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# PRELIMINARY CHECKLIST OF THE CEPHALOPODS OF THE SOUTH CHINA SEA

**M.D. Norman**
*Department of Marine Biology, James Cook University, Townsville, Qld 4811, Australia.*

**C.C. Lu**
*Department of Zoology, National Chung Hsing University, 250 Kuo-Kuan Road, Taichung, Taiwan, 40227.*

***ABSTRACT.*** - Despite the high fisheries profile and value of octopuses, squids, cuttlefishes and their relatives throughout the South China Sea, there is still relatively little known or published on this cephalopod fauna. This situation is a product of few regional revisions, the large number of species being treated under single or inappropriate names, key families with poorly-resolved taxonomies and inadequate diagnostic characters, and limited support for (and development of) regional expertise. A preliminary checklist of 31 families and 120 species of cephalopods are reported here from the South China Sea. This list is generated from a review of the available literature, material examined in museum collections and unpublished data of the authors. A preliminary list of incorrect, unresolved or questionable records of 70 nominal species from the region is also presented to redress some of the errors entrenched in the literature. There is an urgent need for comprehensive revision of this group throughout the region, including primary field surveys, reviews of subsistence and commercial fisheries catches, and support for development of regional expertise.

## INTRODUCTION

This paper presents a preliminary checklist of the cephalopod fauna of the South China Sea. In this treatment, this sea is considered as being bound by Taiwan Strait in the north, Borneo and western Philippines to the east, and the equator to the south.

Despite the high profile of cephalopods in the fisheries, cuisine and cultures of countries bordering the South China Sea, there is surprisingly little known of many aspects of these animals, from taxonomy to biology, distributions, fisheries composition or catch statistics. Most published catch statistics list multiple species under generic terms such as "squid" or "octopuses", or use inappropriate scientific names for individual species harvested on a large scale. This situation is the direct product of three factors: i) poor taxonomy for many groups, ii) scarcity of regional revisions or field guides, and iii) limited communication between adjacent countries in pooling data on biology, distributions and fisheries.

A number of cephalopod researchers have reviewed cephalopods of the world, indirectly providing information on species found in the South China Sea region (e.g., Roper, Sweeney & Nauen, 1984; Nesis, 1987; Young, Vecchione & Mangold, 1996). More recently, the Food and Agriculture Organisation of the United Nations has supported production of a field guide to marine life of commercial value or potential in the Western Central Pacific region, including treatments of key cephalopod taxa (Dunning, Norman & Reid, 1998).

The following studies have provided preliminary revisions of all cephalopods or particular groups from countries within the South China Sea region: Philippines (Voss, 1963; Norman & Sweeney, 1997), Hong Kong (Voss & Williamson, 1972; Norman & Hochberg, 1994), Thailand (Chikuni, 1987; Isarangkura & Davivongs, 1987; Chotiyaputta, 1993; Chaitiamvong, 1993), China (Dong, 1963, 1978, 1979, 1987, 1988; Li, 1983; Li & Chen, 1989) and Vietnam (Duc, 1978, 1993, 1997; Khromov, 1987a, 1987b, 1990, 1996).

As the majority of the cephalopod species found in the South China Sea also occur elsewhere, regional revisions in waters adjacent to this sea also provide valuable information on its cephalopod fauna. Sasaki (1929) reviewed the fauna of Japanese and adjacent waters with records extending into the northern end of the South China Sea. Okutani, Tagawa & Horikawa (1987) also treated the Japanese cephalopod fauna, including many species recorded from the South China Sea.

The following checklist is based on primary field collection by the authors, examination of museum and fisheries research collections, and reviews of the available literature. Distributional records are based on material examined in the collections of the Museum of Victoria, Melbourne; National Museum of Natural Science, Taichung; British Museum (Natural History), London; Muséum National d'Histoire Naturelle, Paris; Australian Museum, Sydney; National Museum of Natural History, Smithsonian Institution, Washington, DC; Zoological Reference Centre, National University of Singapore (incorporating the collections of the Raffles Museum); Californian Academy of Sciences, San Francisco; Yale Peabody Museum, Newhaven; Academy of Natural Sciences, Philadelphia; and Musée Royal d'Histoire Naturelle de Belgique, Brussells.

