

PLANT SURVEY
of
HOFFMAN CENTER,
MUTTONTOWN, NEW YORK

Prepared for Hoffman Center
6000 North Hempstead Turnpike
East Norwich, N.Y. 11732

28 May 2004

INTRODUCTION

This study is an attempt to inventory all the higher plants of Hoffman Center of Muttontown, Long Island, New York. Species' habitats, distributions, abundance and management are noted or discussed. The field work mostly took place during numerous visits between May and November 2003 and a few additional visits during the following winter and very early spring. This contrasts with the author's previous flora survey of the Hoffman Center, which was conducted only during three visits during October 1996 (Künstler 1996). Thus, many more species and more information were found during this survey.

METHODS

There was no strict protocol for the fieldwork. An attempt was made to cover the different areas and habitats evenly throughout the year, but coverage probably concentrated somewhat on the mature oak forest and some of the ponds because of the presence of more species. Twenty visits to the Hoffman Center in 2003 and two in early 2004 were carried out on the following dates and duration in hours and minutes: 5/18: 5:15; 6/27: 4:00; 8/2: 3:45; 8/24: 5:45; 8/29: 3:15; 9/14: 6:20; 9/18: 6:25; 10/3: 4:40; 10/17: 3:45; 10/24: 4:30; 10/26: Minimal time; 10/31: 1:30; 11/1: Minimal time; 11/3: 2:30; 11/4: 2:30; 11/8: 3:15; 11/9: 2:30; 11/15: 4:20; 11/21: 3:10; 12/27: 1:00; 2/16/04: 1:45; 4/3: 2:00; total 72:10. The nomenclature is according to Gleason and Cronquist (1991).

STUDY AREA

Hoffman Center is 155 acres in northeastern Nassau County in the Coastal Lowlands Ecozone, as is the rest of Long Island (Dickinson 1979). The topography does not vary much, elevation ranging from below 180 ft above sea level along some of the area near North Hempstead Turnpike/Route 25A to 220 ft above sea level along the south edge and some of the east edge of the Panhandle in the southeast. The main house and caretaker's buildings sit on an area that generally rises over 200 ft., the house and parking lot being just over 220 ft. The area had been uninhabited and forested when it was purchased by George S. Brewster for his family shortly before constructing the original buildings 1912-1914. The garden was planted 1914, work on the grounds began in 1915 and the main planting was done in spring 1916. The summer estate was sold in 1969 to become the Charter Oaks Country Club. It was taken over in 1977 and renamed Fox Run in 1979, still being maintained as a country club. Much of the golf course was created and graded at the expense of preexisting forest, and in some places, such as in the southeast part; earth was scalped from the surface and piled well above the level of the surrounding land. There are ten ponds on the property, most apparently being constructed as water hazards on the golf course, which was abandoned in 1982. Hoffman Center, a not-for-profit corporation and private operating foundation was established in 1995 to purchase the property and operate it as a nature preserve and wildlife sanctuary. The large pond, "Big Pond," just south of the caretaker's buildings was excavated before a liner was added to allow it to fill with water in 1998 to benefit wildlife. The Caretaker's Pond and the small one next to the inactive West Driveway, Driveway Pond, are possibly the only ponds of natural origin at the Hoffman Center. A sizable grassland was established between 1999 and 2001. A nature center is being constructed from the country club pool house and should be in operation by spring or early summer of 2005.

The major habitats or community types are partly according to Edinger et al. (2002): Scarlet Oak forest; Norway Maple forest; disturbed mixed deciduous forest; successional (southern) hardwoods; successional shrub land; successional old field (planted); and (mostly artificial) ponds. Cultural communities, according to Edinger et al. (2002), include: Mowed lawn with trees (including orchard because grass is regularly mowed); mowed lawn (both mostly near buildings); mowed roadside/pathway; unpaved road/path; and paved road/path.

The mature oak forest, or more specifically, Scarlet Oak forest, occupies a sizable portion of the property. The canopy is generally at least 75% Scarlet Oak (*Quercus coccinea*) and often well above. There are significant stands of White Oak (*Q. alba*), but only in limited areas. There are minor amounts of Northern Red Oak (*Q. rubra*) and Sweet Birch (*Betula lenta*). There is a diverse understory and a rich ground layer. On the preserve, it is distributed along both the main East and West driveways; a strip along the west half of the north border by North Hempstead Turnpike, the Northern Oaks, which meets with the oak forest along the West Driveway. It also stretches west irregularly from the East Driveway past the orchard and main house on the north and a strip of shrubland along the south with the Little Bluestem old field further south. It keeps going to the western boundary, not passing far from the oak forest of the West Driveway at some point, though the edges of the habitat are a bit blurred at times. Parts of the west half of this area are in a younger stage of succession and express such characteristics as smaller trees, thicker understory and more shade intolerant species, sometimes including more non-native species. This swath of oak south and west of the house is called here the Central Oaks. There is also a fringe of similar mature oak spilling just over the fence from much more extensive forest beyond. This is along the southern half of the eastern boundary and the adjacent southern boundary of the southeastern portion of the property that juts south, the Panhandle. While this fringe of forest is very narrow, it still exhibits a flora largely typical of forest interior conditions.

The Norway Maple forest covers a strip from the main entrance on the east to part way along the north border, meeting the Northern Oaks at its west end. It is characterized by a near continuous canopy of mature Norway Maple (*Acer platanus*) and little

else. This is over a sparse understory and groundlayer of largely non-native species.

The disturbed mixed deciduous forest is small and stretches from near the east side of the caretaker's buildings in the north, to the south and the east-west part of the path that goes down the southern east side. There are a few large Scarlet Oaks more or less centrally located. There is Black Cherry (*Prunus serotina*), Black Locust (*Robinia pseudoacacia*) and also Norway Maple in an overstory below the oak canopy, where present. Oriental Bittersweet (*Celastrus orbiculatus*) is climbing high into some of these trees. Morrow's Honeysuckle (*Lonicera morrowii*) and Jetbead (*Rhodotypos scandens*) were found in the shrub layer. Few herbs were found here.

