

---

## NOTE

---

# Eggs of Roundnose Grenadier, *Coryphaenoides rupestris* Gunnerus 1765

G. V. Grigor'ev  
Polar Research Institute of Marine Fisheries and Oceanography (PINRO)  
6 Knipovich St., Murmansk, USSR

and

V. P. Serebryakov  
All-Union Research Institute of Marine Fisheries and Oceanography (VNIRO)  
17 Krasnoselskaya St., Moscow, USSR

### Introduction

The fishery for roundnose grenadier has been conducted in various areas of the North Atlantic for many years, but little is known about the reproduction and early ontogeny of the species. Although sexually mature females are commonly found in certain areas, particularly southwest of Iceland where spawning individuals have been observed in trawl catches (Grigor'ev, 1971), neither descriptions of roundnose grenadier eggs nor data on their distribution could be found in the large volume of literature available to the authors. In this paper, the eggs of roundnose grenadier in very early stages of development after fertilization are described from observations on incubated eggs taken from spawning females.

### Materials and Methods

One male and two spawning female roundnose grenadier were caught by pelagic trawl at a depth of 750–800 m in the vicinity of Reykjanes Ridge (southwest of Iceland, bottom depth 1,400–1,800 m) on 8 September 1973 during a cruise of the USSR research vessel *Odissej*. Eggs from the females were mixed with milt from the male and incubated in jars of sea-water for 9 days. The water was changed daily and the dead eggs were removed. The water temperature varied between 2.0° and 6.5°C during the first 4 days and between 2.0° and 3.0°C thereafter. The eggs were confined to the surface layer when placed in the jars but became dispersed throughout the water column after 3 days. Samples of live eggs were removed and fixed in 10% formalin on the fourth, seventh and ninth days.

Live eggs placed in formalin remained transparent long after fixation but dead eggs became turbid almost immediately after being preserved. The experiment was terminated when the vessel arrived in port.

### Results and Discussion

Preserved eggs of the roundnose grenadier are spherical, 2.3–2.4 mm in diameter, with a celled membrane distinctly visible under reflected light (Fig. 1A). As observed under transmitted light (Fig. 1B, C), the cells are separated by hyaline spaces and appear as irregular rectangles with rounded angles. The cells are 0.15–0.75 mm long and 0.05–0.20 mm wide, and the perivitelline space increases during development from 0.08 to 0.25 mm. There is a single oil globule 0.80–1.02 mm in diameter.

On the fourth day, the eggs reach the early epibolic stage, i.e. the first phase of gastrulation (Fig. 1B). The blastoderm starts to develop on the spherical yolk mass. The animal pole is upturned and the oil globule is beneath the embryonic shield. Fixation in formalin results in the flowing of yolk into the perivitelline space. Seven-day-old eggs are at the mid-gastrula stage (Fig. 1C). Thickened cells are concentrated in the dorsal part of the blastoderm and form a wide and thick embryonic shield.

Eggs of five species of grenadiers have been described from samples taken at sea. Gilchrist (1905) identified the eggs of *Coelorrhynchus fasciatus* taken off South Africa from their affinity with ripe ovarian eggs.

