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CONTROL OF MOSQUITO POPULATION BY DRAGONFLY NYMPH

Mohsin Khan

P.G department of zoology G.T.P college . Nandurbar , (M.S) India .

Abstract:

The efficient selection of natural enemies has become increasingly important success of biological control programs. In India has about 600 known species of dragonfly among the various predators of mosquito larvae. The failure of traditional vector control operation through chemical insecticides renewed interest in biological control method. In present investigation dragonfly nymph has been proved to a strong bio- control agent mosquito larvae in laboratory condition. Dragonfly nymph and mosquito larvae both the breed in fresh water or fresh water habitat. Larvaecidal efficiency of dragonfly nymph as a aquatic predators is tested in laboratory level. Dragonflies nymph eat at least about 50 mosquito larvae per hour among the various predators of mosquito larvae dragonfly are more safe for human being. Because they control of diseases cause by mosquito and maintaining water quality and eat microorganism such as zooplankton and phytoplankton. These are sensitive the different chemical if there is changing water quality because pollutant entering the water . Hence dragonflies are more safe for human being and also their economical application. There if awareness is created in people to use of thin kind of biological control the population of mosquito and other microorganism may be decreases and control the various diseases. And also maintaining the water quality

KEY WORDS:

fresh water sample, mosquito larvae , bio-control search area prey, predator in Nandurbar region.

INTRODUCTION:

Dragonflies are aquatic insects and building a pond in your garden will provide the habitat the required life of dragonflies beings on an egg in the foliage above or below depending on the species once hatched the larva becomes an aquatic predator feeding on other aquatic insect including mosquito larvae. In general almost all aquatic insect predators prey on mosquito larvae and pupae(Ellis and Borden). The aquatic coleopteran and donate have been observe to ingest mosquito larvae as part of there natural food.Both the dragonflies and mosquitoes larvae breed in same place. The larvaecidal efficiency of dragonfly nymph. The interest in biological control of medical pest and vectors had its modest beginning prior to the turn of century(Lamborn 1890).At a time the possible use of dragonflies as a natural enemies for the control of mosquitoes was clearly recognized any species of mosquito larvae (aedes, culex, culiseta, mensonia and psoraphora) were observe in the pond where the damselfly larvae were collected(breen et al.1990).The larvaecidal efficiency of dragonfly nymph is recognized. The growing of larvae into domestic storage containers in Yangon(Rangoon) in Myanmar (Burma).The water storage container were being used by aquatic stages .Mosquito aedes aegypti which was responsible for transmitting of dengue fever in that locality. More than 92%of the local population of aedes aegypti which was occupying the container. The systematic release of dragonfly larvae during the mansoon season (The time when dengue fever was being transmitted by mosquito) rapidly decreases in mosquito population to a level lower that any other methods.

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The trials demonstrated the effectiveness of this approach have been described by Sebastian et al (1990) several short articles (e.g. Kimmins 1991:12 and 2:13-14; Selys 20:37) the Yangon trial is a more recent book (1999:119-121) that a dragonfly is to serve successfully as a biological control agent.

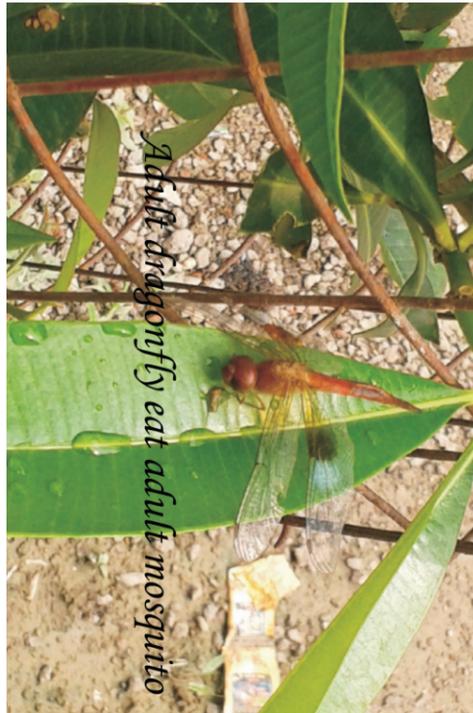
Interest in biological control of medical pest and vector had its modest beginning prior to the turn of the century (Lamborn 1890) at that time the possible use of dragonfly as a natural enemy of mosquito was clearly recognized. Dragonflies are interesting and beautiful. Their large size makes them valuable for quickly assessing water quality and for study of insect behavior. Corbet, p.s (1999). Dragonflies behavior and ecology of dragonflies. Harley books, Colchester. They are only dangerous to mosquito. Dragonfly larvae "nymph" feed on mosquito larvae. And adult dragonflies eat on adult mosquitoes. They can be used for biological control of mosquito of *Aedes aegypti* (vector of dengue fever) Sebastian, S.M., Thu, M.M. and Corbet, p.s (1990) suppression of *Aedes aegypti* (L) (Diptera: Culicidae) using augmentative release of dragonfly nymph (Odonata: Libellulidae) with common participation in Yangon Myanmar bulletin of entomological research 89:223-232. So dragonfly use as a biocontrol agent. And managing the habitat for dragonflies and are special for our help. The text of British dragonfly society booklet "Managing for Dragonflies" in 1933 to assist in managing various types of habitat for dragonflies and damselflies. If the dragonflies flourish in the British Isles the habitat must be managed. All the dragonflies developed in water most breed only in habitat that contain free water all year. The water must contain sufficient oxygen and free from toxic substances. D.Mand V.H. Resh editor 1993. Biomonitoring and benthic micro invertebrates. Chapman and Hall, New York.

