

NPS Science Office - Mary Foley

An Ecological Survey of Weir Farm

Wilton/Ridgefield, CT

November, 1991

~~by Nature Conservancy?~~

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36 215

Introduction

Weir Farm is located in the Southwest Hills Ecoregion as defined by Dowhan and Craig (1976). The geology, soils, and vegetation of Weir Farm is similar to that of the region and is described in general terms below.

SHOULD ~~NOT~~ Be in
NPS species
~~NOT PARK~~
~~LAND~~
→
Ridgefield
Present

The Southwest Hills is a coastal upland, lying within 25 miles of Long Island Sound, characterized by low, rolling to locally rugged hills of moderate elevation, broad areas of upland, and local areas of steep and rugged topography. Within this region, elevations are generally greater than 250 feet and less than 750 feet; the maximum elevation is almost 1,000 feet. The greatest topographic relief, 400-500 feet, is along the Housatonic and Naugatuck River valleys, and adjacent to the Connecticut Central valley along the eastern border of this region. The bedrock is primarily metamorphic: gneisses and schists, complexly folded into north-trending belts. Soils are mostly developed on glacial till in the upland areas and on locally extensive stratified deposits of sand, gravel, silt, and some clay in valleys and in several upland areas.

The mean annual temperature here is 49.5°F. The average winter temperature (December-February) is about 29.5°F, with a monthly mean minimum temperature in the coldest month of about 19°F. Mean annual minimum temperature is about -5°F. Seasonal snowfall accumulation averages 40 inches. The average frost-free season is about 160 days. The average summer temperature (June-August) is about 70°F, with a monthly mean temperature for the warmest month of 85°F, one of the highest in the state. Average annual precipitation is about 45 inches.

On well-drained soils the major forest vegetation is Central Hardwoods-Hemlock, formerly considered part of the Oak-Chestnut forest region and later the Oak-Hickory or Oak-Yellow Poplar region. Characteristic dominant tree species are White, Red, and Black Oaks (~~Quercus alba~~, ~~Q. rubra~~, and ~~Q. velutina~~), Hickories (~~Carya ovata~~, ~~C. cordiformis~~, and ~~C. glabra/ovalis~~ complex), Tulip or Yellow Poplar (~~Liriodendron tulipifera~~), Black Birch (~~Betula lenta~~), White Ash (~~Fraxinus americana~~), and Hemlock (~~Tsuga canadensis~~). Scarlet and Chestnut Oaks (~~Quercus coccinea~~ and ~~Q. prinus~~) are locally abundant on dry ridges and sandy soils, in places associated with White Pine (~~Pinus strobus~~). White Pine, however, is

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generally absent to scarce in this region. Dogwood (*Cornus florida*) is a common understory tree. Red Cedar (*Juniperus virginiana*) is dominant in early phases of old-field vegetation development. The avifauna in this region is not especially distinctive and is similar to that which can be found throughout much of the State.

Methods

The vegetation of Weir Farm was inventoried over a two-day period by staff biologists with the Connecticut DEP-Natural Diversity Data Base. Prior to the field review, collateral information (i.e. geologic maps, soils maps, 1:24,000 topographic maps, and 1:12,000 1990 black and white aerial photographs) was reviewed to determine the variation of habitats on the farm and to ensure that all different areas were surveyed. The vegetation was described using an existing classification for forest types. Shrub and herbaceous vegetation was classified by dominance. Anthropogenic features (fields, old-fields) are not described in this survey.

The vegetation map was prepared using 1990 1:12,000 black and white aerial photographs with boundaries transferred to the base map of Weir Farm. This map should be considered only as a general guide to the vegetation since the boundaries were not accurately transferred or field-checked.

Soils are described in general terms from the U.S.D.A. Soil Conservation Service Fairfield County Soil Survey only for the types delineated on the farm. The taxonomy of vascular plants follows. Preliminary Checklist of the Vascular Flora of Connecticut, J. Dowhan, Geological and Natural History Survey, 1979.

