



PIONEER VALLEY MOSQUITO CONTROL DISTRICT PRESENTS:

DRAGONFLY

Exploration

By Emily Ottomaniello

WHAT ARE DRAGONFLIES?

Successful Predators

Despite being harmless to humans, dragonflies are amongst the most successful predators in the world with their hunting success rate of 95%. They use their 30,000 ommatidia present in their eyes along with the power to rotate their head 180° to have 360° vision. This vision helps dragonflies synchronize movements with their prey in order to predict and intercept them.

Unique Fliers

Unlike other species, dragonflies have the ability to fly in any direction. They have muscles attached directly to their wings allowing them to move each of their four wings individually. Additionally, they contain a colored section called pterostigma on each wing edge which acts as a counter weight to increase flight speed by 10%-25%. Their wings are not flat which allows stabilization and prevents warping of the wings.

Ancient Creatures

Being one of the first winged insects to evolve, dragonflies are thought to have evolved around 320 million years ago. A specific species known as Odonata, meaning toothed one in Greek, had the same morphology as present day dragonflies but a much larger wingspan. Present day dragonflies have a wingspan of 2 to 5 inches where as Odonata had a wingspan of around 28 inches.





BENEFITS OF D R A G O N F L I E S

WHAT IS THEIR IMPORTANCE?

✓ Dragonflies are a natural insect control, especially when it comes to mosquitoes. Each day, dragonflies consume about 100 mosquitoes and can eat up to 30 times their body weight.

✓ Being such successful predators, dragonflies are important species to balance the ecosystem. They ensure insect populations remain in balance to prevent harmful trophic cascades from occurring.

✓ Dragonflies are beautiful and unique specimens with interesting characteristics that many people find fascinating. They are graceful creatures that create a remarkable addition to landscapes.

✓ These gentle species bring only benefits as they are harmless to humans. They are extremely friendly as they won't bite or sting you. If you are lucky enough for one to rest on you, they can be touched as long as they are treated gently.

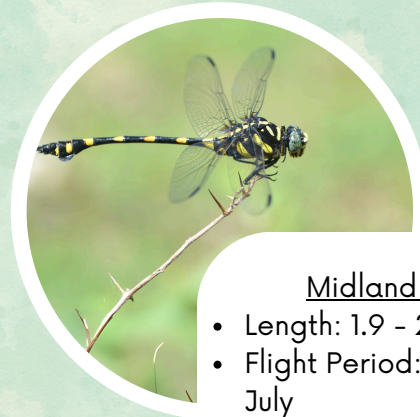
ENDANGERED SPECIES

These specific species of dragonflies are protected in the state of Massachusetts under the Massachusetts Endangered Species Act as they are listed as endangered species. These species are at a high risk of extinction making it crucial for the community to provide suitable habitat, resting areas, and perching locations for these species of dragonflies to recover their populations.



Riverine Clubtail

- Length: 1.7 - 1.9 inches
- Flight Period: mid June - late August
- Location (in MA): Franklin, Hampshire, Hampden, and Middlesex County



Midland Clubtail

- Length: 1.9 - 2.1 inches
- Flight Period: late May - mid July
- Location (in MA): Franklin and Hampshire County



Subarctic Darner

- Length: 2.6 - 3 inches
- Flight period: late July - early October
- Location (in MA): Worcester County



Harpoon Clubtail

- Length: 1.8 - 1.9 inches
- Flight Period: May - mid July
- Location (in MA): Berkshire, Franklin, Hampshire, Hampden, and Worcester County



Rapids Clubtail

- Length: 1.6 - 1.8 inches
- Flight Period: early June - mid July
- Location (in MA): Hampden and Franklin County

ENDANGERED

SPECIES

... CONTINUED ...



Forcipate Emerald

- Length: 1.7 - 2.0 inches
- Flight Period: late May - mid August
- Location (in MA): Berkshire, Worcester, and Middlesex County



Incurvate Emerald

- Length: 1.9 - 2.3 inches
- Flight Period: early July - mid September
- Location (in MA): Worcester County



Ebony Boghaunter

- Length: 1.2 - 1.5 inches
- Flight Period: early May - late June
- Location (in MA): Worcester County



Kennedy's Emerald

- Length: 2.0 - 2.2 inches
- Flight Period: mid May - mid July
- Location (in MA): Middlesex and Plymouth County



Coppery Emerald

- Length: 1.7 - 2.0 inches
- Flight Period: mid July - late August
- Location (in MA): Essex and Middlesex County

How to Promote Dragonfly Habitat

Provide Perching Locations



When creating a dragonfly habitat, it is important to provide adequate perching locations. Dragonflies need both horizontal and vertical perching options to help regulate their body temperature. Options to help promote perching locations around the yard includes adding stakes and setting up cables or rope that may also be used as a plant trellis.

Limit Pesticide use

When creating a safe environment for dragonflies and other beneficial insects, it's important to avoid pesticides. Hand pulling weeds or companion planing instead of using pesticides is a great option, and for the bugs, dragonflies love to eat them. If absolutely necessary, pesticides should be applied after the sun has fully set and only at the target location.



Plant an Insect Friendly Garden

Dragonflies enjoy resting, perching and hunting on stable, pollinator friendly plants. When planning a dragonfly garden, plant bee friendly plants as they will attract small insects that dragonflies enjoy feeding on. Some plants to include are marsh marigold, spearwort, black-eyed Susan, and swamp milkweed.

Promoting dragonfly habitat will help encourage the growth of endangered species, reduce the amount of mosquitoes, and limit the number of insects in your yard. Remember... if you have dragonflies in your garden, you know that you are surrounded in a well balanced, healthy ecosystem.

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