

Key Biscayne residents' uses of and views concerning local coastal and marine resources

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Introduction

- Key Biscayne is part of the barrier island system in South Florida
 - The island, as well as adjacent Virginia Key, is characterized by a wealth of coastal and marine resources
 - Several protected areas and green spaces afford protection to the islands' resources
 - The Village of Key Biscayne, with a population of 12,000 residents, is the major population center

Beaches



Source: Florida State Parks

- Key Biscayne and Virginia Key have miles of beaches
 - Many of the beaches serve as nesting sites for sea turtles
 - The beaches also are a line of defense against coastal erosion and storms

Red mangroves



Source: USGS

- Red mangroves such as these provide habitat on land and serve as nursery sites for marine species
- Mangroves also protect against storms

Sea grasses



- Sea grasses are nearshore habitats found off Key Biscayne shorelines and which are important areas for juvenile fish and invertebrates and sometime also for larger organisms, such as manatees

Source: BNP/NPS

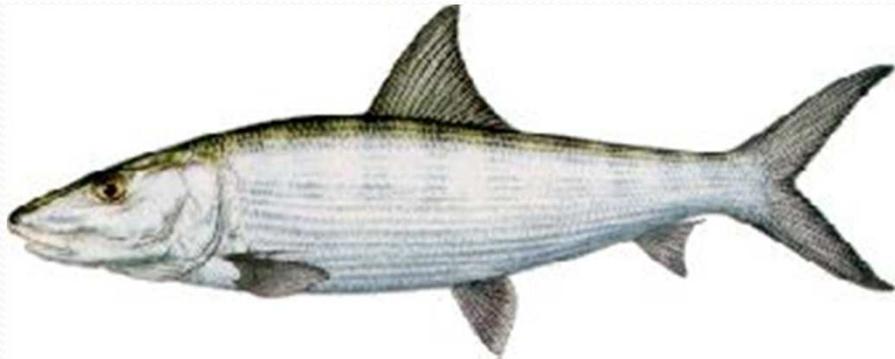
Corals and coral reefs



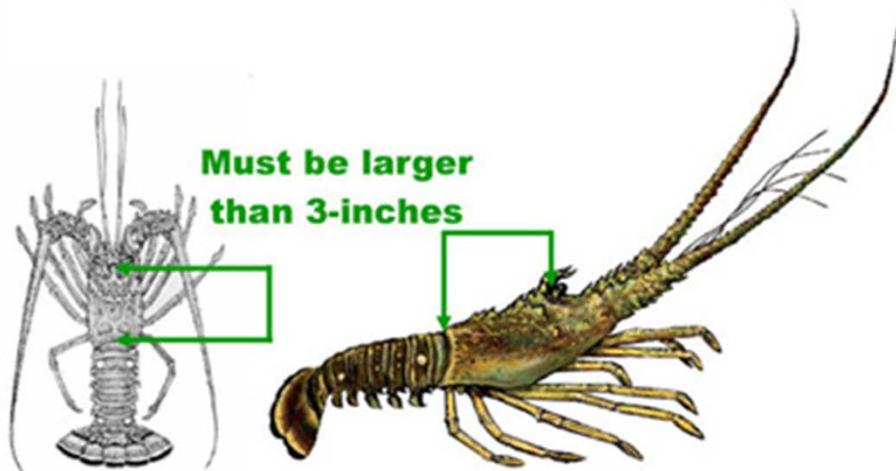
Source: NPS

- The Florida Reef Tract extends in a north-south direction off Key Biscayne's Atlantic coast
 - The reefs contain a variety of different corals, reef fish, and invertebrates important to the dive industry and fisheries sectors

Fish and fisheries



- The islands' nearshore areas provide habitat for a variety of fish and invertebrates
 - These include sport fish such as bonefish and others used for food such as spiny lobster



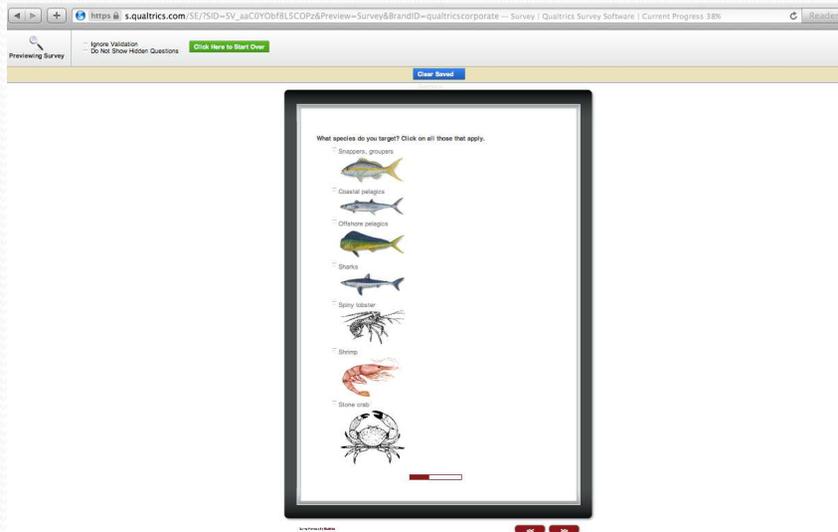
Source: FFWC



Key Biscayne Resident Survey

- In 2012, the Key Biscayne Community Foundation, along with its partners, launched the Key Biscayne Resident Survey Project
- The project had as its main objectives to:
 - 1. Determine residents' use of Key Biscayne and Virginia Key coastal and marine resources
 - 2. Evaluate residents' views on these resources
 - 3. Assess residents' willingness to participate in the Citizen Scientist Program

Survey template



- Internet-based survey
 - The survey was created using online software and was made available to be completed online
 - The technology allowed for real-time data access and to determine response rate

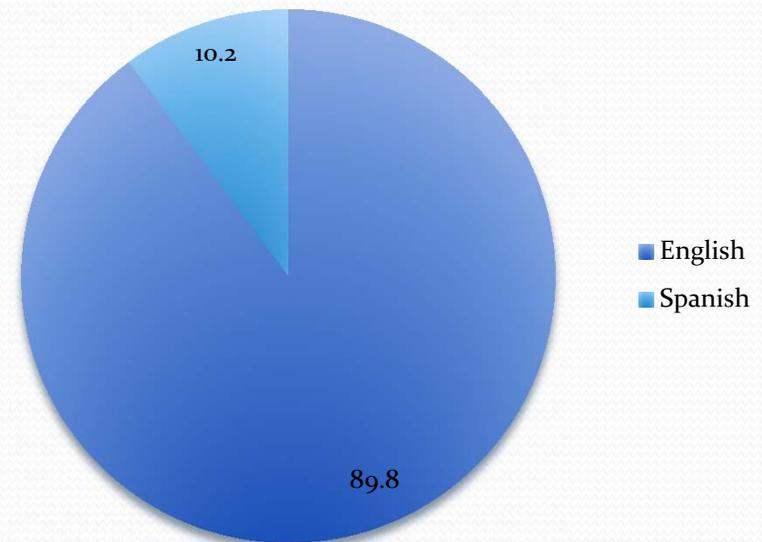


Survey timeline

- The Key Biscayne Resident Survey was implemented in January 2013
- The survey information was made available via a number of sources, including newsletters, emails, and events
- The survey was left open for completion from January – March 2013, for a period of 8 weeks

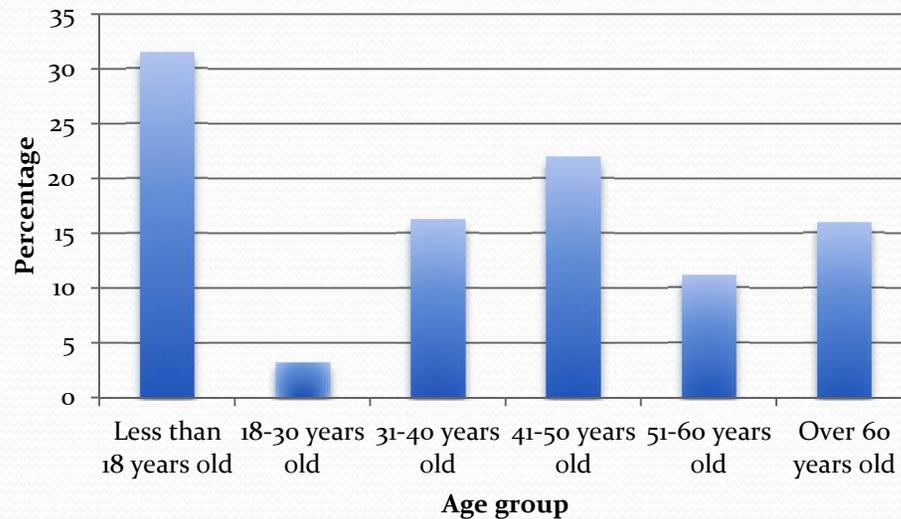
Survey results

- A total of 735 residents completed the 47-question survey
- Most surveys were completed in English
 - But, 62% of the respondents identified themselves as Hispanic/Latino

