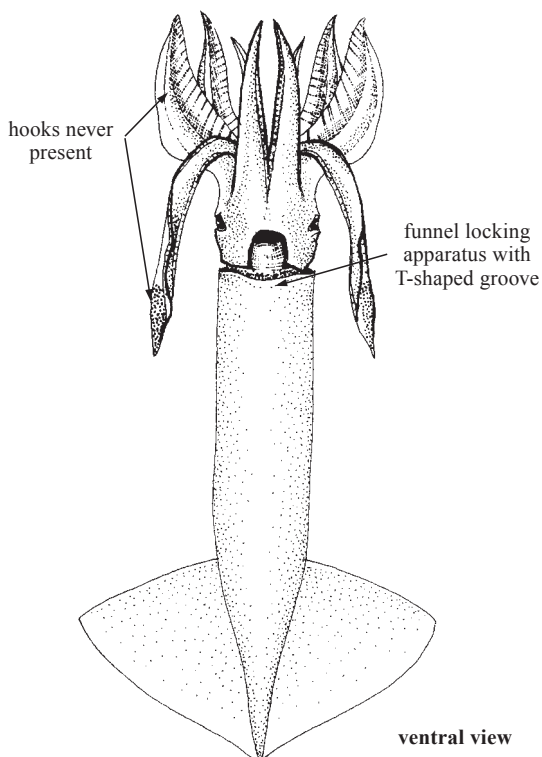


OMMASTREPHIDAE

Flying squids

Diagnostic characters: Medium- to large-sized squids. **Funnel locking apparatus with a T-shaped groove.** **Paralarvae with fused tentacles.** Arms with biserial suckers. Four rows of suckers on tentacular clubs (club dactylus with 8 sucker series in *Illex*). Hooks never present on arms or clubs. One of the ventral pair of arms usually hectocotylized in males. Buccal connectives attach to dorsal borders of ventral arms. Gladius distinctive, slender.

Habitat, biology, and fisheries: Oceanic and neritic. This is one of the most widely distributed and conspicuous families of squids in the world. Most species are exploited commercially. *Todarodes pacificus* makes up the bulk of the squid landings in Japan (up to 600 000 t annually) and may comprise at least 1/2 the annual world catch of cephalopods. In various parts of the Western Central Atlantic, 6 species of ommastrephids currently are fished commercially or for bait, or have a potential for exploitation. Ommastrephids are powerful swimmers and some species form large schools. Some neritic species exhibit strong seasonal migrations, wherein they occur in huge numbers in inshore waters where they are accessible to fisheries activities. The large size of most species (commonly 30 to 50 cm total length and up to 120 cm total length) and the heavily muscled structure, make them ideal for human consumption.



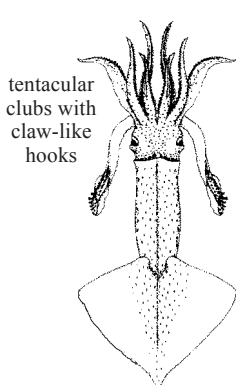
Similar families occurring in the area

Onychoteuthidae: tentacular clubs with claw-like hooks; funnel locking apparatus a simple, straight groove.

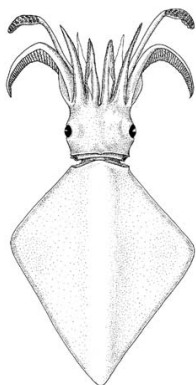
Thysanoteuthidae: funnel locking apparatus a long, narrow longitudinal groove with a short broad transverse groove at midlevel; fins broad, rhomboidal, extending nearly full length of mantle.

Lepidoteuthidae: distinct "scales" on surface of mantle; funnel locking apparatus a simple, straight groove.

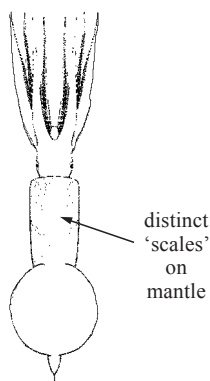
Loliginidae: eyes covered with a transparent corneal membrane; funnel locking apparatus a simple, straight groove; small suckers on buccal lappets.



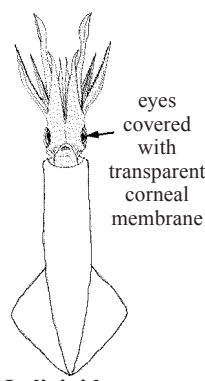
Onychoteuthidae



Thysanoteuthidae



Lepidoteuthidae



Loliginidae

Key to the genera of Ommastrephidae occurring in the area

- 1a. Suckers on tip (dactylus) of tentacular clubs in 8 rows *Illex*
- 1b. Suckers on tip of tentacular clubs in 4 rows → 2

- 2a. Mantle drawn out posteriorly as a pointed tail; foveola present in funnel groove but side pockets absent; a long, thin strip of luminous tissue along ventral midline of viscera posterior to heart *Ornithoteuthis*
- 2b. Mantle with bluntly pointed terminus, not drawn out into a pointed tail; foveola and side pockets present. No strip of luminous tissue along ventral midline of viscera posterior to heart. → 3

- 3a. Nineteen large round light organs on ventral surface of mantle, 3 pairs along ventral arms . *Hyaloteuthis*
- 3b. No large round light organs on ventral surface of mantle → 4

- 4a. Large subcutaneous patch of consolidated luminescent granules on anterodorsal surface of mantle; 0 to 2 small suckers on the tentacular stalk proximal to the first smooth carpal knob *Sthenoteuthis*
- 4b. Golden stripe of luminous tissue along ventral midline of mantle; no subcutaneous patch of consolidated luminescent granules on anterodorsal surface of mantle; 4 to 6 small suckers on the tentacular stalk proximal to the first smooth carpal knob *Ommastrephes*

Key to the species of *Illex* in the area

- 1a. Distal enlarged manal sucker rings notched, forming 7 or 8 broad, flat teeth; base of hectocotylized arm devoid of suckers for about 13% of total arm length; trabeculae on hectocotylus midsection modified into papillose, fringed flaps *Illex coindetii*
- 1b. Distal enlarged manal sucker rings smooth, toothless, rarely with 1 or 2 notches; base of hectocotylized arm devoid of suckers for about 4 to 6% of total arm length; trabeculae on hectocotylus midsection not modified. → 2

- 2a. Lower beak jaw edge straight, short; wing long, wide; lateral wall short, blunt; rostral width narrow *Illex illecebrosus*
- 2b. Lower beak jaw edge curved, long; wing short, narrow; lateral wall long, pointed; rostral width wide *Illex oxygonius*

List of species occurring in the area

The symbol 🦑 is given when species accounts are included.

Subfamily Illicinae

- 🦑 *Illex coindetii* (Vérany, 1839).
- 🦑 *Illex illecebrosus* (LeSueur, 1821).
- 🦑 *Illex oxygonius* Roper, Lu and Mangold, 1969.

