

Great Smoky Mountains National Park
photographs of
Aesculus flava - *Acer saccharum* - (*Fraxinus americana*, *Tilia americana*) /
Hydrophyllum canadense - *Solidago flexicaulis* Forest





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***Aesculus flava* - *Acer saccharum* - (*Fraxinus americana*, *Tilia americana*) / *Hydrophyllum canadense* - *Solidago flexicaulis* Forest**

COMMON NAME Yellow Buckeye - Sugar Maple - (White Ash, Appalachian Basswood) / Mapleleaf Waterleaf - Zigzag Goldenrod Forest
SYNONYM Southern Appalachian Cove Forest (Rich 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 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community occurs in the southern Appalachians of North Carolina and Tennessee and may range into the Blue Ridge of Georgia and Virginia.

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This community was sampled on the Mount Le Conte, Cades Cove, and Kinzel Springs quadrangles. Additional historic samples are from the Calderwood quadrangle (2780 feet elevation). On the Cades Cove quadrangle, historic and recent samples of this community ranged from 2880 to 3960 feet elevation. Samples from the southern portion of the Cades Cove quadrangle came from an east-facing cove of lower Gregory Ridge; protected upper slopes of the Gregory Ridge Trail; lower slopes above Forge Creek; and protected slopes north of Ekaneetlee Gap. In the western portion of the quadrangle, this community was sampled on the northslope of Pine Ridge. In the northern portion of the Cades Cove quadrangle, this community was sampled from a cove above Bunting Branch, north of Coon Butt; from a cove below the north side of Coon Butt; and from upper Fanny Branch. An additional sample of this community was taken from the southern portion of the Kinzel quadrangle, in a cove along Scotts Mountain Trail. Samples from the Mount Le Conte quadrangle ranged from 2508 to 3890 feet elevation. In the central and eastern portion of the Mount Le Conte quadrangle this community was sampled from a cove below Rocky Spur; from broad, protected slopes below Rainbow Falls; west of Porter's Flat on middle cove slopes above Long Branch; and on the west slope above Porter's Creek. In the southwestern portion of the Mount Le Conte quadrangle this community was sampled on a southwest-facing cove above Highway 441 in the vicinity of Fort Harry; on a slope east and south of Balsam Point; from a low Cove above the west Prong of the Pigeon River; on a cove northwest of Bullhead; and on a lowslope/cove above Le Conte Creek, north of Bullhead. Additional examples of this community were found in the western portion of the quadrangle in a cove north of Mt. Winnesoka, and on the north slopes of Piney Mountain, above Cherokee Orchard Road.

ENVIRONMENTAL DESCRIPTION

Globally

These forests occur on protected, concave, landforms, at elevation ranging from 2000-4600 feet. Soils that support this vegetation are nutrient-rich and probably high in base saturation and of circumneutral acidity.

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This association is found on steep to moderately steep, middle to low protected slopes and coves, on sites with northerly aspects, although it can occur at all aspects. Samples of this community had a mean elevation of 2430 feet, ranging from 2500 to 3960 feet. This community can occur on moist, bouldery situations or over well-developed, but rocky, nutrient-rich soils.

MOST ABUNDANT SPECIES

Globally

Stratum

No information

Species

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Stratum

Tree canopy

Herbaceous

Species

Acer saccharum, *Aesculus flava*, *Tilia americana* var. *heterophylla*, *Halesia tetraptera* var. *monticola*, *Fraxinus americana*
(variable)

CHARACTERISTIC SPECIES

Globally

No information

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Acer saccharum, *Aesculus flava*, *Halesia tetraptera* var. *monticola*, *Carya cordiformis*, *Cladrastis kentukea*, *Ostrya virginiana*, *Tilia americana* var. *heterophylla*, *Cymophyllus fraserianus*, *Deparia acrostichoides*, *Disporum lanuginosum*, *Hydrophyllum canadense*, *Laportea canadensis*, *Solidago flexicaulis*, *Hepatica nobilis* var. *acuta*, *Osmorhiza claytonii*, *Aristolochia macrophylla*, *Dryopteris goldiana*, *Asarum canadense*, *Viola canadensis*

VEGETATION DESCRIPTION

Globally

Forests of protected coves in the southern Appalachians, associated with nutrient-rich soils and dominated by *Aesculus flava* and *Acer saccharum*, often with *Fraxinus americana* and/or *Tilia americana* var. *heterophylla* sharing dominance. Other canopy species can include *Halesia tetraptera* var. *monticola*, *Carya cordiformis*, and *Quercus rubra*. A shrub stratum is very sparse or absent, and the herbaceous stratum is dense and luxurious. Characteristic herbaceous species include *Solidago flexicaulis*, *Hydrophyllum canadense*, *Hepatica nobilis* var. *acuta*, *Deparia acrostichoides*, *Cystopteris protrusa*, *Asarum canadense*, *Carex plantaginea*, *Cymophyllus fraserianus*, and *Diplazium pycnocarpon*. The herbaceous stratum can have local dominance by *Laportea canadensis*, *Viola canadensis*, *Dryopteris intermedia*, *Cimicifuga americana*, *Cimicifuga racemosa*, and *Caulophyllum thalictroides*.

