Sepia madokai Adam, 1939

Fig. 156

Sepia madokai Adam, 1939a, *Siboga - Expeditie. Resultats des expeditiones zoologiques, botaniques, oceanographiques et entreprises aux Indes Neerlandaises Orientales en 1899–1900*, 55b: 77 [type locality: Japan, Tokyo Bay and Kagoshima].

Frequent Synonyms: *Sepia robsoni* Sasaki, 1929 (non *S. robsoni* Massy, 1927).

Misidentifications: *Sepia acuminata* Smith, 1916; *Sepia hedleyi* Berry, 1918.

FAO Names: En – Madokai's cuttlefish; **Fr** – Seiche madokai; **Sp** – Sepia madokai.

Diagnostic Features: Mantle elliptical; dorsal anterior margin triangular, acute; ventral mantle margin emarginate, without distinct lateral angles. Hectocotylus present on left ventral arm: sucker size normal proximally, **10 rows reduced suckers medially**, then normal size suckers to arm tip. Suckers of hectocotylus in **2 dorsal series are smaller than those in 2 ventral series**. Club crescent-shaped, sucker-bearing surface flattened, with **8 to 10 equal-sized, small suckers in transverse rows**. Cuttlebone length approximately equal to mantle length; outline oblong, nearly rhomboidal; acuminate, acute, anteriorly; bluntly rounded posteriorly; dorsal surface pinkish; dorsal median and lateral ribs indistinct. Spine present, keel(s) absent. Anterior striae are **inverted U-shape**. Inner cone limbs are of **uniform width, narrow, U-shape posteriorly**, thickened, very slender; not raised into ledge posteriorly; outer cone calcified, narrow anteriorly, broadens posteriorly. **Colour:** Pale brownish. Dorsal mantle has white blotches or spots.

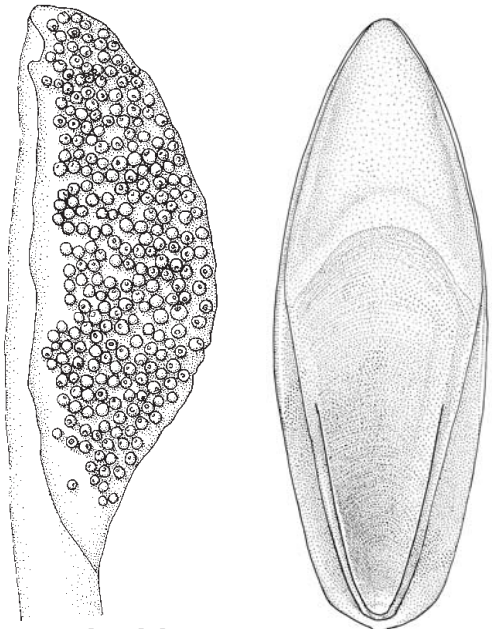

Fig. 156 ***Sepia madokai***

Size: Up to 100 mm mantle length, 100 g total weight.

Geographical Distribution: Northwestern Pacific: southwestern Japan, south of Tokyo Bay on the Pacific Coast and south of Noto Peninsula on the Japan Sea side to Kyushu. Tsushima Strait, East and South China Seas, Taiwan Province of China and Viet Nam (Fig. 157).

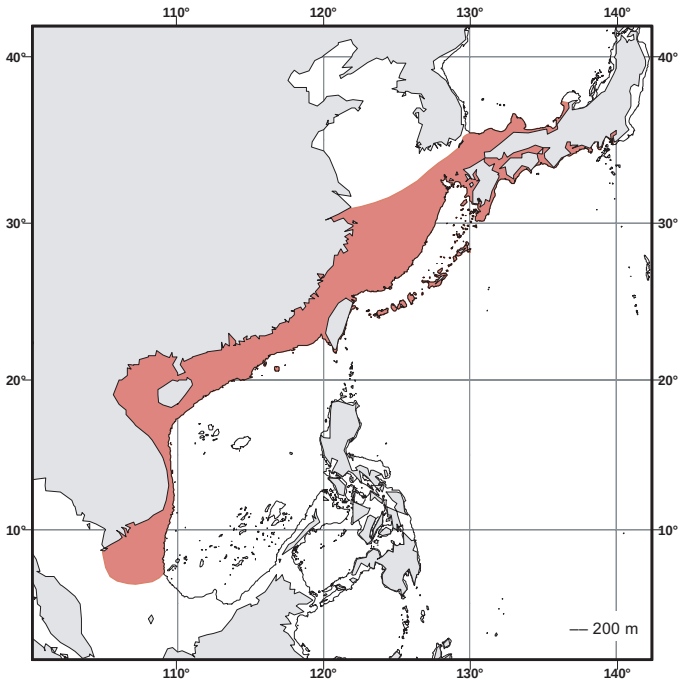

Fig. 157 ***Sepia madokai***
Known distribution

Habitat and Biology: Depth range from 20 to 200 m. ***Sepia madokai*** is a demersal species, most common in bays. It is believed that in years characterized by intensification of warm currents and high temperatures in coastal waters this thermophilic cuttlefish may migrate to areas in the northern Sea of Japan.

Interest to Fisheries: This species is common in the inland sea area of Japan, where it is fished with bottom drift nets and trawls. Due to its small size, it has limited commercial value. It often is caught with ***Sepia esculenta***, particularly in inland seas and bays off Japan. It is a minor object of fisheries in Japan and China (e.g. Peter the Great Bay).

Local Names: JAPAN: Kouika-modoki, Hari-ika.

Remarks: ***Sepia madokai*** has been confused with ***S. acuminata*** Smith, 1916 and as ***S. rex*** (a synonym of ***S. hedleyi*** Berry, 1918). In ***S. madokai***, the reduced suckers of the hectocotylus differ in size, with those of the 2 dorsal rows much smaller than those of the 2 ventral rows. In ***S. hedleyi*** all reduced hectocotylus suckers are similar in size. The club has 8 oblique rows of suckers in ***S. madokai***, rather than 9 to 12 as seen in ***S. hedleyi***. The cuttlebone is bluntly rounded posteriorly, the dorsal median ribs faint and the inner cone limbs broaden posteriorly in ***S. madokai***; in ***S. hedleyi***, the cuttlebone is acuminate posteriorly, the median ribs are distinct, and the inner cone limbs are uniform width along the length of the cuttlebone.

Literature: Adam and Rees (1966), Okutani *et al.* (1987), Shevtsov (1996), Kubodera and Yamada (1998), Lu (1998b).

