

The Spotted Owl Controversy and Conservation Biology

An old joke tells of the man who walks into a doctor's office and announces, "My brother thinks he's a chicken." "Well, bring him in," replies the physician, "and I'll try to cure him." "I can't," answers the man. "We need the eggs." To a small but vocal band of critics, conservation biologists are the egg-laying brother: they think we have an identity problem, but they need our products. Does our field really have something new to offer, and can it produce credible answers to tough problems?

As members of the Interagency Spotted Owl Scientific Committee enjoined by the U.S. Congress in 1989 to produce a "scientifically credible" conservation plan for the Northern Spotted Owl, we were acutely aware of these concerns. But after months of study and debate, we came away from that assignment more convinced than ever that conservation biology is something novel, useful, and exciting.

The committee's task was to decide what amount and distribution of habitat were needed to ensure the long-term survival of a rare bird. The key phrase here is "long-term survival." It required that the committee members be prognosticators. Classical ecological studies had given us as thorough a picture of our subject as one could reasonably expect; indeed, more was known about the autecology and natural history of the Northern Spotted Owl than about any other owl in North America. Yet as essential as these studies were, they alone could not form the basis for a long-term plan. So the committee reached out to population viability analysis and island biogeography and built its plan around five "principles" that, in various forms, are central to conservation biology.

- Species that are well distributed across their ranges are less prone to extinction than species confined to small portions of their ranges.
- Large blocks of habitat containing many individuals of a given species are more likely to sustain that species than are small blocks of habitat with only a few individuals.
- Habitat patches in close proximity are preferable to widely dispersed habitat patches.
- Contiguous, unfragmented blocks of habitat are superior to highly fragmented blocks of habitat.
- Habitat between protected areas is more easily traversed by dispersing individuals the more closely it resembles suitable habitat for the species in question.

As Jack Ward Thomas, chairman of the committee, quipped, "It doesn't take a rocket scientist to see the logic behind these principles." Maybe not. But when they are applied to millions of acres of federal timberlands worth hundreds of millions of dollars, the empirical and theoretical support for them had best be strong. It was, thanks in large part to two decades' worth of modeling efforts in island biogeography, empirical studies of bird populations in fragmented woodlots and islands in Europe, North America, and South America, plus numerous other studies of edge effects, secondary extinctions, and population persistence.

Using the results of these studies and the extensive scientific information available on the Northern Spotted Owl, the committee produced a set of maps showing the precise locations for a network of forested areas in Washington, Oregon, and northern California that, if protected from logging and other forms of development, would probably ensure the viability of the owl over the course of the next century. No conservation proposal has survived more intense scrutiny by Congress, industry, environmental groups, and academia. Its robustness is a measure of the strength of conservation biology, or more specifically, of the synthesis of ecology, wildlife biology, island biogeography, and population viability analysis that is unique to conservation biology.

In addition, the committee's report pointed out the inadequacy of the management guidelines that both the Forest Service and the Bureau of Land Management had in place at the time. And it put to rest preposterous claims that the owl and its habitat weren't in trouble and didn't need protection.

Although the principles underlying the committee's plan seem commonsensical, their use in land planning is a recent phenomenon. Ten years ago, few of these topics were even discussed, much less incorporated, in any management plan for a national park, forest, or wildlife refuge or any recovery plan for an endangered species.

Has the committee's plan been adopted, and is the Northern Spotted Owl now safe? No. As of June 1991, neither the Forest Service nor the Bureau of Land Management has committed itself to full implementation of the plan. What happens to the owls and the ancient forests is a public policy question that will ultimately be decided by the American people—through their land stewards, through the courts, and through Congress. However, the committee and the field of conservation biology have helped to define the scientific parameters of that debate. Conservation biologists have developed a scientifically credible plan for the Northern Spotted Owl, and they have made defensible predictions regarding the fate of the owl under different scenarios of habitat protection. That's no small accomplishment for our fledgling science.

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