zones across all the FKNMS for ERs (48.3% against versus 39.6% for the ERs). However, a plurality was now supportive of the SPAs with 45.7% for the SPAs versus 43.4% against the SPAs and 9.3% neutral. For the WMAs, 44.2% were for versus 37.1% against the WMAs and 14.1% neutral. The results were similar in the Upper Keys with a plurality not supporting ERs (44.5% against and 38.3% for ERs with 13.6% neutral) and a plurality supporting the other two types of zones (43.5% for versus 29.1% against SPAs; and 41.5% for versus 38.2% against WMAs). There was also a fairly significant movement to neutrality. In the baseline, across the entire FKNMS zones 3.8% were neutral versus 10.6% for ERs; 9.3% for SPAs; and 14.1% for WMAs in the 10-year replication). The results were similar for the Upper Keys with 7.3% neutral in the baseline versus 13.6% for ERs; 13.7% for SPAs; and 14.7% for WMA in the 10-year replication.

There were also significant movements in the positive direction in views of the Middle and Lower Keys zones, but less than for the Upper Keys zones. In the Middle Keys, a plurality of commercial fishers was supportive for only the SPAs (42.2% for and 39.3% against with 15.3% neutral). For the Lower Keys zones, there was a plurality supportive of the SPAs (41.4% for and 39.8% against with 14.9% neutral) and the WMAs (38.25 for and 30.0% against with 16.2% neutral).

So overall, there was a very significant movement in the positive direction on support for the FKNMS zones among commercial fishers over the 10-year period.

A plurality of commercial fishers did not support the zones in the Dry Tortugas: 49.3% against and 36.6% for ERs with 10.8% neutral; 41.0% against and 38.6% for SPAs with 14.9% neutral; and 44.4% against and 33.3% for WMAs with 15.0% neutral. There is only one ER in the Dry Tortugas, which is split into two areas, Tortugas North, which allows nonconsumptive uses and Tortugas South, which is research only. The Tortugas ER was the commercial fishers' alternative in the *Tortugas 2000* process to design the reserve and was adopted by consensus of the Tortugas Working Group and implemented by the FKNMS. So it is a bit curious why commercial fishers have a negative view. Some have interpreted these findings as the commercial fishers recognized a certain inevitability of there being a Tortugas ER and just went for the best deal they could get.

The overwhelming majority of commercial fishers also did not support more FKNMS zones in the Florida Keys: 85.8% did not want more ERs, 82.4% did not want more SPAs; and 84.6% did not want more WMAs.

Access to Full Report and Executive Summary

The full report can be cited as follows:

Shivlani, M., Leeworthy V.R., Murray, T.J., Suman, D.O., and Tonioli, F. 2008. Knowledge, Attitudes and Perceptions of Management Strategies and Regulations of the Florida Keys National Marine Sanctuaries by Commercial Fishers, Dive Operators, and Environmental Group Members: A Baseline Characterization and 10-year Comparison. Marine Sanctuaries Conservation Series ONMS-08-06. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 170pp.

Available at: <http://sanctuaries.noaa.gov/science/conservation/pdfs/kap2.pdf>

Full Report and Executive Summary are also available in portable document format (pdf) from:

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