Sepia murrayi Adam and Rees, 1966

Fig. 158

Sepia murrayi Adam and Rees, 1966, *John Murray Expedition 1933–34, Scientific Reports*, 11(1): 63 [type locality: Gulf of Oman, 25°35'00"N 56°42'18"E to 25°43'00"N 56°39'18"E].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: En – Frog cuttlefish; **Fr** – Seiche grenouille; **Sp** – Sepia rana.

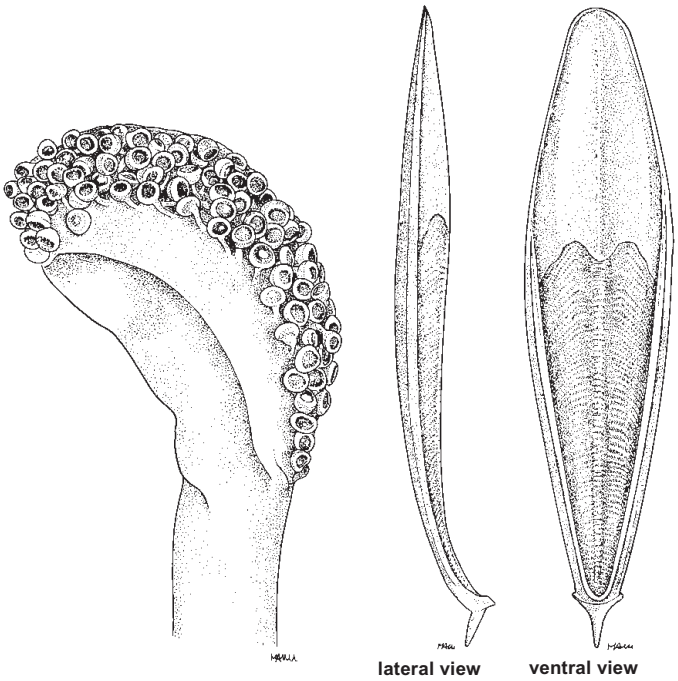

Fig. 158 ***Sepia murrayi***

Diagnostic Features: Mantle oblong; dorsal anterior margin triangular, acute. Fins wide, ending in lobes posteriorly, with a narrow gap between them. Protective membranes in both sexes wide, well developed. Distal arm tips bluntly pointed in females, suckers enclosed by protective membranes. In females, suckers on arms I and II **biserial**, suckers arms III and IV **tetraserial proximally, biserial distally** (arms III may be biserial throughout); female distal biserial suckers **minute and displaced laterally, with distinct gap between**. Club crescent-shaped, short, curved posteriorly; with **5 suckers in transverse rows**; all club suckers of **similar, small, size**. Swimming keel of club extends proximally slightly beyond carpus; dorsal and ventral protective membranes **not joined at base of club** but fused to tentacular stalk, extend proximal to carpus along stalk as narrow ridges; **dorsal membrane much wider than ventral membrane** (nearly as wide as sucker-bearing surface). Cuttlebone outline lanceolate; strongly recurved ventrally; entire surface calcified with reticulate granulose sculpture concentrated posteriolaterally and posteriorly in irregular longitudinal ridges; dorsal median rib indistinct, flanked by shallow grooves; lateral ribs distinct. Chitin borders lateral margins of cuttlebone. Spine straight, directed dorsally, keels absent. Sulcus shallow, narrow, flanked by rounded ribs, extends **entire length of cuttlebone**. Anterior striae **shallow m-shape**; inner cone lateral limbs are separated from outer cone by smooth zones. Inner cone limbs are narrow anteriorly, broaden posteriorly, U-shape, raised into **flat posterior V-shape ledge**; inner cone posteriorly with irregular calcareous ribs radiating into outer cone; outer cone calcified, narrow, limbs are expanded posteriorly into 2 very short 'wings', directed ventrally, to form a recurved cup-like structure.

Size: Up to 41 mm mantle length.

Geographical Distribution: Northwestern Indian Ocean: Gulf of Oman, Gulf of Aden, Somalia (Fig. 159).

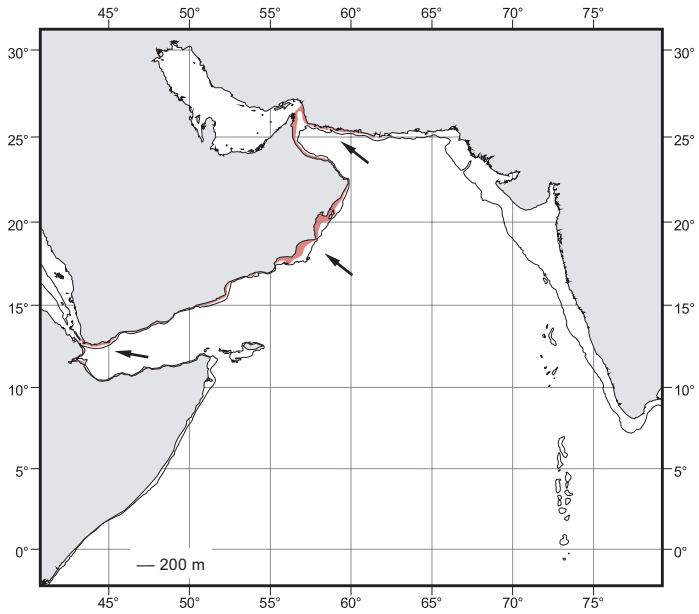

Fig. 159 ***Sepia murrayi***
Known distribution

Habitat and Biology: A neritic demersal species; depth range still undetermined (the only record is 106 m).

Interest to Fisheries: Reported from a bottom trawl resource survey in the Gulf of Aden; its relevance to artisanal or industrial fisheries is undetermined.

Remarks: The males of this species are unknown. ***Sepia murrayi*** differs from ***S. kobiensis*** Hoyle, 1885 in having subequal rather than variously-sized suckers. The dorsal calcareous granules are also more pronounced in ***S. kobiensis***. The inner cone does not have a ventral ledge in ***S. kobiensis*** and the bone lacks the radiating calcareous ribs on the outer cone. The cuttlebone is similar to ***S. burnupi*** Hoyle, 1904 and ***S. trygonina*** (Rochebrune, 1884), but in ***S. murrayi*** the striae differ and the limbs of the inner cone are more divergent and with much sharper edges. The inner cone of ***S. murrayi*** is similar to that of ***S. omani*** Adam and Rees, 1966, but in ***S. omani*** the spine is keeled and the soft parts differ.

