grass-pink

Orchids of New York

by Chuck Sheviak and Steve Young
photos by Chuck Sheviak, unless noted

Oohhs and aahhs erupted from the small crowd of onlookers as each took a turn squatting down to peer at the extraordinary find. They had hoped to catch a glimpse of this rare species in the wild, and were thrilled that the southern twayblade had emerged. To this group of botanists, seeing the tiny orchid—no taller than your hand—in this bog in Lewis County was a dream come true. After all, the delicate flower occurs in fewer than 10 locations in New York.

During their two-day botanical hunt, the group felt fortunate and thrilled to have seen seventeen different species of orchids, from the small twayblade, *Listera australis*, to the large and regal lady's-slipper, *Cypripedium reginae*. It was an awesome trip.

With more than 21,000 known species, the orchid family is the second largest family of plants; only the aster family is larger. Orchids come in a variety of shapes, sizes and colors, and are considered the most highly evolved of plants. They typically have showy, three-petaled flowers with the middle petal differing in shape and color.

Grass-pink
Calopogon tuberosus

Habitat: Bogs, marshes and peatlands. Primarily in very open sites; usually in very acidic soils.

Blooms: June and July

While orchids are often associated with the tropics, these plants actually occur in a variety of habitats worldwide, absent only from the driest deserts and Antarctica. Many New Yorkers have no idea of the variety of orchids that dot the state's landscape. In fact, nearly 60 species of orchids are native to New York, and one European species has become naturalized. Some are common, but most are rare, and a few are endangered.

Many of us have probably encountered several species of orchids without realizing what they were. For instance, the familiar lady's-slippers (among the showiest of our native species) and pink lady's-slipper are commonly found in acid soils of pine and oak forests across the state. In addition, two varieties of yellow lady's-slipper are widespread. One, the large yellow lady's-slipper, is usually seen in upland sites, while the small yellow lady's-slipper prefers deep swamp forests.

Not all our orchids are as flashy as the lady's slippers. In fact, most of our species, like the northern green bog orchid, have smaller, sometimes minute flowers, and in many species the flowers are inconspicuously colored brown or green. This is why they can be easily overlooked.

While variety is the spice of life in the orchid family, there are common features that identify them as a group. Like their relatives, the lilies and irises, orchids have three sepals (small modified leaves near the rim of the flower) and three petals. However, orchids have one petal that is different from the others; called the lip. In addition, while irises have three stamens (male flower parts) and a pistil (female flower part), in orchids these parts are fused into a single structure called the column (see diagram on pg. 7). The column

Loesel's twayblade

Loesel's twayblade
Liparis loeselii

Habitat: Rich marshes, peaty swamps, mucky seepages, and open and forest habitat in permanently saturated soils. Often grows in mucky or peaty soils.

Blooms: June and July

includes the stigma (tip of the pistil) that receives the pollen, and only one or two pollen-bearing anthers (enlarged part of the stamen).

The assorted floral parts, especially the lip and column, are incredibly varied in different members of the orchid family. Differences in the structure of these parts, flower colors, and fragrances reflect specialization that allows the various species to attract different insect and bird pollinators. Even minute differences between closely related orchids can dictate different pollinators and prevent hybridization.

A particularly remarkable feature of orchids is their exceptional ability for seed production. The seeds are minute and dust-like, and produced in great numbers. Even New York's smaller-flowered species, such as the nodding ladies'-tresses, commonly produce around 8,000-10,000 seeds per flower. Considering that an average plant bears 10 to 30 flowers, we are talking about some serious seed production!

northern green orchid

Northern green orchid
Platanthera aquilonis

Habitat: Marshes, swamps, edges of streams, and wet ditches. Also on slopes in hardwood forests.

Blooms: June through August

rose pogonia

Rose pogonia
Pogonia ophioglossoides

Habitat: Peaty open wetlands; acidic bogs and wet interdunal flats. Grows adjacent to these habitats in disturbed upland soils, such as along abandoned railroad grades and roadside ditches.

Blooms: Late May through July

But the tiny seed size that makes such large numbers possible comes at a price. The seed harbors virtually no stored food, and the embryo is an undifferentiated cluster of cells. This renders the seeds incapable of germinating and growing on their own. Instead, they must establish a symbiotic relationship with a soil fungus to provide nutrients. Such relationships are only rarely successful and may require special soil conditions, leading to a plant's rarity.

Another hardship orchids face is that the soils that favor their growth are often nutrient-poor and either very acid or alkaline. Consequently, many orchids, such as grass-pink, rose pogonia, and white fringed orchid are found most often in coastal dune sands and in bogs and fens (a type of marsh).

