

3.2.1 Subfamily SEPIOLINAE Appellöf, 1898

Sepiola affinis Naef, 1912

Fig. 229

Sepiola affinis Naef, 1912b, *Zoologischer Anzeiger*, 40(2): 81 [type locality: Tyrrhenian Sea].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: En – Analogous bobtail squid; Fr – Sépiole analogue; Sp – Sepiola análoga.

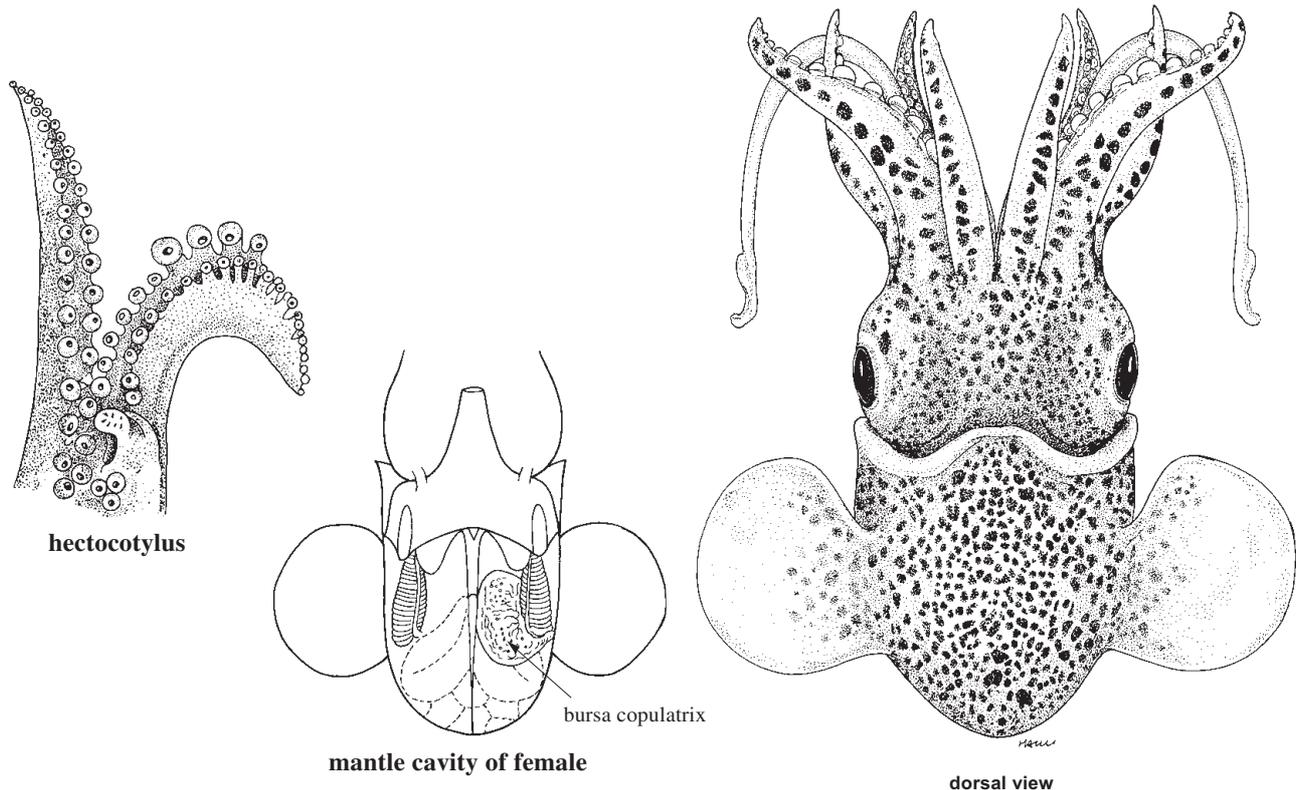


Fig. 229 *Sepiola affinis*

Diagnostic Features: Mantle slightly conical, head robust with prominent eyes; fins wide; rounded, semicircular; do not exceed length of mantle anteriorly or posteriorly; arm suckers biserial; tentacles delicate, club with 6 transverse rows of very small suckers; a few of the dorsal sucker rows close to the stalk slightly enlarged. Hectocotylus present, left dorsal arm modified: **3 small suckers** at the base, followed distally by the swollen lobe of the copulatory apparatus consisting of a primary lobe followed by a smaller lobe and a wrinkled tubercle; suckers biserial distal to copulatory apparatus, the dorsal ones differing in size: **first 4 to 6 small suckers are followed by 3 or 4 very large ones**, remaining suckers small, decreasing regularly in size to distal tip of arm; ventral rows of suckers uniformly small. Paired, kidney-shaped light organs present inside mantle cavity on each side of ink sac. **Bursa copulatrix small.** **Colour:** Dark brown, chromatophores large, violet brownish, dense.