Results

Soils - The soils of the Weir Farm are relatively youthful, of Wisconsinan age or more recent, and have formed under a hardwood forest of oak, hickory, birch and maple. The soils of the farm have been derived solely from glacial till, are generally rocky, and have little organic accumulation in the upper layers. These soils can be further subdivided as occurring over deep and moderately deep friable to firm glacial till, over dense till ("hardpan"), and over shallow till.

The major soils of Weir Farm are described below:

Hollis - somewhat excessively drained, stony to extremely stony soils that formed in a thin mantle of loamy glacial till derived mainly from gneiss and schist. Hollis soils occur on hilltops, ridge tops, and side slopes of bedrock-controlled uplands. This soil occurs in small areas in the northeast and southwest parts of the Farm where it was mapped as a complex with Charlton soil and rock outcrops.

Charlton - well drained, stony to extremely stony soils that formed in loamy glacial till derived mainly from gneiss and schist. Charlton soils occur on hills and ridges of glacial till uplands. This is the predominant soil of the Farm occupying much of the area.

Leicester - poorly drained, stony soils that formed in loamy glacial till derived mainly from gneiss and schist. Leicester soils occur in depressions and drainageways on uplands. This soil is one of the wetland soils on the Farm where it has been mapped as a complex with Ridgebury and Whitman.

Ridgebury - poorly drained, extremely stony soil that formed in loamy compact glacial till derived mainly from gneiss and schist. Ridgebury soils are on side slopes, in slightly concave positions, and in drainageways.

Whitman - very poorly drained, extremely stony soils that formed in compact loamy glacial till derived mainly from gneiss and schist. Whitman soils are in drainageways and depressions in uplands.

Vegetation - The vegetation of Weir Farm is mostly forest except in areas too wet to support trees or areas clear-cut and maintained by man. There are three major forest types on the Farm reflecting the moisture conditions of the soil. The vegetation is described from dry to wet as follows:

Forested Communities

Mixed Oak Forests are a group of communities where oak species predominate, especially on the well-drained sites. Mixed oak forests are differentiated from other forests in Connecticut by the large number of acid-loving species in the ground vegetation. Pine species and Hemlock are common in the drier communities. The Mixed Oak Forest Association

is quite variable in its vegetation structure, ranging from dry forests with a well-developed ericaceous (heath) dwarf shrub layer to mesic forests with a well-developed shrub layer with few ericaceous shrubs, to moist forests with a ground cover of ferns. Mixed oak forests are the predominant vegetation in the Weir Farm and are found on a wide variety of sites. This forest type has one representative on the Weir Farm.

Oak - Maple Leaved Viburnum Type: Mesic forests predominated by Red Oak with a mixture of other species such as Black Birch and Red Maple (~~Acer rubrum~~). The shrub layer is generally well-developed and is dominated by Maple-leaved Viburnum (~~Viburnum acerifolium~~), Beaked Hazelnut (~~Corylus cornuta~~) and Witch Hazel (~~Hamamelis virginiana~~), with a sparse occurrence of ericaceous shrubs. The forest canopy of this vegetation type is more diverse with species such as Sugar Maple, Striped Maple (~~Acer pennsylvanicus~~), Flowering Dogwood (~~Cornus florida~~), and an occasional White Ash. The Oak-Viburnum type is the dominant forest type on the Farm.

Sugar Maple-White Ash Forests are a group of moist to wet, fertile communities that occur on lower slopes. Sugar Maple and White Ash generally dominate the tree canopy. Tulip Poplar (~~Liriodendron tulipifera~~) and American Basswood (~~Tilia americana~~) also occur in these forest types. The Sugar Maple-White Ash forests are differentiated from other forests in the study area by the large number of nutrient-demanding species such as Bloodroot (~~Sanguinaria canadensis~~), Silvery Spleenwort (~~Diplazium acrostichoides~~), Maidenhair Fern (~~Adiantum pedatum~~) and Wild Leek (~~Allium tricoccum~~). All of these forests have a well-developed shrub layer containing Spicebush (~~Lindera benzoin~~). The herb layer varies from a luxuriant herbaceous or fern cover to an open ground cover on moist talus slopes. This forest type has representatives on the Wier Farm, with a very limited distribution.

