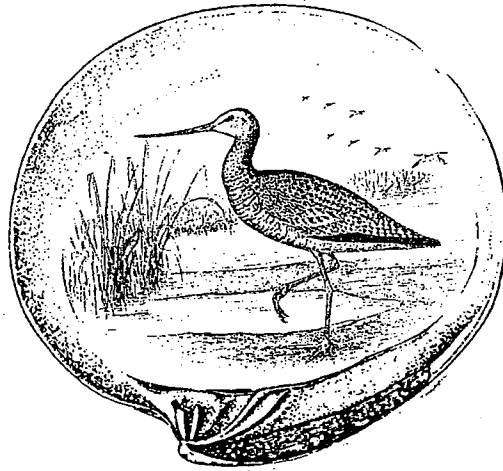


LONG WHARF NATURE PRESERVE TEACHER'S MANUAL



prepared by the New Haven Land Trust
in cooperation with the Garden Club of New Haven



J.H. Torrance Downes



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HISTORY AND INTRODUCTION

The Long Wharf Nature Preserve is a man-made creation, dating back to a 1949 dredging of New Haven Harbor. The spoil from the dredging was placed along New Haven's west shore, creating new land upon which were later built the Connecticut Turnpike (I-95) and the office/industrial complex just inland of the highway. When New Haven was first settled by Englishmen, the harbor waters lapped up clear to the southern corner of the Green, and the harbor was so large and shallow that a wharf had to be built a half-mile out to water deep enough for navigation. This is how the area got the name of Long Wharf. Filling of the harbor continued over the years (see map); now filling is strongly discouraged by the Connecticut Coastal Management Act and other legislation.

As part of the 1960s urban renewal program which led to the construction of the present office/industrial complex, this site was also designated for development. That development never came to be, however, and in 1994, thanks to the joint efforts of the Land Trust and the Garden Club of New Haven, the City donated this land to the New Haven Land Trust. Shortly after the city donation, the state of Connecticut followed suit, donating some of the I-95 harborside right-of-way. The total land area of the preserve is about nine acres.

The preserve's natural history, in contrast, is much longer, going back to the retreat of the glacier which 20,000 years ago covered Connecticut and all of New England, forming Long Island with its deposit of sediment and debris. For a while afterward, the area between Long Island and Connecticut was a lake, but as the melting glacier released enormous quantities of water, the lake overflowed and connected to the ocean, forming Long Island Sound. New Haven Harbor, fed fresh water by the Quinnipiac and Mill Rivers, is an estuary: an area where salt and fresh water meet and mix. For millennia, those rivers have carried into New Haven Harbor sediments eroded from Connecticut's Central Valley, so the harbor

bottom has been soft, not rocky. For thousands of years, till 1949, the site on which you are standing was part of a muddy, shallow estuary.

