

## *Family Sphingidae*

By Kim Smith

Startled! is an apt description of the reaction most gardeners experience when first they encounter a clearwing moth. Hovering while nectaring, with wings whirring rapidly and audibly, is it a miniature hummingbird, enormous furry bee, or mutant new world creature?

The family Sphingidae are easily identified in both their adult and caterpillar forms. The medium-to-large-sized sphinx, or hawk, moths have characteristic robust, chunky bodies tapering to a point, and slender wings, which are adapted for rapid and sustained flight. Often mistaken for hummingbirds, the Hummingbird Clearwing Moth (*Hemeris thysbe*), with green tufted body and ruby colored scales, suggesting the male hummingbird, and the Snowberry Clearwing Moth (*Hemaris diffinis*), with the gold and black striped color pattern similar to that of a fat bumble bee, mimic both the bees and birds they fly with during the day. The ability of certain Sphingids to hover in mid air while nectaring is unusual in nectar feeders and has evolved in only three species: Sphingids, bats, and hummingbirds. Sphinx moths also do an exceptionally unusual movement called “swing-hovering,” swinging from side to side while hovering, it is thought, in an effort to escape predators lying in wait amongst the flora.

Sphinx moths are grouped together because their caterpillars hold their head and thorax erect in a sphinx-like fashion. Most larvae have a horn protruding from their last segment. For this reason, they are often called hornworms. The adult sphinx moth is a powerful flier and usually has a long proboscis suitable for tubular-shaped flowers with a deep calyx, such as trumpet vine. The slender wings must beat rapidly to support their heavy bodies. The names of many sphinx or hawk moth species correlate to their caterpillar host plant, to name but a few examples: Catalpa Sphinx, Huckleberry Sphinx, Paw Paw Sphinx, Cherry, and Elm Sphinx.

The order Lepidoptera is comprised of butterflies, moths and skippers. The name is derived from the Greek *lepidos* for scales and *ptera* for wings. Their scaled wings distinguish them as a group from all other insects. Shortly after the Hummingbird and Snowberry Clearwings are born, they immediately begin to shed their wing scales, hence the common name clearwing moth.

While nectaring, moths receive a dusting of pollen as they brush against the pollen-bearing anthers. Their fuzzy, fur-like scale-covered bodies are an excellent transporter of pollen. Because moths are on the wing primarily at night, moth-pollinated flowers are often white and pale pastel-hued and tend to be sweetly scented. White flowers are more easily distinguished in the evening light, whereas colorful flowers disappear. Adult clearwing moths are diurnal (day flying) and nectar at a variety of flowers. In our garden, they are most often spotted at the purple and blue *Verbena bonariensis* and butterfly bushes, both with small, tubular-shaped florets. The larvae of Hummingbird Clearwings feed primarily on viburnum, honeysuckle, and snowberry (all Caprifoliaceae), and less commonly on hawthorn, cherry, and plum (Rosaceae). Snowberry larvae feed on honeysuckle and snowberry.

For the most part, Sphinx moths are on the wing at night, although the beautiful White-lined Sphinx (*Hyles lineata*) is often seen at dusk. The forward wings are dark olive brown streaked with white. The hind wings are black with a vivid band of rose-pink. The caterpillars feed on the foliage of apple trees, four-o’clocks, evening primrose, elm, grape, and tomato. The adults are generalists and nectar at a wide variety of flowers including larkspur, gaura, columbine, petunia, moonflower, lilac, bouncing bet, clover, Jimson weed, and thistle. White-lined Sphinxes are drawn to lights and those that remain in the garden the next morning are quite subdued, and may come to your finger.

Orchids often have a symbiotic relation to very specific sphinx moths. The starry white, six-petalled Comet Orchid (the French common name, “Etoile de Madagascar” means “Star of Madagascar”) produces nectar at the bottom of an extremely long corolla, nearly a foot in length. Star of Madagascar (*Angraecum sesquipedale*) was predicted by Charles Darwin to have a highly specialized moth pollinator with a proboscis at least that long. “*Angraecum sesquipedale* has nectaries eleven and a half inches long, with only the lower half filled with very sweet nectar...it is, however, surprising, that any insect should be able to reach the nectar: our English sphinxes have probosces as long as their bodies; but in Madagascar there must be moths with probosces capable of extension to a length of between ten and twelve inches!” (Darwin). The giant hawk moth *Xanthopan morgani praedicta* (“the predicted one”) was named appropriately upon its discovery, after Darwin’s death.

Co-evolution, the specialized biological embrace of two species, bears both benefits and risks. Each partner benefits in that no energy is wasted on finding ways to reproduce. The risk lies in becoming too dependent on a single species. If one half of the co-evolved partnership perishes, the other will surely become extinct as well. The gossamer-winged Karner Blue butterfly co-evolved with the wild blue lupine (*Lupinus perennis*), and is its sole caterpillar food plant. Because of the near extermination of our native wildflower lupines through over-development, over-collecting, cross hybridizing with the Russell hybrid lupines, and fire suppression, the Karner Blue is now extirpated in our region. The Baltimore Checkerspot, the state butterfly of Maryland, was once common throughout its wet meadow habitat with nectar plants within easy flying distance from each other, and is now at extreme risk for similar reasons. Housing developments have replaced meadows and farmlands and the species sole caterpillar host plant, white flowering turtlehead (*Chelone glabra*), has become a favorite food for the mid-Atlantic’s exploding white-tailed deer population.

A statewide program is underway in Maryland to educate citizens about the relationship between the Baltimore Checkerspot to its habitat and host plant. Across the state, school and scout groups, along with garden clubs, teamed up with the Maryland Zoo and Washington Area Butterfly Club to participate in the Baltimore Checkerspot Restoration Project. Thousands of white turtlehead plants are growing in schoolyards, propagated to support the checkerspots breeding in captivity at the zoo. Fortunately, the White-lined Sphinx is found throughout North America and both larvae and adults are consummate generalists.

Recommended reading: *Discovering Moths* by John Himmelman; *A Field Guide to the Moths of Eastern North America* by Charles Covell, Jr.; *Caterpillars of Eastern North America* by David L. Wagner.

*Snowberry Clearwing Moth (Hemaris diffinis)*



*Hummingbird clearwing Moth (Hemaris thysbe)*

