

Identification guide for shelf cephalopods in the UK waters (North Sea, the English Channel, Celtic and Irish Seas)



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Dichotomic guide (modified from FAO, 2005)

1a. Suckers stalked with chitinous rings; 10 appendages: 8 arms and 2 tentacles

Cuttlefishes, Bobtail squids, Myopsid squids, Oegopsid squids → 2

1b. Suckers without stalks and without rings. 8 appendages = arms

Octopods → 3

2a. Internal shell straight, laminate, calcified (Sepiidae), rudimentary, straight and chitinous (Sepiolidae) tentacles contractile and retractile into pockets between arms; fins not joined posteriorly

Cuttlefishes and Bobtail squids → 4

2b. Internal shell straight, feather- or rod-shaped, chitinous; tentacles contractile, not retractile, no pockets; fins joined posteriorly

Myopsid squids and Oegopsid squids → 8

3a. One row of suckers on arms. Arms slightly longer than the body length – *Eledone cirrhosa* (p. 28)

3b. Two rows of suckers on arms. Arms are several times of body length – *Octopus vulgaris* (p. 29)

4a. Internal shell calcified, straight, laminate, chalky

Family Sepiidae. Species to be distinguished by the shape of cuttlebone and suckers on the tentacular club (pp. 7-9)

4b. Internal shell (gladius) chitinous

Family Sepiolidae → 5

5a. Head and mantle are not joined → 6

5b. Head and mantle are joined

***Sepiola* and *Sepietta* → 7**

6a. Skin is smooth - ***Rossia macrosoma* (p. 10)**

6b. Skin is rough – ***Rossia palpebrosa***. It could be occasionally captured off northern Scotland, appearance in English and Welsh waters unlikely

7a. Big paired light organs inside mantle cavity – ***Sepiola spp. (pp. 11-14)***. Species are identifiable by the shape of hectocotylus (modified arm in males) and ventral edge of the mantle (both sexes)

7b. No paired light organs inside of mantle cavity – ***Sepietta spp. (p.15)*** Males are identifiable to the species by hectocotylus (p. 15). Females are difficult to identify in field.

8a. Eye covered by transparent membrane (cornea)

Myopsid squids → 9

8b. Eye without cornea; lens in open contact with seawater

Oegopsids squids → 11

9a. Fins heart-shaped < 50% mantle length in juveniles, >50% in adults as the body is attenuated into a long tail – ***Alloteuthis spp.(p. 17)***

9b. Fins rhomboid >50% ML even in juveniles, body of adults is not attenuated into the tail → **10**

10a. ML. Suckers of tentacular club are similar sized – ***Loligo forbesii* (p. 18)**

10b. Two central rows of suckers on the tentacular club are much larger than outer rows – ***Loligo vulgaris* (p. 19)**

11a. Funnel – locking cartilage T-shaped → **12**

11b. Funnel-locking cartilage is a simple straight ridge → **14**

- 12a. Funnel groove is smooth, without foveola and pockets. Tentacular club is short (<40%), most of the tentacle length without suckers → 13
- 12b. Funnel groove with foveola, but without pockets. Tentacular club carrying suckers occupies most (~80-90%) of the tentacle length – ***Todarodes sagittatus* (p. 21)**
- 12c. Funnel groove with both foveola and pockets. Tentacular club is short (<50%), most of the tentacle length without suckers – ***Ommastrephes bartrami* (p. 22)**
- 13a. Body slender, torpedo-like – ***Illex coindetii* (p. 23)**
- 13b. Body short and bulky – ***Todaropsis eblanae* (p. 24)**
- 14a. Mantle long, conical, slightly wider at midpoint, tapers to a sharp point posteriorly. Tentacular club with 1 very large, central hook, followed proximally by 3 small hooks and 1 small sucker – ***Gonatus fabricii* (p. 26)**. It is an Arctic species that could be occasionally captured off northern Scotland)
- 14b. Mantle long, very slender, widest at anterior margin. 1 very large central hook followed by 1 immediately distal, moderate-sized hook and 4 or 5 progressively smaller hooks proximal to it – ***Gonatus steenstrupi* (p. 27)**.

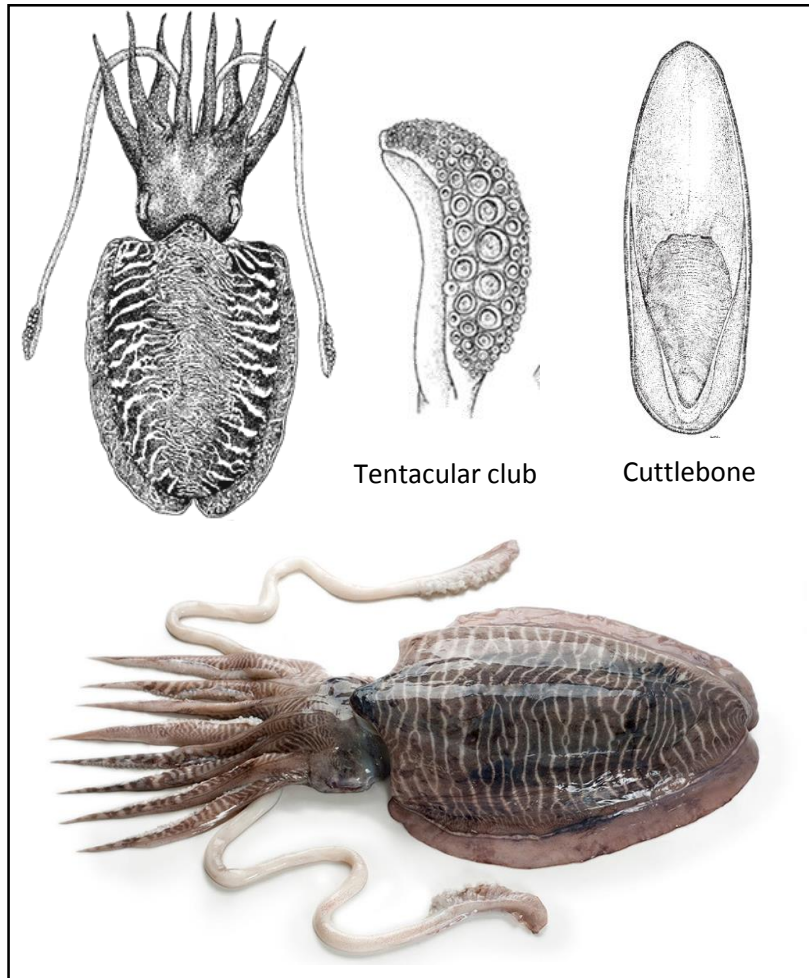
CUTTLEFISHES

Sepia officinalis (Linnaeus, 1758)

Order Sepiida

Family Sepiidae

Genus *Sepia*



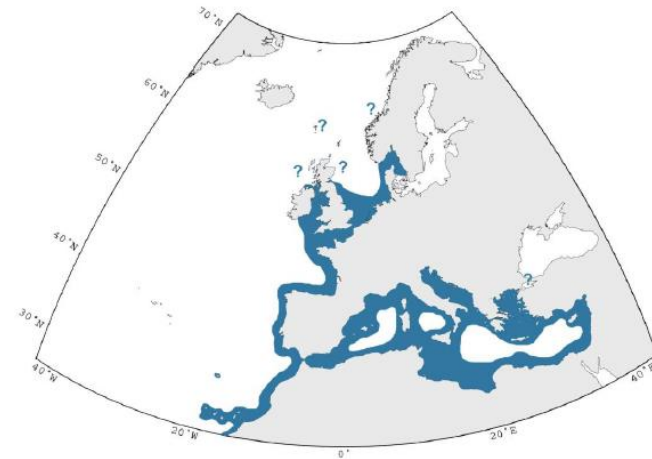
Tentacular club

Cuttlebone

Common name: common cuttlefish

Description: the largest of cuttlefishes occurring in the U.K. waters attaining > 450 mm ML. It could be distinguished from other two species by tentacular club (it has 5-6 suckers in transverse rows, which vary in size) and cuttlebone (oblong anteriorly, and rounded posteriorly). Also, it is a bit more brownish.

Distribution: Subtropical and temperate waters from Morocco to south North Sea, Ireland and Scotland, including the Mediterranean Sea, from subtidal to ~ 200 m, mostly < 100 m.



Geographic distribution of *S. officinalis* in the NE Atlantic and Mediterranean. Source: ICES (2015)

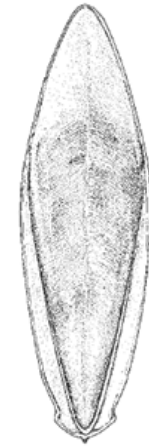
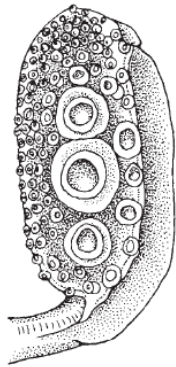
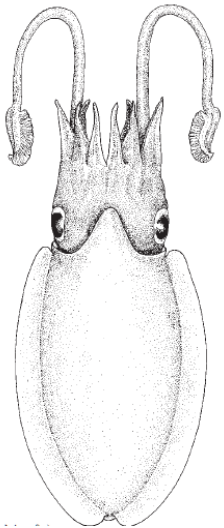
CUTTLEFISHES

Sepia elegans (Blainville, 1827)

Order Sepiida

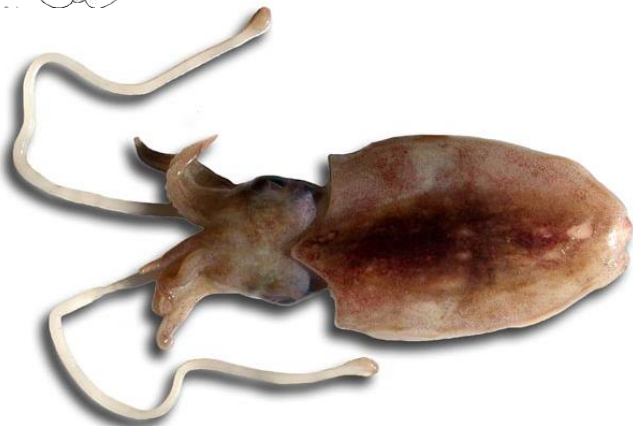
Family Sepiidae

Genus *Sepia*



Tentacular club

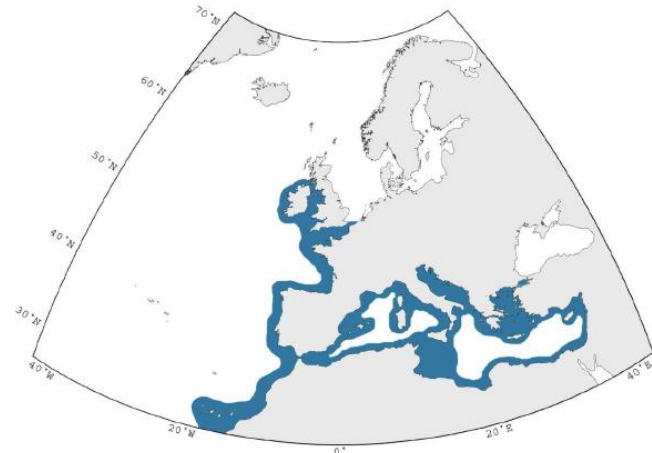
Cuttlebone



Common name: elegant cuttlefish

Description: the smallest of cuttlefishes occurring in the U.K. waters attaining ~75 mm ML. Could be distinguished from other two species by tentacular club (short and oval, with 6-8 suckers in transverse rows and 3-4 greatly enlarged suckers in the middle) and cuttlebone (with a sharp point anteriorly and posteriorly). It is a bit more yellowish than *S. officinalis*.