Literature: Adam and Rees, 1966.

Sepia officinalis Linnaeus, 1758

Fig. 160; Plates IV, 28 and V, 29–30

Sepia officinalis Linné, 1758. *Systema Naturae per Regna Tria Naturae, Secundum Classes, Ordines, Genera, Species cum Characteribus, Differentiis, Synonymis, Locis*, 658 [type locality: eastern North Atlantic].

Frequent Synonyms: *Sepia filliouxi* Lafont, 1869; *Sepia mediterranea* Ninni, 1884.

Misidentifications: None.

FAO Names: En – Common cuttlefish; **Fr** – Seiche commune; **Sp** – Sepia común.

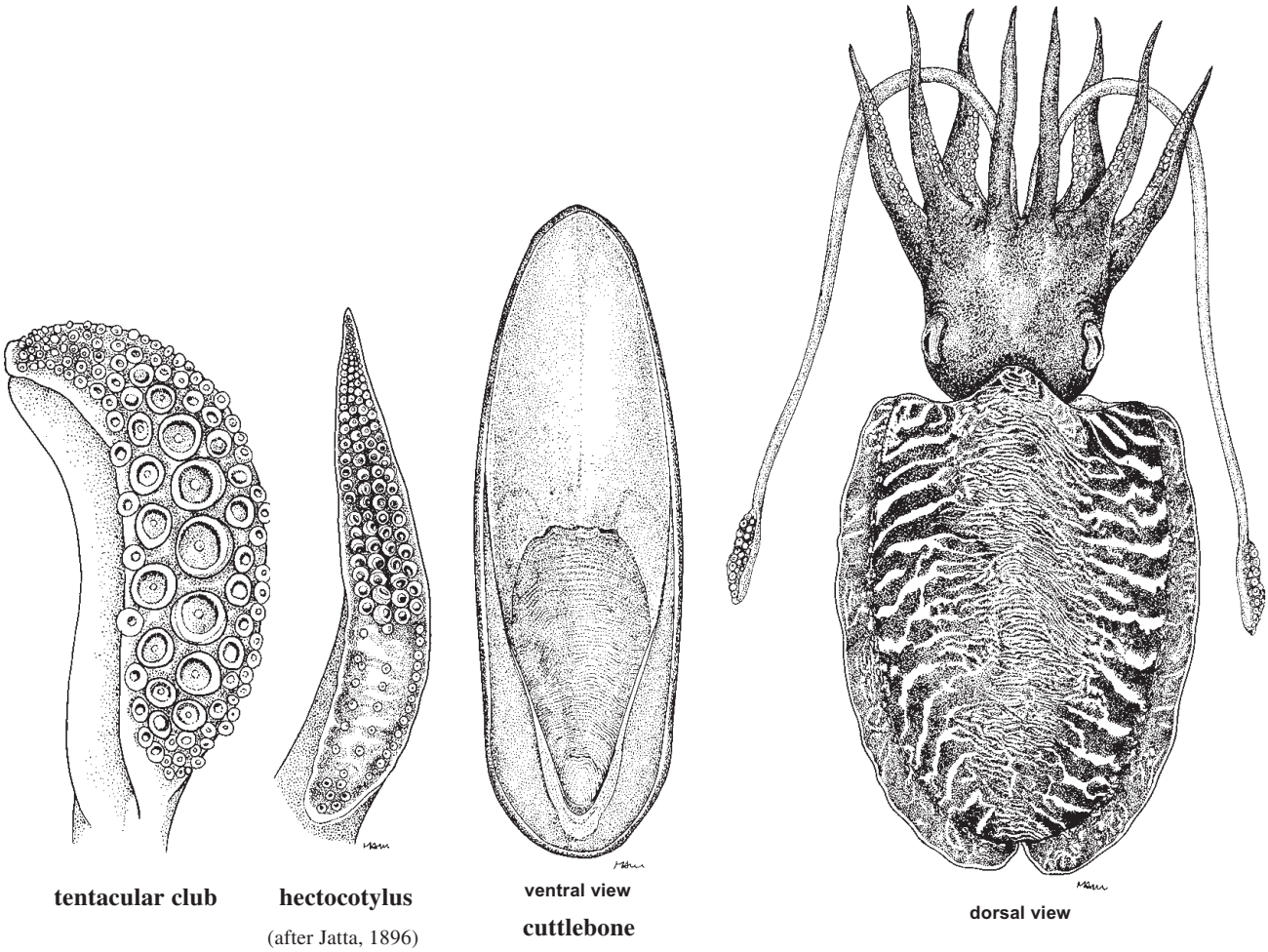

Fig. 160 ***Sepia officinalis***

Diagnostic Features: Fins wide, extend anteriorly slightly beyond mantle margin. Arm suckers tetraserial. Hectocotylus present on left ventral arm: **6 rows of normal size suckers proximally**; **4 to 8 rows of reduced suckers medially**. Club with **5 or 6 suckers in transverse rows**; suckers differ in size: **5 or 6 median suckers twice diameter of rest**. Cuttlebone outline oblong; acuminate, acute, anteriorly; bluntly rounded posteriorly. Spine short, pointed, surrounded by chitinous shield. Sulcus present on last loculus only, absent from striated zone; sulcus shallow, narrow. Anterior striae are **inverted U-shape, or shallow m-shape**. Inner cone limbs are narrow anteriorly, broaden posteriorly; outer cone chitinous; outer cone narrow anteriorly, **broadens posteriorly, spatulate**, lateral limbs are flared ventrolaterally. **Colour: Light brown**. Head with scattered white spots and with dark pigment around eye orbits. Arms I to III have a broad, longitudinal brownish band medially, extending onto head. Dorsal mantle has **bold transverse zebra stripe pattern during the breeding season**; paired dorsal eye spots absent. Fins with narrow white band along outer margin and with small white spots, becoming larger toward junction of mantle and fins. Mature males with **arms IV emboldened by white and black zebra bands and white arm spots**.

Size: Up 490 mm mantle length, weight up to 4 kg in temperate waters and to 300 mm mantle length and 2 kg in the subtropics.

Geographical Distribution: Eastern Atlantic and Mediterranean Sea: eastern North Atlantic, from the Shetland Islands and southern Norway (not present in the Baltic Sea, except for occasional incursions with the northeasternmost Atlantic waters) south through the Mediterranean Sea (including Aegean Sea, Sea of Marmara and Levantine Sea) to northwestern Africa, with the southern boundary coinciding approximately with the border between Mauritania and Senegal (16ºN). Endeavour Bank (Fig. 161).

