EGG PRODUCTION OF *ACHAEARANEA TEPIDARIORUM* (C.L. KOCH) (ARANEAE, THERIDIIDAE) IN THE FIELD IN JAPAN

This field survey on the egg production of *Achaearanea tepidariorum* (C. L. Koch) in Japan was made in 1984 to compare with the results of a laboratory investigation which was reported separately (Miyashita, K. 1987. J. Arachnol. 15:51-58.

The survey was conducted in a vacant house in Abiko City (140°02′E, 35°52′N), Chiba Prefecture. Adult females, which spun webs on the wall, at the edges of the verandah, and under the floor, were carefully observed and censused daily from May to September. When new females were found, they were recorded and marked with colored paint, and the dates of egg sac productions and disappearances of females themselves were recorded. Egg sacs were removed from webs on the 7th or 8th day after oviposition and kept separately in glass vials. The number of spiderlings that emerged was considered as an indicator of the number of eggs in the sac, since healthy egg sacs rarely contained non-viable eggs.

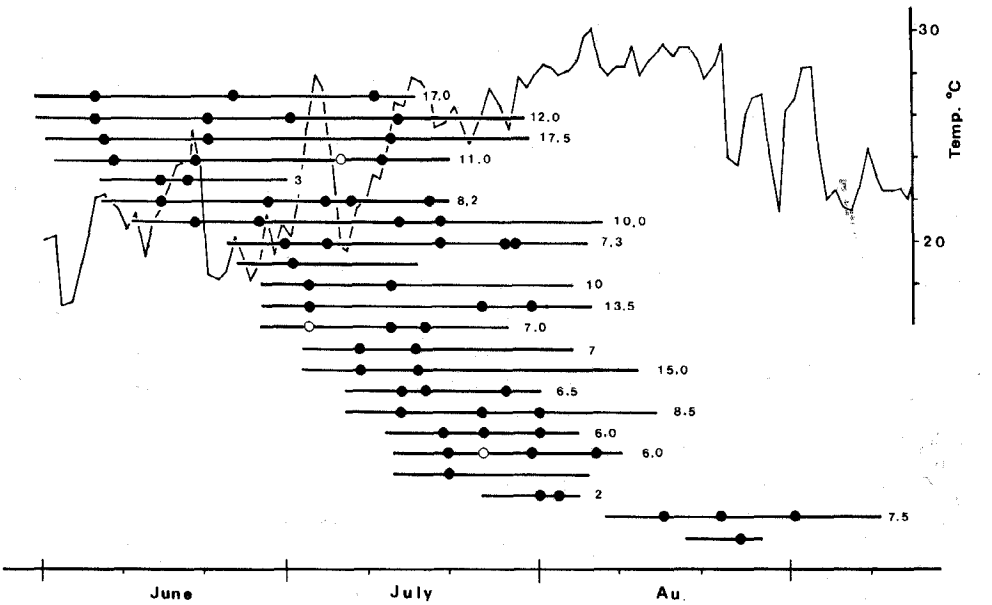

Fig. 1.—Seasonal changes in the resident periods and egg sac production of 22 females *Achearanea tepidariorum* in the field. Horizontal lines indicate length of resident periods in days. Solid or hollow circles show healthy or sterile egg sacs, respectively. The figures following each line are the mean interval(days) between egg sacs. The fine line shows the change of daily mean temperatures.

Figure 1 shows the seasonal changes in length of the resident periods of females and the intervals between egg sacs. "Resident period" means the period from the date of first appearance to that of disappearance of each female. The cause(s) of disappearances were not ascertained. The rate of appearance of adult females increased gradually from early June to late July, and decreased sharply thereafter. The total number of adult female residents was 22, some were residents as juveniles and others were invaders from outside. The resident period became shorter for individuals that appeared late in the season (mean = 35.1 ± 14.0 days).

Egg sac production began in early June, reached a peak in the middle of July, and ceased by early September. Observations outside the survey site, however, showed sporadic egg sac production from the middle of May to late October, although that production was rare. It appears that temperature changes had no apparent effect upon the egg sac production (Fig. 1).

The number of egg sacs per female varied from 1 to 5, (mean = 2.9) including sterile egg sacs produced by three females. The mean interval between egg sacs was 9.4 ± 5.6 days. The number of eggs per sac varied from 150 to 650, (mean = 310.8) excluding sterile egg sacs. In 14 among the 64 egg sacs examined in total,

Table 1.—"Egg periods" in days examined in June, July and August.

Season	No. of egg sacs	Mean	Range
Early June	4	15.4	14-18
Early July	7	11.3	8-15
Early Aug.	6	10.4	8-13

females produced egg sacs a few days after they had captured a large prey. The interval between egg sacs and the number of eggs per sac seemed to be influenced by the nutritional condition of the female. The number of total eggs produced per female varied from 242 to 1866 (mean = 881.7).

In the laboratory, each of 15 females produced 9.7 egg sacs containing a total of 1812.7 eggs at intervals of 8.1 days in average (Miyashita, K. 1987. J. Arachnol. 15:51-58).

Valerio (1976. Bull. British Arachnol. Soc., 3:194-198) examined egg sac production in tropical Costa Rica and reported that, although one female produced 20 sacs, the mean number of sacs per female was 14.1, and that the mean number of eggs per female was 3211.9. Valerio's search of the literature showed that the number of egg sacs produced per female in the temperate regions ranged from 4 to 7 except for one record of 17 reported by Bonnet (1935. Bull. Soc. Hist. Nat. Toulouse, 68:335-386).

As shown in Table 1, the "egg period", which means the number of days from egg sac production to the spiderlings' emergence, became shorter later in the season. This may be influenced by rising temperatures at that time. In the laboratory at 25°C, the mean egg period was 11.0 days.

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