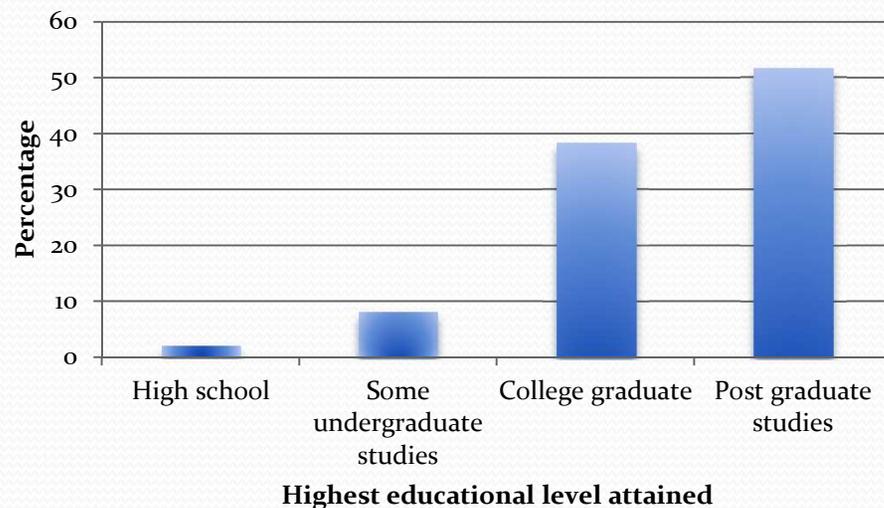


Surveys completed in English and Spanish

Survey demographic results

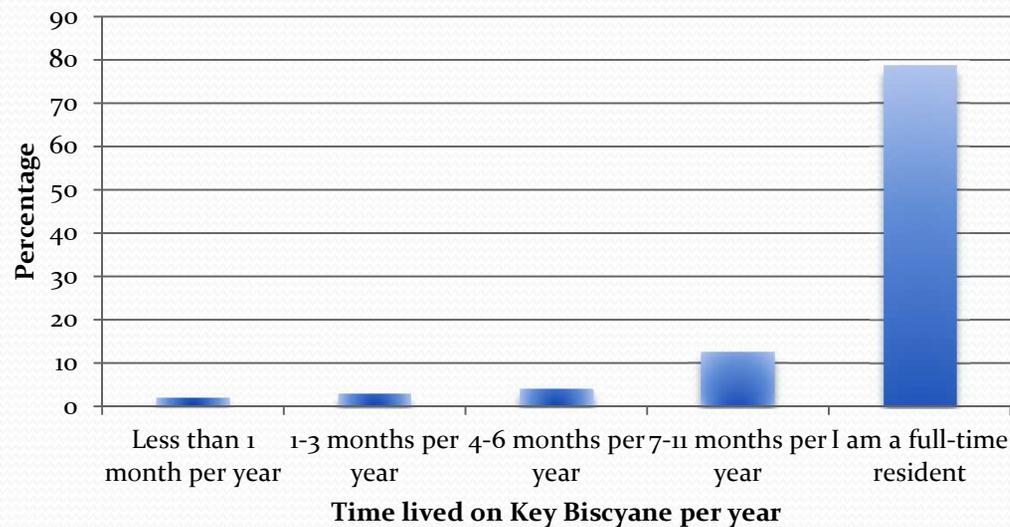
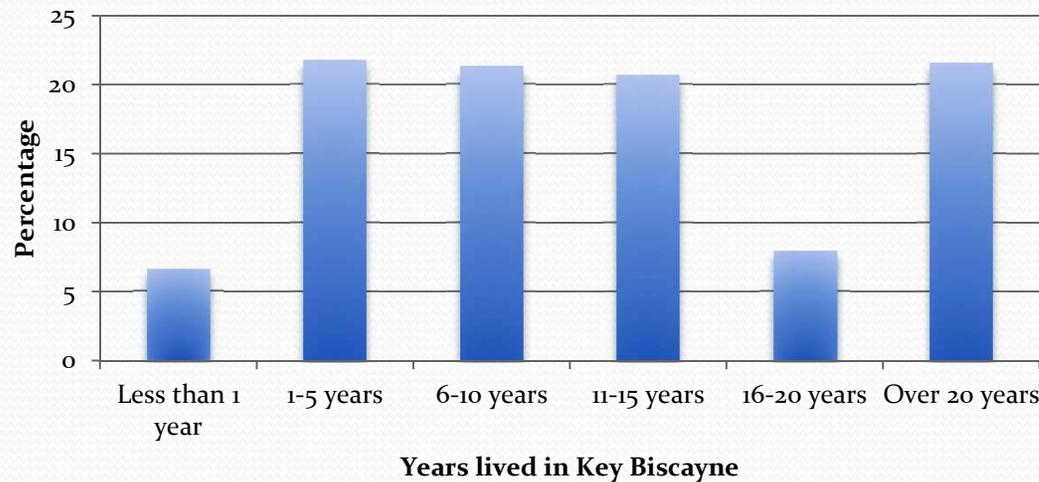


- The sample population was similar to that in the 2010 US Census
 - The average age was slightly older than 31-40 year olds



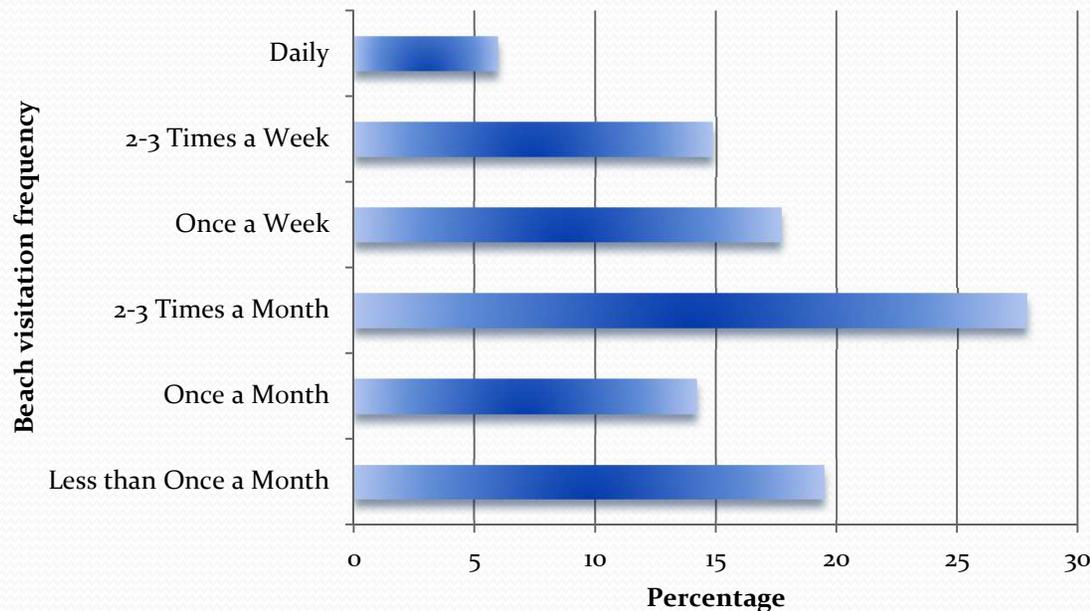
- The sample population was very highly educated
 - 90% held a bachelor's degree or higher

Survey residency results



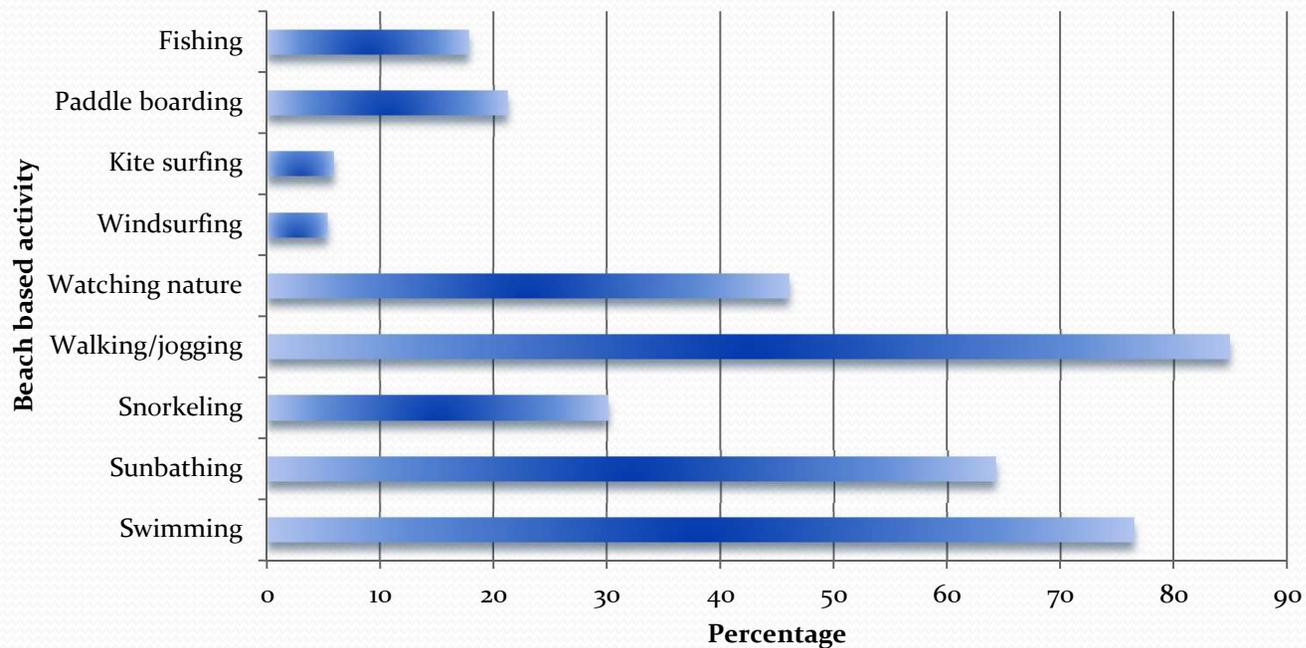
- Residents had lived on the Key for an average of just under 6-10 years
- Over 80% of the residents lived on the Key full-time
- These results show an experienced community that likely interacts with the resources on a continued basis