Distribution: Subtropical and temperate waters from Morocco to the English Channel and Ireland, including the Mediterranean Sea, from subtidal to >400 m.



Geographic distribution of *S. elegans* in the NE Atlantic and Mediterranean. Source: ICES (2015)

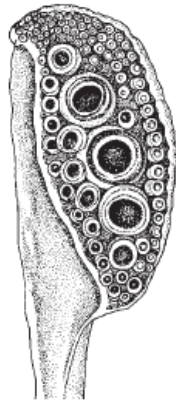
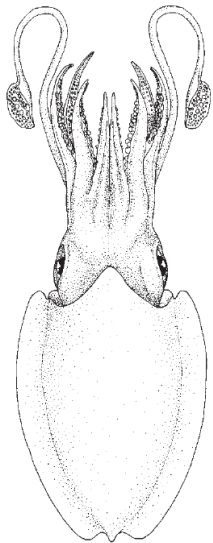
CUTTLEFISHES

Sepia orbignyana (Ferussac, 1826)

Order Sepiida

Family Sepiidae

Genus *Sepia*



Tentacular club



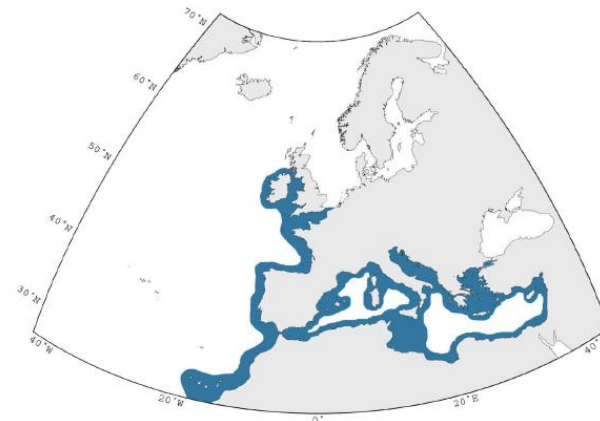
Cuttlebone



Common name: pink cuttlefish

Description: a small cuttlefish attaining 120 mm ML. It could be distinguished from other two species by tentacular club and cuttlebone. The clubs are short and oval, with 5-6 traverse rows. Three large suckers are present medially with one slightly smaller sucker on each side of them. The cuttlebone is oblong, acute anteriorly, bluntly rounded posteriorly, and strongly recurved ventrally. It is a bit more reddish than *S. officinalis*. Spine on the rear part of the body is larger than in other species.

Distribution: Subtropical and temperate waters from Morocco to the English Channel and Ireland, including the Mediterranean Sea, from 15 to >500 m, mostly between 50-250 m. It is one of the deepest living *Sepia* known.



Geographic distribution of *S. orbignyana* in the NE Atlantic and Mediterranean. Source: ICES (2015)

SEPIOLID (BOBTAIL) SQUIDS

Order Sepiolida

Family Sepiolidae

Subfamily Rossiinae

Genus *Rossia*

Rossia macrosoma (Delle Chiaje, 1830)

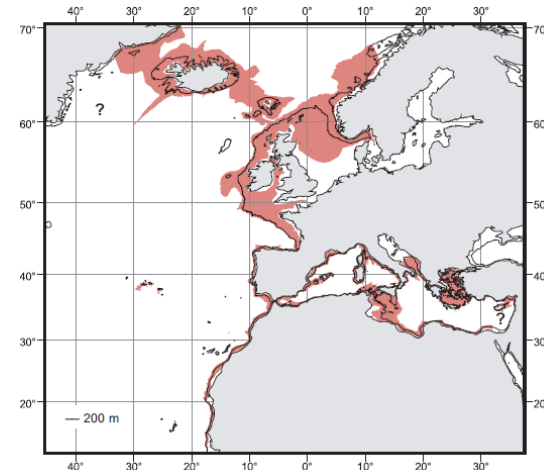


Photo Alberto Arias Garcia

Common name: Stout bobtail squid

Description: A smooth large bobtail squid with head not joined to the mantle. On the north of Scotland potentially could be confused with occasionally occurring there the Arctic *R. palberosa*, which skin is rough.

Distribution: NE Atlantic from Morocco to Iceland, Greenland and Norway including the Mediterranean Sea; depths of 30-900 m, mostly 200-400 m.



Geographic distribution of *R. macrosoma* in the Atlantic and Mediterranean. Source: FAO (2005)

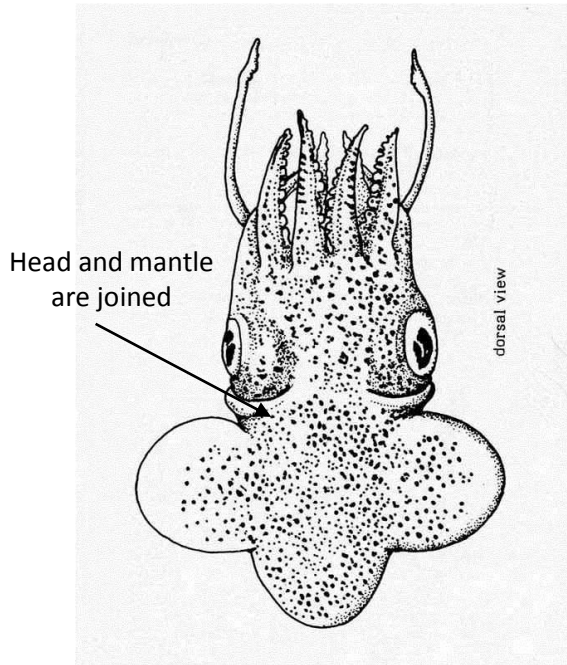
SEPIOLID (BOBTAIL) SQUIDS

Genus *Sepiola*

Order Sepiolida

Family Sepiolidae

Subfamily Sepiolinae



Sepiola atlantica FAO (2005)

Common name: Sepiola bobtails

Description: Small bobtail squids (up to 20-50 mm ML depending on the species) with head and mantle joined and with paired, kidney-shaped light organs on the ink sac. Four species in the U.K. waters, which males could be recognised by the shape of modified arm. Both sexes of *S. aurantiaca* and *S. pfefferi* are also identified by the shape of the ventral edge of the mantle.

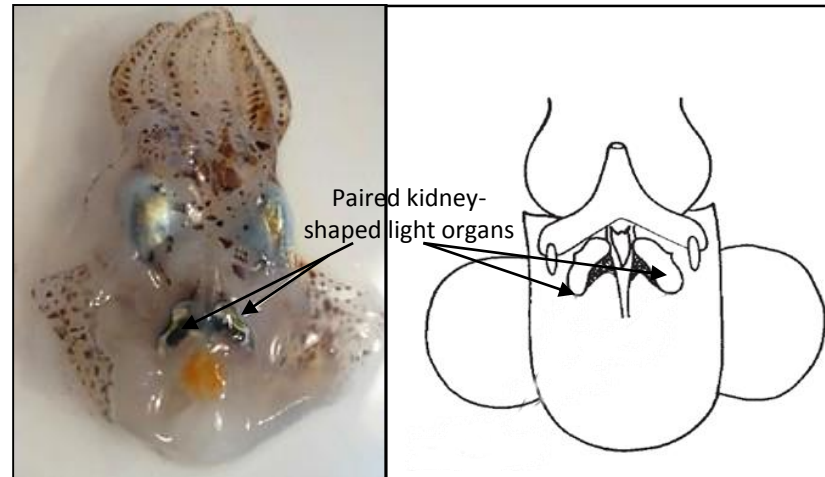


Photo: Angel Guerra

FAO (2005)

SEPIOLID (BOBTAIL) SQUIDS

Order Sepiolida

Family Sepiolidae

Subfamily Sepiolinae

Genus *Sepiola*

Sepiola atlantica (d'Orbigny, 1842)



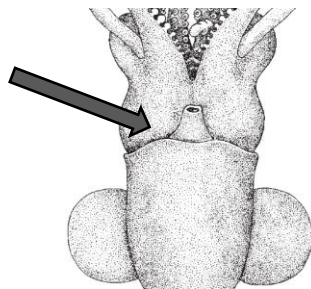
ICES (2015)

Common name: Atlantic bobtail squid

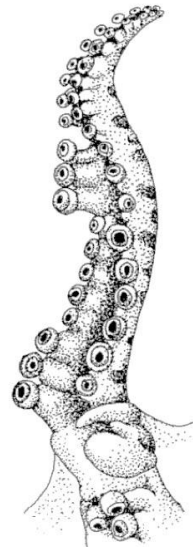
Description: Fins short, do not exceed length of mantle anteriorly or posteriorly. Mature males can be identified by the dorsal arm modified: 3 or 4 slightly enlarged suckers with swollen pedicels, 3 or 4 greatly reduced suckers, then 3 to 5 greatly enlarged suckers approximately halfway along arm. Anterior margin of ventral mantle with a shallow indentation for funnel.

Distribution: NE Atlantic from Iceland and Norway to Morocco. Also found in the Mediterranean. Shelf and upper slope from subtidal to > 400 m.