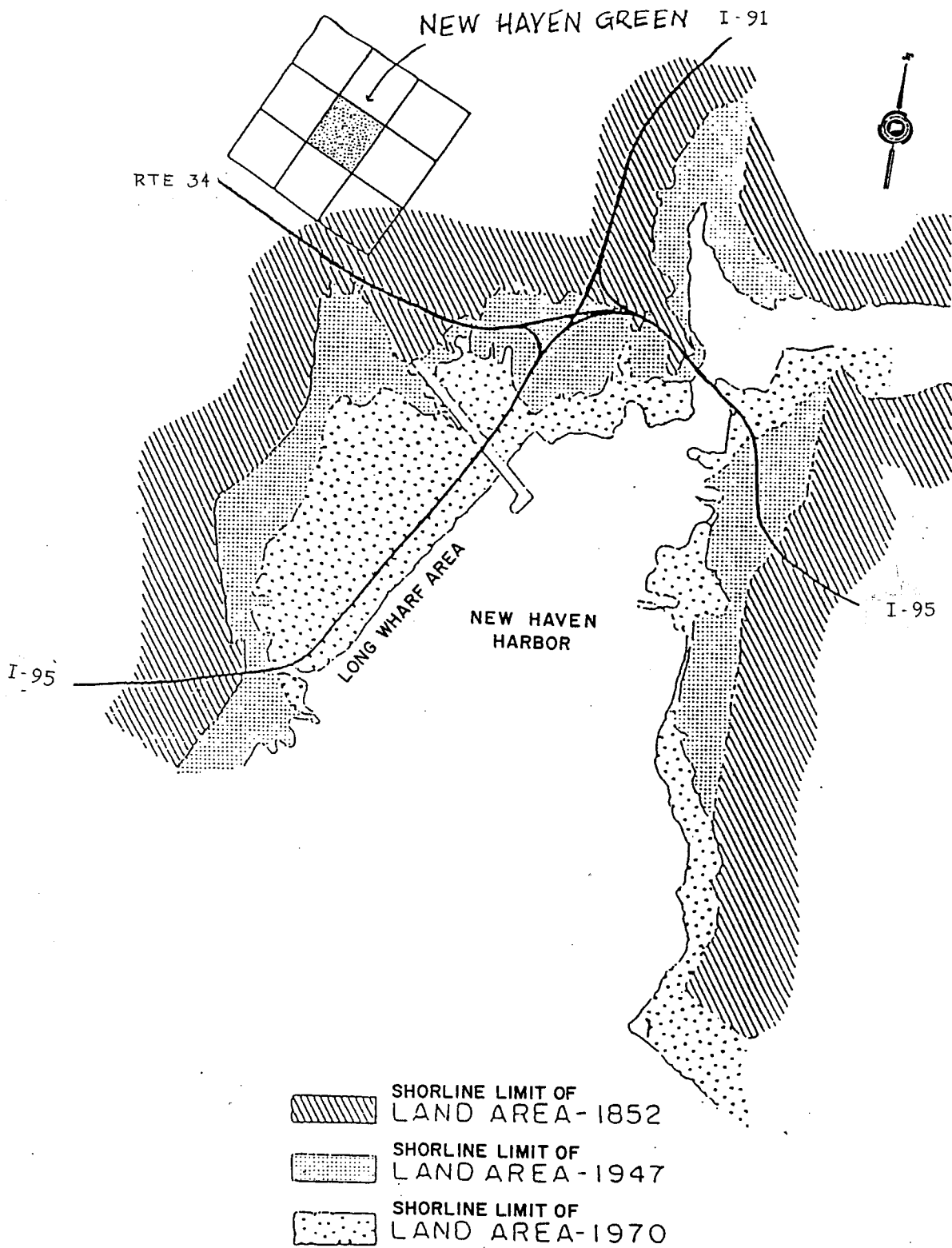
When this fill was first deposited, the land would have been barren. Today, it is covered with greenery. How did this happen so quickly? Seeds might have been in the soil when it was dumped. On the water's edge, some plants might have sprouted from root or stem fragments that washed up with the tides. And seeds could have come in on the wind, on animals' feet or fur, and been excreted by birds. Plants grew, animals ate the plants and each other, and habitats developed.

The character of the preserve is far from uniform. A change in elevation of only five or six feet produces a dramatic difference between the **upland** and the **shorefront**, the most important environmental factor being the influence of water at the shorefront. But even within these two major areas, you can see differences. On the upland area, there is a **wildflower field** and a small **woodland**; on the shorefront, there is a **mudflat**, a **salt marsh**, and a **beach**, with associated dunes. Each of these areas is a **habitat**, characterized by different physical conditions which result in different vegetation. The vegetation becomes part of the habitat; for instance the shade cast by the trees in the woodland affects the kinds of wildflowers growing underneath, while the structure and the food provided by the trees determines the kinds of animals that live there.

The Long Wharf Nature Preserve, with such diversity in such a small area, is an ideal place for teaching about habitats, the effects of physical conditions on plant life, the adaptations of different organisms to different habitats, and the fidelity of certain organisms to their habitats.

These habitats have developed in a very short time and are in a continual process of change known as succession, where one community of plants succeeds another. The rapid evolution of habitats is another feature which makes the Long Wharf Nature Preserve special.

This manual briefly describes the various habitats and some of the plants and animals most likely to be seen there. It is not a comprehensive identification guide, but is designed to take the place of a docent who might point out some of the more noticeable features, as well as those which illustrate general principles of biology and ecology.



PROGRESSIVE FILLING OF NEW HAVEN HARBOR

Map courtesy of New Haven City Plan Department

UPLAND PLANTS

If you try to dig the soil here, you will find it hard, filled with pebbles, and maybe somewhat sandy. It does not crumble in your hand as would soil from a farm or the woods. That is because there is no topsoil - the rich organic component of soil that is formed from decaying plants and animals. This soil does not hold water and has few nutrients. In short, it is an inhospitable environment for plants, yet flowers bloom and green plants grow throughout the year. The many plants that have managed to get a foothold here are referred to by ecologists as pioneers, invaders or colonizers.

