

***Liriodendron tulipifera* - *Aesculus flava* - (*Fraxinus americana*, *Tilia americana* var. *heterophylla*) / *Cimicifuga racemosa* - *Laportea canadensis* Forest**

COMMON NAME Tulip Tree - Yellow Buckeye - (White Ash, Appalachian Basswood) / Common Black Cohosh - Wood-nettle Forest  
SYNONYM Southern Appalachian Cove Forest (Typic Montane Type)  
PHYSIOGNOMIC CLASS Forest (I)  
PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B)  
PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2)  
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N)  
FORMATION Lowland or submontane cold-deciduous forest (I.B.2.N.a)

ALLIANCE *Liriodendron tulipifera* - *Tilia americana* var. *heterophylla* - *Aesculus flava* - *Acer saccharum* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

**Globally**

This association occurs in the southern Blue Ridge of Georgia, North Carolina, Tennessee, and may possibly extend into Virginia.

**Great Smoky Mountains National Park**

This community was sampled on both the Mount Le Conte and Cades Cove quadrangles. Additional historic samples are from the Calderwood (1440 to 1940 feet elevation) and Thunderhead Mountain (2390 to 3420 feet elevation) quadrangles. On the Cades Cove quadrangle, historic and recent samples of this community ranged from 1680 to 3740 feet elevation. Samples from the southern portion of the Cades Cove quadrangle came from the vicinity of Forge Creek in coves along and above the creek, east and north of Gregory Ridge and below Doe Ridge; and from slopes in the lower portion of Gregory Ridge Trail; and on a slope northeast of Birch Springs Gap. In the northeast portion of the quadrangle this community was sampled from a cove at the head of Maynard Creek; a cove above Rowans Creek; a cove along Cork branch, above Rowans Branch; and from a cove below Anthony Ridge. An additional sample of this community was taken from the northwest portion of the Cades Cove quadrangle northeast of Spruce Double on a low slope above Abrams Creek. Only two examples of this community were sampled on the Mount Le Conte quadrangle, and the community is uncommon on this quadrangle. The community was sampled in the central portion of the quadrangle, northwest of Mt. Winnesoka, in a cove near Indian Camp Branch (2935 feet elevation) and in the western portion of the quadrangle, on a steep, low slope above Baskins Creek (1950 feet elevation).

ENVIRONMENTAL DESCRIPTION

**Globally**

This forest occurs on concave, lower slopes and flats at middle elevations (2000-4500 feet) in the southern Blue Ridge.

**Great Smoky Mountains National Park**

This forest was found in low, protected topographic positions, often near small streams, on gentle to moderate slopes with northerly aspects. Samples of this community had a mean elevation of 2500 feet, ranging from 1440 to 3740 feet. Perhaps because of the generally more accessible locations of these forests, many of the sites were logged in the past.

MOST ABUNDANT SPECIES

**Globally**

Stratum Species  
No information

**Great Smoky Mountains National Park**

Stratum Species  
Tree canopy *Liriodendron tulipifera*, *Halesia tetraptera* var. *monticola*, *Tilia americana* var. *heterophylla*, *Acer rubrum*, *Fraxinus americana*  
Herbaceous (variable)

## CHARACTERISTIC SPECIES

### **Globally**

#### **Great Smoky Mountains National Park**

*Liriodendron tulipifera*, *Halesia tetraptera* var. *monticola*, *Carya cordiformis*, *Fraxinus americana*, *Tilia americana* var. *heterophylla*, *Cimicifuga racemosa*, *Collinsonia canadensis*, *Deparia acrostichoides*, *Disporum lanuginosum*, *Hepatica nobilis* var. *acuta*, *Hydrophyllum canadense*, *Laportea canadensis*, *Lindera benzoin*, *Osmorhiza claytonii*, *Panax quinquefolius*, *Polystichum acrostichoides*, *Thelypteris noveboracensis*, *Viola canadensis*.

## VEGETATION DESCRIPTION

### **Globally**

The canopy is dominated by some mixture of rich site mesophytic species such as *Aesculus flava*, *Fraxinus americana*, *Tilia americana* var. *heterophylla*, and *Magnolia acuminata*, occurring with more widely tolerant tree species such as *Liriodendron tulipifera*, *Acer rubrum*, *Tsuga canadensis*, and *Betula lenta*. The herbaceous stratum is diverse and often very lush. Typical herbaceous species include *Cimicifuga racemosa*, *Caulophyllum thalictroides*, *Disporum lanuginosum*, *Aruncus dioicus*, *Adiantum pedatum*, *Collinsonia canadensis*, *Osmorhiza claytonii*, and *Laportea canadensis*.

