What's in these woods?

This brochure highlights some of our favorite native trees. The Fern Trail takes you along a narrow corridor, with a grove of white pines on one side, and a wetland area on the other. Along the trail you can also see tree species that dominate a northern hardwood forest: ash, beech, sugar maple, striped maple, and white pine.

After centuries of commercial timber harvesting and land clearing for agricultural purposes, the forest has returned to the northern Catskills. The elevation here is 2,200 ft., so trees representative of the mountain spruce-fir forest are also found in these woods.

This splendid variety of trees provides brilliant fall color that this region is known for, and a good range of forage and habitat for wildlife.

For more informaton on Catskill ecology, go to www.catskillstreams.org

About the Mountain Top Arboretum

The Mountain Top Arboretum is a living museum of trees and shrubs created for the education and pleasure of the public. Its founders, the Ahrens family, designed and planted a seven acre mountain top area starting in 1977, to display the range of native and exotic trees and shrubs that successfully adapt to the rigorous climate at 2,400 feet elevation. Today we have twenty three acres of displays in three distinct areas: the West Meadow, the Woodland Walk, and the East Meadow. We conduct programs for the public including the Annual Garden Fair, summer lectures, and workshops. Self-guided tours are encouraged and guided tours are possible by contacting the Executive Director at info@mtarboretum.org

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The Fern Trail

SOME TREES ALONG THE FERN TRAIL

Atlantic white cedar (*Chamaecyparis thyoides*)

Cedar has been tradi-tionally used for fence posts, roof shingles, and boat building. Found in swamps and boggy areas, the wood is rot resistant. During the American Revolution this tree was made into charcoal used in making gunpowder.

Balsam Fir (*Abies balsamea*)

Balsam fir is often farmed as a Christmas tree, and it's aromatic needles are stuffed in small pillows. The resin (sap) is used by nuthatches to cement their nests of grasses and bark. The resin has also been used as a glue for optical glass and was traditionally used as a cold remedy

Yellow Birch (*Betula allegheniensis*)

Yellow Birch is often used for flooring and cabinetry. The bark looks more grey than golden colored on many trees in this area, but the wintergreen aroma of the twigs can be used to help identify it. Wildlife feed on the buds and seeds.

Hemlock (*Tsuga Canadensis*)

Hemlock bark was once the source of tannin for the leather industry. Many spe-cies of wildlife benefit from the excellent habitat that a dense stand of hemlock provides. The Hemlock Woolly Adelgid, a non-native insect, poises a serious threat to the hemlocks.

Black cherry (*Prunus serotina*)

Black cherry timber is known for its strong red color and is highly desirable for cabinetry and furniture making. The fruit is suitable for making jam and used for flavoring sodas. The foliage contains cyanogenic glycosides which is poison-ous if eaten by animals.

Access to the East Meadow is along Maude Adams Road from the West Meadow. The walk takes five to ten minutes. This is a dirt road and may not be accessible to all persons. Seasonal conditions may make the walk more difficult. **Visitor vehicles are not allowed on this road!**

EAST MEADOW

11. Pine Grove
12. The Fern Trail
13. The Pump House
14. Wetland Walkway

Some birds you may find here:

- Cedar Waxwing
- Chickadee
- Eastern Bluebird
- Pileated Wood-pecker
- Red -Tailed Hawk
- White-throated sparrow
- Wilson's Snipe
- Winter Wren
- Yellow Warbler
- Yellow-bellied Sap-sucker

FERNS

The abundant expanse of ferns you see along this path is a result of both favorable growing conditions and excessive deer population. The deer have over browsed much of the native vegetation here, but deer will not eat ferns, so ferns have become a dominant plant in this area. While ferns have no known nutritional value for wildlife, they provide shelter for many mammals, amphibians, and reptiles.

The most common fern along this path is the New York Fern (*Dryopteris noveboracensis*), a soft, deciduous, yellow-green fern which stands 1–2 ft. high. Creeping rootstocks send up fronds, sometimes forming a dense ground cover. Multiplication is very rapid from shallow, black, wiry roots, and its dense colonies can crowd out other plants.

The Sensitive Fern (*Onoclea sensibilis*), gets its name from the fact that it dies as soon as there is a slight frost. The Sensitive Fern grows in wet meadows and woods, swamps and stream banks, and is considered a wetland indicator plant. This fern is also sensitive to drought, and requires consistently moist soil to thrive. It is hardy in zones 4–8.

Interrupted Fern (*Osmunda claytoniana*), has been found in the fossil record as far back as the Triassic period.

Three to seven short, cinnamon-colored fertile segments grow along the middle of the length of the Interrupted Fern's frond, giving the plant its name. This fern forms small, dense colonies, spreading locally through its rhizome.