Where information on fisheries value is available, species are designated as being of minor or major importance. Sources for this information, however, may be relatively dated and may not reflect current fishery practices. For example, octopus pot fisheries reported off Hong Kong in Voss & Williamson (1972) no longer appear to be active.

A number of species are listed as anticipated to occur in the region on the basis of their cosmopolitan distributions elsewhere in the world, but for each there is no confirmed records to date. Total distributions provided for species should also be considered preliminary as comprehensive surveys are yet to be undertaken throughout much of the Indo-Pacific region.

## PRELIMINARY CHECKLIST OF THE CEPHALOPODS OF THE SOUTH CHINA SEA

The following order and family diagnoses were constructed on the basis of reviews in Roper, Sweeney & Nauen (1984), Nesis (1987) and Young, Vecchione & Mangold (1996). Size measurements are presented as mantle length (ML), following Roper and Voss (1983). Where information is available, species forming the basis of at least minor fisheries (*) and major fisheries (**) are indicated.

**Subclass Nautiloidea**

A primitive group of cephalopods with chambered shells and four gills (tetrabranchiate). This group were much more diverse and widespread in the past, dominating the world's oceans prior to the arrival of the fishes. The only representatives of this subclass still alive today are a single family and genus, and six species, restricted to tropical latitudes of the Indo-West Pacific region.

**Family Nautilidae**

The "chambered or pearly nautiluses" of the tropical and subtropical waters of the Indo-West Pacific region. Consists of a single family and genus, and six species. At least one species occurs in the South China Sea. These primitive animals are largely unchanged over 500 million years. They have approximately 100 sucker-less tentacles, a simple eye lacking a lens and thick rigid hood used to protect the animal when retracted within the shell. The taxonomy of the group is well-resolved although several (nominal) species are only known from the shell. Species typically occur in deeper waters off reefs (>200 m), rising to surface waters at night to feed primarily on carrion. Chambered nautiluses are harvested in many regions in trap pots to service the shell trade. See comprehensive reviews in Saunders & Landman (1987).

* ***Nautilus pompilius*** **Linnaeus, 1758** (Figure: Dunning, 1998a)
Synonyms: ?*Nautilus ambiguus* Sowerby, 1849, *Nautilus alumnus* Iredale, 1944.
Distribution: Widespread in tropical Indo-Pacific waters. Deep water (>200 m) adjacent to coral/rocky substrates.

**Subclass Coleoidea**

This subclass contains all living cephalopods other than chambered nautiluses and includes the squids, octopuses and cuttlefishes. Key diagnostic characters are two gills (dibranchiate), eight arms with suckers or hooks, and two retractile tentacles in certain groups.

**Order Teuthida**

Squids and characterised by eight arms and two retractile tentacles (tentacles lost in the family Octopoteuthidae, Lepidoteuthidae and the genus *Gonatopsis* of the family Gonatidae), fins on the mantle and stalked suckers with horny rings and constricted necks. In some squids the suckers have become modified into chitinous hooks.

**Suborder Myopsida**

Myopsid squids (or "covered-eye squids") are muscular animals characterised by eyes entirely covered by a transparent cornea which is fused with the orbit. The eye cavity communicates with the exterior through a tiny hole (the lacrimal pore). Arms and tentacles have suckers only, no hooks. Mantle locking apparatus is simple (linear) and the gladius is pen-like. This suborder contains a single family which is represented in the South China Sea region.

**Family Loliginidae**

Known as "inshore, pencil, reef or calamari squids", the loliginids are muscular squids ranging in size from 30 to 500 mm ML. They occur in all temperate and tropical oceans. There are seven genera and around 50 species. At least 13 species occur in the South China Sea. The taxonomy of this group is poor with many important commercial species being treated under catch-all names. There is a high potential for cryptic species, as recently found in molecular studies on the *Uroteuthis* (*Photololigo*) *chinensis* group in northern Australia (Yeatman & Benzie, 1993), where four distinct taxa were recognised, their morphologies indistinguishable on the basis of current diagnostic characters. Species of *Uroteuthis (Photololigo)* possess

bacterial light organs within the mantle cavity, presumably used for counter illumination to reduce silhouettes against ambient down light. This family of squids is extremely important in both subsistence and large-scale commercial trawl fisheries. Members of this family are the most common cephalopod found in local and commercial fish markets throughout the region. See reviews in Nesis (1987) and Vecchione et al. (1998).