The traditional water quality monitoring approach has been to collect fresh water samples and analyze in laboratory for suspended physical and chemical pollutants. A biological approach to water quality monitoring (bio monitoring). Immature dragonflies and dragonflies (naiads) have a modified lower lip that is often toothed and is used as a spear for catching prey. In the United States the use of stream organisms as biological indicators. In the laboratory condition it was observed that different five beaker the population of mosquito larvae and other microorganisms decreases similarly water quality increases.

Dragonflies choose other prey instead present in water bodies such as zooplankton and phytoplankton and monitoring the water quality. Dragonflies require a habitat similar to mosquitoes as well if an area is already free of pools, puddles habitat of aquatic organisms (Williams 1987 1997). Fish which eat mosquito larvae will also eat dragonfly larvae both the fish and dragonflies may balance in nature. Aquatic insect predators prey on mosquito larvae and pupa (Ellis and Borden 1970, Peckarsky 1984) so dragonfly as a successful biological control agent and balancing the nature and also maintain the water quality. Altmann and Dittme (1966) issued a list of many marine and fresh water organisms which include some data of aquatic insects. An experiment in Yangon, Myanmar, in Asia. Showed that dragonfly larvae could be introduced to successfully control mosquitoes that were breeding in large containers of water.



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MATERIALS AND METHODS :

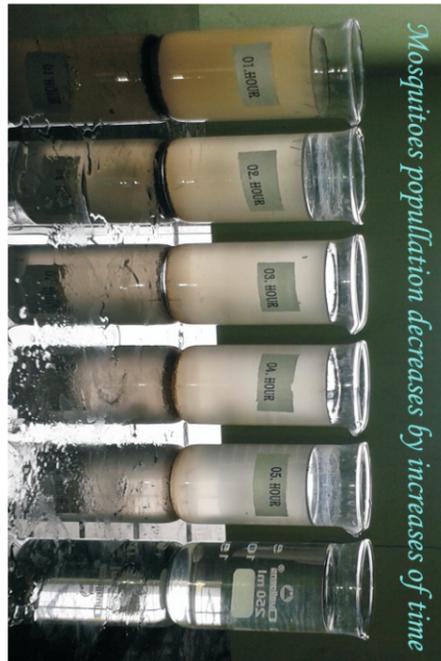
Effectively selection of dragonfly nymph were used in laboratory mosquito larvae an adult were collected for study the collection of mosquito larvae and adult from the shallow ponds and field side located near Nandurbar region where this species has been incriminated to be vector of different diseases. Mosquito and larvae were transport in collection cups.

Experiment is carried out observe the predation intensity of dragonfly nymph .Take a 06 beakers were filled with 02 liter of pond water in each pond 200 larvae of mosquito and 5 to 6 leaves from the single tree an small pieces of bark added. in 05 of the 06 beakers of single dragonfly introduce in each beaker .The experiment was conducted four times on four separate days the number of the larvae consumed by dragonfly nymph through one day has been noted at an interval four hours the beaker were observe periodically to check the dragonfly larvae an topped water if necessary. The experiment where started at 10 am of a day and it was completed at 02 pm of the each day to see the average daily larval feeding rate of a nymph after four (4) hour mosquito larvae present in each beaker were counted. The experiment was repeated every day alternate day for four times.

OBSERVATION RESULT AND DISCUSSION :

The mosquito larvae disappeared quite rapidly after the introduction of dragonfly nymph in each beaker. In present investigation it was observed that Dragonfly nymph eat at least 50 mosquitoes larvae per hour, from each pot. Therefore, we can say that density of target adults decline due to the use of dragonfly nymphs. It can be use as bio-control agent for the population control of *Aedes aegypti*. As *Aedes aegypti* is capable of carrying and transmitting dengue and yellow fever. These disease cause hundred of millions of clinical cases; millions of death annually. (Snow el al 1999, Roth el al 2010). Thus there is a need to test feasibility of dragonflies as an effective, eco compactable means of bio-control. There are about 6000 species of dragonflies in the world. India has about 500 known species of dragonflies. During the experiment it was also observe that the dragonflies eat other microorganism and maintaining the water quality.

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11. For instance diving beetle and damselfly larvae for predators of mosquito larvae and show a preference for larger container sizes (Sunahara et al 2002)
12. Altman and Dittmer (1966) issued list of fresh and marine water insect.
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14. The most important in vertebrate predators in temporary pools are turbllarians (Bluestein 1990). Bluestein and Dumont 1990.
15. Dragonfly larvae (Odonata) (Wiggins et al 1980)

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Address for Correspondence

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