Beach use



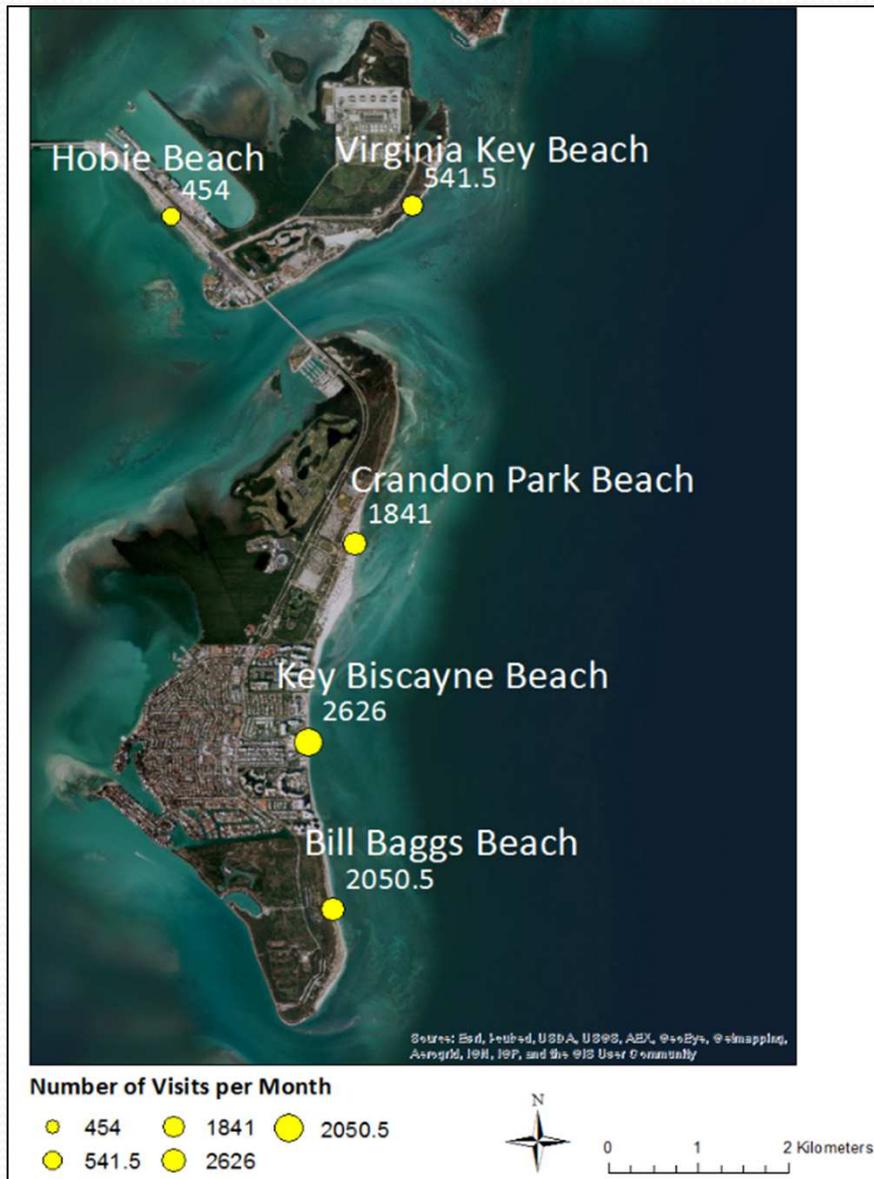
- 94% of the sample stated that it visited a beach
- 2/3rd of the respondents used beaches 2-3 times per month
- Almost 20% did not use the beaches very frequency, or less than once a month

Beach activities



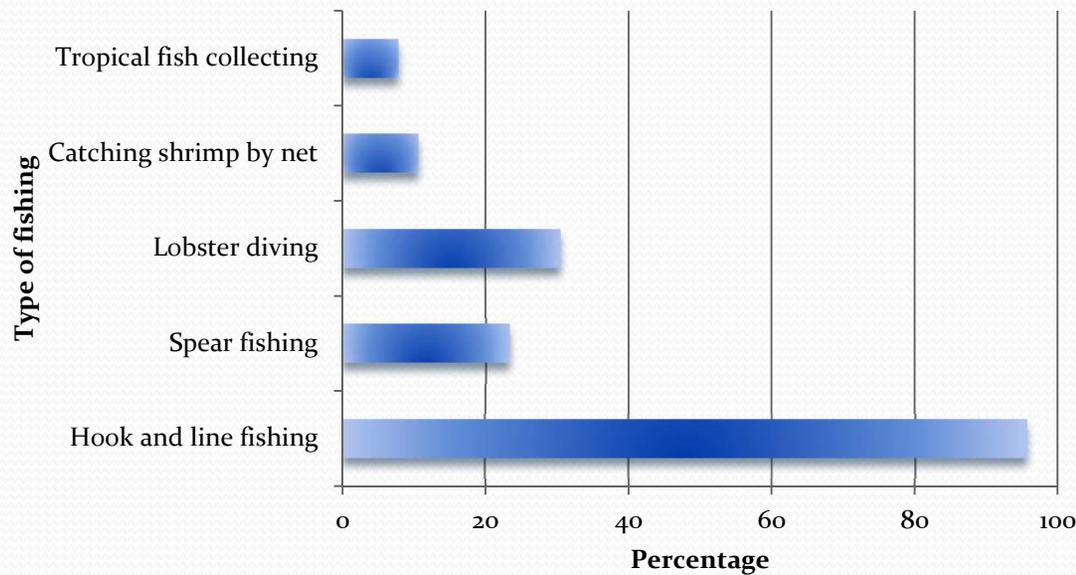
- The most popular activities were walking/jogging (85%), swimming (76%), and sunbathing (64%)
- Fishing was less popular (less than 20%) probably due to conflicts with swimmers
- Nature watching was also very popular, at 46%

Beach visitation rates



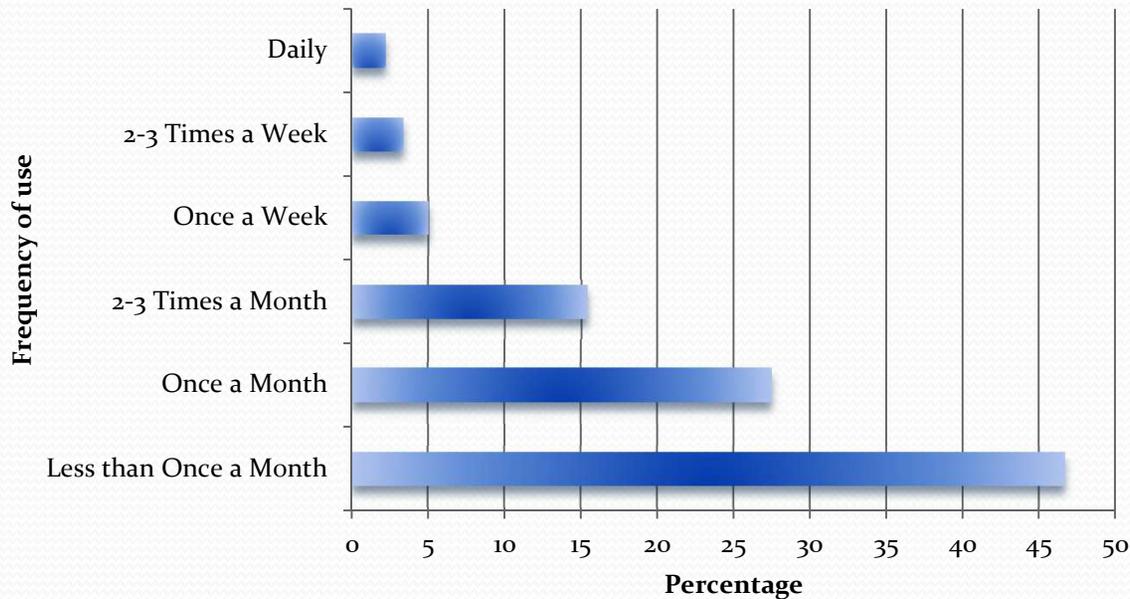
- The most popular beach was Key Biscayne Beach
 - It attracted 35% of all monthly visits
- Key Biscayne beaches accounted for 87% of all monthly beach visits
- The main reason for beach selection was distance from home (86.7%)