Size: Up to 25 mm mantle length (both sexes).

Geographical Distribution: Mediterranean Sea, including Strait of Sicily, Adriatic Sea and north Aegean Sea. Depth range from 20 to 178 m (Fig. 230).

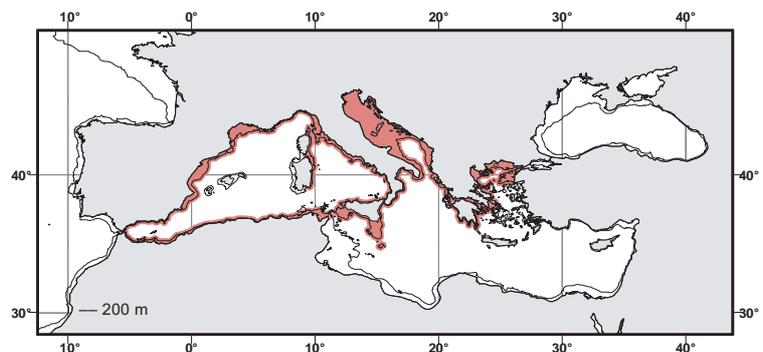


Fig. 230 *Sepiola affinis*
■ Known distribution

Habitat and Biology: A Mediterranean endemic, *Sepioloa affinis* has been found at depths slightly over 150 m, but it is typically abundant in shallow waters (15–30 m), mostly on sandy or sandy-muddy substrates. It is often associated with *S. intermedia* Naef, 1912, from which young females are very difficult to distinguish. The smallest mature males are 12 mm, and the smallest mature females are 18 mm mantle length. Eggs are relatively large (2.2 × 1.8 mm) and experimental observations indicate that spawning may occur in one single event as well as being continuous or intermittent. The maximum observed spawning duration is 2 months and all animals die after spawning. During prey capture the species exhibits a great variety of colour patterns, with rapid colour changes.

Interest to Fisheries: It is commonly caught by small-scale and artisanal fisheries and consumed locally together with other species of the group. Separate statistics are not available.

Local Names: ITALY: *Sepioloa affinis*, Cappuccetto.

Literature: Naef (1923), Mauris (1989), Bello (1990b), Guerra (1992), Bello (1995), Gabel-Deickert (1995), D'Onghia *et al.* (1996), Jereb *et al.* (1997), Salman *et al.* (2002).

***Sepioloa atlantica* Orbigny, 1839–1842**

Fig. 231

Sepioloa atlantica Orbigny, 1839–1842 (in Férussac and d'Orbigny, 1834–1848), *Histoire Naturelle Générale et Particulière Céphalopodes Acétabulifères Vivants et Fossiles*, pl. 4 [type locality: France: Bay of Biscay].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: En – Atlantic bobtail squid; Fr – Sépiole grandes oreilles; Sp – *Sepioloa atlántica*.