While orchids have difficulties establishing themselves, the sheer number of seeds produced, combined with their dust-like qualities, help the plants disseminate widely. That's why after hiking along miles of seemingly identical forest trail you may encounter an isolated orchid plant. Perfect examples of this are the marvelous greater round-leaved orchid and its close relative the large round-leaved orchid which are typically encountered in this fashion. Both are impressive to see, with smooth, rubbery, jade-green basal leaves that can grow to be the size of dinner plates. Another species, Hooker's orchid, has the same flat, round leaves, but it's very rare in the state and the flowering stalk must be seen to identify it correctly.

Large yellow lady's-slipper
Cypripedium parviflorum var. pubescens

Habitat: Predominantly in upland forests.

Blooms: June and July

large yellow lady's-slipper

When conditions are especially favorable, the large number of seeds can lead to explosive population growth. This is especially true for those orchid species that colonize disturbed sites. In fact, some species, such as most species of ladies'-tresses in the genus *Spiranthes*, are common in roadside ditches, borrow pits, mowed rights-of-way, old fields and pastures. Nodding ladies'-tresses are routinely seen every fall by untold thousands of motorists, most of whom have no idea that the little white flowers blooming in the mowed right-of-way of the Thruway are in fact orchids! At one time, one 200-foot-long roadcut bank in the Adirondacks supported amazing numbers of nine species of orchids. One year, approximately 90,000 plants of nodding ladies'-tresses were in bloom on a single day in early September; this was but one day during a five-week period during which individual plants came into bloom and went into seed in sequence. It was a spectacular display.

While some orchids are common, there are 20 species of orchids that are considered endangered or threatened in New York and are very rare to see. DEC's New York Natural Heritage Program keeps track of their numbers and locations throughout the state and surveys new locations for them every year. Some of them, like Hooker's orchid, were once fairly common in the state but have declined drastically over the last century. Continued study may explain this decline.

Questions like, "What caused the decline of Hooker's orchid?" justify the great interest in these wonders of the plant kingdom. Wild orchids often generate excitement due to their reputation as rare and exotic plants. Indeed, the more that is learned about them, the more fascinating they become. Consequently, that

spotted coralroot

Spotted coralroot
Corallorhiza maculata

Habitat: A wide variety of forest types; most common in hardwood, hardwood-hemlock, and hardwood-white pine forests.

Blooms: July through September

nodding ladies'-tresses

Nodding ladies'-tresses
Spiranthes cernua

Habitat: Open, moist, often sandy areas. Most common in disturbed sites along roads and under power lines.

Blooms: August and September

lesser purple fringed orchid

Lesser purple fringed orchid
Platanthera psycodes

Habitat: Margins of streams, swamps, marshes and wet low forests.

Blooms: June through August.

pink lady's-slipper

group of *Listera* in the bog, or the colony of *Spiranthes* on the road shoulder, represents more than a beautiful accent to the scene: they are products of complex and interwoven phenomena that remain mysterious to this day.

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When observing our native orchids, please do not pick them. All of our orchid species are on the state protected list. It is a violation for anyone to remove or damage an orchid that is on state land, and you may not remove an orchid from private land without the landowner's consent. For more information about the state's orchids, check out the New York Flora Atlas at ***www.atlas.nyflora.org.***

showy orchis

Showy orchis

Galearis spectabilis

Habitat: Rich forests (sometimes associated with calcareous "chalky" bedrock).

Blooms: May and June

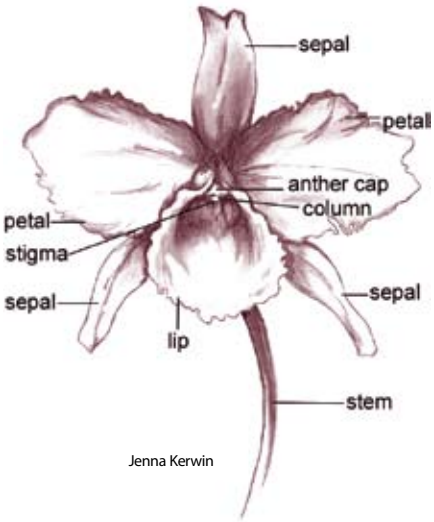
Pink lady's-slipper

Cypripedium acaule

Habitat: Sphagnum bogs and highly acidic forests with pine or hemlock. Sometimes on roadsides and in young successional forests; often on hilltops and upper slopes.

Blooms: May and June

Parts of an Orchid



Jenna Kerwin