Successional southern hardwoods is a hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed (Edinger et al. 2002). Characteristic trees that occur on this site include Sassafras (*Sassafras albidum*), Gray Birch (*Betula populifolia*) and Eastern Red Cedar (*Juniperus virginiana*). In some places, such as the southern and western Panhandle, especially where large oaks were spared when clearing the land, a young forest is developing with oak and other deciduous species. Introduced species include Black Locust, Ailanthus (*Ailanthus altissima*) and Autumn Olive (*Elaeagnus umbellata*). The ground layer is not diverse. The following community may be expected to convert to this one over time, barring drastic management actions. This habitat is of limited extent and in small patches, usually surrounded or partly surrounded by successional shrubland due to differential development of the two habitats over time. Simply "successional hardwoods" is probably a better term since the southern indicator species, such as Sassafras, noted in Edinger et al. (2002), are often absent.

Successional shrubland was once cleared for any of several reasons, mostly for a golf course in this case, and has grown long enough that there is over 50% shrub cover. It is the most extensive habitat on the sanctuary. One area of shrubland, mixed with successional hardwoods, lies between the Norway Maple and Northern Oak forests on the north and the West Driveway forest on the south. Another east-west swath is found on an old fairway between the West Driveway on the north and Central Oaks to the south. More lies west and south of the planted successional old field and a narrow strip along the north side. Nearly all of the southeast section of the sanctuary, from the Big Pond south through the Panhandle, is shrubland, except for the narrow periphery of oak forest, the aforementioned areas of successional hardwoods and the three small ponds. Autumn Olive, Multiflora Rose (*Rosa multiflora*), shrub honeysuckles (*Lonicera* spp.), Rough-stemmed Goldenrod (*Solidago rugosa*), Mugwort (*Artemisia vulgaris*) and sometimes Eastern Red Cedar and Gray Birch are more prominent in this community as it goes to successional hardwoods.

A "natural" successional old field is a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for development or farming), and then abandoned. Shrubs, if present, would have less than 50% cover in this habitat (Edinger et al. 2002). Some small areas interspersed within the successional shrubland fall within this community, but will soon increase in shrub cover, too, converting them to successional shrubland. Because of this and since this habitat only exists within very small expanses, it will be considered part of the shrubland. Prior to being successional shrubland, these areas were presumably successional old field, which developed soon after the golf course was abandoned.

A planted successional old field or grassland of 33 acres stretches from the unpaved south end of the East Driveway and carriage house west to the path that skirts it on the south and west before the path arches north toward the West Driveway. It is south of the Central Oaks. Thirty acres of successional shrubland and perhaps some successional hardwoods or old field were brush-hogged and seeded with mainly Little Bluestem (*Schizachyrium scoparium*), but also Big Bluestem (*Andropogon gerardii*) and Switchgrass (*Panicum virgatum*) by the U.S. Fish and Wildlife Service in 1999 and 2000. The remaining three acres were planted in 2001. Non-native and very invasive Mugwort has probably persisted here since it was shrubland. This is being managed primarily for grassland birds (Steve Werner, personal communication). There are some large mounds of earth that were results of the grading done years earlier that cannot be mowed and are supporting patches of successional shrubland or successional hardwoods.

There appears to be ten ponds on the property, perhaps as large as an acre. Most, if not all, are artificial. There is the House Pond behind the main house, which is permanent, originally ornamental, artificially contained, a fairly extensive lawn beyond and exposed to much direct sunlight; the permanent Caretaker's Pond, possibly natural (S. Werner, pers. comm.), between the caretaker's buildings and driveway and somewhat shaded; the permanent and relatively deep Big Pond just south of the last one and very exposed to the sun; a pair of seasonal ponds separated by a dike in the south central part of the preserve, the Northern South Central Pond and the larger Southern South Central Pond, which holds water later in the year, both receiving much sun; the semipermanent Central Panhandle Pond with the south end holding water much longer than the rest, it is long and narrow, running north and south in a gentle S-shape and is divided in thirds by dikes with successional southern hardwoods and some successional shrubland around it, giving it partial shade; the seasonal Southeast Panhandle Pond, which is small, fairly well shaded with an old, decaying bathroom close by; the small, shaded, seasonal Southwest Panhandle Pond; and the small seasonal Driveway Pond, possibly natural, off the south side of the West Driveway with mature oak forest on the north side and successional shrubland on the south. There is evidence of a small pond near the west boundary, but it was not visited. Here it is called the West Pond.

Terrestrial cultural communities, according to Edinger et al. (2002), are as follows:

Mowed lawn with trees includes areas just north of the main house, some places around the caretaker's buildings and also includes the orchard just east of the house because the grass is regularly mowed.

Mowed lawn is also mostly near buildings, such as the south side of the house and much of the area around the

caretaker's buildings.

Mowed pathway generally describes the paths on the preserve. They get light use, so they must be mowed. They may be shaded or not. They support mostly non-native grasses and forbs.

An unpaved road is mostly bare soil with sparse vegetation. It may or may not be shaded. This exists as a continuation of the main driveway from the carriage house south to the other side of the Big Pond. Much of this unpaved road has been covered with wood chips, which now supports no noticeable vegetation.

Paved road/path includes paved road, which includes the (East or Main) Driveway up to the caretaker's buildings, the West Driveway and connecting circle and roads. Under this classification, the parking lot also qualifies. Paved path is found where some of the old golf cart paths are still exposed. Some of these are in thick vegetation and others occasionally cross the maintained mowed paths. Except for the parking lot, most of these areas are usually in shade.

RESULTS

The individual species from this survey are shown in the species list compiled for the Appendix. Comments are made especially on the less common species and problematic non-native plants. Some common, weedy species lack comments.

