

NATURAL COMMUNITIES CLASSIFICATION
AND
REPORT OF A 1992 BOTANICAL
SURVEY OF THE NATURAL AREA
AT MEDFORD LEAS, NJ

Prepared by

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Acknowledgments

I thank Dr. Donald Horton for his input and assistance in all phases of this project.

1993 GORDON REPORT: SPELLING CORRECTIONS AND ADDITIONS

p.2, line (1) 19 - investigations

p.6, l.2- comma after west,

p.8, III A, last paragraph: Under important trees, add -
Sweet Gum (Liquidambar styraciflua)

p.9, end of paragraph two, add: Also present are Sensitive Fern
and a pocket of Common Reed (Phragmites australis). The
latter could spread perniciously.

p.11, l. 3 - dominates

p.14, l. 2 - underline (S. rotundifolia)

p.14, l. 10 - Jack

Introduction

During the 1992 growing season, a botanical survey was conducted of those portions of Medford Leas comprising the natural areas. Although some attention was given to the meadows sown to wildflowers, the primary focus was directed at the floodplains of Sharps Run and the Southwest Branch of the Rancocas Creek (also known as Haines Creek) and the adjacent forested uplands. Although infused with various plantings of wildflowers, ferns, and shrubs, these habitats essentially have retained their native character and anticipated species composition.

My initial plan to type up a separate list of the plants of Medford Leas was discarded because it lacked the capacity to add species subsequently discovered. After some deliberation, a decision was made to use A Check List of the Plants of New Jersey (1989), developed by Karl Anderson of the New Jersey Audubon Society's Rancocas Nature Center. It appears that this check list is the only taxonomically current, accurate and complete listing of the state's flora. It also allows for the convenient addition of new plants that are discovered. The scientific nomenclature of the Anderson list follows Kartesz and Kartesz, A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland, The University of North Carolina Press, Chapel Hill, 1980, perhaps the most frequently cited taxonomy to date.

In 1911, Witmer Stone published his classic, The Plants of Southern New Jersey. In the preface, Stone states, "The writer has made a rather exhaustive study of the flora about Medford, where, in conjunction with some fellow naturalists, he has maintained a cabin camp for some ten years past, to which trips of two to four days' duration have been made at all seasons of the year and some 750 specimens collected." Local naturalist, Elizabeth Woodford, in

Medford, Pioneering Township (1975), adds that "Stone. . . established headquarters in the vicinity of Camp Dark Waters on Haines Creek." It was with this in mind, that I deemed it worthwhile to determine the flora of the Medford environs at the turn of the century. Considerable time and effort were devoted to gleaning from Stone's authoritative work all native species (& some weedy introductions) recorded from the inner coastal plain of Medford and Burlington county. The major difficulty of this task lay in assigning the current nomenclature to Stone's outdated taxonomy. Additionally, other southern New Jersey records supplied by Stone, along with distributional, habitat, and abundance information were evaluated to determine the complete native flora of Medford circa 1900. Provided with a comprehensive key, this restricted native species list (backed by herbarium specimens essentially housed at the Academy of Natural Sciences, Philadelphia) has been entered in the Anderson check list. It will not only aid the user in species identification, but it also is intended to serve the managers of the natural area with a basis for selecting species to be planted.

Field investigation (1992) were conducted on the following days:

5, 27 April	27 July
1, 13 May	16, 17 September
30 June	29 October

All identifiable vascular species have been recorded in the check list, employing a red dot (•) for plants seen by T. Gordon. As expected, many of the plants seen by Stone have been relocated during the present survey. Also recorded have been the significant sightings of resident naturalist Dr. Don Horton as well as the sightings provided on index cards maintained by residents over a number of years. Both of these are identified in the check list by a dark dot (•), representing species accepted by me as extant, although not actually seen by me. Only a small percentage of these records was deemed indefensible and thus, rejected (e.g. totally out of range or out of habitat). A few were accepted with reservation; these are preceded

by a question mark, pending field verification.

