

# BLUE-SPOT TROUT the! chameleon of! trout!

Of all the coral trout species found on the Great Barrier Reef, the blue-spot (*Plectropomus laevis*) is the largest, but possibly the most easily misidentified. Recent changes to the management regulations in the Coral Reef Fin Fish Fishery Management Plan have different regulations for this species from those applicable to other coral trout species on the basis of its unique biology. Here we highlight some of the differences between blue-spot and other coral trout species that explain why such measures are appropriate.



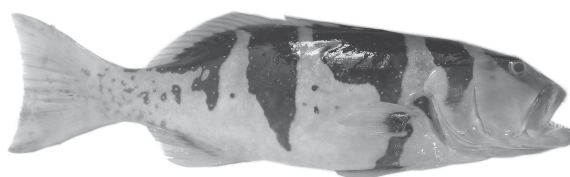
By Gary Carlos

CRC Reef F&F research into the growth of coral trout has shown that the blue-spot trout grow more quickly than other trout species. This research has shown that although the maximum age of blue-spot is around the same as that of the common coral trout (*P. leopardus*) (about 15 years), blue-spot can grow almost twice as large. As with all reef fish, however, the actual growth between individuals is variable, with some fish reaching 80cm in 6 years while others can take 10 years.

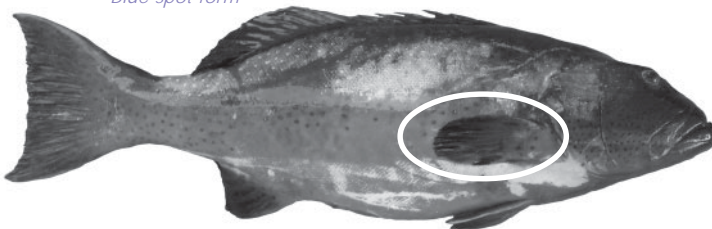
Other research from the F&F Project demonstrates that blue-spot trout are one of the many species of tropical reef fish which undergo a female to male sex change during their lifetime. This characteristic in combination with their rapid growth has important implications for management, especially minimum legal sizes. Unlike the common coral trout and the barred-cheek trout (*P. maculatus*), which are almost always sexually mature and have been able to spawn at least once before reaching their minimum legal size of 38cm, only a fraction of blue-spot trout under this size are mature females, and none have changed sex to become males.

With the new minimum legal size for blue-spot trout now set at 50cm, a greater proportion of spawning females are protected from capture, although at this size still none would have made the sex change to male (see graph on next page). A new maximum legal size of 80cm for blue-spot trout has been introduced by the Queensland Department of Primary Industries to provide protection for male fish.

Blue-spot trout  
Chinese footballer form



Blue-spot form



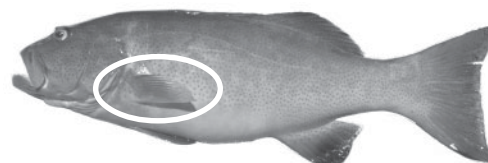
These changes in minimum legal size and introduction of a maximum size for blue-spot trout will afford greater protection for this species. The effectiveness of these regulations are highly reliant on fishers being able to identify blue-spot from other coral trout species.

Blue-spot trout can be a little difficult to recognise from other coral trout species due to a couple of characteristics. Firstly, they appear in two strikingly different colour forms. The more common "blue-spot" form, and the striking "Chinese footballer" form. This has led to confusion as some fishers think they are actually different species when they aren't. Secondly, the blue-spot form of the species can be difficult to identify from common coral trout in some instances.

The blue-spot form looks somewhat similar to common coral trout, having blue spots over a generally brown, black or reddish body. While the spots on blue-spot trout are usually larger and darker than on common coral trout, this is highly variable and using this characteristic alone can result in misidentification. The most reliable method of identifying blue-spot trout is by their dark pectoral fins (fins on the side of the fishes body) compared to the lighter, more transparent pectoral fins of other coral trout species and a somewhat more angular head.

*Blue-spot trout (below left) is sometimes confused with common coral trout (below), but is actually a different species. The pectoral fin (circled) is the most reliable way to detect the differences between these species. In contrast, the Chinese footballer form (left) is often mistakenly thought to be a different species to blue-spot trout when they are actually the same species (*P. laevis*).*

Common coral trout



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inside ...

Eastern Torres Strait  
Islander commercial  
fishing research

CRC Torres Strait -  
F&F research

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# PROJECT UPDATE

## a word from the project leader

Over the past few months the F&F team have been out on the road speaking to commercial and recreational fishers from Mackay to Port Douglas as part of two FRDC funded research projects. These projects, which were introduced in our last couple of Newsletters, are investigating multi-species targeting behaviour and post release survival of reef fish in the reef line fishery.

