Three study sites have been established for each of these two edge types. At each site, three parallel transects were placed perpendicular to the edges, each extending 260 m into the plantation and 400 m into the natural forest. Vegetation structure and composition, and animal abundance (birds, small mammals, amphibians, and reptiles) are sampled at 20 m intervals along the transects. The second and final year of field sampling was concluded in July 1990 and data analyses are now in progress.

The results of this work are expected to provide insights on the influence of stand and edge type on plant and animal community structure. Such insights will offer guidance on strategies for maintaining native plant and animal diversity in managed forests.

Responses of Wildlife Habitats to Forest Management and Climate Change: A Modeling Approach

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Biological diversity has emerged as a major environmental and scientific issue because: species are seen as economically and aesthetically valuable; patterns of diversity may serve as indicators of system response to climate and land-use change, and some organisms may strongly influence system functioning. The challenge for scientists and land managers is to develop techniques to study and manage biological diversity. We are modifying the forest succession model ZELIG (T. M. Smith and D. L. Urban. 1988. Scale and resolution of forest structural pattern. *Vegetation* 74:143–150) to study how vascular plant and vertebrate communities in the northwestern United States respond to land-use practices and climate change within forest stands and landscapes.

Like its parent model FORET (H. H. Shugart. 1984. *A theory of forest dynamics.* New York: Springer-Verlag), ZELIG simulates forest dynamics by accounting the establishment, annual diameter growth, and mortality of each individual tree on small model plots.

We are modifying the model by adding a subroutine that classifies vegetation within simulated plots in terms of suitability as habitat for each animal species. Existing field data on animal habitat use will be analyzed to develop the classification functions. The result will be a listing or map of the proportion of the modeled area that represents suitable habitat for each animal species.

Understanding community responses to land-use and climate change requires analyses at several spatial scales. Stand-level simulations will be done by averaging the results from several independent model plots. Interactions among vegetation patches involving shading, seed dispersal, and probability of animal colonization will be simulated by running ZELIG in transect mode. These runs will be used primarily to examine the influence of patch size, edge characteristics, and patch juxtapositioning on community structure. The simulations of real landscapes (H. J. Andrews Experimental Forest, Oregon Cascades, and Drift Creek Basin, Oregon Coast Range) will produce maps of plant and animal species diversity under the various silvicultural, disturbance, and climate-change scenarios.

Old-Growth Research at the H. J. Andrews Experimental Forest

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The H. J. Andrews Experimental Forest is located 80 km east of Eugene, Oregon, in the western Cascade Mountains. It has been a major site for research on old-growth forest and stream ecosystems since its establishment in 1948. More than half of the 6,400-ha site remains pristine old growth. The site and research program are managed jointly by the USDA Forest Service's Pacific Northwest Research Station and Willamette National Forest, and by Oregon State University (OSU). Funding comes from these sources and the National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), the Environmental Protection Agency (EPA), and elsewhere. The Andrews Forest is one of 18 NSF-sponsored Long-Term Ecological Research (LTER) sites in the United States where basic research programs on ecosystem structure and