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This forest has a canopy dominated by various combinations of *Acer saccharum*, *Aesculus flava*, *Tilia americana* var. *heterophylla*, *Halesia tetraptera* var. *monticola*, and *Fraxinus americana*. Occasionally *Carya cordiformis* or *Quercus rubra* may have high coverage in the canopy. The subcanopy is dominated by the canopy species, occasionally with high coverage by *Cladrastis kentukea* or *Ostrya virginiana*. The shrub stratum is absent or very sparse, with scattered woody saplings, commonly *Acer saccharum*, *Aesculus flava*, and *Halesia tetraptera* var. *monticola*. The herbaceous stratum is lush and diverse, with dominance varying among occurrences. Herbaceous species that commonly have high coverage include *Adiantum pedatum*, *Ageratina altissima*, *Asarum canadense*, *Aster divaricatus*, *Caulophyllum thalictroides*, *Cimicifuga racemosa*, *Cystopteris protrusa*, *Deparia acrostichoides*, *Disporum lanuginosum*, *Dryopteris intermedia*, *Dryopteris marginalis*, *Hydrophyllum canadense*, *Impatiens pallida*, *Laportea canadensis*, *Parthenocissus quinquefolia*, *Polystichum acrostichoides*, *Sedum ternatum*, *Solidago caesia* var. *curtisii*, *Solidago flexicaulis*, *Stellaria pubera*, *Tiarella cordifolia*, and *Viola canadensis*. Additional species with at least 50 percent constancy include *Arisaema triphyllum* ssp. *triphyllum*, *Galium triflorum*, *Hepatica nobilis* var. *acuta*, *Osmorhiza claytonii*, *Polygonatum pubescens*, *Thalictrum* spp. (e.g. *Thalictrum clavatum*, *Thalictrum dioicum*, *Thalictrum pubescens*, *Thalictrum thalictroides*), *Trillium* spp. (e.g. *Trillium catesbaei*, *Trillium erectum*, *Trillium grandiflorum*, *Trillium rugelii*, *Trillium undulatum*), *Uvularia* spp. (e.g. *Uvularia grandiflora*, *Uvularia perfoliata*), and *Monarda* spp. (e.g. *Monarda clinopodia*, *Monarda didyma*). *Aristolochia macrophylla* is a common vine. Other species found in this association that are indicative of high-base status soils include *Dryopteris goldiana*, *Sanguinaria canadensis*, and *Panax quinquefolius*.

OTHER NOTEWORTHY SPECIES

No information

CONSERVATION RANK

G3G4

RANK JUSTIFICATION

DATABASE CODE

CEGL007695

COMMENTS

Globally

This association was defined for the richest cove forests in the Great Smoky Mountains and may need revision to apply more generally to similar forests in the southern Blue Ridge. This forest lacks dominance by *Betula alleghaniensis* and *Fagus grandifolia* and has an herbaceous flora indicative of high-base status soils. This association typically has a much more diverse herbaceous stratum than other forests dominated by *Aesculus flava*. 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.

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Relative dominance of canopy species varies among examples of this association. Some examples may have canopies strongly dominated by *Halesia tetraptera* var. *monticola*, while others have major canopy dominance by either *Acer saccharum*, *Aesculus flava*, *Tilia americana* var. *heterophylla*, or *Fraxinus americana*. Some examples may have signatures similar to *Aesculus flava* - *Betula alleghaniensis* - *Acer saccharum* / *Acer spicatum* / *Caulophyllum thalictroides* - *Laportea canadensis* Forest (CEGL004973). However, *Aesculus flava* - *Acer saccharum* - (*Fraxinus americana*, *Tilia americana*) / *Hydrophyllum canadense* - *Solidago flexicaulis* Forest (CEGL007695) is distinguished by a characteristic herbaceous flora, by lacking canopy dominance of *Betula alleghaniensis* and *Fagus grandifolia*, and by overall occurring at lower elevations, or on less extreme landforms.

REFERENCES

None