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EGGS RELEASED BY THE NOTOTHENIID FISH *TREMATOMUS BERNACCHII* BOULENGER IN CAPTIVITY

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Abstract: In the morning of 24 April 1988, eggs were released by a single fish of the nototheniid *Trematomus bernacchii* which were reared in an aquarium of the Kamogawa Sea World, Chiba Prefecture, Japan. The 4811 eggs were liberated on sand. Eggs were adhesive, semi-transparent, milk-white in color, and 4.4–4.7 mm in diameter. The 1988 results were compared with those of the preceding 4 years.

1. Introduction

Since 20 April 1982, rearing of Antarctic marine organisms has been continued at the aquarium Kamogawa Sea World, Chiba Prefecture, Japan. In 1988, 6 species of the animals including two species of the nototheniid fish, *Trematomus bernacchii* BOULENGER and *Pagothenia borchgrevinki* (BOULENGER), and 1 alga were in a good condition. Since 1984, one of two fish of *T. bernacchii* released eggs once a year.

The time sequential variation of body weight, body length, and feeding rate of the fish in 1984 to 1987 was reported by SAKAKIBARA *et al.* (1989). Here, we report the number and size of eggs spawned in the five-year period from 1984 to 1988 and the 1988 data on the body weight and feeding rate of the parental fish.

2. Materials and Methods

The fish reared was collected in the coastal water near Syowa Station (69°00′S, 39°35′E) in January 1982. A single fish was kept in a glass aquarium of 60 (L) × 30 (W) × 45 (H) cm containing about 72 *l* of sea water, which was 40 cm depth. A closed circulation system was applied for the maintenance of sea water. The water temperature was −2.0 to +2.0°C. The specific gravity of sea water was 1.026 to 1.028. The fish was fully fed at five-day intervals. The diet was mainly composed of northern shrimp (*Pandalus borealis* KRØYER), short-necked clam (*Tapas philipinarum* A. ADAMS *et* REEVE) and anchovy (*Engraulis japonicus* HOUTTUYN).

The measurement of egg diameter was made just after the releasing of eggs. The number of eggs were counted about one month after releasing of eggs.

3. Results

The fish released eggs spontaneously. The release of eggs occurred between 0600 and 0800, when inspections were carried out in the morning of 24 April 1988. The body weight of the fish continued to increase until the release of eggs (Fig. 1). The expansion of the abdomen became noticeable about 1 month before the release of eggs (Fig. 2). Conversely, the consumption of food became low towards the release of eggs and the fish stopped feeding for a week before releasing eggs. Accordingly, the rate of food consumption (weight of food ingested/day/body weight of fish) was as low as 0.02 in April (Fig. 1). The recovery of ingestion was observed within a week after releasing of eggs. Successively the increase in body weight was observed. The increase in body length was quite small in 1988.

Before and after the release of eggs, such particular behavior as building of a nest and care of the eggs was not observed. The change of body color did not occur. However, when the other fish was contained in an aquarium with this fish, the former was attacked by the latter.

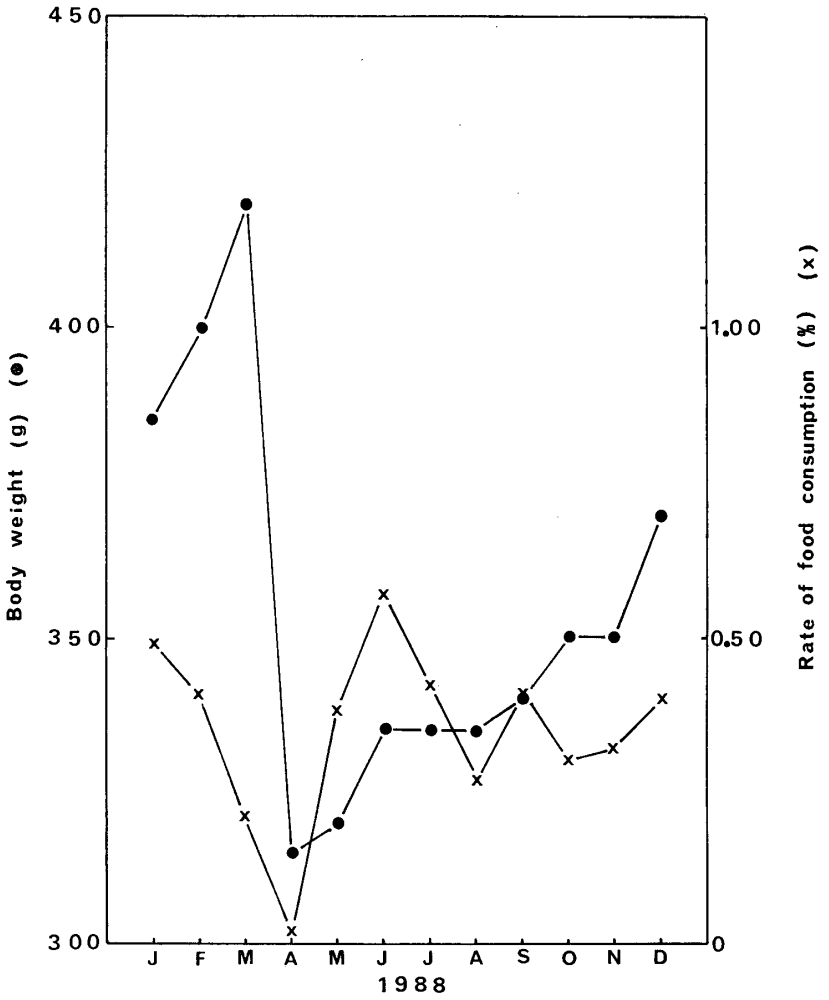

Fig. 1. Seasonal variation of body weight (●) and food consumption rate (×) of T. bernacchii *No. 2.*