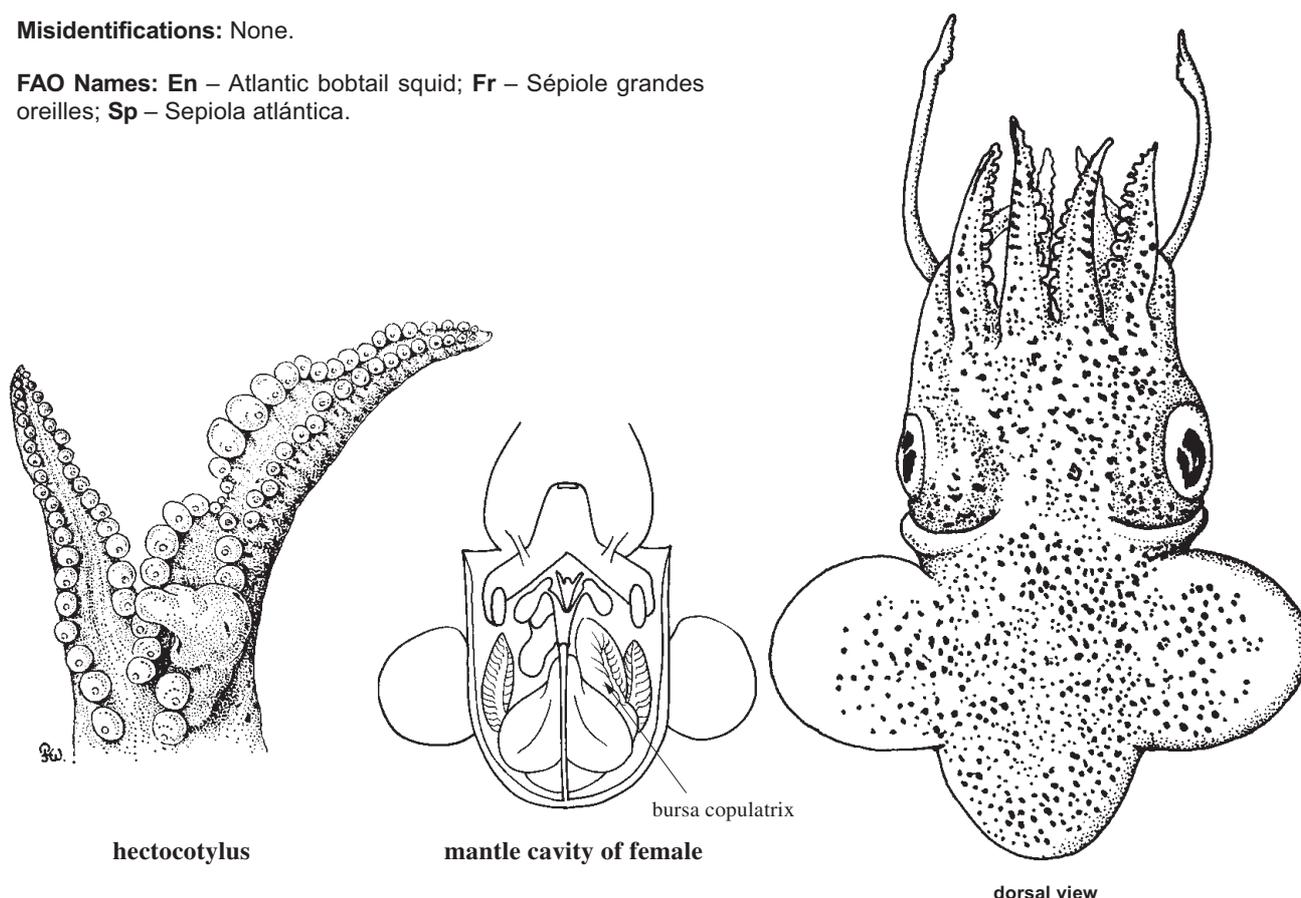


Fig. 231 *Sepioloa atlantica*

Diagnostic Features: Fins short, do not exceed length of mantle anteriorly or posteriorly. Arms IV with biserial suckers proximally, **4 to 8 rows of minute suckers at distal tips**; remaining arms with biserial suckers. Hectocotylus present; left dorsal arm modified: proximal end with fleshy pad formed from enlarged and fused sucker pedicels; copulatory apparatus a large swollen horn, with secondary lobes basally; dorsal row of suckers distal to copulatory apparatus with **3 or 4 slightly enlarged suckers with swollen pedicels, 3 or 4 greatly reduced suckers, then 3 to 5 greatly enlarged suckers** approximately halfway along arm. Hectocotylized arm strongly bent in distal half. Club with 8 suckers in transverse rows. Paired, kidney-shaped light organs (photophores) present inside mantle cavity on each side of ink sac.

Size: Up to 21 mm mantle length (mature males and females similar in size).

Geographical Distribution: Northeastern Atlantic: 65°N to 35°N, from Iceland, Faeroe Islands and western Norway to Morocco. Mediterranean Sea (single record only) (Fig. 232).

Habitat and Biology: Continental shelf to edge of slope. Epibenthic, but has been collected in midwater during both night and day. The ecology of the species in Firemore Bay, Loch Ewe, Scotland has been well studied. The resident population has a variable age composition, which suggests an extended reproductive season. Juveniles occur throughout the year, with peak recruitment in April and July to August.

Interest to Fisheries: Specific records are not available, but the species is likely to occur in local fisheries, due to its wide distribution and fairly common occurrence on the north European continental shelf.

Remarks: According to Naef (1916), Grimpe (1925), Bello (1986), Mangold and Boletzky (1988) and Bello (1992) *Sepiolo atlantica* is absent from the Mediterranean Sea. However, Wurtz *et al.* (1995) referred to one mature male captured in the Tyrrhenian Sea at 90 m depth. *Sepiolo atlantica* is distinguished from other sepiolid species in the northeastern Atlantic by the 4 to 8 rows of minute suckers at the distal tips of arms IV and the presence of the internal, ventrally positioned, bilobed light organs.

Literature: Joubin (1902a), Naef (1912b), Herring *et al.* (1981), Roper *et al.* (1984), Guerra (1986), Nesis (1987), Guerra (1992), Yau and Boyle (1996), Collins *et al.* (2001).

