

## DEVELOPMENT OF A LANDSCAPE-SCALE GIS DATABASE TO ASSESS WILDLIFE USE OF MANAGED FORESTS<sup>WTWS</sup>

Keith B. Aubry  
Pacific Northwest Research Station  
USDA Forest Service, Olympia, WA 98512

Our objective was to establish a design for sampling wildlife populations in intensively managed forest landscapes in western Washington that would enable us to investigate habitat relationships at stand (30-80 ha), sub-basin (watersheds 4,000-12,000 ha), and basin (watersheds 60,000-81,000 ha) scales simultaneously. We established study sites in 24 forest stands, including 6 replicates in each of 4 forest structural classes: clearcut, pre-canopy, closed canopy, and harvest age. To provide a framework for analysis of landscape-scale influences on diurnal breeding bird, forest-floor small mammal, bat, and amphibian populations under study in these stands, we located our sites in sub-basins that were representative of those under intensive forest management, but which included a range of variation in landscape conditions. We quantified landscape conditions by integrating classified Landsat imagery with other

GIS base layers and landscape pattern indices. We classified the satellite imagery into 5 serial stages and used principal component analysis, cluster analysis, and discriminant function analysis to classify sub-basins into 4 distinct landscape types. One of these types represents landscapes under intensive forest management, such as those having approximately equal proportions of relatively small patches of clearcut, young, and mature serial stages with little, if any, old-growth forest. We located study sites only in this landscape type; stands were distributed among 7 sub-basins occurring in 4 basins. Preliminary analysis of amphibian community data confirms the validity of our approach, and suggests that community composition is more strongly influenced by landscape-scale influences operating at the scale of basins than by those occurring at the sub-basin or stand scales.