Top left: New York fern; above left: Interrupted fern; above right: Sensitive fern.

Along this Corridor

Water flowing from the Black Head Catskill Mountain Range gathers in this high gradient stream and wetland area. The stream, the adjacent wetland edges and the surrounding spring seeps create this habitat. This landscape has been largely undisturbed since the early 1900s when widespread logging drastically shifted a woodland swamp into an open shrub wetland. The introduction of this pump house also affected the wetland ecology by drawing ground water from its surroundings.

Occasional flooding and groundwater seepage through mineral sub-soils create nutrient rich soils that support a dense plant community. Steepletop Spirea and Sensitive Fern are the dominant wetland plants here. Deteriorating tree roots, trunks and snags add to make organic rich moist soils.

The wetland and stream purify water; filtering nutrients and sediments as the water winds from this headwater stream to the Schoharie Creek and then to the Schoharie Reservoir. This water eventually joins the Ashokan Reservoir where the Catskill Aqueduct begins its 163 mile tunneled trip to Yonkers. In Yonkers the water enters Water Tunnels 1 and 2 to provide water for over 9 million New York City residents. (Merguerian)

References:

- *Soil Survey of Greene County New York*, USDA
- *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*, Hudsonia
- *A History of NYC Water Supply*, Charles Merguerian.

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The East Meadow Wetland Water's Journey from "Mountains to Manhattan"

To the right of the Pump House you will find markers locating the following:

1. Filtering Plants

Plants along the stream bank edges slow the water flow and allow nutrients to seep through the soil and into the plant roots. Deep root structures stabilize the bank and reduce erosion creating a healthy and diverse plant community. The surrounding wetland acts as a large filtering sponge for both groundwater and rainwater.

2. The Nature of this Soil

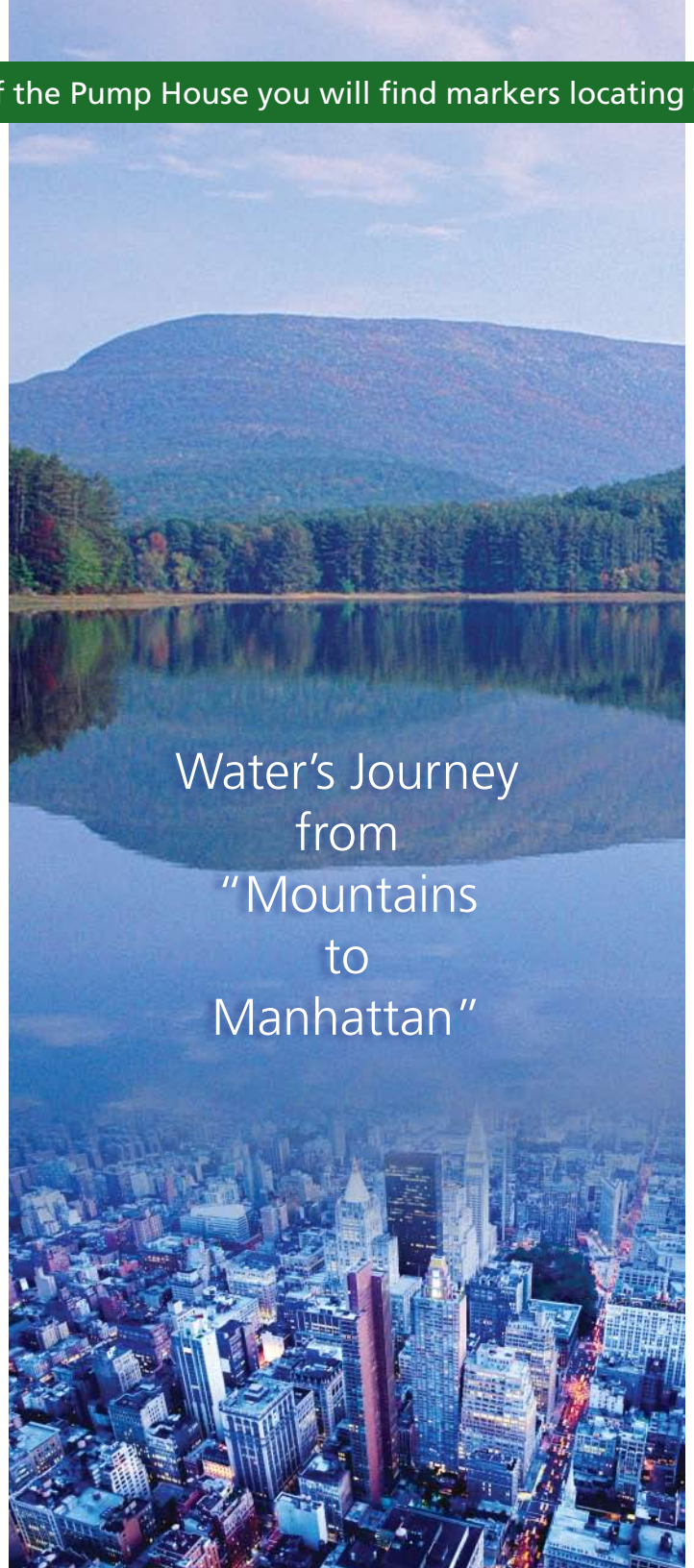
The slow and gradual accumulation of nutrients provides a rich organic base for plant life. These silt loam soils are glacial till, derived from reddish sandstones, siltstones and shale. An elevated ground table keeps soils moist year round. The oily appearance on the soils is naturally occurring from magnesium.

