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MPA Enforcement: How Practitioners Are Developing New Tools, Strategies, and Partnerships

Managing a marine protected area means managing people. If people do not comply with the regulations in place to protect an MPA's resources, the MPA will most likely fail to meet its goals. Education can play a major role in encouraging compliance, both by building community support for conservation and by informing the public about the penalties for noncompliance. But in cases where education is not enough, enforcement becomes necessary.

Enforcement - including surveillance and policing - can take many forms, depending on the budget and expertise available to MPA management and the geographic characteristics of the MPA. In November 2000, *MPA News* reported on the mix of high-tech and community-based strategies practitioners were employing at the time (*MPA News* 2:5). This month, we examine how managers and partners are continuing to develop new tools and strategies to make sure that MPA regulations are followed.

Enforcement of vast, remote protected areas

A major development in the global MPA field in recent years has been the designation of several very large no-take MPAs, such as the 362,000-km^2 Papahanaumokuakea Marine National Monument in the US and the 408,000-km^2 Phoenix Islands Protected Area in Kiribati. While these vast closures represent an advance for conservation, they present big challenges for enforcement. Keeping a lookout for offenders in these wide expanses can be like searching for needles in a large, far-away haystack.

Technology and partnerships can be key to making enforcement work in such places. Take Operation Kurukuru, for example. Operation Kurukuru is a massive, international enforcement operation in the Western Pacific to detect illegal, unregulated, and unreported (IUU) fishing, as well as smuggling and people trafficking. In 2009 over a span of 10 days, the operation:

- Covered an area of approximately 10 million km^2, including the Exclusive Economic Zones of the Cook Islands, Kiribati, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, and Vanuatu;
- Included fisheries surveillance and enforcement staff from each of the above countries, as well as their counterparts from Australia, New Zealand, France, and the US;
- Involved 7 Pacific Class patrol boats (from Cook Islands, Samoa, Solomon Islands, Tonga, Tuvalu, Kiribati and Vanuatu) and 1 French patrol boat; and
- Was supported by aerial surveillance provided by 4 maritime patrol aircraft (from Australia, New Zealand, France, and the US).

Each country had access to a web-based map of surveillance flights, licensed vessels, and unlicensed vessels. The big prize of the 2009 operation was the arrest of a vessel fishing without a license in Kiribati waters: the Kiribati government fined the vessel owner and master a total of US $1 million. (The illegal fishing did not occur in a designated protected area; if it had, the penalties would have been even greater. Several MPAs, including the Phoenix Islands Protected Area, were included in Operation Kurukuru's surveillance area.)

Martin Campbell of the Pacific Islands Forum Fisheries Agency, based in the Solomon Islands, coordinated the 2009 operation. "The aim is to produce an accurate and continually updated surveillance picture of the region," says Campbell. "This allows surveillance assets (both ships and aircraft) to be deployed effectively to target foreign fishing vessels that are considered to have a high risk of conducting IUU." There are several criteria involved in deciding whether a vessel poses such a risk, he says: its geographic position, its movement relative to EEZs where the vessel is not licensed to fish, and information from boarding and inspection reports, which provide a history of the vessel, company, and master's past compliance.

Spreading the word about these enforcement efforts plays an important role in compliance, says Campbell. "It acts as a deterrent to vessels considering breaching the laws and regulations," he says. "We take every opportunity, especially through the media, to sing the praises of the Regional Fisheries Surveillance Centre and successes like Kurukuru and the prosecutions of vessels."

Aircraft and patrol vessels, as used in Kurukuru, clearly can be very effective in enforcement. But they may represent only a portion of the technological tools available to future surveillance of large MPAs, according to Jeff Ardron. He and Sandra Brooke, both of the Marine Conservation Biology Institute (MCBI) in the US, coordinate the Surveillance and Enforcement of Remote Maritime Areas project, or SERMA. In November 2009, SERMA convened an international group of resource managers, law enforcement personnel, and other experts to brainstorm solutions to enforcement challenges of large offshore MPAs.

"There are many different types of tools that could potentially be used for surveillance of large or remote areas," Ardron says. "These include such platforms as traditional aircraft and patrol vessels and well as unmanned air and surface craft, autonomous underwater vehicles, tethered and untethered inflatable balloons, and various types of buoys and satellites. These platforms can support any of a vast array of instrument packages such as different types of vessel monitoring systems, imaging technologies, and acoustic hydrophones. All of these have strengths and weaknesses and vary greatly in purchase and operating costs as well as ease of use. However, it is already clear that combining conventional tools with new and emerging approaches allows for a more targeted use of limited patrol resources."

The SERMA workshop produced a list of recommendations, including on integrating remote MPA surveillance into national marine security, intelligence, and surveillance systems. "Cooperative integrated measures share costs and reduce redundancy," state the SERMA recommendations.

Nonetheless, adds Brooke, it is not about simply handing over MPA enforcement to the military. "There are certainly advantages to having the military responsible for surveillance of these areas: they have powerful technologies and many more assets than civilian agencies," she says. "However, there would also be disadvantages to placing full responsibility on the military. They have other priorities that would take precedence over resource regulations. In addition, the military often do not have the jurisdiction, training, or mandate to enforce these types of regulations, although this varies from place to place. The best of both worlds would be a cooperative arrangement whereby the military would use its tools and assets for surveillance, which would inform and guide enforcement activities by the appropriate civilian agencies."

As part of the SERMA project, MCBI will soon release a report on technical options for surveillance. It is also planning a complementary report on enforcement strategies, involving the integration of new and emerging technologies into existing legal structures.

