



Newsletter

Number 2 – April, 2003

Editorial

Although interest and awareness are growing in the conservation and management of reef fish spawning aggregations, there are still very few successes in protective management to speak of. This is particularly a concern in the Indo-Pacific, where, arguably, action is most urgently needed due to increased targeting of aggregations and limited attention to the problem of aggregation fishing. The solution lies not solely in focusing on the protection of spawning fish, or the sites at which aggregations form, but also in the general management of vulnerable reef fish resources, both during the aggregation, as well as in the non-aggregation, period.

Welcome to SCRFA's second Newsletter. These Newsletters cover work in progress, management implementation, news of SCRFA activities and other items that will hopefully be of general interest. We warmly welcome submissions of news items, information on recently published work and any other relevant material. Please submit to: scrfa@hkucc.hku.hk.

Yvonne Sadovy

News

I cannot help but start with some good news. At the recent ITMEMS2 (Second International Tropical Marine Ecosystems Management Symposium March 24-27, 2003) meeting in Manila, a Call for Action was adopted bringing attention to the need for a greater emphasis on and awareness of spawning aggregations and their conservation and management. The outputs and recommendations from the symposium, including the Call for Action, will be widely disseminated (e.g., IUCN, UNEP, WWF, the World Bank, donor agencies, etc.) and considered in the implementation of management programmes at local, national, regional and global levels. It will serve as an important basis for policy makers and as a guide to managers. The full text of the Call for Action is at the end of this Newsletter.

SCRFA activities

The SCRFA Methods Manual is now out and available on www.scrfa.org, our website, as a hard copy or in CD form. It covers all aspects of studying aggregations, from research to regular monitoring, using both fishery and fishery-independent data. It is intended as a reference manual from which more specialized protocols/guidelines can be developed according to individual needs and constraints. Please contact me if you would like to receive a copy by post.

As you can see (above), we finally have a logo. I never realized quite how much work goes into something as apparently simple as this. The SCRFA Board (*see website for biographies*) worked hard to

determine the most appropriate logo design that depicts what SCRFA is all about. As you can see the design shows a global aggregation perspective, associated with different lunar phases.

We continue with field surveys in the western Pacific, where aggregation information is particularly sparse, to amass our Global Database on fish spawning aggregations. We now have over 500 records. By the summer, the database will be searchable for summary data through the website, although the **precise site locations will not be publicly available to prevent undue attention.**

The SCRFA Board will be meeting on 15-16th May 2003 in San Diego. The meeting will review project progress, address funding issues, and discuss incorporating the Society. Please advise me if you wish us to include something on the agenda.

SCRFA Board Members: Michael Domeier (Chairman) PIER, Pat Colin (CRRF), Yvonne Sadovy (SCRFA), Martin Russell (GBRMPA), Brian Luckhurst (BG), Ken Lindeman (ED), Terry Donaldson (UOG). *Andy Cornish (HKU) keeps the Global Database.*

The SCRFA website will be updated again at the end of April with a range of new materials.

CARIBBEAN & WESTERN ATLANTIC

Bahamas

Mixed messages on aggregation protection are coming in from the Bahamas. From 1998-1999 to 2000-

2001 during the Nassau grouper spawning season, an area around High Cay, Andros Is, spawning aggregation was closed for approximately a week at full moon from November-January. In 1999-2001 there was similar protection given to one or more aggregations off Long Island but the closures were not always for the same sites each year. In October of 2002, it was announced that a seasonal closure for grouper was being considered, with months of closure to be decided (reported in last Newsletter) (www.scrfa.org/current/index.htm).

However, of the originally protected aggregations, only one is (apparently) now protected, because of a lack of government resources. Moreover, in this one case, protection is only voluntary. The proposed grouper closed season, although supported by the majority of fishers, did not, in the end, get government approval because the Bahamas government cabinet felt that there is insufficient data to support the closure. This is despite the fact that many aggregations of this species show declines; many aggregations, formerly numbering hundreds or thousands of fish are reported to have dwindled to a few tens of Nassau grouper in recent years (www.scrfa.org/edu/index.htm). Surveys in December 2002, for example, at three aggregations off Long Island showed that of 3 known sites, one could not be found, and the remaining two were being fished, one of them heavily. SCRFA has appealed, yet again, to the Bahamas government to consider protective measures.

