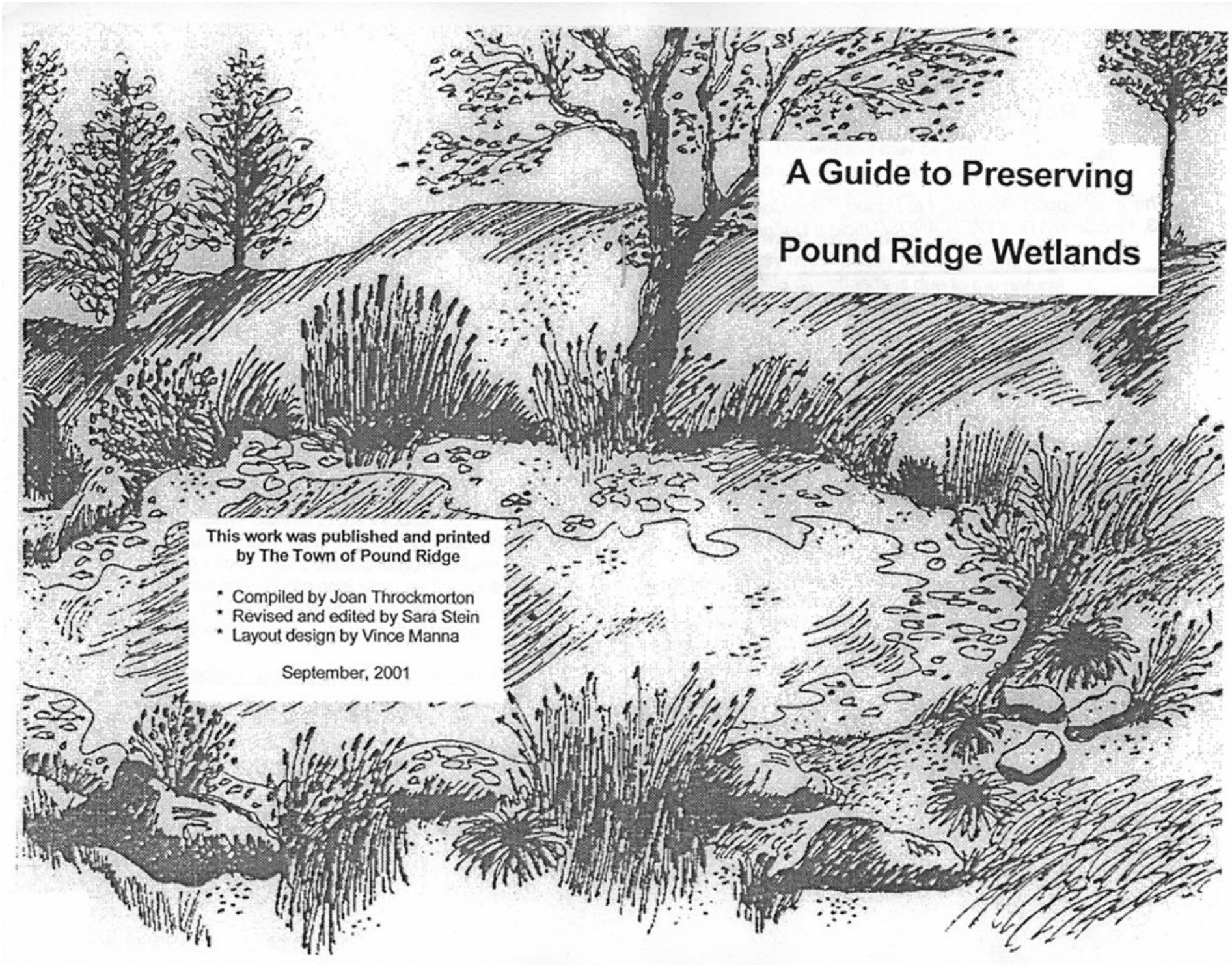

A Guide to Preserving Pound Ridge Wetlands

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This is a Support Document to Pound Ridge Code, Chapter 63, FRESHWATER WETLANDS/Article II Definitions 63-3

On the map filed by the Commissioner of the Department of Environmental Conservation pursuant to the Freshwater Wetlands Act of the State of New York, the Pound Ridge Town Code lists nine categories of "wetlands." Under each category is a list of forbs, grasses, sedges and hardwood trees of characteristic vegetation.