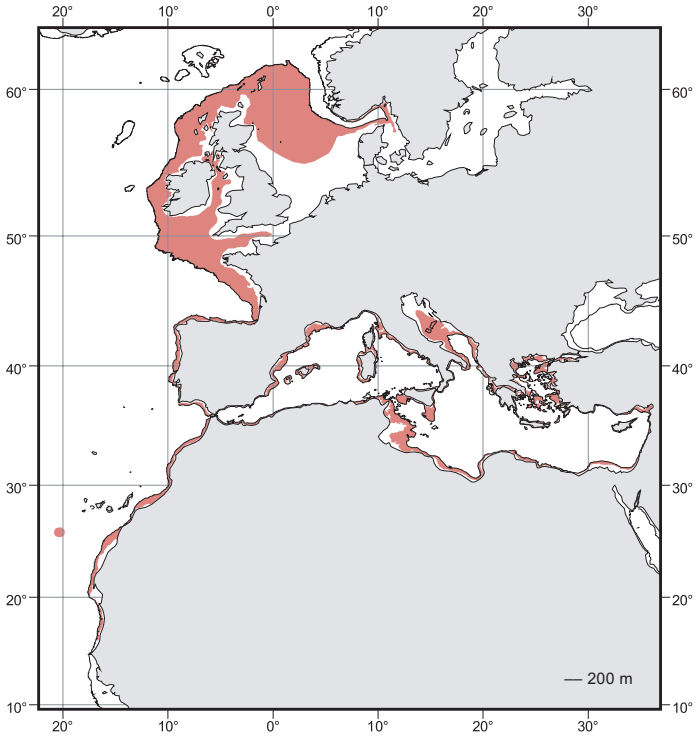

Fig. 161 ***Sepia officinalis***
Known distribution

Habitat and Biology: Depth range from subtidal waters to 200 m, most abundant in upper 100 m, with larger animals found at greater depths. ***Sepia officinalis*** is a neritic, demersal species, found on the continental shelf, predominantly on sandy or muddy substrates. The species undergoes seasonal migrations between inshore waters during spring and summer and medium shelf grounds (about 100 m depth) during autumn and winter. For example, in the Mediterranean, large individuals leave deeper water early in spring to migrate to shallower water, with males preceding females. This group is followed by a succession of smaller animals throughout the summer. In autumn, gradual decent to deeper water begins. Following an elaborate and ritualized courtship, which incorporates stereotyped visual displays and 'mate guarding', spawning occurs in shallow water, with peaks at water temperatures from 13° to 15ºC. In the western Mediterranean, this occurs between April and July; off Senegal and on the Endeavour Bank, spawning occurs between January and April. Males carry up to 1 400 spermatophores and females (depending on their size) between 150 and 4 000 eggs. Mating takes place head-to-head and spermatophores are placed in the females' buccal membrane ventral to the mouth. Eggs, 8 to 10 mm in diameter and blackened with ink, are attached in grape-like clusters to seaweed, shells, debris and other substrates. They hatch after 30 to 90 days depending upon water temperature. The total length of hatchlings is between 7 and 8 mm. The growth rate varies directly with temperature and inversely with size. Very young animals cannot live at depths much greater than about 50 to 80 m, because their cuttlebones cannot withstand water pressures higher than about 6 to 9 atmospheres. From hatchlings to adults, ***S. officinalis*** exhibits a light-induced burying behaviour; most individuals spend the daytime hidden in sand. The life cycle under natural conditions covers 12 to 24 months, varying with environmental conditions. Young hatched in early summer from the spring brood usually spawn in the autumn of the following year; those from the autumn brood spawn in the spring of their second year of life. Adult males may predominate because of massive postspawning mortality among large females. Food consists of small molluscs, crabs, shrimps, polychaetes, other cuttlefishes and juvenile demersal fishes. Prey is often ambushed when these cuttlefishes are partially buried and hidden in sand. The first and second arm pairs commonly protrude from the substrate and are darkened, perhaps acting as lures. Cannibalism is common and may be a strategy to overcome temporary prey shortages. The growth rate is rapid, given their short lifespan. Predators include sharks, sparids and other demersal fishes and cephalopods. ***Sepia officinalis*** has been reared successfully in aquaria and has aquaculture potential if live prey can be substituted by cheaper food items. Recent information on the distribution of this species in Portuguese waters (i.e. Ria de Aveiro and adjacent coasts) indicates that ***Sepia officinalis*** can tolerate brackish waters. The age and mantle length of specimens distributed in brackish areas decrease with decreasing salinity. Younger specimens have greater ecophysiological plasticity and tolerate greater environmental instability: this allows them to colonize the upper zones of the lagunar system, thus avoiding intraspecific competition.

Interest to Fisheries: ***Sepia officinalis*** is one of the most important species for cephalopod fisheries in many countries. It is probably close to its maximum sustainable production in several areas of its distribution since negative trends in captures have been observed in recent years in some heavily fished areas (e.g. in the Mediterranean). Separate official statistics for this species indicate that the main producer country in the year 2001 was Tunisia in the Mediterranean Sea, followed by Greece; Spain and Portugal were also important producers, fishing ***S. officinalis*** in the northeastern Atlantic. However, the species is also known to contribute extensively to the 'cuttlefishes' *sensu lato* official figures both in the Mediterranean (where Italy is the main producer for this category) and in Atlantic waters. In the English Channel, the value of cuttlefish landings increased greatly during recent decades, such that cuttlefishes have become a consistent component of earnings both for French and United Kingdom fishermen. This has focused attention toward a managed exploitation of the resource. Highest catches are recorded for Tunisia in the Mediterranean and off west Africa by Spanish and Moroccan fleets. In the industrial fisheries, ***S. officinalis*** is primarily trawled, either as a target species, or as bycatch to demersal finfishes. The artisanal fisheries, however, utilize a variety of selective gear, such as spears, pots and traps, often combined with the use of light. Sometimes mature females are used as lures to attract males. Trammel nets are also efficient gear to catch cuttlefishes and they are frequently used inshore in many Mediterranean fishing areas. Common cuttlefish usually is marketed fresh or frozen and it is a highly valued food item, especially in Japan, Korea, Italy and Spain.

