

MPA NEWS



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Building the future of MPA enforcement: Project Eyes on the Seas and other high-tech surveillance programs

If you were to build a system to combat illegal fishing, including within remote MPAs, it would most likely feature a way to track two things: where fishing vessels are in relation to the area of interest, and whether those vessels are fishing. Thanks to advancements in technology over the past decade, such systems have become available. Using a combination of satellites and on-board transponders, the systems are empowering a potential revolution in how governments can enforce their rules within MPAs, particularly remote ones.

MPA News has reported on some of these systems over the past couple of years when they were just being launched. A webinar in May provided more details on one system in particular - Project Eyes on the Seas - that has now been in operation since January 2015. The webinar offered insights on the capability of the system, how it may be of use to site managers, and how it can be coupled with additional policy measures to combat illegal fishing in general. (A recording of the webinar - which was co-hosted by MPA News, the US National MPA Center, OpenChannels.org, and the EBM Tools Network - is available at <https://oct.to/ZZt>.)

A brave new tech-based world is emerging for fisheries and MPA enforcement. Here we briefly examine how Eyes on the Seas is addressing the challenge, then describe other systems that are also available.

A system to serve even resource-poor enforcement agencies

Eyes on the Seas is a partnership between The Pew Charitable Trusts (an NGO) and Satellite Applications Catapult, a UK government initiative developed to foster economic growth through the application of space technology. The purpose of the partnership is to build an information platform to allow a true, near-real time picture of industrial fishing activity around the world. Ultimately the vision is to provide a cost-effective global fisheries monitoring system that can be used by governments and their respective enforcement authorities, including resource-poor agencies that may not otherwise have the financial ability to commercially access and use such technology.

The system is also designed to allow retailers and the vast majority of commercial fishers who operate within the law to show buyers where, when, and how their fish were caught. The purpose of this is to provide consumers greater market assurance that illegally caught fish are not intentionally or haphazardly being introduced into the market.

"The system is designed to provide credible, actionable insights into what's happening on the water," says Mark Young, senior officer in conservation enforcement for The Pew Charitable Trusts. "Project Eyes on the Seas is a system that facilitates a network of information and analysis."

Merging four sources of data

How does it work? The technology behind the Eyes on the Seas system merges four main sources of information:

- Data from on-board Automatic Identification Systems (AIS) and Vessel Monitoring Systems (VMS), which broadcast a variety of information on vessel identity, position, speed, and other characteristics;
- Satellite imagery, including Synthetic Aperture Radar, optical imaging, and thermal imaging;
- Data from regional fisheries management organizations on vessel histories, as well as fishing boundaries, marine reserve boundaries, and other information; and
- Automation, including alerts to users when anomalies are detected, such as when an AIS is suddenly turned off when a vessel is about to enter a no-take reserve or EEZ. Such alerts are then investigated by trained, expert analysts.

In the webinar, Young displayed a snapshot of the system at work. Eyes on the Seas technology breaks down each vessel on screen by cross-referencing its identity, risk profile (if it has offended before), and operating licenses. It also identifies, based on various clues and algorithms, what the vessel is likely doing at any point in time: deploying its gear, actively fishing, retrieving its gear, or simply transiting an area, among other behaviors.

All together, says Young, this technology provides the power to transform the current "needle in a haystack" approach to finding offending vessels inside marine reserves and other areas. Still, it is not enough by itself. "There is no single silver bullet to ending illegal fishing," says Young. "You need a multifaceted approach to allow authorities to stay one step ahead of illegal fishers." The technology must be combined, for example, with critical policy frameworks such as the Port State Measures Agreement, which came into force on 5 June 2016 with an initial 30 governments ratifying it (<https://oct.to/ZZY>). This international treaty empowers inspectors to board and investigate offending vessels when they eventually come to port. It also provides mechanisms to increase information sharing among parties to the agreement to allow for more effective and streamlined actions to detect, deter, and eliminate illegal fishing.

Eyes on the Seas has been trialed so far in Polynesia in cooperation with existing national and regional monitoring, control, and surveillance frameworks as supported by the Pacific Islands Forum Fisheries Agency. Eyes on the Seas has also monitored the waters of the UK's proposed Pitcairn Islands Marine Reserve in the south Pacific. Findings from the first 12 months' implementation in Pitcairn demonstrate the technology provides a cost-effective, accurate means of surveillance for a large and isolated area.

Multiple large-scale retailers have reportedly begun discussions with Eyes on the Seas on how to apply its information to the market side. According to Young, Eyes on the Seas is envisioned eventually to become a self-sustaining independent entity, charging for services (to governments and retailers) to recoup only its costs of operating - not as a commercial enterprise, but as a non-profit for public good.

Governments and retailers interested in learning more or getting involved can contact Mark Young directly via email: msyoung@pewtrusts.org

For more information:

Project Eyes on the Seas: <https://oct.to/ZZN>

Pew's Ending Illegal Fishing Project: <https://oct.to/ZZx>

Satellite Applications Catapult: <https://sa.catapult.org.uk>

Video recording of webinar on Project Eyes on the Seas: <https://oct.to/ZZt>

The webinar also addressed whether Eyes on the Seas can be applied to small boat artisanal fisheries, how it is examining high seas fisheries, and whether it could be coupled with fisheries certification programs.

BOX: Other high-tech MPA surveillance programs

In addition to Project Eyes on the Seas, there are two other global fisheries surveillance systems that may be of value to MPA agencies: Global Fishing Watch and DigitalGlobe. MPA News is not advocating for one system over the others, and encourages readers to examine the relative merits of each:

Global Fishing Watch

Developed by Oceana, SkyTruth, and Google, Global Fishing Watch provides a global view of commercial fishing activity based on data from vessels' Automatic Identification Systems (AIS). It has been piloted to monitor fishing vessel activity inside the Phoenix Islands Protected Area in Kiribati, where it documented the apparent success of the MPA's no-take regulations. The website is www.globalfishingwatch.org

DigitalGlobe

Still under development, DigitalGlobe's platform for observing illegal fishing will use the company's own satellites to provide visual evidence to aid prosecution efforts in remote waters. Users are also expected to benefit from DigitalGlobe's predictions of fishing activity and vessel behavior based on multiple factors, and can access Vessel Monitoring System information as well. For more information, email Alyson Kauffman, DigitalGlobe oceanographer, at alyson.kauffman@digitalglobe.com

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