This Support Document strives to encourage and assist homeowners and landscape architects with suggestions for preserving, restoring and/or repairing wetlands and simplifying the restoration process.

Pound Ridge "restoration ecologist" Sara Stein has provided the recommendations for specific forbs, grasses and sedges geographically characteristic of natural wetland vegetation in Pound Ridge itself. Her recommendations represent vegetation with a proven ability to thrive in our local wetlands.

The Support Document also attempts to educate and explain the role of wetlands and their vegetation with guidelines and references for planting and purchase of such vegetation.

Why Wetlands Matter

Most of us have a bit of wetland somewhere on our property. The wetland may be small and seasonal, such as a vernal pool that is evident only in spring, or it may be a wet meadow, marsh, swamp, pond, or stream. All these wetlands are valuable to wildlife, to soil and water conservation in general, and specifically to the quality of our drinking water. Much of the value of wetlands is due to the natural vegetation that characterizes them.

- Wetlands cleanse and conserve surface water by slowing its flow. Rather than being lost as runoff, rainwater absorbed by a wetland seeps slowly into and through the ground where it is filtered and purified before eventually entering the water supply.

- Ponds and marshes are natural catchment basins that contain excess water during periods of flood. Other kinds of wetland reduce erosion and siltation by dissipating the force of rain and runoff. Stream-bank or pond-side vegetation breaks up large raindrops; the well-rooted soil then acts as a sponge to absorb the water. Without this amelioration, huge amounts of topsoil are lost to erosion during heavy rain, and the eroded soil muddies and clogs ponds and streams.

Wetlands participate in the water cycle simply by holding water: evaporation moistens the air, the

water vapor forms clouds, their rain replenishes the ground.

- Natural wetlands contribute to the chemical cycling of carbon, nitrogen, and phosphorus. Some wetlands, notably cattail marshes, detoxify bacterial and chemical pollutants.

- Wetlands refill the aquifer (the reservoir of water held in the pores of bedrock) that provides water to our wells. Without adequate refilling, more water is withdrawn than is returned, and wells run dry or must be dug to ever greater depths.

- Wetlands provide resources to a great diversity of wildlife, not only those animals that inhabit the premises such as muskrats, mallards, sunfish, bullfrogs, freshwater snails, and many kinds of dragonfly, but also to upland species that rely on wetlands for food and drink. Loss and degradation of wetlands has contributed to the diminishment of local species such as wood frogs, bog turtles, and spotted salamanders.

Not least among the reasons to take good care of wetlands is our own enjoyment of their richness and their beauty. If your wetland has been disturbed or damaged, you can improve its looks and health. The measures suggested in this guide are easy and effective ways to do so.

How to Improve Your Wetland

The term *restoration* is used to describe habitat improvement of a natural area. In the strictest sense, the term implies returning an area to a former condition, but this is seldom possible where land is as developed as ours in Pound Ridge. What you can do is called *enhancement*, a less demanding and less technical improvement to the function and sustainability of an ecosystem.

Enhancement of a wetland may include removal or control of invasive non-native species such as purple loosestrife and multiflora rose that spread at the expense of native vegetation, but mostly involves the addition of native plants appropriate to your particular wetland community. Suitable planting will help to control erosion, conserve water, and increase the number and diversity of wildlife.

What you cannot do without a special town permit is dig, dump, or grade; remove natural ground cover; clear cut, dredge, fill in, or drain wetlands; or deposit foreign matter in them. These prohibitions mean that "hardscaping" your wetland by damming or diverting water to control its flow is seldom a realistic option.

The more subtle "softscaping" way to improve wetlands is by increasing the number of native species, and that option is far preferable to heavy-handed intrusion.

What is a Wetland?

Wetlands are transitional zones between uplands and deep bodies of water. For example, a saltwater marsh is a wetland, but the ocean is not. Freshwater wetlands may be as small as a vernal pool only yards across, or as large as the entire floodplain of the Mianus River. Some wetlands flow with water, others are still, and some, like wet meadows, may have no open water at all.

