

FISHERIES

SURVIVING
THE RIDE

Keeping released
fish alive



CRC Reef Staff
Amos Mapleston, Gavin Begg & Dave Welch

Increasing numbers of reef fish are being returned to the water, either because of minimum legal size or bag-limit legislation, or the move towards an ethos of catch-and-release angling. Fishery managers, as well as commercial, recreational and charter fishers, are keen to know the fate of released fish and how to improve their chance of survival. To this end a National Strategy for the survival of released line-caught fish has been developed and funded by the Fisheries Research and Development Corporation, with the support of the Australian National Sportfishing Association (ANSA) and Recfish Australia. As part of the National Strategy, researchers from AFFS Fisheries & Aquaculture (Department of Primary Industries) and the CRC Reef Research Centre, in collaboration with InfoFish, have begun a four-year project investigating the impacts of line fishing on the survival of some important Queensland reef fish species.

The research project will focus on the effects of capture depth, release treatment, hook characteristics and handling techniques on the survival of released fish of a suite of reef species. This will include coral trout, red throat emperor, spangled emperor, red emperor and small and large mouth nannygai. The results of this work will link with the National Strategy to provide a comprehensive assessment of the survival of line-caught fish around Australia.

As many fishers know, capture depth can have a very significant effect on reef fish. Fish caught in deep water often show symptoms of barotrauma, caused by gas in the fish's body expanding as it is brought to the surface. This in turn can cause a range of internal injuries which are often not immediately noticeable to the angler. The deeper the fish is caught, the more the gas expands and the greater the amount of damage that can occur.

Anglers may not be surprised that hook type and size can also have a major impact on the survival of released fish. Hook size can influence the size of fish caught, and potentially reduce the number of undersize fish caught. Other studies have shown that styles of hook can affect where the hook lodges in the mouth, and whether or not the hook will be swallowed. As gut-hooked fish are probably less likely to survive than those hooked in the jaw, changes in hook

size and shape can influence hooking location and therefore survival.

There will be two parts to the research conducted by the QDPI/CRC Reef team. The first part will examine the short-term survival of released fish over three days after release. Researchers will catch fish from a range of depths using a variety of gear and record the condition of the fish, hook location and degree of barotrauma. The released fish will then either be vented (by using a hollow needle to release air from the swim bladder), released unvented or re-compressed by forcing them to the bottom using a weighted shot-line. The fish will be held in video-monitored cages for three days to assess their survival.

The second part of the research will involve collecting information about the long-term survival of released fish from a tag-release study run through the well established Suntag program. Anglers involved in this work will need to be willing not only to tag fish but to record additional information about hook location, degree of barotrauma and release technique (venting

or shot-line). These anglers will be provided with tagging kits and data sheets, and workshops will be run by project staff to help standardise techniques and data collection procedures. It is hoped that a number of dedicated tagging groups can be established in each of the major centres along the east coast of Queensland to help out with this important part of the research.



A small stripey bass showing signs of barotrauma with the swim bladder protruding out of the mouth. Its chance of surviving once released depends on many factors including the extent of barotrauma. New QDPI/CRC Reef research will provide information on what effects survival of released fish and the best handling techniques to enhance survival of released fish.

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issue no. 23

inside

Recreational Fishing
Surveys

Estuary Project
Update

Multi-species
targeting Project

F&F Team News

editor:
annabel jones

phone: 07-47816365
fax: 07-47814099
email:
annabel.jones@jcu.edu.au

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located at
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PROJECT UPDATE

a word from the project leader

It is hard to believe another year is just about upon us, with the New Year looking to be just as productive for the F&F team.

Several studies are coming to completion, while a range of new and innovative projects are beginning. Of note is that the FRDC funded project National Strategy for Increasing the Survival of Released Line-Caught Tropical Fish Species has commenced, and will continue for the next four years. This is a collaborative project with QDPI Southern Fisheries Centre, InfoFish and ANSA, which will aim to estimate the survival of released line-caught reef fish, while identifying the best methods for handling these fish to maximise their chance of survival when released. F&F researchers Amos Mapleston and newly appointed David Welch will be working on this project, and will be looking for the support of recreational anglers to assist them.

Speaking of new staff, I am pleased to advise that we have also recruited one of our soon-to-be recent PhD graduates Ashley Williams. Ashley will be working on a variety of projects, but in particular the ELF Experiment and our upcoming Torres Strait reef line project. Ash and Dave bring much experience to our team, and are welcome additions to our expanding team and research activities. On a sad note though, we will be losing researcher, Annelise Wiebkin, to the lure of a PhD in Adelaide next year. Good Luck Annelise.



Gavin Begg

A number of reports will soon be completed and available, including the ELF Experiment, Measurement Uncertainty and Post-Capture Changes in Sizes of Coral Trout, and Islander Commercial Catch History in the Eastern Torres Strait Reef Line Fishery. We are also working on finishing a project for the National Oceans Office describing the key marine fish species in the Northern Planning Area, which covers from the Arafura Sea, through the Gulf of Carpentaria and across to the Torres Strait, as well as the FRDC funded Red Throat Emperor project. The annual ELF catch surveys were completed for another year, and two of our students, Sara Busilacchi and Aaron Ballagh successfully completed their degrees.