Fishing activities and use



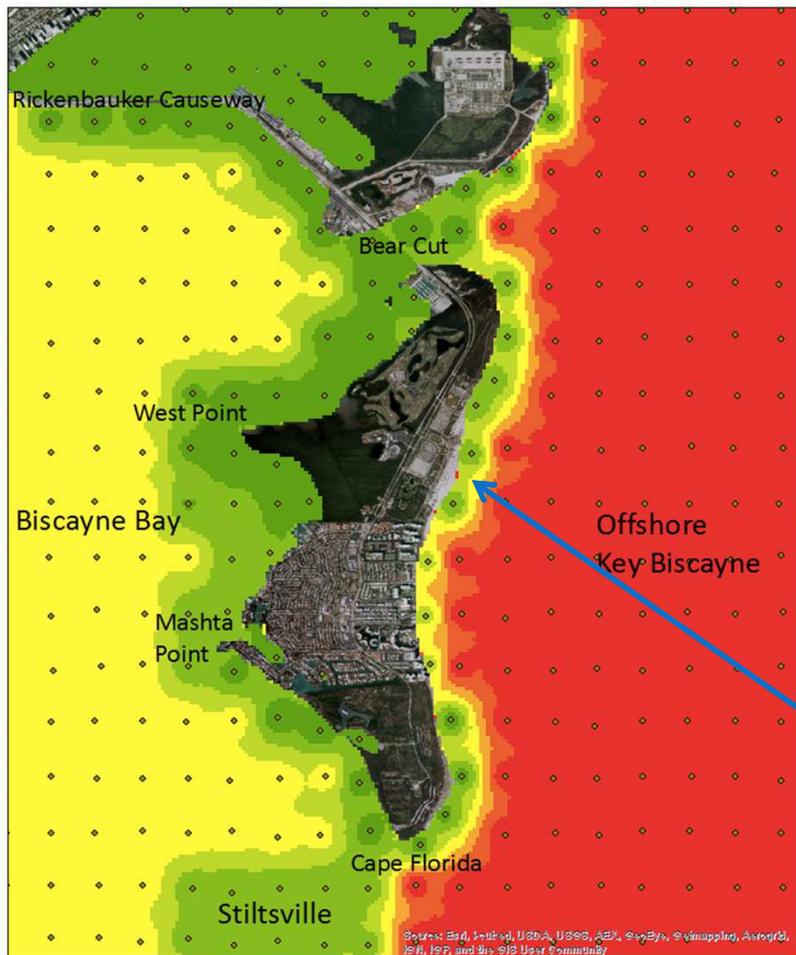
- 29% of the sample stated that they fished off Key Biscayne
- The main type of fishing was hook and line fishing (94%), with lobster diving (30%) and spearfishing (22%) as other main types

Fishing use



- Most residents did not fish very frequently, and 75% fished either once or less than once a month
- In terms of fishing mode, 49% used only boats and 36% fished from boats and the shoreline
 - Only 16% fished only from the shoreline

Fishing rates

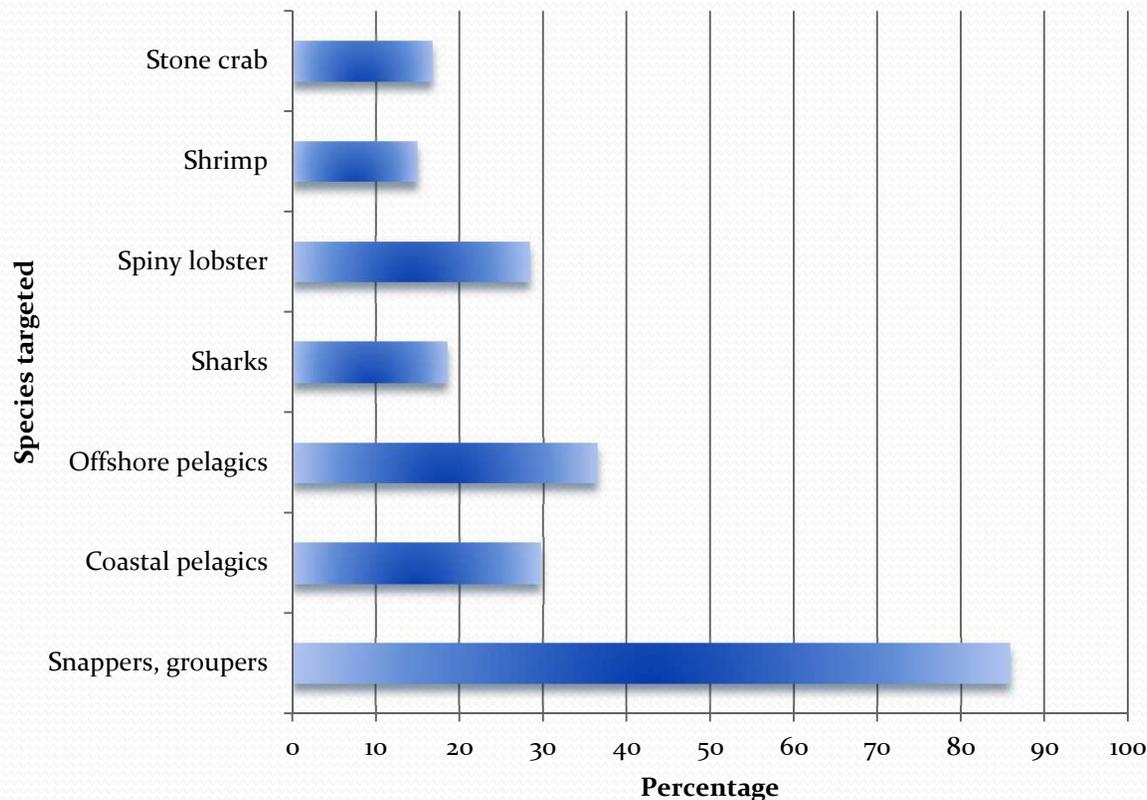


Number of Visits per Month



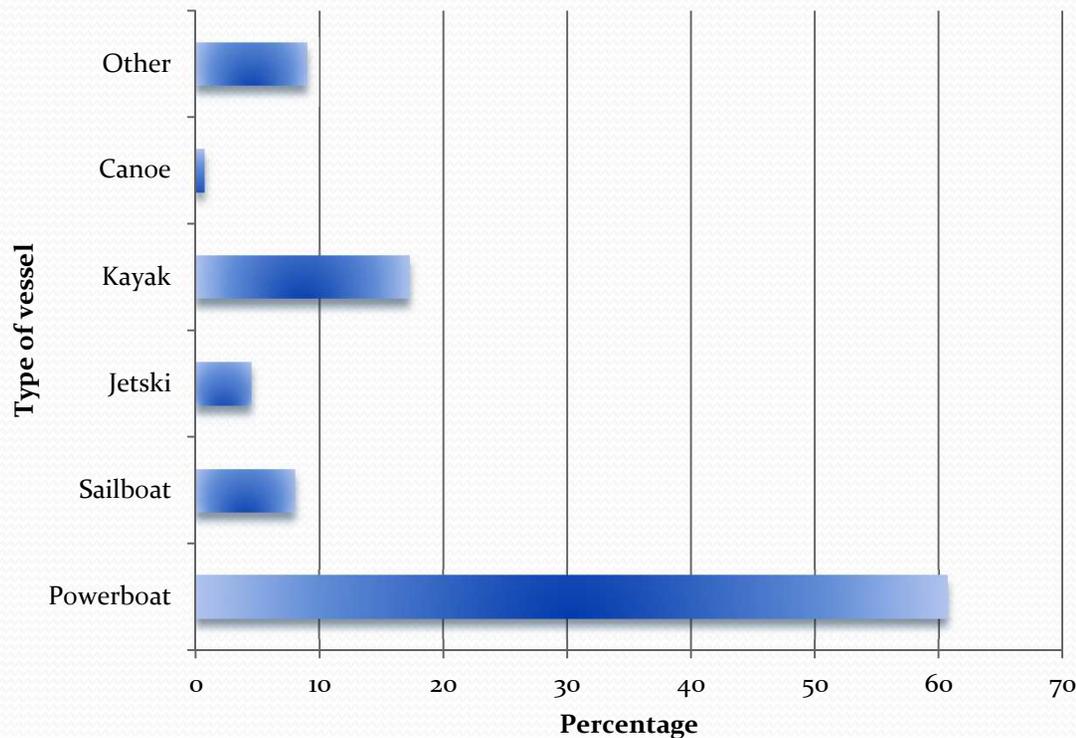
- Total monthly fishing trips were skewed mainly to the east in offshore areas off Key Biscayne
- Fewer fishing trips were taken in Biscayne Bay
- Few areas in the nearshore areas attracted much use
 - The exceptions here were off some of the beaches