The apparent boundaries of wetlands may change over the seasons depending on temperature and rainfall. Like a vernal pool, they can seem to disappear entirely during summer drought, yet even then a wetland can be identified by its characteristic vegetation or moist soil.

Pound Ridge wetlands protected by the town are described in the Town Code under Chapter 63, "Freshwater Wetlands." They include wet meadows, shallow and deep marshes, shrub swamps, wooded swamps, bogs, open water with submergent vegetation, floodplains, and even upland buffer zones that drain into bodies of water below. Although the varied topography and geology of Pound Ridge wetlands ranges from hemlock gorge to limestone fen, this guide addresses only the commoner types of wetland most likely to occur on your property.

To help you visualize where such wetlands occur, see the "Wetland Cross Section" below, reprinted with permission from New England Wetland Plants, Inc., Amherst, Massachusetts. Plants listed on this chart are *indicator species* : that is, their combined presence indicates a certain type of wetland. The list does not

include the many other species that may grow there. The lists of plants that we suggest for each type of wetland described below is compiled from the several independent sources that we used.

Plant Categories and Nomenclature

Common names are deceptive: Blue-eyed Grass is not a grass, but a member of the iris family; Shadbush is a tree, not a shrub; Sweetgum and Sourgum are not related trees, and Sourgum also goes by the common names Tupelo and Black Gum.

To avoid confusion, suggested species are listed by the common names used in the Peterson Field Guide series—*Ferns*, *Wildflowers*, and *Eastern Trees*—and in Lauren Brown's *Grasses, an Identification Guide* (which also includes common sedges and rushes). Use these references to find the botanical name—*Rosa palustris* for Swamp Rose, for example—that exactly specifies the plant you are interested in.

Suggested species are listed by category, as follows:

- Trees are tall, woody, and typically (but not always) branch from a single trunk.

- Shrubs are woody too, but they are shorter than trees and usually have several or many branching stems that give them a bushy look.

- Ferns have flat, subdivided leaves called fronds. They have no flowers, no aboveground stems, and no roots. The underground portion of a fern plant is its stem, which serves as its root.

- Grasses, sedges, and rushes have narrow blades rather than broad leaves, and they bear inconspicuous flowers that are pollinated by the wind. Blades may grow from stalks, but the stalks are unbranched. Most native species form clumps rather than a continuous turf. Because it is hard for non-botanists to tell the differences among grasses, sedges, and rushes, we have listed all three groups as "Grasses & Allies."

- Forbs is a catch-all term for herbacious (non-woody) plants that have broader leaves and showier flowers than the grasses. Some branch from the stem, and some don't. Any plant you'd call a wildflower is a forb, and so are the annual and perennial flowers you see in gardens.

Suggested species are native to our region: that is, they were growing here at the time of European settlement. Many plants introduced from elsewhere since then have naturalized as innocently and prettily as buttercups, but we emphasize native plants for an important reason: American species evolved in tandem with their pollinators and dispersers, so flowering and ripening are often timed to coincide with animal needs.

For example, fall broods of Monarch butterflies obtain plentiful nectar from late-blooming asters to fuel their flight to Mexico, and flocks of migrating robins feast on

fall-ripening dogwood fruit. Such plant/animal interactions are to the benefit of both parties, for the aster flower is pollinated by the butterfly and the dogwood seed is dispersed by the bird.

What Kind of Wetland Do You Have?