***Loliolus* (*Loliolus*) *affinis* Steenstrup, 1856** (Figure: Lu, Roper & Tait, 1985, Dunning, 1998b)
Distribution: Sri Lanka to Java, Indonesia.

***Loliolus* (*Loliolus*) *hardwickei* (Gray, 1849)** (Figure: Lu, Roper & Tait, 1985)
Synonyms: *L. typus* Steenstrup, 1856; *L. investigatoris* Goodrich, 1896.
Distribution: India, Indonesia and Indo-China.

***Loliolus* (*Nipponololigo*) *sumatrensis* (d'Orbigny, 1835)** (Figure: Nesis, 1987, , Dunning, 1998b)
Synonyms: *L. kobiensis* Hoyle, 1885, *L. yokoyae* Ishikawa, 1925, *L. rhomboidalis* Burgess, 1967.
Distribution: Japan to Philippines to Maldives.

***Loliolus* (*Nipponololigo*) *beka* (Sasaki, 1929)** (Figure: Nesis, 1987, Dunning, 1998b)
Distribution: Japan to Taiwan, Hainan and Gulf of Tonkin.

****Loliolus* (*Nipponololigo*) *uyii* (Wakiya & Ishikawa, 1921)** (Figure: Nesis, 1987)
Synonyms: *L. tagoi* Sasaki, 1929, *L. gotoi* Sasaki, 1929.
Distribution: Japan to Gulf of Thailand, Taiwan.

***Loliolus* (*Nipponololigo*) *japonica* (Hoyle, 1885)** (Figure: Nesis, 1987)
Distribution: Japan to Taiwan and Gulf of Thailand.

*****Sepioteuthis lessoniana* Férussac in Lesson, 1830** (Figure: Nesis, 1987, Dunning, 1998b)
Distribution: Tropical Indo-West Pacific region.
Note: Likely to include a number of cryptic species, as suggested by recent findings in Okinawa (Segawa et al., 1993).

*****Uroteuthis* (*Photololigo*) *chinensis* (Gray, 1849)** (Figure: Nesis, 1987, Dunning, 1998b)
Synonyms: *L. etheridgei* Berry, 1918, *L. formosana* Sasaki, 1929.
Distribution: Ryukyu Island, southern China and Taiwan, to New South Wales, Australia.
Note: Likely to include a number of cryptic species, as suggested by the findings of Yeatman & Benzie (1993).

*****Uroteuthis* (*Photololigo*) *duvaucelii* (d'Orbigny, 1835)** (Figure: Nesis, 1987, Dunning, 1998b)
Synonyms: *L. indica* Pfeffer, 1884, *L. galatheae* Steenstrup in Hoyle, 1885, *L. oshimai* Sasaki, 1929.
Distribution: Indian Ocean and Western Pacific Ocean.

*****Uroteuthis* (*Photololigo*) *edulis* (Hoyle, 1885)** (Figure: Nesis, 1987, Dunning, 1998b)
Distribution: Western Pacific Ocean to Red Sea.
Note: Likely to include a number of cryptic species, as suggested by the findings of Yeatman & Benzie (1993).

***Uroteuthis (Photololigo) sibogae* (Adam, 1954)** (Figure: Nesis, 1987)
Distribution: Taiwan to Singapore and Indian Ocean.

*****Uroteuthis* (*Photololigo*) *singhalensis* (Ortmann, 1891)** (Figure: Nesis, 1987, Dunning, 1998b)
Distribution: South China Sea to Gulf of Aden.

***Uroteuthis* (*Uroteuthis*) *bartschi* Rehder, 1945** (Figure: Nesis, 1987, Dunning, 1998b)
Distribution: Eastern Indonesia, Philippines, Mozambique.

### Suborder Oegopsida

Oegopsid squids (or "open-eyed squids") are muscular to gelatinous animals characterised by the anterior chamber of the eye being widely open and communicating with the exterior. Arms and tentacles bear suckers and/or hooks. Mantle locking apparatus ranges from simple to complex to fused. This suborder contains more than 20 families and 200 species, of which 15 families occur within the South China Sea region. Many are the subjects of important fisheries.