Maple-Ash-New York Fern Type: Moist forests predominated by Sugar Maple, White Ash with a mixture of Red Maple (~~Acer rubrum~~), Red Oak, Black Cherry (~~Prunus serotina~~). The shrub layer is generally well-developed with Maple-leaved Viburnum and Spicebush (~~Lindera benzoin~~). The herb layer is usually dominated by New York Fern (~~Thelypteris noveboracensis~~) with Hay Scented Fern (~~Demissaedtia punctilobula~~), Lady Fern (~~Athyrium filix-femina~~), White Wood Aster (~~Aster divaricatus~~), Partridgeberry (~~Mitchella repens~~), Starflower (~~Trientalis borealis~~) and others.

The Red Maple Forests are a group of swamps dominated by Red Maple with Yellow Birch and Hemlock as common associates. Many of these swamps are characterized by an abundance of Skunk-cabbage (~~Symplocarpus foetidus~~) in the spring and early summer. During the vegetative season, the herb layer is diverse and includes many spring ephemerals, ferns, and fall composites. The shrub layer is well-developed and is dominated by shrubs such as Winterberry (~~Ilex verticillata~~), Northern Arrow-wood, Silky Dogwood (~~Cornus anomala~~), and Spicebush, as well as ericaceous species such as Highbush Blueberry and Swamp Azalea and/or Sweet Pepperbush (~~Clethra alnifolia~~). Red Maple forests are the dominant wetland type on Weir Farm in undrained depressions and drainageways. Three types of Red Maple communities are found on the Weir Farm:

Red Maple - Sweet Pepperbush Forest: A wetland forest often dominated by Red Maple and scattered Black Gum (~~Nyssa sylvatica~~) with a well-developed shrub layer of Sweet Pepperbush, a variable herbaceous cover, and an often well-developed moss layer. This forest is distinguished by its location in undrained depressions or along slow-moving streams, by seasonal surface flooding, saturated soil conditions, and the accumulation of decomposed organic materials; and floristically by a number of species indicative of wet, nutrient-poor acidic conditions [e.g., Highbush Blueberry (~~Vaccinium corymbosum~~), Cinnamon Fern (~~Osmunda cinnamomea~~). This wetland grades, sometimes imperceptibly, into the following:

Red Maple - Spicebush Forest: A forested wetland dominated by Red Maple with a well-developed shrub layer of Spicebush and a variable herbaceous cover. This forest is distinguished by its topographic position on lower slopes or along gently sloping streams and brooks with groundwater seepage, and by its floristic composition. In most cases, this forest type can be distinguished from the preceeding by the occurrence of more nutrient demanding species such as Wild Geranium (~~Geranium maculatum~~), False Heleborine (~~Veratrum viride~~), New York Fern, Red Trillium (~~Trillium erectum~~), and ~~Carex bromoides~~. Although this forest is seasonally flooded/saturated, the water table can lie well below the soil surface during the vegetative season.

Unforested Communities

Buttonbush Thickets: are shrub wetlands dominated by Buttonbush (*Cephalanthus occidentalis*) and Winterberry (*Ilex verticillata*) with scattered Red Maple and Black Gum (*Nyssa sylvatica*) trees. Generally this shrub wetland has standing water, with little herbaceous vegetation, but as the water recedes, exposed mud is colonized by Water-Pepper (*Elodea canadensis*), Water Purslane (*Littoralea palustris*), Beggars Ticks (*Eriogonum* spp.), and Liverworts (*Riccia cristallina*). Buttonbush thickets have a very restricted occurrence on Weir Farm.