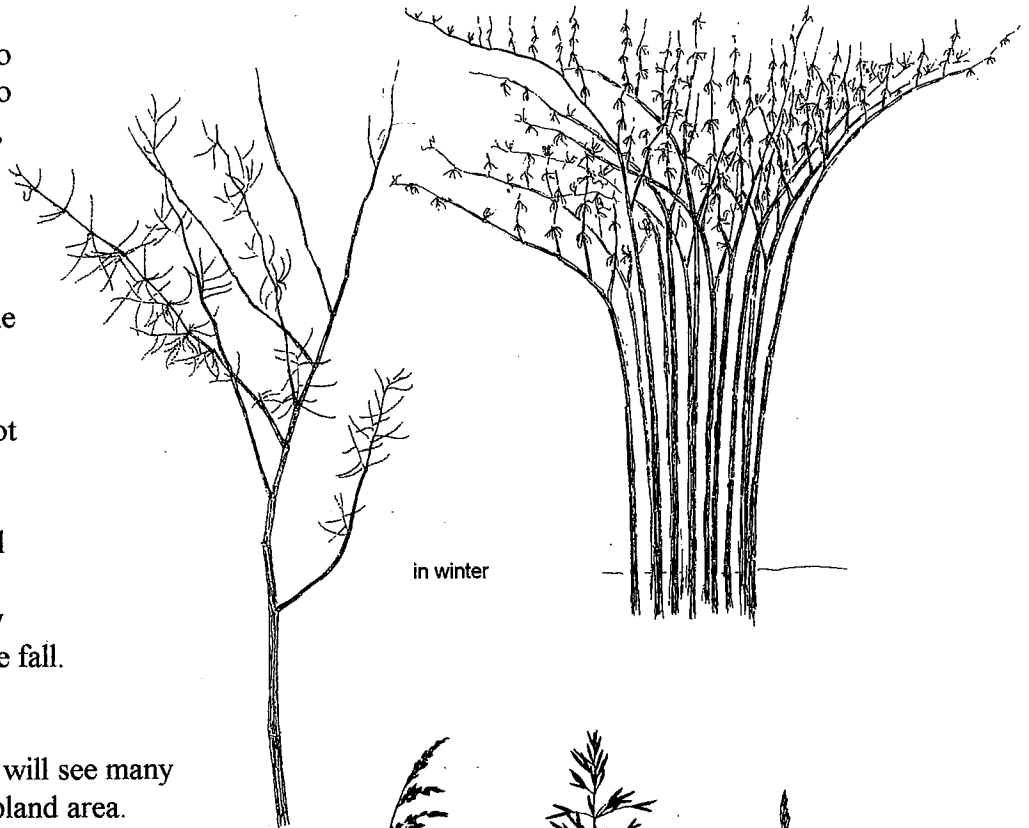
One common characteristic of these pioneer plants is their seeds: they all have seeds that are either very small or have some kind of attachment that helps them to be blown about by the wind. A few have fleshy, edible fruits which are attractive to birds; the birds digest the pulp and excrete the seeds, thus spreading the species around the landscape. Most of these species produce prodigious numbers of seeds, so that they have a better chance of being spread and "being in the right place at the right time."

The plants that you find here are typical of urban vacant lots, sandy roadside areas, railroad tracks and the like: places with poor soil either created or disturbed by man. Ecologists call this habitat a "waste place," but we might take issue with the negative connotation of this term and instead consider this kind of site a new beginning. The plants that colonize these places are tough and adaptable. As they die and decay, they will form top soil which will make the area suitable for other species, including trees and shrubs. Eventually, since Connecticut has adequate rainfall for forest growth, this spot will support trees. Below are described - partly by season of flowering - some of the most abundant and obvious plants.

Spring Whitlow Grass is one of the few spring wildflowers found in this harsh environment. (It is not a grass, but is actually related to broccoli, cauliflower and other plants in the Mustard family). In early April, if you have a sharp eye, you will see large patches of these minuscule flowers. No more than an inch high, Whitlow grass, or *Draba verna* as the botanists know it, is one of the first local plants to flower in the spring and is found most often in bare soil. The flowers come and go very quickly, leaving tiny paddle-shaped seed pods which are divided down the middle by a silvery membrane. By June, all traces of the flowers have disappeared and by late summer, the whole plant has disappeared. Next spring, however, if other plants have not taken over, new flowers will reappear from seed.



Japanese bamboo, also known as Mexican bamboo or Japanese knotweed, also appears in the early spring, its clumps of speckled spear-like stems shooting forth with such vigor that they practically seem to grow before your eyes. The name is only partially correct, as the plant does come from Japan, but is not a true bamboo, similar though it might appear. The stems grow rapidly till they reach their full height of about six feet. The lacy white flowers appear in the fall.



As spring progresses, you will see many types of **grasses** on this upland area. Most of these are European grasses which the settlers planted as forage for their animals. These now grow commonly along roadsides and in abandoned areas. Since they are adapted to the cool, wet climate of northern Europe, they go dormant in the hot dry summer. (This is why your lawn turns brown - it will green up again in the fall; there's nothing wrong with it and you shouldn't feel compelled to water it).



Most of the wildflowers at Long Wharf bloom in the summer. These include the following:

Spotted knapweed or **star thistle**, abundant on the preserve, has thistle-like purple flowers but no thorns. A member of the Daisy family, Knapweed has a two-year life cycle. In the first year, you'll find clusters of the finely cut gray-green leaves. These survive the first winter and in the second year the flowers are produced. At the end of the second summer the whole plant dies.



