

MONTANE OAK—HICKORY FOREST (LOW DRY BASIC SUBTYPE)

Concept: Montane Oak–Hickory Forests are dominated by mixtures of oaks with *Quercus alba* as a significant component. The Low Dry Basic Subtype covers the distinctive, very rare examples that combine flora indicative of drier conditions with that indicative of basic soil conditions. Many species more common in the Piedmont than the mountain are present, along with those characteristic of the Blue Ridge. This community is presently known only from the South Mountains but may be found in other places.

Distinguishing Features: The Low Dry Basic Subtype is distinguished from the other subtypes by the occurrence of characteristic lower elevation species such as *Quercus falcata*, *Quercus stellata*, and *Pinus echinata* in the canopy and suite of low elevation, fire-tolerant herbs, combined with species indicative of basic soils. The characteristic low elevation tree species are indicators that may be present only in small numbers. Characteristic fire-tolerant species include *Baptisia tinctoria*, *Silphium compositum*, *Solidago odora*, *Iris verna*, *Pityopsis graminifolia*, and *Tephrosia virginiana*. Characteristic basic soil species include *Fraxinus americana* or *biltmoreana*, *Cercis canadensis*, *Rosa carolina*, *Frangula caroliniana*, *Chionanthus virginiana*, *Cynoglossum virginianum*, *Tragia urticifolia*, and *Scleria oligantha*.

Synonyms: No NVC association is yet established.

Ecological Systems: Southern Appalachian Oak Forest (CES202.886).

Sites: The Low Dry Basic Subtype occurs on convex or planar slopes or spur ridges that face south or west, and that have amphibolite or other mafic rock substrates. The known range of occurrence is around 1400-1700 feet, but examples should be sought throughout the elevations typical of the Low Dry Subtype, up to 3000 feet or a bit higher.

Soils: Soils presumably are unusually high in pH and base saturation. The known area is mapped as Evard-Cowee complex (Typic Hapludults).

Hydrology: Sites are well drained and drier than other Montane Oak Forests due to low elevation and dry slope aspects.

Vegetation: The canopy consists of a mix of tree species in which *Quercus alba* usually is dominant or codominant, while *Quercus montana*, *Carya glabra*, and *Carya pallida* are abundant. Species indicative of low dry conditions, such as *Quercus stellata*, *Quercus falcata*, *Pinus echinata*, and *Carya pallida* are present. Species indicative of higher pH conditions, such as *Fraxinus americana/biltmoreana*, are characteristic and may be abundant but may be present only at a low density. *Quercus velutina* also has high constancy in the known example. The understory includes frequent *Cornus florida*, *Diospyros virginiana*, *Sassafras albidum*, and *Nyssa sylvatica*. Less abundant but characteristic species include *Cercis canadensis*, *Prunus serotina*, and in the known example, *Prunus alleghaniensis* and *Crataegus uniflora*. The shrub layer varies. *Arundinaria appalachiana* dominates large patches in the known example. Other areas have sparser shrubs that include some notable species such as *Celtis tenuifolia* (possibly *smallii*), *Amorpha glabra*, *Chionanthus virginicus*, *Toxicodendron pubescens*, *Rosa carolina*, and *Frangula caroliniana*, as well as more widespread species such as *Vaccinium pallidum* and *Vaccinium*

stamineum, *Muscadina rotundifolia*, *Parthenocissus quinquefolius*, and *Vitis aestivalis* may be abundant on the ground. The herb layer includes large areas dominated by *Piptochaetium avenaceum*. Other high constancy or frequent herbs include *Clitoria mariana*, *Coreopsis major*, *Solidago odora*, *Carex nigromarginata*, *Chimaphila maculata*, *Dichanthelium commutatum*, *Endodeca serpentaria*, *Galium circaezans*, *Helianthus divaricatus*, *Iris verna* var. *smallii*, *Lespedeza repens*, *Lespedeza violacea*, *Mimosa microphylla*, *Scleria oligantha*, *Solidago petiolaris*, *Symphyotrichum pretense*, *Tragia urticifolia*, and *Parthenium integrifolium*. Less frequent in plots but characteristic or indicative herb species include *Agrimonia pubescens*, *Agrimonia microcarpa*, *Brickellia eupatorioides*, *Cunila origanoides*, *Danthonia sericea*, *Euphorbia pubentissima*, *Cynoglossum virginianum*, *Liatris spicate*, *Lithospermum virginianum*, *Phaseolus polystachyos*, *Silphium reniforme*, *Tetragonotheca helianthoides*, *Angelica venenosa*, *Pityopsis graminifolia*, *Schizachyrium scoparium*, and *Tephrosia virginiana*. The plot data show high species richness, averaging 77 species per 1/10 ha.

Range and Abundance: Ranked G1. At present, this community is known at only one site in the South Mountains. It may be found at other places within the range of the Low Dry Subtype, and possibly in other states, but likely is extremely rare.

Associations and Patterns: This community occurs as small patches. The known example is associated with other subtypes of Montane Oak–Hickory Forest, including the Low Dry Subtype and Basic Subtype, and with Low Elevation Basic Glade.

Variation: Only a single occurrence is known. If more are found, they may be fairly different.

Dynamics: As in the Low Dry Subtype, this subtype is presumed to be more influenced by fire than the other subtypes and other Montane Oak Forests, with fire maintaining a more open canopy, even less dense understory, and a correspondingly dense herb layer. The abundance of *Arundinaria appalachiana* might also be maintained by fire. Given its cooccurrence in landscapes with more mesic forests, the greater influence of fire presumably comes partly from greater fire intensity, though the dry site conditions also would increase the likelihood that any ignition would spread through the whole area and might slow the recovery of the woody vegetation.

Comments: This subtype has been recognized only recently. It was not included in the 2012 edition of the 4th Approximation Guide, as its status was still being considered. It was first identified by Kevin Caldwell and Lloyd Raleigh after 2010. Several CVS plots were sampled in 2013, giving some basis for quantitative description. The known site has a number of unusual floristic characteristics, in other communities as well as in this one. If other examples of the Low Dry Basic Subtype are found, they may be substantially different, but should be recognizable by a combination of flora indicative of warm dry conditions and of basic soils.

Rare species: Vascular plants – *Helianthus laevigatus*, *Liatris aspera*, *Liatris turgida*, *Matelea decipiens*, *Prunus alleghaniensis*, *Tradescantia virginiana*.

References: