BRIEF COMMUNICATIONS

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On the Fecundity of Antarctic Sidestripe, Pleurogramma antarcticum*

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The antarctic sidestripe, *Pleurogramma antarcticum*, has circumpolar distribution along the Antarctic coast, and is distinguished by high population strength and forms natural groups on the shelf of the border seas (Andriyashev, 1964; Skora, 1981; Hopkins and Robinson, 1982). According to present understanding, this is the most pelagic species of family Nototheniidae (DeVries and Eastman, 1981).

The information on the reproductive biology of this species is extremely incomplete, and there is practically no information on fecundity. The published literature indicates only the possible spawning periods (early Antarctic spring), size of prolarvae (6-7 mm), and incompletely formed larvae (12.5 mm), and the possible periods of hatching (December-January) (Regan, 1916; Andriyashev, 1964; Efremenko, 1983).

The present study assessed level of individual and relative fecundity of Antarctic sidestripe and the relationship between absolute fecundity and female length and weight.

Specimens were collected during the voyage of the R/V Chatyr-Dag in March, 1983 in the Mawson Sea (Eastern Antarctic) from catches of midwater trawls. I express my gratitude to my colleagues P. B. Tankevich, G. A. Shandikov, and S. M. Pronenko for the help during collection of material and statistical analysis of data.

To assess the fecundity of Antarctic sidestripe, 30 females of SL 15.4-25.6 cm and 38.7-159 g were analyzed. The gonads were weighed with a precision of 0.01 g and fixed in Bouin's solution. The fixed gonads were weighed repeatedly during chamber analysis. Diameter of all oocytes larger than 0.05 mm in the samples was recorded, whose size was determined by the method of Lisovenko (1983). The oocytes were sequentially extracted from the sample by needles under a binocular microscope with magnification 2 × 8 and measured with an ocular micrometer. The number of oocytes at trophoplasmic growth was recorded in a batch ready for spawning in the closest season to estimate fecundity. Fecundity was determined by the standard weight method (Pravdin, 1966). The sample size varied from 10 to 42 mg. The number of oocytes in individual samples was in the range of 299-1240, with 51-157 oocytes ready for the next spawning. The oocytes of trophoplasmic growth clearly differ from the oocytes of protoplasmic growth in size (0.45-0.55 or more: Fig. 1), as well as external appearance: the oocytes in protoplasmic growth are transparent, and those in trophoplasmic growth turbid with distinct yolk. Since all the

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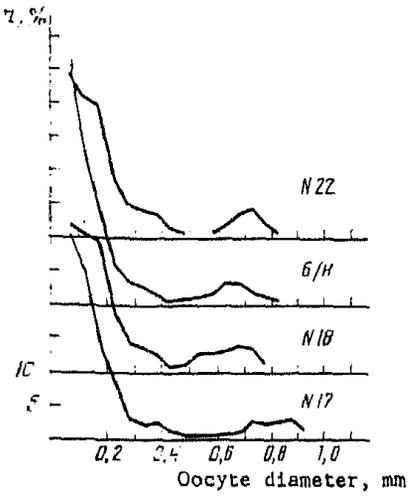

Fig. 1

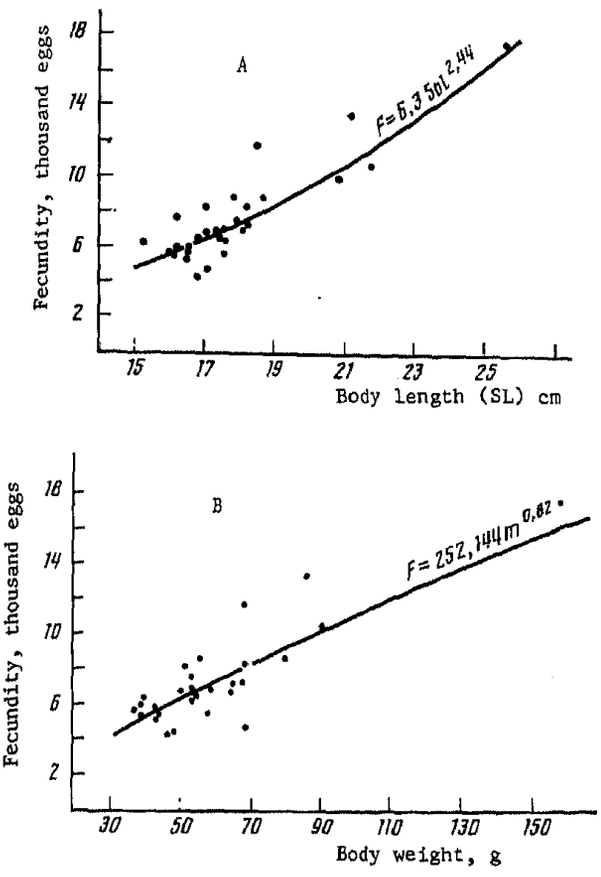

Fig. 2

Fig. 1. Size composition of oocytes of Antarctic sidestripe. No. 22: SL 15.4 cm, weight 38.7 g, weight of fixed gonads 1.00 g, weight of the sample 15 mg, oocytes in the sample 714, out of which 91 in trophoplasmic growth, AF 6067 eggs; unnumbered SL 16.5 cm, weight 44.4 g, weight of fixed gonad 0.60 g, sample weight 12 mg, oocytes in the sample 903, of which 105 in trophoplasmic growth, AF 5250 eggs; No. 18: SL 17.3 cm, weight 54 g, weight of fixed gonad 0.900 g, sample weight 16 mg, oocytes in the sample 870, of which 157 at trophoplasmic growth, AF 6869 eggs; No. 17: SL 18.2 cm, weight 69 g, weight of fixed gonad 1.60 g, sample weight 12 mg, oocytes in the sample 485, out of which 61 at trophoplasmic growth, AF 8133 eggs.

Fig. 2. Relationship between fecundity of Antarctic sidestripe and body length (A) and weight (B).

fish were spawning for the first time (large resorbing oocytes were not found; and the curves of oocyte distribution has only one peak), most probably, all the oocytes in the trophoplasmic growth can be considered as the generation of the next spawning.

The dependence between individual absolute fecundity and body length was determined by the least squares method. Total body weight was used for calculating individual relative fecundity. The individual absolute fecundity (F) was in the range of 4315-17,774 eggs with a mean of 7499 (σ = 2868), i.e., the sidestripe can be included among the fishes with medium fecundity (thousands or tens of thousands eggs) (Permitin and Sil'yanova, 1971).

The correlation coefficients between body length and absolute fecundity as well as between body weight and fecundity are similar (0.87). The projected curves of fecundity-length-weight relationships are presented in Fig. 2. As can be seen

from these curves, the dependence of fecundity on body length, as in most notothenid fishes (Lisovenko and Sil'yanova, 1979), is close to curvilinear and its dependence on weight is close to linear.

The individual relative fecundity of the sidestripes studied varied in the range of 67.7 to 156.8 eggs ($M \pm m = 124.9 \pm 4.4$). Thus, the Antarctic sidestripe, whose relative fecundity is fairly high, can be considered as one of the rare exceptions among the fishes inhabiting the zone of drifting ice, which are usually characterized by low relative fecundity (Lisovenko, 1982). No relationship was observed between individual relative fecundity and body length. The correlation coefficient between these parameters was -0.16.

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