Remarks: Five subspecies along the European–African coast were designated by Adam (1940). Khromov *et al*. (1998) recognized ***S. o. hierredda*** Rang, 1837 and ***S. o. vermiculata*** Quoy and Gaimard, 1832 as valid, but consider ***S. o. filliouxi*** Lafont, 1868 and ***S. o. mediterranea*** Ninni, 1884 as indistinct from ***S. officinalis*** (this designation restricts the distribution of the species to the subtropical and temperate waters of the eastern Atlantic in the northern hemisphere). ***Sepia officinalis*** and ***S. hierredda*** now are known to be distinct species (see Remarks ***S. hierredda***). In the Mediterranean, young ***S. officinalis*** can be distinguished from ***S. orbignyana*** Férussac, 1826 and ***S. elegans*** Blainville, 1827 by their brown, rather than red, skin colour, the shape of the bone and the club sucker arrangement. The biology of ***S. officinalis*** is well known. It has been the most extensively studied of all cuttlefish species.

Local Names: ALGERIA: Choubai, Chouebí, Seiba, Seich, Sepia, Seppio; Soupia; EGYPT: Sobbeit; FINLAND: Mustekala, Sepia; BULGARIA: Sepija; CYPRUS: Corsica: Seppia; FRANCE: Casseron, Chakod, Chibia, Margade, Seiche; GERMANY: Gemeiner Tintenfisch, Sepie; GREECE: Soupia; ISRAEL: Dyonon refui; ITALY: Seppia comune; Scarpetta, Scarpitta; Scarpitelle, Seccetella, (juveniles), Secce, Seppa, Seppia, Siccia, Sepa, Sepia imperiale; JAPAN: Mongo-ika, Yoroppa kouika; LEBANON: Sabbidije; LIBYA: Shoubia; MADEIRA: Choco; MALTA: Sicca; MONACO: Supia; MOROCCO: Chubei, Seiche; NETHERLANDS: Gewone Inktvis, Zeekat; PORTUGAL: Checo, Choco; ROMANIA: Sepia; RUSSIAN FEDERATION: Kora katitza; SENEGAL: Seiche; SPAIN: Aluda, Choco, Coca, Jibia, Jibión, Luda, Rellena, Relleno, Sipia, Sipionet; TUNISIA: Choubei, Chouebi, Seche, Sibia, Sipia, Soubia; TURKEY: Sübye; UK: Cuttlefish; YUGOSLAVIA: Sipa.

Literature: Tompsett (1939), Mangold-Wirz (1963), Boletzky (1983a), Guerra and Castro (1988), Hanlon and Messenger (1988), Guerra (1992), Augustyn *et al*. (1995), Hanlon and Messenger (1996), Sanjuan *et al*. (1996), Neige and Boletzky (1997), Khromov *et al*. (1998), Belcari (1999b), Pérez-Losada *et al*. (1999), Denis and Robin (2001), Guerra *et al*. (2001), Belcari *et al*. (2002), Jereb (2002), Salman *et al*. (2002), Sobral (2002), Vrgoč *et al*. (2004). Numerous other references pertaining to this species are available.

Sepia omani Adam and Rees, 1966

Sepia omani Adam and Rees, 1966. *The John Murray Expedition*, 11(1): 92 [type locality: Gulf of Oman].

Frequent Synonyms: None.

Misidentifications: *Sepia vossi* Khromov, 1996.

FAO Names: En – Oman cuttlefish; **Fr** – Seiche d'Oman; **Sp** – Sepia de Oman.

Diagnostic Features: Mantle oval. Arm suckers tetraserial; webs wide between dorsal and dorsolateral arms. Hectocotylus present on left ventral arm: 2 or 3 rows of normal size **suckers** proximally, suckers reduced medially for 40% of arm length, then normal size suckers to arm tip; reduced suckers much smaller than normal arm suckers; oral surface of modified region wide, swollen, fleshy, with transversely grooved ridges; suckers in 2 dorsal and 2 ventral series displaced laterally, with gap between; 2 ventral series crowded together. Club sucker-bearing surface flattened, with **3 or 4 suckers in transverse rows**; **suckers differ markedly in size: 3 to 5 suckers in middle of third longitudinal row extremely enlarged**. Swimming keel of club extends proximally slightly beyond carpus; dorsal and ventral protective membranes **not joined at base of club**, do not continue along stalk. Dorsal membrane forms deep cleft at junction with stalk. Cuttlebone acuminate, acute, anteriorly and posteriorly; dorsal median rib present, sides almost parallel, flanked by shallow grooves; lateral ribs distinct. Spine long, pointed. Anterior striae **shallow m-shape**; sulcus shallow, narrow, extends entire length of cuttlebone. Inner cone limbs are uniform width, narrow, U-shape posteriorly, thickened; inner cone posteriorly with **irregular calcareous ribs radiating into outer cone**; outer cone calcified, narrow anteriorly, broadens posteriorly. **Colour:** Light brown. Dorsal mantle has dark brown transverse stripes.

Fig. 162

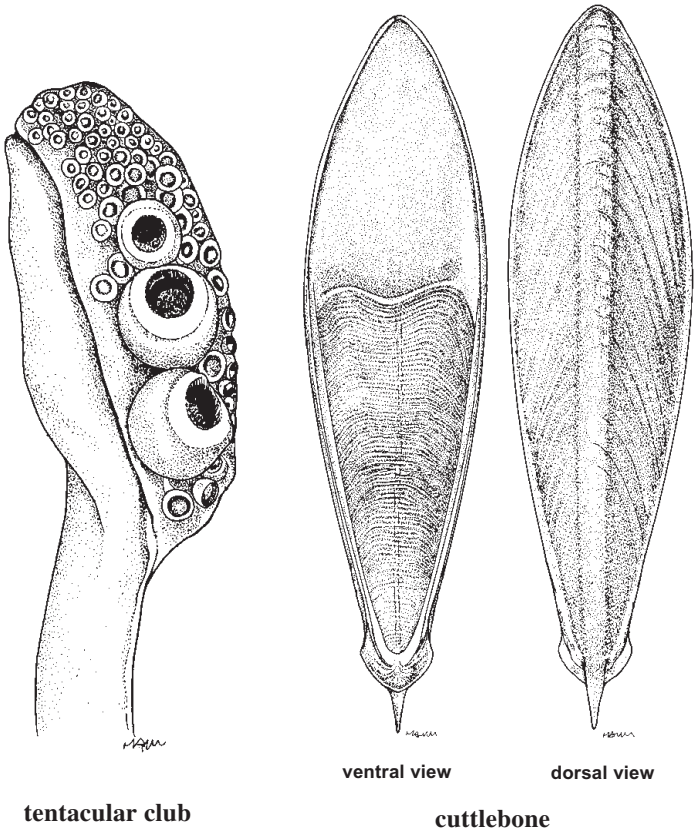

Fig. 162 ***Sepia omani***

Size: Up to 100 mm mantle length.

