

Mystery in Yellowstone!

Wolves, wapiti, and the case of the disappearing aspen

Notable notes in forest research at Oregon State University College of Forestry

Although quaking aspen (*Populus tremuloides*) is the most widely distributed tree in North America, its native range has been shrinking over the past century. This loss has been especially apparent in Yellowstone National Park, where stands of the white-barked tree, with its trembling leaves and brilliant fall foliage, have decreased dramatically over the last century. This disappearance is puzzling, especially since aspen grows rapidly and can quickly resprout from its extensive underground root systems or from seeds after fires, floods, and other disturbances.

Scientists **William J. Ripple**, Forest Resources, and **Eric J. Larsen**, Geosciences, both of the Environmental Remote Sensing Applications Laboratory (ERSAL), have been seeking answers to the mystery of Yellowstone's vanishing trees by examining changing ecological relationships between aspen and wildlife species of the Park. They hypothesize that changes in predator/prey relationships between wolves and wapiti (elk) since the 1920s have led to the disappearance of aspen stands. As wolves in the park decreased drastically over the past century, elk populations have increased. Elk and other wildlife, such as deer, beaver, and

porcupine, eat the thin, smooth bark of young aspen. Have large elk herds been overbrowsing aspen faster than the stands can regenerate?



To find out, Ripple and Larsen needed to know more about the historical distribution of aspen trees in Yellowstone Park. An earlier scientist, Edward R. Warren, conducted one of the few quantitative studies of the Park's aspen in 1921-1922. They used Warren's measurements of tree diameter to study historic patterns of aspen regeneration in the Park. To compare the historical data with new data, they collected new increment cores from aspen stands growing in the Park and in the nearby Gallatin National Forest. They counted the trees's growth rings

and developed an equation describing the age/diameter relationship. When they applied the equation to Warren's data, they found some interesting clues. For nearly 200 years, from the 1750s until the 1920s, aspen stands in the park had been successfully regenerating. Then, coinciding approximately to the time wolves disappeared from the park, aspen stands also began to disappear.

Now, using information gained from Ripple and Larsen's work, scientists have a new question to solve: *Will the reintroduction of wolves into Yellowstone Park help aspen and other hardwoods survive?* To find out, check back to this site, or visit: www.cof.orst.edu/cof/fr/research/aspen/.