**Family Ancistrocheiridae**

Moderate-sized squids (to 250 mm) with large triangular fins, hooks on the arms and tentacles, and photophores on fins, mantle, head, arms and tentacles. The single species in this family occurs throughout tropical and subtropical seas including the South China Sea. No known fisheries value. Taxonomy requires revision with Young et al. (1996) suggesting different species in the Atlantic and Pacific oceans. See Young et al. (1998) for review of this family.

***Ancistrocheirus lesueuri* (d'Orbigny, 1842)** (Figure: Roper et al. 1984)
Synonyms: Possible senior synonym of *Thelidioteuthis alessandrinii* (Vérany, 1851)
Distribution: Tropical and subtropical waters.

**Family Enoploteuthidae**

Firefly or enope squids" are small (30 to 130 mm ML) and characterised by hooks on all arms and tentacles, photophores restricted to mantle, head, eyes and arms (not on tentacles or viscera) and a broad tail containing vesicles. There are four genera and around 40 species of which at least six are found in the South China Sea. It appears that most (and possibly all) members of this family undergo extensive daily vertical migrations. No species are targetted for fisheries in the South China Sea, although some appear in markets as bycatch. See Tsuchiya & Okutani (1988), Tsuchiya (1993) and Young et al. (1998) for reviews of this family.

***Abralia andamanica* Goodrich, 1896** (Figure: Nesis, 1987)
Distribution: Tropical waters: Arabian Sea to Japan, Australia and Hawaii.

****Abralia multihamata* Sasaki, 1929** (Figure: Nesis, 1987)
Distribution: Taiwan and mainland China.

***Abraliopsis lineata* (Goodrich, 1896)** (Figure: Tsuchiya & Okutani, 1988)
Distribution: East Africa to Taiwan and Polynesia.

***Enoploteuthis jonesi* Burgess, 1982** (Figure: original description)
Distribution: East Africa to Hawaii.
Note: No record from the South China Sea but anticipated to occur in the region.

***Enoploteuthis leptura* (Leach, 1817)** (Figure: Tsuchiya, 1993)
Distribution: Tropical western and central Pacific, predominantly equatorial.
Note: No record from the South China Sea but anticipated to occur in the region.

***Enoploteuthis reticulata* Rancurel, 1970** (Figure: Nesis, 1987)
Distribution: Western Indian Ocean to Hawaii.
Note: No record from the South China Sea but anticipated to occur in the region.

**Family Pyroteuthidae**

Small muscular squids (23-50 mm ML) with sharply pointed tail, oval-shaped fins, hooks on at least arms I-III and photophores on the viscera, eyes and tentacles, but not on the mantle. The family occurs in tropical and temperate waters world-wide and contains two genera and six species. At least two species are present in the South China Sea. No known fisheries value. See Young et al. (1998) and Young & Harman (1998) for reviews of this family.

***Pterygioteuthis giardi* Fischer, 1896** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

***Pyroteuthis margaritifera* (Rüppell, 1844)** (Figure: Nesis, 1987)
Distribution: Tropical to subtropical Atlantic Ocean and Indo-West Pacific region.

**Family Octopoteuthidae**

"Octopus squids" are medium to large squids (to 2000 mm ML) which receive their name from the reduction or loss of the tentacles from early growth stages, leaving eight arms. The fins are very large and rhomboidal extending along most of the length of the mantle. Arms

with two rows of hooks replaced at the tips by suckers and photophores. The family is found in tropical and temperate waters and is represented by two genera and seven species. At least one species is represented in the South China Sea. No known fisheries value. See Nesis (1987) for key to genera and species.

***Octopoteuthis sicula* (Rüppell, 1844)** (Figure: Nesis, 1987)
Distribution: Tropical to subtropical Atlantic Ocean and Indo-West Pacific region, mid-Philippines.

**Family Pholidoteuthidae**

Medium-sized squids (to 800 mm ML) covered in dermal pads or tubercles. Suckers in two rows on arms and four rows on tentacular clubs. Family consists of one genus and two species found throughout tropical and temperate seas. One species has been recorded from the South China Sea. No known fisheries value. Treated in Nesis (1987) under the family Lepidoteuthidae.

