



Australian Government

Department of the Environment, Water, Heritage and the Arts

Marine and Tropical Sciences Research Facility Milestone Report, 1 March 2009

Program 8: Sustainable use and management of marine resources of the Great Barrier Reef

Project 4.8.3: Evaluation of the resiliency of key inter-reefal fish species

Project Leaders: Dr Colin Simpfendorfer, James Cook University (JCU)

Summary

This project is proceeding well and producing a large amount of life history information from the archived Effects of Line Fishing samples and data. During the current reporting period, both agreed milestones (article for the Fishing and Fisheries Newsletter, and completion of processing of biological samples for the family Serranidae) were achieved – all of the samples for the Family Serranidae have been processed and an article has been written for publication in the Fishing and Fisheries Newsletter. In addition to these milestones, work has progressed on several other aspects of the project. Firstly, a student has been engaged to develop yield per recruit analyses to assist in developing resilience indices for the ‘other species’ group of coral reef fish. Secondly, work continues towards publication of the analysis of the Lethrinidae and Lutjanidae (reported in earlier milestones) in the scientific literature. Thirdly, analysis of data from the Serranidae is ongoing for reporting in the June 2009 milestone. And finally, updated analyses of the catch data from the Coral Reef Fin Fish Fishery is underway, also for reporting in the June 2009 milestone.

Project Results

Description of the results achieved for this milestone

This project is proceeding well and is currently on track to report against all milestones on time. Specific milestones for this reporting period were:

1. Fishing and Fisheries Newsletter article

An article for the next Fishing and Fisheries Newsletter has been drafted. The draft newsletter artwork is attached.

2. Completion of processing of biological samples for the family Serranidae

The processing of biological samples from the Family Serranidae was completed in February 2009 and data computerised to enable its analysis. Table 1 shows a summary of the number of samples processed for this family. A total of 11,397 individuals from 29 species (including five priority species) were collected by the Effects of Line Fishing Project. From these, 6,205 otoliths and 3,522 reproductive samples have been

processed. The data from these samples is currently being analysed to provide biological information for a variety of species within the family.

Table 1: Numbers of biological samples processed for species of the Family Serranidae. Shaded rows indicate priority species identified.

Species	Number of animals caught	Otolithes with final age	Repro tissue (histology)
Bommie rock cod <i>Cephalopholis cyanostigma</i>	4,714	2,635	707
Black-tipped cod <i>Epinephelus fasciatus</i>	1,554	1,058	447
Speckle-finned cod <i>Epinephelus ongus</i>	1,153	865	656
Wire-netting cod <i>Epinephelus merra</i>	633		232
Flowery cod <i>Epinephelus fuscoguttatus</i>	577	420	342
Peacock cod <i>Cephalopholis argus</i>	505	233	93
Camouflage rock cod <i>Epinephelus polyphekadion</i>	480	346	299
Long-finned rock cod <i>Epinephelus quoyanus</i>	347	217	178
Coronation trout <i>Variola louti</i>	218	59	82
Trout cod <i>Epinephelus maculatus</i>	178	61	112
White-lined cod <i>Anyperodon leucogrammicus</i>	169	129	98
Flag-tail cod <i>Cephalopholis urodeta</i>	126		12
Blue Maori <i>Epinephelus cyanopodus</i>	121	45	93
Coral-trout cod <i>Cephalopholis miniata</i>	108	33	34
Lunartail trout <i>Variola albimarginata</i>	83	55	58
Black-spot cod <i>Epinephelus malabaricus</i>	70		4
Chocolate cod <i>Cephalopholis boenak</i>	60	19	25
Redmouth rockcod <i>Aethaloperca rogae</i>	52	10	5
Five spot cod <i>Epinephelus spilotoceps</i>	49		1
Dwarf spotted rockcod <i>Epinephelus merra</i>	43		5
Estuary cod <i>Epinephelus coioides</i>	28		2
Dot tail cod <i>Cephalopholis microprion</i>	25	20	19
Snubnose rockcod <i>Epinephelus macrospilus</i>	16		
Blacksaddle rockcod <i>Epinephelus howlandi</i>	16		1
Greasy rockcod <i>Epinephelus tauvina</i>	15		1
Six spotted rockcod <i>Cephalopholis sexmaculata</i>	14		6
Coral rockcod <i>Epinephelus corallicola</i>	13		6
Star-spotted rockcod <i>Epinephelus hexagonatus</i>	10		2
Tomato rockcod <i>Cephalopholis sonnerati</i>	6		1
Grand Total	11,397	6205	3522

Problems and Opportunities

No problems have been encountered during the period.

An opportunity has arisen to engage a Master of Science (Natural Resource Management) student on a short project to develop yield per recruit analyses for the species being studied as part of this project. These analyses will provide a key element of this project in relation to the measuring of resilience. This student will complete a project report by the middle of

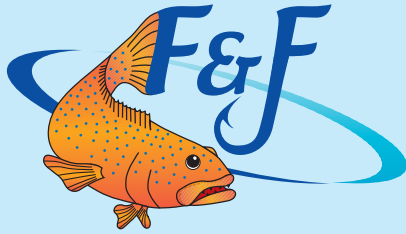
2009. This work will form the basis of a larger analysis to be undertaken during Year 4 of the MTSRF Program.

Communications, Major Activities and Events – During the milestone reporting period

A draft of an article for inclusion in the Fishing and Fisheries Newsletter has been written and will appear in the next issue.

Communications, Major Activities and Events – During the next milestone reporting period

Presentation entitled 'Measuring the resilience of coral reef fish using biological data from the Effects of Line Fishing Project' to be given at the third Annual Conference of the MTSRF in late April 2009.



Cod: not just a hungry fish

Amos Mapleston

People familiar with fish of the Great Barrier Reef will be familiar with the group of fish which include cods, rock cods and groper. All these fish belong in the same family, Serranidae. Within the GBR there are around 40 different species of cods or groper. This includes species such as the large Queensland groper which grow to 270 cm and 400 kg and other species such as the small dot-tailed rock cod which only grows to around 25 cm. Because of the diversity of these species, and their eagerness to take a bait, a day of fishing on the reef is usually not complete without catching at least one of these fish. Some cod are a welcome catch and other smaller species are not so welcome when they take baits intended for other larger fish. These species are therefore an important part of the catch of fish-ers on the GBR. The prevalence and variety of these fish means they are likely to also be important for the healthy functioning of reef ecosystems.



During the long run- ning Effects of Line Fishing project, a number of samples were collected from a range of cod species which were caught using hook and line gear. With funding from the Marine and Tropical Sciences Research Facility these samples have now been processed and the information has been included in a database. Over the next 12 months researchers will be analysing these data to provide more information about the life history of a number of cod species.

The cod species included in the analysis range from those which are commonly caught, such as wire netting and footballer cod to rarely encountered species like the cattedog or blue Maori cod. Information which will be of particular interest will include; how long these fish live, how fast they grow and when they are mature. Information which

In this issue:

Hungry Cods

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has already been collected has provided some interesting facts. Some of the smaller species such as Bommie rock cod are very long lived, with some fish living as long as 46 years but only growing to about 30cm. Other larger species such as cattedog cod appear to grow much faster. Because of lack of life history information, such size at maturity and the fact there may be big differences between species it is important to collect as much information as possible for each species.

This information will be important for fisheries managers and will be of some interest to fishermen who value this kind of information. Because of a lack of reliable data many of these species are grouped together in fisheries regulations. It is likely that each of these species is unique and consideration needs to be given to this before decisions are made about the future management of these species.

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