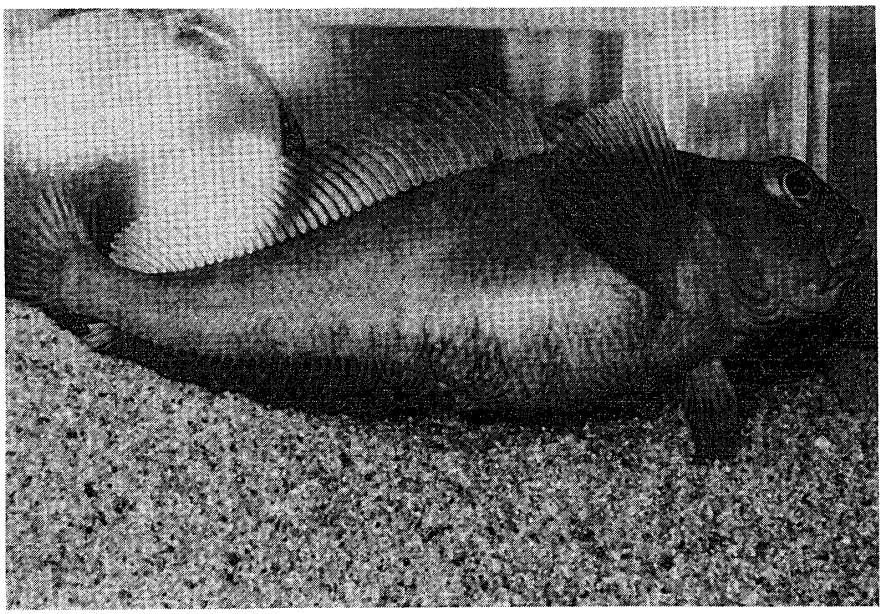

Fig. 2. T. bernacchii *No. 2 just before releasing of eggs.*

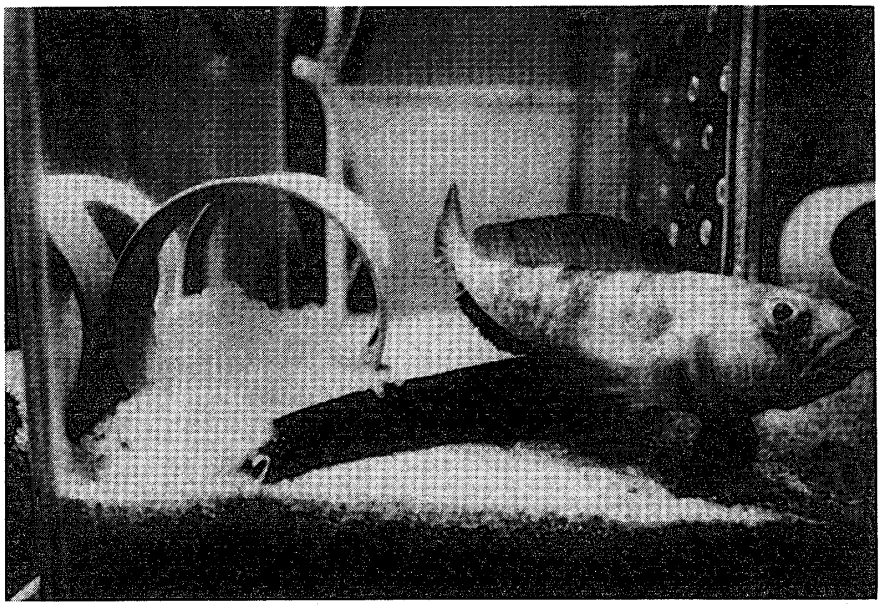

Fig. 3. T. bernacchii *No. 2 with eggs released.*

Demersal and adhesive eggs were liberated on sand (Fig. 3). Eggs were spherical in shape, 4.4–4.7 mm in diameter, and semi-transparent and milk-white in color. The total of released eggs was 4811. Sex of the other fish was unknown because the release of eggs or sperm has not been observed.

4. Discussion

The release of eggs by the fish was observed once a year for the 5-year period from 1984 to 1988 (Table 1). The condition of the environment in which the fish was reared

Table 1. Data on eggs released by T. bernacchii *No. 2 reared in the Kamogawa Sea World.*

Date of spawning	1984 June 2	1985 May 5	1986 April 4	1987 March 30 –April 1	1988 April 24
Standard length (mm)	220	220	220	231	236
Body weight (g)					
before spawning	303	345	400	410	420
after spawning	230	265	285	313	315
Number of eggs	3117	3175	4828	4245	4811
Diameter of eggs (mm)	4.1–4.3	4.3–4.4	4.2	4.4–4.7	4.4–4.7
Number of eggs examined	12	15	15	10	15

hardly changed throughout the present observation. The interval between two successive releasings of eggs varied; it was 11 months the first two times, was lengthened to 12 months in 1986–1987, and was 13 months in 1987–1988. There are no data on the number of eggs released in the Antarctic seas, but ANDRIASHEV (1965), HUREAU (1964), and DEARBORN (1965) reported the number of ovarian eggs in an aquarium to be 1030–1600, 1500–2500, and 3123, respectively. DEARBORN (1965) reported that the diameter of ovarian eggs was 3.9 mm and HUREAU (1970) mentioned that the diameter of ovarian eggs became 3.5 mm in October.

Acknowledgments

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