The Bahamas Reef Environmental Education Foundation (BREEF - www.breef.org.) has teamed up with the Bahamas National Trust to try to

improve the situation. If you want to support aggregation protection for the Nassau grouper, please contact Mr. Michael Braynen within the next few weeks at: mbraynen@batelnet.bs.

It is critically important to get the message for aggregation protection out to the wider public. Dan Wagner, of Mother Ocean Foundation, and his team have done a nice job filming an unfished aggregation and interviewing fishermen on tape. For more information on the video and the work of Dan's group see www.ourmotherocean.org or contact Dan (fishydan@CFL.RR.COM). We will shortly preview a segment of the film on the SCRFA website.

Cayman Islands

At Little Cayman, in the Cayman Islands, a recently discovered (2001) aggregation was surveyed during both the January/February full moon periods using video and underwater visual census in a collaboration between the Cayman Islands Department of the Environment (DOE) and Reef Environmental Education Foundation (REEF) (www.reef.org/). Before fishing started, the maximum number estimated to be present (at one time) in the aggregation was 5,200 fish while 1,934 were caught over the following ten days. In 2001, about 2,000 fish were caught during the aggregation period.

The history of this aggregation is little understood although it appears that a couple of fishermen probably knew about it and were able to keep it secret, at least up until the early 1980s. Others have proposed that this aggregation represents one that moved there from a site where the aggregation ceased to

form. Whatever the truth, it is likely that a significant proportion of the fish present were removed by fishing from the aggregation in each of 2001 and 2002.

Before this site was discovered, five Nassau grouper spawning aggregation sites were known from the Cayman Islands. Three of the aggregations have become severely reduced or have disappeared completely. The collaboration is an excellent opportunity to document changes that might occur over time at this newly discovered site. The DOE/REEF team also plans to start a tagging programme.

USA – southeast coast

The South Atlantic Fishery Management Council is currently working on a comprehensive revision of Federal Regulations (Amendment 13 to the South Atlantic Snapper Grouper Fishery Management Plan) for grouper fishing. This follows concerns over stocks of many grouper species and the finding that fishing for spawning groupers is reducing their reproductive success producing further declines in already depressed grouper populations.

To generate public support for the measures, ReefKeeper is hosting a Save America's Groupers petition campaign at www.reefguardian.org/Campaigns/SaveOurReefFishGRP/PetitionGRP.html.

They wish to promote a unified management approach that would include staggered and partial spawning season fishing closures for both shallow- (Spring) and deep- (Autumn) water species. This approach would allow a year-round flow of local groupers to fish markets and restaurants while gradually

rebuilding grouper populations. For more information on the petition or management plan revision, contact: a_stone@reefkeeper.org, Alexander Stone, or gregg.waugh@safmc.net Gregg Waugh of the South Atlantic Council.

USA – Gulf of Mexico

Regulators are now proposing to end the current one-month long (Feb 15-March 15) spawning season closures for three species of grouper (black, gag and red grouper). This reversal is apparently in response to industry concerns that closures result in lost local markets to foreign imports (e.g. to less expensive groupers coming in from Mexico); evidence for this, however, is unclear. There is currently no plan by the Gulf Council to provide any spawning season protection to any of the 15 grouper species it manages, despite declines in several of them. Some of these species form aggregations for reproduction, and some are considered to be vulnerable to extinction by the American Fisheries Society.

ReefKeeper International is calling for staggered seasonal protection (as for the SE Atlantic) and conducting a web-based petition campaign (as above). For details, contact Wayne Swingle at: Wayne.Swingle@gulfcouncil.org.

INDO-PACIFIC

Australia – Great Barrier Reef

During the past 12 years, two spawning aggregations of common coral trout *Plectropomus leopardus* on two mid shelf reefs in the Great Barrier Reef, northeastern Australia, have been

monitored during the peak spawning period in Spring. Since 2000, these and other aggregation sites have been assessed to develop fish spawning aggregation site assessment criteria for the Great Barrier Reef. An exciting story is emerging in that there seems to be consistency in the characteristics of locations of spawning sites surveyed in the reefs offshore from Cairns and Townsville. The study also witnessed a sad story for these aggregations. Although numbers of fish visiting one of the surveyed locations steadily increased over the 12-year period, from less than 50 fish in the 1990's up to about 400 fish in 2001, in 2002, the numbers drastically dropped to the low 20's. It was determined that several commercial fishers were fishing the aggregation site during the peak spawning time in 2002.