Critical Environmental Features

There were no Federal or State-Listed Endangered, Threatened, or Special Concern Species found during this survey of Weir Farm. In addition, no unusual, critical or essential habitats, were observed.

A butterfly species *Euphyes dion* (Sedge Skipper) proposed for state listing as a "Species of Special Concern" was observed just north of Weir Farm in 1984. This species prefers open bogs, swamps, wet meadows and sedge marshes. Caterpillars feed on *Carex lacustris* and *Carex stricta* while adult nectar on buttonbush, sneezeweed, and pickerelweed.

In Connecticut the Sedge Skipper is most easily found during July in sedge marshes, especially calcareous ones. During our July visit to Weir Farm we sampled buttonbush for the Sedge Skipper but none were collected. Weir Farm apparently does not include the preferred habitat for this species.

Recommendations

Garlic-mustard, *Allyrium officinale* was observed in one area along the roadside across from the Burlingham House (refer to map). Garlic-mustard is a non-native species that displaces native species. It is rapidly becoming a serious threat to the quality of many natural communities. Current practices for dealing with this species include arresting the spread of known populations. This is best achieved by the removal of flowering heads before seed is set; these parts should be removed from the property. Because this plant is a biennial, this process should

be repeated for several successive years. Other techniques for controlling the spread of this species include the use of herbicide and/or fire (Nuzzo, 1991).

Other exotic species noted during field surveys include Asiatic Bittersweet, (~~*Oenanthe*~~ *orbiculatus*) and Japanese Barberry, (*Berberis thunbergii*). Total eradication of exotic species is usually not possible, but the spread of these species should be controlled.

Any plantings considered for restoring the gardens around the existing structures should be native species or horticultural species that do not have a history of becoming noxious weeds that become a threat to existing natural communities.

Heavy deer browse was noted during field surveys. This is a common phenomena in Fairfield County and little can be done by managing a small parcel such as Weir Farm.

Placement of parking lots, structures and nature trails should avoid disturbance to wetlands. The lands east and northeast of the pond are the least disturbed communities of the Weir Farm parcel. It would be desirable to exclude these areas from consideration for development (parking lots, structures).

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Weir Farm

Polygonum Ludwigia Community Swale

Thelypteris noveboracensis
Clethra alnifolia
Riccia crinita & *Moerkia* - 3100
Lycopodium sp.
Echinochloa crusgalli
Polygonum hydropiperoides
Spiraea tomentosa
→ *Bidens*, *Thelypteris felix-femina*
Ludwigia palustris
Acer rubrum
Boehmeria cylindrica
Carex lurida

Acer-Clethra Swamp

Acer rubrum
Clethra alnifolia
Carex filiculata - 3101
Vaccinium corymbosum
Osmunda cinnamomea
Viola cucullata, incognito
Eleocharis ovalis - 3102
Climacium dendroides
Nyssa sylvatica
Sphagnum sp.
Sassafras albidum
~~*Smilax*~~ sp.
Monotropa unifolia
Polystichum acrostichoides
Acer pennsylvanica
Juniperus virginiana
Carya ovata

Quercus Viburnum Woods

Corylus cornuta
Dennstaedtia punctiloba

Clear Cut Behind Swale

Spotted Wintergrass *Chimaphila*
Kalmia latifolia
Acer rubrum
Lysimachia quadrifolia
Quercus alba
Solidago rugosa
Hamamelis *Hamamelis*
Fagus grandifolia
Desmodium nudiflorum
Viburnum acerifolium
Betula lenta
Vaccinium corymbosum
Dennstaedtia peruculotia - 3103
Solidago graminifolia
Lespedeza sp (col)
Panicum dichotomum
Carex sp. (in montane group)

Acer Fraxinum Transition

Carex laxiculmis
Celastrus orbiculatus
Mitchella repens
Pteridium aquilinum
Prunus serotona
Dennstadia punctiloba