Geographical Distribution: Northern Indian Ocean: Gulf of Oman, off Pakistan and western India. Limits of range unknown (Fig.163).

Habitat and Biology: This is a neritic demersal species. Depth range from 50 to 210 m.

Interest to Fisheries: At present still undetermined. Probably the species occurs in mixed species trawls, where it is not separated from other sepiids.

Remarks: Records from the Indo-Pacific refer to ***S. vossi*** Khromov (1996).

Literature: Filippova *et al*. (1995).

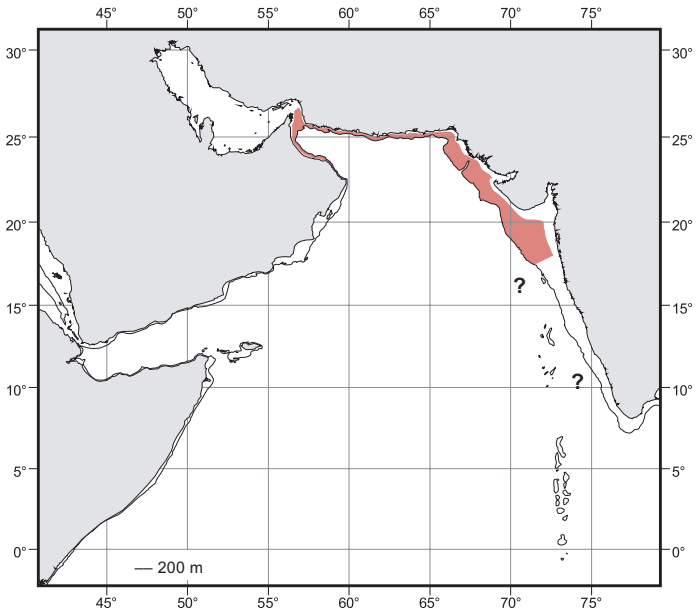

Fig. 163 ***Sepia omani***
Known distribution

Sepia opipara (Iredale, 1926)

Fig. 164

Glyptosepia opipara Iredale, 1926, *The Australian Zoologist*, 4(3): 191 [type locality: Australia: Queensland, Masthead Island, Capricorn Group, 23°32'S 151°44'E].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: En – Magnificent cuttlefish; **Fr** – Seiche magnifique; **Sp** – Sepia magnífica.

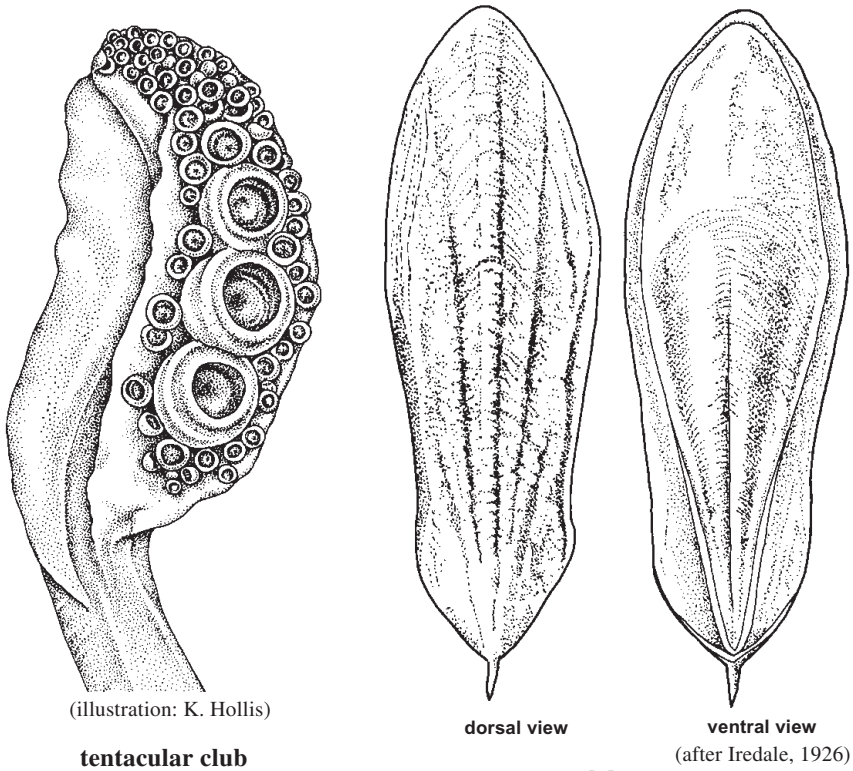

Fig. 164 ***Sepia opipara***

Diagnostic Features: Mantle broad, oval. Male and female arm lengths subequal; protective membranes narrow. Arm suckers tetraserial. Hectocotylus present on left ventral arm: **5 or 6 rows of normal size suckers proximally, 6 or 7 rows of reduced suckers medially**, then normal size suckers distally to arm tip; oral surface of modified region not wide, fleshy, but normal, as on opposite arm. Club sucker-bearing surface flattened, with **3 or 4 suckers in transverse rows**; suckers differ markedly in size: middle of club with **4 or 5 greatly enlarged suckers**, second proximal one the largest, obliquely 1 small lateral sucker and 1 minute marginal sucker dorsal to the big sucker, 1 small lateral and 4 minute marginal suckers ventral to it; suckers proximal and distal to the big suckers are small. Swimming keel of club extends well proximal to carpus; dorsal and ventral protective membranes not joined at base of club but **fused to tentacular stalk**. Dorsal and ventral membranes **of equal length**; extend proximal to carpus along stalk. Dorsal membrane forms deep cleft at junction with stalk. Cuttlebone outline oblong; bone bluntly rounded anteriorly; acuminate, acute, posteriorly; **dorsal surface pinkish**; dorsal surface **flat medially and laterally**; texture rough, with irregular calcified projections; dorsal median rib **distinct**; **sides approximately parallel**, flanked by broad grooves; **lateral ribs distinct**. Chitin borders lateral and anterior margins of cuttlebone. Spine

short, pointed, curves dorsally, with **ventral keel**. Striated zone flat; last loculus convex; sulcus shallow, narrow. Anterior striae are **inverted U-shape**; limbs of inner cone extend anteriorly to end of striated zone. Inner cone limbs are uniform width, narrow, **U-shape posteriorly**, thickened; outer cone calcified, narrow anteriorly, broadens posteriorly.