Private aid for enforcement

Marine protected areas worldwide suffer from chronic funding shortages. This affects enforcement programs. Some MPAs have partnered with private NGOs or foundations to secure funding for their enforcement efforts. But the support is often limited to the purchase of a patrol boat, or construction of a guard station, or capacity-building for staff. In the Galápagos Marine Reserve, a broad enforcement partnership has been established between management and the Sea Shepherd Conservation Society.

Sea Shepherd - which is well-known (or notorious) for its direct-action efforts against illegal whalers, in some cases ramming the whaling vessels with its own ships - has been involved in the Galápagos for nearly a decade (*MPA News* 3:4). Industrial fishing in the 140,000-km^2 marine reserve is banned by Ecuadorian law, but poaching has been widespread. In 1997, Sea Shepherd offered the use of its 29-meter patrol vessel Sirenian to the park and the Ecuadorian government. In 2001, the NGO and the Galápagos National Park Service agreed to partner. (The Park Service manages the reserve.)

"Our role is providing financial and logistical support to the Ecuadorian law enforcement agencies," says Alex Cornelissen, who leads Sea Shepherd's Galápagos programs. The support takes several forms:

- **Vessels:** Sea Shepherd loaned the Sirenian to the Park Service for the first five years of partnership, then donated the vessel to the Park Service. The NGO is now organizing the donation of another small vessel to the park's fleet;
- **Hiring of personnel:** The NGO has hired two crew members for the Park Service's floating base station Tiburón Martillo. ("Even though we are paying their salaries, they work for the Park," says Cornelissen.) The station is located in the north of the reserve in an area of historically high poaching. Sea Shepherd has also hired an Ecuadorian attorney to examine strategies for strengthening punishment of environmental offenders in Galápagos;
- **Police dogs:** In 2008, Sea Shepherd purchased six trained police dogs from Colombia to help the Ecuadorian environmental police establish a K-9 unit that focuses on detection of illegal wildlife

parts. The main goal is to target the smuggling of shark fins from Galápagos to the mainland;
- **Radios:** Sea Shepherd just completed implementation of new radio systems for the police and the agricultural control service. "We have donated and installed complete VHF and UHF radio networks for the entire archipelago that enable these institutions to perform their work in a safer and more efficient manner," says Cornelissen.

These programs have all required substantial funding, of course. Sea Shepherd has donors around the world. The Dutch National Lottery, for example, provides 500,000 euros (US $688,000) each year to Sea Shepherd as a whole, and this year donated an additional 1 million euros ($1.38 million) to fund establishment of an automatic identification system (AIS) for vessels in the Galápagos Marine Reserve. The AIS will enable Galápagos authorities to monitor vessels more closely and act instantly in cases of illegal activity. (For information on how AIS works, go towww.navcen.uscg.gov/enav/AIS/default.htm.)

"We are doing our best to provide the most powerful tools to the local authorities in order for them to improve their efficiency and results," says Cornelissen. But the partnership stops short of Sea Shepherd actually patrolling and making arrests. "These are Ecuadorian waters and only Ecuadorian authorities are entitled to uphold the regulations," he says. "On the water, the only authority remains the navy, and on land these are matters for the Ecuadorian police."

Advice on building, managing ranger stations

In Belize, an NGO called the Toledo Institute for Development and Environment (TIDE) was founded in 1997 to meet the growing environmental and development needs of the Toledo District (www.tidebelize.org). Among its programs, TIDE assists the Belizean government in planning and managing protected areas, including co-managing the Port Honduras Marine Reserve and the Paynes Creek National Park. TIDE also manages more than 20,000 acres of private protected lands. The organization has built a ranger station in each protected area to enforce regulations. Celia Mahung, executive director of TIDE, was asked for advice on planning and managing such facilities.

"Ranger stations should be sited in a location that is central to the area under management," says Mahung. Her organization's Port Honduras Marine Reserve is multiple-use with no-take zones, and the ranger station is located on a small island (Abalone Caye) near the no-take zones. "This saves costs on fuel for patrols," says Mahung.

A station on an island presents unique challenges that must be considered in planning, she notes. Moving construction materials and workers to the site is an increased cost compared to a land-based station. Maintenance of a station exposed to the weather on a small caye also includes costs of planning a trip to town by boat to pick up needed materials and a worker, then returning the worker to town afterward.

"The station must be designed and built with prevailing weather conditions in mind to result in a durable and sturdy building," says Mahung. "The use of low-energy and alternative sources of energy including solar and wind is an advantage although staff should be trained in basic maintenance activities. A composting toilet is an asset to any station." She says TIDE is always reviewing current conditions and resources for opportunities to make its stations more effective.

Mahung emphasizes the need for well-trained rangers to operate the stations. "TIDE is proud of its dedicated staff," she says. The rangers work on a two-weeks-on/one-week-off schedule and live at the ranger station during the two weeks of work. "With this as the situation, the station must be seen not only as the center of management for the reserve but also as a home with a suitable kitchen and comfortable sleeping areas," she says.

TIDE has hired women as park rangers, and they perform the same duties as males. Some challenges have been encountered as staffers confront traditional stereotypes of male and female roles. "We have learned that the day-to-day interaction creates dynamics that require additional training in human relations skills and sensitivity to overcome stereotypes," says Mahung.

TIDE views education in general as critical to the success of enforcing the MPA's regulations. The organization offers an abundance of public environmental education programs (www.tidebelize.org/education_outreach.html), and also views each ranger as a frontline educator. "Compliance is improved as people accept the concept [of conservation] and develop stewardship for the protected areas," says Mahung. "TIDE utilizes a system that relies on information sharing and warnings. To be stopped by a TIDE ranger on patrol is to receive information and education on the protected area and the importance of compliance with regulations."

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