Finally, I wish you all a great festive season and once more thank you on behalf of the F&F team for your continued support, and I look forward to working with you in the New Year.

RECREATIONAL FISHING!

What makes it great?



By Steve Sutton

Recreational fishing is a way of life for many Queenslanders, whether it is to catch a feed, test their angling skills with catch-and-release fishing, enjoying family, friends and the outdoors, or relaxing. A lot of emphasis is placed on economic benefits of recreational fishing for local communities, through tourism and sales of boats and fishing equipment, but the real value in recreational fishing for many people lies in the social elements of fishing rather than the economic. The question is then, how do you put a value on the enjoyment of fishing? A new study by CRC Reef researchers, in a joint project with James Cook University, will take a closer look at the social values surrounding recreational fishing in Queensland, the reasons why people go fishing and the benefits they receive from their fishing activity. This will be a first for Queensland as it will focus on understanding the social characteristics of recreational anglers on a State-wide basis.

Previous surveys of recreational fishers conducted by the Queensland Government in recent years collected mainly catch and effort data, but little information on why people go fishing. The information collected by this new research will give fisheries managers and anglers themselves a better idea of what recreational fishing means to the people who participate in it, how anglers feel recreational fisheries should be managed, and how the recreational fishing community might be affected by future fishery management decisions. This information will be very helpful for making future management decisions that affect recreational fishers.



Recreational fishing is seen as a favourite pastime for many Queenslanders. But can we put a value on a day out fishing that can be usefully considered in management decision making?

This new project is being conducted with the support and cooperation of Sunfish, the Queensland Fisheries Service, and the Great Barrier Reef Marine Park Authority. All three groups will be involved in the development of the angler questionnaires to ensure that the information collected is relevant and useful to both management agencies and angler stakeholder groups. CRC Reef researchers will be contacting 3000 randomly selected

anglers throughout Queensland by phone and ask them a set of simple questions. The survey will take no more than about 15 minutes and participation will be totally voluntary. Confidentiality will be ensured, and no names will be collected or stored with the information from these surveys. CRC Reef researchers will begin contacting anglers by telephone between February and May 2004.

This project has the potential to be of great benefit to anglers, but it can't succeed without the support of the angling community. Over the next few months we will begin a media campaign to inform anglers of the purpose and potential

benefits of this research and encourage them to participate in the survey if contacted by researchers.

For more information on this project call Steve Sutton on (07) 4781 5510 or email him on stephen.sutton@jcu.edu.au. Stay tuned to this newsletter for more information as we get this project up and running over the next few months.





By Renae Tobin

Research Update | ESTUARY FISHING PROJECT!

The Estuary fishing project has been progressing well over the past couple of months with some major milestones being completed. While the focus of this research is now moving to analysis, it is timely that I provide a bit of an update on where the project is up to.

This project is examining competition between recreational and commercial fishing sectors over access to common fisheries resources in north Queensland estuaries (between Hinchinbrook and Cape Upstart). The long-term closures of selected estuaries to commercial gillnet fishing often stimulates discussion about what these areas provide for the recreational fishing sector. Opinions about whether recreational catch is "better" (in terms of numbers and size of fish) in estuaries closed to commercial fishing are mixed, and there are no data to support any anecdotal claims.

To examine such claims, I have been collecting recreational catch data in estuaries open and closed to commercial gillnet fishing through a two-year logbook program and structured fishery-independent sampling.

In addition, last year I interviewed 400 recreational anglers, asking whether they thought their catches differed between 'open' and 'closed' estuaries; and their opinion about conflict between sectors in local estuaries. This year I have been extremely busy extending these interviews to estuarine charter operators and commercial gillnet fishers. I have just completed my last interview, and would like to thank all those who participated by giving me their opinion. I greatly appreciate you giving me your time to have a chat! These questionnaires provided a unique opportunity to examine the opinions of each user group involved in this competition issue.

Now that I have finally finished collecting information I am collating all of my data and should have some results for you fairly soon. Please be patient though, with all of those interviews and countless logbooks, there is a lot of data to analyse!

This project will provide impartial information about whether there are significant benefits of closed areas for competing users. By teasing apart some of the fact and fiction surrounding sector-specific closures of estuaries, the project will assist management decisions by providing independent information about this highly-charged issue.

If you have any questions about the project, or know any charter or commercial fishers who would like to do a questionnaire but missed out, please call Renae at CRC Reef on 07 4781 5196, or e-mail renae.tobin@jcu.edu.au



Renae interviews a recreational angler. Participation by anglers in these interviews have provided good information on the feelings of anglers on sharing of resources between recreational and commercial fishers. Photo courtesy the Ayr Advocate

From Page 1

The information collected in this project will be extremely valuable in fisheries assessments that are becoming increasingly important for management of Queensland's fisheries. There is also a need to test some of the alternative hook shapes available to determine whether a change in hook size or shape can alter the incidence of catching undersize fish. The techniques used to relieve the effects of barotrauma have not been tested on these tropical reef species and although are currently thought to give fish a better chance of survival it is not known to what extent they work and for what species they are effective. The results from this research will be used to develop a best practice for handling fish, which will be promoted through the 'Gently Does It' publicity campaign (another component of the National Strategy) to enhance the survival of released fish and improve the fishery for everyone.



