



Early stages of snapper–grouper exploitation in the Caribbean (Bay Islands, Honduras)

Bertrand Gobert^{a,*}, Patrick Berthou^b, Ester Lopez^c, Patrick Lespagnol^d,
Maria Dolores Oqueli Turcios^e, Christophe Macabiau^f, Pedro Portillo^g

^a *Institut de Recherche pour le Développement, BP 70, 29280 Plouzané, France*

^b *Institut Français de Recherche pour l'Exploitation de la Mer, BP 70, 29280 Plouzané, France*

^c *Colonia Altamira, Casa 1564, Boulevard Suyapa, Tegucigalpa, Honduras*

^d *Institut Français de Recherche pour l'Exploitation de la Mer, BP 171, 34203 Sète Cedex, France*

^e *29, rue Egalité, 75019 Paris, France*

^f *PolySpace Technologies, 28, Rue Estienne d'Orves, 92120 Montrouge, France*

^g *Université des Antilles et de la Guyane, BP 592, 97159 Pointe-a-Pitre Cedex, France*

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Abstract

In the Caribbean, snappers (Lutjanidae) and groupers (Serranidae) are often heavily exploited by artisanal or industrial fisheries. This paper analyzes the catches of an artisanal fishery selectively targeting these species with a moderate fishing pressure in the Bay Islands (Honduras), and discusses the implications on the understanding of the early stages of development of reef fisheries. Although snappers and groupers are targeted with handlines and spearguns in the whole archipelago, the differences in species diversity and size structure of the catch reveals various exploitation patterns. In most areas, a depletion is observed for the most vulnerable snapper and grouper species, and most other species are mainly exploited in their juvenile phase; clear signs of an intensification process are apparent in one of the areas. The comparison of the relative production in the Bay Islands with other reef fisheries in the Caribbean suggests that higher values may be related to moderate fishing pressure and appropriate combinations of fishing effort and selectivity. This example shows how fisheries strictly targeting a high quality resource with selective fishing techniques can be quite productive even at high levels of effort, but also that they are progressively lead to broaden their species range (sooner or later at the expense of the most vulnerable, often large-sized, species) while increasingly using less selective gears.

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1. Introduction

Lutjanidae and Serranidae, sometimes considered jointly as a “snapper–grouper complex” (Coleman et

* Corresponding author. Tel.: +33 2 98 22 45 16;
fax: +33 2 98 22 45 14.

E-mail address: gobert@ird.fr (B. Gobert).

al., 1999), are keystone species in coral reef ecosystems (Parrish, 1987) and major resources for tropical fisheries. In the Caribbean, they are exploited (a) by industrial or semi-industrial line fisheries targeting a few species for local or export markets (Claro et al., 2001; Contreras et al., 1996; Mendoza and Larez, 1996), (b) by small-scale fisheries intensively exploiting the whole reef fish community with non-selective gears like traps or nets (Gobert, 2000; Kimmel and Appeldoorn, 1992; Luckhurst, 1996; Matos-Caraballo, 1997; Munro, 1983), and (c) by small-scale fisheries directed on them with moderate or low fishing pressure, being both selective (handlines) and much less active than export-oriented conch or lobster fisheries. Unlike the first two categories, little is known about this latter form of exploitation, in spite of a few published studies (e.g. Auil et al., 1999; Koslow et al., 1994; Smith, 1988). This paper presents an analysis of such a fishery located on the Caribbean coast of Honduras.

The Bay Islands archipelago is made of three main islands extending over 130 km, about 50 km from the continent (Fig. 1). Whereas Utila lies on the continental shelf, Roatán and Guanaja are the emerged parts of two submarine platforms separated by depths greater than 400 m. Coral reefs are found all around the islands, but

lagoons are narrow and the development of true barrier reefs is limited by the steepness of outer slopes. The archipelago has a population of about 48,000 people whose main activity is fishing. A fleet of 334 semi-industrial boats (in 1998) is based in Roatán but fishes exclusively on the eastern part of the Honduran EEZ, without interacting with the artisanal fleets of the Bay Islands. There has never been any significant public policy of fishery development (loans, subsidies, infrastructures) or management (boat registration, catch or effort limitations) for the Bay Islands local fishery, which was unregulated so far.

2. Materials and methods

As part of an integrated coastal management project (Proyecto Manejo Ambiental de las Islas de la Bahía), a 2-year monitoring and sampling protocol was applied on the landing sites in 1999 and 2000 (Berthou et al., 2001). Data collection included an initial frame survey (identification of fishermen communities, fleet census) and a 2-year monitoring phase. The monitoring was based on a monthly census of active boats, a daily record of effort, gear and catch over a sample of boats in

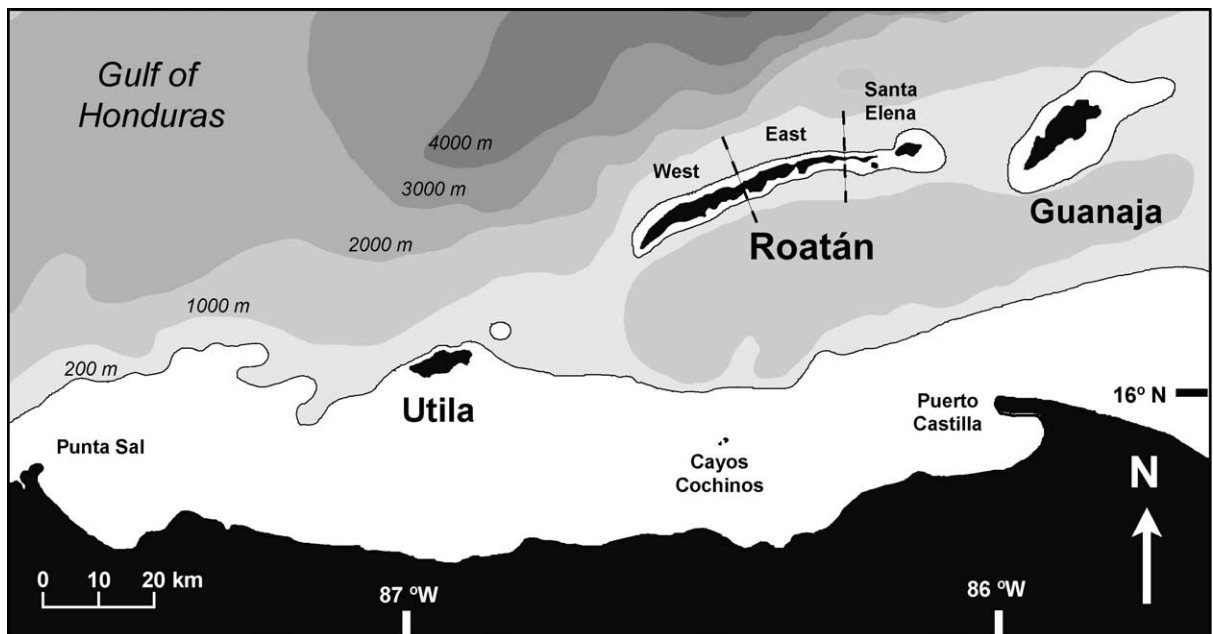


Fig. 1. Map of the area.

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