With all the changes that have recently occurred in the fishery, it has been a great opportunity for us to catch up with a wide range of fishers along the coast, who have expressed their views on issues from fishing practices to management, providing us with valuable information for the projects.

At the same time, we have been gaining a wealth of information on the recreational sector through a State-wide telephone survey, which will soon be completed.

I would like to thank you all for your continued support and assistance with our research, particularly considering the management restructuring that you all have been facing.

Finally, I would like to welcome Carla and Aaron to the F&F team. Their input of skill and experience will be welcome additions to our team. I also wish Annabel, Renae and Amanda all the best with their latest additions.

## NEW STAFF



Carla Chen



Aaron Ballagh

The F&F team continues to expand and broaden its boundaries with new staff starting in the new year with the team.

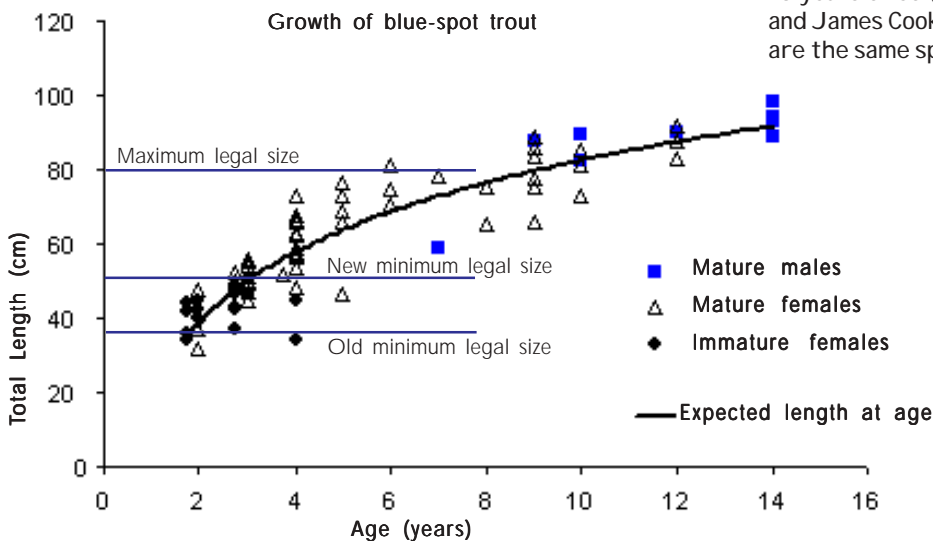
Carla Chen brings to the team a wealth of experience in statistics. This important field of science is fundamental in the analysis of any research data, and Carla's skills will be most welcome to the team. She will be concentrating initially on data from the Torres Strait Spanish mackerel fishery with the aim to providing a detailed assessment of this fishery.

The team also welcomed Aaron Ballagh at the start of the year. Aaron will provide general research assistance to the Effects of Line Fishing experiment and has already been in the thick of it participating in recent catch surveys of ELF experimental reefs and helping out in the lab. His assistance with processing biological samples from the ELF experiment and other research work will be invaluable to the ongoing progress of our research.

### From page 1

The Chinese footballer form, a white fish with black saddles and brilliant yellow fins and tail, looks so different to the blue-spot colouration that these have often been mistaken for a different species. The two colour forms are also often referred to by

different common names (the Chinese footballer and the blue-spot or oceanic trout, respectively) adding to the confusion. However, observations of individuals changing colour forms, especially after capture, coupled with research over the past 15 years or so (including recent genetic research by CRC Reef and James Cook University) have shown these two colour forms are the same species.



The graph above shows that the old minimum legal size for blue-spot trout protected very few sexually mature female fish (open triangles on graph) that may have spawned prior to reaching legal size. The new minimum legal size of 50cm will allow more individual fish to mature to a spawning female, but very few will change sex to male (squares on graph).

You are more likely to catch a blue-spot trout on outer reefs and shoals, whereas common coral trout tend to have a fairly wide distribution over the Great Barrier Reef, and a third species the barred-cheek trout tend to be found around inner reefs and islands. However, again, this distribution can be variable and is not a good indication of the species.

The new management regulations for blue-spot trout (including the Chinese footballer form) squarely puts an obligation on fishers to be able to correctly identify this species. Biological information about these important reef predator points to why these management changes were appropriate for long term sustainability of this species and we hope this article helps reduce some of the mix-up's surrounding it's identification.

# a look at commercial fishing by Eastern Torres Strait Islanders

# TORRES STRAIT

The commercial harvest of reef fish in the Eastern Torres Strait has raised concerns for the sustainability of reef fish stocks in the region. A general lack of information on the fish and fishery in Torres Strait highlights an urgent need to provide Torres Strait Islanders, managers and other stakeholders with basic information required to manage the fishery sustainably. In 2003, CRC Reef researchers from the Fishing & Fisheries team, with support from the Australian Fisheries Management Authority (AFMA), investigated the commercial catch of reef fish by Torres Strait Islanders.



by Cameron Murchie



and Gavin Begg

Islander fishers have sold reef fish (and other commercial species) to community freezers on various islands in the Eastern Torres Strait for many years. Records of these sales are the best source of historical catch and effort information for the Islander commercial sector of the fishery.

