

**FIRST RECORD OF ROSSIA MACROSOMA AND
OCTOPUS DEFILIPPI (CEPHALOPODA : MOLLUSCA)
IN THE EGYPTIAN MEDITERRANEAN WATERS.**

BY

RIAD, R.*

*National institute of Oceanography and Fisheries. Alexandria. Egypt.

Key words: Cephalopods, Taxonomy, *Rossia macrosoma*, *Octopus defilippi*, Egyptian waters.

ABSTRACT

Present investigation yielded two newly recorded cephalopod species namely: *Rossia macrosoma* (11 individuals) sampled from the area between Abu-Qir and Rosetta at 20-70 m depth from over a silty bottom and *Octopus defilippi* (17 individuals) from Sidi Abdel Rahman area from a very coarse calcareous sand (bioclastic) bottom at 30 to 60 meters are described. The main diagnostic characters for *Rossia macrosoma* are: dorsal mantle border not fused to head and the ink sac possesses regular anal flaps. *Octopus defilippi* is characterized by the presence of one cirrus over each eye and 8-11 gill lamellae on the outer demibranch.

INTRODUCTION

Few are the studies on the Egyptian Mediterranean cephalopods. Steuer (1939) recorded only *Sepia officinalis* from Abu-Qir Bay. Halim *et al.* (1991) described nine cephalopod species. Abdalla (1993) gave a detailed illustrated taxonomical study on the Cephalopoda of Egyptian Mediterranean waters. Twenty-nine cephalopod species are known to occur in the Mediterranean Sea. Of them 24 species are known to extend along the Eastern Mediterranean Basin

(Roper, *et al.* 1984). The Cephalopoda of the Egyptian Mediterranean waters are still in need of a comprehensive study, particularly from the taxonomical point of view. The present work reports on two records new to the Egyptian Mediterranean waters.

The two species belong to two orders namely Sepioidea and Octopoda and two families Sepiolidae and Octopodidae, respectively. It is worth mentioning that the two orders are represented in the Mediterranean by 8 species each (Roper *et al.* 1984).

MATERIAL AND METHODS

The newly recorded cephalopod species (*Rossia macrosoma* and *Octopus defilippi*) were picked from commercial catch of fishing trawlers working between Sidi Abdel Rahman and Rosetta (Fig. 1).

The first species *Rossia macrosoma* (11 individuals) was picked in the area between Abu-Qir and Rosetta in April 2001 at a depth of 20-70 meters from silty bottom. The second species *Octopus defilippi* (17 individuals) was picked from a depth of 30-60 meters during March 2001 from the area of Sidi Abdel Rahman, where the bottom is of very coarse calcareous sand. Characters examined for identification are: external morphology, tentacular club, hectocotylized arm, arm sucker ring, beak, radula, gill, shell, egg cluster and funnel. Drawings were made through a zoom stereoscopic microscope provided with a camera lucida drawing tube. The main references used for identification are: History of British Mollusca and their shells (Forbes and Hanly, 1852), Monograph of the Recent Cephalopoda (Robson, 1932), FAO species identification sheets (Fischer, 1973), FAO species catalogue (Roper *et al.* 1984), key for the identification of the Mediterranean sepiolids (Bello, 1995), and the Octopodinae from the Eastern Atlantic Ocean and the Mediterranean Sea (Mangold, 1998).

RESULTS AND DISCUSSION

Rossia macrosoma (Delle Chiaja, 1829) [Plate 1,2,4 and 5]

Material:

Eleven individuals ranging between 2 cm for mantle length of animal weighing 3g and 5.6 cm for mantle length of animal weighing 35g.

Synonymy: *Sepiola macrosoma* Delle Chiaja. 1829

Description:

Body broad and short. dorsal mantle border not fused to head. Fins oval shaped, wing-like. Colour reddish. Tentacular clubs with more than 8 subequal suckers, all much smaller than arm suckers. Arms with 4 rows of well developed suckers. Functional ink sac with regular anal flaps. Arms III and IV united by a broad web. Shell placed dorsally, rod-shaped, with 2 narrow plates running along each side of the hind region. Orbital pores open. Both arms I (dorsal) hectocotylized characterized by decrease in size of large basal suckers (in 2 rows) to smaller suckers (arranged in 4 rows in a rounded zigzag pattern) and by the presence of a deep ridge and groove between horizontal sucker rows.