Plantings

Being a large estate and then a country club, opportunities were taken over the years to add ornamental plantings to the property, especially near the main house, but also along the driveways, at their entrances, the caretaker's buildings, the parking lot and on the former golf course. Treated below are plants that were apparently planted, but may or may not have reproduced since then by producing offspring sexually or vegetatively. Those that have reproduced are also in the main list of wild plants (see key of the Appendix). There are a few non-reproducing plants, such as new plantings around the main house that were not recorded.

SCIENTIFIC NAME	ENGLISH NAME	COMMENTS
<i>Acer sacharum</i>	Sugar Maple	Big tree in dog pen of caretaker's area; regeneration elsewhere
<i>Andropogon gerardii</i>	Big Bluestem	Planted in grassland 1999-2001; may be reproducing
<i>Arctostaphylos uva-ursi</i>	Bearberry	Planted by Big Pond 2000-2002, since died out
<i>Asclepias tuberosa</i>	Butterfly weed	Planted by Big Pond 2000-2002, 2 with pods
<i>Aster novaeangliae</i>	New England Aster	Planted in orchard 2002
<i>Callicarpa</i> sp.*	Beautyberry	1 planted W side East Driveway before 1 st right
<i>Carpinus caroliniana</i>	Hornbeam, Ironwood	1 E side E Panhandle path, unsuitable habitat, thus planted
<i>Eupatorium</i> sp.	Joe-Pye weed	Planted by Big Pond 2000-2002
<i>Halesia tetraptera</i> *	Silver-bell Tree	At west entrance
<i>Panicum virgatum</i>	Switch grass	Planted in grassland 1999-2001; may be reproducing
<i>Picea abies</i> *	Norway Spruce	Planted along eastern West Driveway
<i>Picea</i> sp.*	Spruce	West Driveway; few elsewhere
<i>Pinus strobus</i>	Eastern White Pine	Big trees: W Driveway and 1 in CO (much reproduction); mid-S border
<i>Prunus maritima</i>	Beach Plum	Planted by Big Pond 2000-2002
<i>Pseudotsuga menziesii</i> *	Douglas Fir	A tree on W side of parking lot
<i>Rhododendron maximum</i> *	Rose-bay	Sizable old planting just NE of house; sapling near main <i>Kalmia</i>
<i>Rosa virginiana</i>	Virginia Rose	Planted by Big Pond 2000-2002
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	Little Bluestem	Dominant, planted in grassland 1999-2001; may be reproducing
<i>Taxus</i> sp.*	Yew	Plantings at least along and near W side of pkg. lot and HP; reproducing
<i>Trillium</i> sp.	Trillium	Clump of 20 flowering stems 5/1/03 just into oaks off house's S lawn
<i>Tsuga canadensis</i>	Eastern Hemlock	2 trees E end West Driveway reproducing
<i>Wisteria sinensis</i> **	Chinese Wisteria	Escaped plantings: E-most path; W end W Driveway; Ct area; E side house
<i>Yucca filamentosa</i> *	Adam's Needle	Plantings at extreme SE corner

DISCUSSION

The one community that is most likely similar to the pre-settlement habitat before it, contains the least disturbed vegetation and soils, has the highest native plant diversity and is most irreplaceable is the Scarlet Oak forest. This community may be the only one that bears any resemblance to the original habitat and it or its forerunner was perhaps the only one present on the preserve at one time, save, perhaps a few vernal ponds. However, this forest is likely second-growth that was cut over at least once before since colonial times, undergoing various permutations over the years. Additionally, no individual old-growth trees were noted, though

limited attention was given to this aspect of the forest. This would include trees with different, balding bark at the base of the trunk and large, dead or broken limbs at the top. Nevertheless, this community has not been described and is not included in Edinger et al. (2002). Allan Lindberg (pers. comm.), Nassau County Department of Recreation and Parks, stated that no such habitat is present on the Muttontown Preserve a little to the east or anywhere else in the area that he knows. A search should be made of remaining forest near Hoffman Center, particularly south and east of the Panhandle, to ascertain just how extensive the Scarlet Oak forest is.

A near pure canopy of Scarlet Oak with few other oaks and virtually no hickory may be unique. There are numbers of White Oak in the forest just north of the carriage house and relics on the lawn in front of the house, but these sites are not extensive. There are a few Northern Red Oaks and Black Oaks (*Quercus velutina*) and scattered Chestnut Oaks (*Q. prinus*) may be growing on slightly drier sites. There were three large Black Oaks in front of the carriage house that probably were part of the forest in the past. There should be more searching for Black Oak in the forest and perhaps Northern Red Oak as well. Likewise, a large double stemmed White Ash (*Fraxinus americana*) in the western Panhandle amongst other large trees and dense, successional undergrowth indicates that this species played some role in the oak forest previously present. In the Scarlet Oak forest, the American Elm (*Ulmus americana*) is only represented by a few seedlings on the east side of the driveway and the north side of the western West Driveway. They undoubtedly would not be there if not for the roads. In some places, such as the Central Oaks, there is excellent oak regeneration, which does not seem to be occurring in nearly as many places as it once did in the Northeast. However, in the Northern Oaks, there is much regeneration, but it is mostly Sugar Maple (*Acer saccharum*) with some Norway Maple. The future forest here is beginning to undergo a complete transformation of the canopy, and if many Norway Maples are allowed to remain, there will also be a transformation in the understory and ground layer with a loss of most native species. No large Sugar Maples were found in this general area, but there must be at least one such individual that is producing a great deal of seed. Peters (1973) stated that this species is "almost entirely confined to northwestern Long Island where it is occasionally found near kettle hole ponds." These may very well be from non-local planted trees. Eastern White Pine (*Pinus strobus*) was apparently planted by Brewster in the early 20th century or somewhat later along the West Driveway near the house and perhaps a solitary tree in the Central Oaks, where they have produced hundreds of saplings. There is also much regeneration along the main driveway. A row of planted pine along the south central border has not been examined for reproduction. Although Eastern White Pine is a native species on Long Island, the exact range is uncertain due to many early plantings, but from "existing records it appears to have occurred naturally as isolated specimens or in small groups often in swamps along the North Shore from Queens east to Greenport..." (Peters 1973). Hoffman Center's white pines are certainly from plantings. Although Sugar Maple and Eastern White Pine are native, the individuals at Hoffman Center are not likely of local ancestry and appear to be invasive, unlike their uncommon to rare predecessors. A couple of planted Eastern Hemlock (*Tsuga canadensis*) are reproducing at a slow rate in or at the edge of the Scarlet Oak forest. Originally, it was only "scattered as single specimens or small groups on cool slopes or deep woods along the North Shore moraine from Queens to Roslyn, thence quite rare to Roanoke" (Latham *vide* Peters 1973). A few young American Holly (*Ilex opaca*) have been found. This species historically grew almost entirely "along a narrow coastal strip from Flatbush...to Montauk." Henry Hicks stated that no native Holly occurred in central and northern Queens and Nassau counties (Peters 1973). This plant is at its northern range limit and could be making its way north due to a warming climate in combination with plantings of this popular species.

