

Biology Of Aquatic Insect Mayflies (Order: Ephemeroptera) (An Appropriate Food Resource Of Birds And Aquatic Creatures)

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Abstract

Background: Aquatic arthropods play an important role in life science. Some of them are beneficial and some play an important role for transmission of different disease to human and other creatures. Mayflies is a specify aquatic insect which is an appropriate food resource of birds and aquatic creatures.

Main body of the abstract: In this research an intensive search of scientific literature was done in "PubMed", "Web of Knowledge", "Scopus", "Google Scholar", "SID", etc. Results showed that this insect has sub imago stage which is unique among all he arthropods. Nymphal stage is around 2 years and sometimes they have 45 stages.

Short Conclusion: Artificial rearing of this insect is appropriate for food resource of other creatures.

Keywords: Mayfly, Food Resource, Short Lived, Aquatic, Insect.

Mini Review

Main Text

Mayflies, also called "upwing flies" are rather delicate-looking insects in the order Ephemeroptera. They live in standing and running water. The adult stage is abbreviated. They have limited range of activity and short time for mating and laying egg. Adults have a sub imago stage (winged, but sexually immature). Imago of most species live 2 hours to 3 days to one week (depend on species). They called as : mayflies, upwings, duns, dippers, spinners. Subimago stage is called dun and imago stage is spinner. Mayfly eggs are eaten by: snails and caddis fly larvae. The nymphs may be eaten by fish, frogs, birds, flies, water beetles. The subimagos

are eaten by fish, birds, dragonflies, water beetles, predatory insects. The eggs deposited at the water surface at a time or a cluster, beneath the surface of water. Adults drop the cluster of egg from air. Eggs have sticky covering with anchoring device. Diapause happen at the egg stage. Nymph have 12- 45 molting time. Length of nymphal life is 1-24 months. Nymphs are collector, scraper, macrophyte, some feed from animal materials, carnivore. Food habits vary during the growth period. External morphology of Ephemeroptera: nymphal head has a processes, projections, armature. The eyes are large, the antennae vary in length. They have Prothorax, mesothorax, metathorax. Legs function is burrowing, filtering food, grooming, gill protection (Figure: 1).

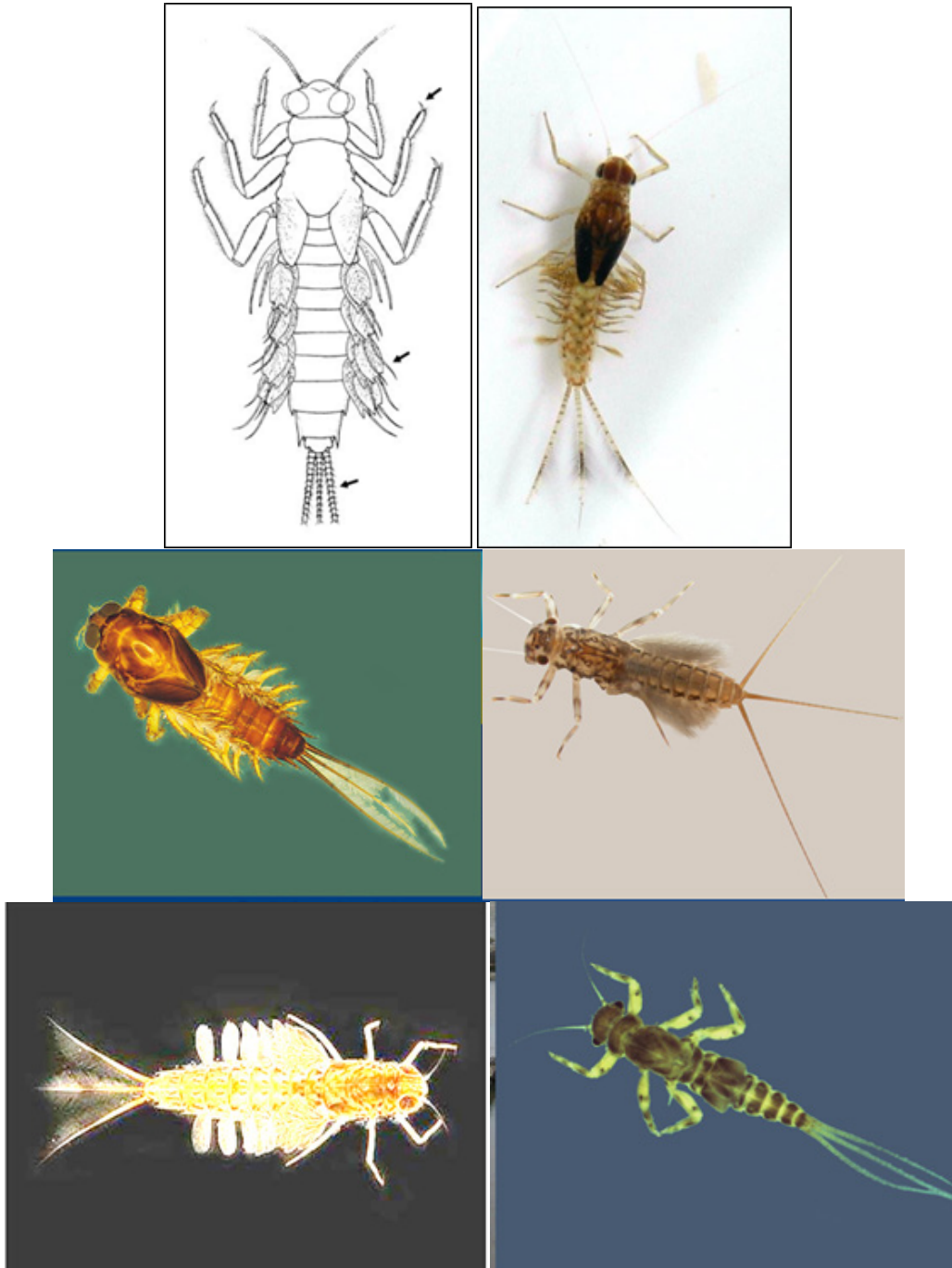


Figure 1: Nymph of Mayfly

At the adult stage the eyes in male is larger than female. In males the facet may be: uniform, upper facets are larger, upper facets raised on a stalk like portion. Some male mayflies have a pair of bi-

zarre upward-facing "turban-eyes" between the normal compound eyes on their head, thought to be UV-sensitive organs used to detect females flying above them (Figure: 2).