Fishery species targeted



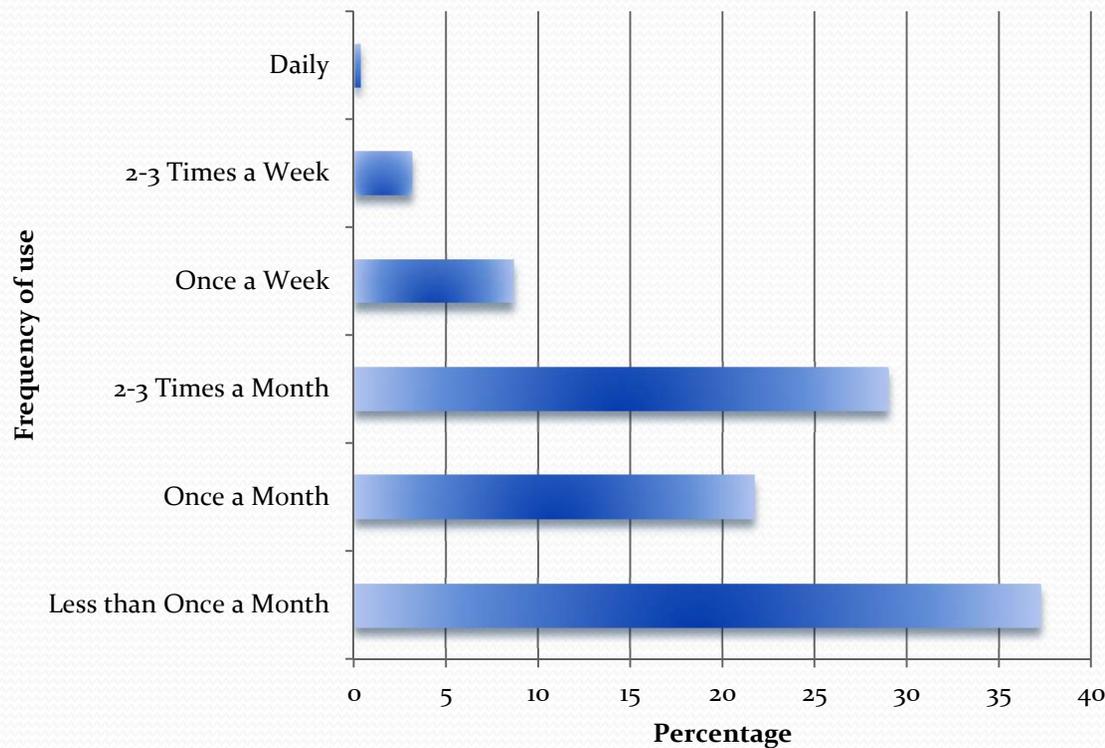
- 85% of the respondents targeted bottom fish, such as reef fish
- Offshore and coastal pelagic were targeted by a third of the residents
- Spiny lobster was the most popular crustacean species targeted (28%)

Boating vessels



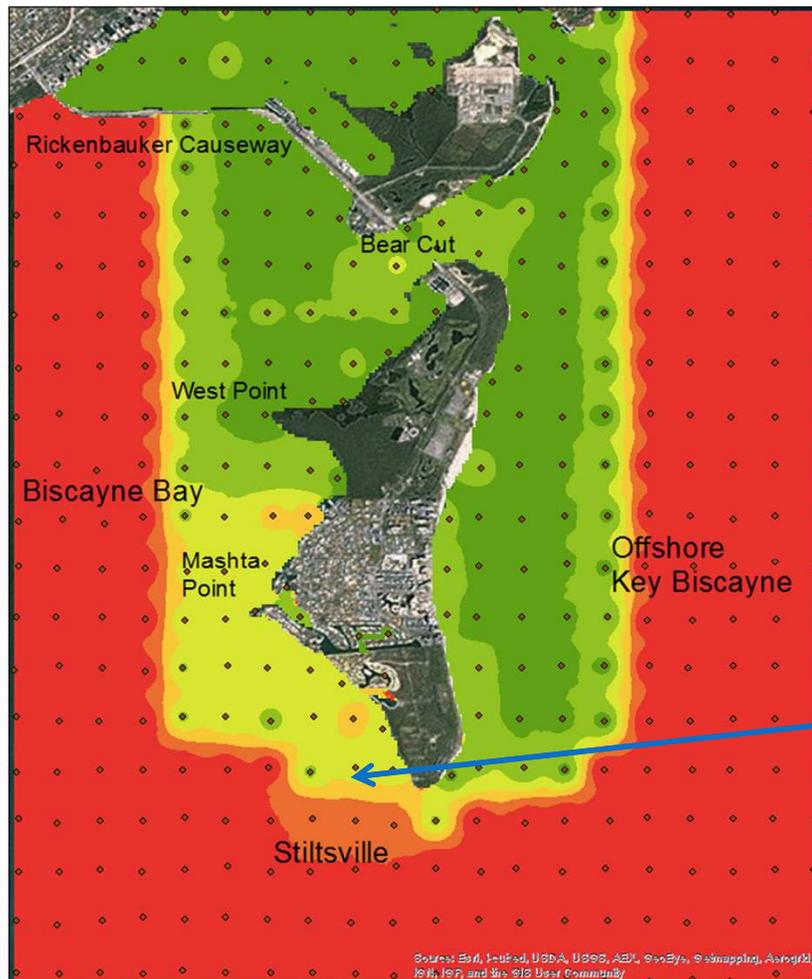
- 46% of the sample stated that it boats off Key Biscayne
- The most commonly used vessel was a powerboat (61%)
- Less popular were self propelled vessels like kayaks (17%) and canoes (0.7%)
- Also, less than 5% of the sample reported using jetskis

Boating use



- Boating use was largely limited to 2-3 times per month or less frequency (88%)
 - Over a third of the residents went on a boat less than once a month
- By contrast, 3.4% went out on a boat at least 2-3 times per week