Size: Up to approximately 150 mm mantle length.

Geographical Distribution: Southern Indo-Pacific: northern Australia from Dirk Hartog Island, 25°45'S 113°03'E (Western Australia), to southern Queensland, 36°57'S 151°45'E (Fig. 165).

Habitat and Biology: Depth range from 83 to 184 m.

Interest to Fisheries: Species taken as bycatch of prawn and mixed species trawl fisheries. The size of this species and its broad distribution indicate that it has potential for exploitation.

Literature: Lu (1998a).

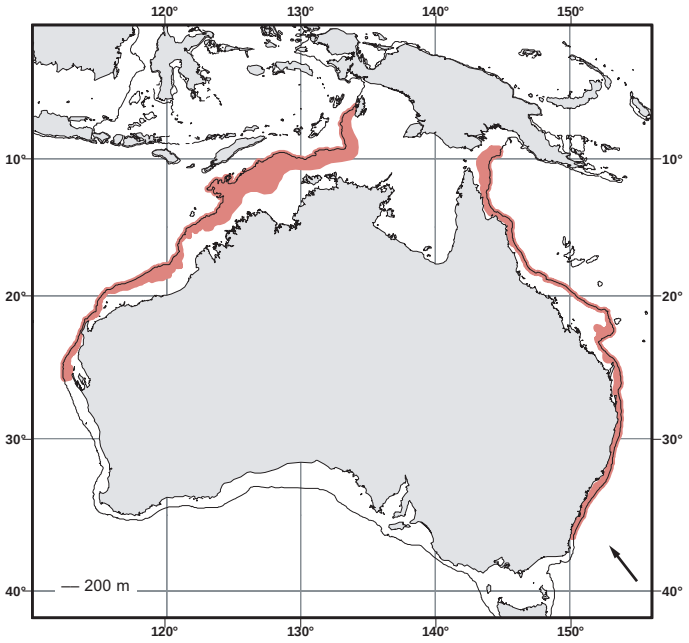

Fig. 165 ***Sepia opipara***
Known distribution

Sepia orbignyana Férussac *in* d'Orbigny, 1826 **Fig. 166**

Sepia orbignyana Férussac *in* d'Orbigny, 1826, *Annales des Sciences Naturelles, Paris*, series 1, 7: 156 [type locality: France: La Rochelle].

Frequent Synonyms: None.

Misidentifications: None.

FAO Names: En – Pink cuttlefish; **Fr** – Seiche rosée; **Sp** – Sepia con punta.

