Viewpoint

Lessons from the spotted owl—the utility of nontraditional data

An unexpected use of taxonomic publications was recently prompted by the urgency to solve northwest forest problems. The Northwest Forest Conference, initiated by President Bill Clinton and held in Portland, Oregon, in April 1993, examined the conflicts over the forest resources of the Pacific Northwest. Concern centered on the remaining mature and old-growth forests and how these and other forest resources might be managed as sustainable assets. The announcement in June 1992 that the Forest Service and the Bureau of Land Management would in the future practice ecosystem management signaled a new era for public lands. The impetus for this action came from scientists within and outside those agencies. Although some decried the "new forestry" as only a repackaging of old practices, the change in management was toward better use of current knowledge of forest ecosystems; that is, toward resource management based on science rather than on market forces.

The northern spotted owl, a bird whose distribution coincides with that of mature and old-growth forests in the region, is a central player in this complex environmental drama. The owl depends on the massive forests for its home and for its selected prey. Its vulnerability to habitat disturbance was recognized early, but some individuals believe the bird does not really depend on such forests for survival. The structure and composition of the forests vary over the owl's range, and the owl responds to the different habitats and food items that the forests contain. However, the accelerated levels of timber harvest that began in the 1950s have greatly reduced owl populations along with the amount of mature and old-growth forests.

The northern spotted owl was given endangered status under the Endangered Species Act of 1973. Several scientific committees considered available evidence and suggested management strategies to protect the birds—recommendations that affected forest harvest. Immediately after the April forest conference, the Interagency Recovery Team, consisting of scientists from federal agencies, universities, and the private sector, was brought together in Portland and directed to draft a new northern spotted owl recovery plan for delivery to the president by early June 1993. The team also considered information on other organisms, their relation to long-term forest health and sustainability, and the impact of the new management plans on them. These broader considerations included the arthropods.

In March 1992, A. R. Moldenke and I reported on a small group of arthropod species confined largely to old-growth forests and therefore likely to benefit from owl protection. Studies of arthropods in mature forests extend back more than 20 years and involve some 3400 species to date. The work has been chiefly carried out on the H. J. Andrews Experimental Forest on the west slope of the Cascade Mountains of Oregon. Postsummit studies have centered on arthropod species characteristic of mature forests and species involved in the different functions within forest ecosystems. A list of approximately 200 arthropods has been assembled from field data, from the combined knowledge of systematists and ecologists, and from portions of the literature on different arthropod taxa found within the range. The taxonomic revisions that are the major source of information for these studies often include data on habitat, biology, and distribution. Although this information is not readily retrievable from the literature and must be extracted species by species, it is a rich pool, representing years of research and observations. Most ecological investigations overlook this nontraditional source—a cogent argument for closer collaboration between ecologists and systematists.

Well-organized taxonomic information provides an underutilized resource for landscape managers. The large number of arthropod species and individuals, the diversity of habitats they occupy, and their varied functional roles in forested ecosystems make them a particularly useful group. This high-resolution information can provide insight into the sustainability of different portions of ecosystems. Such information, gathered for taxonomic purposes, if properly organized, can be of considerable utility in evaluating ecosystem health.

JOHN D. LATTIN
Department of Entomology
Oregon State University
Corvallis, OR 97331-2907