Boating rates



Number of Visits Per Month

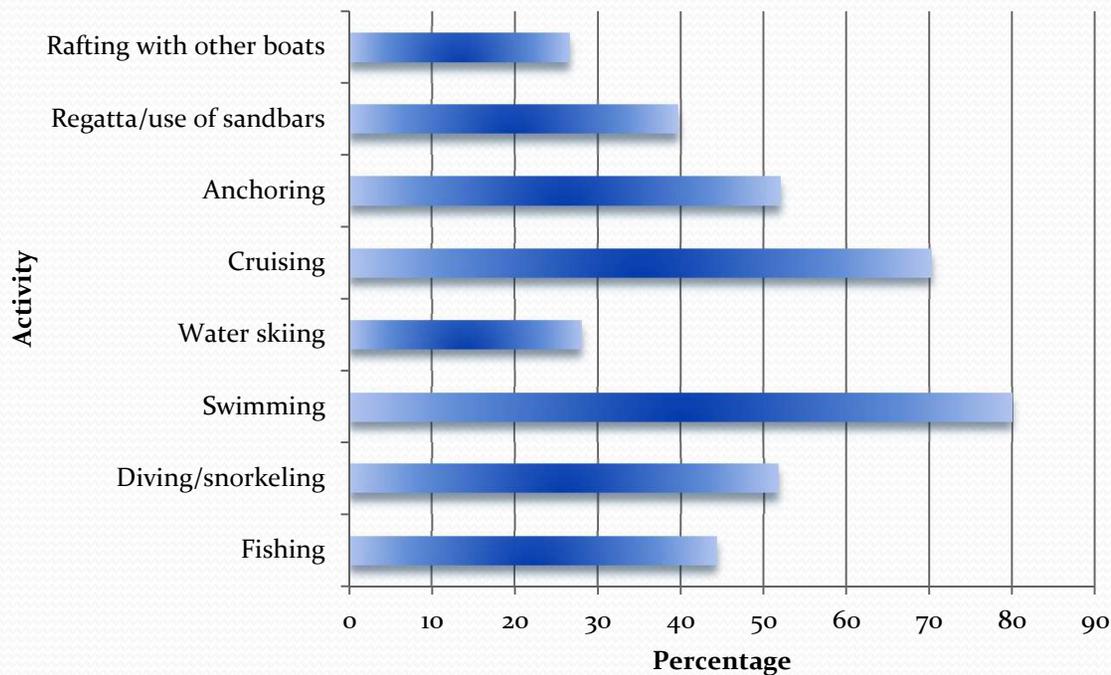


◆ Boating Regions



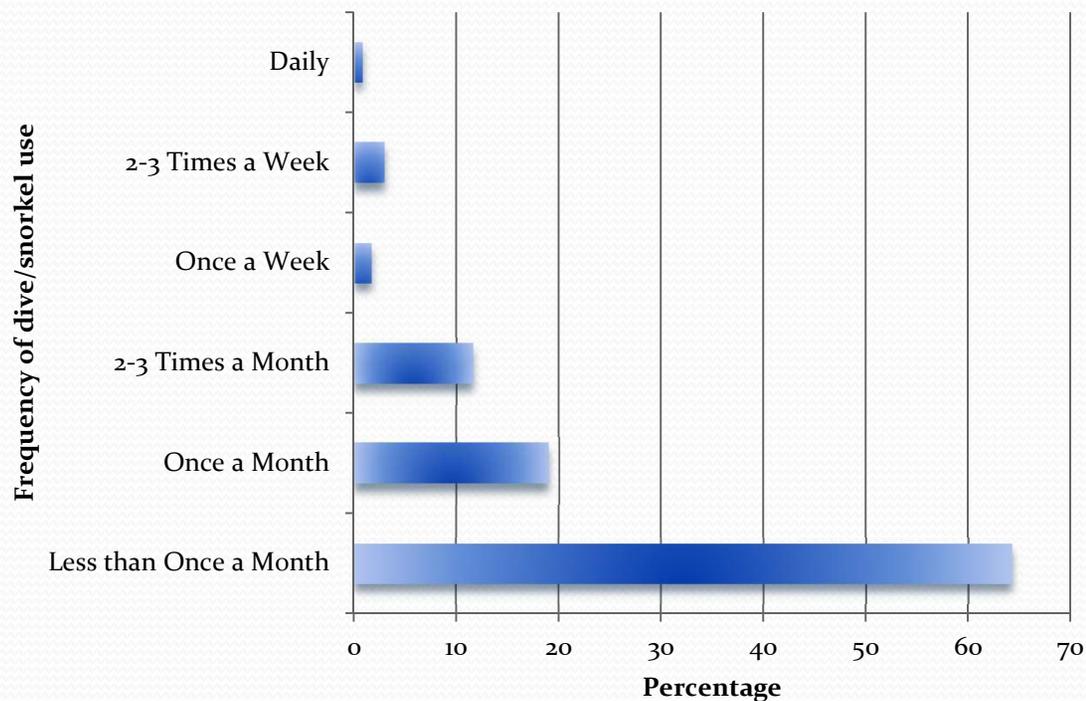
- Monthly boat visits were highest in the Biscayne Bay and Offshore Key Biscayne areas
- Residents took fewer, monthly trips around the islands, with the notable exception of around Mashta Point and Stiltsville

Boating activities



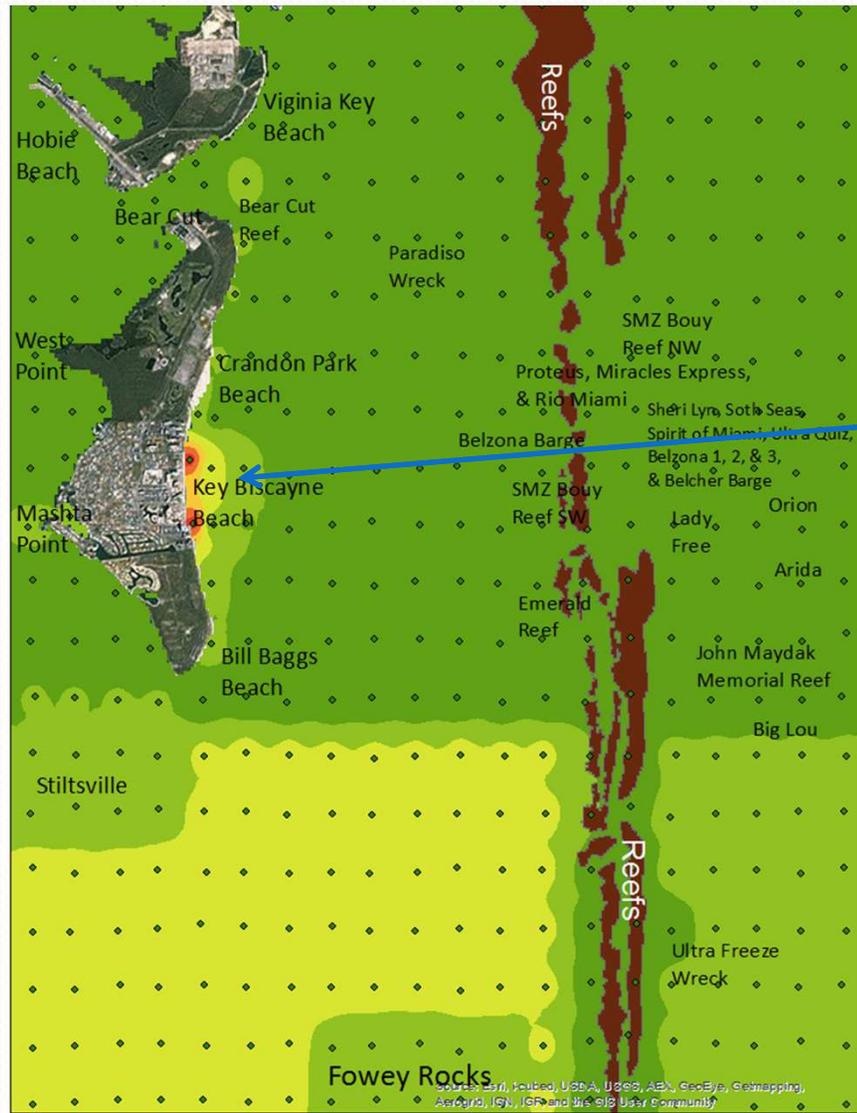
- Swimming was the most common activity associated with boating (80%)
- 70% also reported cruising as an activity, followed by anchoring (51%), diving/snorkeling (51%), and fishing (43%)
- Almost 40% used the local sandbars

Diving and snorkeling use



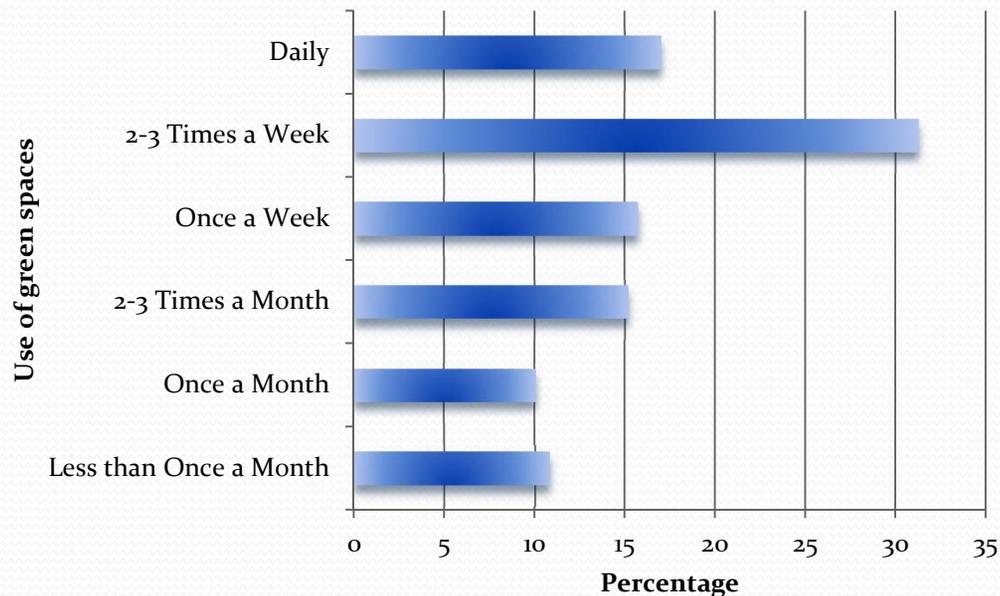
- 39% of the residents reported diving or snorkeling off Key Biscayne
- Only 19.5% took extractive dive or snorkel trips
- Over 83% took one or fewer dive or snorkel trips per month

Diving and snorkeling rates



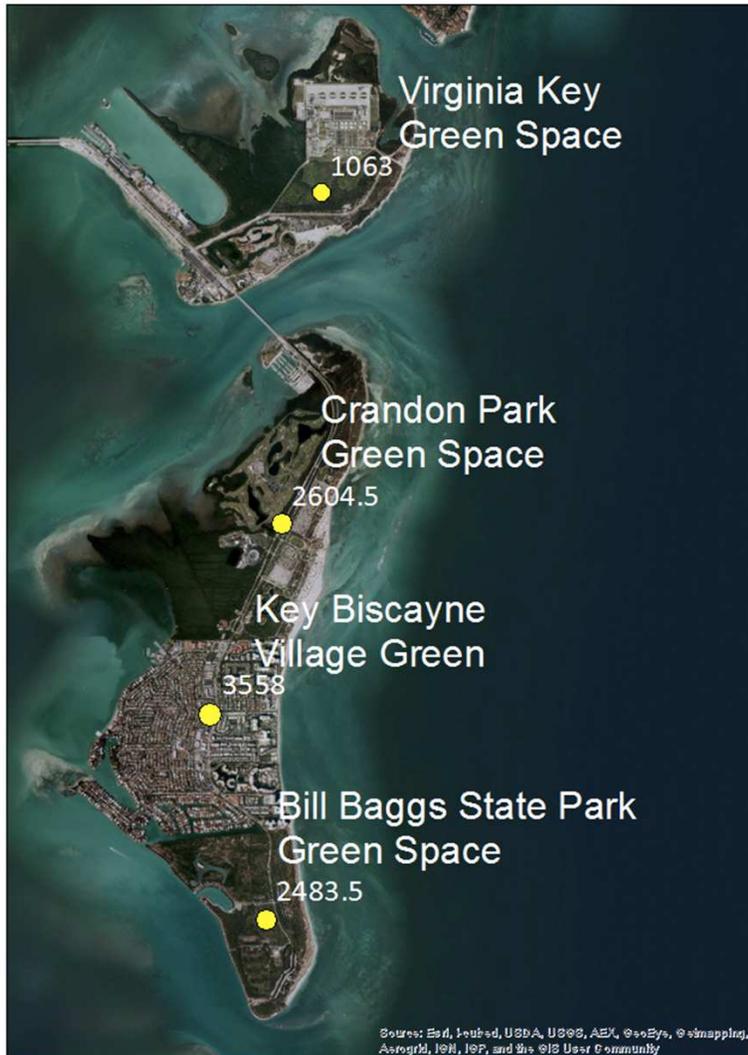
- Most diving and snorkeling, unlike boating and fishing, took place off the nearshore waters off Key Biscayne
- Dive and snorkel monthly trips were low along the main reef tract
- Snorkeling may account for much of the nearshore rates

