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Review Article

EMPEROR DRAGONFLY ECOLOGY DIVERSITY OF TAMILNADU-REVIEW

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ABSTRACT

Objective: The emperor dragonfly or blue emperor (*Anax imperator*) is a large species of hawker dragonfly of the family Aeshnidae, averaging 78 millimeters (3.1 in) in length. This dragonfly has a wide distribution; it is found throughout Africa and through most of Europe, the Arabian Peninsula, and south-western and central Asia. Since 2000, its range has expanded in Europe, both northwards and to higher altitudes. Methods: They frequently fly high up into the sky in search of prey, which includes butterflies, other Odonata, and tadpoles; small prey is eaten while flying. They breed in a variety of aquatic habitats from large ponds to dikes, but they require a plentiful supply of vegetation in the water. The females lay the eggs into plants such as pondweed/ and always lay alone. The larvae are very aggressive and are likely to influence the native species composition of colonized freshwater ecosystems. The adult male is highly territorial, and difficult to approach. Conclusion: In the summer months, emperor dragonflies are frequent visitors to gardens, being especially prevalent in the southern counties of Great Britain. When they first emerge, both sexes appear pale green with brown markings. The legs are brown with a yellow base. Wings are born black but grow yellow-brown with age. Males have a sky blue abdomen marked with a diagnostic black dorsal stripe and an apple green thorax. The thorax and head of a male are green and their prominent eyes are blue. Females have similar markings but they are mainly green.

Keywords: Emperor Dragonfly,Wings, Coloration, Lifespan.

INTRODUCTION

The bright blue male emperor dragonfly is extremely Sharp-sighted and is one of the fastest flyings of all insects. The emperor dragonfly has remained unchanged for 230 million years [3]. Despite being able to beat its wings only 30 times a second (ten times slower than a bee), it has no difficulty hunting down more highly evolved insect species. The male circumnavigates its territory and chases off any other dragonfly that comes near. Each pair of wings moves in a different motion, giving the impression of a helicopter [4].

Food and Feeding: The adult dragonfly is ableto catch most of its prey while flying. It plucks insects out of the air with its legs. The dragonfly is rarely still, and its huge, multifaceted eyes enable it to detect prey up to 40 feet away. Almost any flying insect is suitable prey. The dragonfly (Figure 1) eats small insects even while it is flying but takes larger prey to a resting perch. The emperor dragonfly's larvae also hunt. They propel themselves through their underwater habitat by expelling water rapidly from their intestines. Their extendable jaws, armed with deadly hooks, enable the larvae to catch and kill such food as water lice and nymphs [6]. The shovel-like the jaw of the larva is used to capture a variety of freshwater animals. The legs form a basket in which insects are caught in flight and then transferred to the jaws to be eaten.

Habits: The male emperor dragonfly is almost continuously airborne, in search of a mate or prey that may stray into its territory. The dragonfly's territory is always over a freshwater pond or lake. The defending dragonfly will attack the trespasser immediately by flying under him to force him up and away from the water [8]. The green and brown female stays away from the water until she is ready to breed, so she is sighted less frequently.

Lifecycle: Most of the dragonfly's life is spent underwater as a larva It emerges as a winged adult for a few weeks a year to mate and lay eggs [2].Usually, mating takes place in the high branches of a tree along the pond's bank, but sometimes it will occur in the air. The male pursues the female until he is able to settle on her back. The mating procedure is known as the "copulation wheel." The female fertilizes the eggs and then uses her ovipositor (a special egg laying organ) to lay them. To protect her eggs from being eaten by fish, she places them into slits that she has cut into stems of pondweed [5].

Fig. 1: Emperor dragonfly (*Anax imperator*)

The eggs develop in about 3 weeks, depending upon the temperature of the water. The larva, ornymph, that hatches is wingless and lives in the water. It molts (sheds its skin) ten to fifteen times during the 2 years it takes to mature. Almost all of its growth occurs in the summer months. In the last stage ofdevelopment the larva crawls out of the water and dries its skin in the sun. As the skin splits, the adult dragonfly emerges [10]. Once its soft wings have hardened, it can fly. The adult dragonfly lives for only a few brief weeks. The lifecycle (Table 1) of the emperor dragonfly guarantees that its larvae hatch at the same time, allowing a better chance for the adults to breed successfully.

Nature watch: The emperor dragonfly is usually recognizable by its large size. The male has a deep blue abdomen, divided by a central back stripe. Its head is green [7]. At close range it can be identified by the distinctive rounded inside edges of the hind wings. The female is green and brown and is much less conspicuous than the male. During summer the adult male patrols

its territory – weedy ponds and lakes. It usually flies 6-20 feet above the water. When it does rest, it perches briefly on the edge of a reed bed or in a tree. Adults can be found near any stretch of unpolluted fresh close to each other in their range. Larvae emerge from the water as early as May [9].

Special Features of the Emperor Dragonfly: The larva has an extended jaw armed with hooks. Itpushes they forward to catch and kill its prey. The male uses calipers at the tip of his abdomen to grip the female's thorax. The male transfers sperm from the tip of his abdomen to accessory sexual organs. The female then fertilizes the eggs. The copulation wheel: the female arches her body under the male to mate. Adult males defend small breeding territories, pursuing and mating with females who enter. The female lays eggs by repeatedly plunging the tip of her body into shallow water. Later in the season or the following spring, immature dragonflies, called nymphs, hatch from the eggs. The nymph lives in the water for 2 to 4 years, eating smaller aquatic insects and shedding its skin many times [1]. The nymph then crawls out of the water and sheds its skin a final time, emerging like a flying adult. The adults may live only 4 to 5 weeks.

Table 1: Key factor of Emperor Dragonfly

Length	Adult, 3 in.; larvae, 2in
Wingspan	4 in.
Coloration	Adult male; enable blue body with central black stripe and green head; adult female: green head and greenish body.
Wings	2 pairs, moved independently
Habit	Active hawker
Adult	Winged insects; nymph: invertebrates, tadpoles
Lifespan	Adult, about 4 weeks; nymph, 2 years

Why Is The Emperor Dragonfly (*Anax imperator*) Endangered? Why Save a Dragonfly? Dragonflies play an important role in nature. They catch and eat small flying insects, including mosquitoes, biting flies, and gnats. In its immature stage (nymph), a dragonfly is an important food source for larger aquatic animals such as fish. They serve as excellent water quality watchdogs, are part of our nation's natural heritage and add beauty to our world. Habitat Loss or Degradation - The greatest threat to Emperor Dragonfly is habitatdestruction. Most of the wetland habitat that this dragonfly depends on for survival has been drained and filled to make way for urban and industrial development. Pesticides and Other Pollutants - Contamination of wetlands by pesticides or other pollutants also poses a threat [8]. The dragonfly depends on pristine wetland or stream areas, with good water quality, for growth and development. Changes in Ground Water - Development that decreases the amount or quality of ground water flowing to the dragonfly's habitat threatens its survival because it depends on spring-fed shallowwater to breed. Recommendation Listing, Recovery Plan, Research, Habitat Protection, Public Education.

Conclusion

Learn more about the Emperor Dragonfly and other endangered and threatened species. Understand how the destruction of habitat leads to loss of endangered and threatened species and our nation's plant and animal diversity. Tell others about what you have learned. Join - Join a conservation group; many have local chapters. Or volunteer at a local nature center, zoo, or wildlife refuge. Protect - Protect water quality by minimizing the use of lawn chemicals (i.e., fertilizers, hervices, and insecticides), recycling used car oil and properly disposing of paint and other toxic household products.

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