Subfamily Ommastrephinae

- 🦑 *Hyaloteuthis pelagica* (Bosc, 1802).
- 🦑 *Ommastrephes bartramii* (LeSueur, 1821).
- 🦑 *Ornithoteuthis antillarum* Adam, 1957.
- 🦑 *Sthenoteuthis pteropus* (Steenstrup, 1855).

Reference

Zeccini, F., M. Vecchione, and C.F.E. Roper. 1996. A quantitative comparison of hectocotylus morphology between Mediterranean and western Atlantic populations of the squid *Illex coindetii* (Cephalopoda: Ommastrephidae). *Proc. Biol. Soc. Wash.*, 109:591-599.

Hyaloteuthis pelagica* (Bosc, 1802)*HQI**

Frequent synonyms / misidentifications: None / None.

FAO names: **En** - Glassy flying squid; **Fr** - Encornet vitreux; **Sp** - Pota estrellada.

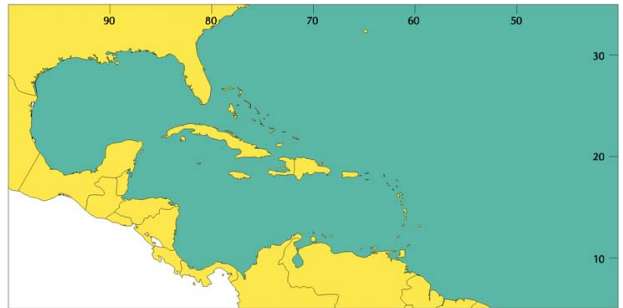
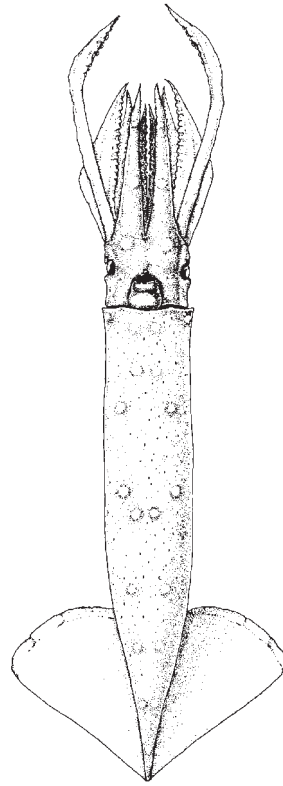
Diagnostic characters: Suckers on tip of tentacular clubs in 4 rows. Mantle with bluntly pointed terminus, not drawn out into a pointed tail; foveola and side pockets present. **Nineteen large round light organs on ventral surface of mantle, 3 pairs along ventral arms.** **Colour:** not distinctive.

Size: Mantle length to 9 cm. The smallest ommastrephid in size at maturity.

Habitat, biology, and fisheries: Epipelagic and upper mesopelagic, but not usually caught at the surface.

Distribution: All tropical and subtropical oceans.

Remarks: Only a single species is recognized worldwide.



Illex coindetii (Vérany, 1839)

SQM

Frequent synonyms / misidentifications: *Illex illecebrosus coindetii* Pfeffer, 1912 / *Illex illecebrosus* (Le-Sueur, 1821).

FAO names: **En** - Broadtail shortfin squid; **Fr** - Encornet rouge; **Sp** - Pota voladora.

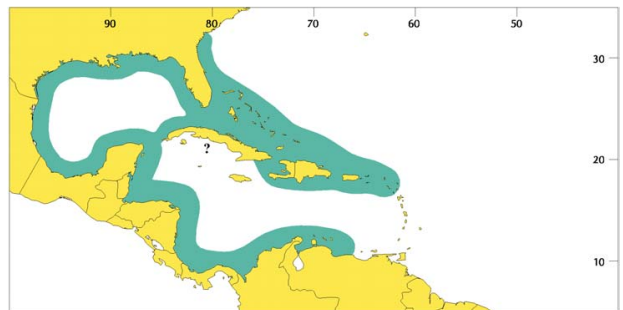
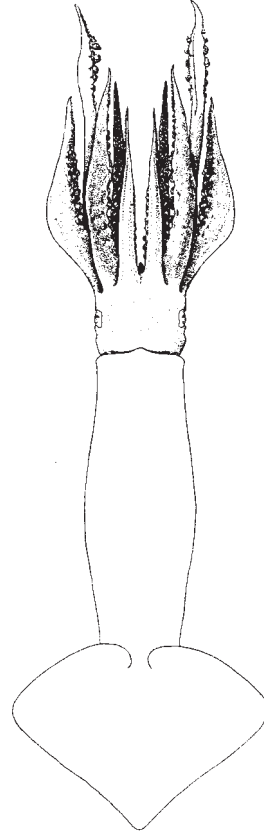
Diagnostic characters: **Suckers on tip (dactylus) of tentacular club in 8 rows. Distal enlarged manal sucker rings on tentacular club notched, forming 7 or 8 broad, flat teeth.** Mantle widest at anterior end (except in fully ripe females), moderately long and narrow; fin angle broad, exceeding 50°; fin width greater than fin length. Head large and robust, especially in males; length about equal to width. **Arms very long**, especially in males where second and third arms are very robust. Hectocotylized arm longer than the opposite ventral arm in males; base of hectocotylized arm devoid of suckers for ca. 13% of total arm length; **trabeculae on hectocotylus midsection modified into papillose, fringed flaps**; 1 or 2 knobs on dorsal row of lamellae on modified arm tip. **Colour:** reddish to reddish brown, more vivid dorsally; paler, more yellowish ventrally.

Size: Maximum mantle length: males 18 cm; females 23 cm.

Habitat, biology, and fisheries: A neritic species that inhabits nearshore waters of the continental shelf. Apparent preference for sandy or silty bottoms; vertical range from a few metres to 1 000 m with major abundance at 200 to 600 m in the western Atlantic. Apparently associated with the bottom during the day (when captures by trawl are most frequent), disperses into the water column at night. Bottom temperatures at capture sites in the western Atlantic range from 8° to 13°C. Spawning grounds, season, eggs, and larvae are unknown. Prey presumed to be crustaceans (euphausiids) and fishes. Commercially exploited in the eastern Atlantic and Mediterranean, mainly with bottom trawls. Potential seems high for fisheries in the Gulf of Mexico and Caribbean Sea.

Distribution: Western North Atlantic from 37°N southward through the Gulf of Mexico and Caribbean Sea; eastern Atlantic from the North Sea southward along the European Atlantic coast, Mediterranean Sea, and the African coast to 14°S. It has not been recorded from east of the Antilles chain or from south of about 9°N in the western Atlantic (lack of collections limits knowledge of its southern range).

Remarks: Zecchini et al. (1996) compared hectocotylus morphology between Mediterranean and western Atlantic populations; in spite of some minor differences, they concluded that the two populations are conspecific.