***Pholidoteuthis boschmai* Adam, 1950** (Figure: Nesis, 1987)
Distribution: At least Flores Sea, Indonesia. Reports off Australia, Africa and eastern Pacific Ocean.
Note: First record for South China Sea from off Tung-Sha Island in the Pratas Islands (Lu, unpublished data).

**Family Cthenopterygidae**

"Comb-finned squids" of medium size (to 90 mm ML), characterized by unusual ribbed fin as a series of soft rays, ventral arms broad at base with two rows of suckers, all other arms with six rows at some point along length. Large oval photophore on viscera and as large patch on eye. Family consists of one genus and two species in tropical to subtropical waters. Resident in deep water during the day (at 500-1000 m), rising at night to surface waters. One species represented in the South China Sea. No known fisheries value. Family treated in Nesis (1987).

***Cthenopteryx sicula* (Vérany, 1851)** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

**Family Bathyteuthidae**

Small squids (to 80 mm ML), deep red-brown in colour with short kidney-shaped posterior fins and short arms, wide at their bases. All but ventral arms with single photophore at aboral base. Family found throughout temperate and tropical waters and consists of a single genus and three species. One species recorded from South China Sea. Bathypelagic and meso-bathypelagic squids without conspicuous vertical migrations. No known fisheries value. See Roper (1969) for extensive review.

***Bathyteuthis abyssicola* Hoyle, 1885** (Figure: Roper, 1969, Nesis, 1987)
Synonyms: *B. megalops* Verrill, 1885
Distribution: Cosmopolitan, rarer in tropical latitudes.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

**Family Onychoteuthidae**

"Hooked squids" are small to very large squids (to 1500 mm ML), typically muscular with elongate mantles. Arms are equipped with two rows of smooth-ringed suckers and the tentacular clubs have two rows of hooks. The fin is in the posterior part of the mantle. Mantle locking apparatus linear and simple. The family contains six genera and around 16 species which occur throughout all oceans. Some species are of minor fisheries value. At least two occur in the South China Sea. See review in Kubodera et al. (1998).

***Moroteuthis lönnbergii* Ishikawa & Wakiya, 1914** (Figure: Nesis, 1987)
Distribution: Japan to Saya-de-Malha Bank, Indian Ocean

***Onychoteuthis banksii* (Leach, 1817)** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in warmer waters.
Note: Plus potential cryptic species.

### Family Histioteuthidae

"Jewel squids" are weakly muscled moderate-sized squids (to 300 mm ML) characterized by many small anteriorly-directed photophores over all ventral surfaces of the mantle, head and arms. The mantle is short with small rounded fins and the arms are very long and thick. The eyes are different in shape and orientation with the left eye much larger than the right, and semi-tubular in shape. Representatives of this family are found in all non-polar waters of the world. The family contains one genus and at least 15 species of which at least four are represented in the South China Sea. No known fisheries value. See Voss (1969) and Voss et al. (1998) for reviews of this family.

***Histioteuthis celetaria pacifica* (Voss, 1962)** (Figure: original description, Nesis, 1987
Synonyms: *Calliteuthis japonica* Massy, 1916.
Distribution: Southern Japan to Madagascar, northern Australia and Hawaii.

***Histioteuthis hoylei* (Goodrich, 1896)** (Figure: Voss, 1962, Nesis, 1987)
Synonyms: *H. dofleini* (Pfeffer, 1912)
Distribution: Widely distributed in the Pacific Ocean between 45N and 45S, and in the Indian Ocean between ~10°N and the Southern Subtropical Convergence.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

***Histioteuthis meleagroteuthis* (Chun, 1910)** (Figure: Voss, 1962, Nesis, 1987)
Synonyms: *Meleagroteuthis hoylei* Pfeffer, 1908, *H. bruuni* Voss, 1969.
Distribution: Cosmopolitan in tropical and subtropical waters.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

***Histioteuthis miranda* (Berry, 1918)** (Figure: Voss, 1962, Nesis, 1987)
Distribution: Philippines to Australia, New Zealand, South Africa and Hawaii.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

### Family Thysanoteuthidae

"Diamond squids" are large muscular squids (to 1000 mm ML) with large triangular fins which extend along the length of the mantle. Suckers in two rows on arms and in four rows on the tentacular clubs. This family contains a single species which occurs in tropical and subtropical waters throughout the world including the South China Sea. Minor object of fisheries in Japan. See treatment in Nesis (1987).

