

Odonata – dragonflies

**Anatomy, life-cycle, habits and characteristics of the beautiful creatures commonly known as:
Dragonflies.**

Diversity.

- “The order Odonata ("toothed ones") includes some of the most ancient and beautiful insects that ever roamed Earth, as well as some of the largest flying invertebrates ever to have lived. Odonata consists of three groups: **Anisoptera** (which includes dragonflies), **Zygoptera** (which includes damselflies), and **Anisozygoptera** (a relict group represented by only two living species. This order is very diverse with about 5000 species, and its members are easy to observe”.
- [Odonata: Dragonflies and Damselflies \(berkeley.edu\)](#)
- “Dragonflies were some of the first winged insects to evolve, some 300 million years ago. Modern dragonflies have wingspans of only two to five inches, but fossil dragonflies have been found with wingspans of up to two feet”.
- [14 Fun Facts About Dragonflies | Science | Smithsonian Magazine](#)

Diversity.

Dragonfly #1



Dragonfly #2



Dragonfly #3



Dragonfly #4



Dragonfly #5



Dragonfly #6



Dragonfly #7



Dragonfly #8



Dragonfly #9



Dragonfly #10



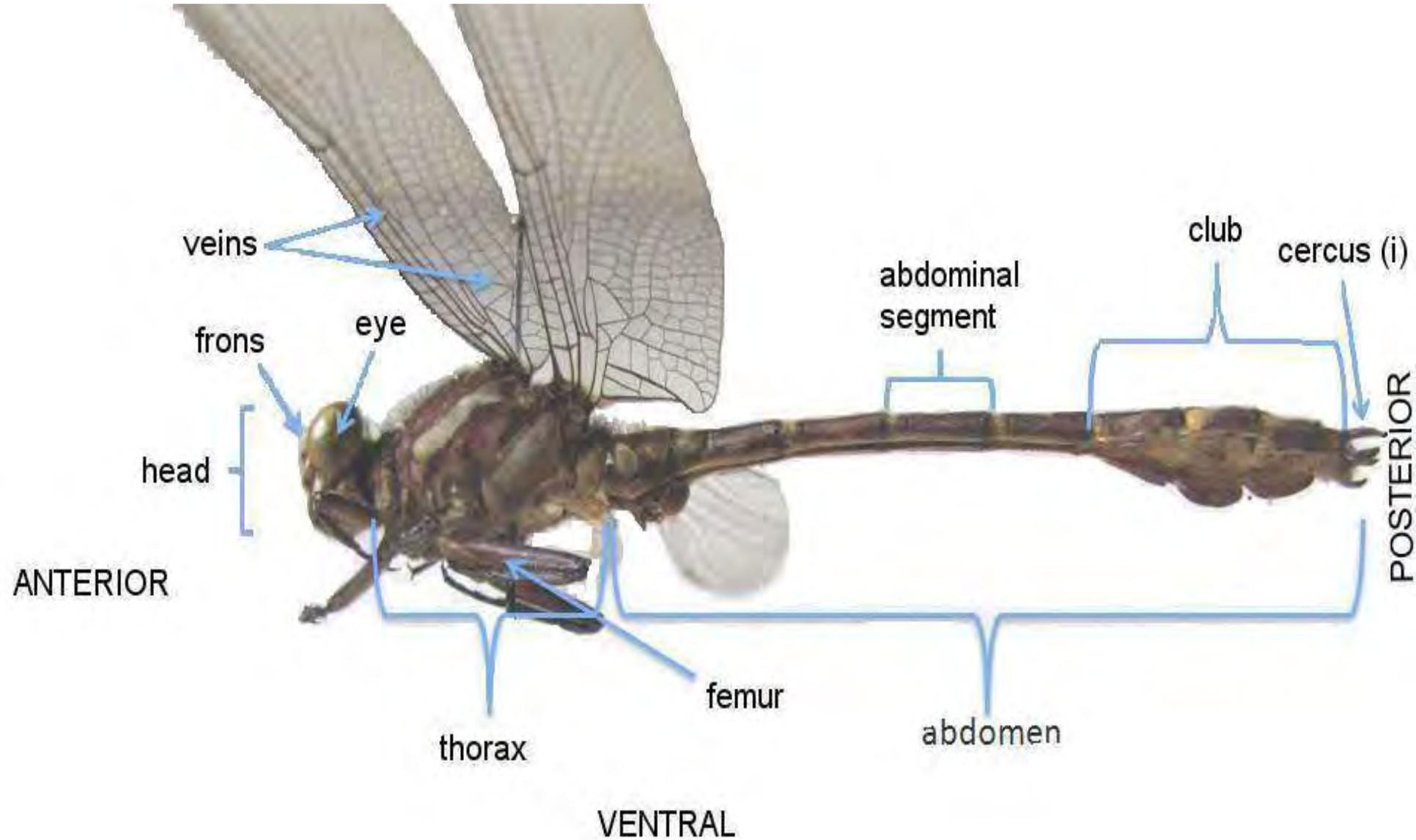
Distribution.

