

## Contribution to the knowledge of the coupling behaviour in *Sphaerophoria scripta* (L.) (Diptera: Syrphidae)

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Contribuții la cunoașterea comportamentului de împerechere la *Sphaerophoria scripta* (L.) (Diptera, Syphidae)

### Rezumat

Autoarea prezintă în premieră date inedite privind comportamentul de împerechere la *Sphaerophoria scripta* (L.) (subfam. Syrphinae, tribul Syrphini), date care nu apar în literatura de specialitate. Aceasta este o specie polivoltină, cu larve afidofage, are perioada de zbor din aprilie până în octombrie și are un areal vast, fiind răspândită în regiunea Holarctică și Orientală.

**Keywords:** coupling behaviour, long phase, short phase, coupling, decoupling.

In the paper below I present for the first time original information concerning *Sphaerophoria scripta* (L.) (Subfamily Syrphinae, tribe Syrphini) reproduction (nuptial) behaviour, information that can not be found in any of the papers written in this field.

This species is a polyvoltine one, having aphidophagous larvas; it has its flying period from April until October and a vast areal, being spread in the Holarctic and Oriental Regions.

It is known as a fact that the adults, as pollinators, visit the flowers of over 30 species of plants.

In July 1992 I did some personal observations in a clearing, on the river bank, in the neighbourhood of the village Porumbacu de Sus (district of Sibiu) in the following cases:

I. On day 21.07.1992, time 12,40 to 13,35, temperature 25°C in the shadow the coupling period lasted 55 minutes;

II. On day 23.07.1992, time 15,55 to 16,50, temperature 23°C in the shadow, partially cloudy sky the coupling period lasted 55 minutes;

III. On day 23.07.1992, time 17,20 to 18,05, temperature 20°C in the shadow, the coupling period lasted 45 minutes.

In all the cases I studied, the couples were flying already coupled and landed on narrow leaves on graminaceae straws to continue the coupling preliminaries.

The coupling period lasted in the ob-

served cases between 45 and 55 minutes.

I have noticed two different phases, wich, considering their duration period, I have called "the long phase" and "the short phase".

The long phase has between 1130 and 1930 rithmical pulsations of the abdomen wich means between 1,7 to 2,8 pulsations per second.

In this phase, the position chosen by the couple resembled in all cases I observed, that is the male was positioned on the upper part of the vegetal support (leaves or graminaceae straws), the wings wide open, while the female was on the lower part of the leaf, the wings draws together. The two partners had their abdomens one in extension of the other, their heads positioned in diametrical opposition. I suppose that this position, the same in all observed cases, would ease flowing of the sperma, helped by the force of gravitation.

This position is advantageous for male that could supervise all around, to observe a potential danger.

The short phase. After the couple's landing and its fixing on the support, at the beggining, the male executes energetic coupling movements, being situated on the female. These movements last aproximately 1,5 minutes and that is why I have called this the short phase.

I noticed that the long phase is interrupted by 3 or 4 short phases, that is after (a number of) 200, 600 and 900 abdominal pulsations in the second case and after 40, 100, 200 and 300 pul-

sations in the third case; the males interrupt this "long phase" in order to pass to the "strengthening" of the sexual act through that and position themselves on the females, passing to energetic movements of coupling or fixing their genitals, having their heads in the same direction as the females.

After this short, but energetic phase, the sexual act is afterwards continued by regaining the position before, that would be the long phase.

During the attentive examination of these couplings I could observe also different kinds of temper at the partners.

In the first case I noticed the male dominance, more energetic and "lacking patience" towards the female. Due to strong sunburning I observed "the washing" of the head with the anterior members (legs), more frequently happening with the male, betraying stronger "irritability" than the female.

In the second case (II) the female dominated, showing more pronounced "irritability" which I explained as due to the abdomen overloaded by pollen and to an extremely high temperature. Besides frequent "washing" of the head, I also observed the female cleansing of the extremity of the abdomen with posterior members.

Both sexes keep remaining coupled all the time and sometimes, during the long phase there can be observed the pushing of the female abdomen, when the two abdomens still coupled appear curved and raised up in the air, detached from the support, as an arch, or semicircle. Both sexes can fly coupled on another graminaceae leaf in the neighbourhood, where the sexual act continues.

The interruption or the stop for a short time of the abdominal pulsations happened in light-shadow due to the passing of a cloud or to a

light breeze.

While at the beginning the male abdomen pulses rhythmically and steadily, through the end of the coupling this one seems to enter muscular tetany due to fatigue without showing the usual rhythmic curve, which has a maximum and a minimum point.

In my observations the decoupling appears to be a quite stressing moment for both partners. The male initiates the female's pulling up the leaf, while the latter has an opposed reaction, to pull the couple in the other direction to the base of the plant. This way, after a moment of excitement, when the couple runs around the stalk, heading to the base of the stem, the male's wings caught in the vegetation which is denser in the lower part and so he is forced to the couple.

### Postnuptial behaviour

After the decoupling, I noticed the male was immediately anxious about nourishing in order to re-feed himself and regain the energy wasted during the coupling.

In the reference material I have studied, I could not find ethological information about the coupling behaviour and especially about the coupling act at *Sphaerophoria scripta* (L.).

### REFERENCES

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