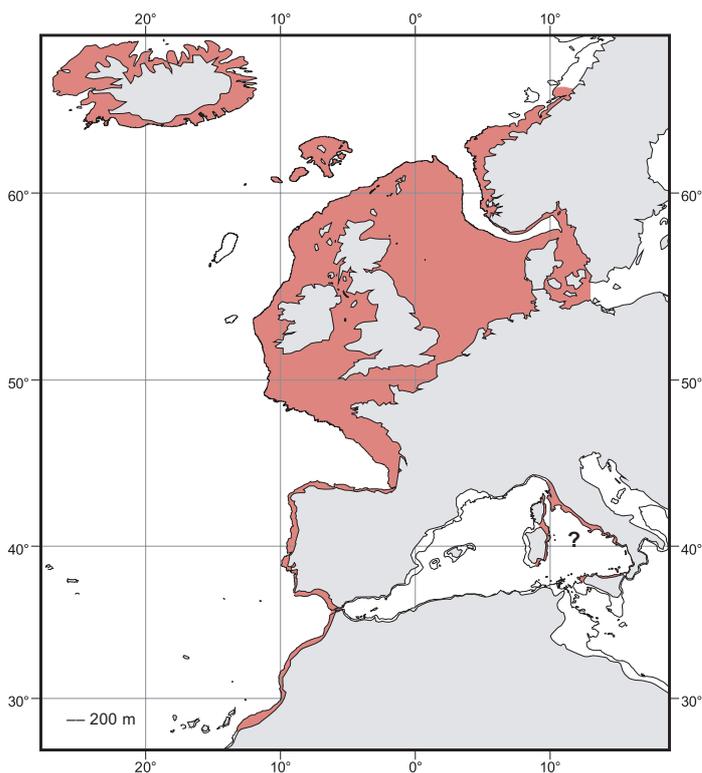


Fig. 232 *Sepiolo atlantica*
■ Known distribution

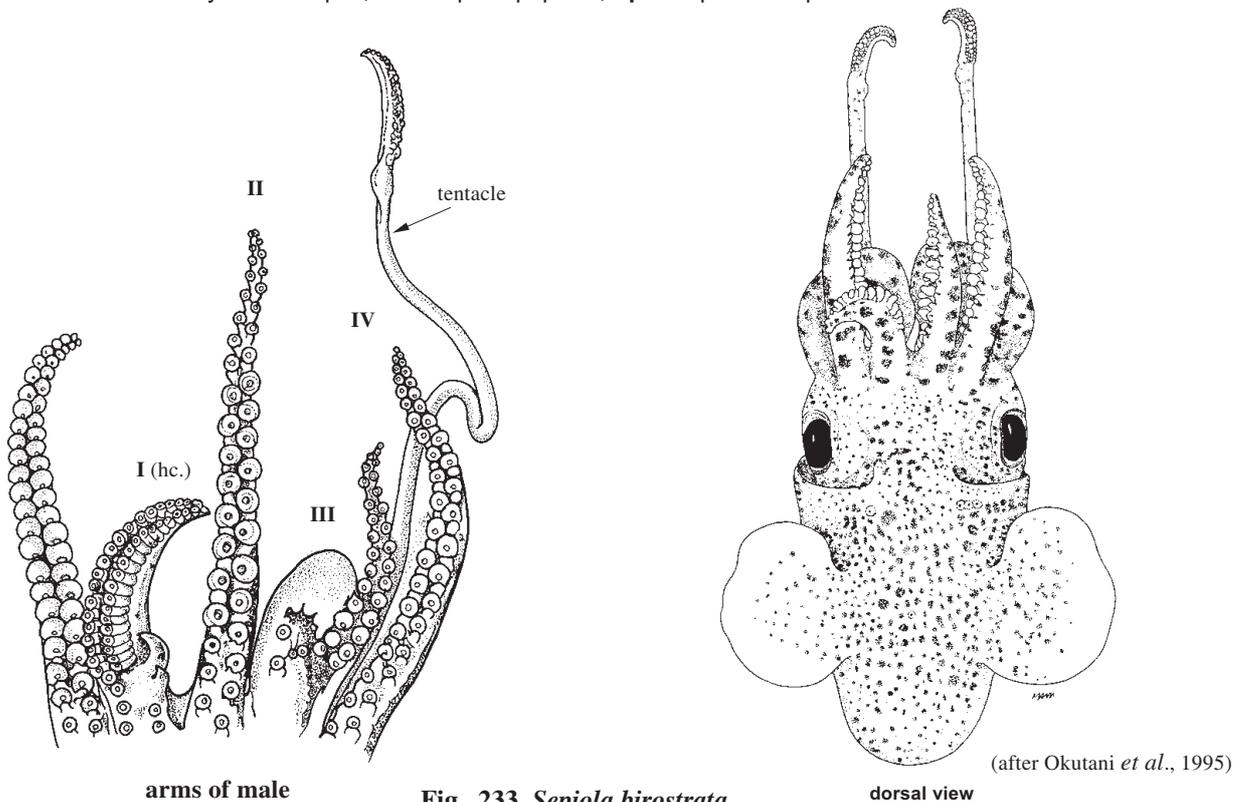
Sepiolo birostrata* Sasaki, 1918*Fig. 233**