- “Odonates are aquatic or semi-aquatic as juveniles. Thus, adults are most often seen near bodies of water and are frequently described as aquatic insects. However, many species range far from water. They are [carnivorous](#) (or more specifically [insectivorous](#)) throughout their life, mostly feeding on smaller insects”.
- “Odonates can act as [bioindicators](#) of water quality in [rivers](#) because they rely on high quality water for proper development in early life. Since their diet consists entirely of insects, odonate density is directly proportional to the population of prey, and their abundance indicates the abundance of prey in the examined [ecosystem](#).^[21] [Species richness](#) of vascular plants has also been positively correlated with the species richness of dragonflies in a given habitat. This means that in a location such as a lake, if one finds a wide variety of odonates, then a similarly wide variety of plants should also be present. This correlation is not common to all bioindicators, as some may act as indicators for a different environmental factor, such as the [pool frog](#) acting as a bioindicator of water quality due to its high quantity of time spent in and around water”.
- [Odonata - Wikipedia](#)

Body plan.

- “All dragonfly species have excellent vision. Each compound eye is comprised of several thousand elements known as *facets* or *ommatidia*. These ommatidia contain light sensitive opsin proteins, thereby functioning as the visual sensing element in the compound eye. But unlike humans, day-flying dragonfly species have four or five different opsins, allowing them to see colors that are beyond human visual capabilities, such as ultraviolet (UV) light. Together, these thousands of ommatidia produce a mosaic of “pictures” but how this visual mosaic is integrated in the insect brain is still not known”.
- “Dragonflies are classified into the insect order Odonata (suborder: Anisoptera; *different wings*) which also includes the physically smaller and slower-flying damselflies (suborder: Zygoptera; *twin wings*). Dragonflies are characterized by their large multifaceted or “compound” eyes, two pairs of strong transparent wings, and an elongated body. Interestingly, even though they possess six legs (as do all insects), dragonflies cannot walk”.
- [30,000 Facets Give Dragonflies A Different Perspective: The Big Compound Eye In The Sky | by GrrlScientist, scientist & writer | Medium](#)

Body plan.



Methods of locomotion.



Methods of locomotion.

- “Most dragonflies fly an average of 10 miles per hour, but large species can top out at 30 miles per hour. They are able to fly backwards, hover in place, turn in tight spots, and accelerate instantly”.
- [Feeding Habits of Daring Dragonflies \(dupageforest.org\)](http://dupageforest.org)
- Unable to walk.

Feeding style.

