

海産枝角類ウスカワミジンコ耐久卵の海底における存在の確認

誌名	日本水産學會誌
ISSN	00215392
著者	遠部, 卓
巻/号	38巻3号
掲載ページ	p. 305-305
発行年月	1972年3月

Short Paper

Occurrence of the Resting Eggs of a Marine Cladoceran, *Penilia avirostris* DANA, on the Sea Bottom*

In an investigation on the biology of marine cladocerans in the central part of the Inland Sea of Japan, it was found that *Penilia avirostris* DANA has a very marked pattern of seasonal occurrence. It first appears in late May to mid-June; numbers increase sharply reaching a maximum in July and then decrease rapidly to zero in September.¹⁾ The sudden increase in population density is achieved by the parthenogenetic reproduction. However, the sexual individuals, i.e. males and females bearing resting eggs, first appear shortly before the population attains to its highest density, and the sexual reproduction becomes most intense in late August. From these findings, it was assumed that *P. avirostris* may pass the winter in the form of resting eggs in this area.¹⁾ Many investigators have supposed that the resting eggs of marine cladocerans sink to the sea bottom after release.²⁾ As far as the author knows, however, there is no record which confirms their actual existence on the sea bottom.

In early September 1970, abundant living specimens of *P. avirostris* reproducing bisexually were collected at a station (34°22.5'N., 133°24.0'E.) near Sensui-jima, Fukuyama, and kept in large plastic tanks in the laboratory. About a month later, many eggs were found among the debris accumulated at the bottom of each tank, some of them were enclosed within their mother shells. From this fact, they were undoubtedly believed to be the resting eggs of *P. avirostris*. The egg is grayish in color and ovoid in dorsal aspect, 0.21–0.29 mm long (average: 0.25 mm) and 0.14–0.20 mm wide (av.: 0.18 mm). It is about 0.10 mm thick and considerably concaved on the ventral side. The cytoplasm is full of yolk and a thick membrane can be seen.

On the other hand, an attempt was undertaken to find out the resting eggs of *P. avirostris* in natural environment. Some core-samples of the bottom muds were taken near the station mentioned above in late November 1970, and observed thoroughly under the microscope. As expected, many eggs were found in these samples. They were identical in size, shape and color with those obtained in the laboratory.

In January 1971, both of the eggs obtained from these two sources hatched successfully under laboratory conditions. Based on the examination of the hatched young, evidence that they were really the resting eggs of *P. avirostris* was finally afforded. Morphologically, the resting eggs presented here have essentially similar features as those described by DELLA CROCE and BETTANIN³⁾ for the specimens collected off Sandy Hook, U.S.A. They differ considerably, however, in size from the record of Black Sea specimens by BRAIKO⁴⁾ who gives much greater values (0.327 mm long and 0.210 mm wide on an average). Whether the discrepancy between these size values is of geographic variation of this species remains to be solved.

Results of countings of the eggs made for several core-samples demonstrated that the resting eggs of *P. avirostris* existing on the sea bottom attained a maximum of $5.7 \times 10^4/m^2$. This rather large number may be reasonable, since the sexual females sometimes reach up to 13.5% of the total population of 25,000–35,000 individuals/ m^3 in summer.

The author wishes to thank Professors Nakaroku NAKAMURA and Yutaka MURAKAMI of Hiroshima University for their kind guidance and Professor Norberto DELLA CROCE of the University of Genoa, Italy, for his valuable advice. This work was supported in part by a grant-in-aid from the Ministry of Education.

Takashi ONBÉ**

Fisheries Laboratory, Faculty of Fisheries and Animal Husbandry, Hiroshima University, Fukuyama, Japan.

References

- 1) T. ONBÉ: *J. Fac. Fish. Anim. Husb. Hiroshima Univ.*, **7**, 269–279 (1968).
- 2) J. H. LOCHHEAD: *Biol. Bull.*, **107**, 92–105 (1954).
- 3) N. DELLA CROCE and S. BETTANIN: *Cah. Biol. Mar.*, **10**, 95–102 (1969).
- 4) V. D. BRAIKO: *Dokl. Akad. Nauk SSSR*, **164**, 1187–1189 (1965).

Received October 29, 1971

* 海産枝角類ウスカワミジンコ耐久卵の海底における存在の確認 (短報)

** 遠部 卓: 広島大学水畜産学部付属水産実験所 (印刷費負担)