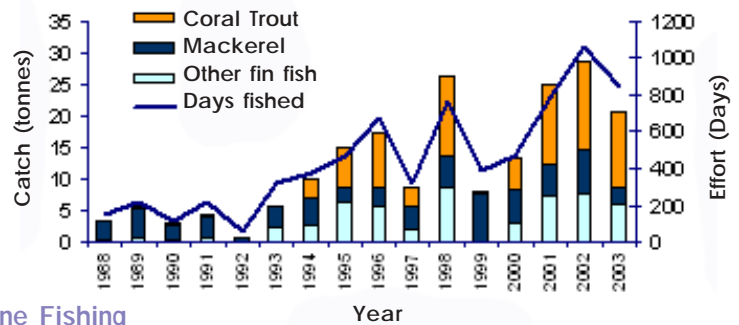
F&F researchers visited Mer (Murray), Erub (Darnley) and Masig (Yorke) Island Communities in 2003 and with the co-operation of Island Councils and freezer managers collected over 4000 pages of catch records dating back to 1988.

Two types of records were collected; individual catch records (purchases from individual fishers) and transshipment records (sale of fish from freezer operators to mainland wholesalers). All of the information presented here is based on individual catch records because these records contained more information about the different types of fish caught and effort than the transshipment records.

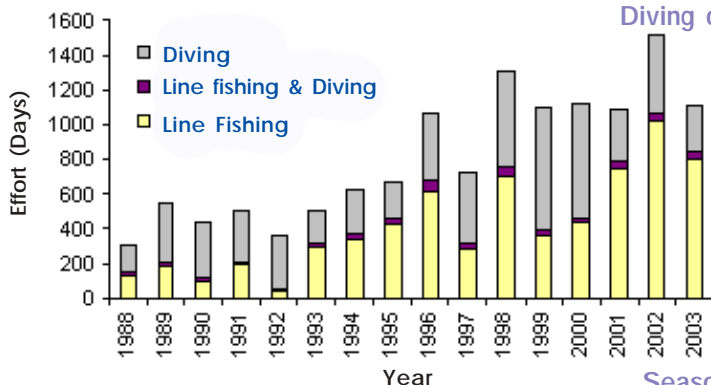
## Catch & Effort

A total of 18 different fin fish species or species groups were recorded to have been caught by commercial Islander fishers.

Total catch and effort have generally followed a similar pattern over the years (see graph right). This indicates that catch rates have remained stable. Increases in total catch and effort are more likely to be due to the fact that more records of catch have been kept in recent years rather than an actual increase in catch and effort by Islanders.



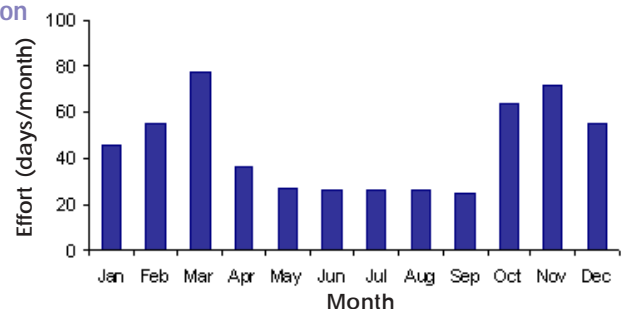
## Diving or Line Fishing



Data collected from freezer operators provided information on sales of lobster and sea cucumber (beche de mer), as well as fin fish. A fisher that sold lobster or sea cucumber were assumed to have caught these by diving, whereas sales of fin fish indicated that the fisher had been line fishing.

Both line fishing and diving are important to Eastern Torres Strait Islanders, but line fishing seems a little more important as there is generally more line fishing days than days spent diving (see graph left). However, individual communities tended to focus more on diving, while others did more line fishing.

## Seasonal Variation



The strong prevailing SE (sager) winds between April and September have an obvious impact on the amount of Islander commercial fishing during this period. In fact, effort between October to March is about double that of April to September (see graph right).

Another interesting point to come out of this research is that a small number of Torres Strait Islander commercial fishers go fishing often, while most only go fishing occasionally. In fact 25% of fishers account for more than 50% of the total fishing effort by Islanders.

While the information from this research represents the most comprehensive evaluation of Torres Strait Islander commercial fishing in the Eastern islands, there are still considerable gaps for various reasons. This means that stakeholders must be cautious about how they interpret and use this information.