Local distribution:

Being recorded only from the area Abu- Qir to Rosetta, no more additional distribution of the species can be confirmed.

General distribution:

Eastern Atlantic. North Sea. Mediterranean Sea. West Africa, Morocco, (Roper *et al.*, 1984)

Habitat and biology:

The habitat of the present record agrees with Roper *et al.* (1984) who mentioned that, the species is considered to be demersal, inhabiting shallow to medium water depth between 30 and 60 m over sandy to muddy bottoms. It carries out seasonal migrations between deeper offshore waters (winter) and shallower coastal zones (for the rest of the year), but partitioned by size in such

FIRST RECORD OF ROSSIA MACROSOMA AND OCTOPUS DEFILIPPI

a way that largest individuals arrive first in spring, followed by smaller bobtail squids in summer. Maturing males (aged 7-8 months) carry 85 to 100 spermatophores, females (8 to 11 months) have about 120 to 150 eggs in the ovary. The spawning season extends from spring through autumn with peaks in spring and autumn corresponding to the major size classes. The eggs are deposited in clusters of 30 to 40 (egg diameter 7 or 8 mm) on shells. They hatch after 45 days.

Remarks:

It is worth to note that *Rossia macrosoma* may be regarded as very much similar to *Sepioloideia rondeleti* with which it may be taxonomically confused. The marked difference that can differentiate them is that in *Rossia macrosoma* the head is clearly distinct from the mantle (not joined to the mantle by a dorsal membrane). Besides, its shell is rod-shaped with two narrow plates running along each side of the hind region. On the other hand *Sepioloideia rondeleti* has the upper side of the head joined to the mantle by a broad membrane and the shell is more slender ending posteriorly in a conical appendix.

***Octopus defilippi* Verany, 1845.
(Plate 3 and 6)**

Material:

Seventeen individuals ranging between 5 cm for mantle length of animal weighing 30 g and 8.8 cm mantle length of animal weighing 100g.

Synonymy: None.

Description:

Mantle relatively very small, smooth-skinned, head narrower than mantle, no pigmented ocellus, spots or rings. Funnel elongate tube. All arms very long, slender, symmetrical, 3rd arms very much longer than other arms. Arm length exceeding 70-85% of the total length, arms with delicate tips. Arms formula [III > II > IV > I or III > IV > II > I]. Right arm III of male hectocotylized shorter than opposite arm bearing 60-100 suckers. Ligula well differentiated 1.8 to 2.5% of hectocotylized arm length, groove very shallow, calimus very small. 8-11 gill lamellae on outer demibranch. Web depth 20-25% of the longest arm length. Web formula C > D > B > E > A. Suckers widely set, of medium size,

diameter of largest arm suckers in males on the average 15-16% of the mantle length. One cirrus over each eye. Funnel organ W-shaped.

Local distribution:

The species was only encountered through the present study from only Sidi Abdel Rahman locality; hence its local distribution is not well known.

General distribution:

Mediterranean Sea, Eastern Atlantic from Morocco to Angola, Cap Verde Islands, Western Atlantic, Bahamas, Gulf of Mexico, Caribbean Sea, Brazil, Indian Ocean, Arabian Peninsula to Burma and South Western Pacific (Roper, *et al.* 1984, Nesis (1987) and Mangold, 1998).

Habitat and biology:

The present record inhabits bioclastic bottom at 30-60 m depth. According to Roper *et al.* (1984) the species is little known as benthic species inhabiting sandy to muddy bottoms at 6 to 60 m water column depth, but occasionally reported down to 200 m. Its larvae and juveniles are pelagic (called macrotritopus larva) and characterized by extremely long arms III. Females lay over 10000 small eggs (2.1 mm long) that may be brooded in the arms.

Remarks:

Present work samples showed the mantle length of the largest specimen to be 8.8 cm in an animal weighing 100 gm and in the smallest specimen to be 5 cm in an individual weighing 30 gm, while according to Roper *et al.* (1984), the maximum mantle length is 9 cm and according to Mangold (1998), the animal is small to medium size (3.3 - 5.5 cm). Distinction of *Octopus defilippi* from the other *Octopus spp.* previously recorded in the Egyptian Mediterranean waters can be summarized as follows:

Octopus defilippi: The mantle relatively very small. Arm III is the largest arm and there is a cirrus over each eye. *Eledone moschata*: One row of suckers on each arm and clear cirrus over each eye.

