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Eggs of the Rock Grenadier, *Coryphaenoides rupestris* Gunnerus 1765

by

G. V. Grigor'ev

Polar Research Institute for Marine Fisheries and Oceanography (PINRO)
Murmansk, USSR

and

V. P. Serebryakov

All-Union Research Institute for Marine Fisheries and Oceanography (VNIRO)
Moscow, USSR

The fishery for rock grenadier is conducted in the North Atlantic for over 15 years. Spawning individuals occur in trawl catches in the area south-west of Iceland (Grigor'ev, 1972). However, little is known about reproduction and early ontogeny of the species. Neither descriptions of the rock grenadier eggs nor data on their distribution were found by the authors in the wealth of literature available.

Two spawning females and one male rock grenadier was caught by the pelagic trawl at a depth of 750-800m in the vicinity of the Reykjanes Ridge (1400-1800m deep) during the cruise of the R/V "Odissej" (PINRO) on September 8, 1973.

The eggs obtained were mixed with milt roe and in an hour sea water was added. One hour later eggs were placed in 11 jars and incubated. Water temperature during the experiment was 2°C. Eggs were fixed by a 10% formaldehyde solution on the fourth, seventh and ninth day. The incubation water temperature varied between 2.0 and 6.5°C during the first four days and from 2 to 3°C later on. Water was changed daily and dead eggs were removed.

The experiment was ceased when the vessel arrived at the port.

Eggs were found to be confined to the surface layer when placed into the jars and became dispersed throughout the water column three days later.

Preserved eggs of rock grenadier are spherical, 2.30-2.40mm in diameter, with celled ^{membrane} distinctly visible in the falling light (Fig.1). As it is observed by transmitted light cells are irregular rectangles with rounded angles and thickened probably hyaline lines between the cells. The cells are 0.15-0.75mm long and 0.05-0.20 mm wide, the perivitelline space increased during development from 0.08 to 0.25 mm. There is a single oil globule 0.80 - 1.02 mm in diameter (Fig.2,3).

On the fourth day eggs reach early epibolic stage, i.e. the first phase of gastrulation (Fig.2). The blastoderm starts to develop on the spherical mass of the yolk. The animal pole is upturned, the oil globule is beneath the embryonic shield. The fixation by formaldehyde solution results in the flaving out of the yolk into the perivitelline space.

7-day old eggs are at the 'middle gastrula' stage (Fig.3). Cells are developed up to the egg equator, cells of the thickened zone are concentrated in the dorsal part of the blastoderm and form a wide and thick embryonal shield. Dead eggs taken from the bottom and fixed by formalin become turbid while alive ones remain transparent long after fixation.

Eggs of 5 species of grenadiers have been described from samples taken at sea, Gillchrist (1905) identified eggs of *Coelorhynchus fasciatus* recorded off the South African coast based on the affinity with ripe ovarian eggs. Eggs of three Mediterranean species (*Coelorhynchus coelorhynchus*, *Hymenocephalus italiens* and *Nezumia sclerorhynchus*) were described by Sanzo (1933). On the basis of these descriptions and of the original data Marshall and Iwamoto (1973) considered both drifting eggs and ripe ones from the ovaries to have distinct diagnostic features. The egg membrane in these species is covered by hexagonal cells of honeycomb pattern. The celled structure of the membrane was noted by Yanulov (1962) in *Macrourus berglax* with no remarks on the cell shape. No comments on the cell shape were made by Magnusson (1978) who provided data on the distribution of the roughhead grenadier. The celled structure of the membrane in the rock grenadier eggs is obvious, though the shape of the cells does not correspond to Sanzo's description (1933). Though the cell structure may be different in other 65 species of the family Macrouridae occurring in the Atlantic Ocean, the celled structure of the membrane seems to serve as the distinguishing character for egg identification of the species from this family.