***Illex illecebrosus* (LeSueur, 1821)**

SQI

Frequent synonyms / misidentifications: *Ommastrephes illecebrosus* Verrill, 1880 / *Illex coindetii* (Vérane, 1839); *Illex oxygonius* Rober, Lu, and Mangold, 1769.

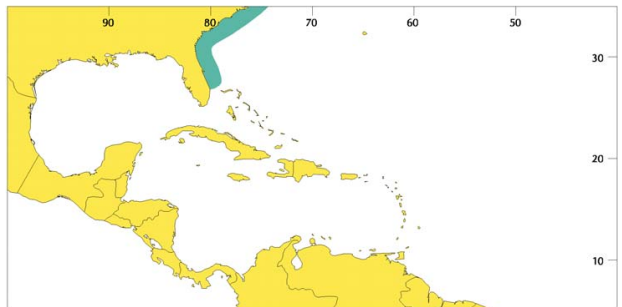
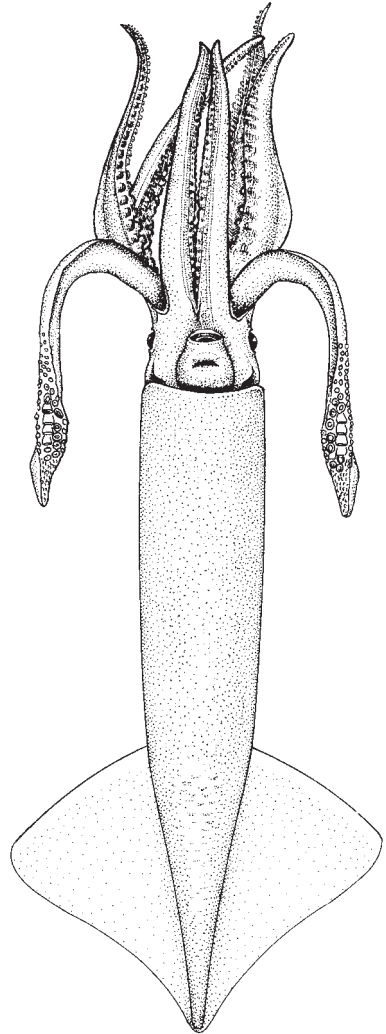
FAO names: **En** - Northern shortfin squid; **Fr** - Encornet rouge nordique; **Sp** - Pota norteña.

Diagnostic characters: **Suckers on tip (dactylus) of tentacular clubs in 8 rows.** **Distal enlarged manal sucker rings smooth, toothless,** rarely with 1 or 2 notches. Hectocotylized arm (in males) usually shorter than the opposite ventral arm, its modified portion straight and very short, about 22% of arm length; base of hectocotylized arm devoid of suckers for about 4 to 6% of total arm length; **trabeculae on hectocotylus midsection not modified into papillose, fringed flaps;** 1 or 2 knobs on dorsal row of lamellae on modified arm tip. **Lower beak jaw edge straight, short; wing long, wide; lateral wall short, blunt; rostral width narrow.** Mantle robust, widest at midpoint between anterior end and beginning of fins; tail not sharply pointed; fin angle moderate, 40° to 50°, mostly 45°; fin width greater than fin length. Head small, short and narrow; arms relatively short, of about equal length in both sexes. **Colour:** reddish brown to deep purple, paler on ventral surfaces, more intense on head, arms, and dorsal surfaces of mantle and fins; purplish stripe along dorsal midline of mantle.

Habitat, biology, and fisheries: Inhabits inshore waters in summer and retreats to deeper, offshore waters of the continental shelf and slope in autumn and winter. Occurs in temperatures of 0° to 15°C, optimum 7° to 13°, so it is restricted to northern waters. Vertical range extensive depending on size, season, and time of day, but tends to congregate on or near the bottom during the day and disperse into the water column at night. Has been caught from the surface to about 1 000 m depth. Spawning grounds and season are unknown, but recent data indicate a late autumn-early winter spawning in offshore slope water near the inshore edge of the Gulf Stream. An inshore summer migration is associated with intensive feeding, primarily on small fishes and euphasids. Fishing occurs in offshore waters during autumn and winter off the Middle-Atlantic states of the USA; from New England northward to Labrador, fishing takes place in inshore waters during the summer and early autumn. Caught primarily by otter trawl. In Newfoundland it is captured by hand jigging or by squid jigging machines with lights at night. The species has historically been utilized primarily as fish bait. However, it is of good quality for human consumption and recent years have seen greater demand on the species as a source of food, particularly in eastern Europe and Japan. Marketed both fresh and frozen.

Size: Maximum mantle length: males 27 cm; females 31 cm.

Distribution: East coast of North America from Labrador to central Florida; greatest abundance in northern portion of range.



Illex oxygonius Roper, Lu and Mangold, 1969

IXO

Frequent synonyms/misidentifications: None / *Illex illecebrosus* (LeSueur, 1821); *Illex coindetii* (Vérany, 1839).

FAO names: En - Sharptail shortfin squid; Fr - Encornet rouge à pointe; Sp - Pota puntiaguda.

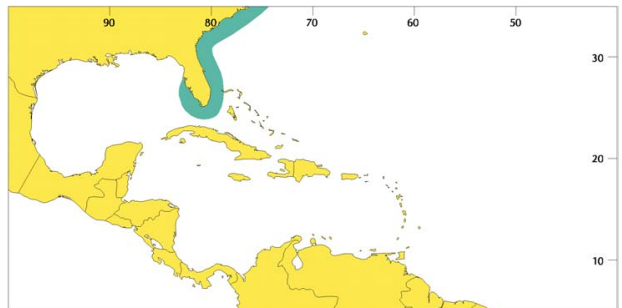
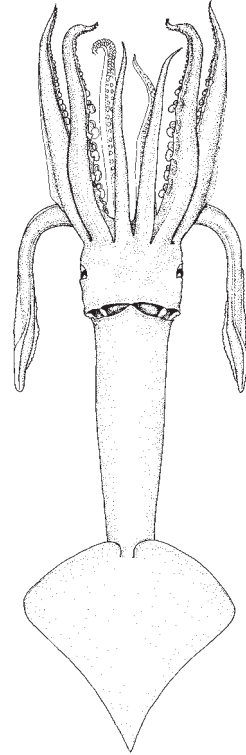
Diagnostic characters: Suckers on tip (dactylus) of tentacular clubs in 8 rows. Distal enlarged manal sucker rings smooth, toothless, rarely with 1 or 2 notches. Hectocotyized arm (in males) longer than the opposite ventral arm; modified portion curved, about 29% of arm length; base of hectocotyized arm devoid of suckers for ca. 4 to 6% of total arm length; trabeculae on hectocotylus midsection not modified; 3 knobs on dorsal row of lamellae on modified arm tip. Lower beak jaw edge curved, long; wing short, narrow; lateral wall long, pointed; rostral width wide. Mantle widest at anterior end; long, narrow, drawn out to a pointed tail posteriorly; males with a sharp, distinct, triangular dorsal lobe at mantle opening; fin angle acute, 25° to 35° (very occasionally to 40°); fin width equal to or slightly greater than fin length; head medium-sized, wider than long; arms moderately long and robust, especially the second and third in males. **Colour:** reddish to reddish brown, more vivid dorsally; paler, more yellowish ventrally.

