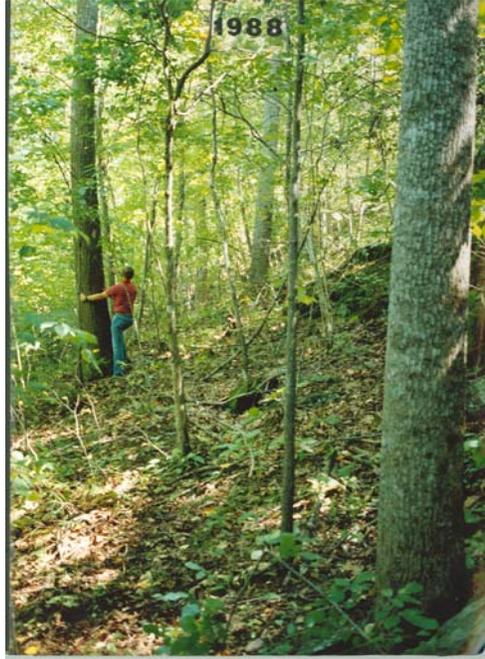


FOREST SITE CLASSIFICATION



A forest site is a small parcel of land, less than an acre, which has unique environmental characteristics of heat,

moisture, and nutrients. The species composition and growth rate of forest vegetation are strongly dependent on the amount of those components, particularly moisture, which is available during an annual growing cycle. Sites of high quality have ample moisture and nutrients for continuous growth during the spring and summer, but low quality sites usually lack adequate moisture during the late summer. For example, yellow-poplar and northern red oak are often present on low elevation sites in moist coves and oaks usually dominate ridge sites, which are



This photo shows mesophytic tree species growing on a moist lower slope.

typically dry and infertile. Resource managers must determine the characteristics of forest sites when making decisions ranging from conservation to silviculture. Foresters often estimate site quality based on tree height at a certain age. Ecologists, however, need methods of determining the temperature, moisture, and fertility regimes of a site.

Our research shows:

- Satellite imagery and FIA field data can be used to validate large ecosystem map units, such as the southern Cumberland Plateau, in [Tennessee](#) and [Kentucky](#).
- Soil moisture availability during the growing season is a good predictor of tree species composition and growth.
- Landform, the concave or convex surface shape of a site, is more important than aspect in determining site quality in the southern Appalachians of [North Carolina](#).
- Forest ecosystems, consisting of trees, shrubs, and herbs can be mapped across landscapes using digital data sets and predictive models applied by computer.
- An expert system based species composition can be used to classify forest site quality in the central hardwood region from western [Virginia](#) to [Arkansas](#).

Research in progress involves:

- Predicting forest site quality using tree species composition in [North Carolina](#) (Contact: Henry McNab)

- Using geology, soils and topography to estimate site quality in northern [Alabama](#)
(Contact: Callie Schweitzer)
- Correlating tree species with site moisture gradients in eastern [Kentucky](#).
- Associating historic fire regime dynamics with site quality in northern [Arkansas](#)
(Contact: Marty Spetich)

Contact: Henry McNab