***Thysanoteuthis rhombus* Troschel, 1857** (Figure: Nesis, 1987, Dunning, 1998d)
Distribution: Cosmopolitan in tropical and subtropical waters.

### Family Ommastrephidae

"Arrow squids" are medium to large muscular squids (to 1000 mm ML) characterised by a distinctive mantle locking apparatus in the shape of an inverted "T" and a paralarval stage (rhynchoteuthion stage) where the tentacles are fused into a long proboscis. Sucker sin two rows on arms and four on tentacular clubs (eight in *Illex*). The family contains eleven genera and 22 species represented in all oceans. Many species are harvested, forming major commercial fisheries, particularly in cooler waters. Eight species are recorded from the South China Sea. See Wormuth (1976) and Nesis (1987) for treatments of this family.

***Eucloteuthis luminosa* (Sasaki, 1915)** (Figure: Nesis, 1987)
Distribution: Subtropical and higher latitudes in all oceans.

***Hyaloteuthis pelagica* (Bosc, 1802)** (Figure: Nesis, 1987)
Distribution: At least Pacific and Atlantic Oceans, probably Indian Ocean.

****Nototodarus hawaiiensis* (Berry, 1912)** (Figure: Nesis, 1987, Dunning, 1998c)
Synonyms: *N. sloani philippensis* and *N. philippensis* Voss, 1962, *N. nipponicus* Okutani & Uemera, 1973.
Distribution: Hawaii to China Seas, Japan and northern Australia.

***Ornithoteuthis volatilis* (Sasaki, 1915)** (Figure: Nesis, 1987)
Distribution: Japan and Taiwan to Line Islands, Africa and Arabian Sea.

***Ommastrephes bartrami* (Lesueur, 1821)** (Figure: Nesis, 1987, Dunning, 1998c)
Synonyms: *O. caroli* Furtado, 1887.
Distribution: Subspecies: From Taiwan north.
Note: No confirmed record, but anticipated to occur in the region.

****Sthenoteuthis oualaniensis* (Lesson, 1830)** (Figure: Nesis, 1987, Dunning, 1998c)
Synonyms: As *Symplectoteuthis oualaniensis* in earlier works.
Distribution: Tropical Indo-Pacific region: Red Sea to Japan, Australia and Hawaii.
Note: A distinct species which lacks a photophore on the dorsal mantle is also treated under this name. Commercial in Taiwan/Japan.

****Todarodes pacificus* (Steenstrup, 1880)** (Figure: Nesis, 1987, Dunning, 1998c)
Synonyms: As *Ommastrephes sloani pacificus* in earlier works.
Distribution: NW Pacific to northern part of South China Sea.

****Todaropsis eblanae* (Ball, 1841)** (Figure: Nesis, 1987, Dunning, 1998c)
Distribution: Northern Australia to at least South China Sea, as well as Indian and Atlantic Oceans.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data). Minor fishery in NE Atlantic.

## Family Mastigoteuthidae

Medium to large (to 1000 mm ML) weakly muscled squids from deep waters, characterised by red colouration (the majority not expressed as chromatophores) and elongate fourth arms. Tentacles are long and whip-like but frequently are lost during capture. Fins are large and in posterior portion of mantle. The family contains two genera and around 16 species, found in all oceans except the Arctic. No known fisheries value. At least two species occur in the South China Sea. See Nesis (1987) and Salcedo-Vargas & Okutani (1994) for treatments of this family.

***Mastigoteuthis cordiformis* Chun, 1908** (Figure: Nesis, 1987)
Distribution: Southern Japan, Philippines, Indonesia and Australia. Associated with the bottom in deep water.