Sepiolo birostrata Sasaki, 1918, *Doubutsugaku Zasshi* [Zoological Magazine Tokyo], 30: 235. [In Japanese] [type locality: Japan Sea, Toyama Bay].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: **En** – Butterfly bobtail squid; **Fr** – Sépiole papillon; **Sp** – *Sepiolo mariposa*.



arms of male

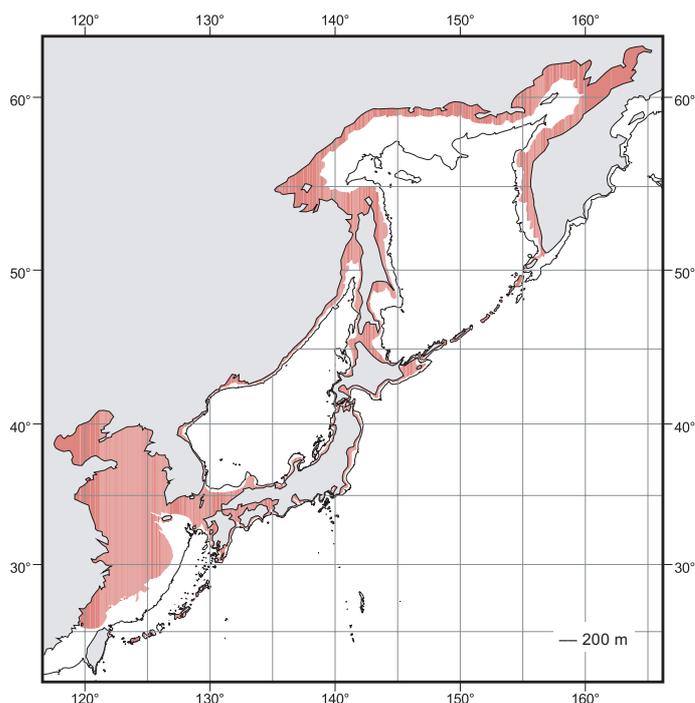
Fig. 233 *Sepiolo birostrata*

dorsal view

Diagnostic Features: Mantle dome-shaped, half as wide as long. Dorsal mantle fused to head. Fins wide, ovate, short, do not exceed length of mantle anteriorly or posteriorly; attached slightly anterior to mantle midline. Arms III in both sexes stout and strongly curved inward (more obviously so in males). Non-hectocotylized arm sucker arrangement same in both sexes: arm suckers biserial. Dorsal and ventral rows of suckers on arms I and II of males equal in size, larger than suckers on arms III and IV. Hectocotylus present, left dorsal arm modified: proximal end with **2 slender, fleshy, papillae formed from enlarged and elongate sucker pedicels**; anteriormost papilla longest and thickest, posterior papilla fleshy; both papillae blunt distally. Club slightly recurved; short; with 4 suckers in proximal transverse rows, up to 16 rows distally; suckers small, dorsal marginal longitudinal series of suckers slightly larger than those in ventral marginal series. Paired, kidney-shaped light organs present inside mantle cavity on each side of ink sac. **Colour:** Mantle and head with many minute brown or black chromatophores; arms III deep pink, arms I to III each with single longitudinal row of large chromatophores, arms IV with double row of small chromatophores.

Size: Up to 22 mm mantle length.

Geographical Distribution: Northwestern Pacific: Sea of Okhotsk, southern Sakhalin, south Kurile Islands, Primorye (Russian Federation), North and South Korea, Japan, East China Sea (Fig. 234).

**Fig. 234** *Sepiolo birostrata*

■ Known distribution

Habitat and Biology: Neritic. Depth range to approximately 100 m.

Interest to Fisheries: No specific information is available, but the species is likely to occur, occasionally, in multispecies fisheries.

