

DEVELOPMENT AND THE KEUKA LAKE WATERSHED - PART I

DAVE DECALESTA

Reprinted from the March 2007 KLA Newsletter

Prior to settlement by European colonists, the Finger Lakes Region of New York was a vast expanse of forestland with some openings created and maintained by Native Americans for growing crops and hunting. Settlement gradually denuded the hillsides surrounding the Finger Lakes, including Keuka Lake, as trees were harvested for lumber, and forestlands were cleared for agriculture. Pictures taken 1890-1910 show the hills above Keuka Lake essentially bare of trees, the land being used mainly for pasture and crops, including grapes. These same hills gradually re-forested as farming was abandoned, except lands retained for agriculture. As pressures build to once again deforest these hills for housing in the "second tier" of development, and continuing use for agriculture, questions have been raised over potential impacts of a second wave of deforestation on these hillsides which form the Keuka Lake Watershed (lands containing streams that feed into Keuka Lake).

Deforestation affects terrestrial (land-based) wildlife and their habitats, aquatic wildlife and their habitats, and water quality of streams and the lakes they feed into. To better understand how deforestation and development may affect these natural resources in the Keuka Lake Watershed, a series of articles will be presented in the KLA newsletter to provide background information on natural resources and development/deforestation. This article describes how forests grow and mature over time in a series of stages and how these stages provide vital habitats for wildlife species (some endangered or threatened). and how development and deforestation affect succession, and in turn, habitats and wildlife.

The next article will describe habitat components, like snags, logs, and rocks used by wildlife and how development affects them.

Another article will describe how the spatial arrangement of forested habitats, and size of blocks of contiguous forest habitat affects wildlife and how development affects this dimension of wildlife habitat.

The final article describes how development can affect aquatic vegetation, habitats (streams, ponds, gullies, gorges, and lakes) and associated wildlife species. This last article will integrate information from preceding articles to describe how development in watersheds can affect quality and quantity of land and aquatic ecosystems, and associated wildlife communities.

Stages of Forest Succession and Wildlife

The predominant stage of forestland surrounding Keuka Lake prior to colonization and development by Europeans was old-growth. **Old-growth Forests** are characterized by a mix of large and old deciduous trees (trees with leaves that fall in autumn like oak, maples, ash, and beech) and coniferous trees (trees that bear cones and retain green leaves –needles - year-long like white pine and hemlock). Large snags and large logs are prevalent. Large natural disturbances, like hurricanes, tornadoes, and fire knock down standing trees and cause old-growth forests to turn into early succession forests (see below). There are no local wildlife species that must have old-growth to survive, but some of the characteristics of old-growth stands, like large white pine snags, provide key nesting sites for some rare species such as bald eagles. Many wildlife species require characteristics shared by old-growth forests and maturing forests, but that does not make them "old-growth obligate" species.

Early Succession Forests, created when overstory trees are removed by natural events or logging, are characterized by dense, shrubby vegetation, grasses, small seedlings, occasional snags, and a few large surviving trees (called residuals). A number of wildlife species live only in early succession forests, including rufous-sided towhees, chestnut-sided warblers, indigo buntings, cottontail rabbits, and meadow jumping mice.

Sapling/pole Forests replace early succession forests and are characterized by dense collections of smallish trees (usually less than 4 inches thick). The trees are packed together so tightly that little sunlight reaches the ground, resulting in little if any seedlings, shrubs, or wildflowers growing underneath. These forests meet some of the needs of wildlife species, such as feeding areas for woodcock and snowshoe hares and hiding

areas for deer. Many birds nest in the dense vegetation.

Maturing Forests succeed sapling/pole forests as the trees keep growing larger. By this time some of the trees have already died, some remaining standing as snags, some falling as logs. These dead trees create small holes in the forest, allowing sunlight to reach the ground, promoting growth of shrubs, new seedlings, and wildflowers. Oaks and beech trees now produce nuts, cherry trees and shrubs like Juneberry produce fruits for wildlife. This stage of forest succession is the most productive for wildlife as it creates much food, and hiding and nesting places. As maturing forests continue to age, trees get bigger, more die and become larger snags and logs, and the forest again begins to open up. A number of locally rare and threatened species, such as scarlet tanagers, cerulean warblers, and blue-spotted salamanders live in maturing forests and in old-growth forests.

Sustainable timber harvest (removing trees for lumber, but leaving enough to insure continued presence of all forest stages) does not lead to deforestation or loss of habitat or wildlife – it merely turns older forests into younger forests and provides a key forest stage: early succession. Timber harvests usually occur over areas of 10-40 acres and usually do not remove enough older forest to negatively affect wildlife. Temporary roads (skid roads) built to haul harvested trees out of forests, and places where the trees are stacked (landings) prior to transport to lumber mills, must be carefully treated to prevent soil compaction, erosion, and potential runoff of soil into streams. Usually old-growth forests are not timbered, but are left intact for the values they produce.

Farming converts forests to agricultural land, resulting in deforestation and loss of forest habitat and associated wildlife species. However, farming creates another type of habitat – forest/farmland – which supports a group of wildlife (deer, rabbits, turkeys) that use agricultural lands for food and surrounding forests for cover. A moderate amount of farmland interspersed with blocks of intact forests increases the mix of habitats and wildlife species. However, large-scale (hundreds to thousands of acres in solid blocks) farming, which removes forestland in large blocks and prevents recurrence of forests, does result in significant deforestation and losses of wildlife habitats and species.

Residential and commercial development results in various amounts of deforestation. In some cases, farmland is sold for residences and/or commercial development, eliminating the farm/forest wildlife habitat type. In other cases, existing forests are cut down and replaced with residences/commercial operations. A small ¼ acre patch cut out of an intact forest for a home site produces little negative impact on forest habitats and wildlife. A ¼ home site, with additional forest acreage cut down to produce a view results in more deforestation and the beginnings of impact. Residential developments with multiple home sites remove larger areas of trees to create views. These developments begin to destroy enough forestland to create significant negative impacts on forest habitats and wildlife. The bluff, formed by the “Y” of Keuka Lake, is heavily forested (excepting the block of residential development at the tip) and contains multiple habitats with a diverse community of wildlife species. The northern tip of Keuka Lake (Penn Yan and residential developments surrounding the lake) is devoid of forests, excepting patches of individual trees, and has far fewer wildlife habitats and wildlife species. This large block of residential/commercial development has eliminated all stages of forestland and has eliminated the associated habitats and wildlife species.

Achieving Balance. Communities concerned with preserving the quality of life, habitats, wildlife, and water resources in surrounding watersheds establish “green zones.” Residential, commercial, and agricultural development in these green zones are designed, developed, located, and managed to maintain designated blocks of forestland in sufficient size, position, and quality to preserve the quantity and quality of wildlife habitats, wildlife communities and aquatic resources. Watersheds so managed produce high quality of life for humans and wildlife alike.

Subsequent articles will discuss economic consequences of how development within watersheds occurs, either managed or unmanaged.