As pointed out earlier my preliminary survey reveals that the "natural" area has been altered by the introduction (through planting) of numerous species not native to New Jersey or the southern portion of the state. This is particularly true of the "island" and the vicinity of the canoe launch. Metal stakes bearing numbers or names of plants no longer present abound. Among these introductions are, for example, a southern leucothoe, trilliums, cypress, and garden plants such as daffodils, dame's rocket, pachysandra, and ivy. The beautiful wildflower meadows are sown primarily to uncommon aliens and a few North American prairie species. The seed mixture of 18 species recently planted contained 5 familiar naturalized aliens, 2 naturalized prairie species, 9 uncommon aliens, and just 2 native species (Lupine, Rudbeckia). With this in mind, I propose that the wildflower meadows not be included in the native natural area. (It should be pointed out, however, that the check list does report a number of meadow species.)

Twenty-eight index cards kept at the nature center apply to ferns alone, the majority of which--including many of those native to the area--appear to have been planted. It is highly unlikely that 28 ferns would occur naturally in such a small habitat. Of 21 ferns listed by Stone for Medford and Burlington county, 16 were found. Six planted species restricted to northern New Jersey were not found; while a few fronds of Male Fern, a species not native to this state, have survived.

Regrettably, several ornamental species such as Pachysandra and English Ivy, along with the weeds Gill-over-the-ground and the aggressive Japanese honeysuckle, have become so invasive that they need to be addressed.

HABITAT TYPES

The classification of habitats is never an easy task. It, perhaps, becomes an even more difficult assignment when dealing with the inner coastal plain (the Delaware Valley) with its long history of land disturbance.

Medford Leas lies in the Rancocas drainage of the inner coastal plain. This region, today referred to as the Delaware Valley, was known to Witmer Stone and other early 20th century botanists as the ~~as the~~ Middle District. The once massive beech-oak-hickory forests of this region have been fragmented since early settlement. Abundant tillage was their demise.

Upon leaving the Pine Barrens in the Tabernacle-Indian Mills area, Julian Niemcewicz^{*}, a Pole traveling through America in the late 1790s, remarked in his journal, "There are no longer bogs, sand, gloomy cedar, and pine forest, but an open and fertile country." From atop the mount in the village of Mt. Holly, he observed "an extensive countryside, there are fields covered with sheaves, meadows, and dense belts of woods." Little remains of those "dense belts of woods," victims of suburban sprawl and lack of concern. Yet, a remnant survives along the Southwest Branch in Medford Leas, a reminder of what once was.

I. Man-Made Habitat: "The Railroad Trail" *or Hedgerow*

The tracks of the Medford spur of the Penn Central Railroad were removed a number of years ago. Today the abandoned right-of-way unobtrusively runs from Route 70 to the intersection of Wilkins Station, Church, and New Freedom roads. This linear green belt actually consists of two distinctly different portions. The southern leg, between Rt. 70 and Medford Leas Way, comprises a high embankment sown to grass and lined by a few specimen-sized trees. The elevation offers an

* Budka, M. (Editor; author J. Niemcewicz). Under their Vine and Fig Tree. The Grassmann Publishing Co., Inc. Elizabeth, NJ. 1965.

an unanticipated view of the adjacent beaver meadow and palustrine forest along Sharps Run below. (See also description of "Sharps Run Floodplain")

Commencing at Estaugh Way and running north to the village terminus, the second leg cuts through a shallow ravine for a short distance. This man-made habitat, bisected by a foot trail, is a good example of advanced natural successsion. Lining the corridor, which forms the entire eastern border of the "Great Wildflower Meadow," are saplings (and trees) of such species as Red Cedar, Black Cherry, Persimmon, Sassafras, Scarlet Oak, and Dwarf Sumac. Aggressive weeds abound, especially Multiflora Rose, Pokeweed, Japanese Knotweed, and Japanese Honeysuckle, the latter forming dense tangles that provide excellent cover for songbirds and small wildlife such as rabbit, fox, and groundhog. Save for a large Willow Oak (Quercus phellos) perched on the embankment just off Estaugh Way, no plants of special significance were discovered here. However, more diligent searching is encouraged, for railroad rights-of-way frequently produce rare adventives.

