Science that Informs Conservation for an Economically Important Sport Fish: Bahamas Case Study

Ciencia que Informa de Conservación para un Pez de Deporte Importancia Económica: Estudio de Caso de Bahamas

Science qui Informe de Conservation pour un Poisson de Sport Économiquement Important: Étude de Cas des Bahamas

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EXTENDED ABSTRACT

Bonefish (*Albula vulpes*) are an economically important sport fish throughout its geographical range. There are three different species of bonefish found in The Bahamas, *Albula vulpes*, *Albula goreensis*, and *Albula conorhynchus*. Bonefish inhabit the flats environment, which is a nearshore shallow water environment that is characterized by a long shallow gradient, zero to six feet in depth, which is made up of a habitat mosaic. In The Bahamas, where tourism is the largest industry accounting for 60% of the country's GDP, the recreational catch and release bonefish fishery has an annual economic impact exceeding $141 million, and has a high cultural value. Bonefish are an important part of Bahamian culture, they are found on the Bahamian ten cent coin, have been harvested for generations as a source of food, and historically were a staple of the Bahamian diet. The majority of fishing for bonefish occurs on the family islands, where rural communities heavily depend on the health of the fishery. Despite the fishery's importance, the sustainability of the fishery is threatened by habitat loss and degradation, and to a lesser extent illegal harvest via netting. Bonefish & Tarpon Trust (BTT) Bahamas Initiative focuses primarily on habitat conservation, and until recently data to inform conservation in response to these threats were sparse. We have been collaborating with fishing guides, fishing lodges, and fishers to obtain data on bonefish habitat use and movements. The actionable knowledge (data) collected from this collaborative work – of scientific research as well as fisher's ecological knowledge – has led to identification of bonefish home ranges, migratory pathways, and pre-spawning aggregation locations that directly impact conservation efforts for bonefish and their habitats. A great example of this collaborative work that has helped bonefish conservation efforts, is the tag-recapture study (Figure 1). This is BTT's the longest ongoing research project in The Bahamas. Over fourteen thousand bonefish has been tagged

Figure 1. Collaborating with fishing guides and Bahamas National trust to dart-tag bonefish as part of the ongoing tag-recapture study.

since 2008, with close to seven hundred recaptures recorded. The recapture data has shown that the majority (72%) of bonefish were recaptured >1 km from where they were originally tagged. This suggest that bonefish have very small home ranges, but has also shows that bonefish will travel long distances in order to spawn. One fish in particular traveled 200 km one way between two different islands to get to a spawning site, which also shows inter-island connectivity. These multi-stakeholder partnerships BTT has built over the years, has fostered advocacy for habitat conservation. In fact, fishing guides and anglers have played leading roles in habitat conservation efforts. We work with Bahamas National Trust to incorporate these data into conservation strategies that had led to the recent creation of six National Parks to protect bonefish habitats. The work BTT and our collaborators do also feed into conservation education. We work closely with anglers and guides educating them about the biology and ecology of the flats and bonefish, but more importantly the impact of best handling practices when fishing for bonefish. Research has shown that if bonefish are handled improperly, this significantly impacts their survival post-release. BTT's outreach and education program has also expanded to primary and high school students, who learn little to nothing about the flats environment and bonefish in the current curriculum. We do this through a combination of classroom presentations and field trips that exposes students to the flats environment, ongoing research, and anthropogenic impacts (Figure 2). We have also partnered with Bahamas National Trust to develop a flats ecosystem curriculum that is currently reaching over a thousand students around the Bahamas. The main purpose of educating Bahamian students is to help them become more conservation minded, and understand that healthy habitats equal healthy fisheries. There is a need to get The Bahamas Ministry of Tourism involved in bonefish conservation efforts, and to better promote the fishery and educate the people of The Bahamas of its importance to the country. Currently, the Ministry of Tourism has shown little interest in the recreational bonefish fishery. This is unsettling especially due to the amount of visitors that travel to The Bahamas to fish for bonefish, and the thousands of Bahamians that depend of this sustainable and lucrative fishery.

KEYWORDS: Tourism, conservation, recreational

Figure 2. During a field trip with Bahamian high school students we came across a ghost net, and discussed the negative impacts anthropogenic threats such as these can have on the flats and bonefish.