Octopus vulgaris: Shorter arms, a well-developed inter-branchial membrane (connecting the arms up to 1/5 of their length), the presence of 3 cirri over each eye.

Octopus macropus: Slender and longer arms, poorly developed interbranchial membrane. Cirri absent.

The present new records complete the list of the Egyptian Mediterranean cephalopods published by Halim *et al.*, (1991) and Abdalla (1993) to 11 species (see the next checklist).

Check List of the cephalopods in the Mediterranean

The following is an inventory of the cephalopods dwelling in the Mediterranean waters classified to their families and orders (Roper *et al.* 1984). The species denoted by one asterisk (*) are previously recorded in the Egyptian Mediterranean waters, while species denoted by two asterisks (**) are new records.

Class: Cephalopoda Cuvier, 1798

Sub-class: Coleoidea Bather, 1888

Order: Sepioidea Naef, 1916

Family: Sepiidae Keferstein, 1866

Sepia elegans Blainville, 1827 * Halim *et al.*, 1991

Sepia officinalis Linnaeus, 1758 * Steuer, 1939

Sepia orbignyana Ferussac, 1826

Family: Sepiolidae Leach, 1817

Sepiola rondeleti Leach, 1817

Sepietta oweniana Orbigny, 1840

Rondeletiola minor Naef, 1912

Rossia macrosoma (Delle Chiaje, 1829) ** Present work

Neorossia caroli Joubin, 1902

Order: Teuthoidea Naef, 1916

Family: Loliginidae Orbigny, 1848

Loligo forbesi Steenstrup, 1856 * Halim *et al.*, 1991

Loligo vulgaris Lamarck, 1798 * Halim *et al.*, 1991

Alloteuthis media Linnaeus, 1758 * Halim *et al.*, 1991
Alloteuthis subulata Lamarck, 1798

Family: Onychoteuthidae Gray, 1849
Ancistroteuthis lichtensteini Orbigny, 1839

Family: Histioteuthidae Verrill, 1881
Histioteuthis bonnellii Ferussac, 1835
Histioteuthis elongata Voss and Voss, 1962

Family: Brachioteuthidae Pfeffer, 1908
Brachioteuthis riisei Steenstrup, 1882

Family: Ommastrephidae Steenstrup, 1857
Illex coindetii Verany, 1839 * Halim *et al.*, 1991
Todaropsis eblanae Ball, 1841
Todarodes sagittatus Lamarck, 1798
Ommastrephes caroli Furtado, 1887
Ommastrephes pteropus Steenstrup, 1855

Order: Octopoda Leach, 1818

Family: Octopodidae Orbigny, 1845
Octopus defilippi Verany, 1851 ** Present work
Octopus macropus Risso, 1826 * Halim *et al.*, 1991
Octopus vulgaris Cuvier, 1797 * Halim *et al.*, 1991
Scaevurgus unicolor Orbigny, 1840
Pteroctopus tetracirrhus Delle Chiaja, 1830
Eledone cirrosa Lamarck, 1798
Eledone moschata Lamarck, 1798 * Halim *et al.*, 1991

Family: Argonautidae Tryon, 1879
Argonauta argo Linnaeus, 1758

Compared with the number of cephalopod species recorded in the Mediterranean, it is obvious that the number of the Egyptian Mediterranean cephalopod species is still low. Accordingly, it is recommended to extend the

surveying to more areas and depths in order to complete the list of Egyptian Mediterranean cephalopods.

EXPLANATION OF PLATES

1 to 6

Plate (1): *Rossia macrosoma*

(A) Arm I of male hectocotylyzed, (B) Tentacular club, (C) Normal arm,
(D) Upper beak, (E) lower beak, (F) Shell (G) Ink sac.

Plate (2): *Rossia macrosoma*

(A) Egg cluster, (B) Nidamental gland, (C) Arm sucker, (D) Funnel,
(E) Gill, (F) Arm sucker ring.

Plate (3): *Octopus defilippi*

(A) Right arm III of male hectocotylyzed, (B) Funnel. (C) Radula, (D) Arm suckers, (E) Gill, (F) Egg cluster. (G) Upper beak. (H) lower beak.