The one small tree that commonly grows a little above the shrub layer in moist oak forests of Long Island, including the Hoffman Center, is the Flowering Dogwood (*Cornus florida*). Individuals are well spaced, but found within most of the Scarlet Oak forest, amounting to many in this habitat.

Common shrubs in the Scarlet Oak forest understory include Northern Arrowwood (*Viburnum dentatum* var. *lucidum*) and Maple-leaf Viburnum (*V. acerifolium*) on somewhat drier sites. Others that may be somewhat numerous, but mostly restricted to single areas are Mountain Laurel (*Kalmia latifolia*), Spicebush (*Lindera benzoin*) and Early Lowbush Blueberry (*Vaccinium pallidum*). American Chestnut (*Castanea dentata*), at least at Hoffman Center, is no longer part of the canopy and grows more like a shrub, due to the effects of Chestnut Blight (*Cryphonectria parasitica*), sprouting from old stumps. Generally common shrubs that are uncommon or rare at Hoffman are Highbush (*Vaccinium corymbosum*) and Late Lowbush (*V. angustifolium*) blueberries, Black Haw (*Viburnum prunifolium*) and shadbush (*Amelanchier* sp.). Both lowbush blueberries are typical of the Long Island Pine Barrens and locally much less common. Shrubs uncommon to rare at Hoffman and considered by the author to be of similar abundance on Long Island in general include American Hazelnut (*Corylus americana*), Winterberry Holly (*Ilex verticillata*), Nannyberry (*Viburnum lentago*), Possum-haw/Withe-rod (*V. nudum* vars. *nudum* x *cassinoides*) and Red Chokeberry (*Aronia arbutifolia*).

Several vines live in this habitat, including some very large, dense stands of Common Catbrier (*Smilax rotundifolia*) no higher than two to three feet, but not much more than several seedlings of Sawbrier (*S. glauca*). Grape (*Vitis* spp.) and Virginia Creeper (*Parthenocissus quinquefolia*) were not common. Poison Ivy (*Toxicodendron radicans*), not restricted to a mature deciduous forest and often found in more disturbed areas, was oddly abundant and widespread as erect stems in the Northern Oaks. There was one sizable patch of Bur-cucumber (*Sicyos angulatus*).

Most of the diversity is on the ground. Many of these herbs are common and typical of oak forest on western Long Island and many are uncommon or even rare in this area. But, virtually all are dependent on the conditions found in mature oak forest. These include nearly 30 species. Generally somewhat common species found here include Sensitive Fern (*Onoclea sensibilis*), New York Fern (*Thelypteris noveboracensis*), Wild Sarsaparilla (*Aralia nudicaulis*), Spotted Wintergreen (*Chimaphila maculata*), Whorled

Loosestrife (*Lysimachia quadrifolia*), Partridgeberry (*Mitchella repens*), Indian Pipe (*Monotropa uniflora*), Solomon's-seal (*Polygonatum biflorum*), White Wood Aster (*Aster divaricatus*), Silver-rod (*Solidago bicolor*), Blue-stem Goldenrod (*S. caesia*), Jacob's-ladder (*Smilax herbacea* var. *herbacea*), Wild Lily-of-the-valley (*Maianthemum canadensis*), Pennsylvania Sedge (*Carex pennsylvanica*) and Moccasin Flower (*Cypripedium acaule*). Enchanter's Nightshade (*Circaea lutetiana*) and Wild Geranium (*Geranium maculatum*) were each restricted to single sites.

A few Spotted Wintergreen are persisting in shaded lawn south of the parking lot. There is a healthy population of Moccasin Flower, mostly along the West Driveway, consisting of 75 plants along the north side, two further west and more distant from the driveway and 18 along the south side. There were also six that had flowered of 12 total in an area of open understory between a large, lone Eastern White Pine (*Pinus strobus*) and a north-south path just west in the western Central Oaks. False Solomon's-seal (*Smilacina racemosa*), usually a common plant, was only represented by a few individuals at Hoffman Center. Shinleaf (*Pyrola elliptica*), usually uncommon on Long Island, is very common under much of the center's mature oaks and is even colonizing successional sites where there is an open understory just being created beneath young oaks. Smooth Aster (*Aster laevis*) could be considered a facultative forest species, often being found in old fields.