Use of green spaces



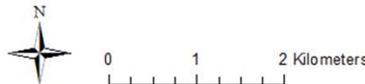
- We defined “green spaces” as the major parks and Village Green
- 90% of those surveyed stated that they used green spaces
- Use of green spaces was very prolific
 - 64% used the green spaces at least once a week
 - Only 20% used the green spaces once a month or less

Green space use rates



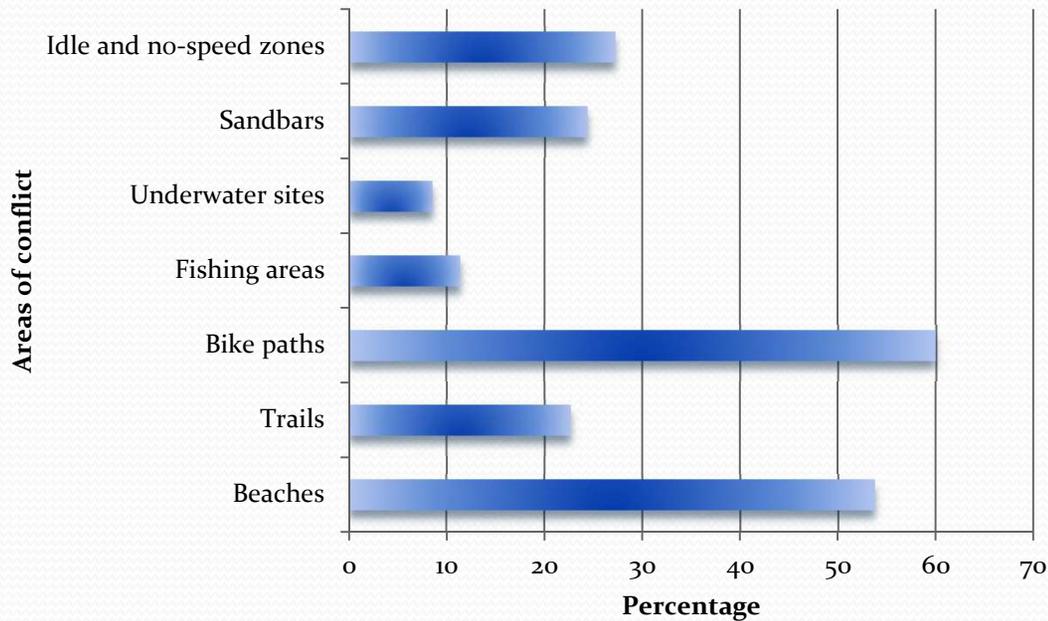
Number of Visits Per Mont

● 1063 ● 3558
● 2604.5 ● 2483.5



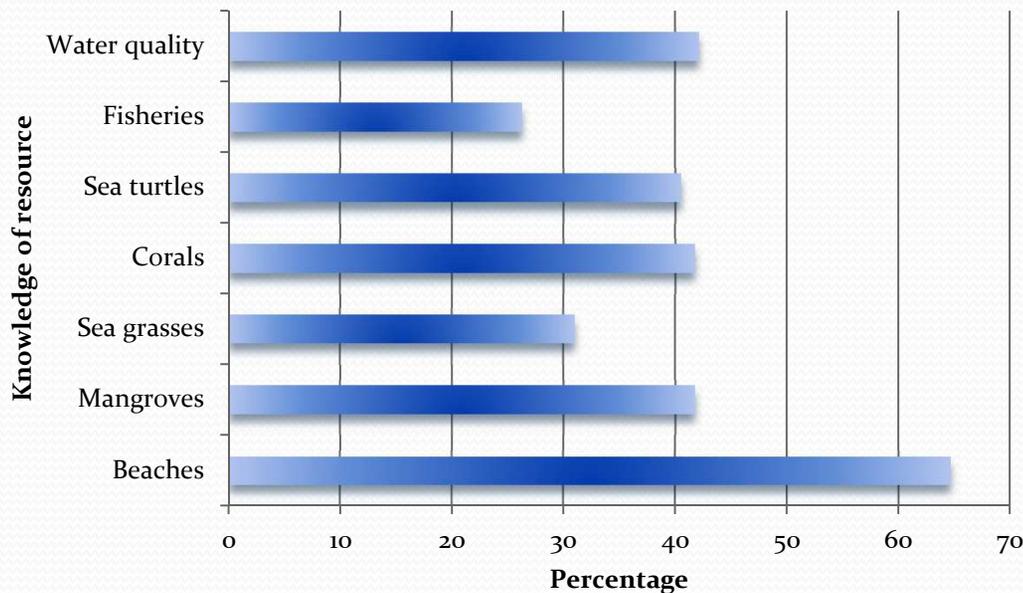
- The most frequently visited green space on a monthly basis was Key Biscayne Village Green
 - This location attracted 36.6% of all use in green spaces
- Crandon Park and Bill Baggs attracted 27% and 26%, respectively
- Virginia Key only attracted 10% of use, likely due to the distance

Use conflicts and areas of conflicts



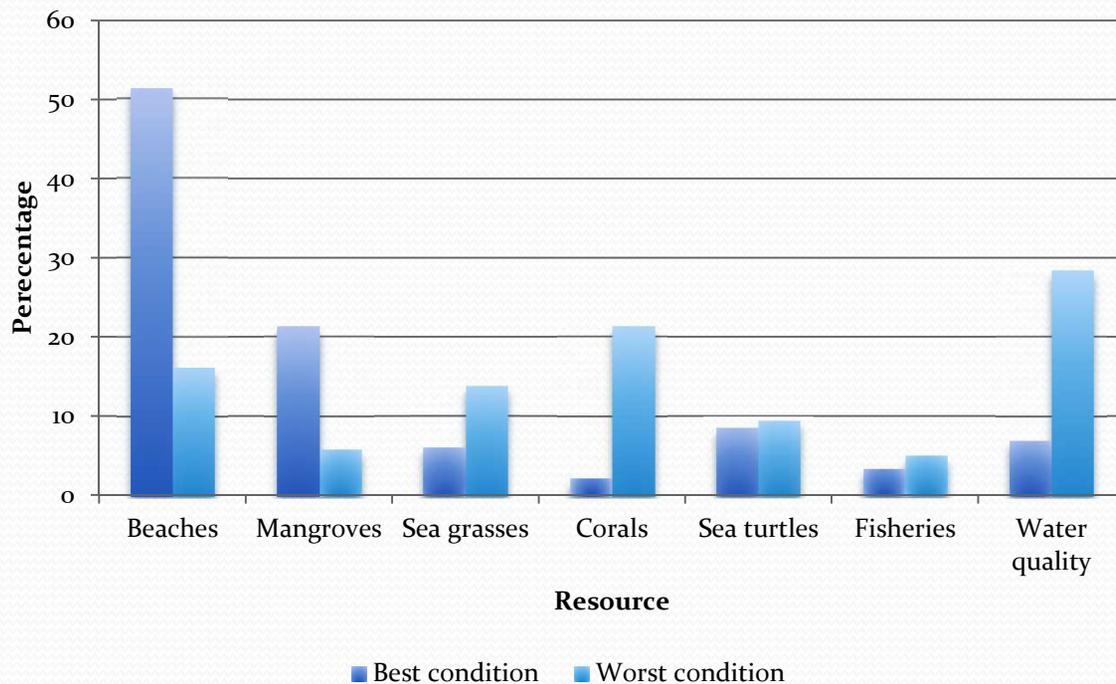
- Almost 71% of those surveyed had not experienced any use conflicts on Key Biscayne
- Among those who did report use conflicts, the most common of these were related to bike paths (60%), beaches (53%), and idle or no speed zones (27%)