3. Stream Dynamics

This relatively stable stream slowly meanders through ground held in place by large rock outcroppings. The ox bow shape, characteristic of a slow stream, creates more stream edge habitat. As the stream reaches the steeper slopes of the woodland, the route becomes less serpentine and the rushing water erodes the soil, exposing the rocky till.

To learn more about Catskill streams, go to: www.catskillstreams.org

A stream runs through the Arboretum's Wet Meadow.



4. Seeps

Seeps are the places in this wetland where the mineral rich groundwater seeps out of the ground. 50 degree groundwater temperatures create a warmed microclimate, most visible at the beginning and end of winter. Seep habitats support salamanders and dragonflies; the northern dusky salamander and the tiger spiketail, in particular, are of special "conservation concern" due to their diminishing populations. (Hudsonia)

5. Plants found here

All of these plants belong in a primarily open shrub wet acidic meadow community. Some of these plants tolerate low oxygen conditions, yet may also be happy in average garden conditions.

Trees: Alder (Alnus); Eastern Larch (Larix laricina); Moosewood (Acer pennsylvanicum); Red Spruce (Picea rubra) and White Pine (Pinus strobes).

Shrubs: Steepletop Spirea (Spiraea tomentosa); Winterberry (Ilex verticillata) and Willow (Salix).

Perennials, Ferns and Grasses: New England Aster (Aster novae-angliae); Buttercup (Ranunculus reptans); Goldenrod (Solidago); Blued-eyed Grass (Sisyrinchium Montanum); False Hellebore (Veratrum viride); Sensitive Fern (Onoclea sensibilis) and Sedges (Carex).

Sedge (carex), Robert H. Mohlenbrock. USDA SCS. 1989. Midwest wetland flora: Field office illustrated guide to plant species. Midwest National Technical Center, Lincoln. Courtesy of USDA NRCS Wetland Science Institute.

Attracting Wildlife with Plants

Although the pink flower of the Steeplebush Spirea is beautiful, the most significant quality of this plant is the way it is part of an integrated plant community supporting an associative wildlife community. Long evolutionary processes create adaptive relationships between plant and animal. The beauty of these plants is in the role they perform, giving sustenance and shelter to a multitude of creatures.

Edges between habitats, called ecotones, provide opportunities for a more diverse group of wildlife. There are two edges here — the edge between woodland and wetland habitat and the edge along the stream between land and water. This contiguous stream corridor traverses through an open wetland into a woodland, offering opportunities for wildlife that need space for food, hunting and breeding.

Here we can observe how specific birds, insects, and animals interact with plants and understand in any habitat the loss of one species can cause a chain reaction affecting many more species. We can also learn how to manage our home landscape in order to better create and conserve precious wildlife habitat.

References:

- *Attracting Birds, From the Prairies to the Atlantic* by Verne E. Davison.
- *The Book of Swamp and Bog: Trees, Shrubs, and Wildflowers of Eastern Freshwater Wetlands* by John Eastman.
- *The Field Guide to Wildlife Habitats of the Eastern United States* by Janine M. Benyus.
- *www.catskillstreams.org*