A red throat emperor ready for release after being tagged. Recapture of tagged fish will provide information on the long-term survival of released line-caught reef fish. We are seeking anglers throughout Queensland to be involved with this project by tagging and releasing a variety of reef fish species such as red throat emperor. Photo courtesy QDPI Southern Fisheries



A floating holding 'sock' will be used to hold released fish for approximately three days and video cameras used to monitor their survival.

Photo courtesy QDPI Southern Fisheries

We are very keen to establish contact with anglers who target any of the species mentioned above and may be willing to participate in the project. We recognise that the success of this project, which will be of direct benefit to all stakeholders, will depend very heavily on the continuing assistance of fishers throughout Queensland.

For more information on this project, and how you can be involved, please contact either: Amos Mapleston at the CRC Reef Research Centre, James Cook University, Townsville, Qld 4811, phone 07 47815247, e-mail amos.mapleston@jcu.edu.au or Mark McLennan at the Southern Fisheries Centre, Deception Bay, Qld 4508, phone 07 3817 9596, e-mail Mark.McLennan@dpi.qld.gov.au.

MULTI-SPECIES TARGETING


Questionnaires to help research



By Barry Goldman, Gavin Begg & Steve Sutton

Fishing for a range of fish species, termed multi-species targeting, is fairly unique in world commercial fisheries and presents a number of challenges to Queensland's fisheries managers. Multi-species targeting needs to be considered when formulating management strategies so that the flexibility in fishing operations is taken into account, and that all targeted species are adequately protected. Little is known, however, about the effects of this target-switching behaviour on either the patterns of fishing by operators or the sustainability of the fish stocks upon which the fishery depends. The F&F team has been funded by the Fisheries Research and Development Corporation to investigate multi-species targeting in the Queensland reef line fishery and examine its effects on the distribution of effort and fish stocks (see Edition 20 of the F&F Newsletter).

As part of this project researchers from the F&F team wish to interview a broad range of commercial reef line fishers along the Queensland coast to document their individual fishing behaviours, motivations and decision making processes to better understand the effects of multi-species targeting. These interviews are planned for late 2003- early 2004 and we will be contacting a number of fishers shortly. Participation will be voluntary, and all information provided to the project will remain completely confidential.

This project provides an opportunity for fishers to directly contribute towards our understanding of how the fishery works and how fishers think and behave. This information is essential if we are to provide realistic and acceptable projections about the reef line fishing industry. If you would like any more information about this project please contact Gavin Begg on 07 47815287, gavin.begg@jcu.edu.au; Barry Goldman on 07 47816094, barry.goldman@jcu.edu.au; or Steve Sutton on 07 47815510, Stephen.sutton@jcu.edu.au. 

THE F&F TEAM

New Staff



It is with much pleasure that the F&F team welcome back an old team member who has recently taken up a new position with us. Some of you may remember Dave Welch who was with us for many years. He has recently been appointed as a Research Fellow with the team to take over the position vacated by Andrew Tobin.

Since leaving the F&F team Dave has worked in fisheries science overseas and more recently with QDPI Northern Fisheries and at the School of Marine Biology at James Cook University. The experience he has gained in his previous positions will be a considerable asset in his new position at F&F.

Dave will initially be working on the new post-release survival of line-caught fish project (see the story on the front page for more information on this project), but will have input into a variety of other projects as well. We welcome Dave back to the F&F team and you will be sure to see more of him around the traps in the near future.

F&F host German traineeship student

The F&F team is pleased to be hosting a traineeship student from Germany for three months. Through our affiliations with James Cook University who have facilitated the visit, Annekathrin Reuschel from Germany is working with the F&F team for three months to gain further experience for her formal qualifications.

Anneka brings with her a wealth of skills in GIS and mapping that have been put to good use in the F&F team mapping movements of boats between reefs. This information will help refine information already used in our computer simulation called ELFSim. ELFSim is designed to, as closely as possible, simulate the Queensland reef line fishery and provide information on the potential effects of various management strategies on fish stocks in the future. The more realistic the information used in it is, the better the information coming out of the model will be.



Annelise Wiebkin has been one of our keenest researchers in the F&F team for the past two years. She has been diligently working away in the laboratory processing fish gonads, out on catch surveys and generally helping out wherever possible throughout this time. So it is with great regret that we are now to lose Annelise to cooler climes. Annelise has decided to further her academic career by taking up a PhD in Adelaide.

While she is moving away from studying fish, she is remaining in the fisheries field, studying the diets of fairy penguins in South Australia and how this may impact on local fisheries. We wish Annelise all the best in her pursuits, and hope that her time at F&F will be of benefit to her in the upcoming years.

F&F says goodbye

The staff and students of the Fishing and Fisheries team would like to take this opportunity to thank you for your support over the past year and wish you a Merry Christmas and happy and healthy New Year