Management/Maintenance

No management, except for mowing the foot trail, is recommended for this habitat at this time.

II. Palustrine Nontidal Emergent Wetlands: Behind Bridlington crossing RR right of way to Exit Road to Route 70

A. "Hedgerow Seepage Swale"

This band of wetlands runs along the western boundary of the village behind the Bridlington complex. It originates at the base of a seepage slope below Wilkins Station Road and extends southward, stradling a narrow intermittent feeder stream of Sharps Run. At the time of aquisition, this wet meadow very likely was part of a cow pasture. More recently it was further impacted by recontouring (fide resident Don Horton) and subsequently received some plantings. the area is underlain by a glauconitic soil known as Pemberton sand. (Refer to description under Mesic Coastal Plain Mixed Oak (-Beech) Forest.

This open graminoid/herb dominated marsh is accessed and bounded by the red trail on the east and on the west by an abrupt high embankment, bearing an old wire fence and hedgerow, bordering a farm field. Among the dominant species are Phragmites (Phragmites australis), Soft Rush (Juncus effusus), Multiflora Rose, Sensitive Fern (Onoclea sensibilis), Seedbox (Ludwigia alternifolia), goldenrods (Solidago spp.), Broomsedge (Andropogon virginicus), Little Bluestem (Schizachyrium scoparium), Evening Primrose (Oenothera biennis), and Pokeweed (Phytolacca americana). More scattered are willow (Salix sp.), Black Cherry (Prunus serotina), Bayberry (Myrica pensylvanica), and Mullein (Verbascum thapsus). Silhouetted against the sky along the ridge line, a cluster of specimen-sized Sour Gum (Nyssa sylvatica) and scattered large individuals of Red Cedar (Juniperus virginiana), American Holly (Ilex opaca) and Sycamore (Platanus occidentalis) lend an eeriness to the landscape. Songbirds and hawks (esp. sparrow hawks) are here in abundance.

Traditionally such vegetated wetlands have been referred to as emergent marsh, bog, swamp or fen. Ralph Tiner (1985^{*}) accurately classifies them as palustrine emergent wetlands.

Management/Maintenance

The Red Trail should continue to be maintained from bridge #7 to Estaugh Way. The planting of trees, shrubs, and wildflowers should be restricted to the "wildflower meadow" on the east side of the trail. Maintenance on the west side of the trail should be confined to the care of planted species only. Any management of the native vegetation within the confines of the natural area as described above should be postponed until further evaluation of this habitat by your Natural Areas Committee. Future plantings here should be limited to native species suited to the local habitat.

* Tiner, R.W., Jr. 1985. Wetlands of New Jersey. US Fish & Wildlife Service. Natural Wetlands Inventory. Newton Corner. MA.

B. "The Marsh"

Situated along the streambank of a cove at the confluence of Sharps Run and the Southwest Branch of the Rancocas, "the Marsh" is a semipermanently flooded zone whose dominants include Broad-leaved Cattail (*Typha latifolia*), Pickerelweed (*Pontederia cordata*), Bullhead or Pond Lily (*Nuphar luteum*), Mallow (*Hibiscus moscheutos*), Tussock Sedge (*Carex stricta*), Manna Grasses (*Glyceria* spp.), Arrow-leaved Tearthumb (*Polygonum sagittatum*), Halbert-leaved Tearthumb (*Polygonum arifolium*), Arrow Arum (*Peltandra virginica*), Poison Ivy (*Toxicodendron radicans*), and Multiflora Rose (*Rosa multiflora*).

