

## Canada to Designate MPA for Hydrothermal Vents

On June 8, the federal cabinet of the Canadian government approved a plan to designate the Endeavour Hydrothermal Vents as an official marine protected area under Canada's Oceans Act. The highly biodiverse area has been of great interest to scientists since its discovery in the 1980s, and its MPA status will serve mainly to ensure that its ecosystem remains relatively undisturbed for scientific study. This represents one of the first efforts in the world to establish an MPA specifically for the protection of hydrothermal vents.

The Endeavour vents lie at a depth of 2,250 meters, 250 km southwest of Vancouver Island on Canada's Pacific coast. The protected area, consisting of four known vent fields, will cover roughly 93 sq. km and stretch from the sea floor up to sea level.

Canada's Department of Fisheries and Oceans (DFO) selected the Endeavour Hydrothermal Vents in 1998 as one of several "pilot MPAs", part of a strategy to evaluate whether the areas should be formally designated as MPAs and how they could be best managed ([MPA News 1:1](#)). Race Rocks, a small nine-island archipelago on the southernmost end of the nation's Pacific coast, was the first pilot MPA chosen for full MPA designation under the Oceans Act, in September 2000 ([MPA News 2:4](#)).

Now that the Endeavour vents have received cabinet endorsement as an MPA, they will undergo a regulatory process to formalize the MPA designation. That process is expected to conclude by August 2001, according to Doug Andrie of DFO.

### Zoning the MPA

As part of the Juan de Fuca Ridge system, the Endeavour vents are in an active seafloor-spreading zone where tectonic plates diverge and new oceanic crust is extruded onto the seafloor. In these zones, cold sea water percolates downward through the crust where it is heated by the underlying molten lava, eventually jetting back up through the seafloor as plumes of particle-rich, superheated fluid. The plumes of the four known vent fields shoot about 300 meters into the water column.

The vents are distinctive for their "black smokers" -- large, chimney-like structures that form when dissolved minerals and metals carried upward by the plumes precipitate on contact with cold water. Venting systems such as these host some of the highest diversity and abundance of microbes on earth, living off the chemical energy of the emerging fluids. The Endeavour vents are also home to large tube worms, crabs, and spiders.

Currently, the depth of the Endeavour vents and their distance from the mainland limits access to those with the technological equipment, ability, and resources to reach the area. The proposed MPA is not greatly affected by fishing activity, which is minimal in the area and mostly focuses on highly migratory species (tuna). The principal anthropogenic impact facing the ecosystem comes from extraction of samples for research, including chunks of the black smokers.

To balance the objectives of research and protection, the management plan for the proposed MPA has established a zoning system. Each of the four vent fields will be managed to allow particular activities. In the two fields that have already experienced the most research activity, sampling of the smokers will continue to be permitted, while the other two fields will harbor stricter restraints on research activity. One site in particular will be managed as a control site for examining the effects of human activities elsewhere in the vent system, with only water-sampling and mapping allowed. All research activity in the MPA will require a permit from the Canadian government.

Interestingly, hydrothermal vents have a tendency to "move", disappearing from some spots and appearing in others as a result of ongoing seafloor processes. This means the vents could conceivably move out of the protected area at some point. DFO's Andrie said this was a consideration in the planning process. "We'd like to manage [the MPA] in an adaptive manner, which could involve adjusting the boundaries if necessary," he said.

Most of the ideas in the management plan came from work performed by a multistakeholder planning team, which included representation from federal departments and academic institutions. Future management of the MPA will be executed through a management committee, chaired by DFO and involving federal departments, Canadian and foreign scientists, the Canadian private sector, educators, and an NGO.

**For more information:**

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## **Box: Proposed Endeavour regs online**

The proposed regulations for governing the Endeavour Hydrothermal Vents MPA are published in the Canadian government's *Canada Gazette*, at <http://publications.gc.ca/gazette/archives/p1/2001/2001-06-09/pdf/g1-13523.pdf>

Note: The PDF file that corresponds with this address contains a significant amount of information on other government regulations unrelated to Endeavour. For the section on Endeavour, go to pp. 70-83 of the PDF document (corresponding to pp. 1940-1953 of the *Canada Gazette*).

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