Habitat, biology, and fisheries: A neritic species taken from 50 to 550 m in bottom trawls at temperatures of 6° to 13°C; associated with the bottom during the day and disperses into the water column at night. Spawning grounds, season, eggs, and larvae are unknown at present. Food unknown, but presumed to be crustaceans and fishes. Abundance and distribution currently unknown; if concentrations are found, the species would be of commercial use because of its close resemblance to the other currently utilized species of the genus: *I. illecebrosus* and *I. coindetii*.

Size: Maximum mantle length: males 23 cm, females 21 cm.

Distribution: Western Atlantic from Chesapeake Bight south to Florida Current and southeastern Gulf of Mexico.

Remarks: This species can be distinguished from congenors based on a combination of morphological characters. However, no character unique to the species is known. Its known geographic range is in the area of overlap between those of *I. illecebrosus* and *I. coindetii*. It remains possible that *I. oxygonius* is a hybrid of *I. illecebrosus* and *I. coindetii*.



***Ommastrephes bartramii* (LeSueur, 1821)**

OFJ

Frequent synonyms / misidentifications: *Ommastrephes caroli* (Furtado, 1887); *Sthenoteuthis bartramii* (LeSueur, 1821) / *Sthenoteuthis pteropus* (Steenstrup, 1855); *Ommastrephes pteropus* (Steenstrup, 1855).

FAO names: **En** - Neon flying squid; **Fr** - Encornet volant; **Sp** - Pota saltadora.

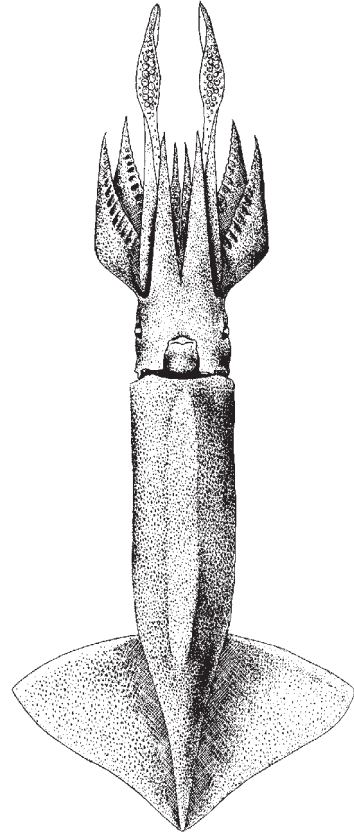
Diagnostic characters: **Suckers on tip of tentacular clubs in 4 rows.** Mantle with bluntly pointed terminus, not drawn out into a pointed tail; foveola and side pockets present. No large round light organs on ventral surface of mantle. Golden stripe of luminous tissue along ventral midline of mantle; no subcutaneous patch of consolidated luminescent granules on anterodorsal surface of mantle. Numerous, closely-packed, small, very irregularly shaped, often interconnected light organs embedded under the skin in muscle of mantle ventrally; similar light organs occur in patches on ventral surface of head. **Four to 6 small suckers on the tentacular stalk proximal to the first smooth knob of the fixing apparatus.** **Colour:** deep maroon overall, slightly lighter ventrally, darker along dorsal midline of mantle.

Habitat, biology, and fisheries: Oceanic, it occurs near the surface at night and is dispersed throughout the water column to about 1 500 m both day and night. It occurs in schools of similarly-sized animals that congregate around a night light; as the size of individuals increases, their number in the school decreases; very large individuals around 50 cm mantle length apparently are solitary. Spawning areas and seasons in the Atlantic are unknown. The neon flying squid feeds on small oceanic fishes and squids. Readily captured on squid jigs, so jigging machines used at night with electric lamps in the open ocean should be effective and more efficient than hand jigging or dip netting.

Size: Maximum mantle length: females 60 cm, males somewhat smaller.

Distribution: Worldwide, in tropical and temperate waters, but the distributional limits in the Atlantic are unknown. Abundant in north and south transition zones in the Pacific and in the southern Indian Ocean.

Remarks: A very powerful swimmer, *O. bartramii* has been observed during daytime to leap from the water and to glide for some distance over the surface, thus receiving the name 'flying squid'. The flesh is of excellent quality for human consumption, either fresh or frozen.



Ornithoteuthis antillarum Adam, 1957

OKA

Frequent synonyms / misidentifications: None / *Ommastrephes bartramii* (LeSueur, 1821); *Illex oxygonius* Roper, Lu, and Mangold, 1969.

FAO names: **En** - Atlantic bird squid; **Fr** - Encornet oiseau; **Sp** - Pota pájara.

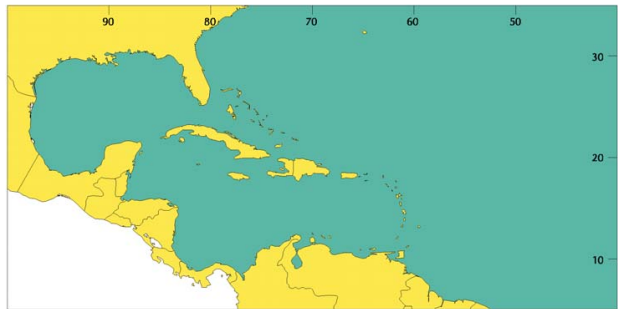
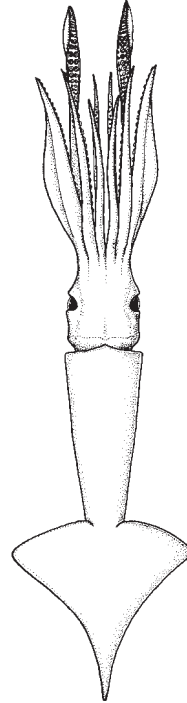
Diagnostic characters: **Suckers on tip of tentacular clubs in 4 rows. Mantle drawn out posteriorly as a pointed tail; foveola of funnel groove with 7 to 22 very indistinct folds, no side pockets. A long, thin strip of luminous tissue along ventral midline of viscera posterior to heart.** No external light organs; discrete light organs on the ink sac and rectum. No distinct fixing apparatus on tentacular club. **Colour:** purplish maroon, darkest on dorsal surface.

Habitat, biology, and fisheries: May inhabit continental shelf and slope waters or be associated with islands. Specimens have been captured in bottom fishing with trawls during the day at 585 to 1 100 m (mostly 640 to 825 m); night-time captures were made in large midwater trawls at 100 to 600 m over very deep water and by dip net at the surface in the open ocean. Not currently fished commercially; too few data are available on distribution, abundance, and biology to allow prediction of fishing potential. The species is edible.