When conditions allow, "the Marsh" is best accessed via the yellow trail to the "Island" from bridge #5. It is necessary, but worthwhile, to cross a muck flat upon leaving the trail at the north-eastern edge of the island to see Broad-leaved Arrowhead (*Sagittaria latifolia*), Nodding Bur Marigold (*Bidens cernua*), Cardinal-flower (*Lobelia cardinalis*), Blue Flag (*Iris versicolor*), Sweet Joe-Pye Weed (*Eupatorium purpureum*), Small White Aster (*Aster vimineus*), and Mud Plantain (*Heteranthera reniformis*).

A couple of seepage streams that cross the palustrine forest exhibit features similar to those of the marsh, particularly at coves just before they enter the Southwest Branch. Here some of the characteristic species are Common Reed (*Phragmites australis*), Common Elderberry (*Sambucus canadensis*), Virginia Willow (*Itea virginica*), Lizard's Tail (*Saururus cernuus*), Rice Cutgrass (*Leersia oryzoides*), Sensitive Fern (*Onoclea sensibilis*), Marsh Fern (*Thelypteris palustris*), Skunk Cabbage (*Symplocarpus foetidus*), and Spotted Jewelweed (*Impatiens capensis*). Ostensibly the species composition of these communities can be quite variable.

The hydrology of the marsh proper, no doubt, is affected by the manipulation of the lock at Kirby's Mill downstream. Extended

periods of flooding could alter species frequency within this community.

Not easily accessible during the time of my survey, the marsh deserves additional exploration. Perhaps it is best reached by canoe.

Management/Maintenance

None. Perhaps a stepping-stone type of path to the marsh could be constructed.

III. Palustrine Forested Wetland

Area east of Exit Road
to route 20

A. "Sharps Run Floodplain"

Extending along the southern boundary of Medford Leas, from the western limit arbitrarily to the southern tip of the "Island," "Sharps Run Floodplain" comprises a basin some 200' wide and perhaps 1800' long. It was created by Sharps Run, a meandering perennial stream, subject to overflowing its banks several times a year. The stream deposits in this basin constitute highly variable soil materials described as Alluvial land, loamy. In most areas the surface layer is sandy loam, with some glauconite content. (See also III. B for additional comments on these soil deposits.)

Characterizing this floodplain is a mixed forest community of fast-growing hardwoods. Important trees include Red Maple (Acer rubrum), Sycamore (Platanus occidentalis), Sweet Bay (Magnolia virginiana), Black Willow (Salix nigra), Pin Oak (Quercus palustris), Willow Oak (Quercus phellos), Tulip Tree (Liriodendron tulipifera), American Elm (Ulmus americana), White Ash (Fraxinus americana), American Holly (Ilex opaca),* and some Silver Maple (Acer saccharinum). Invading drier slopes are Red Cedar (Juniperus virginiana), Sassafras (Sassafras albidum), Black Cherry (Prunus serotina), and Dogwood (Cornus florida); while a cluster of Bald Cypress (Taxodium distichum) has been planted near a pond by the head of Woolman-Haddon Way. Although similar in composition to the palustrine forest along the

* RIVER BIRCH (BETULA NIGRA)

Southwest Branch, the community here is dominated by Red Maple (esp. east of Medford Leas Way) and several imposing specimens of Sycamore and Tulip Tree, most advantageously viewed from the high railroad embankment that crosses Sharps Run. Conspicuous shrubs are Spicebush (Lindera benzoin), Sweet Pepper (Clethra alnifolia), Southern Arrowwood (Viburnum dentatum), Black Haw (Viburnum prunifolium), Alder (Alnus serrulata), and Common Elderberry (Sambucus canadensis).

