Coarse Wood in Lake Littoral Zones

William Cole[1] and Richard Guyette[2]

1) Forest Science Section, Science Development and Transfer Branch, SIRD, OMNR
1235 Queen St. E. Sault Ste. Marie, ON. P6A 2E5
2) School of Natural Resources, University of Missouri

Ontario has an estimated 260,000 lakes, many of which have at least some forested ecotone. Many of the less developed shorelines of these lakes have large quantities of coarse wood in the littoral zones. Aquatic coarse wood provides valuable habitat for a variety of aquatic and terrestrial flora and fauna. We lack specific knowledge of the ecological properties, input rates and residence times of littoral zone coarse wood, which makes it difficult to make resource management decisions about forest lake ecotones that are sustainable.

Eastern white pine (*Pinus strobus* L.) and eastern hemlock (*Tsuga canadensis* L.) are two of the most common tree species contributing coarse wood to the littoral zones of lakes in central Ontario. We mapped and described white pine and hemlock coarse wood in four central Ontario Lakes, Swan, Scott, Dividing, and McCullock, and used dendrochronology to estimate residence times using cross-sectional samples collected from logs. The mean littoral zone residence time for hemlock is 147 years and for white pine, 271 years. The maximum estimated residence time was nearly 700 years for white pine. White pine coarse wood generally has more surface area above the water line than hemlock. It is more likely to be oriented parallel to the shoreline, and has more terrestrial flora and faunal diversity. These factors may make it more valuable as long-term aquatic habitat than hemlock.

Insect and Microclimate Responses to Selection Cutting in Algonquin Hardwood Forests

Erica Nol

Department of Biology, Trent University
Peterborough, ON. K9J 7B8

We measured microclimate and vegetation gradients at 10 m intervals along a 100 m transect perpendicular to road and trail edges in three logging treatment types(<2 yrs ago; 2-5 yrs ago; and 15-20 yrs ago) and in wilderness designated regions in the hardwood forests of Algonquin Park. Strong microclimate gradients were found for soil moisture, with soil moisture increasing as a function of distance from the road/trail edge, especially in the logged treatments. Other microclimate features including air and soil temperature and light intensity varied significantly among treatments but not as a function of distance from the edge. Vegetation gradients were strong with decreases in herbaceous and 1-2 m cover class, and increases in ground vegetative cover and 2-5 m cover class as a function of distance from the edge. Strong treatment effects occurred in 5m+ (canopy) cover, as expected after removal of canopy trees. There were no significant differences in canopy cover between 15-20 year old stands and wilderness zone stands. In a separate but related study we found strong treatment effects on the average number of carabid beetles, with a 50% reduction in numbers in recently logged stands. We explain these reductions as responses of the invertebrate communities to major alterations in forest microclimate especially 1-5 years after selection logging. Carabid beetle biomass was not significantly different in 15-20 year post-cutting stands and wilderness zone stands.