Introduction

- Marine Protected Areas (MPAs) are any region of oceans with a restriction of human activity. MPA's replenish fish biodiversity, create resilience, increase local fish stocks, and give species time to restock (Fox et al., 2011).
- 10 years ago an MPA was proposed in South Eleuthera but due to the lack of a management plan it was never implemented. (Danyukh, 2003)
- The International Union for the Conservation of Nature (IUCN) proposed that by 2020 10% of the world's ocean needs protection. The Caribbean was more ambitious as they took on the goal to protect 20% of their oceans by 2030. (Fox et al., 2011)
- Many families in South Eleuthera rely on fishing as a food source and source of income.
- Fishermen have traditional ecological knowledge that can support science. (Kincaid et al., 2013)
- Research aims to balance fishermen's needs for food security while sustaining fish stocks to keep ecosystems healthy.

Objectives

The goal is to work towards local food security and conservation of resources in South Eleuthera through an ecosystem based management approach, as well as combining social and biological data to address fisheries and conservation concerns within South Eleuthera.

Fish Survey Objective: Assessment of the resource fin fisheries in South Eleuthera to evaluate the population structure of commercially important target fish species

Fisher Interview Objective: Assessment of fishers’ knowledge, attitudes, and perceptions on fisheries and conservation in South Eleuthera.

Research Questions

1. How do population abundance metrics differ between habitat types and areas?
2. What are the perceptions, attitudes and knowledge of local fishers and conservation?
3. Can our results be integrated to provide resource management recommendation in South Eleuthera?

Methods

Fish Survey Methods:
1. Each surveyor is given a set of species to identify, size and record (Fig. 1).
2. Researchers conducted merring dive surveys to document on dive slates the size structure, biodiversity and abundance of the reef fish populations. (Fig. 2)
3. Surveys lasted 20 minutes and were conducted at depths between 4m and 15m. (Fig. 3)

Fisher Interviews:
1. In the fisher survey a wide variety of questions were asked regarding the fisher’s perceptions, attitudes and knowledge regarding fisheries and conservation. A set list of 15 questions within three categories: importance of the area and perceptions of change, attitudes to conservation, and alternative livelihoods. (Fig. 4)
2. Local fisherman were interviewed randomly at landing sites and in nearby settlements. (Fig. 5)
3. A semi-structured interview was conducted with questions ranging from demographic, to open ended and closed questions. (Fig. 6)

Fisher Survey Results

- 9 fishermen were interviewed
- Their mean age is 47 years old
- The mean number of years that they have been fishing in South Eleuthera is 32
- The places that the interviewed fishers most commonly fish can be seen in Fig. 9. circled in yellow
- Fishermen used a variety of gears; handlines, spears, traps and hook and compressed air

Exuma Cays Land and Sea Park Case Study

In order to get a first-hand look on how MPAs can be effective and to see what type of management tools are most influential on the protection of park grounds, research and interviews were conducted in the Exuma Cays Land and Sea Park (ECLSP).

- According to park officials, the reasons the park is so successful are:
  - Majority of resources are spent on patrolling the park.
  - Funding is from donors and NGO’s (primarily “Bahamas National Trust”)

The park warden described a major downfall of the park’s success.

"In the beginning, the park never held community meetings, which is why they didn’t start off well. Since there was no communication, the local [fishers] did not understand why they couldn’t fish.”

Discussion

- Data shows that fishermen are willing to work with conservation if they have a say in what is being implemented.
- In an interview with the park warden at the Exuma Cays Land and Sea Park, he said that the main downfall of the park was the lack of communication between the fishers and conservation during implementation. To this day there is still dispute over the rights of resources.
- This is why we are working to include the fishers in the decision making process.
- There has to be communication between the fisheries and conservation.
- Fishers have knowledge on species changes over time and can provide data to support biological data.
- As seen in the study done in Cabo Pulmo National Park, local support leads to higher rates of success proven by the 463% increase in fish biomass. (Abrutyn-Osporoz et al., 2011)

Literature Cited

- Abrutyn-Osporoz et al. 2011. Large Recovery of Fish Biomass in a No-Take Marine Reserve Fish (1-27)

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