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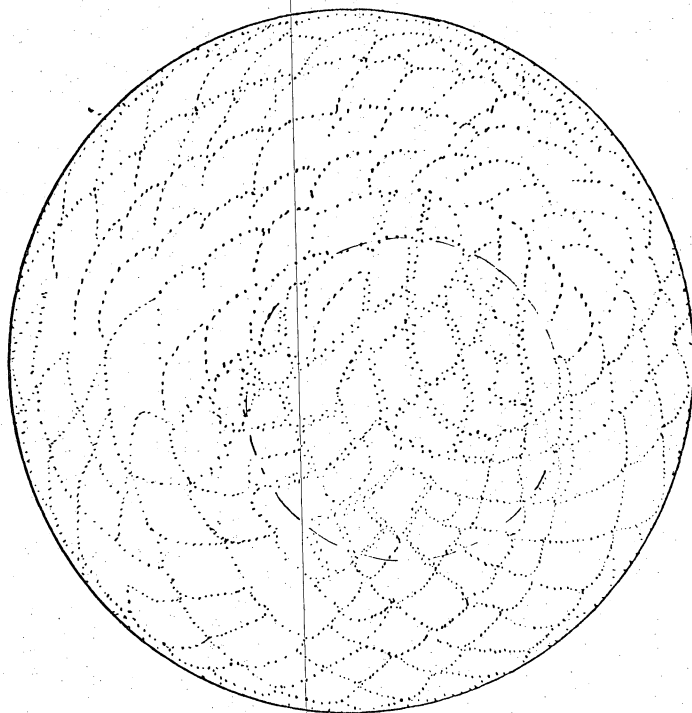


Fig.1. The egg of rock grenadier as observed by falling light; convex cells of the membrane are visible.

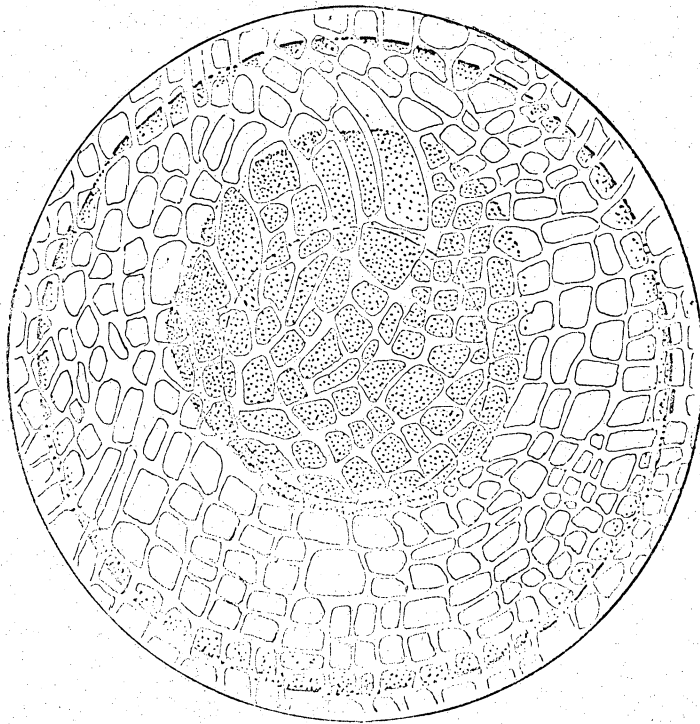


Fig.2. The egg of rock grenadier at early epibolic stage on the fourth day development. The blastodisc with the oil globule beneath is seen ^{by} transmitted light through the membrane.

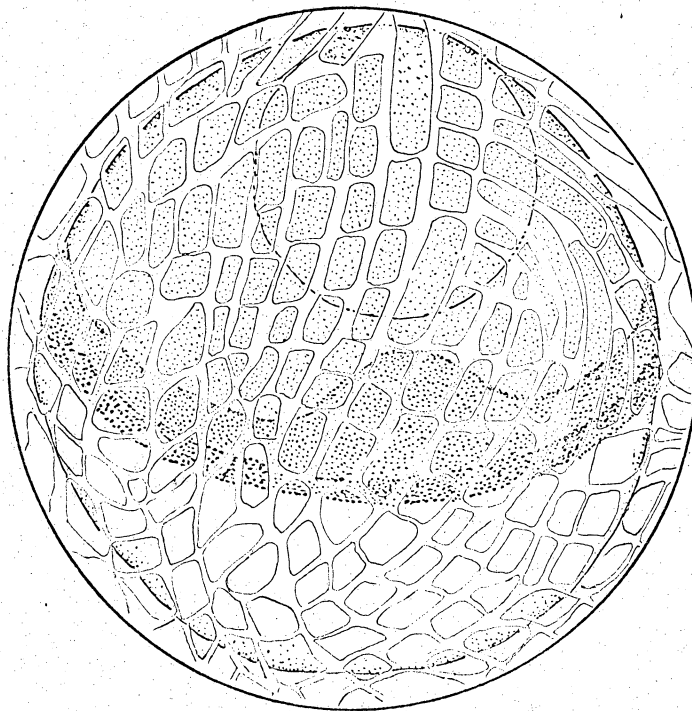


Fig.3. Seven-day old eggs of rock grenadier at the middle point of gastrulation. A thickened zone, wide and thick embryonic shield and the oil globule turning the animal pole upward is observed by transmitted light.