Size: Maximum mantle length up to 20 cm.

Distribution: Tropical and subtropical western Atlantic and Caribbean Sea; West Africa and Morocco in the eastern Atlantic.

Remarks: The species is infrequently caught but its rarity in collections undoubtedly is a reflection of the animal's rapid, powerful swimming ability. It has been seen frequently from submersibles at 600 to 1 000 m depth (Vecchione and Roper, 1991).



***Sthenoteuthis pteropus* (Steenstrup, 1855)**

OFE

Frequent synonyms / misidentifications: *Ommastrephes pteropus* Steenstrup, 1855 / *Ommastrephes bartramii* (LeSueur, 1821); *Illex* spp.

FAO names: **En** - Orangeback flying squid; **Fr** - Encornet dos orange; **Sp** - Pota naranja.

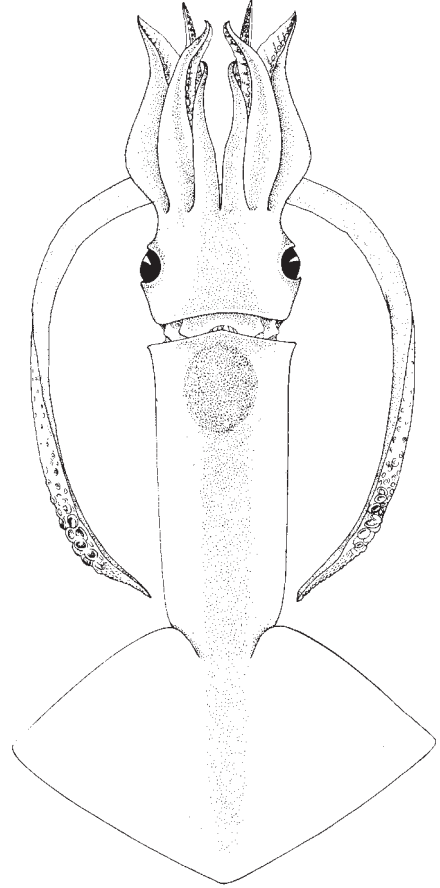
Diagnostic characters: **Suckers on tip of tentacular clubs in 4 rows.** Mantle with bluntly pointed terminus, not drawn out into a pointed tail; foveola and side pockets present. No strip of luminous tissue along ventral midline of viscera posterior to heart. No large round light organs on ventral surface of mantle. **Large subcutaneous patch of consolidated luminescent granules present on anterodorsal surface of mantle.** Small, individual scattered light organs (like short grains of rice) embedded in muscle of ventral surface of mantle, head and fourth arms. **Zero to 2 small suckers on the tentacular stalk proximal to the first smooth knob of the fixing apparatus.** **Colour:** very dark maroon overall, slightly lighter ventrally; dorsal midline darkest.

Habitat, biology, and fisheries: This very abundant, strong-swimming, near-surface, oceanic squid is a dominant species at the surface during dark (moonless) nights, but is distributed over a broad vertical range day and night to about 1 500 m; during periods of bright moonlight or rough seas it does not appear at the surface. With such extensive vertical and geographic ranges, the species tolerates a broad range of temperature conditions. When at the surface, it forms schools of up to about 50 similarly-sized individuals, the size of the school diminishing with increased size of individuals. The species is an important predator on fishes, cephalopods, and crustaceans. Extent and location of spawning areas are unknown. Although *Sthenoteuthis pteropus* is considered to be very abundant, no assessment of actual population size has been made. It is currently not fished commercially in the Western Central Atlantic. It congregates at night lights where it can be dip netted and caught by machine jigging or hand jigs. *S. pteropus* aggregates along the northeastern coast of Venezuela where it is fished at night by tuna baitboats (Arocha, 1989).

Size: Maximum mantle length: females 37 cm, males somewhat smaller.

Distribution: Pan-Atlantic in tropical and temperate waters; limits of distribution unknown.

Remarks: The vernacular name, orangeback flying squid, supposedly derives from the luminescent glow emitted by its dorsal patch of light organs.



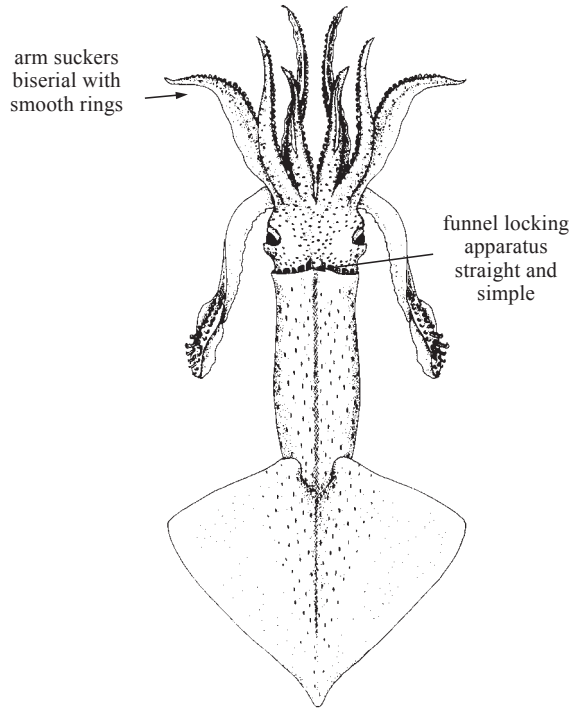
ONYCHOTEUTHIDAE

Hooked squids

Diagnostic characters: Small (ca. 15 cm mantle length) to large (ca. 150 cm mantle length), muscular squids. **Tentacle clubs with 2 rows of strong hooks** (with or without marginal suckers) on manus, **well-defined discoidal locking apparatus on the carpus**. Arm suckers biserial with smooth rings. Neck often with numerous nuchal folds. Buccal connectives attach to ventral side of ventral arms. Funnel locking apparatus straight and simple.

Habitat, biology, and fisheries: Some species are common in the open ocean (e.g., *Onychoteuthis* spp.); others live near the ocean floor along continental or island slopes (e.g., *Moroteuthis* spp.).

Remarks: Morphological characters of squids currently considered to be *Onykia banksii* are quite variable and it is likely that this “species” actually comprises a species-complex. It is also possible that some species of *Onykia* are young stages of *Moroteuthis* spp. (Kubodera et al., 1998).



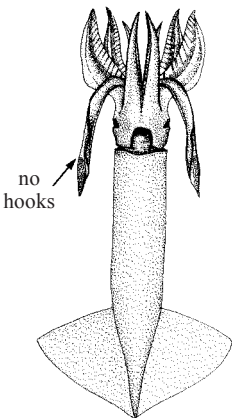
Similar families occurring in the area

Ommastrephidae: funnel locking apparatus T-shaped; tentacular clubs usually with 4, exceptionally with 8 (*Illex*) rows of suckers at tips, no hooks; buccal connectives attached to dorsal borders of ventral arms.