Plate (4): *Rossia macrosoma*

(A) Whole animal, (B) Arm I of male hectocotylyzed, (C) Tentacular club,
(D) Normal arm, (E) Upper and lower beak, (F) Shell, (G) Ink sac.

Plate (5): *Rossia macrosoma*

(A) Egg cluster, (B) Nidamental gland, (C) Arm sucker, (D) Funnel,
(E) Gill, (F) Arm sucker ring.

Plate (6): *Octopus defilippi*

(1st) Whole animal, (B) Right arm III of male hectocotylyzed, (C) Funnel,
(D) Radula, (E) Egg cluster, (F) Arm suckers, (G) Gill,
(H) Upper and lower beak.

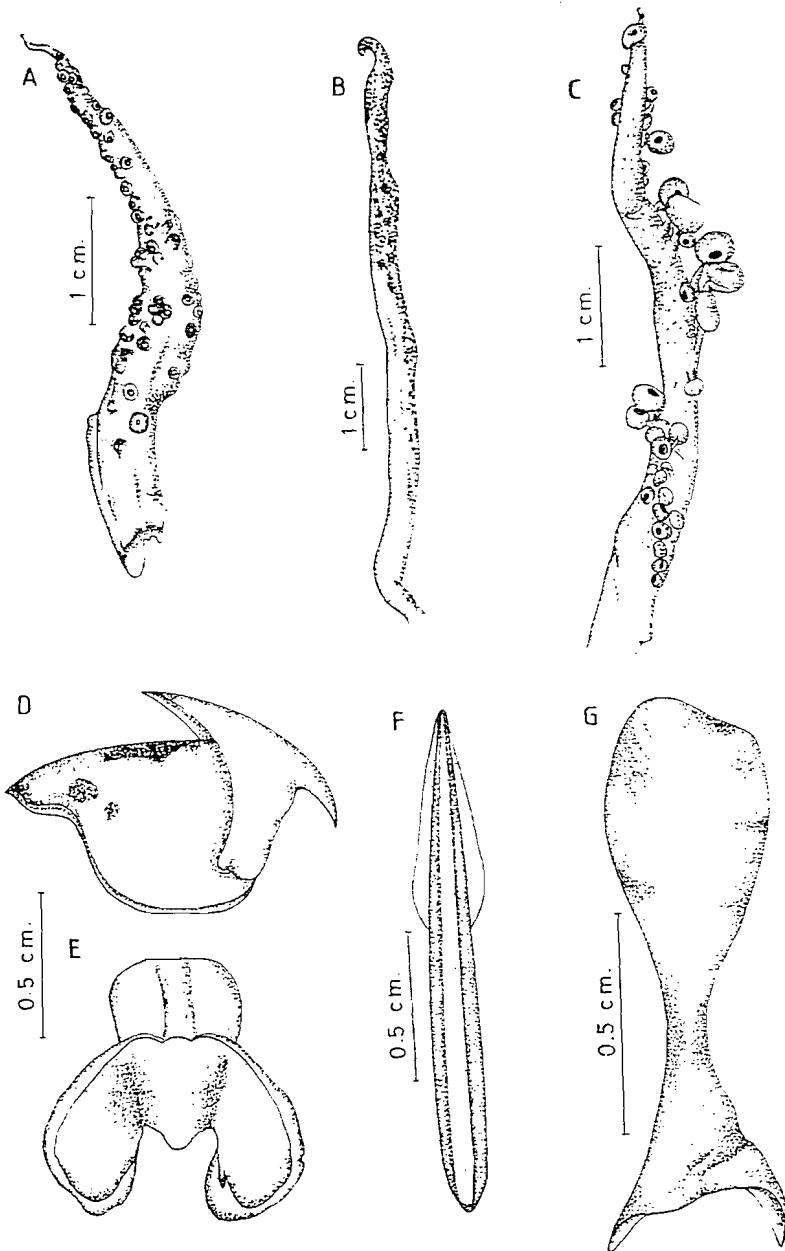


Plate (1) Rossia macrosoma

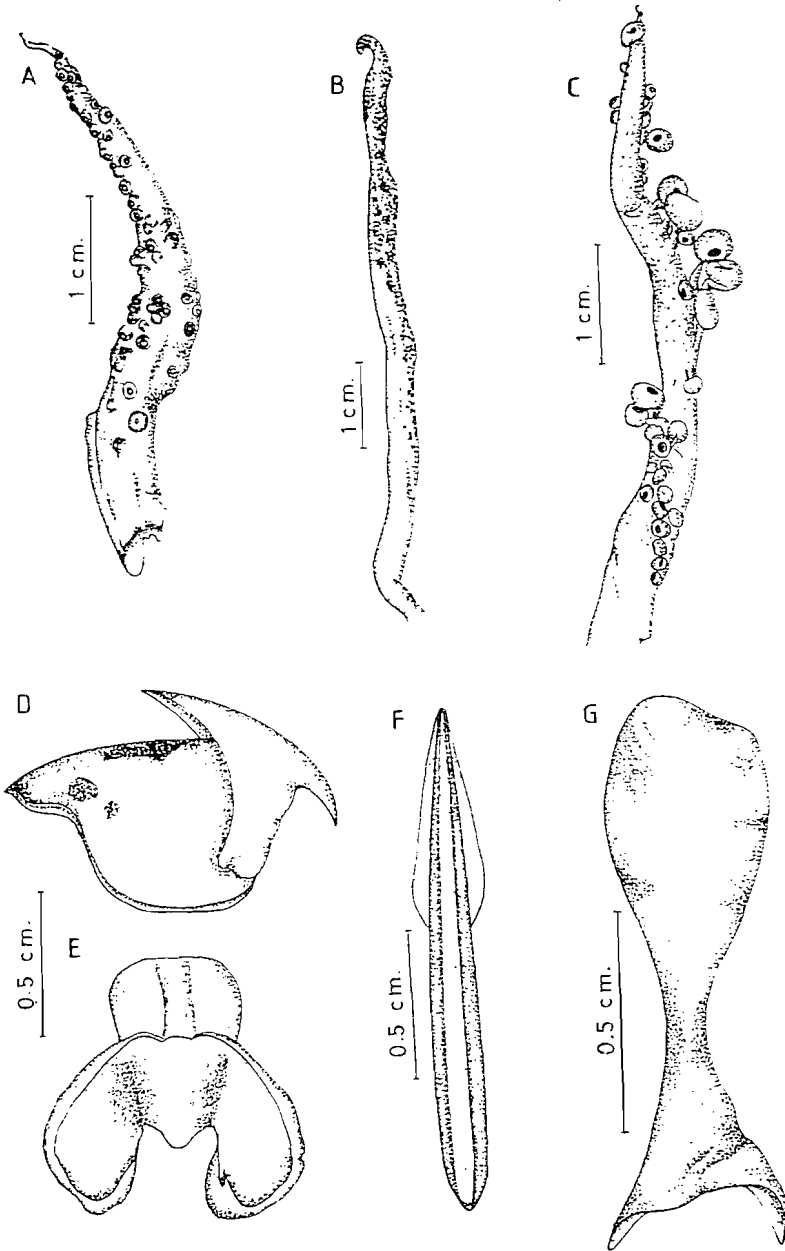


Plate (1) Rossia macrosoma

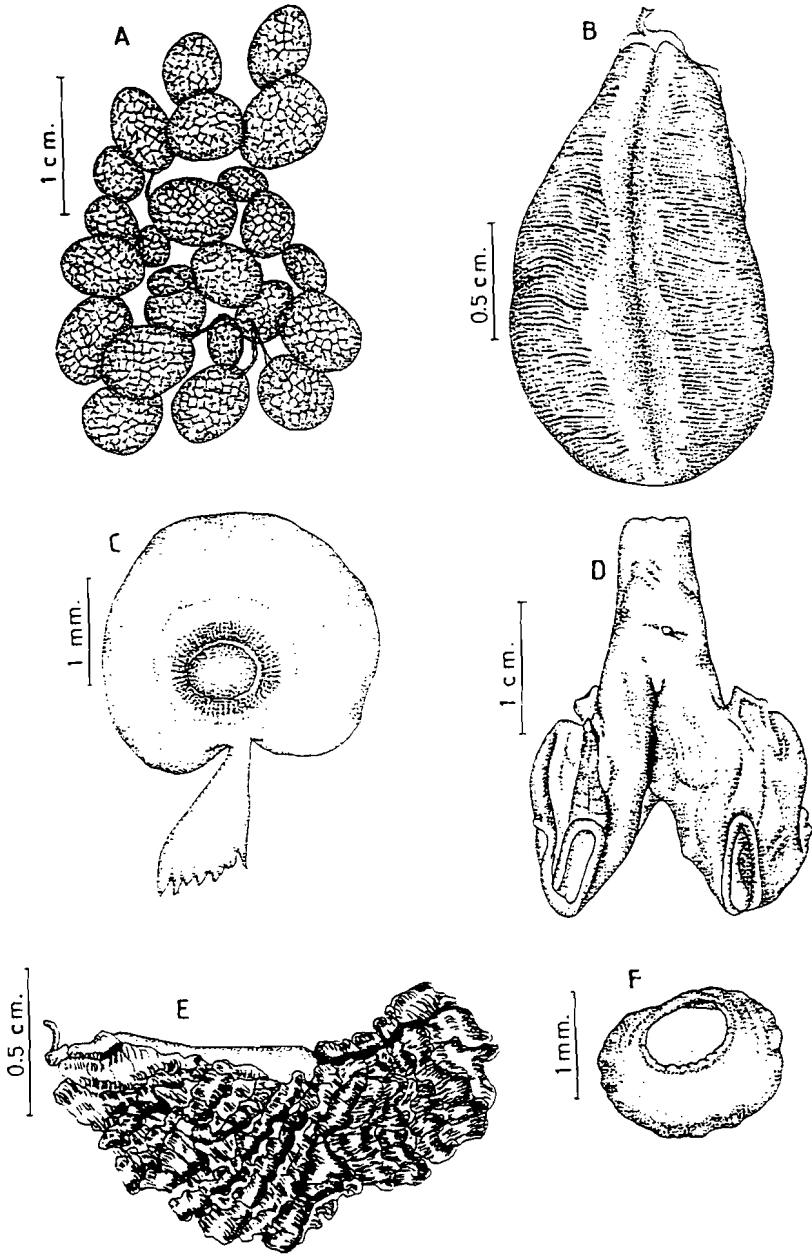