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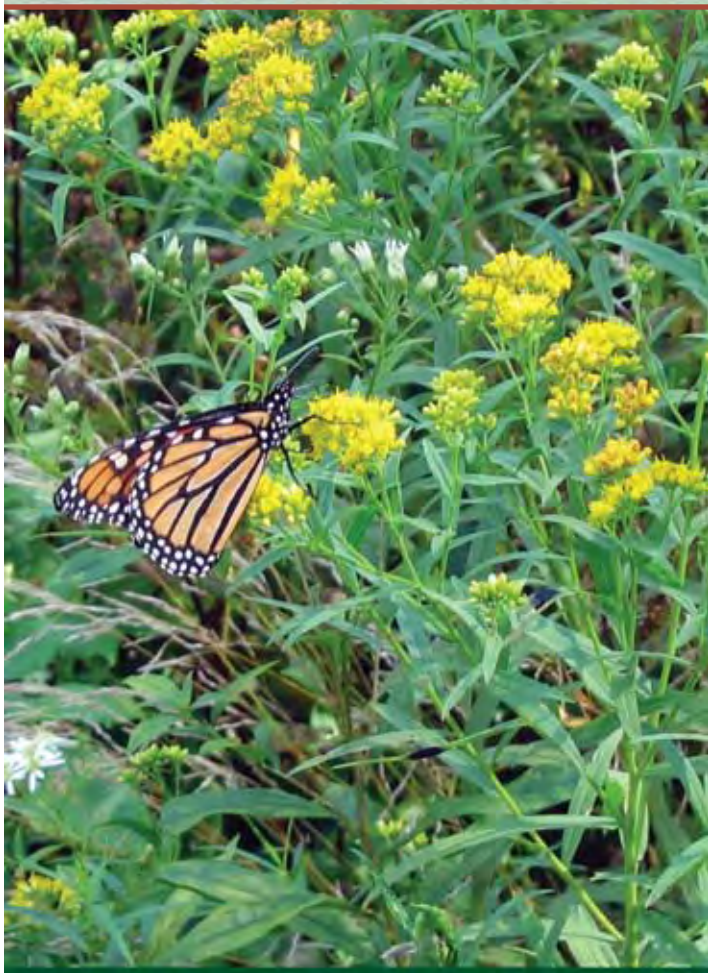
Wildlife Relationships in the East Meadow Wetland



Along the Path and Boardwalk you will find markers for:

A. Winterberry (Ilex verticillata)

The red winter berries offer important winter food for Mockingbirds, Crows, Yellow Shafted Flickers and Robins. As their fall berries ferment in early winter, they become more digestable. Their thick brush offers a sheltered place for birds like the Veery to nest. Winterberry is a stand out in the winter garden.

B. Steepletop or Hardhack Spirea (Spiraea tomentosa)

This bisexual plant relies on insects for pollination. Its nectar attracts many insects including bumblebees, wasps, and Long Horned Beetles. The Spring Azure butterfly and the Dark Spotted Looper Moth Catepillar feed on its foliage. In the winter rabbit and deer feed on its twigs and ruffed and sharp tailed grouse dine on the buds. Deer may be found bedding in the dense spirea thicket. Steepletop Spirea are found in mineral rich sunny marshes. (Eastman)

C. Sensitive Fern (Onoclea sensibilis)

Millions of years of evolution may have helped this primitive and dominant species develop biochemical resistance to being eaten by birds and animals. Most of the ferns are considered to have low wildlife value compared to other plants, however birds feed on the sensitive fern's fiddleheads, and deer and chipmunks have been known to browse on foliage. In wet habitats like this, Sensitive Fern forms colonies through their fibrous root system.

A. *Winterberry (Ilex verticillata).*

D. *Sedge (Carex crinita).**

B. *Steeplebush (Spiraea tomentosa).*

E. *Willow (Salix discolor)*

C. *Sensitive Fern (Onoclea sensibilis).*

F. *Goldenrod (Solidago).*

D. Sedge (Carex crinita)

Sedge is a host for many butterflies including the Eyed Brown Butterfly, the Appalacia Brown, Mulberry Wing, and the Two-Spotted Skipper. (Audubon Butterfly Guide) Snow Buntings; Lapland Longspur; Redpolls; and Swamp Sparrow are amongst the many birds that feed on the pendulous Carex seeds. (Davison and Benyus). Snipe come to feed on insects that are attracted to this sedge.

E. Willow (Salix)

The fuzzy willow catkins emerge in spring and provide an early food source for pollen collecting insects such as the Bumble Bees, Honey Bees, Andrenida Bees, and Syrphid Flies. Willow thickets provide good nesting sites for Northern Harriers, Alder Flycatchers, Grey Catbirds, Wilson's Warblers, Yellow Warblers and American Goldfinches. Grouse and grosbeak feed on buds. Rabbits, muskrats, deer, and porcupine all feed on twigs and bark in winter. (Eastman and Davison)

F. Goldenrod (Solidago)

The nectar of the goldenrod's fall flowers attract pollen loving insects, insects that provide food for birds. American Goldfinch and Ruffed Grouse feed on Goldenrod seed.(Davison) Goldenrods and Asters are among the few perennials that can penetrate the densely colonized Spirea. They do it by releasing phenols that act as herbicides for competing plants.

Rose gall, a sign of insect activity.

Male Goldfinch on nest.

** Jennifer Anderson. United States, IA, Scott Co., Davenport, Nahant Marsh. 2002. **Courtesy Joan Kutcher, Mountain Top Arboretum*

Mountain Top Arboretum Kiosk