

## *A Tale of Two Tigers*

By Kim Smith

### *Recalled to Life*

As seed and plant catalogues pile ever higher in my ever-shrinking office, I am culling all for sources of delicious vegetables and herbs, native plants, fragrant cultivars, and plants that will expand the Lepidoptera and songbird habitat. With inviting descriptions accompanied by enticing photographs, it is difficult to exercise restraint. Absorbed in thoughts of new life in spring, I am reminded of an incident that occurred at about this same time last year.

My husband and I had returned home from a venture along the backshore to witness the waves cresting in the aftermath of a late-winter storm. With great gusts blowing up from the south, the storm was tropical in temperature, but not in degree of ferocity. Drenched to bare skin, we came in through the cellar to remove our soaked clothing, where, to our dismay, we encountered a newly emerged tiger swallowtail butterfly, unable to fly, with its wings dragging along the cold stone cellar floor. I carefully picked it up, holding the butterfly along the sturdy leading wing margin, and brought it into the warm kitchen. Its wings had not fully unfurled and the butterfly was in distress. We provided a twig for it to crawl upon, which would have allowed its wings to hang down, and then, perhaps, fully expand. That was unsuccessful and the butterfly preferred instead to simply rest in my hands. We offered it a Q-tip soaked in sugar water and I cupped my hands and held it there for a long time, hoping the warmth would recall it to life.

Within the brief moment of time a butterfly emerges, if just one of the steps in the complicated dance goes awry, the creature will likely fail. The crimped, wet wings are tightly compacted within the chrysalis. The butterfly pushes head first through the pupa case and upon emerging, with its crochet hook-like feet (tarsi) grasps at nearby surfaces. Hanging upside down, body fluids are drained from the swollen abdomen and pumped through tubular wing veins (called struts) to the very outer margins of the wings. The butterfly's double drinking straw (proboscis) must zip together, or it will be unable to nectar. For several hours after eclosing, it remains hanging upside down in a stationary state, the most vulnerable of positions, to allow its wet wings to dry thoroughly. The mystery of how the tiger swallowtail came to be in our basement, and why it eclosed in early March, prompted me to learn more about this magnificent species of butterfly.

### *The Golden Thread*

Tiger swallowtails are recognized by their four rows of tiger-like yellow and black stripes and thin black tails extending from each lower wing. Canadian Tiger swallowtails are common throughout northern New England and eastern New York. Eastern Tiger Swallowtails are more common in southern New England and New York. We are fortunate in Massachusetts to be located where much overlapping of both species occurs. Canadian and Eastern Tiger swallowtails are closely related and were not recognized as separate species until 1991. The clearest way to see the difference is to compare wingspan. The Canadian is smaller, with a wingspan of just under 3 inches; the wingspan of the average Eastern is 4.5 to almost 5 inches—the southern female ranks as the largest butterfly of the East Coast. Canadian Tiger Swallowtails are generally a paler yellow and the darker border next to the body is thicker. When the wings are folded, the yellow sub-marginal band on the fore wings is largely continuous, not interrupted by black wing veins. Tiger swallowtails are highly palatable and, as a defense against predators,

have evolved with rapid wing movements and erratic flight patterns, which make these differences between the two species difficult to discern without side-by-side specimens or photos.

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Lepidoptera

Family: Papilionidae

Genus: *Papilio*

Species: *glaucus* ~ Eastern Tiger Swallowtail

Species: *canadensis* ~ Canadian Tiger Swallowtail

The purpose of identifying the different species is relevant when planting to encourage tiger swallowtails caterpillars to colonize your garden. Host trees for Canadian Tiger Swallowtail caterpillars include native species of birch (*Betula*), black cherry (*Prunus*), and aspen (*Populus*). The Eastern Tiger Swallowtail caterpillars have adapted to a wider range of host trees from multiple families, especially wild cherries (*Prunus sp.*, *Prunus virginiana*), tuliptree (*Liriodendron tulipifera*), ash (*Fraxinus*), and sweetbay magnolia (*Magnolia virginiana*) in the Deep South. Both species are generalist when nectaring. I most often observe tiger swallowtails nectaring at plants with clusters and panicles of small florets, native buttonbush (*Cephalanthus occidentalis*), butterfly bush (*Buddleia davidii*), and *Verbena bonariensis*, for example.

Adding to the challenge to accurately identify whether Canadian or Eastern, female Eastern Tiger Swallowtails may exhibit sexual dichromatism, a dark-phase that mimics the highly unpalatable and toxic blue/black coloration of the Pipevine Swallowtail. The yellow form of the females is more typically seen in our region and is similar to the males, except that the hindwings above the black margin are covered in beautiful blue iridescent scales. Iridescence in wing scales is an example of how Lepidoptera have evolved with structural color that is disorienting to predators. The flashes of light created by the iridescent scales, combined with undulating wing beats caught in sunlight, causes hungry birds to be confused. The characteristic “tails” that lend swallowtails their common name are significant aerodynamically. Airflow is directed over the wings, enabling extended glides at higher angles, whereas Lepidoptera with more broadly cut wings would normally stall.

We look for tiger swallowtails eggs on the topside of host tree leaves. The spherical, green, pinhead-sized singular eggs are not easy to see amongst the surrounding foliage. The first instars are dark brown with white markings, which resemble bird droppings (another defense against birds). Later stages become luminous light green, with yellow and black thoracic “eyespot” that mimic the eyes of small snakes. Tiger swallowtail caterpillars have yet another defense against predators. When threatened, they will evert their osmeterium (a unique horn-like appendage that resembles a snake’s forked tongue), which emits a smelly secretion.

Most tiger swallowtail caterpillars feed at night, spending the day in a rolled-up leaf mat bound with spun silk. When ready to pupate, the caterpillar turns chocolate-brown and spins a silk girdle, a “thread of life” that supports it in an upright position as it begins to pupate. The chrysalis resembles a twig, or knob of wood jutting from the trunk, and the thread holding it in place is as fine as a strand of golden thread. In the case of the chrysalis formed in late summer, the pupa enters a state of diapause and the adult emerges in spring. The same thread of life

girdling chrysalis to branch will keep the pupa secure through winter snow, sleet, and ice, and during violent spring thunderstorms and nor'easters.

### *The Track of the Storm*

Artfully mimicking the twiggy growth and withered leaves of the lantana (*Lantana camara*) standards we winter-over, it became clear how a tiger swallowtail chrysalis could find its way into our cellar. Prior to bringing plants indoors, I now thoroughly examine all for signs of Lepidoptera pupa. The unsolved mystery is why. The eerie atmosphere created by the tropical storm in winter, coupled with the unsettling early emergence of the butterfly is haunting still. Perhaps the electric energy and unusual balmy temperature carried by the storm caused the butterfly to eclose several months too early. Whatever the reason, I return to the not unpleasant task at hand—catalogues beckoning with plants to enhance the songbird and Lepidoptera landscape—anon to be engaged in the garden of possibilities.

*It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way . . . ~ A Tale of Two Cities by Charles Dickens*

To see a short video of an Eastern Tiger Swallowtail filmed in our garden last summer, click on the link provided: [http://www.youtube.com/watch?v=60\\_B3Tm1GTc](http://www.youtube.com/watch?v=60_B3Tm1GTc)

See also three beautiful cygnets at dusk.

<http://www.youtube.com/watch?v=MzPwBxLxiuc&feature=channel>



*Storm Swallowtail*



*Eastern Tiger Swallowtail and Buddleia davidii 'Nanho Blue'*