Among the aggressive invaders--especially creeping down slopes--are Japanese Honeysuckle, Poison Ivy, Japanese Knotweed, and Multiflora Rose. A lack of diversity of herbs probably is a response to frequent inundation. Those observed include White Avens (Geum canadensis), White Vervain (Verbena urticifolia), Canada Goldenrod (Solidago canadensis), White Snakeroot (Eupatorium rugosum), Late-flowering Boneset (Eupatorium serotinum) and Yellow Thistle (Cirsium horridulum).

Special features of this community are the high abandoned railroad embankment already mentioned and a steep slope that rises some 20' above the floor of the floodplain along its northern border. The former man-made intrusion has aided the establishment of an open beaver meadow, a grass-sedge complex to the west that deserves further exploration. Here songbirds are abundant, hawks are frequent, and a great blue heron was sighted. The steep slope mentioned above, rimmed by large, precariously perched trees, can be ascended via the red trail leading from bridge #6 to bridge #7. Forming the northern boundary of this floodplain, the trail offers a surprising view of the wetland.

Management/Maintenance

The steeper sections of the red trail will require frequent clearing of windthrow and repair of damage caused by erosion. Sections of the steep bank along the trail just to the east of the rail-

road embankment need to be stabilized as soon as possible to avoid the further loss of big trees by uprooting during storms. The development of a path into the floodplain forest and a path down to the beaver meadow would enhance this system. No planting is recommended at this time.

B. "Southwest Branch Floodplains"

This narrow band of floodplain (generally <100-150' wide) stretches ca. 1950 feet north along the Southwest Branch of the Rancocas Creek from the "Island" near bridge #5 to a major unnamed feeder stream ca. 200' north of "Woods Cottage." It is bounded on the west by a steep slope whose ridge line in the southern section parallels the red trail.

Consisting of highly variable soil materials, the alluvial deposits of this floodplain have noticeably been distributed to varying depths throughout the basin. Various pockets of microrelief occur, each with a variable water table and a slightly different flooding regime that dictate plant composition and frequency. Another significant feature is the more than $\frac{1}{2}$ dozen rivulets that originate at the base of the steep seepage slope and traverse the floodplain on their course to the Rancocas. Often these have developed into broad, mucky swales too wet for tree development. In contrast, the "Island" appears to be the only area of relief high enough to escape flooding.

With its numerous micro habitats, the palustrine forest that has developed on this floodplain constitutes the most diverse landscape in the natural area.

The view from the red trail along the ridge line immediately reveals a mature forest that will delight the palate of one who admires huge trees, both in height and in girth. Nearly all the giants situated along the upper slope or directly along the red trail are

featured in the wetland as well. The same tree species seen along Sharps Run occur here, too, but with some differences. Sycamore, although present, no longer dominates the landscape, and species count increases dramatically. While Red Maple appears to be dominant, the following less frequent species are conspicuous throughout: Sweetgum (Liquidambar styraciflua), Hickory (Carya spp.), Spanish Oak (Quercus falcata), Ironwood (Carpinus caroliniana), Tulip Tree, American Holly, Sweet Bay, River Birch, and Black Cherry. Also present are American Elm, Sassafras, Black Walnut (Juglans nigra), Sour Gum (Nyssa sylvatica), Red Cedar, Persimmon (Diospyros virginiana), White Ash, Flowering Dogwood, and Pin Oak. Sparsely represented are Silver Maple, Willow, Gray Birch (Betula populifolia), Willow Oak, Pitch Pine (Pinus rigida), Shortleaf Pine (Pinus echinata), and Virginia Pine (Pinus virginiana).

The most common shrubs and vines scattered throughout are Spicebush, Southern Arrowwood, Black Haw, Poison Ivy, Strawberry Bush (Euonymus americanus), Highbush Blueberry (Vaccinium corymbosum), Common Elderberry, Virginia Creeper (Parthenocissus quinquefolia), Winterberry (Ilex verticillata), and Partridge Berry (Mitchella repens).