Common mullein is also a biennial, like spotted knapweed. In the leaf stage, you will see a cluster of flannel-like leaves that will turn your skin red if you rub it on yourself. In the second summer, the plant produces a tall, spike-like shoot with yellow-flowers. The flowers make seeds and then the whole plant dies, leaving the sentinel-like stalk to sway in the wind and disperse the tiny seeds, which can number in the tens of thousands per plant.



Milkweed is easy to recognize: break off a leaf and a sticky, milky juice comes out. In the late spring, you will find round clusters of small pink flowers, a few of which are fertilized and form the familiar pods filled with rows of fluffy seeds. Look carefully under the leaves and you may find a yellow and black striped caterpillar. This will become a monarch butterfly. The various types of milkweed, poisonous to most animals, are the only food source for the monarch larvae. The adult butterflies drink nectar from many types of flowers. (See monarch butterfly description, p. 12.)



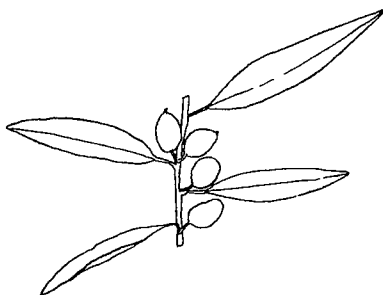
Mugwort, an abundant ground cover on the preserve, has leaves that look like chrysanthemums and smell like turpentine when crushed. A European immigrant, it is related to the various species of *Artemisia* that many people grow in their gardens. The small flowers, though individually inconspicuous, form a large branching cluster in the late summer. Mugwort spreads underground by runners, and, like many of the plants on this preserve, can occupy a lot of ground very quickly. Mugwort is extremely common in urban areas.



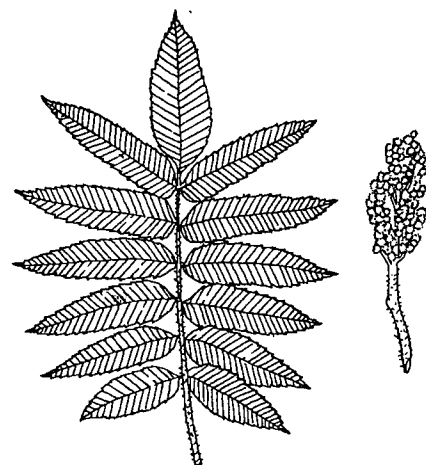
Goldenrod, aptly named for its showy clusters of yellow flowers, is the most conspicuous flower in the late summer and fall. Its nectar provides food for the migrating monarchs and for many other insects. Contrary to popular opinion, goldenrod does not cause hay fever. Its pollen is not wind-borne, a characteristic of allergenic plants, but is sticky and is spread by insects. Like the mugwort, goldenrod also spreads underground by runners, covering a lot of ground in a short time.



Shrubs are invading the preserve and may eventually shade out the wildflowers. Common shrubs here include **autumn olive** and its close relative **Russian olive**, both easily recognized by their silvery leaves. In the spring, they bear intensely fragrant yellow flowers which, when fertilized, become small red berries relished by birds. Their popularity with birds is undoubtedly one reason that this species, imported from Asia for erosion control, has become so widespread. The plant is well adapted to poor soil and has even been used to reclaim abandoned coal mines because of its ability to convert atmospheric nitrogen into a form usable by plants.

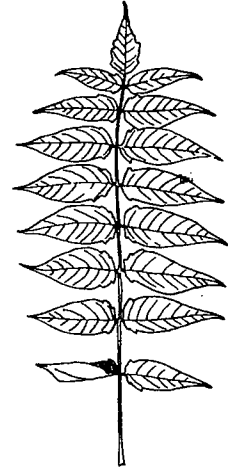


Staghorn sumac is another common shrub, actually a small tree, recognizable by its large feather-like leaves, fuzzy red fruits and thick fuzzy twigs. If you find some plants with fruits and some without, that is because the male and female flowers are on separate plants. Though they might not look very appetizing to us, the fruits are readily eaten by mourning doves, which you will see on the preserve, and many other songbirds. Like the mugwort and the goldenrod, staghorn sumac spreads underground, its suckers (as they are called for woody plants) sometimes stretching ten feet or more. People often ask if this is poison sumac, a shrub which causes a rash even worse than that of poison ivy. Poison sumac, though related to the staghorn, has smooth twigs and white berries, and grows only in fresh-water swamps. Poison sumac is not common in Connecticut.

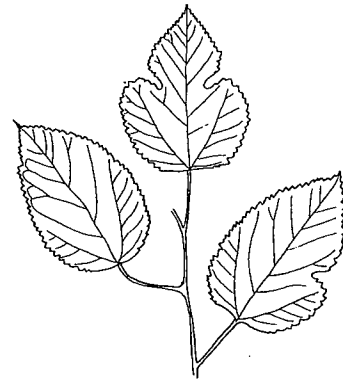


Trees, too, are beginning to invade the preserve and someday will dominate. If this were agricultural land, or a woodland that had been logged, the process of tree establishment would be much quicker: about ten years from open land to complete shade. On this poor soil, however, this natural succession is proceeding more slowly.