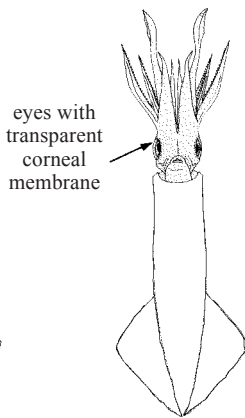
Loliginidae: eyes covered with a transparent corneal membrane; tentacular clubs with no hooks.

Enoploteuthidae and Ancistrocheiridae: hooks on arms; photophores on surfaces of head and mantle.

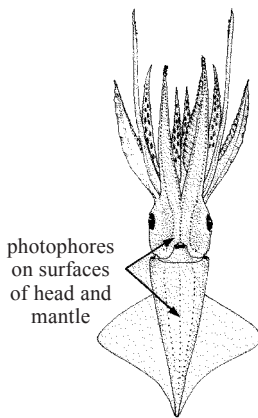
Pyroteuthidae: hooks on arms; photophores on tentacles.



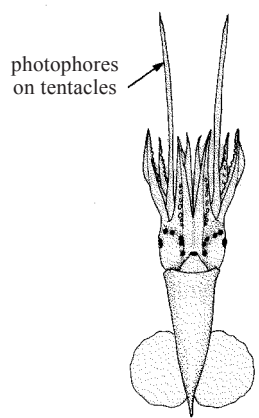
Ommastrephidae



Loliginidae



Enoploteuthidae



Pyroteuthidae

Key to the genera of Onychoteuthidae occurring in the area

- 1a. Mantle short, cylindrical; dorsal nuchal folds absent; marginal suckers present lateral to hooks on manus of tentacular clubs; no photophores *Onykia*
- 1b. Mantle slender, tapering posteriorly, acutely pointed; dorsal nuchal folds present; no marginal suckers on manus; photogenic patch present on ventral surface of eyeball → 2
- 2a. Intestinal photophores present; gladius visible along dorsal midline of mantle. *Onychoteuthis*
- 2b. No intestinal photophores; gladius not visible through dorsal mantle muscles. *Ancistroteuthis*

List of species occurring in the area

- Ancistroteuthis lichtensteinii* Ferussac, 1835.
- Onychoteuthis banksii* (Leach, 1817).
- Onykia carriboea* LeSueur, 1821.

References

Kubodera, T., U. Piakowski, T. Okutani, and M. R. Clarke. 1998. Taxonomy and zoogeography of the family Onychoteuthidae. In Systematics and Biogeography of Cephalopods, edited by N. A. Voss, M. Vecchione, R.B. Toll, and M.J. Sweeney. *Smithson. Contr. Zool.*, 586:277-291.

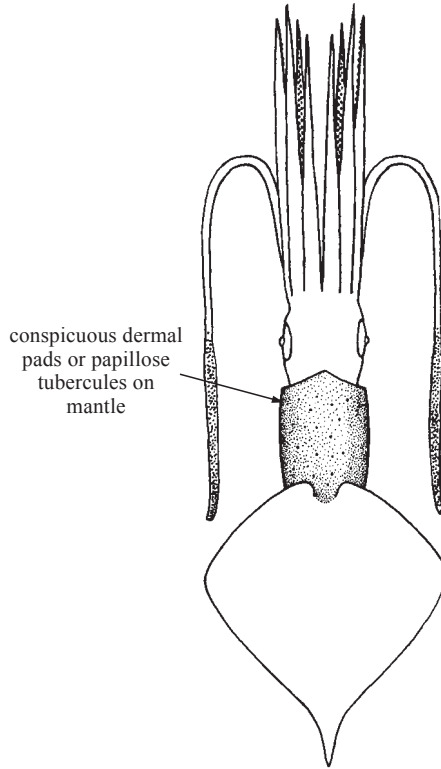
PHOLIDOTEUTHIDAE

Scaled squids

Diagnostic characters: The 2 species are large (*Pholidoteuthis boschmai*: 72 cm mantle length; *Pholidoteuthis adami*: 78 cm mantle length) but moderate to somewhat weakly-muscled squids. **Conspicuous dermal pads or papillose tubercles present on mantle.** **Tentacular clubs long, slender, only slightly expanded;** locking apparatus absent; **club suckers in 4 series, with unusual elongate apertures.** **Colour:** not distinctive.

Habitat, biology, and fisheries: In the Gulf of Mexico, *Pholidoteuthis adami* has been reported to be common (Voss, 1956) and is it fairly common in the slope water of the western North Atlantic to at least New England (Vecchione, 2001). *Pholidoteuthis boschmai* is thought to be cosmopolitan in tropical and temperate seas.

Remarks: Currently considered to be monotypic. However, the 2 species are so different from each other that generic separation is probably warranted. The species are quite different in morphology; their status as possible separate genera is currently unresolved.



Similar families occurring in the area

Lepidoteuthidae: lack tentacles.

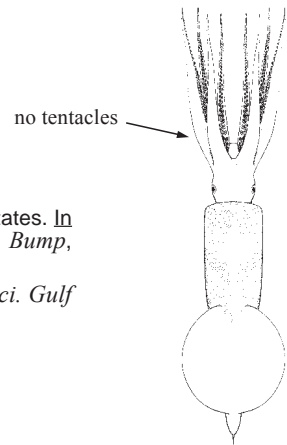
List of species occurring in the area

Pholidoteuthis adami Voss, 1956.

Pholidoteuthis boschmai Adam, 1950.

References

- Vecchione, M. 2001. Cephalopods of the continental slope east of the United States. In *Island in the Stream. Oceanography and Fisheries of the Charleston Bump*, edited by G. Sedberry. American Fisheries Society Symp. 25: 153-160.
- Voss, G.L. 1956. A review of the cephalopods of the Gulf of Mexico. *Bull. Mar. Sci. Gulf Cari.*, 6: 85-178.



Lepidoteuthidae

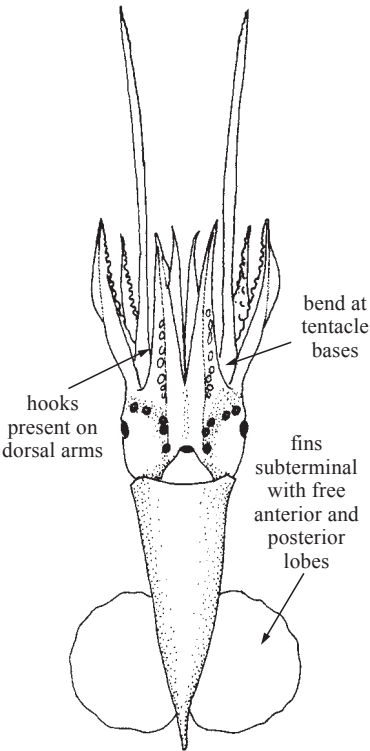
PYROTEUTHIDAE

Fire squids

Diagnostic characters: Small (23 to 50 mm mantle length) and muscular. **Hooks present on dorsal 3 arm pairs.** **Permanent constriction and bend near bases of tentacles.** **Photophores present on viscera, eyeballs and tentacles but absent from mantle, funnel, head surface and arms.** **Tail formed from strongly pointed conus of gladius, without fleshy extension beyond gladius.** **Fins subterminal with free anterior and posterior lobes.** **Colour:** not distinctive.