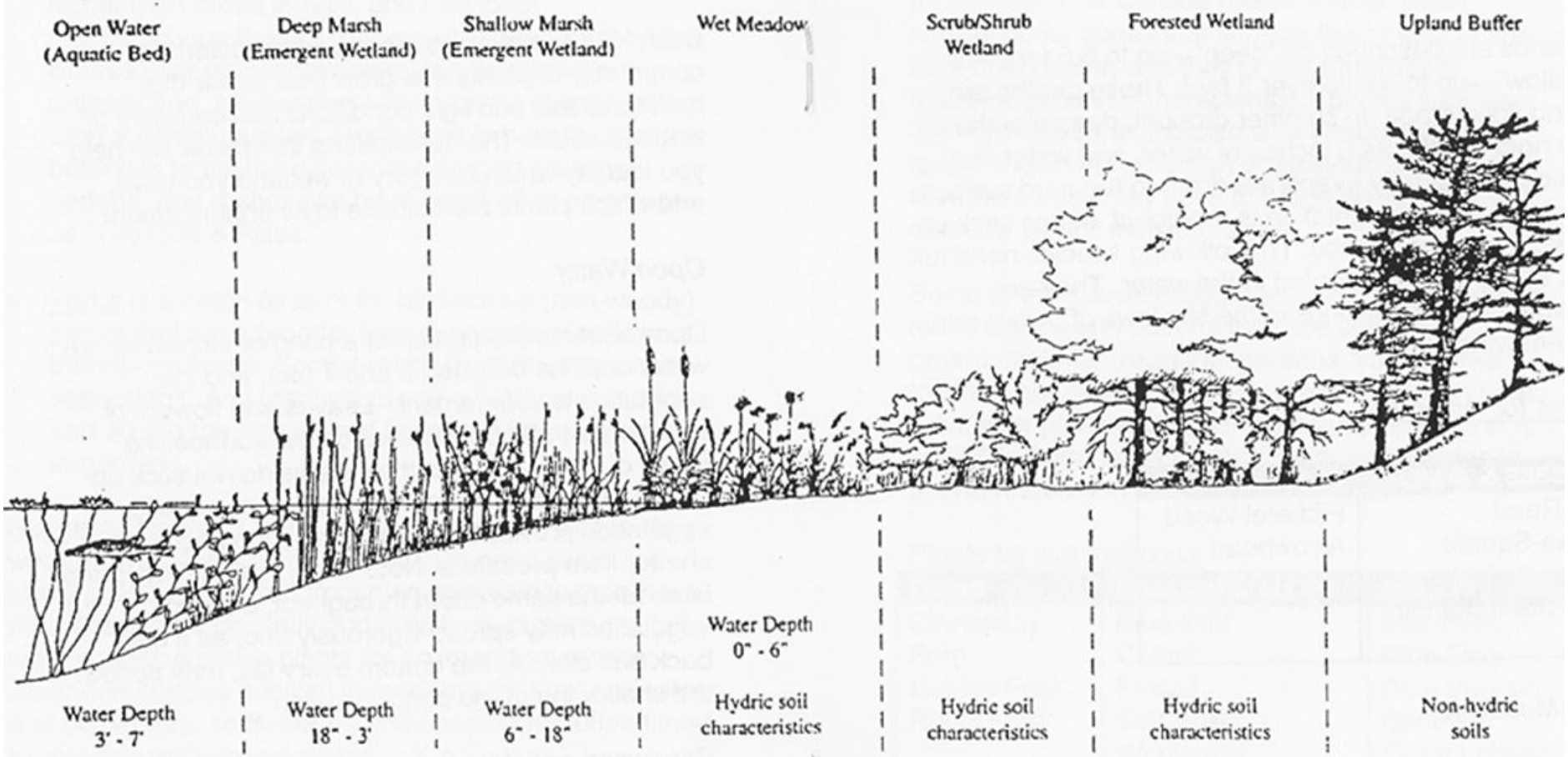
Each kind of wetland supports a characteristic community of plants that grow best under the moisture, soil, and light conditions that category of wetland offers. The descriptions that follow will help you identify which category of wetland you have, and which plants are suitable to its enhancement.

Open Water

Open water is the portion of a pond or stream where water depth is between 3 and 7 feet, and the vegetation is *submergent.* Leaves and flowers of submergent plants may float on the surface like those of Water-Lily, but their stems do not stick up beyond the water surface. Submergent aquatic vegetation provides tadpoles and young fish with shelter from predators. Note, though, that if the pond is about the same depth throughout, aquatic vegetation may spread vigorously and, as it dies back and sinks to the bottom every fall, may speed the shallowing of the pond to marsh.