- “Both the aquatic nymphs and the flying adults are some of the largest and most aggressive insect hunters in the world”.
- “Dragonfly nymphs live in the water and usually hang out on aquatic vegetation waiting for their prey, which is virtually any animal small enough to grab. When prey gets close enough, the nymph unfurls its labium (mouthpart that shoots out past the head) to capture its prey. Larger dragonfly nymphs may even eat minnows or tadpoles”.
- “Adult [dragonflies](#) will also eat any insect they can catch. While they usually eat mosquitoes and midges, they’ll also eat butterflies, moths, bees, flies and even other dragonflies. Larger dragonflies will eat their own body weight in insect prey every day”.
- [Feeding Habits of Daring Dragonflies \(dupageforest.org\)](#)

Defense mechanisms.

- “They defend themselves with an advanced flight motion. Catching dragonflies is not easy. They seem to fly in 2 different directions at once. Their large mobile head and large compound eyes allow them to see motion and color. They can move swiftly through the air, darting and weaving to avoid predators”.
- “Many species are mottled with different colors that act as camouflage in wooded areas near ponds and streams. Dragonfly naiads have gills and bury themselves in silt, mud, or gravel. Just the head and front legs are left out to grab prey”.
- [Wikijunior:Bugs/Dragonfly & Damselfly - Wikibooks, open books for an open world](#)

Unique and distinctive features.

- “Dragonfly species (Anisoptera) are characterized by long bodies with two narrow pairs of intricately veined, membranous wings that, while generally transparent, may have coloured markings”.
- “Dragonflies also have huge bulging eyes that occupy most of the head, giving some a field of vision approaching 360 degrees”.
- [dragonfly | Description, Anatomy, Habitat, Life Cycle, & Facts | Britannica.](#)

Reproduction.

- “Mating in dragonflies is unique. The male first transfers sperm from near the tip of his abdomen to accessory genitalia near the top of the abdomen. He then grasps a female by the back of the head with his abdominal claspers (tandem position). The female curls the tip of her abdomen to meet the male’s accessory genitalia and sperm is transferred (the wheel position). This process can take a few seconds (in species of Chasers) or many hours (Blue-tailed Damselflies)”.
- “The life-expectancy of adults is short, typically no more than a week or two, but sometimes they can last 6–8 weeks”.
- [Life Cycle And Biology - British Dragonfly Society \(british-dragonflies.org.uk\)](http://british-dragonflies.org.uk)

Reproduction.

From egg to adult

Take a closer look at the journey of a dragonfly

1 Mating adults

The male dragonfly attaches his abdomen to the female's head as she curls hers under, so that he can fertilise the eggs.

2 Depositing the eggs

The female will then submerge her abdomen in water to deposit the eggs. She can lay hundreds of them in a day.

3 Emerging nymphs

After a week the nymph will emerge from the egg and remain in the water for a few months to a couple of years, surviving off other insects and small vertebrates.

7 Drying out

Before flying away, the dragonfly will wait for its legs to harden and for its wings to unfurl and dry out in the Sun.

6 Emerging dragonfly

The still-vulnerable young adult dragonfly carefully curls wings out of its split exoskeleton.

5 Shedding the exoskeleton

Once ready the nymph will emerge from the water and attach to a nearby plant. The puffy exoskeleton will then split open.

4 Instar stages

The nymph will go through several instars before it reaches the metamorphosis stage. It will shed its exoskeleton each time to make room for growth.



Some species of dragonfly will change colour over time

Interesting and unusual behaviours.

- Dragonflies don't sting and generally don't bite people.
- They have been around for 300 million years. Prehistoric dragonflies were much larger and could have a wingspan of 2 ½ feet!
- When first hatched, the larva or nymphs live in the water for around a year. Once they leave the water and begin to fly, they only live for around a month.
- People in Indonesia like to eat them for a snack.
- Having a dragonfly land on your head is considered good luck.
- They are not really related to common flies. Groups of dragonflies are called swarms.
- Watching dragonflies, similar to bird watching, is called odong which comes from the order classification odonata.
- Predators that eat dragonflies include fish, ducks, birds, and water beetles.
- They need to warm up in the sun during the morning before taking off and flying for most of the day.

Read more at: <https://www.ducksters.com/animals/dragonfly.php>

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