Princess-pine (*Lycopodium obscurum*) is a fairly uncommon species in the area. However, in addition to the small colony in the Northern Oaks, there is a very large stand in the oak forest immediately south and outside of the fence near the southeast corner of the center, coming within four feet of the sanctuary. A rare species in the Metropolitan region is Pipsissewa (*Chimaphila umbellata*), a large colony of which was found by Steve Werner just south of the Princess-pine in the Northern Oaks. There were 266 stems counted, which may have been a moderately high count. It is not known whether the few plants seen in the Central Oaks on the first survey are still extant. This species seems to be rare on Long Island and New York City (Gargiullo 2003; personal observation). Perhaps it has undergone a regional decline in population. Naked-flowered (*Desmodium nudiflorum*) and Panicked (*D. paniculatum*) tick-trefoils are mostly uncommon on Long Island, but Panicked Tick-trefoil is also able to grow in a grassland exposed to full sun. A single good-sized clump of Pinesap (*Monotropa hypopithys*) was discovered on September 14 in extensive, dense, young oaks in the northern Central Oaks a little south of the old fairway that stretches west of the main house. They were well past flowering. There is a large colony of Schreber's Aster (*Aster schreberi*) on the east side of the driveway. A single plant was noted in the Northern Oaks. It was on the Watch List until recently, but has since been removed. A second orchid on the preserve (Moccasin Flower being the first), Little Lady's-tresses (*Spiranthes tuberosa*), was found in a grassy area under oaks just off the parking lot 24 August in full flower. This species has only been recorded in Nassau, Suffolk, Richmond and Ulster counties in New York (Weldy et al. 2002). Perhaps a request to the New York Natural Heritage Program should be made to review the status of this species. It has a limited distribution in the state and perhaps should be listed as Threatened or Endangered.

Introduced species, even cumulatively, are not generally a large segment of the biomass of the mostly native oak forest. However, there are a good many species that are found in small numbers. Many species are well established with larger colonies along edges, such as the West Driveway. Trees included a seedling Japanese Maple (*Acer palmatum*) that was removed, Royal Paulownia (*Paulownia tomentosa*), an as of yet non-fruiting corktree (*Phellodendron* sp.) just west of the main stand of Mountain Laurel and spruce (*Picea* sp.) The Sugar Maple and Eastern White Pine present, as mentioned above, should probably be thought of ecologically as invasive.

Non-native shrubs include Japanese Barberry (*Berberis thunbergii*), Japanese Holly (*Ilex crenata*), Common Privet (*Ligustrum vulgare*), Rose-bay (*Rhododendron maximum*), yew, Linden-leaved Viburnum (*Viburnum dilatatum*), Guelder Rose (*Viburnum opulus* var. *opulus*) and Multiflora Rose.

Oriental Bittersweet (*Celastrus orbiculatus*) is presently one of the most invasive plants on the property, including at least at the forest edge, but is ready to invade wherever there is suddenly more light in the forest interior. Porcelain-berry (*Ampelopsis brevipedunculata*) is another vine that is a relative newcomer, but will undoubtedly spread enormously in the next few years, blanketing everything in its path and in similar habitats as the bittersweet, though it does not need something to climb, like the bittersweet. Chinese Wisteria (*Wisteria sinensis*) tends to dominate the few sites where it is established.

The forbs Field Garlic (*Allium vineale*), Lily-of-the-Valley (*Convallaria majalis*), Day-lily (*Hemerocallis fulva*), Japanese Pachysandra (*Pachysandra terminalis*) and Periwinkle (*Vinca minor*) are invasive non-natives that grow densely (except the garlic), vegetatively and exclude most other species as they spread.

The Norway Maple forest is largely composed of non-native species, some invasive, such as the Norway Maples themselves. These are the majority of those at Hoffman Center and are serving as a large seed source that threatens other parts of the sanctuary, such as with the regeneration that is occurring in the adjacent Northern Oaks. Due to heavy shade that is created early in the season and perhaps allelopathy, these trees eliminate or prevent much of what would otherwise grow beneath them. This is a very impoverished community. However, there were some significant native species. A stand of American Elm was found just west of the main entrance with four live trees ranging from about 3 ½ to 20 in diameter at breast height (dbh). A very large tree, 30 in dbh, was suspected of dying from Dutch Elm Disease (DED) (*Ophiostoma ulmi*), but conclusive evidence could not be found. Two smaller ones were killed by DED. There are a few seedlings in other parts of the Hoffman Center, but this is a stand of mature trees. These are just inside the fence along North Hempstead Turnpike. A colony of Sensitive Fern was one of the few other native species found here.

There is also a small stand of Norway Maple and associated non-native and invasive species, such as English Ivy (*Hedera helix*), behind the greenhouse.

The disturbed, mixed deciduous forest has been very modified and is filled with early successional or pioneer and non-native species, such as Black Locust, Black Cherry, Norway Maple, Morrow's Honeysuckle, Jetbead and Oriental Bittersweet. A young Sweet Cherry (*Prunus avium*) was also found. Some of the area must have been cleared and perhaps graded at one time, except where there are large Scarlet Oaks forming a canopy, relics of the original Scarlet Oak forest. A Northern Arrowwood was one of the only native species encountered. The particularly uncommon Pale Touch-me-not (*Impatiens pallida*) forms a colony north of the root cellar that appears smaller than when first encountered in 1996 (Künstler). In this same area, there was much weedy, herbaceous growth in an opening that was not focused on for this survey. Some Day-lily was found near the root cellar. The prospects of this succeeding to mostly native species, preferably with a largely Scarlet Oak canopy, does not seem very likely at this time without a good deal of human intervention.

Typical trees of the successional (southern) hardwoods include Sassafras, Gray Birch and Eastern Red Cedar. Young Scarlet Oaks may be an important component where the large, original ones were not cleared along with everything else. A few Bigtooth Aspen (*Populus grandidentata*) were found, as was a small Northern Bayberry (*Myrica pensylvanica*), which was getting shaded out by dense, maturing tree growth. While most of these species are present as a result of the destruction of the oak forest and ensuing early successional processes, a few species could have been components of the original oak forest, such as a young Basswood (*Tilia americana*) and a young White Ash near the large Persimmon (*Diospyros virginiana*) stand in the western Panhandle. Introduced species include Black Locust, Ailanthus, Autumn Olive, Hercules'-club (*Aralia spinosa*), Oriental Bittersweet and Porcelain-berry (*Ampelopsis brevipedunculata*). Several seedlings of the last species were found along the path between the two south central ponds. In an unusual situation in the interior south central Panhandle, there is a relatively large area of earth, probably the largest on the sanctuary, that was once piled high and left alone. On top, there is a multi-stemmed Black Willow (*Salix nigra*), normally semi-aquatic, growing in this dry site. Herbaceous species are few, largely because of the shade, but non-native and invasive Garlic Mustard (*Alliaria petiolata*) and Field Garlic are common. Mile-a-Minute (*Polygonum perfoliatum*), a highly invasive, non-native vine, was found in successional habitats, including this one, west of the Southern South Central Pond, where it was removed. It has been reported recently on Long Island, including nearby (Hyatt 2002). With luck, this community may be expected to convert to a somewhat impoverished Scarlet Oak forest over time, at least where there are large, remaining oaks for seed sources. This community comes about after the following community and will hopefully succeed to Scarlet Oak forest.

