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# Influence of Female and Host Age and Timing of Host Exposure on the Sex Ratio of *Parasierola nephantidis* Muesebeck

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*Parasierola nephantidis* Mues., a larval parasite of the coconut leaf eating caterpillar, *Opisina arenosella* Walk. is one of the most important parasites. This parasite can be reared in large numbers under uncontrolled laboratory conditions for field releases to ascertain its effectiveness against the pest under Mahuva conditions of Gujarat State. In present investigation, three ecological aspects viz. female and host age and timing of host exposure affecting the sex ratio of the parasite have been studied.

The parasite was reared on *Corcyra cephalonica* Station. Twelve pairs of the parasite were made and introduced in each glass tube (10 x 2.5 cm) alongwith a healthy host larva. The parasitized host larva was removed and replaced by another healthy host larva. Each host larva parasitized by a female was kept separately for adult emergence. The male and female parasites produced from each parasitized host larva were recorded for determining the sex ratio during the different age of female. The different aged host larvae were exposed to female parasites for studying the effect of host age on the sex ratio. Ten pairs were studied in each group of host age. The male and female parasites produced by each group were recorded.

To ascertain the effect of timing of host exposure on the sex ratio of the parasite, six weeks old *Corcyra* larvae were exposed on different days (3, 6, 9, 12, 15) of confining the pairs of the parasite. All the parasitized host larvae were reared in each respective group till emergence of adult parasite. The female and male parasites were recorded from each group. The results obtained are presented in Table 1, 2 and 3.

## 1. Female age

Data presented in Table 1 revealed that the female progeny produced by a female parasite decreased with the increase in female age. Only female parasites were observed in the progeny of the first day of oviposition or 4 days old female. The female progeny was observed greater than male progeny upto

*TABLE 1*

**Effect of female age on the sex ratio of *Parasierola nephantidis*.**

| *Age of female parasites in days (oviposition day)* | *Sex ratio* | |
|---|---|---|
| | *Female* | *Male* |
| 4 (1) | 7.00 | 0 |
| 6 (2) | 3.40 | 1 |
| 8 (3) | 3.25 | 1 |
| 9 (4) | 3.00 | 1 |
| 11 (5) | 2.00 | 1 |
| 13 (6) | 1.66 | 1 |
| 14 (7) | 1.77 | 1 |
| 17 (8) | 0.33 | 1 |

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female age of 14 days or seventh day of oviposition. The male was only observed to be greater in the progeny of last day of oviposition or in 17 days old female. Avilla and Albajes (1984) reported the percentage of males to be greater in the progeny of first day of oviposition in case of parasitoid, *Opius concolor* Szepl.

**2. Host age**

Data presented in Table 2 indicated that the female progeny increased (from 1.37 to 3.00 female : 1 male) with the increase in host age (from 3 to 6 week old). The female and male ratios were found to be 1.37 : 1, 1.50 : 1, 1.90 ; 1, 2.12 : 1 and 3. 00 : 1 from progeny of female parasites which were exposed to second, third, fourth, fifth and sixth week old host larvae, respectively. Avilla and Albajes (1984) reported that the sex ratio of the progeny of single female of *Opius concolor* Szepl. parasitizing large hosts favoured females and small hosts favoured males. According to Dharmaraju and Pradhan (1976), the biotic potential of P. *nephantidis* was found to be the best on six week old *Corcyra* larvae.

*TABLE 2*

**Effect of host age on the sex ratio of *Parasierola nephantidis*.**

| *Age of host larvae (week)* | *No. of larvae obser-ved* | *Total cocoons observed* | *Sex ratio* | |
|---|---|---|---|---|
| | | | *Female* | *Male* |
| 2 | 20 | 20 | 1.37 | 1 |
| 3 | 30 | 70 | 1.50 | 1 |
| 4 | 20 | 30 | 1.90 | 1 |
| 5 | 20 | 75 | 2.12 | 1 |
| 6 | 20 | 80 | 3.00 | 1 |

**3. Timing of host exposure**

Data presented in Table 3 revealed that the female progeny was higher (4 female : 1 male ), when the host exposed to the parasite on the third day of pairing of the parasite. The female progeny was decreased with the increase in timing of host exposing to the parasite. The sex ratio of the parasite was 3.13 : 1,2.82 : 1,2.10 : 1 and 1.57 :1, when the host was exposed on 6th, 9th, 12th and 15th days after pairs made.

*TABLE 3*

**Effect of timing of host exposure on the sex ratio of *Parasierola nephantidis*.**

| *Host exposure made on days of pairing* | *No. of pairs studied* | *No. of parasie-rola cocoons produced* | *Sex ratio* | |
|---|---|---|---|---|
| | | | *Female* | *Male* |
| 3 | 10 | 90 | 4.00 | 1 |
| 6 | 10 | 157 | 3.13 | 1 |
| 9 | 10 | 88 | 2.82 | 1 |
| 12 | 10 | 31 | 2.10 | 1 |
| 15 | 10 | 18 | 1.57 | 1 |

The studies concluded that the production of female progeny of *P. nephantidis* was influenced with the increase in female and host age and timing of host exposure. The highest female progeny of the parasite was obtained at the female parasite of 4 days old, six week old host and host exposed on third day of pairing the parasite.

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