

MPA NEWS



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MPA Perspective: Deep-Sea Vents Should Be World Heritage Sites

Editor's note: Magnus Johnson is head of the Scarborough Centre for Coastal Studies, University of Hull (UK). For readers interested in the scientific literature he cites in the following essay, a version containing literature citations is [available online](#).

By Magnus Johnson, University of Hull, UK

I am not someone who would be termed an ardent supporter of MPAs. I worry that they are too easy a tool for administrators to apply to any resource or conservation problem. To a non-biologist (and even to some biologists), the attractions of the erroneous equilibrium paradigm are such that a superficial understanding of what an MPA can do may discourage any consideration of alternative and more appropriate - though perhaps more difficult to implement - methods of resource husbandry or conservation.

That said, in the case of hydrothermal vents I can see that there could be a need for exclusive protection. Hydrothermal vents are discrete and startlingly different deep-sea habitats. Rather than the high-diversity, low-biomass environment that makes up 99.9% of the deep-sea, hydrothermal vents are crammed full of life mostly comprising a few endemic specialists. Membrane structures and even DNA from some vent species have evolved to be thermostable at temperatures approaching 100 degrees C (Van Dover, 2000). The particularly hostile conditions mean that hydrothermal vents naturally create their own exclusion zone.

Their spectacular visual nature, exciting ecology, and possibilities for novel biological products draw biologists to these vents. This has unfortunately resulted in unregulated scientific activity at some of the best-known vent sites. Ironically, the Worldwide Fund for Nature has highlighted scientists as the main culprits with regard to disturbance of these habitats. Herring *et al.* (1998) provided evidence that the bright lights of submersibles were likely to be blinding large numbers of the vent shrimp *Rimicaris exoculata* with unknown consequences.

Notably, Canada has granted official protection for its Endeavour Hydrothermal Vents site ([MPA News 4.9](#)). However, despite Canadian officials' acknowledgement that the principal human impact on this deep-sea ecosystem comes from extraction of scientific samples, research will still be encouraged at the site, though requiring formal permission.

I have raised these issues to the scientific community (Johnson 2001, 2005) and have suggested that the community get its house in order. In a published response to a recent article of mine in *Nature*, researchers (Tyler *et al.* 2005) suggested that the scientific community has nothing of which to be ashamed regarding vent research, and pointed out that there is a draft code of conduct under consideration by InterRidge, the organization that coordinates international studies on mid-ocean ridges (<http://interidge.org>). Considering that the first hydrothermal vent site was discovered in 1977 (Gage & Tyler, 1991), it seems unfortunate that after 28 years the scientific community - the main user of hydrothermal vents - has only reached the stage of discussing an unpublished draft code of conduct.

The logic of Garrett Hardin's "tragedy of the commons" applies as much to scientists working on hydrothermal vents as it does to coastal fishers or cows on a pasture. The scientific community is driven by the need to be productive in the short term - to secure funding and generate publications - rather than conservationist in the long term. It could be argued that since the scientific community is attempting to foist sustainable resource management and MPAs on the rest of the world, it has a moral obligation to set an exemplary standard.

There is a need for robust international legislation to rein in narrow and short-term scientific agendas. I suggest that hydrothermal vents should become World Heritage sites and that there should be strict limits on the number of times a few selected sites may be visited. Moreover, prior to any scientific activity, proposals should be reviewed by a broad-based international panel consisting of conservationists, politicians, and academics.

For more information:

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