Successional shrubland is largely dominated by Autumn Olive, Multiflora Rose, shrub honeysuckles (*Lonicera morrowii* and *Lonicera* sp.), Rough-stemmed Goldenrod, Mugwort and sometimes maturing Eastern Red Cedar and Gray Birch are also prominent. Some other common plants found in this habitat were Showy Goldenrod (*Solidago speciosa*) and crab-apple (*Pyrus* sp.). Of the less widely distributed plants in this habitat, there was a large colony of Common Milkweed (*Asclepias syriaca*) in the eastern Panhandle and little elsewhere. Other uncommon to rare native herbs on the Hoffman Center included Butterflyweed (*Asclepias tuberosa*), Slender Three-seeded Mercury (*Acalypha gracilens*), Pearly Everlasting (*Anaphalis margaritacea*), Panicked Tick-trefoil, Wild Lettuce (*Lactuca canadensis*) and Indian Hemp (*Apocynum cannabinum*). Indian-tobacco (*Lobelia inflata*) was not unusual along mowed paths. A single colony of forget-me-not (*Myosotis* sp.), possibly native, was found. Two vines uncommon in this habitat which may or may not be native are Hedge Bindweed (*Calystegia sepium*) and Climbing False Buckwheat (*Polygonum scandens*). Celandine (*Chelidonium majus*) and Spring Vetch (*Vicia lathyroides*), "locally introduced" in the Northeast (Gleason and Cronquist 1991), were both represented by single small colonies.

Highly invasive non-native newcomers here include corkscrew, of which there is a fruiting individual well east of the northern Central Panhandle Pond. A very large, single stemmed Common Buckthorn (*Rhamnus cathartica*) was found on an unmowed mound in the old field and a smaller plant on the abandoned path off the West Driveway. These were two of three encountered on the preserve. This species may be in the early stages of heavily colonizing the area and is considered very invasive. Porcelain-berry has begun to establish itself in this community, among others. This vine is out-competing all the shrubs and everything else within several hundred square feet and may be expected to spread very quickly. Mile-a-Minute has recently established itself on at least two shrubland sites in the sanctuary, one west of the Southern South Central Pond and the largest behind the greenhouse. All three colonies, including one in successional hardwoods (above) were removed or treated with herbicide after discovery.

The successional old field is dominated by Little Bluestem with Big Bluestem and Switchgrass. Various herbaceous species grow near the edges especially. Mugwort has probably been a problem here since before planting and efforts are being made to control it through mowing.

The old, ornamental House Pond has been allowed to maintain itself more as a natural pond instead of clear and sterile as it must have been at one time, with a ramp up to the rim on either side for wildlife to come and go, such as turtles and possibly frogs now found there. However, there are no significant native plants close by.

The Caretaker's Pond only has a narrow rim for semiaquatic plants due to lawn maintained just beyond. There is an extensive overstory of mature oaks. Only four species seemed to be present due to the pond. Panicked Aster (*Aster lanceolatus* var. *simplex*) was very numerous and a willow (*Salix* sp.), with False Nutsedge (*Cyperus strigosus*) and Pennsylvania Smartweed (*Polygonum pensylvanicum*) were in significant numbers.

The deep Big Pond has shrubland or successional hardwoods on the east side and old field or scarified and near barren soil on the west. There is a limited stand of Phragmites (*Phragmites australis*) near the east side, a clump of Wool-grass (*Scirpus cyperinus*) on the nearby shore and Eastern Cottonwood (*Populus deltoides*) a little back from the shore in the same general area. The pond was only five years old, the soil conditions are probably poor for most plants and the slope of the shore may be too steep to support many plants. However, more species should colonize with time.

The Northern South Central Pond and the following two were certainly the water bodies with the highest plant diversity. This appears to be caused by the larger size, shallow shoreline slopes and large portions of the ponds being dry for much of the year. In this pond, the dominant tree around much of the pond was willow (*Salix* sp.) and Gray Dogwood (*Cornus racemosa*) was present among the woody vegetation. Small-headed Aster (*Aster racemosus*), which supports a colony of rare Field Dodder (*Cuscuta pentagona*), was perhaps the most numerous herb in the open area that is prone to flooding. Also in the open were Dwarf Spikerush (*Eleocharis parvula*), Fringed Loosestrife (*Lysimachia ciliata*) and Dotted Smartweed (*Polygonum punctatum*), which were perhaps a little less numerous or composed less coverage. Often present here in small numbers or areas were the herbaceous species Panicked Aster, spikerush (*Eleocharis* sp.), Northern Three-lobed Bedstraw (*Galium trifidum*), water-horehound (*Lycopus* sp.), Trailing Wild Bean (*Strophostyles helvola*), a sedge (*Carex* sp.) and the non-native Purple-headed Sneezeweed (*Helenium flexuosum*). Trees present included Eastern Cottonwood nearby and small, single American Elm and Gray Birch. These last three species and the bean are generally upland plants.