Remarks: *Sepiolo birostrata* usually differs from *S. tirostrata* Voss, 1962, by the absence of a third blunt, fleshy lobe at the base of the pair of elongate papillae on hectocotylyzed arm. However, there appears to be some intraspecific variability in *S. birostrata*: 3 lobes have been reported to occur in some specimens. All papillae on the hectocotylyzed arm of *S. birostrata* arise from a common mound-like base. In contrast, the third lobe-like papilla of *S. tirostrata* does not arise from the same base as the other two papillae. See Remarks under *Sepiolo parva* Sasaki, 1913 for differences between *S. birostrata* and *S. parva*.

Literature: Roper *et al.* (1984), Nesis (1987), Takayama and Okutani (1992), Okutani (1995), Kubodera and Yamada (1998).

***Sepiolo intermedia* Naef, 1912**

Fig. 235

Sepiolo intermedia Naef, 1912a, *Zoologischer Anzeiger*, 39(7): 270 [type locality: Tyrrhenian Sea].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: **En** – Intermediate bobtail squid; **Fr** – Sépiole intermédiaire; **Sp** – *Sepiolo intermedia*.

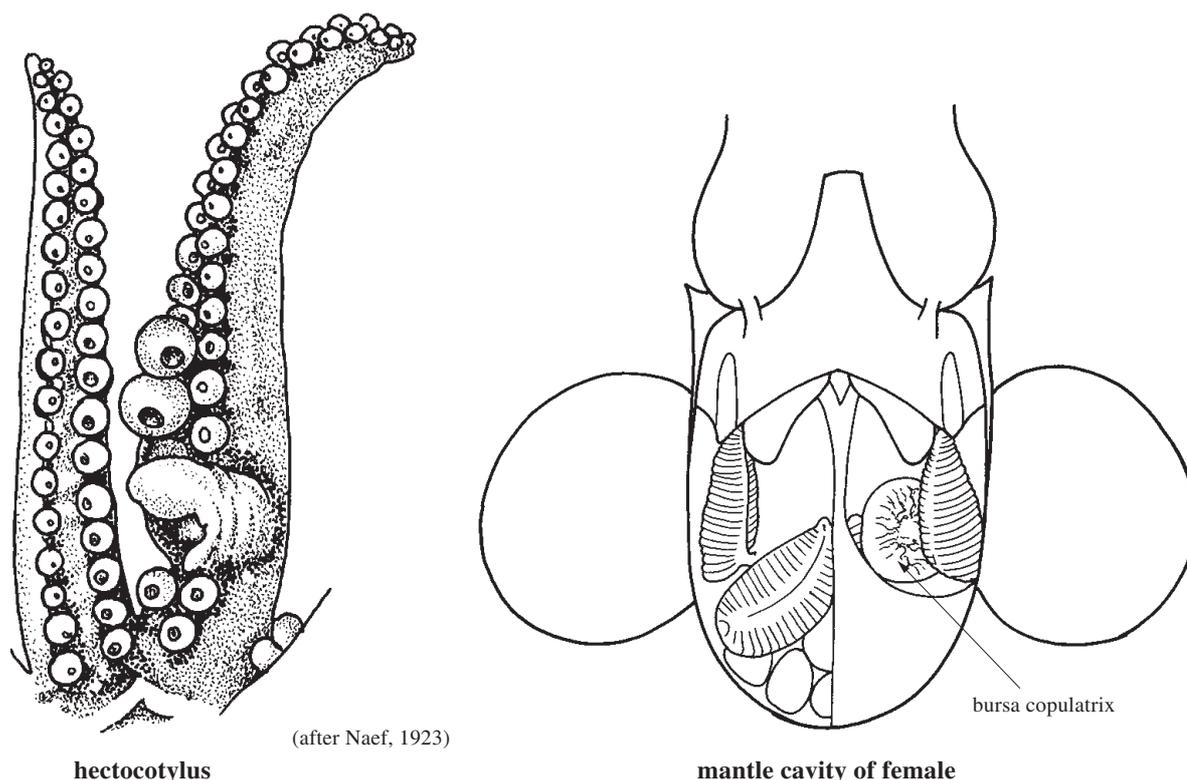


Fig. 235 *Sepiolo intermedia*

Diagnostic Features: Fins short, rounded, do not exceed length of mantle anteriorly or posteriorly. **Arms II and IV in males with a few enlarged suckers.** Tentacles very delicate, tentacle clubs with 6 transverse rows of small suckers. Hectocotylus present; left dorsal arm modified: **3 normal suckers at the base** (only slightly enlarged); copulatory apparatus consisting of a swollen and wrinkled tubercle, curved inward, with the markedly enlarged lobe projecting free; dorsal row of suckers distal to copulatory apparatus very variable in size: **2 markedly enlarged** (of which the proximal is slightly larger); or **3 enlarged**, of which the median is the largest; or **1 very small** followed by **1 very large** then **1 moderately large** sucker distal to the basal apparatus; left dorsal arm much longer than the right one. **Colour:** Dark coffee brown, with a strong shade of reddish brown; large chromatophores loosely scattered all over the mantle surface.

