The Remarkable World of Some New England Goldenrods

By Pamm Cooper, UConn Home & Garden Education Center

Goldenrods, *Solidago ssp.,* form one of the most interesting interrelationships between flora and fauna of the late-season flowering plants in New England. The name *solidago* is from two Latin words meaning 'to make' and 'whole', referring to its use as herbal remedies in the form of teas or compresses, among other uses. Goldenrods are perennial herbs that are members of the Asteraceae, or aster, family. Flowering from August through September, they are often found blooming together with Joe-Pye weeds and asters. The time of year that they bloom has made them a scapegoat for many allergy sufferers who believe they are to blame them for symptoms that are actually due to ragweed that flower at the same time.

Goldenrods naturally produce rubber, and Thomas Edison actually experimented with the cultivation process to increase the rubber content in the plants. George Washington Carver and Henry Ford devised a process to make a much-needed rubber substitute from goldenrod during World War II. It was rather tacky and not as elastic as true rubber, but goldenrods and other native plants such as *Aclepsis* and *Chrysothamnus* have rubber in sufficient quantity that may one day prove worthwhile. Tall goldenrod ***(****Solidago altissima)* had the most rubber content at 6.34 %.

Goldenrods have a unique type of inflorescence that consists of many tiny flowers that aggregate together in a flower head and form a 'false flower'. The individual flowers are most commonly in the form of ray flowers or disk flowers. Identification of species is often done by observing the hairs on the seeds, which may be visible when the plant is still in flower. Goldenrods vary in height, with the tallest (*Solidago altissima*) at six feet. Some, such as sweet goldenrod (*Solidago odora)* have pleasant odors.

Image by Pamm Cooper

One of the most common goldenrods in New England is the Canada goldenrod (*Solidago canadensis).* It is considered allelopathic to sugar maple seedlings, producing chemicals that inhibit their growth. Habitat is disturbed areas like meadows, fields or roadsides. This is a tall plant with hairy stems and a plume flower arrangement.

It is associated with the goldenrod gall fly (*Eurosta solidaginis*) whose larva feed inside a round gall on the stem which is formed by the reaction of the plant to the larva's saliva. You can easily find these galls when green or later in the season when stalks turn brown. The larva chews an exit hole before the plant tissue hardens up for the winter. In the spring, the adult fly will exit through this hole. Downy woodpeckers and chickadees will peck at these galls to access the larva, especially in harsh winters. Studies have shown the larger the larva inside the gall, the less likely it is to be parasitized by other insects or eaten by birds like downy woodpeckers in the winter. The goldenrod gall moth also causes a stem gall, but

this is a spindle- shape rather than a ball. The caterpillar hatches from an egg laid the previous autumn and feeds its way into a stem.

Licorice goldenrod (*Solidago odora)* has a licorice or anise scent and the leaves were used in a tea by the Cherokee for colds, coughs, and fevers. This plant is found in the southernmost parts of the New England states, but is absent in Maine. Found in woodlands, along roadsides, disturbed sites and old fields, the flowers have been used to make deep yellow dyes and attract beneficial insects such as lady beetles and lacewings.

White goldenrod (*Solidago bicolor)* is found at the edges of woodlands. It is also sometimes called 'silverrod' in reference to its white flowers. It is the only goldenrod with white flowers in the eastern part of the country. The stamens and pollen will give it a slightly yellow look. Sometimes the spectacular brown hooded owlet caterpillar can be found on this plant where it primarily eats the flower buds and flowers. Found more often on any goldenrods with longer flower spikes, this caterpillar is a favorite of many lepidopterists.

Early goldenrod *(Solidago juncea)* gets its common name from its bloom time, which can be as much as a month prior to many other goldenrod species. This attractive, slender plant has a very delicate appearance and can be distinguished from other goldenrods by the lack of, or near lack of hairs on the stems and leaves. White-tailed deer, woodchucks, cottontail rabbits and livestock may feed on the plant if less desirable food is available.

Goldenrods provide a source of seeds for eastern goldfinch, tree, swamp and song sparrows as well as some migrating warblers such as the yellow-rumped warblers. Mice and other rodents eat the seeds throughout the winter and have a better time of it when seed heads are pressed down against the ground by heavy snows.

Any insects still around in late summer that have an interest in flowers may be found on goldenrods, especially pollen and nectar seekers and their predators. Some of the many insects and other arthropods that rely on goldenrods for survival are bees, wasps, butterflies, moths, flies, beetles, grasshoppers and spiders. Many of these visit for the pollen and nectar often in shorter supply as the season winds down. Migratory butterflies, especially along their shoreline routes, depend upon goldenrods for food sources as they travel south for the winter. Bloom periods are extended for at least two months as different species of goldenrods bloom in succession or coincide with each other.

Black and margined blister beetles are often found on these plants in the late summer and early fall. Many beneficial insects, such as soldier beetles and assassin bugs use the flowers as either food sources or hideouts where they wait to ambush other insects. If you see a butterfly hanging upside down without moving, check and see if an ambush bug or crab spider is feeding on it. Caterpillars such as the asteroid and flower moth caterpillars, aphids, tarnished plant bugs, and many other insects feed on flowers, stems and leaves. Wasps, goldenrod and crab spiders, praying mantids, lacewings, ambush bugs, assassin bugs, spined soldier bugs and birds prey on insects that visit or live on the plants. Cucumber beetles also feed on goldenrod pollen. Some flies cause galls on stems and upper foliage as their larvae feed.

Chinese mantids also hang out around goldenrods, and often lay their egg masses on its stems. Look for these in the winter if heavy snows have not mashed the plants into the ground. I sometimes take a stem with the mantid egg case and stick it in my garden. The mantids usually emerge by mid- May, and they disperse quickly.

There is a great interconnection between goldenrods and vertebrates and invertebrates, and nature reveals such things to the careful observer. If you happen upon some goldenrod, or seek it out on purpose, just a few moments of careful observation will be rewarded with a peek into the drama that is on display in a simple stand of yellow flowers.

If you have questions about goldenrods or on other horticultural topics, feel free to contact us, toll-free, at the UConn Home & Garden Education Center at (877) 486-6271, visit our website at www.ladybug.uconn.edu or contact your local Cooperative Extension center.