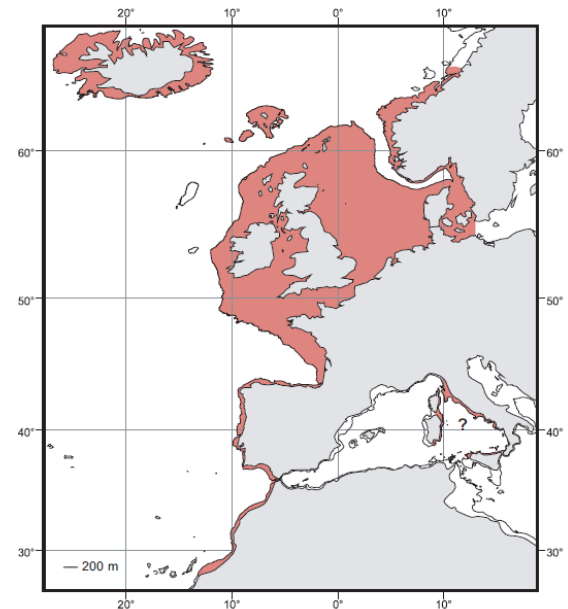
Shallow indentation in the edge of the mantle



Ventral view of the mantle
(FAO 2005)



Hectocotylus
Source: ICES (2015)



Geographic distribution of *S. atlantica* in the Atlantic and Mediterranean.
Source: FAO (2005)

SEPIOLID (BOBTAIL) SQUIDS

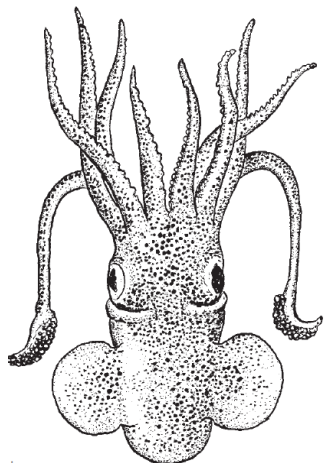
Order Sepiolida

Family Sepiolidae

Subfamily Sepiolinae

Genus *Sepiola*

Sepiola rondeleti (Leach, 1834)

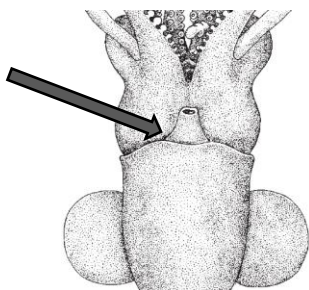


Common name: Dwarf bobtail squid

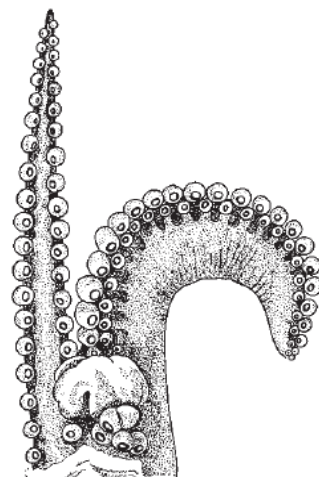
Description: Fins short, do not exceed length of mantle anteriorly or posteriorly. Mature males can be identified by the dorsal arm modified: horn of copulatory apparatus recurved to form a small hole; base of hectocotylus with equal sized suckers; distal end of hectocotylized arm with some enlarged suckers; ventral row of suckers distal to copulatory apparatus much smaller than those in dorsal row. Anterior margin of ventral mantle similar to *S. atlantica*

Distribution: NE Atlantic from the North Sea to Senegal. Also found in the Mediterranean. Shelf and upper slope from subtidal to > 400 m.

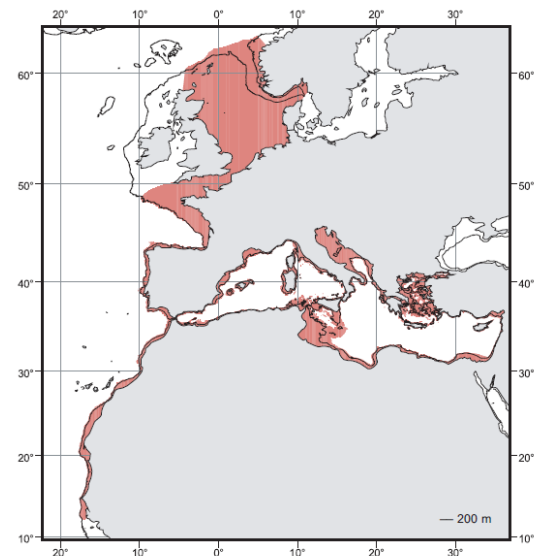
Shallow indentation in the edge of the mantle



Ventral view of the mantle
FAO (2005)



Hectocotylus
Source: FAO (2005)



Geographic distribution of *S. rondeleti* in the Atlantic and Mediterranean.
Source: FAO (2005)

SEPIOLID (BOBTAIL) SQUIDS

Sepiola pfefferi (Grimpe, 1921)

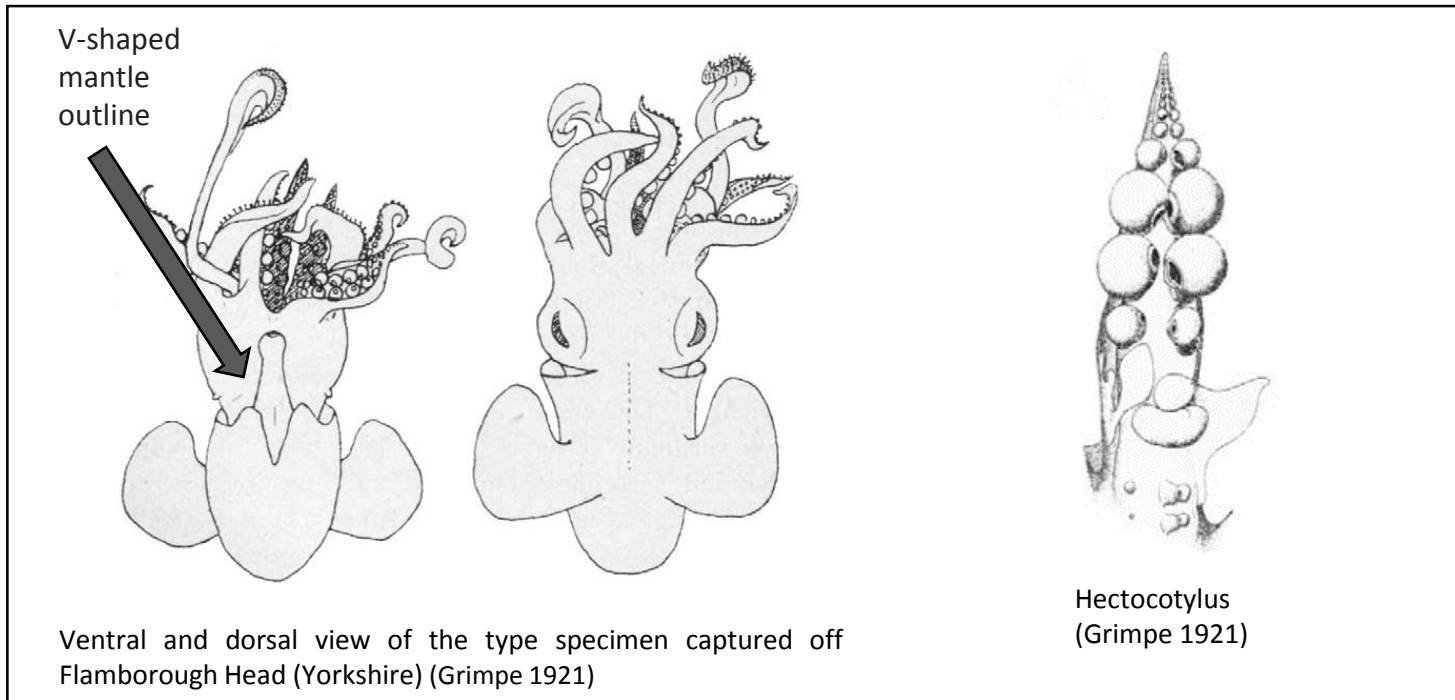
Order Sepiolida

Family Sepiolidae

Subfamily Sepiolinae

Genus *Sepiola*

Description: Uncommon species distributed in the NE Atlantic from southern Norway and different from other *Sepiola* by a V-shaped mantle outline. Reports of a similarly looking rare Mediterranean species, *S. aurantiaca* are likely based on confusion in description of both sepiolids in early XX century (Goud & Hedge 2012).



SEPIOLID (BOBTAIL) SQUIDS

Order Sepiolida

Family Sepiolidae

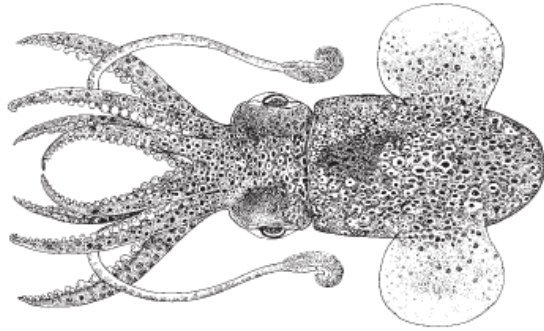
Subfamily Sepiolinae

Genus Sepietta

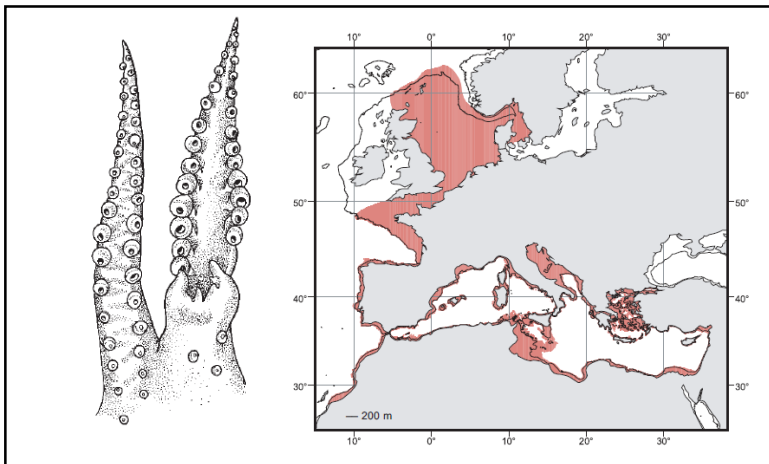
Common name: Sepiola bobtails

Description: Small elongated bobtail squids (up to 45 mm ML) with head and mantle joined. Unlike *Sepiola*, this genus lacks of a light organ on the ink sac. Two species in the U.K. waters which adult males could be recognised by the shape of modified arm. Females are not identifiable in the field. *S. neglecta* is generally a smaller species, adults up to 5 cm without tentacles while *S. oweniana* reaches 7-9 cm.

Distribution: NE Atlantic from Morocco to Scotland and Norway including the Mediterranean Sea. Lower shelf and slope from 25 to 475 (*S. neglecta*) and 50-1000 m, mostly at 200-400 m (*S. oweniana*).

