The Science and Policy of Protecting Spawning Aggregations: An Interview with Yvonne Sadovy

Interview with Yvonne Sadovy, Society for the Conservation of Reef Fish Aggregations

Many commercially important fishes reproduce in spawning aggregations that range in size from just a few individuals to tens of thousands. Because such gatherings can yield large catches and are often easy to locate again once discovered, spawning aggregations are attractive to fishermen. Overexploitation can occur quickly, as has happened for several reef-based species worldwide, like groupers, snappers, and emperors.

A global effort is underway to help protect such aggregations and to raise awareness of the problems of aggregation fishing. Led by the Society for the Conservation of Reef Fish Aggregations (SCRFA), an international NGO, and funded by the David and Lucile Packard Foundation, the initiative has built a global database of spawning aggregation data for reef fishes, and is working with governments to encourage conservation and management measures where appropriate. Marine protected areas - such as no-take reserves or seasonal closures of fisheries - can play an important role in such conservation.

Below, MPA News speaks with biologist Yvonne Sadovy, SCRFA director, about the conservation options available for spawning aggregations. Although SCRFA focuses on tropical reef fish, Sadovy says much of what has been learned can be applied to temperate reef, or even non-reef, species as well.

MPA NEWS: Should all spawning aggregations of commercially valuable reef fish be incorporated in no-take reserves?

SADOVY: No. Not all reef fish spawning aggregations need to, or should, be incorporated in no-take reserves, nor do they all need to be protected. There are some circumstances when low levels of subsistence fishing on spawning aggregations can probably be sustained, and not all aggregating species are equally vulnerable to fishing.

In cases where protection is necessary, the appropriate measures depend on the biology of the species, the nature of the fishery, and the local management and social contexts. In many places, a seasonal sales ban during the spawning season might be easier to implement than a no-take reserve. One specific example is in Palau, which has a seasonal sales ban on three species of aggregating groupers. Although the aggregation sites are also temporarily protected during the reproductive season, their distance from land and the limited enforcement capacity mean that they cannot be easily observed. Therefore, no one is allowed to catch or sell fish during the aggregation period. Moreover, the reef channels where the aggregations occur are important fishing areas for a range of species outside of the reproductive season, so closing them permanently as part of a no-take reserve would be unacceptable to many local communities.

In addition, aggregation locations can shift from year to year. If the protected area is too restricted, or if fish migrate along predictable pathways to aggregations, as the Nassau grouper seems to do in the Caribbean, then a no-take reserve may not protect the aggregations or migration routes effectively unless it is very big, which may be difficult to implement in practice.

Finally, in many places the actual spawning locations are not widely known. Protection of fish during spawning seasons, which are relatively easy to determine, can effectively protect such species without any need to know the physical location of aggregation sites. Several such sites are protected largely because they are not yet known.

MPA NEWS: Could the process of trying to protect such aggregations actually have the effect of publicizing their location, potentially exposing them to greater fishing pressure?

SADOVY: This is an important point and is true only if the aggregation site itself is to be protected, rather than using some other form of management such as seasonal protection. This is why different management options need to be considered and applied according to local circumstances.

For example, in the Indo-Pacific over the last decade, there has been a growing commercial interest in many reef fishes for the international trade in live reef fish for food. Several of the key species in this trade aggregate to spawn, and traders and businessmen - looking for good sources of live fish - search for potential aggregation sites using the same kinds of information as biologists do. If biologists should release information prematurely on aggregation locations, or reveal techniques that would make aggregations easier to find, there is a very real risk that the aggregations will be fished, even overfished, before protection can be implemented.

The reality is that very few known spawning aggregations, anywhere, are currently protected and few of these are protected effectively. SCRFA therefore believes that there is a need for discretion in not widely revealing aggregation site locations identified by our work, other than in the immediate context of management with local communities, conservation groups, and government, and then only on a strictly need-to-know basis.

Almost all the sites that we have come to learn about in our Western Pacific work are already known by fishers, but often only by a few small communities. Again, one way to protect species without widely revealing their aggregation sites, or without knowing all the sites, is through seasonal protection. Another approach, in the Pacific, is to protect outer reef channels and passes during the spawning seasons since such areas are already known to be a significant habitat for spawning aggregations for several valuable fish species. In some places, such habitats could be included in the planning of no-take marine reserves.

For more information:

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BOX: The SCRFA database

Over 110 reef fish species in more than 20 families reproduce in spawning aggregations. The Society for the Conservation of Reef Fish Aggregations (SCRFA), an NGO based in Hong Kong and the US, has built an online database of known aggregations, based on information from published and unpublished literature, personal communications, and interviews with fishers. The objective is to document the current status and exploitation history of aggregations, thus building a strong case for aggregation protection and providing a baseline for research, education, and conservation efforts.

The database is available for searching on the SCRFA website (http://www.scrfa.org), and is categorized by roughly 30 parameters, including country, species, months of spawning, and catch-per-unit-effort trend. Data on the location of aggregations are available at low resolution and on a county-specific basis directly from the database. More detailed location information is available only in the context of management initiatives, in collaboration with SCRFA.