Knowledge of coastal and marine resources



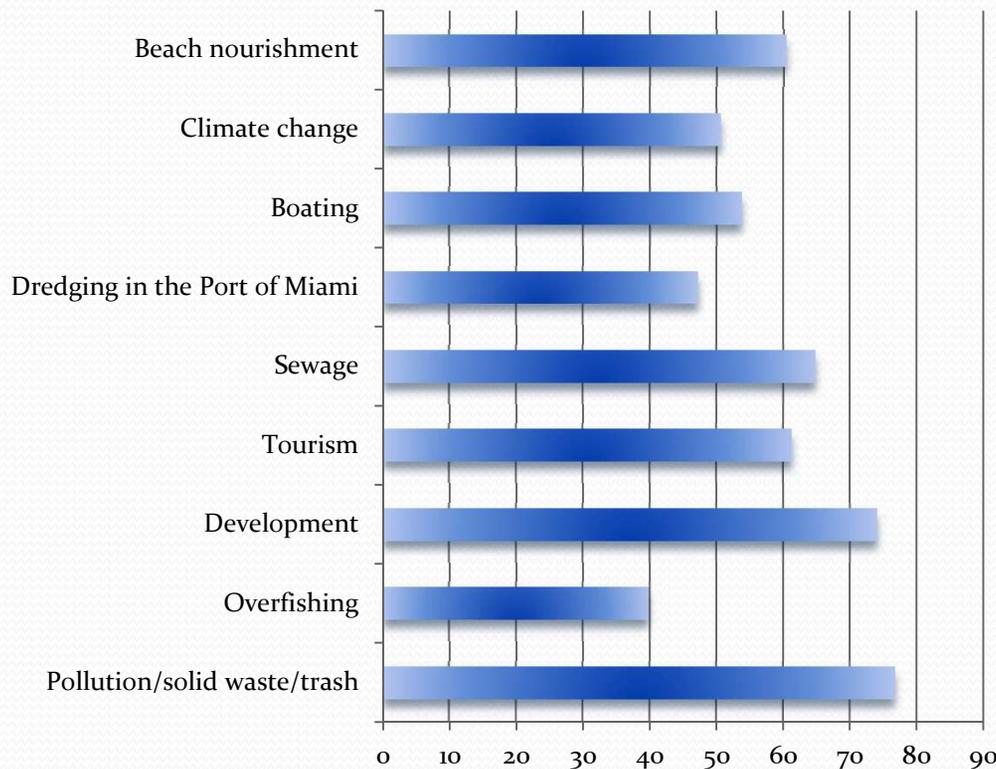
- Respondents stated that they were held the most knowledge on beaches (64%)
- The resource over which residents held the least amount of knowledge was fisheries (25%)
 - 21% of those surveyed stated that they had no knowledge at all about fisheries, compared to 5.6% who felt the same about beaches

Resources in the best and worst conditions



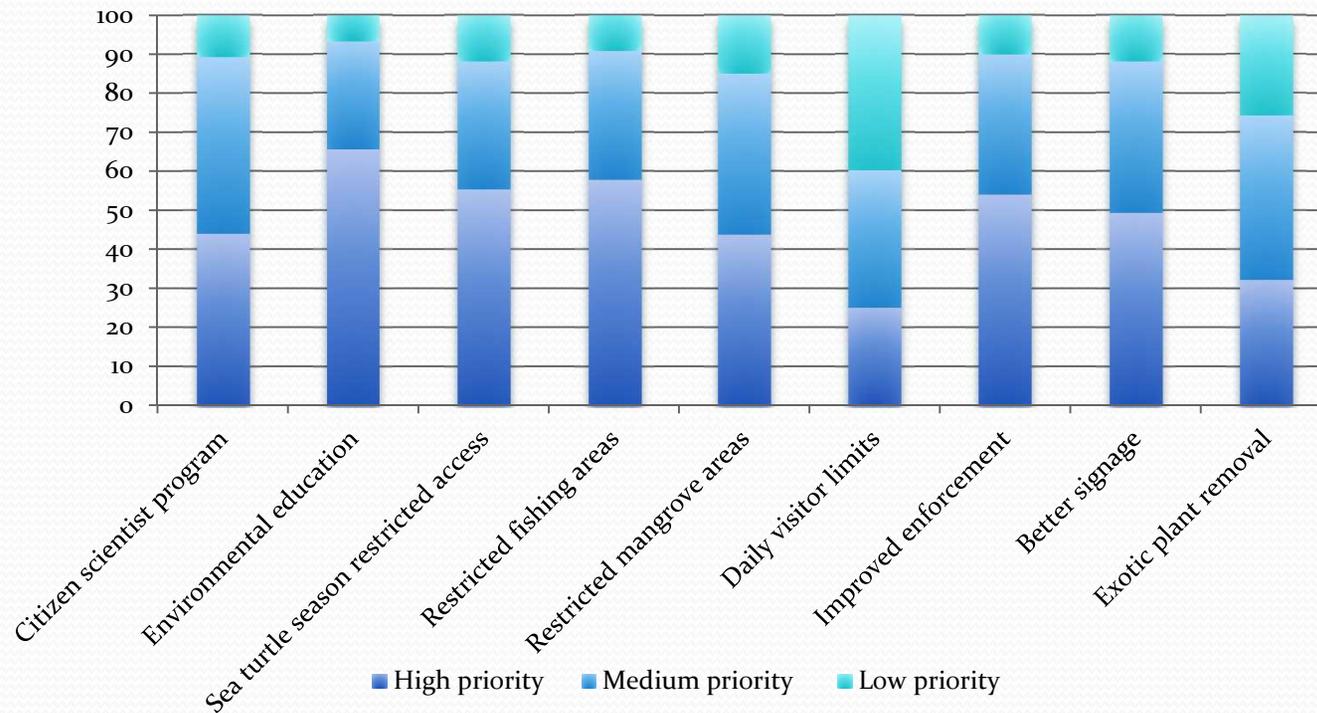
- Over half the respondents believed that beaches were the resources in best condition
- By contrast, almost 30% believed that water quality was the resource in worst condition

Activities that impact Key Biscayne resources



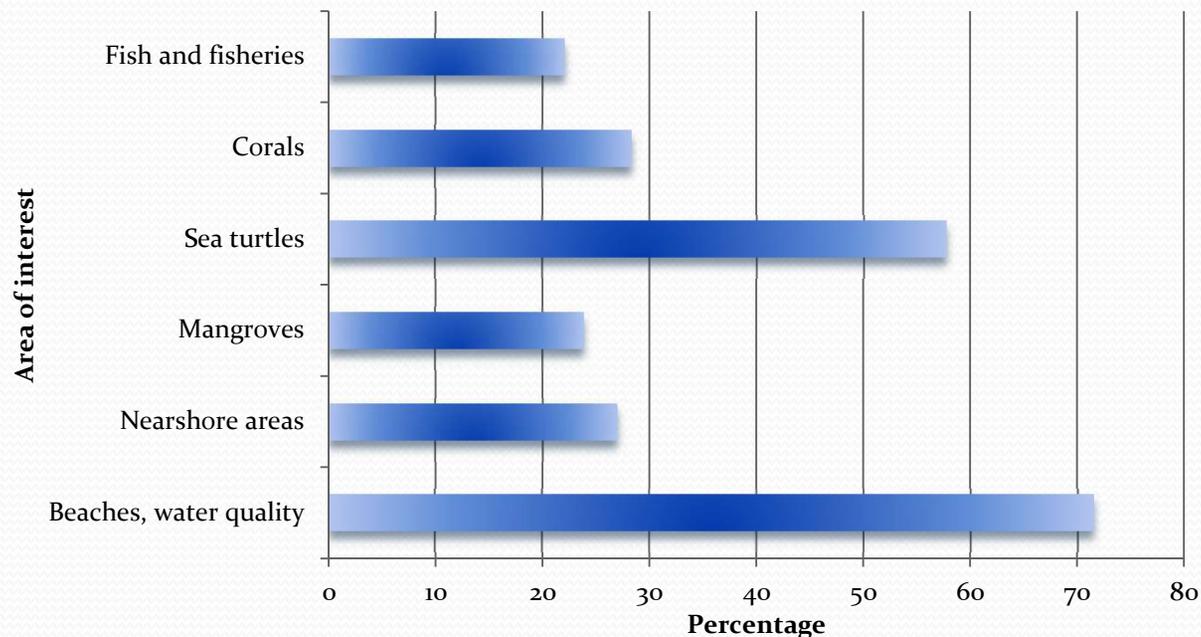
- At least 40% or more of the respondents felt that all listed activities had major to moderate impacts on Key Biscayne resources
 - The most severe impacts were those resulting from pollution and development
 - But, 29% were unsure about the dredging project in the Port of Miami, and 25% were unsure about overfishing

Priority action areas



- Environmental education was perceived as highest priority area, followed by sea turtle and fishery restrictions
- Imposing daily visitor limits and removing exotic plants were given the lowest priorities

Citizen Scientist Program



- When asked about their willingness to participate in the Citizen Scientist Program, 49.2% stated that they would like to participate
- Over 70% of these respondents are interested in working on water quality and in beaches, and 57% are interested in sea turtle research
 - Interest in other areas is much lower but still robust, such as the almost 30% who would like to work with corals, and 26% who would like to work with seagrasses



Conclusions

- 1. The project was successful in obtaining a large sample
 - Thanks in a large part to the efforts of the foundation and of course the residents
- Results demonstrate a dedicated use of the resources
 - Especially via beach visitation and green space use
- Residents are concerned about the area's coastal and marine resources
 - The view is that the resources are being impacted by multiple stressors
- Residents prioritize education and some types of limited access to protect the area's most vulnerable resources
 - There is also considerable support to participate in the Citizen Scientist Program

Acknowledgments

I would like to thank all the members of the research team – Melissa, Bob, Diego, Andrew - for doing all the hard work.

I would like to acknowledge Andrew Calhoun who did all the mapping for the project.

Finally, I would like to thank all the residents of Key Biscayne for having taken the time to complete the survey.