The Southern South Central Pond's dominant woody species is a willow with at least one mature Black Willow (*Salix nigra*) and a young Persimmon with a Virginia Creeper on it and a few shrubs of Red Osier Dogwood (*Cornus sericea*) and Silky Dogwood (*C. amomum*) are at the edge of this. The herbs in the open area include the abundant Dwarf Spikerush, the large stands of Common Water-purslane (*Ludwigia palustris*), panic grass (*Panicum rigidulum*), fair-sized colony of a spikerush and lesser numbers of Leafy-bracted Beggar-ticks (*Bidens comosa*), Purplestem Beggar-ticks (*B. connata*), Devil's beggar-ticks (*B. frondosa*), sedge (*Carex crinita*), sedge (*C. lupulina*), rare Smartweed Dodder (*Cuscuta polygonorum*) growing on Pennsylvania Smartweed, False Pimpernel (*Lindernia dubia*) and False Water-pepper (*Polygonum hydropiperoides*).

The woody vegetation of the Central Panhandle Pond is often dominated by the unidentified willow with Black Willow, Red Maple, Silver Maple (*Acer saccharinum*) (mid section), Eastern Cottonwood and Persimmon (north and south sections) in very small numbers. The terribly invasive Porcelain-berry is present in a moderate amount next to the mid section. A *Carex* sp. dominates parts of the mid and north sections. Small-headed Aster was found in the north. Pennsylvania Smartweed was common in the south pond and supported a small colony of Smartweed Dodder. A small colony of Sensitive Fern and Dwarf Spikerush were in the south. Greater Duckweed (*Spirodela polyrhiza*) was present in the water of the south section, but not abundant, on October 3, 2003. There was also an aquatic species in the same water with linear leaves that was not identified.

Southeast Panhandle Pond was not diverse. The willow species common at the other ponds was dominant here, as well. The other species that also did not mind getting its feet wet was a moderate amount of *Carex lupulina*. Red Maple and Sensitive Fern were growing on drier ground.

Southwest Panhandle Pond was dominated and well shaded by the same common willow species as previously mentioned. Wool-grass was moderately numerous. Besides the House Pond, this seemed to be the least diverse pond with only two recorded semiaquatics.

In the Driveway Pond, Wool-grass and *Carex lupulina* were common. There was not much Phragmites. Eastern Cottonwood may have been present nearby because of the pond.

The West Pond must be of at least minimal size located near the west boundary of the center southwest of the Driveway Pond. A small pond at this site is apparent on an aerial photograph taken when there was an active golf course. Although this pond was not readily accessible or visible to the author in spring 1997, due to very dense vegetation, a chorus of Northern Spring Peepers (*Pseudacris crucifer crucifer*) was heard, indicating that a body of water was indeed present. It was not visited during this survey.

The description of mowed lawn with trees in Edinger et al. (2002) apparently includes any lawn with trees, but perhaps the place with the most trees and hence, the most shade, with pine, oak and hickory, had the most shade tolerant and even forest species, such as Spotted Wintergreen, Plantain-leaved Pussytoes (*Antennaria plantaginifolia*) and a violet (*Viola* sp.). The two young Pignut Hickory (*Carya glabra*) are among the few hickories found at the center.

Mowed lawns consist of grasses and forbs. Something unusual about the caretaker's area is the abundance of at least one species of aster (*Aster* sp.) that is clearly evident late in the season when asters bloom, despite them being periodically cut.

Mowed pathways support mostly non-native grasses and forbs similar to those found in typical, more expansive lawns with or without trees. However, an interesting plant, Pennsylvania Bittercress (*Cardamine pensylvanica*), was found on the path south of the Driveway Pond. It is very possible that there is much more elsewhere in this habitat.

An unpaved road may support some of the relatively few Path Rush (*Juncus tenuis*) that would be more common on heavily used paths with more compacted soils.

Paved road, even through mature oak forest, often supports along its borders more non-native plants than a few feet further from the road. Examples are Great Burdock (*Arctium minus*) and speedwells (*Veronica* spp.). The old parking lot receives much sun and many herbaceous roots have been able to find their way to the soil below via cracks in the pavement. The plants here are also mostly not native, but there are more species than in some of the other paved areas. Smaller Hop-clover (*Trifolium campestre*) was

one that was not found elsewhere. The native Slender Three-seeded Mercury had its greatest numbers in the preserve here, where it was also found in 1996 (Künstler 1996). A Butterflyweed individual had been here in 1996 (Künstler 1996), but not for this survey. Paved paths usually are located in disturbed areas, such as shrubland, and the adjacent plants, often non-native, do not appear to be different in species composition than those further from the paths. That includes path segments eventually taken over by these same species.

Rare Species and Their Management

Four species of plant were found on this survey that are listed as rare by the New York Natural Heritage Program (Young and Weldy 2003). Two of these, Persimmon (*Diospyros virginiana*) and Smartweed Dodder (*Cuscuta polygonorum*), were also recorded on the 1996 survey, but significant new stands were found. The same individual Butternut (*Juglans cinerea*) was observed again. The fourth, Field Dodder (*Cuscuta pentagona*), was new for Hoffman Center.

Persimmon: Ranked S2, Threatened in New York. The major find for this species was a relatively large stand on both sides of the path that goes south past the east end of the Southern South Central Pond and only a little south of that point. Most individuals are on the east side of the path. Of 22 trees taller than six ft growing in a pure stand, the largest is about 8 in diameter below the fork and 4¼ in and 4½ in dbh above. They are growing with mostly blackberry underneath them. Next to them are Black Cherry and Black Walnut. There are at least 14 seedlings under six ft in height in open, adjacent shrubland to the north with goldenrod and Mugwort. About where the older trees meet the young trees, there is a Multiflora Rose. There are another five seedlings on the opposite or west side of the path, making a total of at least 41 individuals in this stand.