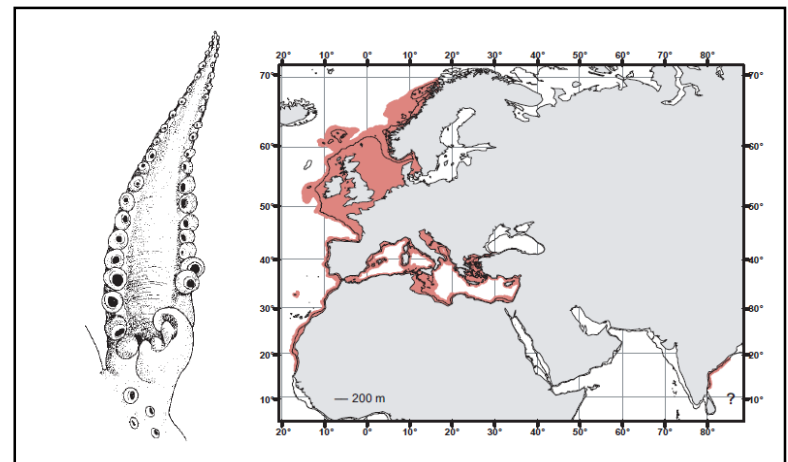


Sepietta neglecta (Naef, 1916)



Source: FAO (2005)

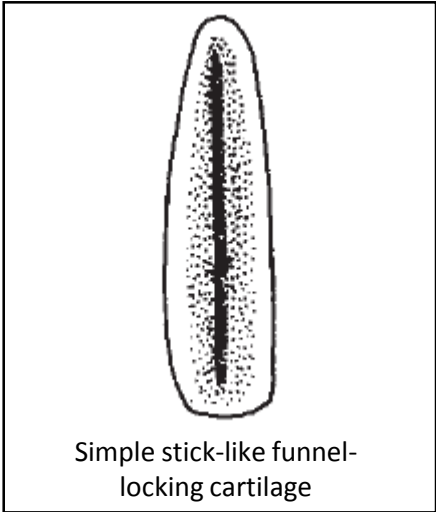
Sepietta oweniana (d'Orbigny, 1840)



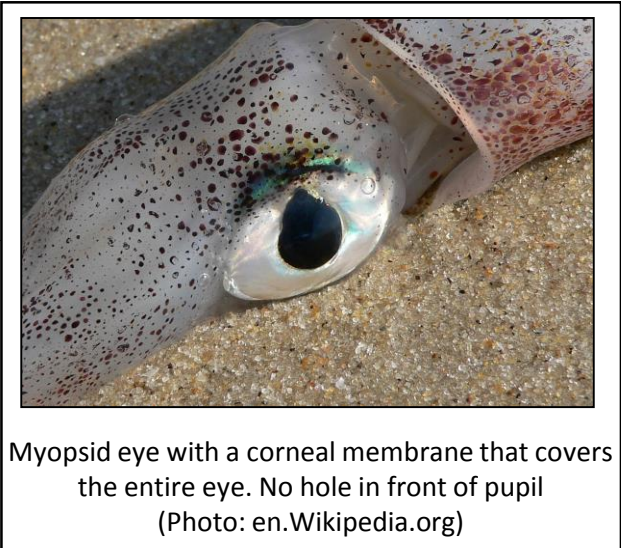
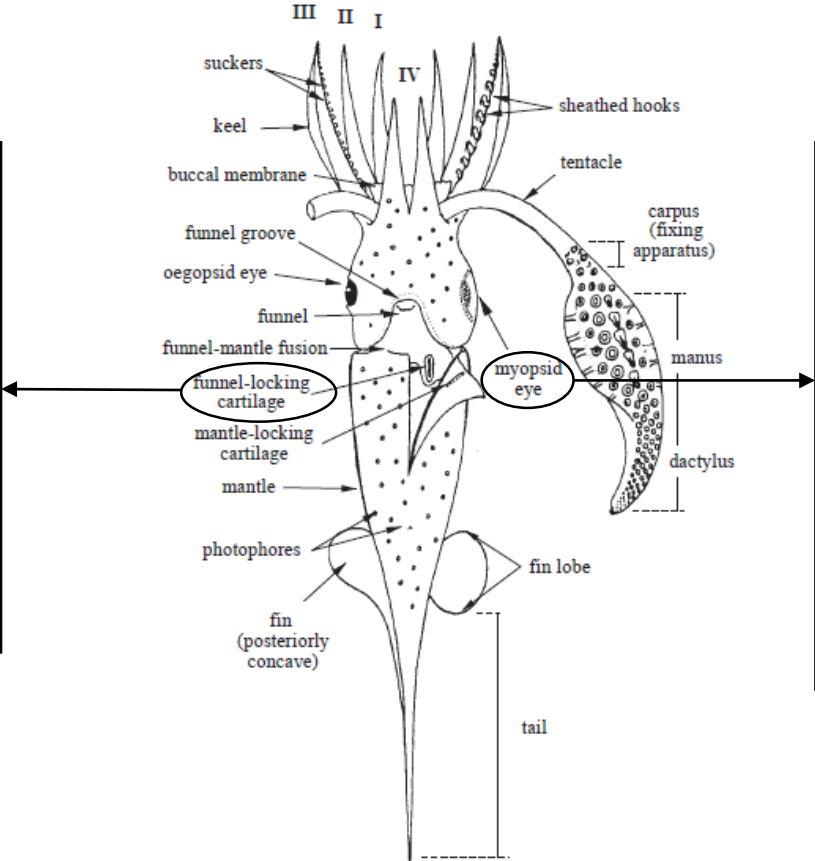
SQUIDS

Family Loliginidae

Order Teuthida
Suborder Myopsina



FAO (2010)



Myopsid eye with a corneal membrane that covers the entire eye. No hole in front of pupil (Photo: en.Wikipedia.org)

SQUIDS

Alloteuthis media (Linnaeus, 1758)

Alloteuthis subulata (Lamarck, 1798)

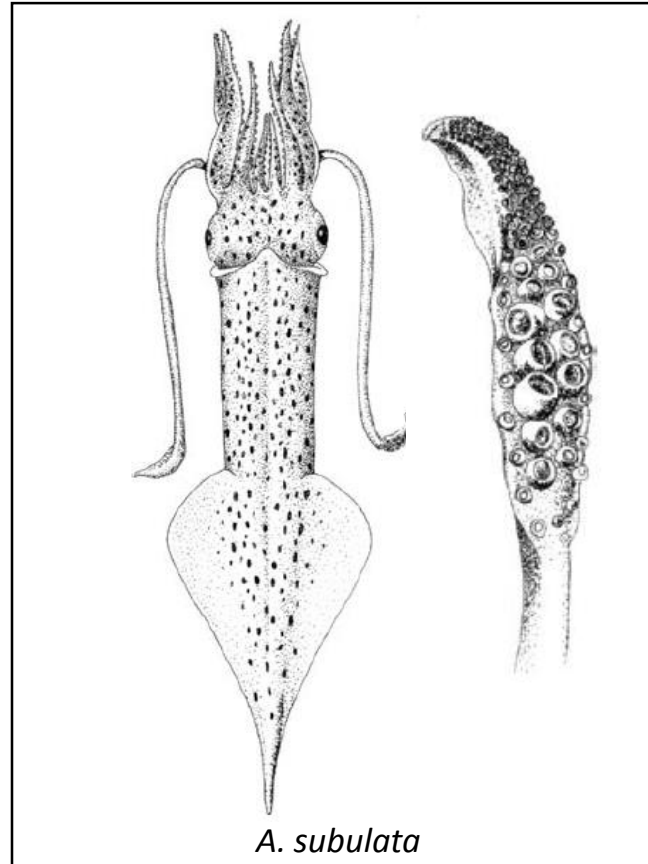
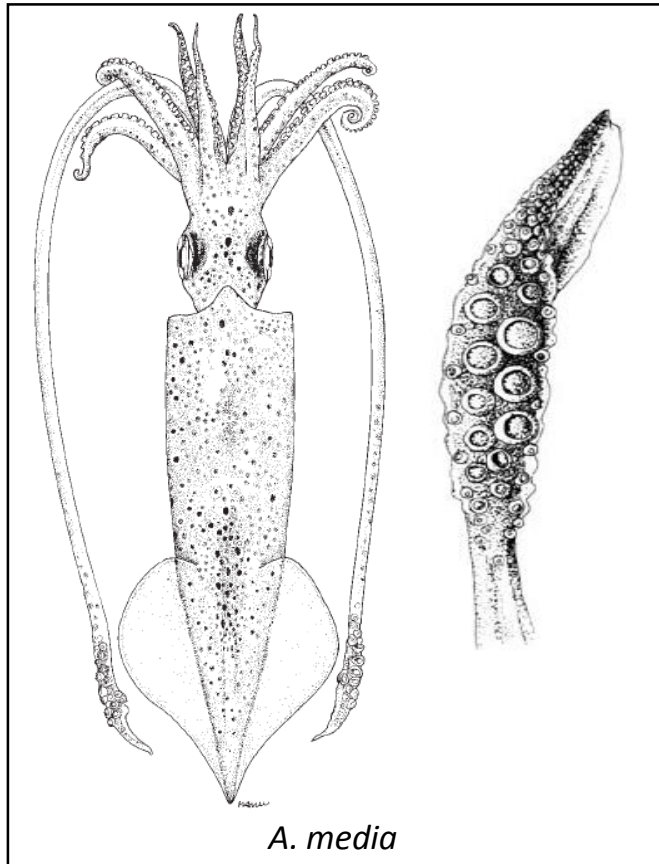
Order Teuthida

Suborder Myopsina

Family Loliginidae

Genus *Alloteuthis*

Fins heart-shaped < 50% mantle length (ML, juvenile) or body is attenuated into a long tail (adult)



Common names: common squid (*A. subulata*), mid-sized squid (*A. media*)

Description: A small slender loliginid squid (ML rarely exceed 15 cm) with heart-shaped fins that in males exceed 50% ML and a pointed tail. Taxonomy is confusing: two nominal species or morphs (*A. media* and *A. subulata*) not distinguishable genetically and with nearly coinciding ranges (for details: ICES (2015). Gebhardt & Knebelsberger, (2015).

Distribution: In the Mediterranean Sea and NE Atlantic from Morocco to Norway and Scotland, shelf waters mostly <150 m. In many areas it is the most abundant squid.

