MPA News
Interview with Fiona Gell on the subject of reserve effects
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MPA News: As a researcher you were in the middle of the reserve effect issue, including through your 2003 *TREE* journal paper with Callum Roberts, "Benefits beyond boundaries: the fishery effects of marine reserves". Now that you are a practitioner, what role does the question of reserve effects (larval export and adult spillover) play in your work to implement MPAs?

Fiona Gell: After a number of years working on the science of marine reserves and their effects on fisheries, I had the opportunity to go back to my native Isle of Man as Marine Conservation Officer for the Isle of Man Government. This transition from researcher to practitioner has been enlightening in many ways and it is great to have the opportunity to share some of those experiences here.

In the Isle of Man there are two complementary Marine Protected Area programmes being implemented by the Department of Agriculture, Fisheries and Forestry: Fisheries Closed Areas specifically for scallop fisheries management and Marine Nature Reserves, primarily for habitat and species conservation. The Port Erin Closed Area, for example, has been closed to scallop fishing for 20 years and the effects of closure — including build-up of biomass and spawning potential — have been well documented through the work of Dr. Andy Brand and his research team at the former Port Erin Marine Laboratory.

After about 15 years of closure, fishermen's support for the Closed Area began to grow as they witnessed benefits to fisheries in adjacent areas, including increased catches. There is not yet conclusive scientific evidence that the Closed Area is supporting the increased Catch Per Unit Effort that has been recorded in adjacent fishing sites. However, fishermen believe that they are benefiting from increased larval supply, and this is supported so far by particle tracking work carried out by Bangor University scientists. These improved catches, combined with the extensive work my colleagues in the Fisheries Division have been doing (commissioning the particle tracking work, liaising with fishermen and keeping them informed on the science), have continued to build support for the concept of closed areas for scallop fishery management. This has culminated in the industry-led closure of a second site (Douglas Bay) in 2008, two further sites (Niarbyl and Laxey Bay) for scallop ranching in October 2009 and a fifth site (Ramsey Bay) closed temporarily in December 2009.

Manx fishermen have seen the apparent effects of MPAs in action and have embraced this management technique. Dr. Brand and his team produced strong science demonstrating the build up of biomass and spawning potential within the Port Erin Closed Area, and the recovery of habitat. Scientists at Bangor University (who now provide fisheries advice to the Isle of Man Government) are pursuing a genetic approach to determine the contribution that the closed area makes to the wider fishery. The outcome of this research will be vital in

helping us understand what is happening. However, for fishermen, their own experiences are the best evidence.

So, in the consultation sessions I hold about Marine Nature Reserves for conservation, Manx fishermen are not questioning the mechanism by which closed areas could benefit fisheries. But they are concerned about MPAs for conservation. We are currently working towards the Isle of Man's first Marine Nature Reserve which will be designed primarily for conservation purposes. It also has the potential to play a role in fisheries management if we can get the design right. Research looking specifically at designing MPAs to maximise conservation *and* fisheries benefits — and at how MPAs for conservation can contribute more widely to healthier ecosystems and more sustainable fisheries — is most useful for my current work.

MPA News: In light of your having viewed the MPA field from both sides (research and practice), what do you think of the issue of reserve effects overall? For example, is there too much scientific hand-wringing about the need to demonstrate reserve effects unequivocally? Or, conversely, would your current job be easier if there were more research to try to establish such unequivocal evidence of reserve effects?

Fiona Gell: Scientific hand-wringing is no bad thing if it leads to clearer management lessons to put into practice. If it remains within academic circles then it doesn't really help! I personally think that the research is sufficient to support the concept of marine protected areas as a fisheries management and conservation tool. But we really need to take every opportunity, particularly in temperate systems, to monitor effects of existing and new MPAs to give us the widest range of evidence for effects on the full range of habitats and species. Practitioners need the opportunity to learn from what has and hasn't worked in systems similar to their own, and this requires simple, cost-effective monitoring and rapid dissemination of results, both of which can be a luxury.

My new practitioner's angle on this would be: before you start (or fund!) another modeling study, meta-analysis or general review, think about whether that time, money, or expertise could be better used supporting monitoring (biological or socio-economic) of an existing MPA lacking the resources to do their own. Filling the gaps in our understanding about MPA effects on less-studied species, habitats and geographical regions is a real priority.

Reserve effects science should also be more accessible. It is essential that MPA researchers think carefully about how they make their research outputs available not only to the scientific community but also to those who are in a position to act on the results. Many conservationists and fisheries managers just don't have access to leading scientific journals, or the time to keep up to date with information being generated in the form of papers and reports. We need short accessible summaries, journals that are freely available online, and regularly updated reviews on relevant topics (thank you, MPA News!).

Better communication between scientists, policy makers, marine managers, fishermen and other stakeholders will help scientists ask the right questions and produce information that can really help us all move forward in the task of building sustainable fisheries and protecting marine ecosystems. The Caribbean and Indian Ocean regions spring to mind as examples of this approach, with their constructive networks of MPA practitioners and scientists, training opportunities, and initiatives to involve fishers.

MPA News: In your current role, what promises do you feel comfortable making to local fishers regarding the effects they will experience from a proposed reserve (e.g., increased catches, etc.)?

Fiona Gell: The scallop fishermen in the Isle of Man are telling *us* they are seeing benefits from the Port Erin Closed Area and have led the implementation of further closed areas. They have clearly seen the build up of biomass within the Closed Area and believe that there has been larval export to nearby fishing grounds, boosting catches. What fishermen and scientists have seen in the Isle of Man is supported by science from many other similar systems. However, fishermen will not see effects of closed areas immediately and it is important that we state that clearly. Fishermen in the Isle of Man have demonstrated their willingness to make short-term sacrifices for long-term gains and are benefiting from that longer view.

In the Isle of Man we can use our scallop Closed Area experiences to illustrate the potential for MPAs to show similar effects for other species of conservation and commercial interest. What we don't have is clear evidence to show how protecting other marine habitats could affect fisheries. We need to protect maerl beds, horse mussel reefs, seagrass meadows, and many other habitats for their conservation importance. There is now great science on the value of maerl beds for juvenile scallops and some fish species. But for other habitats we don't really know whether protecting them will lead to tangible benefits for our current fisheries, now almost exclusively limited to a few species of shellfish.

What I do say to fishermen is that I think that we can work together to design conservation MPAs which can offer fisheries benefits, combining fishermen's knowledge and the latest science. There is real potential for our Isle of Man combination of Fisheries Closed Areas and conservation MPAs to improve wider ecosystem health in our territorial sea, giving us more resilience against climate change and more options in an uncertain future. One question I keep hearing from fishermen and the general public is: How can we design MPAs faced with the uncertainty about the effects of climate change? This is a growing area of research and we definitely need the support of good science on marine ecosystem resilience and building climate change adaptation into MPA design.

For fishers, valuable evidence comes from case studies from similar systems, ideally where the information comes not just from scientists but from the fishers involved. For MPA planners, a version of the MPA science that includes the messy, convoluted backstory is always valuable but rarely makes it into print! Encouraging practitioners to share case studies and present a realistic picture of

how MPAs work on every level would definitely help me and I'd be very interested to hear the perspective of others in a similar position!

Fiona Gell
Department of Agriculture, Fisheries and Forestry, Isle of Man Government,
British Isles
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