Areas of special botanical interest can be observed by using a network of yellow and orange trails that permit convenient access into the floodplain at some six points. It should be noted that the Island loop trail, for example, harbors not only several outstanding tree specimens--among them an enormous hickory--but also a fine stand of Lady Fern (Athyrium felix-femina), Sensitive Fern (Onoclea sensibilis), and some Bog Fern (Thelypteris simulata). The muck flats east of the northern tip of the Island harbor Marsh Marigold (Caltha palustris), Cardinal-flower (Lobelia cardinalis), Fringed Loosestrife (Lysimachia ciliata), and Turtlehead (Chelone glabra), and, nearby, Moneywort (Lysimachia nummularia) and Virginia Bluebells (Mertensia virginica). The latter, along with the more centrally located Bloodroot (Sanguinaria canadensis), Wild Columbine (Aquilegia canadensis), and May Apple (Podophyllum peltatum) are representatives of successful

plantings of rare species.

In the general vicinity of the canoe launch are fine patches of Wood Anemone (Anemone quinquefolia), Wild Oats (Uvularia sissiliifolia), Trout Lily (Erythronium americanum), Spring Cress (Cardamine bulbosa), and Cinnamon Fern (Osmunda cinnamomea). Scattered are White Avens (Geum canadensis), Jack-in-the-Pulpit (Arisaema triphyl- lum), Tall Meadow Rue (Thalictrum pubescens), False Nettle (Boehmeria cylindrica), New York Fern (Thalypteris noveboracensis), and Marsh Violet (Viola obliqua=V. cucculata). Wetter zones are frequently occupied by Skunk Cabbage (Symplocarpus foetidus), Bedstraws (Galium spp.), Sallow Sedge (Carex lurida), Jewelweed (Impatiens capensis), Clearweed (Pilea pumila), and Royal Fern (Osmunda regalis). Sixteen (16) ferns, many of them planted, have been found in the flood- plain (See also p.3 and Checklist).

References

Markley, Marco. 1971. Soil Survey of Burlington County, NJ.
USDA-Soil Conservation Service.

Tiner, Ralph. 1985. Wetlands of New Jersey. USF&W Service

Management/Maintenance

A serious effort must be made to prevent the further advance- ment into the natural area of several aggressive horticultural species, e.g., Pachysandra, Periwinkle (Vinca minor), and English Ivy (Hedera helix). Similarly, Japanese Honeysuckle needs to be held in check on the Island and elsewhere.

Any future plantings should be restricted to palustrine forest species that comprise the W. Stone check list.

The dumping of clippings and pruning refuse into the natural area is a practice that should cease at once.

A cleanup of the brush at the canoe storage area should be

undertaken. Local scouting groups may be willing to take part in this and similar tasks.

An enormous hickory on the Island is in need of repair of its trunk. A large cavity requires filling.

IV. Mesic Coastal Plain Mixed Oak (-Beech) Forest: ⁺ "Mixed Oak Forest"

Situated on a gentle upland slope of the natural area, this mature native hardwood forest stretches from the tennis court parking lot to the "Woods Cottage" overlooking the Rancocas (excepting a Virginia pine stand), and from there north to New Freedom Road. All forested upland between bridge #2 and the Virginia pine stand is included. The forest occupies a moderately well drained soil (with pockets somewhat poorly drained), mapped as Pemberton sand, 0 to 5 percent slope (PbA).^{*} Originally marine deposited, this acid soil contains a thick sandy surface layer and a mottled glauconitic fine sandy loam subsoil, redeposited by eolian activity.