SQUIDS

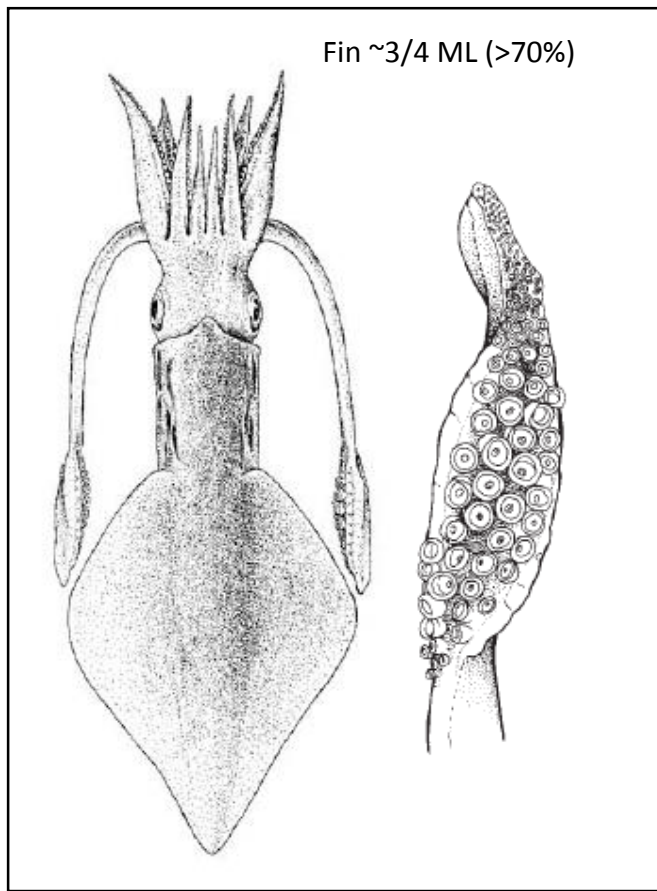
Order Teuthida

Suborder Myopsina

Family Loliginidae

Genus *Loligo*

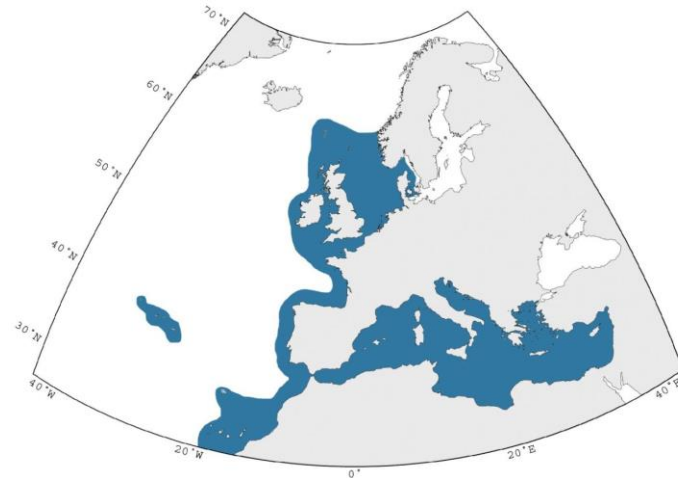
Loligo forbesii (Steenstrup, 1856)



Common name: Northern squid, Veined squid

Description: A large loliginid squid (up to 735 mm off Scotland) with rhomboidal fins of ~70-75% ML. Suckers of tentacular club are similar sized.

Distribution: In the Mediterranean Sea and NE Atlantic from Morocco to Norway and Scotland, including Azores. Shelf and upper slope (mostly 50-250 m, occasionally down to 700 m)



Geographic distribution of *L. forbesii*.

Source: ICES (2015)

SQUIDS

Order Teuthida

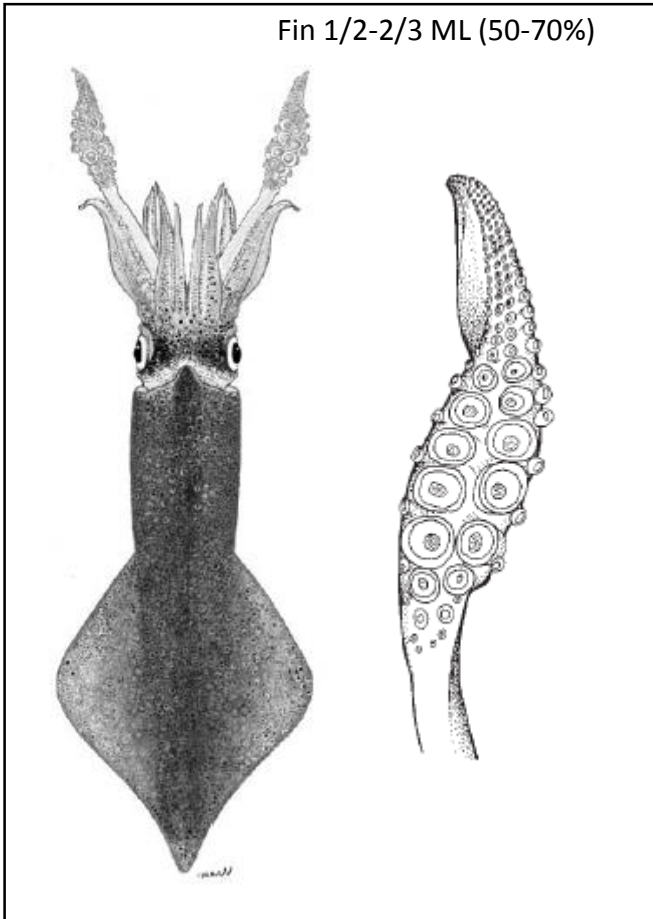
Suborder Myopsina

Family Loliginidae

Genus *Loligo*

Loligo vulgaris (Lamarck, 1798)

Fin 1/2-2/3 ML (50-70%)

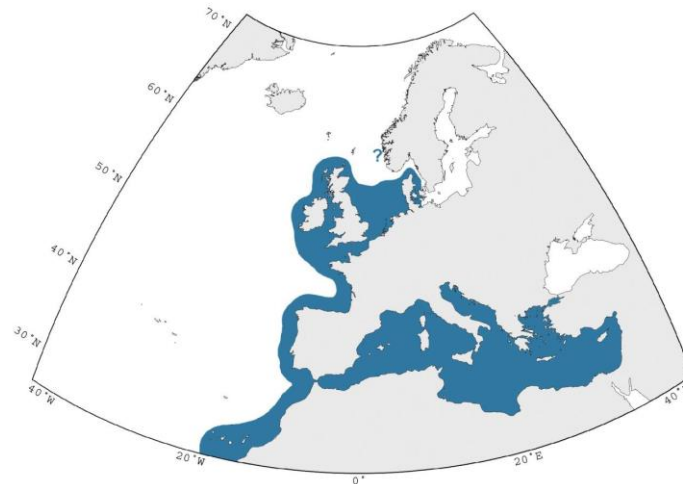


FAO (2010)

Common name: European squid

Description: A large loliginid squid (up to >500 mm ML in European waters) with rhomboidal fins of ~55-65% ML. The central two rows of suckers of tentacular club are much larger than outer rows.

Distribution: Shelf waters in the Mediterranean Sea and NE Atlantic from Morocco to Denmark. Mostly < 100 m but occasionally to 200-500 m.



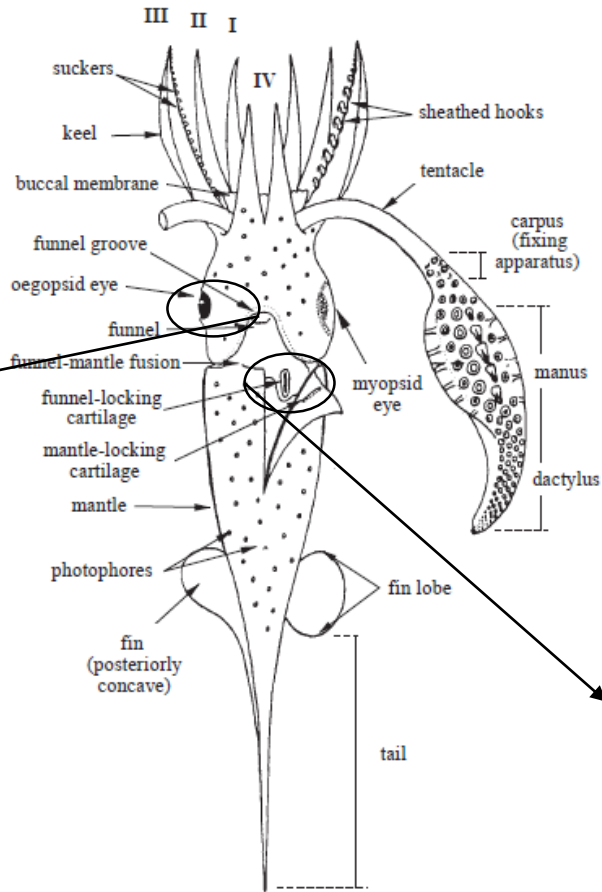
Geographic distribution of *L. vulgaris*

Source: ICES (2015)

SQUIDS

Family Ommastrephidae

Order Teuthida
Suborder Oegopsina



Oegopsid eye: corneal membrane with a hole in front of pupil, the eye lenses directly exposed to sea water

Photo: Nathaniel Kitzmann



T-shaped funnel – locking cartilage

Photo: Mike Vecchione

SQUIDS

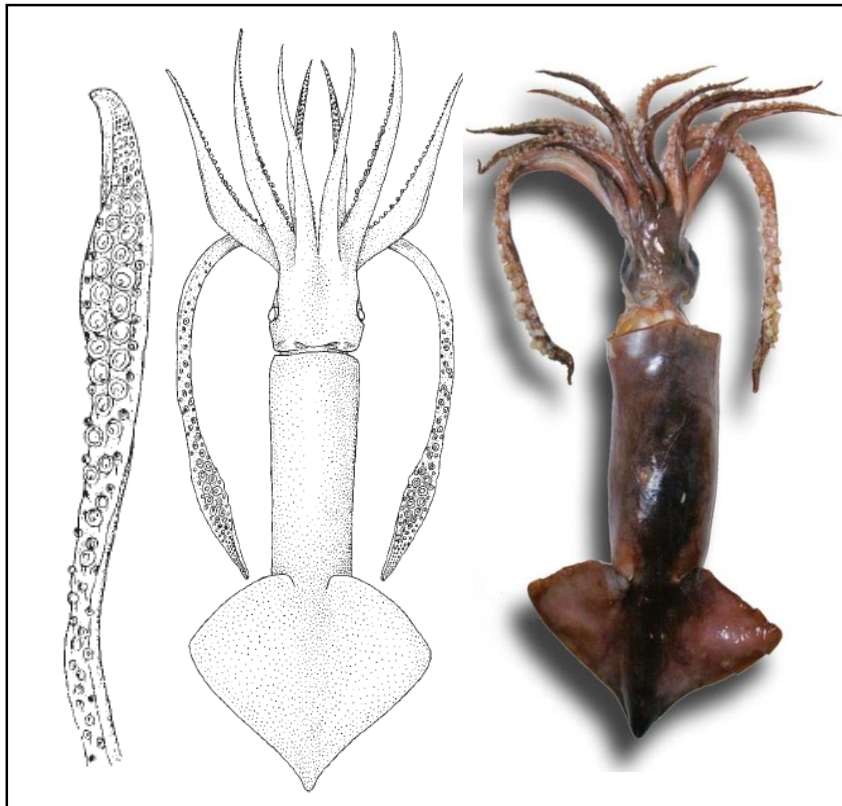
Order Teuthida

Suborder Oegopsina

Family Ommastrephidae

Genus *Todarodes*

Todarodes sagittatus (Lamarck, 1798)