Another new find was a tree, perhaps over 10 ft tall, on the shore of the southeast corner of the Southern South Central Pond in a fairly open site growing mostly with sedges in the immediate vicinity. It is in an area with little other woody vegetation due to the pond apparently rising to well above this tree's base at times. This is one of only six known Persimmon growing on a pond shore or any wet site at Hoffman Center, as they are only known to do so nearby, such as at the Muttontown Preserve (A. Lindberg, pers. comm., pers. obs.) and on private property just west of the preserve and north of Muttontown Road (pers. obs.). In Pelham Bay Park in the Bronx, the five major stands are all on upland sites (pers. obs.). But, perhaps we should expect more trees germinating around this pond and the Central Panhandle Pond (see below) as nearby seed sources mature at Hoffman Center.

A few yards east of the path paralleling the east border of the Panhandle are four Persimmon stems growing closely in shrubland, about 2 3/8 in dbh, 2 in dbh and 1 in dbh and 7/16 in dbh. They are probably the same plant. Perhaps 30 ft west of the path, directly opposite these trees, is another individual of like size, 3¼ in dbh, with two small stems growing from its base, 5/8 in dbh and under six ft in height that were new finds.

In shrubland only a short distance east from the north part of the southern section of the Central Panhandle Pond is a relatively large tree found during the first survey. Along the shore of the pond roughly closest to this tree are two small seedlings. On the east shore of the north section of this triple pond was found a three-stemmed tree less than 10 ft in height.

A small tree seven feet tall found in 1996 (Künstler 1996) in shrubland east of the South Central ponds was not encountered, though briefly searched for. It may no longer be present since an Autumn Olive was competing with it then (Künstler 1996).

The largest tree (less than 20 ft tall) found in 1996 (Künstler) in the old fairway west of the house and south of the West Driveway (Künstler 1996 mistakenly reported north of the driveway) was not relocated in 2003, though some searching was done. The author was also not able to relocate it after first discovered in 1996 in dense, woody vegetation.

The Persimmon observed in 2003 total 55 stems. There still may be two others that were only observed in 1996. This is a sizable population for a Threatened tree and it is probably growing, as evidenced by the presence of only young individuals. It is not likely that any are producing fruit yet, but when that occurs, it will at least greatly increase the seed supply and create an attractive food source for wildlife.

There is not much vegetation now competing with these trees, but they should be periodically checked and competing plants pruned or removed, particularly around seedlings. The Multiflora Rose in the large stand is such an example. It may be expected that where the Persimmons themselves are dense, especially the larger trees in the big stand, they will thin out with increasing competition for light. With a developing canopy and resulting shade, competition from other species should be reduced.

Butternut: Watch List. There is only one mature individual of this species known on the property, which is by the trough in the Norway Maple forest. The crown is limited in extent due to the crowding of a couple of Norway Maples around the Butternut. It should be determined whether this tree is producing viable fruit after collecting some for growing this August or September, after which they could be replanted at the site with perhaps the Martin Viette Nursery helping out. If not, it should be assumed that there are no other Butternuts nearby until more are found and this tree probably needs at least another individual for cross pollination. It is recommended that, since a few maples are causing a problem for the Butternut and trees and other plants cannot grow easily, if at all, under the maples, the trees competing directly with the Butternut should be killed and a few young Butternuts planted in the resulting opening. It would probably be easiest to treat the maples with a basal spray. The young trees should be from as nearby as possible, preferably Long Island, in order to promote the local gene pool. Peters (1973) stated that it is a "Rare tree whose original range is indefinite because of its early cultivation." Records from the area include Brookville and Oyster Bay.

Smartweed Dodder: S1, Endangered. The colony identified in 1996 (Künstler) at the north end of the southernmost Central Panhandle Pond section was still present in 2003, but this parasitic plant was growing on Pennsylvania Smartweed, as opposed to False Water-pepper identified in 1996 (Künstler). Of the two species, only one was identified at this site in each of the surveys. In 2003, despite an ample supply of smartweed, there was only a small colony of dodder of probably only several square feet in extent. This may have been somewhat smaller than in 1996. The only water observed in this series of three ponds was in the south end of this southern section.

A second and new colony of Smartweed Dodder was found near the northeast shore of the Southern South Central Pond. It was growing on at least Purplestem Beggar-ticks. This stand of dodder was more extensive than that described above and there was also a good, dense supply of potential host plants. Only water at the opposite southwest corner of the pond was seen during the regular field season, though it appeared full the following winter.

Field Dodder: Watch List. This plant was found in the Northern South Central Pond growing on Small-headed Aster, which was abundant and covered much of the pond. It comprised a fair-size colony. The pond was never seen with water until the winter.

Plantings

The dense Rose-bay plantings in front of the house have some Mountain Laurel that is perhaps wild mixed in. Some of the Rose-bay is competing with the Mountain Laurel. On May 1, 2003, a trillium (*Trillium* sp.) that had been recently discovered (Ursula Niarakis, pers. comm.) just inside the young, little disturbed oak forest adjacent to the back (south) lawn of the main house was examined. There was a single cluster of 20 flowering stems. At first, it was thought to be Toadshade (*Trillium sessile*), but certain characteristics did not match. Petals were 3x length of the stamens instead of 2x; leaves were to 13 cm long instead of seldom to 9 cm; leaves were strongly mottled instead of usually inconspicuously or not mottled. Based on this, from Gleason and Cronquist (1991), it must presently be an unidentified species.

More Botanical Work Needed

There are certainly a few more species to be found and identified at the Hoffman Center. More work especially needs to be done during April, the time for spring ephemeral wildflowers of the oak forest. The West Pond should be fully examined. An ecologically important species that needs full identification is the willow that is common at most of the ponds. Whether it is native or not would be important for its management and that of the ponds. As indicated in the list, a shadbush, a couple of sedge species, spikerush, forget-me-not, water-horehound, violet and wild grapes are native, or hopefully native in the case of the forget-me-not, and need to be fully identified. The aquatic plant in the south section of the Central Panhandle Pond also needs identification. Any older, seed-producing Sugar Maples that must be present in or near the Northern Oaks should be located and whether they appear planted or wild should be noted.

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