One initiative proposed by the Queensland Government to protect spawning fish is for three nine-day closures over the new moons in October, November and December. It is hoped that this initiative is progressed as a minimum to protect vulnerable spawning aggregations on the Great Barrier Reef. For more information on spawning sites on the Great Barrier Reef, visit www.gbrmpa.gov.au. SCRFA supported the closures in writing.

Seychelles

Recently, concerns regarding the status of fish spawning aggregations in the Seychelles have increased. There is now considerable evidence to suggest that several serranid aggregations form at some of the remote atolls in the vast Seychelles archipelago, and commercial fishermen are known to target many of these sites. Anecdotal information and

recent results from underwater visual surveys suggest that there may be remnant aggregations in the carbonate and granitic reefs around the main islands.

Access to demersal resources is restricted to Seychellois operating in the locally important artisanal fisheries. A small fillet and whole fish export market is also operating successfully; live reef fish operations are not permitted. The fisheries in the Seychelles are researched and managed by the Seychelles Fishing Authority (SFA).

Numerous fish stocks are estimated to be fully or over-exploited and this situation led SFA to evaluate various management options to arrest the declines, promote recovery, and achieve ecologically sustainable fisheries, particularly in the near-shore areas close to the main islands of Mahé, Praslin and La Digue. An integrated, dynamic and adaptable system of fisheries reserves is now seen as the most appropriate tool for management of the demersal resources in outer-island groups, to complement an existing network of marine protected areas close to population centres on the Seychelles Bank.

The protection of fish spawning aggregations will be considered a key criterion in the planning and implementation processes of the fisheries reserves. Recognising the considerable lack of data on reproductive activity for commercially exploited reef fishes in the Seychelles, a research programme was initiated by SFA in early 2002. SCRFA members and other scientists experienced in this field were contacted at an early stage for input and the project developed quickly.

Financial support of US\$50,000 from the Western Indian Ocean Marine Science Association (WIOMSA) for a two-year programme, entitled 'Investigation of the Importance of Reef Fish Spawning Aggregations for the Sustainable Management of Artisanal Fisheries Resources in Seychelles', has now been obtained. This is the first time that a project from Seychelles has won the competitive research grant of WIOMSA.

Solomon Islands

Licence conditions were recently revised for all new licences issued for the export-based live reef food fish trade. The licences will include Article 22 which states that fishing of spawning aggregations is not permitted during specified periods. This is the first licencing condition to address spawning aggregations of which we are aware.

Miscellany

By chance, two very similar reports have just reached me on the disturbing practice of using dynamite to fish species migrating to spawn (a reminder that not just the aggregations themselves are vulnerable. At one site in the Philippines, seasonal runs of ripe milkfish are herded into confined areas and stunned using dynamite over a one to two week period. Fishermen are armed and are hard to stop despite local concerns. In the Solomon Is., a case of poachers using dynamite on mullet pre-spawning runs reportedly killing 1,000s of fish occurred in the late 1990s. The case was subsequently settled out of court.

2002/3 Publications and Articles

Claro, R, and K. C. Lindeman. 2003. Spawning aggregation sites of snapper and grouper species (Lutjanidae and Serranidae) on the insular shelf of Cuba. *Gulf and Caribbean Research* 14(2):91-106

Colin, P. L., Sadovy, Y. J., and Domeier, M. L. 2003. Manual for the study and conservation of reef fish spawning aggregations. Society for the Conservation of Reef Fish Aggregations. Special Publication No. 1 (Version 1.0), pp. 1-98+iii

Domeier, M. L., P. L. Colin, T. J. Donaldson, W. D. Heyman, J. S. Pet, M. Russell, Y. Sadovy, M. A. Samoilys, A. Smith, B. M. Yeeting, and S. Smith. 2002. Transforming coral reef conservation: reef fish spawning aggregations component. Spawning Aggregation Working Group Report, The Nature Conservancy, Hawaii, April 22, 2002, 85 p. (<http://www.scrfa.org/doc/FSAS.pdf>).

Levin, P. S., and Grimes, C. B. 2002. Reef fish ecology and grouper conservation and management. In: Coral reef fishes: dynamics and diversity in a complex ecosystem. (Sale, P.F. ed), p. 377-389, Academic Press, Amsterdam, Boston.