The canopy composition of this mesic (moist) forest is dominated by oaks, especially Spanish Oak (Quercus falcata), White Oak (Q. alba), Black Oak (Q. velutina) and by Beech (Fagus grandifolia), Hickory (Carya glabra & C. tomentosa),^{*} American Holly (Ilex opaca). Sassafras (Sassafras albidum), often near edges, and Sweet Gum (Liquidambar styraciflua) appear to be a bit less frequent. Somewhat scattered are Persimon (Diospyros virginiana), Black Cherry (Prunus serotina), Dogwood (Cornus florida), Willow Oak (Quercus phellos), Virginia Pine (Pinus virginiana), Pin Oak (Quercus palustris), and River Birch (Betula nigra). In general, Beech, Tulip Tree (Liriodendron tulipifera), and Ironwood (Carpinus caroliniana) occur more frequently on the slightly moister gradient toward the eastern downslope. It is often difficult to determine dominance, but there are a few pockets where beech stands out.

Among the shrubs and lianas are Pinxter Flower (Rhododendron pericyclamenoïdes), Swamp Azalea (Rhododendron viscosum), Spicebush

(Lindera benzoin), Glauous Greenbrier (Smilax glauca), Common Greenbrier (S. rotundifolia), Strawberry Bush (Euonymus americanus), Sweet Pepper (Clethra alnifolia), American Chestnut suckers (Castanea dentata), Partridgeberry (Mitchella repens), Southern Arrowwood (Viburnum dentatum), Black Haw (Viburnum prunifolium), Silky Dogwood (Cornus amomum), Mountain Laurel (Kalmia latifolia) and the 4 heaths listed under "Pocket of Variability" below.

In areas of dense litter, few herbs persist. In more congenial open spots and along paths, typical species include False Solomon's Seal (Smilacena racemosa), Jack-in-the Pulpit (Arisaema triphyllum), Wild Oats (Uvularia sessilifolia), Canada Mayflower (Maianthemum canadense), planted May Apple (Podophyllum peltatum), Indian Cucumber (Medeola virginiana). Swan's Sedge (Carex swanii) and Pennsylvania Sedge (Carex pensylvanica) are frequent, while New York Fern (Thelypteris noveboracensis) and Rattlesnake Fern (Botrichium virginianum) are scarce. Finally, a nice population of Ladies' Slipper (Cypripedium acaule) is by the parking apron of Woods Cottage; closeby is a stand of Tree Clubmoss (Lycopodium obscurum).

References

See end of report

Special Features within the Mixed Oak Forest Community

A. Pocket of Variability

In the northwest corner of the forest, east of the "Vegetable Gardens," is a small pocket of slight variability, linked, perhaps, to droughtier soil. Here, amid a dense leaf litter, the understory has some pine barrens affinity, comprising such heaths as a fine stand of Fetterbush (Leucothoe racemosa), Lowbush Blueberry (Vaccinium pallidum), Highbush Blueberry (Vaccinium corymbosum), and Black Huckleberry (Gaylussacia baccata). Although these species occur elsewhere in the forest, this is the only spot where they prevail in such dense concentration. Specimens of Post Oak (Quercus stellata) and Blackjack

Oak (Quercus marylandica), typical pine barrens species, also are here, but nowhere else in the forest. This combination makes this pocket reminiscent of the Oak-Heath Forest Subtype.⁺

(It should be noted that this pocket and the parcel immediately surrounding are excellent birding area.)

B. Holly Grove

A charming American Holly Grove occurs in the southeastern section of the "Mixed Oak Forest" just north of bridge #2. Hemlock (Tsuga canadensis) and Great Laurel (Rhododendron maximum), two species of our northern forests that rarely occur as native in southern New Jersey, have been tastefully planted here.

Management/Maintenance

The majority of this forest has maintained its native integrity. The Stone list should be the basis for any proposed plantings. Trail maintenance should be continued.

V. Successional Forests

A common phenomenon of abandoned farm fields of the Inner Coastal Plain is their conversion to almost pure stands of either Sweet Gum or Virginia Pine. At Medford Leas there are representatives of both types.

