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New Book, Website Provide MPA Inventory for British Columbia

With each year's designation of new marine protected areas around the world, analysis of the coverage fostered by this patchwork of MPAs is becoming increasingly difficult.

For managers to assess gaps in habitat protection, they must first document where MPAs already exist. In regions where dozens -- or hundreds -- of marine protected areas have been designated under various regulatory regimes, such documentation can be painstaking. Nonetheless, inventories of MPAs are necessary for effective marine resource planning, and efforts to create regional MPA databases are becoming more common.

The new book *Marine Protected Areas and Fishery Closures in British Columbia*may offer a useful model for MPA practitioners interested in pursuing their own MPA-inventory process. Created by two Canadian fisheries researchers, the book profiles the 125 legislated MPAs and 579 spatially-persistent fishery closures along Canada's Pacific coast. (The book defines "fishery closures" as restricting only fishing activity, while "marine protected areas" may address a variety of human activities.)

An accompanying website (http://www.pac.dfo-mpo.gc.ca/oceans/closure/default.htm) allows visitors to search more detailed maps of each MPA and closure than the book offers. In addition, the geographic information system (GIS) database on which the project was based is now available to managers to consult directly. With a baseline year of 1997, the book and website are designed to be living documents, and will incorporate newer data (from 1998 to the present) as they are added to the database.

Obstacles to creating an inventory

The project, which began in 1997, had to overcome an array of challenges, according to co-authors Glen Jamieson and Joanne Lessard, both biologists with Canada's Department of Fisheries and Oceans. "When we started, we thought we could get this done in a year," said Jamieson. "It turned out to be a two-and-a-half year process."

Among the first challenges was finding where and when the MPAs and closures had been designated. "Some MPAs were designated with arcane measurement systems, such as 'chains'," said Jamieson. For the fishery closures, the project had to comb through old management plans to see when they were established.

Converting the information to an electronic format for mapping offered additional obstacles. One of the most difficult was that of creating a seamless digital shoreline for the entire province, necessary for calculating the area of each MPA or closure. Although a basic shoreline had been mapped previously, it did not offer the detail necessary for the inventory project, and required the creation of new software.

"The biggest challenges we faced were the database design, the coastline digitizing, and the sheer amount of data we faced," said Lessard. Some of the calculations necessary to compute datasets took hours to complete on the project workstations.

Tips for other inventory projects

Jamieson recommends that other efforts to inventory MPAs around the world should avoid "reinventing the wheel", and should contact those who have gone before them, including himself. "They don't need to go through the learning pains we did," he said.

In fact, he and Lessard based much of their book's format on the past work of Deborah McArdle, who created an MPA inventory for the US state of California (*California Marine Protected Areas*, 1997, California Sea Grant College System, Publication No. T-039). They followed McArdle's lead to allow for easier comparison with measures that may be undertaken by other US and Canadian agencies in the northeast Pacific.

Lessard encourages the managers of future inventory projects to design their databases first. "There were a number of

changes I had to make to the database as we went along, which slowed the process," she said. "You can't forecast everything, but when you're designing a database, think about what you want to get out of it and the types of questions you'll want to ask in the end."

The Department of Fisheries and Oceans has already begun using the database for its management work. Managers are using it to site a reopening of the Pacific gooseneck barnacle fishery away from MPAs and closures, and Lessard herself is using it to assess whether known beds of geoducks, a type of clam, are in open or closed areas.

As for the future of the database, Jamieson envisions its serving as a keystone for similar work along the entire Pacific coast of the US and Canada. He'd like to overlay habitat type and depth contours on the maps, which presently lack such detail. And he'd like to bring the project's GIS database fully online; currently, the project website is limited to showing static picture files of the MPA and closure maps, rather than allowing for complete online interactivity.

"Eventually, we'd like to have a system where anyone could log on and experiment with siting MPAs here or there, or determine what portion of any resource is located in a particular type of protected area," he said.

For more information:

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