



FORCE Policy Brief #2 for Caribbean Reef Management

Building a Sustainable yellowtail snapper fishery on Caribbean coral reefs

The issue

Grouper and snapper are top predators that are important components of Caribbean fisheries and part of the culinary heritage of the region. Unfortunately, the majority of snapper and grouper species are highly vulnerable to overfishing, due to slow growth rates and late maturity, in addition to forming predictable spawning aggregations to reproduce. Targeting these spawning sites has reduced their reproductive capacity and been a principal cause for the collapse of populations of Caribbean species such as the Nassau grouper (*Epinephelus striatus*) and the Cubera snapper (*Lutjanus cyanopterus*) throughout the region.

As traditional grouper and snapper fisheries decline, fishers increasingly switch to target alternative reef species, often deploying unselective fishing methods such as nets and traps to increase catch volume as a trade-off against lower catch quality and poorer market value.



Photo: George

Shifting to mixed species fisheries on coral reefs presents complex challenges as each species may respond differently to management interventions. In addition many smaller coral reef species such as parrotfish play essential ecological functions as parrotfish are essential grazers of algae, preventing reefs being overgrown by algae.

Identifying suitable fish species for exploitation and developing effective management are critical goals for coral reef managers. Here we provide evidence that the yellowtail snapper (*Ocyurus chrysurus*) is a good candidate for a species specific management policy to underpin the development of sustainable fisheries, particularly in the Western Caribbean.

The evidence

Life History Traits

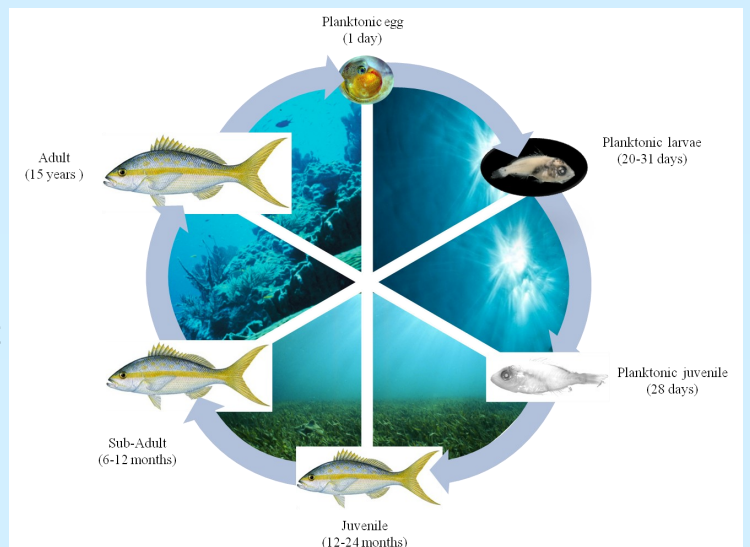
Yellowtail snapper has life history traits advantageous to being more resilient to fishing pressure in contrast with other snapper and grouper. These traits include a relatively fast growth rate, sexually maturity at around two years or 25cm, year round reproduction and an omnivorous diet that includes plankton.

Distribution

Found across the wider Caribbean, yellowtail snapper are one of the most important components of local fisheries both by weight and value in the Western and Southwestern Caribbean. As adults yellowtail form loose shoals in surface waters near the drop off on coral reefs and are easy to catch using hook and lines which is a highly selective method with little bycatch. In the Western Caribbean, genetic studies suggest that yellowtail snapper form a meta-population with large levels of mixing, but local recruitment is also relatively high. At smaller scales, juveniles from seagrass beds are connected to adult grounds including on offshore reefs, across 10s of km, meaning local coastal protection is important for local fisheries.

Market Value

Yellowtail snapper with its white flesh and subtle flavor is a valuable fish species, comparable to other larger snapper or grouper. A staple of local western Caribbean cuisine it also has a strong market price in the United States where there is a price increase for larger individuals. This means there is an economic incentive for fishers to target larger individuals and leave smaller fish to grow.



The yellowtail snapper's life cycle and shifts in habitat use with growth and size.



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Response to management

Where management has been implemented, yellowtail snapper populations have responded well. For example no-take zones in the Florida Keys found an increase in population biomass of 15% after only 3 years whilst a minimum size and total allowable catch has ensured the fishery has consistently remained sustainable since reviews began in 2000.

Policy Options	Conservative		
	Most	Less	Least
Set minimum size for yellowtail snapper at 25 cm (12"), ¾ lb (350g)	X	X	X
Replace J hooks with circle hooks to reduce hooking mortality in juveniles	X	X	X
Collect yellowtail snapper as a discrete category in fisheries statistics	X	X	X
Prohibit unselective gears like traps and gill nets from coral reef fisheries	X	X	
Closed Season during peak reproductive months	X		
Protect Identified nursery areas in seagrass	X		

Frequently asked questions

We have limited resources for fisheries management why should I prioritize the management of yellowtail?

Ensuring a sustainable yellowtail snapper fishery could avert coral reef fisheries decline and fishers shifting to target other reef fish which are essential for ecosystem function. Stopping this slide in fisheries productivity can prevent more drastic fisheries restrictions in the future such as complete closures. A sustainable yellowtail fishery is a valuable renewable resource for coastal communities. Enabling fishers to target yellowtail snappers sustainably can provide employment whilst allowing the protection of critically endangered species such as the Goliath and Nassau groupers.



There is limited budget for data collection what type of fisheries data should be collected?

Developing a specific management plan for yellowtail snapper can be a sequential process, but it is important to establish regular monitoring of catch and effort levels. This can be best achieved by working with the fishers so they become part of the data collection process. Yellowtail fishers could be registered under a specific license to facilitate this process.



Are there tools available that can help collect and analyse fishing data?

Free tools such as www.ourfish.org are available to assist fisheries managers and local fishermen develop a fisher register, compile catch statistics and monitor fisheries infractions.

What research would help develop a sustainable fishery?

Monitoring how many fish are being taken out of a given area is fundamental to fisheries management. Collecting systematic data on fishing effort, location and catch composition is therefore essential to underpin good decision-making in fisheries and should be a priority for any research program.

Specifically for the yellowtail snapper, since this fish utilizes different habitats throughout their life cycle, from planktonic larvae through seagrass and mangroves as juveniles and on to coral reefs as adults, their populations may be connected across large distances. Defining these connections and identifying areas of critical habitat for yellowtail snapper can inform managers of the suitable spatial scale at which the fishery should be managed and also help local fishers identify exclusive or shared fish stocks across their fishing grounds.



Photos: George Stoyale & Steve Box

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