Pondweed and Wild Celery are not included in Peterson's *Field Guide to Wildflowers*, but all four suggested forbs can be obtained by mail order from companies that specialize in water gardens.

Wetland Cross Section



New England Wetland Plants, Inc., 800 Main St., Amherst, MA 01002

Plants for open water

Pondweed
Spatterdock
Water-Lily
Wild Celery

Marshes

Marshes are described as "deep"—up to 6.5 feet—or "shallow"—up to a little over 3 feet. These depths are during flood stage. In summer drought, deep marshes may hold as little as 6 inches of water, and water in a shallow marsh may evaporate down to the mud surface. Dominant marsh vegetation is *emergent*: stems stick up above the water surface. The following species need full sun, and should be planted in the water. They are suitable also for plantings in the shallows of ponds and slow-moving streams.

Plants for marshes

GRASSES & ALLIES	FORBS
Bur-Reed	Pickerel Weed
Three-Square	Arrowhead
Tussock Sedge	
Soft-Stem Bulrush	

Wet Meadows

The lowest depressions in a wet meadow may be filled with water in the spring, or edges may be inundated by an adjoining body of water. Later in the season, water

isn't evident at the surface. However, the high groundwater level keeps the soil moist to wet all summer.

Mowing to the edges of waterways has destroyed much of this productive habitat and has encouraged an infestation of Canada geese. Geese avoid natural buffer zones that impede their traffic to and from open water, and they prefer turfgrass to meadow grasses. Characteristic species such as Joe-Pye weed that indicate a wet meadow are no longer there where natural grasslands have been mowed, so you may have to judge an incipient wet meadow by soil moisture alone.

Some of the species suggested here for enhancing moist shores and bottomlands are sold as ornamentals for traditional gardens; you may want to start your enhancement by creating garden beds. Advice for planting a more extensive buffer zone is available from native plant growers specializing in prairie restoration or wetland mitigation.

Plants for wet meadows

FERNS	GRASSES & ALLIES	FORBS
Cinnamon Fern	Blue-joint	Bee-balm
Ostrich Fern	Cattail	Blue Flag
Royal Fern	Foxtail	Blue Vervain
	Soft Rush	Boneset
	Woolgrass	Great Lobelia
		Joe-Pye Weed
		New England Aster
		New York Ironweed

FORBS (con't)

Swamp Rose-mallow
Sneezeweed
Spiderwort
Swamp Milkweed
Sweetflag
Turtlehead

Shrub Wetlands

The existence of a shrub-dominated wetland may be more due to its history than to its hydraulics or elevation. Over time, wetland shrubs like Highbush Blueberry may colonize the hummocks formed earlier in a shallow marsh by Tussock Sedge or Royal Fern. Larger woody species such as pussy willow and silky dogwood may seed into wet meadows from adjoining areas, and shade out the sun-loving forbs. If your wetland is in an early stage of this succession, you can encouraged it to go either way, back toward more herbacious growth or forward toward more woody growth.

To preserve existing grassy wetland areas, remove invasive shrubs such as multiflora rose, and keep only those native ones that lend variety to the landscape without making it too shady. To encourage succession to shrub meadow, add more native woody species. The chart that follows indicates which species will form a thicket useful for controlling erosion on steep banks, which will tolerate shade, and which offer fruit to resident or migrating birds.

Plants for shrub wetlands

	SHADE	THICKET	FRUIT
Arrowwood	√	√	√
Buttonbush	√		
Chokeberry			√
Elderberry			√
Highbush Blueberry			√
Meadowsweet		√	
Pussy Willow			
Redtwig Dogwood		√	√
Silky Dogwood	√	√	√
Spicebush	√		√
Swamp Azalea			
Swamp Rose		√	√
Sweet Pepperbush	√	√	
Winterberry	√		√

Forested Swamps

Forested swamps in our area are usually dominated by Red Maple, but you may also see Yellow Birch, Black and Green ash, American Sycamore, Sweetgum, Sourgum, and Swamp White Oak. Forested wetlands may encompass many acres or occur as small patches only. They may be covered with water or laced with rivulets during spring and fall rains, yet dry to muck in summer.