Size: Males up to 26 mm mantle length; females up to 28 mm mantle length.

Geographical Distribution: Northeastern Atlantic and Mediterranean Sea: including Ligurian Sea, Strait of Sicily, Adriatic Sea and northern Aegean Sea. Possibly Gulf of Cádiz. Continental shelf, depth range from 8 to 110 m (Fig. 236).

Habitat and Biology: *Sepiolo intermedia* lives mainly on muddy bottoms between 60 and 200 m depth throughout its distributional range. In Italian waters, a preference for shallower, coastal and sandy bottoms has been observed both in the Adriatic and the Tyrrhenian Seas, where the species can be very abundant and is often found associated with *Turritella communis*, *Astropecten bispinosus* and *Ophiura texturata*. The biology of the species is poorly known, but the presence of mature individuals throughout the year suggests there may be a prolonged spawning period. Adult *Sepiolo intermedia* have been collected in midwater, at night, by purse seine for blue fishes, confirming the strong swimming ability of this small bobtail squid (as observed in other species of the group).

Interest to Fisheries: No separate statistics are available, but the species is collected by local small-scale fisheries throughout its distributional range and represents a component of the bobtail squids captured in many Mediterranean areas.

Local Names: ITALY: *Sepiolo intermedia*, Cappuccetto.

Literature: Naef (1912b), Naef (1923), Belcari *et al.* (1989), Orsi Relini and Bertuletti (1989), Guerra (1992), Bello (1995), Volpi *et al.* (1995), D'Onghia *et al.* (1996), Jereb *et al.* (1997), Salman *et al.* (1997).

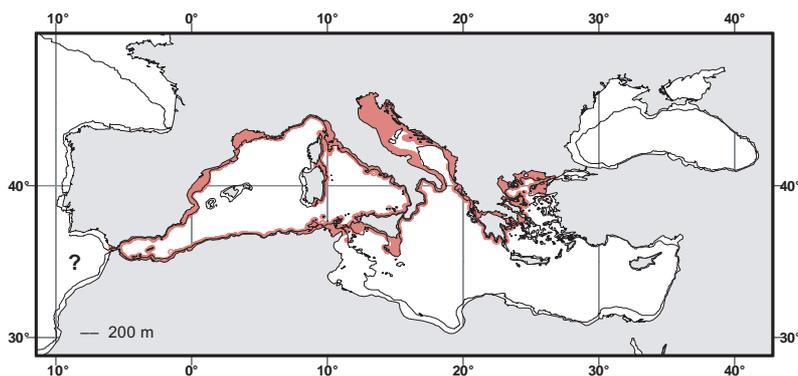


Fig. 236 *Sepiolo intermedia*

■ Known distribution

***Sepiolo ligulata* Naef, 1912**

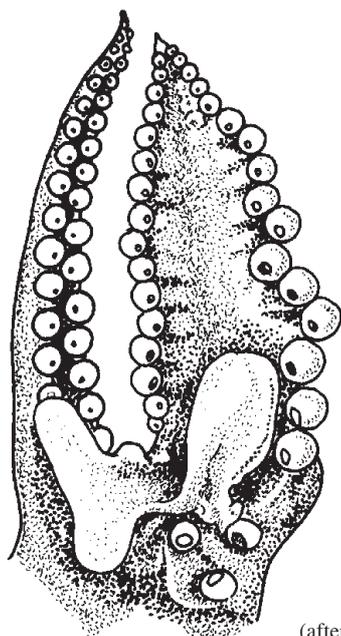
Fig. 237

Sepiolo ligulata Naef, 1912a, *Zoologischer Anzeiger*, 39(7): 271 [type locality: Tyrrhenian Sea].

Frequent Synonyms: None.

