

Stalking the Common Dragonflies of Illinois

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Dragonflies (Odonata: Anisoptera), among the largest and most spectacular of the insects, play an important ecological role as predators. Although dragonflies generally tend to prey indiscriminately on smaller insects, they specifically aid in reducing populations levels of disease-transmitting insects —mosquitoes (encephalitis, malaria, yellow fever, dengue, dog heartworm) horse flies and deer flies (anthrax, tularemia). Dragonflies also help control numbers of other biting flies, including black flies, sand flies, punkies, midges, and stable flies.



Lance-tipped Darner (Aeshna constricta)
Photograph by Dr. Everett Cashatt

In spite of these attributes, dragonflies have not attracted the popular interest of as many biologists and nature enthusiasts as have butterflies, moths, and beetles. Perhaps this is because dragonflies are usually difficult to collect and because their bright colors fade soon after they die, reducing their attractiveness as display insects.

Illinois Dragonflies

Records indicate that 98 species within seven families of dragonflies have been recorded for Illinois. The immature stages of dragonflies are adapted to living in a variety of aquatic habitats. The adults are usually found flying or perched near open water or in meadows located near water. Some generalizations can be made about the seven families of dragonflies in Illinois:

The **petaltails** (Family Petaluridae) with one species recorded in southern Illinois) are relatively large and have gray-and-black striped bodies. They may be found near streams or sometimes perched on tree trunks.



Gray Petaltail
Tachopteryx thoreyi
Photograph by Dr. Everett Cashatt



The **spiketails** (Family Cordulegastridae, with one species recorded in southern Illinois) are brightly marked with yellow and are found patrolling small woodland streams in the morning and flying above nearby meadows in midday.

Arrowhead Spiketail
(*Cordulegaster obliqua*)
Photograph by Dr. Everett Cashatt

The **clubtails** (Family Gomphidae, with 23 species recorded in Illinois) are appropriately named because of the larger segments at the end of the abdomen. The larger species seem to prefer the muddy or sandy-bottomed streams, while the smaller species are found in brooks, cleaner streams, and spring-fed pools.



Plains Clubtail Dragonfly
(*Gomphus externus*)
Photograph by Dr. Everett Cashatt



The **cruisers** (Family Macromiidae, with six species recorded in Illinois) are brightly marked with yellow stripes on the thorax and yellow bands on the abdomen. These are among the largest dragonflies (up to 4 1/2 -inch wingspans) and are found swiftly flying along lakeshores and larger streams.

Royal River Cruiser
(*Macromia taeniolata*)
Photograph by Dr. Everett Cashatt

The **darners** (Family Aeshnidae, with twelve species recorded in Illinois) occupy nearly all permanent freshwater sources. These include the largest dragonflies (over 4 ½-inch wingspans) and are perhaps the most difficult to collect because they are high fliers. They are brightly colored with blue and green markings on the thorax and abdomen; some species have amber-tinted wings.



Common Green Darner (Anax junius)
 Photograph by Dr. Everett Cashatt



The **emeralds** (Family Corduliidae, with ten species recorded in Illinois) and the **skimmers** (Family Libellulidae, with 32 species recorded in Illinois) are found near lakes, ponds, swamps, and slow streams.



Hine's Emerald Dragonfly (Somatochlora hineana)

Common Whitetail (Libellula lydia)

Photographs by Dr. Everett Cashatt

The skimmers include common pond species such as the widow (*Libellula luctuosa*), twelve spotted (*Libellula pulchella*), and common whitetail (*Plathemis lydia*) — all with large black and white markings on the wings.

Flight Periods of Common Dragonflies

Dragonflies are among the swiftest and most agile of the insects. Scientists have estimated the flight speed of some species at about 25 miles per hour with top speeds reaching 35 mph. While flying at full speed they are able to stop abruptly and perch, hover, change course, and even fly backwards or laterally.

Flight periods vary with the species; many emerge in spring and are present until fall, some have an early spring emergence and are not present after about midsummer, and others do not appear until late summer or fall. Generally, the common species are most active from 10 a.m. to 4 p.m. on hot, sunny days. A notable exception is *Neurocordulia* spp., which flies only during a relatively short period at dawn and again at twilight.

Male dragonflies tend to fly a “beat,” staking out a territory for feeding and mating, and defending it against other males of the same species. Females of some species spend only

a brief time over the water to mate and lay eggs, retreating to tall grass, meadows, or woods for the remainder of the day.

Much fieldwork and detailed study remains to be done, even on the common species — their flight patterns and mating behavior, location of their night perches and their migratory habits. Certain species, for example, have been known to migrate in large swarms. Careful and continued observation will certainly yield greater understanding of these spectacular insects.

Collecting Dragonfly Specimens

Collecting insects that possess such capabilities can be challenging and frustrating work. (One species, the Hine's Emerald (*Somatochlora hineana*), is federally and state listed as endangered. It, of course, cannot be collected legally without permits.) To catch dragonflies, most odonatologists use an aerial net and swing at a perched or flying dragonfly from below or behind. Some species, such as the darners, are high-flying and spend most of their time flying at treetop level or just out of reach. In desperation, some collectors resort to the use of a 22-calibre rifle loaded with dust shot. This method often produces results when no other technique works; however, the specimens are of poorer quality!



Preservation of Specimens

After the specimen is collected, care must be taken to properly preserve it. Wings should be folded over the back and the dragonfly carefully placed into a glassine envelope. Placing the envelope (with the specimen inside) into an acetone bath kills the insect quickly. Keeping freshly killed dragonflies in acetone for about twelve hours will preserve many body pigments that would normally fade, especially if the specimen was originally killed in a cyanide jar or by other means. After air-drying, specimens are stored in fresh glassine envelopes and filed away in a card file cabinet. Specimens may be labeled and pinned on spreading boards in the same manner as butterflies, then dried for twelve hours. Specimens mounted on pins in this fashion are usually sorted in insect drawers or display cases. With either method, a label containing the complete date (locality, date, habitat information and collector) is kept with each specimen.

Field Guides and Research Organizations

There is a lack of popular literature available specifically for Illinois dragonflies, but the following field guides on dragonflies include the species that occur in Illinois:

Dragonflies Through Binoculars by Sidney Dunkle, 2000, Oxford University Press.

Dragonflies of Indiana by James R. Curry, 2001, The Indiana Academy of Science.

Color guide to Common Dragonflies of Wisconsin by Karl and Dorothy Legler and Dave Westover, 1998. (Karl Legler, 429 Franklin St., Sauk City, WI 53583)

(608) 643-4926, email: karlndot@bankpds.com or order through <http://userpages.chorus.net/karlndot/>

An international society formed in 1972 for the study of Odonata (**Societas Internationalis Odonatologica**) has a membership of 600 professional and amateur odonatologists.

<http://www.afn.org/~iori/siointro.html>

Other dragonfly organizations are:

The Worldwide Dragonfly Association (<http://powell.colgate.edu/wda/dragonfly.htm>)

The Dragonfly Society of the Americas (<http://www.afn.org/~iori/dsintro.html>)

Dr. Everett Cashatt and other members of the ISM zoology staff have produced a list of dragonflies based on their fieldwork and data.

Dragonfly Checklist: <http://www.museum.state.il.us/research/entomology/df1list.html>

Damselfly checklist: <http://www.museum.state.il.us/research/entomology/df2list.html>

Hine's Emerald Dragonfly information:

<http://www.museum.state.il.us/research/entomology/hines/mainpage.html>

There are also captioned color images in a **photo gallery**:

<http://webdev.museum.state.il.us/ismdepts/zoology/collections/>