Ecological Site Analysis of Bear Creek Aquatic Camp

Bear Creek Aquatic Camp (BCAC) is located in the Mississippian Embayment physiographic region of Kentucky. This region is characterized by flat lying terrain due to the erosion of the unconsolidated sediments from the Cretaceous, Tertiary, and Quaternary periods that are located at the surface (Kentucky Geological Survey). By downloading the Geology layer package from the Kentucky Geological Survey and querying the area of interest, BCAC, I was able to determine that these are the five geologic units underlaying the property: Fort Payne Formation (Mississippian limestone), Warsaw Limestone (Mississippian limestone), McNairy Formation (Cretaceous sandstone), continental gravel deposits (Quaternary), and loess (Quaternary) (Kentucky Geological Survey). The McNairy Formation is notable because it has been determined to have deposits of heavy metals such as ilmenite, hematite, and zircon. This formation is mined in Tennessee, but the deposits are too thin and discontinuous in western Kentucky to be of economic interest (Kentucky Geological Survey). Loess deposits are also unique to western Kentucky geology. Loess is windblown sediments that are highly unconsolidated and deposits east of Kentucky Lake are not mappable due to thinning of the unit.

Due to the flat lying terrain, the geologic units listed above are not outcropped in any area of the camp property. Therefore, the soils in this region are also important to investigate. The dominant soil unit is the Brandon silt loam, the Purchase-Loring complex, and the Saffell-Smithdale-Brandon complex. These are dominantly silty soils that are typically well drained, slowly permeable, and can contain loess deposits (Natural Resources Conservation Society). The majority of the property has a high flooding potential related to the proximity of Kentucky Lake and the relatively flat terrain. ­­

The hydrological system of BCAC is very integral to the camp property management and the activity at camp. From kayaking to sailing or swimming, when camp is in session, girls spend 2-6 hours on the water each day. Kentucky Lake is 250 square miles with over 2,000 miles of shoreline, including where the camp is located along Girl Scout Bay. The lake is man-made, like all lakes in Kentucky, due to the creation of the Kentucky Dam in 1938 that flooded the valley (Kentucky Lake). The Tennessee Valley Authority (TVA) operates the dam and fluctuates the lake level periodically each year. With the fluctuating land level, the camp property manager must be mindful of the location of structures near the lake shore like boat supply barns and boat storage and must monitor the conditions of the lake in relation to the multiple docks and launch ramps along the shore of Girl Scout Bay. The fluctuating level of the lake also creates some issue with property rights of the land under the lake. When the lake is high during the spring, the water level is quite high and covers a significant larger amount of land than when the lake level is low in the fall. Kentucky’s navigable water laws determine that all of the land that is at some point in the year covered by the lake is public land. So even when the water level is low, the outer edge of the camp property is considered public land and can be accessed by water by anyone (American Whitewater). This information is important for the camp property manager to be aware of.

As visitors to the property can attest, BCAC has a lot of canopy cover which provides a lot of shade during the summer for campers (National Agriculture Imagery Program). Since the property has been managed as a camp since 1944, there has been a certain level of protection provided for at least the past 75 years. High amounts of canopy cover are also beneficial for wildlife in the area. The property is located along Kentucky Lake which is bounded by the Land Between the Lakes (LBL) National Recreation Area. LBL is managed by the US Forest Service and contains 98,940 acres of protected, forested land (Land Between the Lakes). Since such a large swath of protected land is located less than two miles from the camp, the amount of canopy cover on the camp’s 184 acres likely does not have a significant impact on providing habitats for migratory species like birds. Nevertheless, maintaining this camp as a source of protected, partially forested land is important for providing habitats for the wildlife in this area.