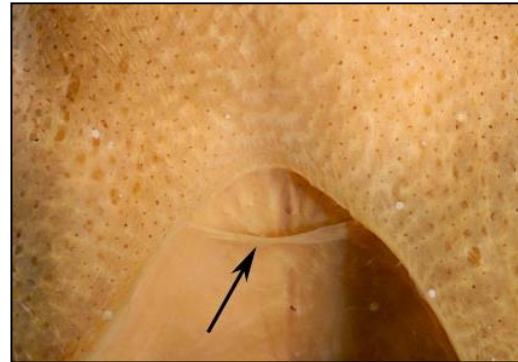


FAO (2010) left, ICES (2015) right

Common name: Arrow squid, European flying squid

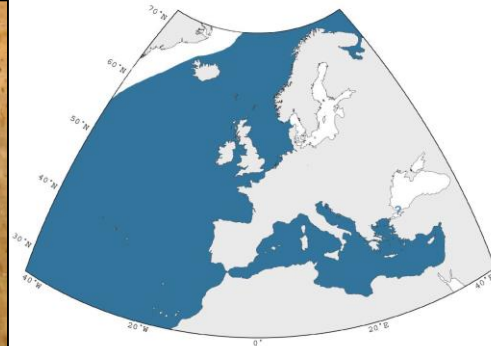
Description: A slender elongated squid attaining >600 mm ML. Most of the tentacle length is with suckers; the funnel groove is with foveola and without side pockets.

Distribution: A migratory species inhabiting the NE Atlantic from Morocco to Barents Sea including the Mediterranean, from open ocean (>4,000 m) to the inner shelf and fjords.



Funnel groove with foveola.

Photo: Richard Young



Geographic distribution of *T. sagittatus* in the NE Atlantic and Mediterranean. Source: ICES (2015)

SQUIDS

Order Teuthida

Suborder Oegopsina

Family Ommastrephidae

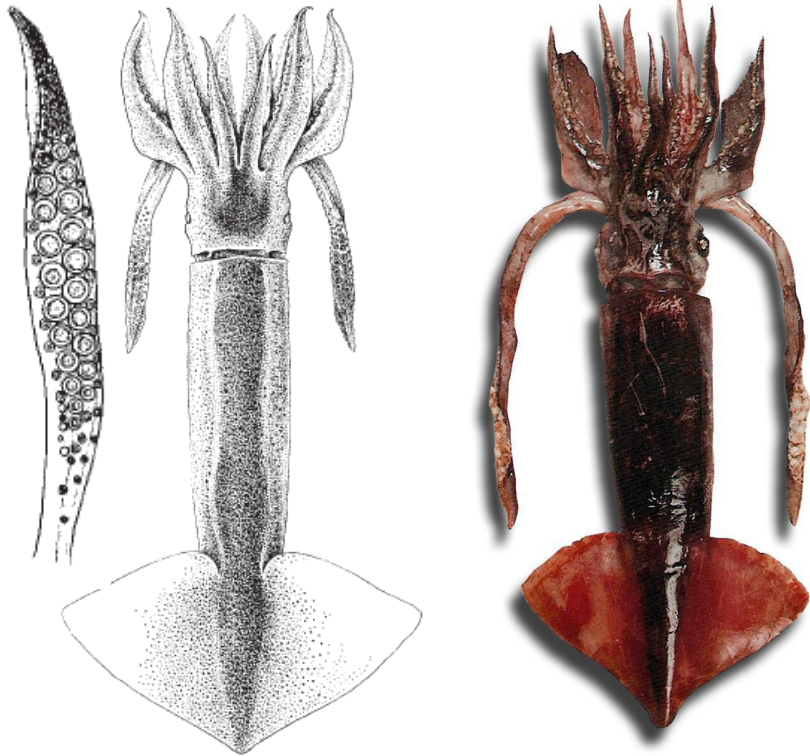
Genus *Ommastrephes*

Ommastrephes bartramii (Lesueur, 1821)

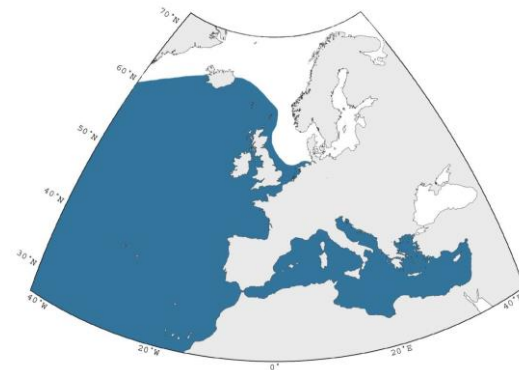
Common name: Red flying squid

Description: A slender arrow-like squid attaining >700 mm ML. Most of the tentacle length is without suckers; the funnel groove is with both foveola and side pockets.

Distribution: Subtropical open waters of all oceans warmer than 14-17 C. Occasionally in the North Sea and off Scotland and Ireland.



Funnel groove with foveola and side pockets. Photo: Richard Young



Geographic distribution of *O. bartramii* in the NE Atlantic and Mediterranean. Source: ICES (2015)

FAO (2010) left, ICES (2015) right

SQUIDS

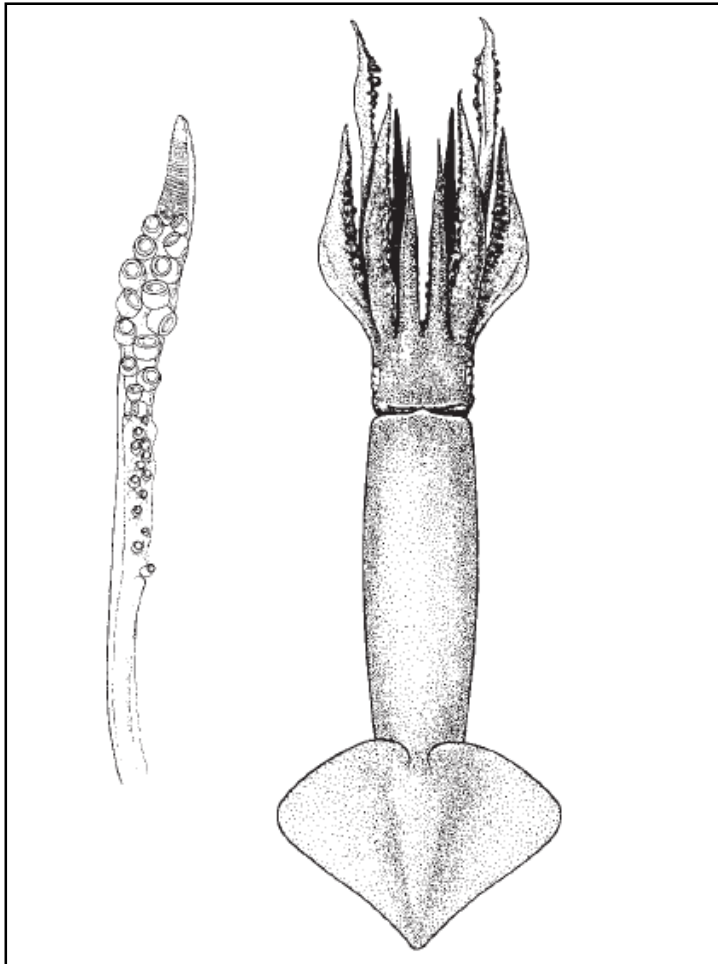
Order Teuthida

Suborder Oegopsina

Family Ommastrephidae

Genus *Illex*

Illex coindetii (Vérany, 1839)



FAO (2010)

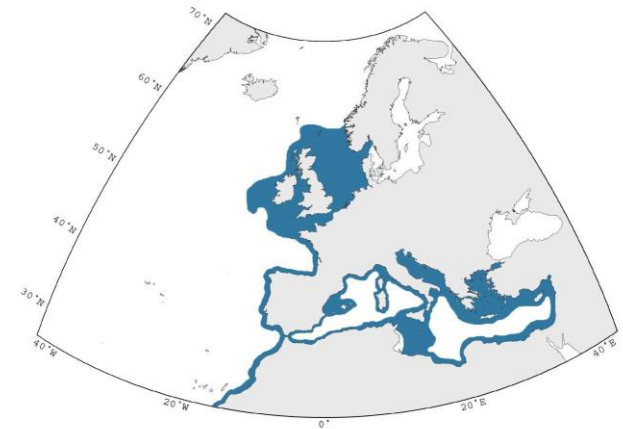
Common name: Short-fin squid

Description: A slender elongated squid attaining 250 mm ML. Most of the tentacle length is without suckers; the entire funnel groove is smooth.

Distribution: In the NE Atlantic from Morocco to Scotland and Norway including the Mediterranean, on the shelf and slope between surface and >1,000 m, mostly above depth of 100-500 m.