Acer Linderia Seepage Forest

Geranium maculata
Arisaema triphyllum
Osmunda cinnamomea
Vaccinium corymbosum
Clethra alnifolia
Cinna arundinacea

Field notes
- not very
reliable
- NOT entered
only sp. in
report
entered

Weir Farm

Pond Margin

Lobelia cardinalis
✓ *Wolffia* sp.
Lemna sp.
- *Carex swani*
- *Antennaria* sp.
Fagus grandifolia
Polystichum acrostichoides
Quercus alba
Smilax sp.
Chimaphila maculata
Carex pennsylvanica
✓ *C. bracteosa* (col) - 3/10/4
Sassafras albidum
Clethra alnifolia
Viburnum acerifolium
Corylus cornuta
Lindera benzoin
✓ *Epilobium* sp. (col)
Impatiens capensis
Viola cucullata
Lindenia benzoin
Thelypteris novaboracensis
Castanea dentata
Hieracium paniculatum
- *Rubus* sp.
Panicum clandestinum
- *Bidens* sp.
Erechtites hieracifolia
Cephalanthus occidentalis
- *Drapariocladus* sp. land/pond margin
Salix nigra
- *Plantago* sp.
✓ *Viola triloba*
Onoclea sensibilis
Arisaema triphyllum

Animal Species

Mourning Dove
Belted Kingfisher
Downy Woodpecker
Northern Flicker
Eastern Wood Peewee
Bluejay
American Crow
Black-capped Chickadee (nesting)
Gray Catbird
Red-eyed Vireo
Green Frogs

Small Ledgey Area N. of Pond

Polypodium virginianum
Histrix patula
Acer saccharum
Betula lenta
Traxinus americana
Solidago flexicaulis
Dennstaedia punctiloba

Bedrock outcrop

Gayluceacia baccata
Q. rubra
B. lenta
Carex virescens
Lycopodium obscurum
Aralia nudicaulis
Panicum depauperatum

Acer Linderia Seepage Swamp

Mimulus ringens
Lobelia cardinalis
Athyrium thelypteroides
Lycopodium complanatum
Lyonia lingustrina
Aster laterfloris
Lespedeza sp. (col)
Solidago bicolor
Lobelia inflata
Carex lupulina
Conopholus americana

Weir Farm

Acer-Clethra Swamp
Swamp Behind House

Clethra alnifolia
Acer rubrum
Betula lutea
Nyssa sylvatica
Vaccinium corymbosum
Osmunda cinnamomea
O. regalis
Thelypteris palustris
Lindera benzoin
Symplocarpus foetidus
Viola cucullata, *V. incognita*
Maianthemum canadensis
Carex bromoides
Toxicodendron radicans
Kalmia latifolia
Scutellaria latiflora
Aster acuminatus
Parthenocissus sp.
Dryopteris cristata
Onoclea sensibilis
Equisetum arvense
Bartonia sp.
Sphagnum sp.
Amelanchier arboria
Carex gracillinia
Smilax rotundifolium
Sassafras albidum

Across From Burlingham House

Alliaria officinalis
Leonurus cadriaca
Acer saccharum

Viburnum Woods

Viburnum acerifolium
Acer pennsylvanica
Carya ovata
Betula lenta
Hamamelis virginiana
Aster divaricata
Carex debilis
C. pennsylvanica
C. laxiflora
Berberis thunbergii
Dryopteris marginis
Quercus rubra
Q. velutena
Kalmia latifolia
Fagus grandifolia
Vaccinium corymbosum

Boehmeria-Polygonum Drainage
Northern Western Wetlands

Clethra alnifolia
Lycopus sp.
Polygonum hydropiperoides
Scutellaria latifolia.
Bidens sp.
Ludwigia palustris
Penthorum sedoides
Solanum dulcarmara
Leersia virginica
Riccia pingues
Hypericum canadensis
Moerkia sp.
Nuphar variegatum
Phragmites communis

10 5
to 100 ft. deep