Plate (2) Rossia macrosoma

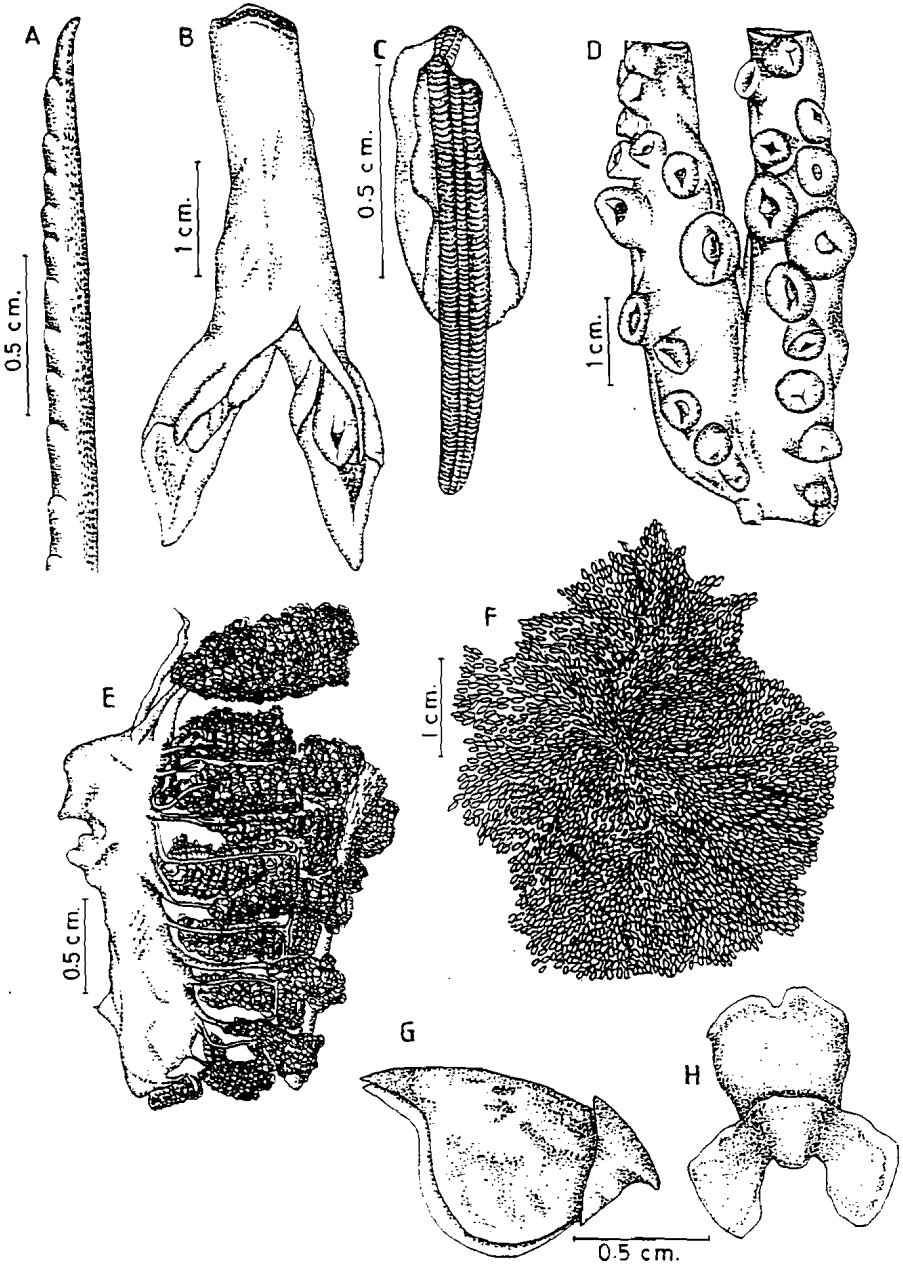


Plate (3) Octopus defilippi



Plate (4) Rossia macrosoma

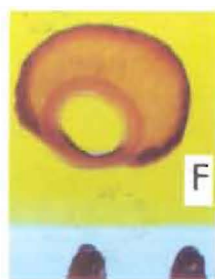
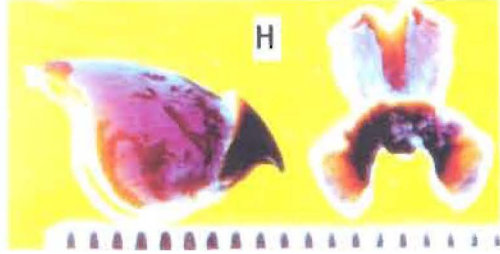


Plate (5) Rossia macrosoma



Plata (6) Octopus defilippi

REFERENCES

- Abdalla, R. R., 1993. Studies on cephalopod molluscs of the Mediterranean Waters of Alexandria. M. Sc. Thesis, Fac. Sci., Alexandria Univ. 230 pp.
- Bello, G. 1995. A key for the identification of the Mediterranean sepiolids (Mollusca: Cephalopoda). Bulletin de l'Institut Océanographique. Monaco. no special 16(1995).