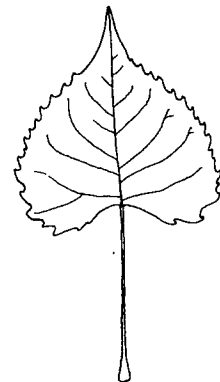
Tree-of-heaven, frequently referred to by its scientific name, *Ailanthus*, is often mistaken for staghorn sumac. The leaves and the stout twigs are similar to those of the sumac, but *Ailanthus* does not have the fuzzy twigs, and the fruits, when they are present, are little propeller-like structures instead of fuzzy red berries. Tree-of-heaven was brought from China (by way of Europe) to be grown as a street tree because it was so tolerant of city smoke and dust. It is now rarely planted, because it breaks easily in storms, but it has made itself at home in most northeastern cities, sprouting through cracks in the sidewalk and along vacant lots. *Ailanthus* was immortalized in the novel, *A Tree Grows in Brooklyn*.



Mulberry trees, with yellowish bark and variously shaped shiny leaves, form a clump near the path to the beach. A native of China, mulberry is the food source for the silkworm, which is actually a kind of caterpillar. In the 18th century, mulberry trees were planted in Connecticut for a short-lived silk industry, best represented by the Cheney mills in Manchester. Though the industry died, the mulberry trees survived and multiplied, spread no doubt by birds that enjoyed their sweet fruits. The white or dark red fruits, which look somewhat like raspberries, are produced in great abundance in early July and fall off the tree quickly. A mulberry tree is not an advisable species to plant near a patio or sidewalk.



Eastern cottonwood grows easily from seed in bare areas like this. You can recognize it by its triangular leaves which flutter in the breeze. When a tree is large enough to bear fruit, it produces millions of tiny fluffy seeds. In early June, you can easily see this "cotton", the source of the tree's name, as it falls like snow, piling up along curbs or clogging air conditioning units. A cottonwood tree can grow five feet in a year, so it can quickly gain dominance in this kind of open area.

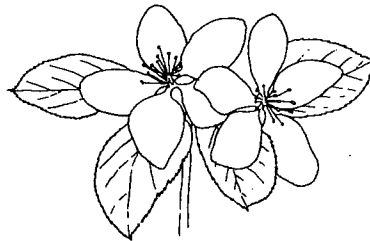


Eastern red cedar or **juniper**, an evergreen species with flattened needles, is also present on the preserve. Evergreens, as the name implies, do not lose their "leaves" (this is what the needles are) in the fall like other trees. In the winter, however, they must protect themselves against drying out (Isn't this the time when your skin gets dry?). This is as much a threat to plants in the winter as the cold, and the waxy coating on the needles hold in moisture. In the fall, the red cedar can be covered with small blue-gray berries which are a banquet for many species of birds who no doubt help spread the red cedar around the landscape.



whole tree

Several **apple** trees on the preserve are covered with short-lived fragrant blossoms in early May and bear small fruits. How do you suppose this tree got here?



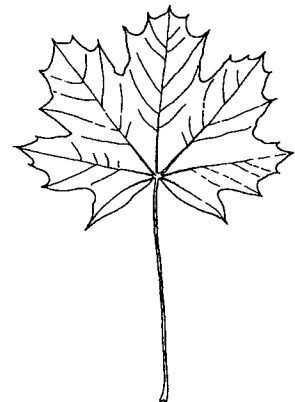
In the southwest corner of the preserve is a small woodland where large trees are growing and shading the ground below. Thus you will not find here the knapweed, the mullein, the goldenrod and the other sun-loving wildflowers that carpet the open area. Most of these trees are cottonwoods, described above; there are also **pin oaks** and **Norway maples**, among others.

Pin oak has typical oak leaves and short delicate branches, perhaps the reason for the name. Pin oaks are commonly planted on city streets because they grow fast and can tolerate low levels of oxygen in the soil. In the wild, they are found most often in flood plains, areas along rivers which are annually inundated and thus also subject to low oxygen levels.



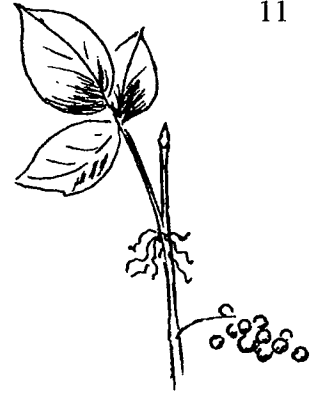
Like other oaks, pin oaks produce acorns which provide an important winter food for squirrels, deer, blue jays, ducks, turkeys, and other animals. If you are on the preserve with your class in the fall, check out the abundance of acorns on the ground. Some years huge crops are produced; other years, very few. The size of the acorn crop greatly affects many wildlife populations. Do you find any acorns in the spring? Probably not, because they have all been eaten, either by birds, mammals, or insects.