Figure 2: compound eyes of adults of mayflies

The mouthparts are unfunctional. Adults also have Prothorax, mesothorax, metathorax and paired wing and 6 legs. Forewing is triangle and hind wing is small. The three wing margins are costal, outer, margin. Dimorphism can be seen in adult. In males forelegs have long tibiae and tarsi and longer than middle and hind leg. In abdomen there are 10 segment, the posterior portion of sternum

9 in female is referred as a subannal plate and in male subgenital plate (styliger plate).The posterior margin of subgenital plate has two pairs of appendages called forceps (claspers).Dorsal part of sub genital plate have paired penes. Posterior portion of tergum 10 in both sexes are caudal filaments (2 cerci and one terminal filament (Figure: 3).



Figure 3: Adults of mayfly with large compound eyes

The main families are: Amelitidae (Brown Duns), Baetidae (Blue-Winged Olives), Baetiscidae (Armored Mayflies), Caenidae (Angler's Curses), Ephemerellidae (Hendricksons, Sulphurs, PMDs, BWOs), Ephemeridae (Hexes and Big Drakes), Heptageniidae (March Browns, Cahills, Quill Gordons), Isonychiidae (SlateDrakes), Leptohiphidae (Tricos), Leptophlebiidae (Black Quills and Blue Quills), Metretopodidae (Pseudo-Gray Drakes), Polymitarcyidae (White Flies), Potamanthidae (Golden Drakes),

Siphonuridae (Gray Drakes) (Figure: 4) [1-3].

Conclusion

Rearing of this insect is appropriate for food resource of other creatures.

Abbreviation

Not applicable

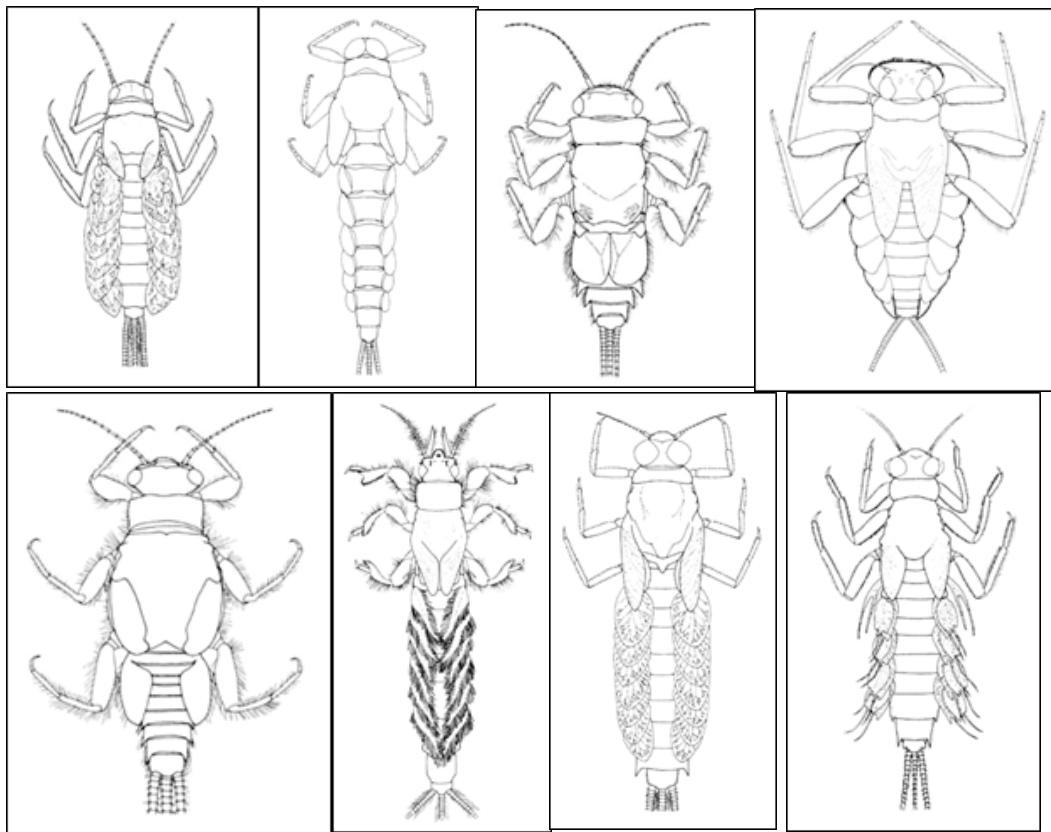


Figure 4: Nymphal stages of different families of mayflies



Figure 5: Mayfly massive hatch

Declaration

Ethics approval and consent to participate

Not Applicable

Consent for publication

Applicable

Availability of data and material

Applicable

Competing interests

Not Applicable

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Authors' contributions:

Acquisition of funding, collection of data, writing of the manuscript

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