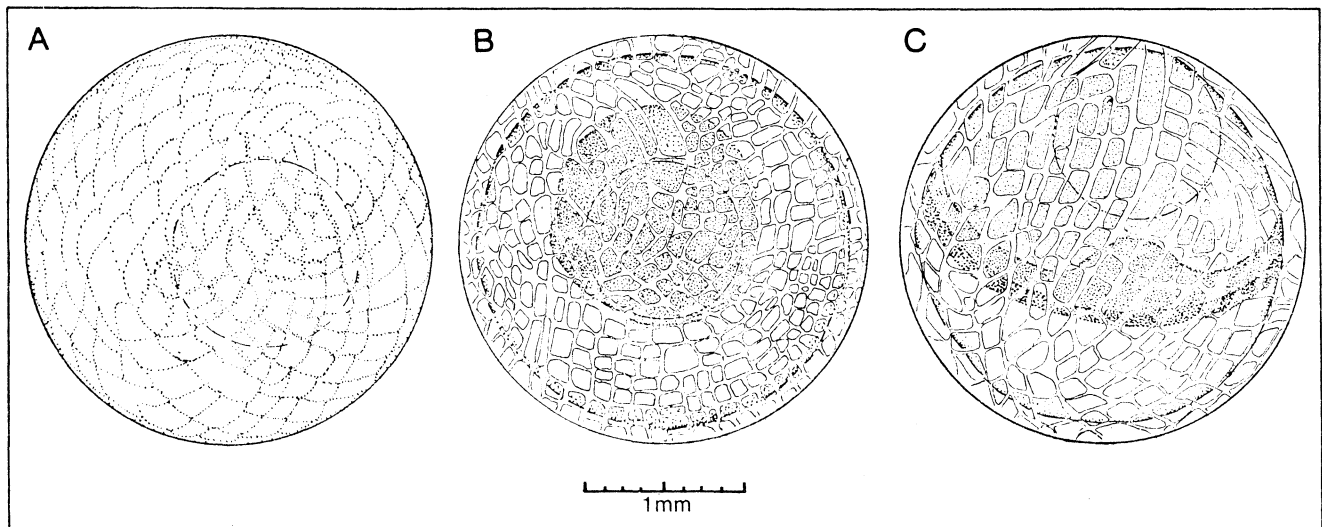


Fig. 1. **A.** Egg of roundnose grenadier under reflected light, showing the cell structure of the membrane. **B.** Four-day-old egg at the early epibolic stage under transmitted light with the oil globule visible through the membrane. **C.** Seven-day-old egg at mid-gastrula stage under transmitted light showing the oil globule and the thickened embryonic shield.

The eggs of three Mediterranean species (*C. coelorrhynchus*, *Hymenocephalus italicus* and *Nezumia sclerorhynchus*) were described by Sanzo (1933). On the basis of these descriptions and from their own observations, Marshall and Iwamoto (1973) considered both drifting eggs and ripe eggs from the ovaries of these species to have a distinct diagnostic feature, the egg membrane being covered by a fine honeycomb pattern of cells. Yanulov (1962) noted the celled structure of the membrane in eggs of *Macrourus berglax* but did not mention the cell shape. Also, no comment on the cell pattern of the membrane was made by Magnusson (MS 1978) who reported on the distribution and spawning grounds of the roughhead grenadier (*M. berglax*) in the North Atlantic. The celled structure of the membrane of roundnose grenadier (*C. rupestris*) eggs, as noted in this paper, is quite different from Sanzo's (1933) description and may serve as a useful distin-

guishing feature for egg identification, if it is found to be different from the patterns in closely related species.

## References

- GILCHRIST, J. D. F. 1905. Marine investigations in the South African area. Vol. 3: 131-152.
- GRIGOR'EV, G. V. 1971. On the reproduction of rock grenadier from the North Atlantic. *Trudy PINRO*, **28**: 107-115.
- MAGNUSSON, Jutta V. MS 1978. On the distribution and spawning grounds of the roughhead grenadier (*Macrourus berglax* Lacepede) west of Iceland. *ICES C.M.* 1978, No. G:36, 10 p.
- MARSHALL, N. B., and T. IWAMOTO. 1973. Family Macrouridae. In: Fishes of the Western North Atlantic, D. M. Cohen (ed.). *Memoir Sears Found. for Mar. Res.*, Part 6: 496-665.
- SANZO, L. 1933. Macrouridae. In: Uova, larve e stadii giovanili di Teleostei, Fauna e flora di golfo del Napoli, **33**: 255-265.
- YANULOV, K. P. 1962. On the reproduction of roughhead grenadier. *Zool. Zh.*, **41**: 1259-1262.