Funnel groove is smooth, without foveola and pockets. Photo: Mike Vecchione



Geographic distribution of *I. coindetii* in the NE Atlantic and Mediterranean. Source: ICES (2015)

SQUIDS

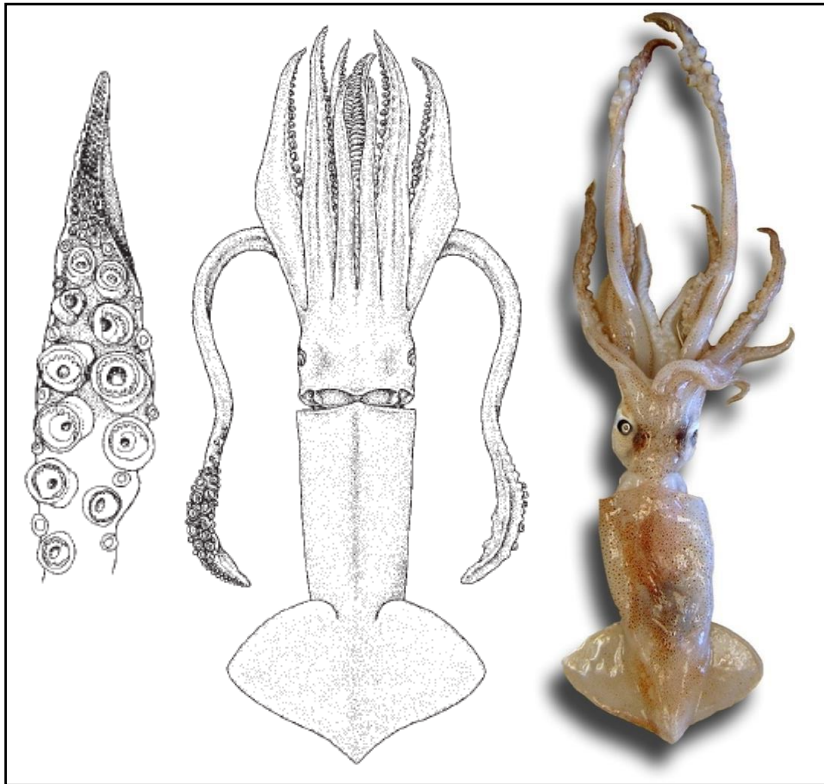
Order Teuthida

Suborder Oegopsina

Family Ommastrephidae

Genus *Todaropsis*

Todaropsis eblanae (Ball, 1841)

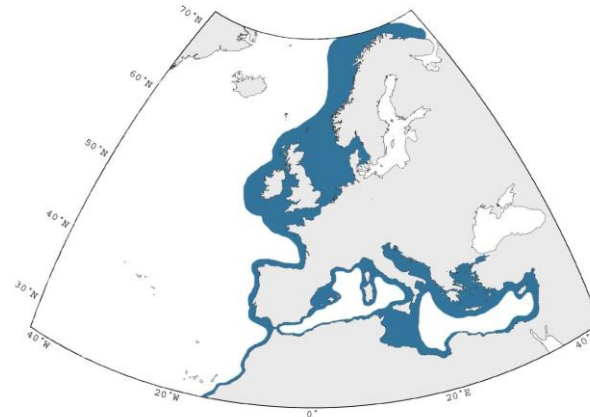


FAO (2010) left, ICES (2015) right

Common name: Lesser flying squid

Description: A bulky short-bodied squid attaining 290 mm ML. Most of the tentacle length is without suckers; the entire funnel groove is smooth, similar to *I. coindetii*.

Distribution: In the NE Atlantic from Morocco to Scotland and Barents Sea including the Mediterranean, on the shelf and slope between 30 and 850 m. Occurs also in the Indo-Pacific.

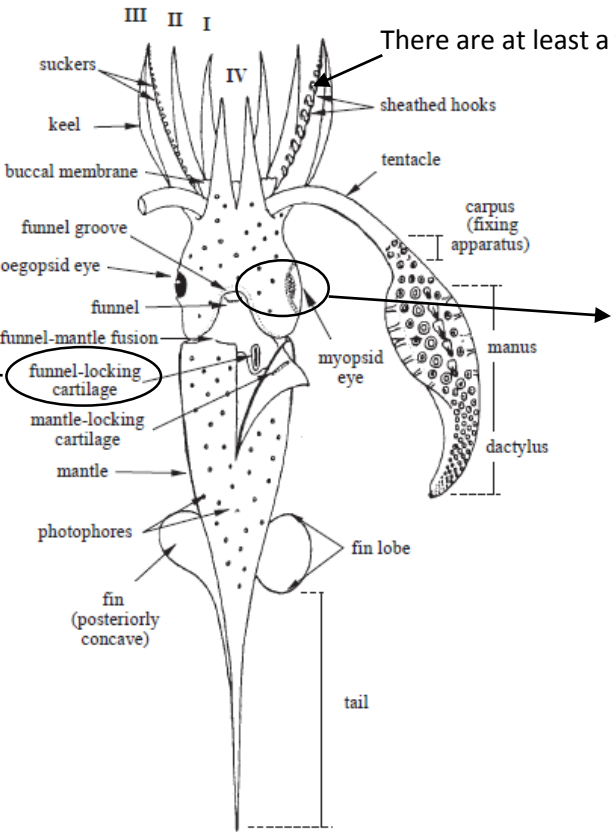
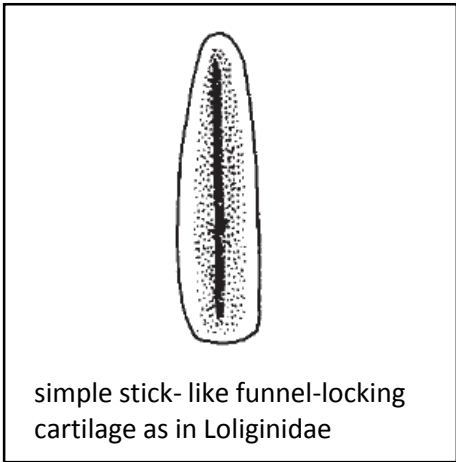


Geographic distribution of *T. eblanae* in the NE Atlantic and Mediterranean. Source: ICES (2015)

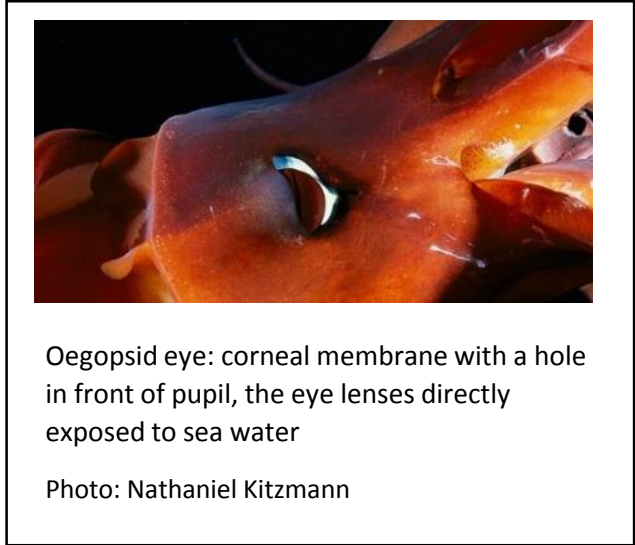
SQUIDS

Family Gonatidae

Order Oegopsida



There are at least a few hooks on arms



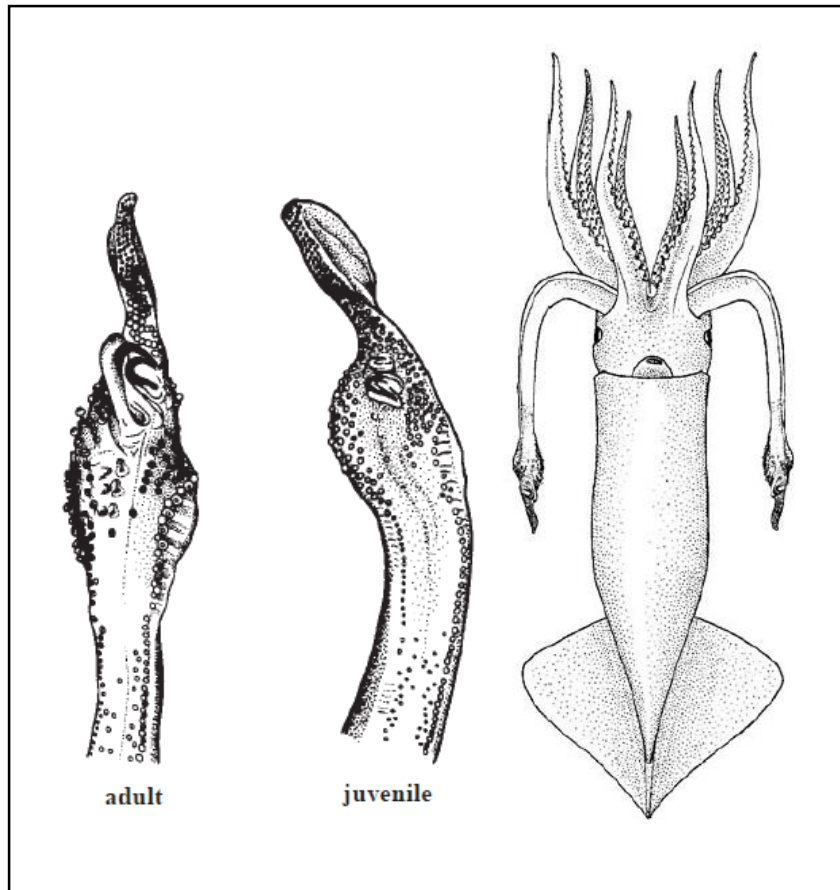
SQUIDS

Gonatus fabricii (Lichtenstein, 1818)

Order Oegopsida

Family Gonatidae

Genus *Gonatus*

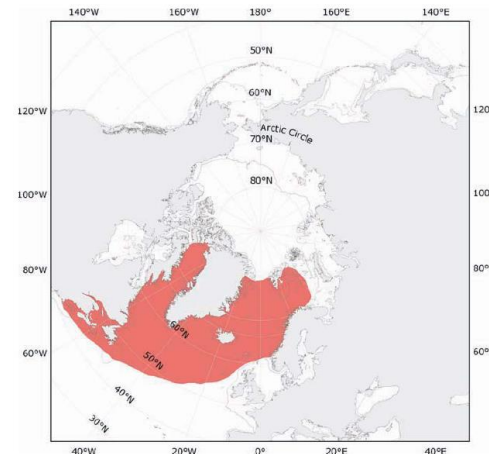


Source: FAO (2010)

Common name: Boreoatlantic gonate squid

Description: A relatively bulky squid attaining ~400 mm ML with a conical mantle slightly wider at midpoint, tapers to a sharp point posteriorly. A characteristic big hook on the tentacle. Hooks are also well developed in 2 medial series on arms; suckers and hooks are arranged in 4 rows along the arm length as in other *Gonatus* species.

Distribution: Northernmost Atlantic and Arctic Ocean, open waters between surface and 1,000 m.



Geographic distribution of *G. fabricii* in the North Atlantic.