Despite the limitations, the historical catch and effort information on the commercial Islander reef fishery in the Eastern Torres Strait collated by F&F researchers will now allow all stakeholders, in particular Torres Strait Islanders to approach future management decisions for Torres Strait from a more informed basis. It will also form the basis of another F&F project on the evaluation of the ETS Reef Line Fishery (starting in 2004) funded by the new CRC Torres Strait Research Program and will gather information on both the Islander and non-Islander commercial sectors of the fishery.

F&F researchers have recently visited the participating Torres Strait Communities to present these results and will shortly produce a final report from this work. They would like to thank the Island Communities & Community Councils of Mer, Erub & Masig Islands, the Island Community Fisher Representatives and Island Community freezer managers and staff for their cooperation and comments on this project.

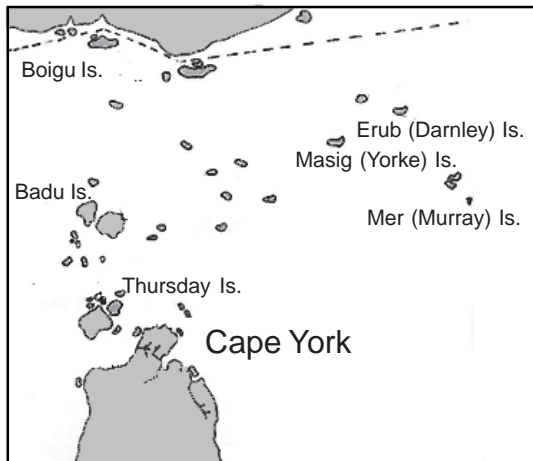


# CRC TORRES STRAIT

A new research program to investigate marine resources of the Torres Strait has begun within the CRC Reef Research Centre. To be known as CRC Torres Strait, this exciting research program has enabled F&F researchers to further broaden the focus of their research to include the unique fisheries of the Torres Strait with four new research projects for F&F included in the CRC Torres Strait Program.

CRC Torres Strait is a partnership between a number of key Torres Strait stakeholder groups and research agencies including: the Torres Strait Regional Authority, Australian Fisheries Management Authority, Australian Institute of Marine Science, CRC Reef Research Centre, CSIRO Marine Research, Geoscience Australia, James Cook University, National Oceans Office and Queensland Department of Primary Industries.

These stakeholders have identified a number of areas of importance to them with regard to the marine resources in the Torres Strait. Their guidance has helped shape the areas of research to be conducted for CRC Torres Strait and ensured that the research will be relevant and focused on matters of importance to Torres Strait. Fisheries is one of the areas of importance to them.



The F&F team have already spent some time discussing research projects with stakeholder groups in Torres Strait and with their help have developed research projects that will provide Torres Strait Islanders, managers and other stakeholder groups with important information about fisheries in Torres Strait. This will enable these groups to approach future management decisions with key information that will aid them in their decision making.

The first F&F project within the CRC Torres Strait program will look at the Reef Line Fishery in the Torres Strait. Growing interest in commercial harvest of reef fish in eastern Torres Strait (commercial line fishing is prohibited in the Western Torres Strait) has raised concerns for the sustainability of reef fish stocks.

However, there is very little information about the fish in this region or the fishery itself. F&F research will gather information about the fishery including both non-Islander and Islander commercial fishing, as well as, non-commercial fishing by



Gavin Begg  
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Sustainable Harvest of  
Marine Resources.  
CRC Torres Strait

New CRC  
Program  
broadens F&F  
focus

Islanders for subsistence. They will also be sampling key fish species of commercial importance from Torres Strait to determine if their biology differs from those of the east coast of Queensland.

Mackerel fishing is another important fishery in Torres Strait and F&F researchers will be investigating a number of aspects of this fishery, this makes up the second major F&F research project. A third project aims to investigate the effects of different harvest strategies in the reef line fishery in Eastern Torres Strait. This will take into account differences in management arrangements for commercial (both Islander and non-Islander) and subsistence fishing by Islanders in Torres Strait and how this may affect fish stocks. The fourth research project will be working closely with Islanders throughout Torres Strait to develop collaborative community-based management perspectives for Islander fishing of sea cucumbers (beche de mer).

In a show of confidence in the abilities of the F&F team, and in particular the team leader Gavin Begg, Gavin has been appointed Project Leader of the largest research project within the CRC Torres Strait Program: Sustainable Harvest of Marine Resources. His management skills will be of great benefit to the project.



*A map of the Torres Strait. Marine resources in this region are essential to Torres Strait Islanders. Sustainable management of marine resources in the area is set to benefit from new research being undertaken by the F&F team within the CRC Torres Strait Program.*



*One of the pristine beaches in Torres Strait. It is essential that Torres Strait Islanders, managers and other stakeholders have information on the marine environment in Torres Strait to ensure that the region is managed sustainably for the future.*