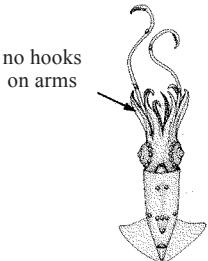
Habitat, biology, and fisheries: Occur in mesopelagic depths during the day and migrate into near-surface waters (0 to 200 m) at night. They are among the more common squids found in the midwaters of the open ocean. They are most easily recognized by the sharply pointed "tail" and fins that are separate, each with a nearly circular outline. They also have large buccal membranes with unusual attachments to the four dorsal arms and peculiar tentacle bases. The latter, presumably, increase the degree of the retraction (i.e., shortening) of the tentacles. Oviducts may be reduced or absent on 1 side (unique in the Oegopsida).

Remarks: This family was formerly considered to be a subfamily of the Enoploteuthidae.

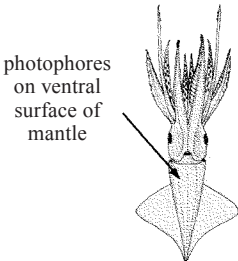


Similar families occurring in the area

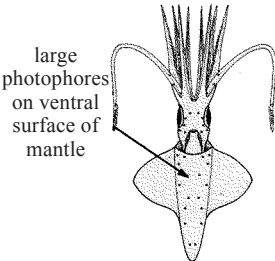
- Lycoteuthidae: have suckers (no hooks) on the arms and tentacles.
- Enoploteuthidae: have photophores on the ventral surfaces of the head and mantle.
- Ancistrocheiridae: lack photophores on the eyeballs and have large photophores on the ventral surfaces of the head and mantle.
- Octopoteuthidae: lack tentacles; none of these families have free posterior fin lobes.



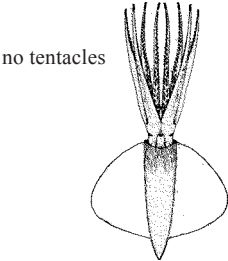
Lycoteuthidae



Enoploteuthidae



Ancistrocheiridae



Octopoteuthidae

Key to the genera of Pyroteuthidae occurring in the area

- 1a. Hooks present on tentacular clubs; 12 photophores, none of which are lidded, on eyeballs; 10 visceral photophores; 6 to 8 photophores on tentacular stalks; right ventral arm hectocotylized in males, without a tooth plate; both oviducts present in females although the right may be reduced *Pyroteuthis*
- 1b. Hooks absent on tentacular clubs; 14 or 15 photophores, 1 lidded, on eyeballs; 8 visceral photophores; 4 photophores on tentacular stalks; left ventral arm hectocotylized in males, with a tooth plate; only the right oviduct developed in females *Pterygioteuthis*

List of species occurring in the area

- Pterygioteuthis gemmata* Chun, 1908.
- Pterygioteuthis giardi* Fischer, 1896.
- Pyroteuthis margaritifera* (Ruppel, 1844).

SEPIOLIDAE

Bobtail squids

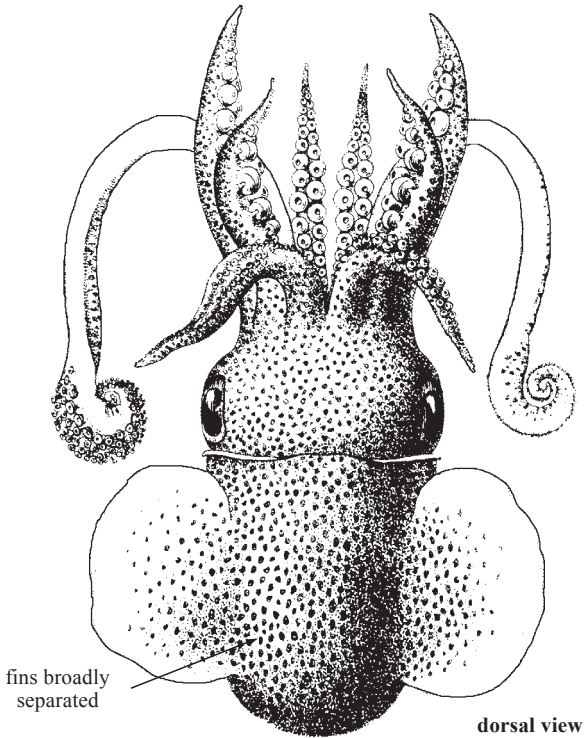
Diagnostic characters: These are small (ca. 1 to 10 cm mantle length), broad cephalopods. **Mantle short, rounded posteriorly. Fins broadly separated posteriorly, with free anterior and posterior lobes.** Gladius rudimentary or absent. Median mantle septum with strong adductor muscles present. **Eye lenses covered by cornea;** ventral eyelid present. Protective membranes absent on arms. One or both dorsal arms hectocotylized; 1 dorsolateral arm may also be modified. Lateral funnel adductor present between head and funnel at funnel locking apparatus. **Colour:** not distinctive.

Habitat, biology, and fisheries: Species of the Rossinae are benthic while those of the Heteroteuthinae are pelagic.

Remarks: This family is divided into 3 subfamilies, of which only 2 are found in the Western Central Atlantic Ocean.

Similar families occurring in the area

None, no other squid has short, rounded mantle with free anterior and posterior fin lobes and gladius rudimentary or absent.



Key to the genera of Sepioidae occurring in the area

- 1a. Anterior ventral edge of mantle extended, forming extensive ventral shield covering funnel from below; dorsal 6 arms joined by deep web (Subfamily Heteroteuthinae) → 2
- 1b. Anterior ventral edge of mantle not extended to form ventral shield, not covering funnel; dorsal and dorsolateral arms not joined by deep web (may be a shallow web) (Subfamily Rossiinae) → 3
- 2a. Suckers on distal arms with long, thick stalks (much thicker than suckers themselves); fins insert on midlateral mantle and extend beyond anterior edge of mantle *Nectoteuthis*
- 2b. Distal arm suckers on normal, thin stalks; fins insert on posterior half of mantle, not extending to anterior edge of mantle *Heteroteuthis*
- 3a. A pair of photophores present on ink sac; tentacular club suckers in 5 to 8 series; size of suckers greatly increasing on middle region of lateral arms *Semirossia*
- 3b. No photophores on ink sac; tentacular club suckers in 6 to 50 series; no greatly enlarged suckers on middle regions of lateral arms → 4
- 4a. Tentacular club expanded, not bent; club suckers in 6 to 12 (rarely to 16) series; no anal pads on sides of rectum *Rossia*
- 4b. Tentacular club narrow, often twisted and spiral; club suckers in 25 to 50 series; anal pads located on both sides of rectum *Austrorossia*

List of species occurring in the area**Subfamily Heteroteuthinae**

Heteroteuthis dispar (Rüppell, 1844).