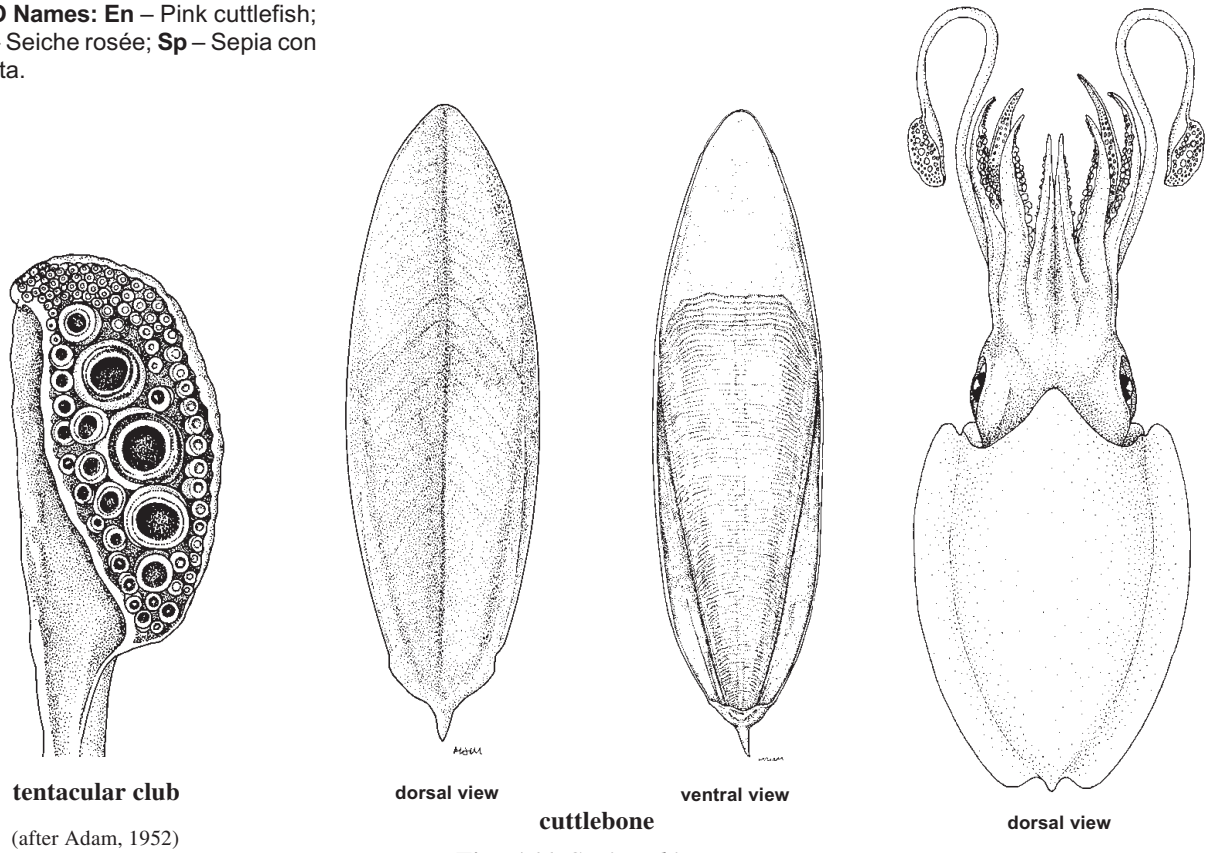

Fig. 166 ***Sepia orbignyana***

Diagnostic Features: Mantle oval. Male and female arms subequal in length. Arm suckers tetraserial. Male medial non-hectocotylized arm suckers with greater diameter than marginal ones. Hectocotylus present on left ventral arm: 1 or 2 rows of normal size suckers proximally, greatly reduced suckers medially, then normal size suckers distally to arm tip. Suckers of hectocotylus in 2 dorsal and 2 ventral series displaced laterally, with gap between them. Club **short, oval**, with **5 or 6 suckers in transverse rows**; suckers differ markedly in size: **3 large suckers medially with one slightly smaller sucker on each side of these**. Swimming keel of club extends proximal to carpus; dorsal and ventral protective membranes **joined at base of club**. Buccal membrane in females with single median spermathecae in ventral part. Cuttlebone outline oblong; acuminate, acute, anteriorly; bluntly rounded posteriorly; **strongly recurved ventrally**; dorsal surface pinkish; dorsal surface flat medially, curved, convex laterally; granulose; dorsal median rib absent; bone with **dorsal median groove present**, shallow, narrow, extending full length of cuttlebone. Spine long, pointed (prominent), straight, directed dorsally, with **ventral keel**. Striated zone and last loculus convex; sulcus **shallow, narrow, extends** entire length of cuttlebone; **sulcus flanked by rounded ribs bordered laterally by shallow grooves**. Anterior striae **shallow m-shape,** or wavy. Inner cone limbs are uniform width, narrow V-shape posteriorly, thickened slightly; outer cone limbs are slightly expanded posteriorly, directed ventrally to form a recurved cup-like structure. **Colour:** Reddish brown.

Size: Males up to 96 mm mantle length; females up to 120 mm mantle length.

Geographical Distribution: General distribution: eastern Atlantic and Mediterranean Sea: from the Irish Sea, English Channel and Bay of Biscay to southern Angola (17°S), and throughout the Mediterranean Sea (including the Adriatic and Aegean Seas, Sea of Marmara and Levantine Sea). Saharan Bank (Fig. 167).

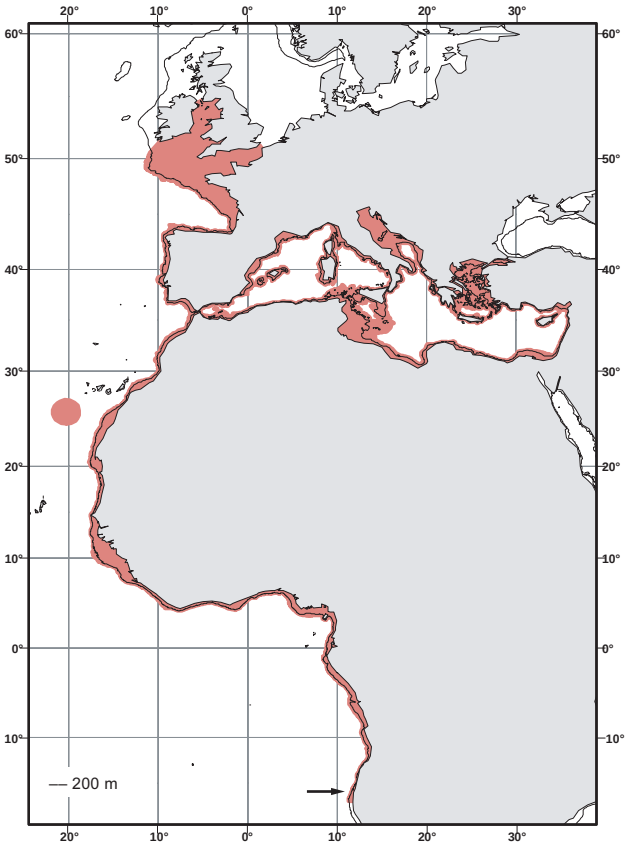

Fig. 167 ***Sepia orbignyana***
Known distribution

Habitat and Biology: The depth range for this species is from 15 to 570 m, and it is most abundant between 50 and 250 m. ***Sepia orbignyana*** is a demersal species that lives mainly on sandy and sandy-muddy bottoms. It is frequently sympatric (and confused) with ***S. elegans*** Blainville, 1827. In the Sea of Marmara the species can occur in brackish waters. In Mediterranean waters, males and females are usually found together throughout the year and the spawning period is probably continuous, with peaks of activity from spring to autumn. A predominance of mature individuals in spring is also reported for the species in Portuguese waters. No onshore spawning migrations have been reported. Due to the extended reproductive period, recruitment is also continuous but variable, with seasonal density peaks. Growth rates of females are higher than those of males, and females also attain larger sizes. In the Mediterranean, the smallest mature males are 35 mm, and the smallest females 65 mm mantle length. Mature males, aged 6 or 7 months, carry about 100 spermatophores; females of 9 or 10 months of age, carry around 400 eggs. Egg diameter increases with the size of the females. The eggs (maximum size 7 to 8.5 mm diameter) are laid in clusters of 30 to 40 and are attached to sponges on muddy bottoms. Diet consists mainly of crustaceans, but fish and cephalopods make up a minor component.

Interest to Fisheries: ***Sepia orbignyana*** is one of the most abundant cephalopod species in some areas of its distributional range (e.g. within the Mediterranean: Aegean, southern Adriatic and Tyrrhenian Seas and in the Sicilian Channel). It is taken mainly as a bycatch throughout the Mediterranean and in the west African trawl fisheries. Separate statistics are not reported, but ***S. orbignyana*** represents a very significant percentage of the catches in some areas. In the Mediterranean Sea it is marketed along with ***S. elegans*** and small ***S. officinalis*** and constitutes a valuable resource locally. In the Sicilian Channel, research studies showed an exploitation rate of 0.60 for this species, which suggests an intense fishing pressure on this resource. It is marketed fresh and frozen.

Local Names: ITALY: Seppia pizzuta; SPAIN: Sepia puntiaguda, Chopito.

Remarks: ***Sepia orbignyana*** differs from ***S. elegans*** in having more than 100 suckers on the club. The 2 species also differ in the cuttlebone form and structure. ***Sepia elegans*** lacks a cuttlebone spine, while a spine is present in ***S. orbignyana***. In addition, ***Sepia orbignyana*** differs from ***S. officinalis*** Linnaeus, 1758 in having a reddish, rather than brown coloration, it generally inhabits deeper water and does not bury in the sand during the day.

Literature: Mangold-Wirz (1963), Adam and Rees (1966), Bello (1990a), Jereb and Ragonese (1991), Ragonese and Jereb (1991), Wurtz *et al*. (1991), Guerra (1992), D'Onghia *et al*. (1996), Sanjuan *et al*. (1996), Neige and Boletzky (1997), Belcari (1999c), Salman *et al*. (2002).