Source: FAO (2010)

SQUIDS

Gonatus steenstrupi (Kristensen, 1981)

Order Oegopsida

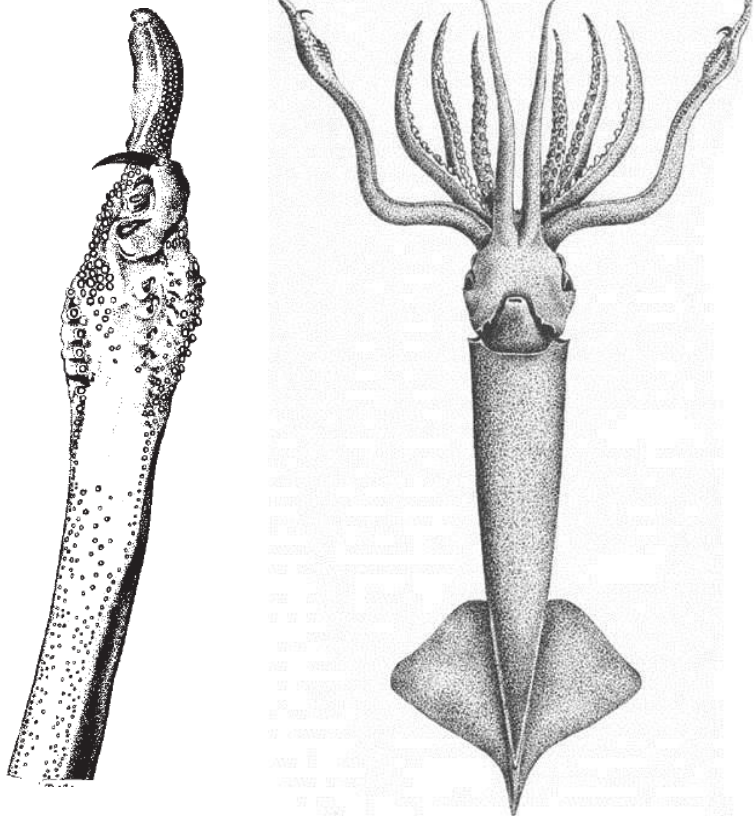
Family Gonatidae

Genus *Gonatus*

Common name: Atlantic armhook squid

Description: A slender arrow – shaped gonate squid attaining > 150 mm ML with a short fin (<50% ML) and a characteristic big hook on the tentacle. Hooks are also well developed in 2 medial series on arms; suckers and hooks are arranged in 4 rows along the arm length in contrast to 2 series of suckers as in other *Gonatus* species.

Distribution: North Atlantic Ocean; in European waters between Gulf of Biscay and Iceland, on the slope from 250 m (juveniles) to > 1000 m (adults) larger squids occurring deeper.



Source: FAO (2010)



Geographic distribution of *G. steenstrupi* in the North Atlantic. Source: FAO (2010)

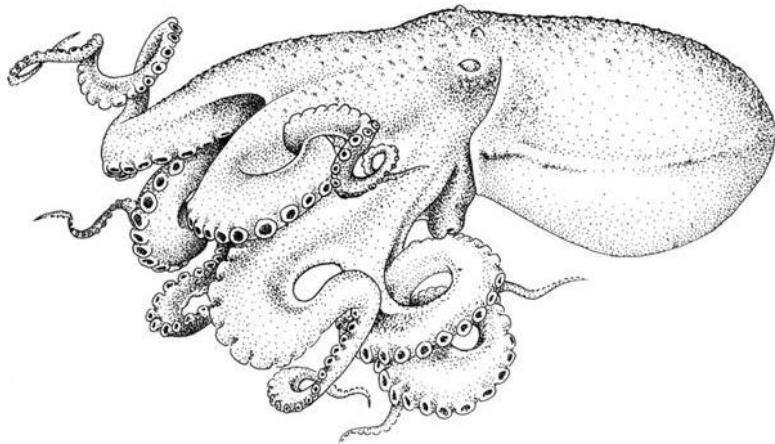
OCTOPODS

Eledone cirrhosa (Lamarck, 1798)

Order Octopoda

Family Octopodidae

Genus *Eledone*

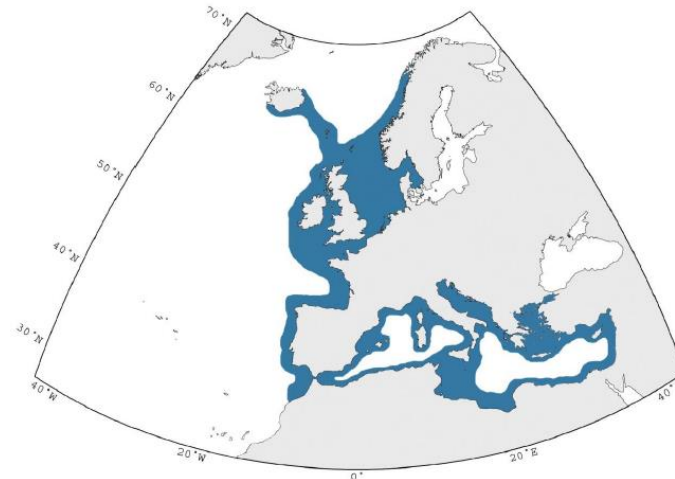


Common name: horned octopus

Description: A medium-sized (up to 250 mm ML, total length to 550 mm, body weight to 1.2 kg) octopus with one row of suckers on short arms (2.5-3 times ML).

Distribution: From Morocco to Norway, Scotland and Iceland, between 5 and 700 m, mostly 60-120 m.

FAO (2014)



Geographic distribution of *E. cirrhosa* in the NE Atlantic and Mediterranean. Source: ICES (2015)

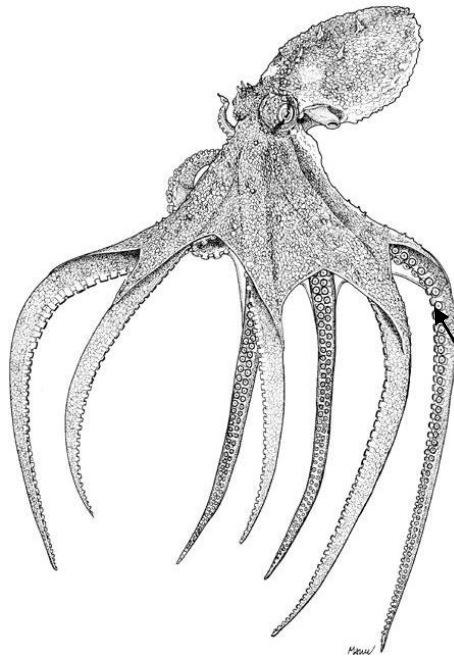
OCTOPODS

Octopus vulgaris (Cuvier, 1797)

Order Octopoda

Family Octopodidae

Genus *Octopus*



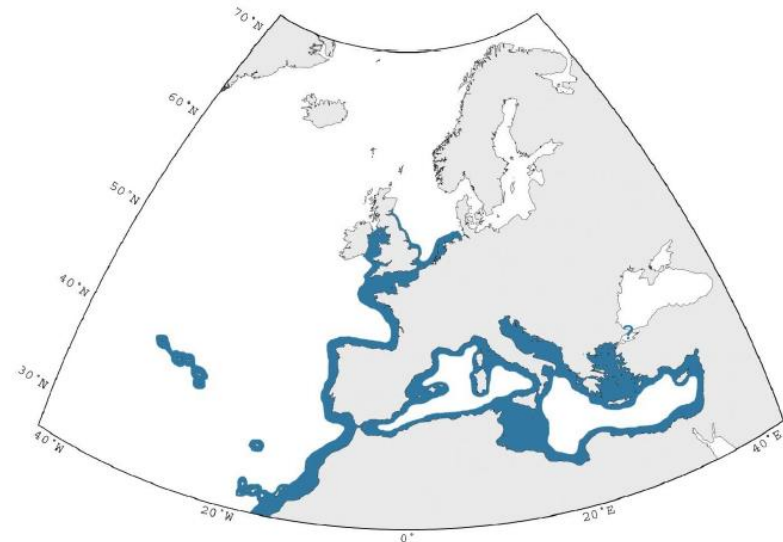
FAO (2014)

Two rows of suckers

Common name: common octopus

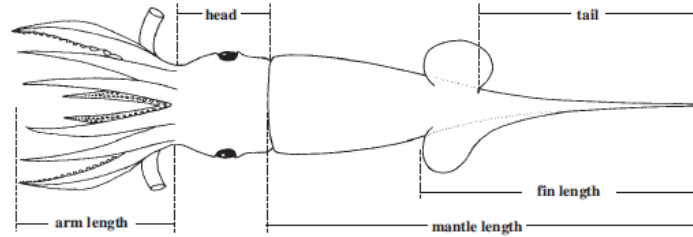
Description: A large (up to 250 mm ML and >1000 mm total length, > 2 kg) octopus with two rows of suckers on long arms (4-5.5 times ML).

Distribution: East Atlantic from Northeast Africa to the English Channel, from shoreline to 250 m, mostly < 100 m. In the past was recorded as north as off south Scotland and in Irish Sea.

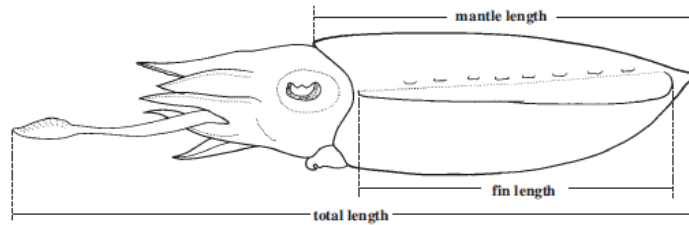


Geographic distribution of *O. vulgaris* in the NE Atlantic and Mediterranean. Source: ICES (2015)

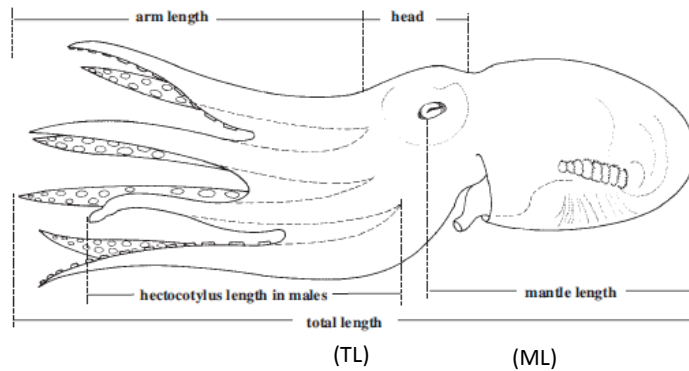
Standard measurements for cephalopods



a) Schematic illustration of a squid



b) Schematic illustration of a cuttlefish



Source: FAO (2005)

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