Norway maple, when the weather is warm enough, can be distinguished from other maples by the milky sap that flows out from the base of the stalk if you break off a leaf. Norway maples are also commonly planted along city streets and in yards. In the summer, you can find the familiar maple wing seeds.



Twining among the trees of this little woodland are many **vines**.

Poison ivy, with shiny leaflets in groups of three, grows here. **DO NOT TOUCH IT!!** Poison ivy can grow as almost a ground cover, or it can snake up a tree with its hairy rope-like trunk.



Oriental bittersweet, with round, long-tipped leaves, is another abundant vine. The fruits, fleshy red seeds surrounded by a mustard-yellow husk, are showy in the fall and are popular with blue jays, mockingbirds, starlings and other birds. Around 1860, the plant was brought from Manchuria as an ornamental, but since then has spread vigorously on its own.



Black swallowwort, with shiny paired leaves, is prolific. Related to milkweed (but not providing food for the monarch butterfly larvae), black swallowwort has similar seed pods with fluffy seeds inside.



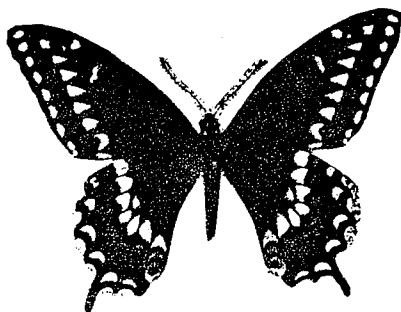
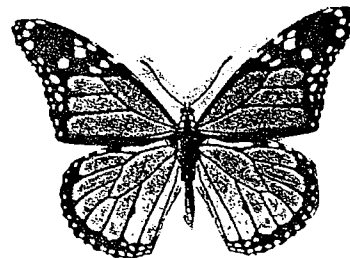
Helleborine is one of the few wildflowers that you will find here in the shade. Helleborine is an orchid, but do not look for something like the showy orchid corsage that you would buy at the florist's, for the early summer flowers are a dull green-brown and no more than half an inch long. This is yet another alien species, having been brought from Europe, perhaps for purported medicinal properties.



The listing above is far from complete. To identify other plants on the preserve, consult the Peterson or the Audubon Field Guide series, *Newcomb's Wildflower Guide* or any other popular plant identification manual.

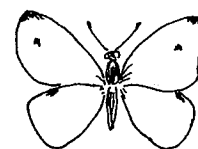
UPLAND ANIMALS

Monarch butterflies, predominantly orange and black, appear on the preserve from midsummer through late September. Those that you see in the summer will be feeding on the nectar of various flowers and perhaps laying eggs on the milkweed plants (see p. 7). The various species of milkweed are the only food source for the yellow and black striped larvae, which you might be lucky enough to find. The adult butterflies that you see in the fall will be on their way to the mountains of central Mexico to spend the winter and will probably be feeding on nectar from the seaside goldenrod flowers on the beach. The monarch is the only insect with a regular migration like birds.

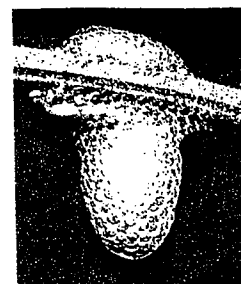


The **black swallowtail** is recognizable by its black wings with orange, blue and yellow spots and the long projections from the hindwings. The colorful larva feeds exclusively on plants of the parsley family. This includes the abundant Queen Anne's lace on the preserve, as well as garden plants like parsley, carrots and dill. The adults feed on nectar from various flowers.

Cabbage butterfly is a small white butterfly commonly seen throughout the spring and summer. It is so named because its larva - a small, green caterpillar - eats plants in the cabbage family. These include not only crop plants such as broccoli, cauliflower and turnips, but also many wildflowers such as wild mustard.



The **meadow spittle bug** always fascinates children with its little masses of froth, resembling saliva, on the stems of many plants. If you poke open one of these "spit balls," you will find the small green nymph - one of the early stages in the insect's life cycle. The nymph, protected by this bubbly mass, is sucking sap from the plant, sometimes significantly reducing its growth. The adult, which also sucks plant sap, can jump and fly, unlike the nymph.



Bees come in many types on the preserve, including **honey bees**, with their ochre-colored abdomen, **bumblebees** and **carpenter bees**. All bees gather nectar and/or pollen from plants and, as they fly from one plant to another, they spread the pollen and thus enable the flowers to be fertilized and form seeds. Moths, butterflies, flies and beetles also help in this important function of nature. Most kinds of bees live by themselves, but honey bees and bumble bees live in large colonies with complex social structures. Each individual has a “job” which contributes to the survival of the colony as a whole.



