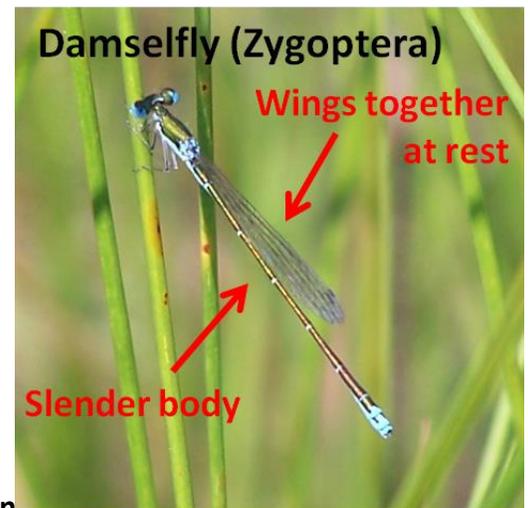


Damselfly (Zygoptera)



Characteristics:

- Need rigid perches until wings harden
- Need sun before taking flight and avoid cloudy days
- Eat small insects
- Compound eyes help to integrate sensory information in the environment
- Hemimetabolous—3 life stages → egg, nymph, adult
- Does not go through larva and pupa stages; it goes through multiple molts during a nymph stage

Location:

- Warm tropical environments
- All continents except Antarctica

Mating:

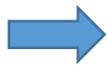
- Males have claws to hold the female
- Females use ovipositors to help lay eggs on overhanging plants or sheltered surfaces underwater
- Produce fewer eggs because they live close to water sources
- They slow the egg production rate down so they can survive dry spells
- Once water refills the pond, the eggs will hatch
- Produces one generation each year, but it may take 1-2 years to complete the life cycle
- Once fertilized, females usually lay eggs by dipping their abdomen into water; the chosen habitat for the eggs is submerged aquatic vegetation

Nymph:

- Requires oxygen-rich water – their respiratory surfaces are exposed
- Highly sensitive to poor water quality; cannot acquire adequate oxygen
- Bodies of water with high plant densities in sunny areas are ideal
- Develop two different life cycles in order to decrease predation risks; Fast and slow life cycles
- Lasts a few weeks to almost five years, never leaving the water
- Goes through 10 – 15 molts and becomes darker with exoskeleton hardening
- The wings develop as buds on the thorax until they are functional



Eggs



Nymph



Adult

Mayfly (Ephemeroptera)



Characteristics:

- Can live just a day or up to 1-2 months
- Omnivore
- 0.4-0.6" is the average length
- Antennae short and bristle-like
- Front legs long and often held out in front of body
- Compound eyes large, usually covering most of the head
- Wings: four membranous wings with many veins and cross veins front wings large, triangular hind wings smaller, fan-shaped
- Abdomen slender, bearing two (or sometimes three) long terminal filaments
- Predators: birds, rodents, reptiles
- Long narrow bodies and large wings, with a second set of smaller hind wings behind them
- Got its name from "*ephemera*" meaning short-lived, and "*ptera*" meaning wings

Location:

- Native to North America
- Only close to water due to pollution sensitivity

Mating:

- Lays eggs by dipping her abdomen into the water while in flight
- Female lays between 500 and 3,000 eggs
- Eggs can hatch immediately or wait up to 11 months
- When a Mayfly nymph first hatches it is less than 1mm long and generally missing the middle tail

Nymph:

- 3 tails, gills on their abdomen and only one claw on each leg
- Antennae short and bristle-like
- Four to nine pairs of leaf-like or fan-like gills along the sides of the abdomen
- Will go through approximately 50 molts
- Herbivores feeding mostly on algae
- Symbiotic relationship with *Ephemera Danica*, *Symbiocloeon heardi*, and the larva of the Chironomid *Epoicocladus flavens*

