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Courtship Behavior in Insect

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SUMMARY

Courtship constitutes touching, moving toward, chirping, mounting, biting and mating. Courtship is the behavior by which different species select their partners for reproduction. Usually males start courtship and female chooses to either mate or reject the male based on the performance. It serves to advertise reproductive readiness. It involves the complicated dance or touching, vocalization or display of beauty or fighting powers. The genetic selection has translated into sexual selection among males and females, leading to male-male computation and female choice.

INTRODUCTION

Courtship is an interaction between the male and female members of a species which leads to mating and reproduction. Various types of courtship are adopted by insects. It include visual display in which parts of the body such as antennae, eyes, wings, ritualized movements, sounds, smell, and pheromone etc. are used. The main purpose of courtship is to pass along it's gene to the next generation. It also involves an interaction between acoustic and chemical communication (Rudinsky *et al.*, 1976), bumping (frons to declivity), antennal tapping or drumming on the declivity, brushing of antennae or the antennal scape setae against the elytra, and mandibular gnawing (Blackman and Stage, 1924). The importance of courtship behavior is that it is species recognition, copulation, isolating mechanism, inhibition of predatory response and also helps to ensure breeding. Main mechanism of courtship behavior is that it serves to physiologically coordinate male and female, reduces aggressive tendencies of opposite sexes, serve to advertise reproductive readiness, proved to be protective phenomenon against predators or enemies of the same group, distinguishes the male and female sexes where both are very much alike and helps in maintaining constancy of race. The various types of courtship behavior in insect are discuss below.

Isolating mechanism in Drosophila

Isolating mechanism was proposed by Dobzhansky in 1937. In this mechanism physiologically and ecologically most heterogenous collection and also involve the genetic separateness of species are quite different not only in different groups of organisms but even between different pairs of species in the same genus. Leg vibration is observed in *D. prolongata*, whereas leg shaking specific to other species. Leg vibration is a dynamic movement involving the male extends and vibrates forelegs against abdomen of female, usually against ventral side.

Nuptial Gifts in Balloon Flies

Balloon flies have been designed with a complex mating ritual involving the giving of large white balloon as a gift. Balloon flies wrap the prey in pretty, silken balloons. In many species female will only mate with males who come to them bearing gift. Female fly into a mating swarm of males and choose a partner who presents her with his silk package. Sometimes male balloon flies, trick the females by offering them "empty balloons''. Male balloon fly giving gift to female balloon fly by oral gift, genital gift and transdermal gift.

Aphrodisiacs in Queen Butterfly

The female flaps her wings and draws male's attention and pursues her. The male queen butterfly dust prospective mates with an aphrodisiac produced by "hair pencils", brush like appendages found the tip of the abdomen. The female responds by closing her wings. This signals the male land near to her and begins mating. The anti- aphrodisiacs is found in ground beetle. Ground beetle females produce methacrylic acid, a potent anti-aphrodisiacs that not only repel the males, which can knock them out for several hours.

Flash flirting in Fireflies

In case of species *Photinus carolinus*, flashing helps to locate appropriate partners for mating. Firefly mating rituals include the males cruising, flying around and flashing their signals to catch the females attention. Female fireflies wait in leaves, observing the male's flashes. Each waits for a specific pattern of blinking light and the sequences are unique in case of each species (Kathrin and James, 2015).

Sexual arms race in Cowpea Seed Beetle

The aedeagus is covered with hundreds of sharp spines which pierce the female reproductive tract during mating. Male has destructive spikes, but females, in turn, are adapting with their own defenses. Nuptial gifts: seminal fluids or spermatophores. Traumatic mating has evolved because it increases male fertilization success.

Singing mechanism in Crickets

Calling song of Field Cricket (*Gryllus bimaculatus)* consists of chirps of 4-5 sound pulses, which are repeated at 2-3 times/sec. Female crickets attracted by this calling song and walk/fly towards singing males. This orientation is called phonotaxis. Phonotactic behaviour can be studied by playing computer generated artificial calling songs to a female cricket walking on a trackball. This method allows a highly precise measure of the female walking speed and direction towards a sound pattern.

Sex pheromones in Moths

Sex pheromones are an important factor in finding members of the opposite sex. A female releases chemical, the mate search is initiated, and the male moths begin their upwind motion toward their potential partner. Chemical communication of sex substances used in signaling a mating partner.

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