#### **Great Smoky Mountains National Park**

The canopy of this forest is dominated by various mixtures of *Liriodendron tulipifera*, *Halesia tetraptera* var. *monticola*, *Tilia americana* var. *heterophylla*, *Acer rubrum*, and *Fraxinus americana*. Other species that occasionally have high canopy coverage include *Acer saccharum*, *Aesculus flava*, *Betula lenta*, and *Tsuga canadensis*. If a subcanopy is present it has species from the canopy and often *Cornus florida*. The shrub stratum is sparse to moderate and is often composed of saplings of canopy species, but composition varies from site to site. Some of the more common shrub species include *Acer pensylvanicum*, *Calycanthus florida*, and *Rhododendron maximum*. The herbaceous stratum has sparse to moderate coverage but is always diverse and contains a mix of species characteristic of high-base status soils occurring with those more typical of acidic forests. Dominance is variable among occurrences and may relate to varying levels of disturbance. Species that most often have moderate to high coverages include *Adiantum pedatum*, *Ageratina altissima*, *Amphicarpaea bracteata*, *Aster divaricatus*, *Carex* spp. (e.g. *Carex austrocaroliniana*, *Carex digitalis*, *Carex laxiflora* var. *laxiflora*, *Carex pensylvanica*, *Carex plantaginea*, *Carex virescens*), *Caulophyllum thalictroides*, *Cimicifuga americana*, *Collinsonia canadensis*, *Dryopteris intermedia*, *Galium triflorum*, *Laportea canadensis*, *Maianthemum racemosum* ssp. *racemosum*, *Mitchella repens*, *Osmorhiza claytonii*, *Polystichum acrostichoides* var. *acrostichoides*, *Solidago caesia* var. *curtisii*, *Stellaria pubera*, *Thelypteris noveboracensis*, *Tiarella cordifolia*, and *Viola* spp. (e.g. *Viola blanda*, *Viola canadensis*, *Viola cucullata*, *Viola hastata*, *Viola pubescens*, *Viola rotundifolia*). Other species commonly found include *Arisaema triphyllum*, *Arisaema triphyllum* ssp. *triphyllum*, *Botrychium virginianum*, *Deparia acrostichoides*, *Dioscorea quaternata*, *Disporum lanuginosum*, *Panax quinquefolius*, *Parthenocissus quinquefolia*, *Phegopteris hexagonoptera*, *Sanguinaria canadensis*, *Sanicula canadensis*, *Thalictrum thalictroides*, and *Uvularia perfoliata*. Common vines include *Aristolochia macrophylla*, *Smilax rotundifolia*, and *Vitis aestivalis*. Particularly on disturbed sites, *Vitis aestivalis* can have high coverage.

## OTHER NOTEWORTHY SPECIES

No information

CONSERVATION RANK                      G4

## RANK JUSTIFICATION

This community is uncommon due to specialized habitat requirements, but it is not rare. It is secure throughout its range, but susceptible to impacts by logging due to its location in accessible topographic positions.

DATABASE CODE                          CEGL007710

## COMMENTS

### **Globally**

This association is distinguished by the absence or scarcity of calciphilic species, such as *Diplazium pycnocarpon*, *Asplenium rhizophyllum*, *Dryopteris goldiana*, *Aquilegia canadensis*, *Solidago flexicaulis*, *Deparia acrostichoides*, and *Cystopteris protrusa*, by generally occurring at elevations above 2000 feet and by lacking species typical of lower elevation forests. Deciduous cove forests are perhaps the most complex group of communities to classify in the southern Blue Ridge, due to a combination of wide environmental range, high species richness, and high biogeographic variability. The recognition of associations based on fertility and elevation is provisional and will likely need further refinement.

#### **Great Smoky Mountains National Park**

Some examples described from the Great Smoky Mountains National Park may be more closely related to the global concept of *Liriodendron tulipifera* - *Tilia americana* var. *heterophylla* - (*Aesculus flava*) / *Cimicifuga racemosa* Forest (CEGL007291), but

because of the range in elevation (mostly above 2000 feet) and compositional variation among examples, they were placed in *Liriodendron tulipifera* - *Aesculus flava* - (*Fraxinus americana*, *Tilia americana* var. *heterophylla*) / *Cimicifuga racemosa* - *Laportea canadensis* Forest (CEGL007710), which has a more general concept. Many examples of this community are disturbed and have canopy coverage of early successional species such as *Liriodendron tulipifera*, *Acer rubrum*, and *Robinia pseudoacacia*, which may tend to make a photosignature similar to *Liriodendron tulipifera* - *Acer rubrum* - *Robinia pseudoacacia* Forest (CEGL007219).

#### REFERENCES

Schafale and Weakley 1990, Schafale pers. comm.