A transient but critical subcategory of woodland swamps is the vernal pool, which is merely a depression that puddles in late winter and into spring, only to dry up as early as mid-May. However transient, vernal pools are critical breeding grounds

for American toads, wood frogs, and several species of salamander. They may be recognizable out of season by a ground cover of Skunk Cabbage, the commonest forb in all our Red Maple swamps.

Shade-tolerant shrubs listed in the preceding table are suitable for enhancing the diversity of forested wetland. Limbing up low-branched trees, which is allowed by Pound Ridge wetland regulations, will encourage shrub growth by letting in more light. The suggested ferns generally do well in low light, but better still in bright light.

Sedges and grasses can be added where natural clearings are sunny for at least half the day. Most of the suggested forbs are ephemerals: wildflowers that sprout, bloom, and produce seed in the brief period of sunlight before canopy trees are in full leaf. Species that can be planted in shallow water are marked with an asterisk*. Plant others on slightly higher ground.

Plants for forested swamps

FERNS	GRASSES & ALLIES	FORBS
Cinnamon Fern*	Blue-Joint	Cuckoo Flower
Ostrich Fern*	Crinkled Sedge	Dwarf Ginseng
Royal Fern*	Foxtail	False Hellebore*
Sensitive Fern	Tussock Sedge*	Golden Ragwort
		Jack-in-the-Pulpit
		Marsh Marigold*
		Marsh Violet
		Rue Anemone
		Skunk Cabbage*
		Spring Beauty
		Tall Meadowrue
		Wild Leek (Ramps)
		Wood Anemone

To research specific forbs, shrubs and ferns recommended above, try the Peterson Field Guide series in paperback, published by Houghton Mifflin and available in bookstores and on the Web.

Locating Sources for Purchase of Native Plants

Popular ornamentals such as ostrich fern, New England Aster, or Redtwig Dogwood are available at local retail nurseries, but many other plants suggested here are available only from gro specialize in native species. Most of these ship by mail order during limited periods in and fall. Stock tends to be cheaper than th available locally, and the grower may also quantity discounts or even bareroot stock a wholesale prices. Bareroot plants are the b for enhancement or restoration projects, ar well or better than potted specimens.

Two books are especially valuable for loca sources of native plants:

- Barbara Barton's *Gardening by Mail* list by category such as "Prairie" and "Wetl paperback is available in bookstores ar Web, and is updated regularly.

- *Andersen Library Sourcebook of Plants and Seeds* is organized by species rather than category, and therefore locating a source is less hit-and-miss than sending for the catalog of a "Wetland" grower who may not carry, for example, *Rosa palustris*. Order the paperback directly from Andersen Horticultural Library, University of Minnesota, 3675 Arboretum Dr. Box 39, Chanhassen, MN 55317, or subscribe to the library's continuously updated web site at *plantinfo.umn.edu*.

The information and recommendations in this document come from three independent sources:

New England Wild Flower Society
NEWFS, which celebrated its centennial in 2001, is the oldest plant conservation organization in the United States. Although Pound Ridge is not technically part of New England, information from NEWFS is relevant to our location in southern New York. Contact New England Wild Flower Society, Garden in the Woods, 180 Hemenway Road, Framingham MA 01701 (508-877-7630) to obtain informative booklets about wetland and other habitats, as well as regional sources for purchasing native species. NEWFS also publishes an extensive list of plants and seeds sold at Garden in the Woods.

The Native Species Planning Guide for New York City and Vicinity
This publication, prepared by the Natural Resources Group, City of New York Department of Parks and Recreation, describes the common types of wetland in our area and lists appropriate plants for each. [See NY City Web site, nyc.completeinet.net].

Sara Stein
Ms. Stein, a well-known writer and environmentalist, is a local resident who brings to regional perspectives her own specific experience restoring wetlands and other habitats in Pound Ridge. Her books on the subject, *Noah's Garden, Restoring the Ecology of Our Own Back Yards*, and *Planting Noah's Garden, More adventures in Backyard Ecology*, both published by Houghton Mifflin, are available at libraries, book stores and on the web.