A. Virginia Pine Successional Forest: "Virginia Pine Forest"

Surrounded by a mature mixed oak forest, the Virginia Pine Forest is situated on an upland bluff of Pemberton sand to the west and southwest of Woods Cottage and east of Meadford Leas Way. According to the county soil survey: "The native vegetation of these soils (i.e., Pemberton series) is a hardwood forest consisting of mostly oaks, hickories, and scattered Virginia pines. Virginia pines invade idle fields and occupy the site for many years before the hardwoods are reestablished."*

It can be assumed that the present pocket of almost pure Virginia

Pine (Pinus virginiana) once was a farm field or, at least, a clearing. The current stand appears to be well over 55 years old and is exhibiting loss of vigor and signs of deterioration. Decay and windthrow are evident throughout the stand, which is frequently draped by thick grape vines. A dramatic lesson in succession is being played out at this very moment, as young oaks and hickory and saplings of beech are lurking in the sub-canopy as the successor generation. Forming minor components are scattered associates of Sweet Gum, Dogwood, White Oak, Black Oak, and Sassafras. Also present are Greenbrier (Smilax spp.), Poison Ivy, and Virginia Creeper, but, for the most part, the forest floor of thick leaf litter is almost devoid of shrubs and herbs. Infrequent are Indian Cucumber, Indian Pipe (Monotropa uniflora), Spotted Wintergreen (Chimaphila maculata), and False Solomon's Seal.

Management/Maintenance

Snagged trees may present a hazard to trail users. Frequent clearing may be necessary.

B. Sweetgum Successional Forest: "Sweetgum Stand"

South of New Freedom Road and east of Medford Leas Way between a unit of the Rushmore Apartments and an isolated home to the north lies a young Sweetgum Successional Forest, bisected by an intermittent stream. Robichaud and Buell[®] have observed, "With the passage of only twenty-five years, an idle field on the Inner Coastal Plain may be transformed into a woodland consisting primarily of sweet gum and red maple trees as tall as 30 feet." This scenario very much applies to the Medford Leas stand, where the dominant canopy tree, Sweet Gum (Liquidambar styraciflua), is associated with Virginia Pine, Red Maple, and scattered Red Cedar, Dogwood, Black Cherry, and River Birch. Poison Ivy and Japanese Honeysuckle are abundant, while Grape (Vitis sp.) Virginia Creeper, Tall Blackberry (Rubus argutus), Swamp Dewberry (Rubus hispidus), and Common Greenbrier (Smilax rotundifolia) are present as well. Shrubs include Black Haw, Southern Arrowwood, and

Common Elderberry, especially in wetter areas associated with the feeder stream. Among the herbs are Canada Mayflower, White Avens (Geum canadense), Evening Primrose (Oenothera biennis), Deertongue Grass (Dichanthium or Panicum clandestinum), Wild Lettuce (Lactuca canadensis), Pokeweed (Phytolacca americana), and Nightshade (Solanum nigrum).

Of interest is that this upland sweet gum stand occupies the only patch of Kresson loamy sand (mapped KWA)@ in the area. In contrast, the mature mixed oak forest that directly borders it on the east is underlain by Pemberton sand. Believed to have been wind deposited, the Kresson soil is quite fertile and contains and contains substantial amounts of glauconite. Its surface layer of loamy sand is underlain by a poorly drained sandy clay subsoil that often causes perching of water. In all likelihood (although difficult to comprehend), in the distant future, the climax forest of this soil will be similar to that of the adjacent forest of mixed oak, hickory, and beech.

References Pertaining to Sections IV & V

- + Karlin, E.F. 1989. "A Preliminary Natural Community Classification for New Jersey". Thomas F. Breden. In New Jersey's Rare and Endangered Plants and Animals. Ramapo College. Mahwah, NJ.
- * Markley, Marco. 1971. Soil Survey of Burlington County, New Jersey USDA-Soil conservation Service.
- @ Robichaud, B. & M.F. Buell. 1973. Vegetation of New Jersey. Rutgers University Press.