Nectoteuthis pourtalesi Verrill, 1883.

Subfamily Rossiinae

Austrorossia antillensis Voss, 1956.

Rossia bullisi Voss, 1956.

Rossia tortugaensis Voss, 1956.

Semirossia equalis (Voss, 1956).

Semirossia tenera (Verrill, 1880).

SPIRULIDAE

Ram's horn squids

Diagnostic characters: A small (45 mm mantle length), muscular species. **Internal shell curved ventrally in open coil;** each coil round in cross-section and possessing transverse septa with a siphuncle. Arms with suckers in 4 series. Both ventral arms hectocotyized in males. Tentacular clubs with suckers in 16 series; not divided into manus and dactylus. Eyes without cornea. **Fins separate, terminal, and lie in a plane nearly transverse to body axis.** Large photophore at posterior end of body. **Colour:** not distinctive.

Habitat, biology, and fisheries: Found in mesopelagic waters of the tropical open ocean. The intact mantle is covered with regularly aligned collagen fibers that produce a silvery sheen. *Spirula* carries an unusual internal shell that is calcareous and has the shape of a horn coiled in a single plane without the coils touching one another (open planispiral). The direction of coiling is opposite that of nautilids. The shell, which retains the phragmacone and siphuncle of its distant ancestors, is used as a buoyancy device. The posterior position of the shell apparently causes the animal to generally orient vertically with the head downward. The large photophore posterior to the shell therefore would be directed upward, a very unusual situation in cephalopods and other oceanic animals.

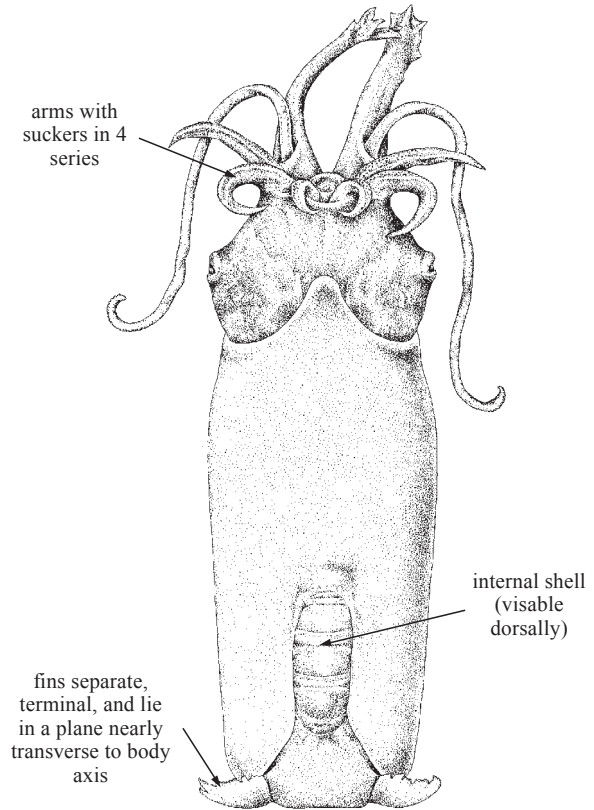
Remarks: Only a single species is known in this peculiar family.

Similar families occurring in the area

None, no other family has a shell curved ventrally in an open coil.

List of species occurring in the area

Spirula spirula (Linnaeus, 1758).



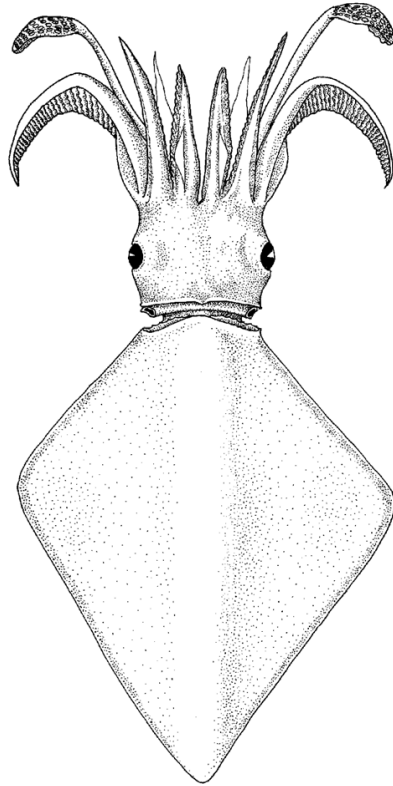
THYSANOTEUTHIDAE

Rhomboid squids

Diagnostic characters: A large, muscular squid (100 cm mantle length). **Funnel locking apparatus with grooves arranged like sidewise T (i.e., a longitudinal groove with a short lateral groove extending at approximately a right angle from the middle).** Nuchal (dorsal head-mantle) locking apparatus with two mantle hook-like knobs and opposing nuchal knobs and pits. **Fin length equals mantle length;** fins insert on sides of mantle rather than gladius. Gladius vanes project anteriorly. Tentacle clubs with four series of suckers. Arm suckers in two series. Buccal connectives attach to ventral margins of ventral arms. Photophores absent. **Colour:** not distinctive.

Habitat, biology, and fisheries: Found throughout tropical and subtropical regions of the world's oceans. It occupies near-surface waters during the night and midwaters during the day. It is often found in male plus female pairs or in small schools. It is fished commercially in the Sea of Japan and off Okinawa.

Remarks: *Thysanoteuthis rhombus* is the only species recognized in the family.



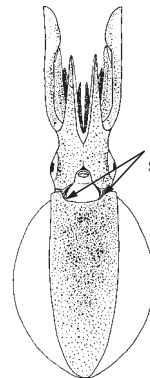
Similar families occurring in the area

Sepioteuthis sepioidea (Loliginidae): eye lens covered with clear corneal membrane (eye lens open to the sea, no covering of skin in *T. rhombus*); funnel locking apparatus simple and straight.

Other families also have species with fins extending the entire length of the mantle (e.g., Mastigoteuthidae, Ancistrocheiridae, Cycloteuthidae); all can easily be eliminated, however, by the distinctive funnel locking apparatus peculiar to the Thysanoteuthidae.

List of species occurring in the area

Thysanoteuthis rhombus Troschel, 1857.



funnel
locking
apparatus
simple and
straight

Sepioteuthis sepioidea