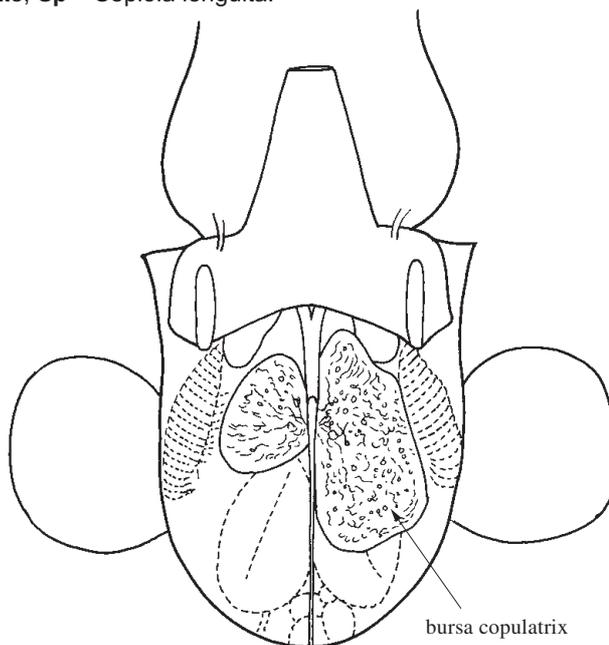
Misidentifications: None.

FAO Names: **En** – Tongue bobtail squid; **Fr** – Sépiole languette; **Sp** – *Sepiolo lengüita*.



hectocotylus

(after Naef, 1923)



mantle cavity of female

bursa copulatrix

Fig. 237 *Sepiolo ligulata*

Diagnostic Features: Mantle ventral margin may be markedly produced, with a deep median indentation. Fins relatively small, with a round lateral corner and relatively straight posterior margin. Tentacles delicate; club with 8 dense transverse rows of minute suckers. Hectocotylus present, left dorsal arm modified; **3 small normal suckers** at the base followed distally by the copulatory apparatus: **spatula-like thick and large lobe** extending towards the distal part of the arm and an **adjacent appendage forming a stalked plate or shovel-like structure that extends toward the right arm**; distal to copulatory apparatus, first suckers of the ventral row enlarged, with long, robust stalks. Bursa copulatrix large, extending anteriorly to cover renal papillae and genital opening and extends through the mantle septum over a large part of the right side of the mantle cavity. **Colour:** Bright, almost golden yellow, with yellowish orange, brownish red tones.

Size: Up to 25 mm mantle length.

Geographical Distribution: Mediterranean Sea: including Ligurian Sea, Tyrrhenian Sea, Strait of Sicily, Adriatic Sea and northern Aegean Sea. Possibly eastern Atlantic around Portugal and Spain. Depth range from 44 to 380 m (Fig. 238).

Habitat and Biology: The male copulatory apparatus and the female bursa copulatrix are very distinctive in *S. ligulata*, enabling it to be readily distinguished from other species in the genus. It is one of the smallest species of the genus and is reported to be common throughout its range, though never abundant. *Sepiolo ligulata* is an epibenthic species, living on muddy bottoms and mainly on the continental shelf, although it has also been found on the slope. It is often captured with *Sepietta oweniana* (Orbigny, 1839–1841) and *Rondeletiola minor* Naef, 1912. Information on the biology of *S. ligulata* is scarce, and is mostly derived from aquarium observations. Eggs are red and relatively large (3.5 mm diameter) and growth is rapid with water temperatures between 12° and 20°C, allowing newly hatched individuals (1.8 to 2.5 mm mantle length) to reach 9 mm mantle length in about six months. The smallest mature males are 11 mm, and the smallest females 14 mm mantle length.

Interest to Fisheries: Never abundant, but often present in captures with the other species of the group, it is used as food locally.

Local Names: ITALY: Seppiola linguetta.

Literature: Naef (1912b), Naef (1923), Boletzky *et al.* (1971), Orsi Relini and Bertuletti (1989), Bello (1990b), Guerra (1992), Bello (1995), Sartor and Belcari (1995), Volpi *et al.* (1995), Wurtz *et al.* (1995), D'Onghia *et al.* (1996), Jereb *et al.* (1997), Salman *et al.* (2002).

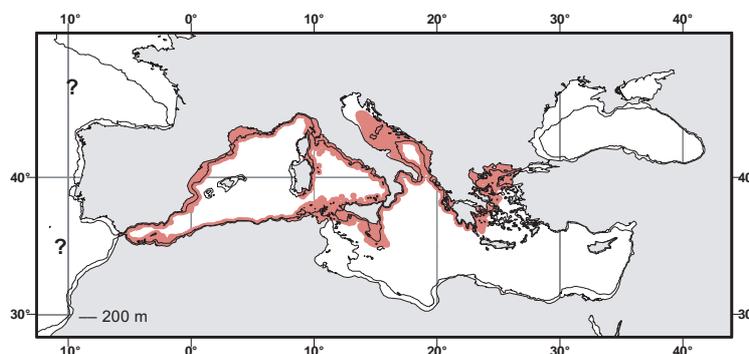


Fig. 238 *Sepiolo ligulata*
■ Known distribution