- Fischer, W. (Ed), 1973. FAO species identification sheets for fisheries purposes, Mediterranean and Black Sea (Fishing area 37), Rome, FAO, Vol. 2: Page Var.
- Forbes, E. and Hanley, S., 1852. A history of the British Mollusca and their shells. Vol. 4. London. 207-243.
- Halim, Y.; Riad, R. and Hassan, A. K.: 1991. The Cephalopoda (Mollusca) of the Mediterranean Sea around Alexandria. Part I. Bull. Fac. Sci. Alexandria Univ., 31(A): 264-284.
- Mangold, K. 1998. The Octopodinae from the Eastern Atlantic Ocean and the Mediterranean Sea. In (Systematic and Biogeography of Cephalopods Vol.II) in Smithsonian Contributions to Zoology No. 586: 521-528.
- Nesis, K. N. 1987. Cephalopods of the world. Squids, cuttlefishes, octopuses. 351 pages. Neptun City, New Jersey: Tropical Fish Hobbyist Publications Inc., Ltd. [Translation from Russian by B. S. Levitov].
- Robson, G.C., 1932. A monograph of the recent Cephalopoda. Part 2. The Octopoda. (Excluding the Octopodinae): 359 pages. London. British Museum (Natural History).
- Roper, C. F. F., Sweeney, M.J and Nauen, C.E 1984. Cephalopods of the world. 3. An annotated and illustrated catalogue of species of interest to fisheries. FAO Fisheries Synopsis. 125, 3: 277 pages.
- Steuer, A. 1939. The fishery grounds near Alexandria. XIX- Mollusca. Notes and Memoirs, No. 33: 1-152.