Louisy, P. and Culioli, J. M. 2002. Review of present knowledge on the reproductive activity of the dusky grouper *Epinephelus marginatus* (Lowe, 1834) in the north-western Mediterranean. *Marine Life* 9(1): 47-57.

Rhodes, K. L. & Y. Sadovy. 2002. Reproduction in the camouflage grouper, *Epinephelus polyphekadion* (Pisces: Serranidae), in Pohnpei, Federated States of Micronesia. *Bull. Mar. Sci.* 70:851-869

Rhodes, K. L., R. I. Lewis, R. W. Chapman & Y. Sadovy. 2003. Genetic structure of camouflage grouper, *Epinephelus polyphekadion* (Pisces: Serranidae), in the western central Pacific. *Marine Biology*. 142 (4):771-776.

Vacchi, M., La-Mesa, G., Finoia, M.-G., Guidetti, P., and Bussotti, S. (2002). Protection measures and juveniles of dusky grouper, *Epinephelus marginatus* (Lowe, 1834) (Pisces, Serranidae), in the Marine Reserve of Ustica

Island (Italy, Mediterranean Sea). *Marine Life* 9(2): 63-70.

Other relevant information

The Nature Conservancy has produced a draft monitoring protocol for application in the Caribbean. This is currently under review and is available at www.nature.org: "*Reef Fish Spawning Aggregation Monitoring Protocol For the Wider Caribbean*". Please send comments, critiques, endorsements or queries to Will Heyman - will@btl.net.

Websites:

http://www.oar.noaa.gov/spotlite/archive/spot_spawn.html

http://www.nmfs.noaa.gov/prot_res/species/fish/nassau_grouper.html

<http://www.breef.org>

<http://www.scrfa.org/edu/index.htm>

<http://nature.org/magazine/spring2003/features/>

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CALL FOR ACTION ITMEMS2/ICRI Reef Fish Spawning Aggregations Need Protection

Many commercially valuable reef fishes are particularly vulnerable to over-exploitation because they form spawning aggregations that are highly predictable in time and location. These aggregations, and in some cases the migration routes to and spawning aggregation sites, are easy to find and target by fishers. The evidence is unequivocal that spawning aggregations can be decimated rapidly by heavy fishing,

resulting in serious declines in the fish populations they serve. Moreover, they are increasingly being targeted globally, particularly in the Pacific Ocean for commercial salted and chilled fish and for lucrative live fish export markets. Best known is the example of the Nassau grouper, *Epinephelus striatus*: a significant number of Nassau grouper aggregations are depleted in the western Atlantic, and some have possibly disappeared completely. The species is listed as endangered on the IUCN Red List of Threatened Species. Evidence is growing of aggregation depletions in SE Asia and the western Pacific.

Spawning aggregations are critically important for maintaining fish stocks and may thus underpin fisheries that contribute significantly to livelihoods in coastal communities, as well as to food supply. However, little management has been implemented to protect reef fishes when they spawn, despite the widely recognized need to protect spawning areas in marine protected areas. Unmanaged aggregation fishing is clearly **non-precautionary**. Management options include combinations of spatial and/or temporal controls, such as short-term, seasonal closures during the aggregation period, closures of aggregation sites, incorporation of aggregation sites into marine reserves, and various controls on catch and effort.

Specific recommendations

- Ideally, fishing of aggregations should be avoided unless part of important local traditional or subsistence fisheries
- If spawning aggregations are fished for subsistence, they

should be closely monitored and carefully managed

- Fishing of spawning aggregations should not be permitted for export/commercial markets
- Spawning aggregations should be included routinely in fishery management plans and marine protected areas design
- The potential impacts and benefits of tourism on fish aggregations should be evaluated, especially to determine the possible disturbance caused by tourism activities
- Education is needed to increase understanding of the biological and fishery importance of spawning aggregations and their vulnerability to fishing
- Extreme caution should be exercised not to make public information on the specific locations of aggregation sites that cannot be adequately protected from exploitation

Key recommendation: fish spawning aggregations should be conserved, through robust management strategies. Whenever possible, this should include complete or managed protection, to ensure persistence of the populations that form aggregations, the integrity of reef ecosystems and the livelihoods and food supply of communities that depend on aggregating species.

<http://www.icriforum.org/itmems.html>