Lady bugs appeal to children, who, with careful looking, might notice different species with different numbers of spots. Lady bugs are more accurately called **lady beetles** or **ladybird beetles**, for beetles they are, with strong jaws and hard outer wings that cover a pair of delicate flying wings. Ladybird beetles are predators, feeding mainly on aphids. For this, they are much appreciated in the garden.

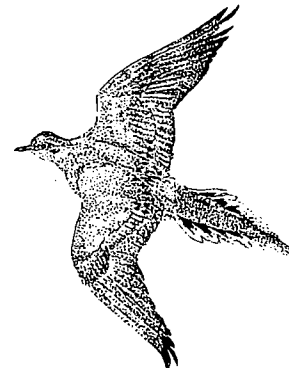


Sow bugs, also called **pill bugs**, are small lead-colored creatures that can be found in great numbers if you lift up a log. They will scurry for cover, but if you pick one up, it will curl into a half-circle. Can you count their legs? Even a quick glance will reveal more than six, telling you right away that these are not insects in spite of the name. The sow bugs, which eat mold and rotting vegetation, are actually in the same large group of animals as shrimp, crabs and lobsters.

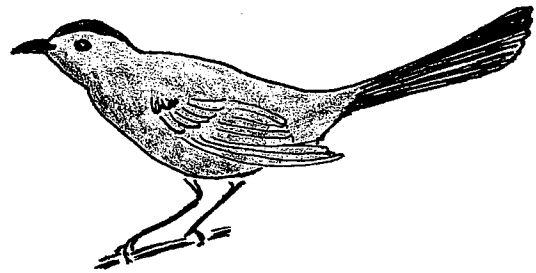


Few **birds** are found exclusively in the wildflower field, and probably few nest there, since there are few trees or shrubs to provide shelter. However, many species of birds may be seen there at one time or another, maybe just passing over or feeding on the berries of the autumn olive or the red cedar, or on the grains of the grasses and plants like the common mullein. Some that you are the most likely to see are described here.

The **mourning dove**, a grayish-brown pigeon relative with a long pointed tail and small head, takes off suddenly with a flutter. During spring courtship, the mourning dove makes a supposedly mournful cooing sound which is sometimes mistaken for the call of an owl.



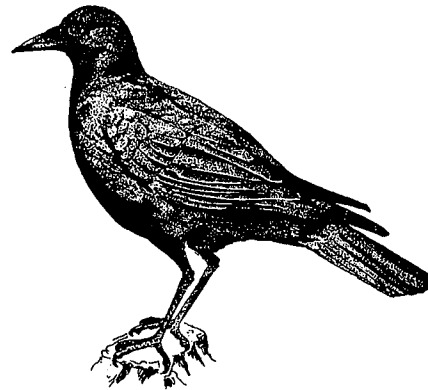
The **catbird** is all gray, its head slightly darker. Catbirds have a vast repertoire of sounds, but one of them somewhat resembles a cat's meow, hence the name. You are more likely to hear the birds calling in the spring than in the summer or fall, for this is when the males are establishing their territories and trying to attract mates.



Sparrows are small, plump and brown, often with streaky patterns. There are many species, difficult to distinguish. They doubtless enjoy the abundance of grains on the preserve throughout the fall and winter.



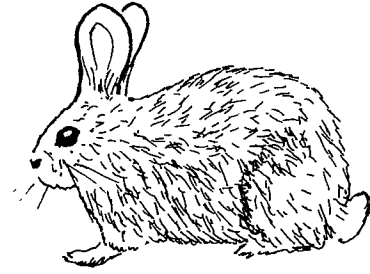
The **common crow** is large and completely black. In the winter, crows from New Haven and nearby towns - probably numbering in the thousands - spend the night in West Haven, around I-95 Exit 43. Starting around 3:00 p.m., you can see them flying there from many directions. This is typical crow behavior, with birds congregating for the night in what is called a roost. In the summer, when they are nesting, this behavior stops. Crows are omnivorous, that is, they eat just about anything: insects, fruits, small mammals, dead animals and garbage.



Most of the birds that you will see on the upland portion of the preserve are non-migratory, staying here year-round. Many that you will see on the shore, by contrast, are strictly seasonal, some here only for the breeding season, others just passing through in the spring or the fall on their way to far away climes.

To identify other birds that you see here, consult any bird identification manual such as *Peterson's First Guide to Birds*, *Peterson's Field Guide to Birds* or *The Golden Guide to Birds*. Most of the birds seen on this part of the preserve are likely to be quite common and easily found in a simplified manual.

The **cottontail rabbit** is the only large **mammal** that has been seen on the preserve. The open area, with its abundance of non-woody vegetation, provides abundant food for the cottontails, who in turn provide food for hawks and cats. Few cottontails survive more than one year, which compensates for the fact that a single female can have over 20 babies per year.



