

# Nature notes

From The Natural Resources Group

Volume 2, Issue 1 Winter 2008

Nature Notes is a publication of field observations from the Natural Resources Group, a division of the Department of Parks and Recreation of the City of New York. NRG's mission is to protect and preserve New York City's natural parklands through active management, restoration, acquisition and outreach using scientifically supported and sustainable approaches.

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## THE MYSTERIOUS FALL-FLOWERING TREE

In the springtime our parks are aglow with beautiful wildflowers and colorful blossoming trees, such as the familiar cherries and magnolias. However, some of our native plants wait until the fall to bloom, including one small tree found throughout the parks of New York City. The common witch hazel (*Hamamelis virginiana*) starts to flower when its leaves turn yellow and begin to drop. Although often called a tree, witch hazel has multiple woody stems, which fit the definition of a shrub, and usually reaches a maximum height of less than 10 feet in our area. The outer stems often grow out at an angle, making the canopy look wider, rather than tall. Witch hazel has mostly smooth, gray bark, sometimes with a pattern of horizontal pores, or lenticels. The broad, wavy-toothed leaves range in size from 3-6 inches. Often the tops of the leaves are riddled with galls. These are small, cone-like projections rising above the leaf surface that house insect eggs or parasites. Witch hazel has rounded fruit capsules that explode when ready, launching seeds as far away as 50 feet! This mechanical dispersal helps spread the seeds over a wide area, increasing the trees' chance of survival in the shady understory.



Witch Hazel Flowers

By far the most unusual feature of the witch hazel is the time of year that the tree flowers. The odd-looking blooms appear as the leaves begin to fall in the late autumn. The wispy, pale-yellow flowers grow in clusters in the leaf axils. Each flower has four thin petals that are an inch to an inch and a half in length. They have the ability to curl up to avoid cold temperatures and to open again during warmer weather to take advantage of insect activity. At the time of flowering, most of the neighboring trees have already dropped their leaves, thus witch hazel provides some color during the bleakest, and chilliest, season of the year.

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Witch hazel was important to both the Native Americans, and later, to the colonists who learned about the plant from them. Native people not only ate the oily seeds, but used extracts from the highly-tannic bark and twigs for medicinal purposes. The ailments that were treated included sores, cuts, bruises, tumors, coughs, colds, eye infections, dysentery, hemorrhoids, and aching muscles. In the mid-nineteenth century, witch hazel extract was patented, leading to its commercial production shortly thereafter. The woods of northwest Connecticut supply much of the witch hazel used in the extracts sold in American pharmacies today. Witch hazel also provides food for wildlife such as grouse, pheasant, bobwhite, deer, rabbit, and beaver. It can be found along the Atlantic coast from Nova Scotia to Florida and inland to Ontario and south to Texas. Some places to look for witch hazel in New York City are Inwood Hill Park in Manhattan, Van Cortlandt Park in the Bronx, Alley Pond Park in Queens, and the Green Belt in Staten Island.

~by Susan Stanley

## LEAF LITTER LEPIDOPTERA

Many of the words used to describe the ecosystem beneath our feet describe undesirable, or, at best, unremarkable objects: we talk about the forest "floor", the leaf "litter", woody "debris". Even the mineral soil is just "dirt", something we must clean off our hands before dinner. These lowly components, however, combine to form the soil ecosystem, a world which supports organisms from tiny bacteria to great trees, and which holds much of the carbon that forests remove from the air, reducing global warming. Soil ecology fills many articles and books, but here we'll discuss just one of the groups of animals that depend on the soil and litter, the Lepidoptera, or butterflies and moths.

Everyone is familiar with the monarch with its hanging chrysalis in which the caterpillar transforms to the butterfly. Many beautiful moths and butterflies, however, make this transformation in less regal clothes: drab, sometimes uncovered brown pupae, often lying within the leaf litter or a few inches below the soil surface in an underground cell. In autumn, with cooling temperatures and falling leaves, caterpillars begin their journeys to their winter homes. When you encounter a caterpillar on a path or road in this season, it is probably wandering in search of a good spot to spend the cold months.

Species that spend the winter on or within the soil include some of the Giant Silkworm, or Saturnid moths, such as the well-known, hauntingly beautiful, Luna moth (*Actias luna*). One of its relatives, the Tulip-tree Silkworm (*Callosamia angulifera*), travels to its winter retreat on the "Leaf Express." It pupates within the leaf of its only host plant, the Tulip Tree (*Liriodendron tulipifera*), and falls to the ground with the leaf.

The Sphinx moths, Sphingidae, are known to tomato gardeners as the fleshy green hornworms that ruin their crops, but many species in this family are beautiful caterpillars and moths that do not feed on our crops. The Hummingbird Clearwing, (*Hemaris thysbe*) flies during the day, seeking nectar from common garden and wild flowers such as Phlox and Swamp Milkweed. It hovers in front of flowers, sucking nectar with its extremely long proboscis, looking nearly identical to a hummingbird at a flower. The hummingbird clearwing's caterpillar feeds mostly on Viburnums such as Arrowwood, descending to the leaf litter to spin a silken cocoon around its pupa. Without intact leaf litter, this moth would no longer confuse, delight, and entertain with its antics. Many other

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Sphinx Moths, including the Pandorus Sphinx (*Eumorpha pandorus*), pictured below, have caterpillars that crawl down the stems of their food plant (usually Virginia Creeper) and dig a room beneath the soil in which to pupate.

Butterflies that pupate on or within the soil include some Swallowtails (Papilionidae), and Gossamer Wings (Lycaenidae) such as the Northern Hairstreak (*Euristrymon ontario*) and Frosted Elfin (*Incisalia irus*). Other species of moths and butterflies overwinter on the ground as caterpillars. This is the case with the familiar Woolly Bear Caterpillar (actually the larvae of the Isabella Tiger Moth (*Pyrrharctia isabella*), and many Metalmark (Riodinidae) butterfly species.

Trampling of leaves and compaction of the soil by feet or vehicles kills caterpillars or pupae. "Tidying up" the forest by removing logs, twigs, and leaves also eliminates habitat for overwintering moths and butterflies. One of the greatest threats to species dependent on fallen leaves are non-native earthworms, such as the very large *Lumbricus terrestris*, which can quickly consume an entire year's leaves, leaving bare mineral soil. If people stay on pathways, follow the rules regarding vehicles in parks, and leave fallen wood and leaves in natural areas, they can help these beautiful fliers continue to enliven our forests and meadows. At the present there is no method proven to reduce populations of invasive earthworms, but planting of American Beech (*Fagus grandifolia*) trees, which acidify soil and drive out earthworms, has been proposed.



Pandorus Sphinx (*Eumorpha pandorus*)

~by Ellen Pehek, Ph.D.