White-footed mice have been spotted, making nests under logs. Though perhaps abundant, they are rarely seen because they are more active at night and they are adept at running swiftly and quietly - a necessity for an animal that is eaten by so many others! At Long Wharf, they are probably trying to avoid hawks and wild cats. They can find ample food at the preserve: seeds, berries and insects.



Other mammals probably frequent the preserve, but have not been noted. If you see any not described here, please inform the New Haven Land Trust

SHOREFRONT PLANTS

Take a few steps down the path towards the water and you will immediately see completely different plants from what you saw on the upland. This is because the physical conditions are so different - and difficult as well.

Plants on the shorefront, whether growing in or out of the water, face severe environmental challenges. Water laps in and out with the tides twice a day. The water is salty, and salt is lethal to most plants. The plants that are out of reach of the normal high tide are still exposed to salt, from storm washovers and wind spray. These plants also face the threat of drying out as the sandy soil does not hold rain water for long, and the constant wind draws water out of the soil and out of their leaves. A limited number of species, with special adaptations, can grow under these conditions.

Slight differences in elevation within the shorefront area have resulted in three distinct habitats:

- the **mudflats**, exposed at low tide, but with water too deep at high tide to allow for upright plant growth
- the **salt marsh**, a vegetated area slightly above sea level, flooded twice daily by the high tides
- the **beach** and its dune, sand and shells deposited by the tides, out of reach of the normal high water, but occasionally soaked by a storm.

Though these three habitats are quite different, and though some organisms are found only in one and not the others, there is enough overlap that they are here treated together.

Phragmites is a tall grass with plume seed heads, growing in an impenetrable mass along the path from the upland to the shore. This is the common reed, usually referred to by its scientific name, *Phragmites* (pronounced “frag - mighties”). *Phragmites* thrives on the upper edges of the salt marsh, where it is not exposed to the full salinity of the Sound waters, and spreads with great rapidity by underground runners, some them extending ten or more feet. The shoots that emerge from these runners grow quickly and shade out any other plants that might germinate in their midst. *Phragmites* is what botanists call a “cosmopolitan” plant; that is, it grows worldwide, on every continent except the Antarctic. In Europe, *Phragmites* is used to make thatched roofs, and it is thought that the Pilgrims, when they first arrived, probably used it on their small houses.



Tall cordgrass, also often referred to by its scientific name, *Spartina alterniflora*, grows farther out from the shore, forming a large uniform stand. Tall cordgrass, smaller than *Phragmites* and without the plume-like flower heads, is the pioneer plant which starts the process of salt marsh formation. Seeds and root fragments float about in the water, carried by tides and currents. If they are deposited on an open substrate, the seeds can germinate and the root fragments can take hold and produce new shoots. Once a shoot is established, it will send out runners, which produce more shoots. Ribbed mussels find the *Spartina* stems a convenient place to attach themselves and their attaching threads help to bolster the plants against strong tides or ice scour. As the mussels filter sediment, they fertilize the *Spartina*. Fiddler crabs dig burrows under the *Spartina*, bringing oxygen to the roots and enhancing their growth.



Eventually, however, the tall cordgrass does itself in, as the sediment that it traps and the soil formed by the rotting of its own stems cause the elevation to be raised. Conditions are then favorable for other salt marsh plants which are adapted to less frequent flooding. The most common of these is a different, more low-growing species of *Spartina*, known as **salt-meadow cordgrass** or **salt hay**, often referred to by the scientific name, *Spartina patens*. On the Long Wharf Nature Preserve, you can see salt hay growing just behind the beach, in the low area which receives tidal flow indirectly from the little creek that goes under the footbridge. This is the grass that covers many of the salt marshes in the state, growing in distinctive wavy cowlicks; this is also the salt hay that gardeners like to use for mulch. It is favored for this use because the salt water in which it was growing kills the seeds of most terrestrial weeds. In days past, salt hay was harvested for cattle to eat in the winter.



Though it grows in salt water, the salt hay is not salty on the inside because it has a complicated mechanism for keeping salt out of its cells. It has to do this - as do most salt marsh plants - or the plant will die. The mechanisms for excluding salt are varied, complicated and not fully understood. Some plants have membranes on the root hairs that exclude cells. Some have glands where salt is concentrated and excreted. Some concentrate other, non-harmful salts in their cells to offset the pressure differential caused by the sodium chloride.

In addition, salt marsh and seashore plants have physical adaptations which help the plants to conserve fresh water. The narrow, vertically oriented leaf of a grass is one such adaptation; there is relatively little surface area for evaporation, and the angle at which the leaf is held relative to the stem minimizes exposure to the drying rays of the sun. Another adaptation is succulence, or fleshiness - a feature best represented in cacti and other desert plants, where fresh water is stored in the leaves or stems. You can see this feature in several of the common plants on the shorefront: **sea lavender**, **saltwort** and **seaside goldenrod**.