***Mastigoteuthis* cf *grimaldi***
Distribution: South China Sea
Note: A species with many similarities to the Atlantic species, *M. grimaldi* (Joubin, 1895). First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

## Family Cycloteuthidae

"Discus squids" are medium-sized semigelatinous squids (to 600 mm ML) with a widely conical mantle and a large round fin. The mantle locking apparatus is sub-triangular. Suckers in two rows on arms and four rows on the tentacle clubs. The family contains two genera and four species found in tropical and subtropical waters of all oceans. No known fisheries value. Two species occur in the South China Sea. See Young & Roper (1969) and Nesis (1987) for treatment of this family.

***Discoteuthis discus* Young & Roper, 1969** (Figure: Nesis, 1987)
Distribution: Nesis (1987) lists distribution as "tropical and subtropical Atlantic, probably Indian and Pacific Oceans". This record confirms the presence of this species in the Pacific Ocean.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

***Cycloteuthis sirventi* Joubin, 1919** (Figure: Nesis, 1987)
Distribution: Tropical and subtropical waters of the Atlantic and Indo-West Pacific region.
Note: Based on Khromov (1990, 1996) record from Vietnam.

## Family Chiroteuthidae

Medium to large gelatinous squids (to 800 mm ML) characterised by elongate necks, fluid (ammonium chloride) filled chambers and vesicles for buoyancy control. Most species have very long tentacles. The paralarval stage (doratopsis stage) has a chambered neck and a gladius which extends well beyond the fins to support "ornamentation" (flotation devices). The family contains four genera and around 14 species, represented in all oceans from the sub-arctic to the sub-antarctic. No known fisheries value. At least two species occur in the South China Sea. See Nesis (1987) for treatment of this family and Young (1991) and Vecchione et al. (1992) for treatment of the paralarval stages.

***Chiroteuthis imperator* Chun, 1908** (Figure: Nesis, 1987)
Distribution: Tropical waters from the Red Sea to Japan, Indonesia and Hawaii.
Note: Nesis (1987) treats this species as a synonym of *C. picteti*. Young et al. (1996) considers *C. picteti, C. imperator* and *C. macrosoma* as members of a species complex. We choose at this stage to treat *C. imperator* as distinct.

***Asperoteuthis acanthoderma* (Lu, 1977)** (Figure: original description)
Distribution: Central North Pacific.

## Family Cranchiidae

"Cranch, bathyscaphoid or cockatoo squids" are small to large (to 2000 mm ML) often transparent squids characterised by a large fluid-filled body containing ammonium ions for buoyancy. They typically appear bloated with short arms. The head and funnel are fused to the mantle and the arms possess two rows of suckers and/or hooks. The family contains 13 genera and around 30 species which are typically planktonic to bathypelagic in all oceans except the Arctic. No known fisheries value. At least four species are represented in the South China Sea. See Nesis (1987) and Voss (1988b) for treatments of this family.

***Cranchia scabra* Leach, 1817** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

***Taonius pavo* (Lesueur, 1821)** (Figure: Nesis, 1987)
Distribution: Wide distribution but rare in tropical-subtropical waters.

***Liocranchia reinhardti* (Steenstrup, 1856)** (Figure: Nesis, 1987)
Synonyms: *L. intermedia* Robson, 1924, *Fusocranchia alpha* Joubin, 1920
Distribution: Cosmopolitan in tropical and subtropical waters.

***Megalocranchia* sp.**
Distribution: South China Sea.
Note: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

## Order Spirulida

This order contains a single family and a single species, the anomalous squid, *Spirula spirula*. It is found in mesopelagic waters of the tropical open ocean. It carries an unusual internal shell that is used as a buoyancy device. The shell is calcareous and has the shape of a horn coiled in a single plane without the coils touching one another. The posterior position of the

shell causes the animal to generally orient vertically with the head downward. Both ventral arms are hectocotylized.

### Family Spirulidae

"Ramshorn Squid" is a small mesopelagic squid (to 45 mm ML) recognised by the internal coiled and chambered shell embedded in the posterior end of the mantle. Small fins are positioned on the posterior tip of the mantle, almost perpendicular to the longitudinal axis of the mantle. A large circular photophore is situated on the posterior tip of the mantle between the fins. The family contains a single species, represented in the South China Sea. No known fisheries value. See Clarke (1970) for treatment of this family.

***Spirula spirula* (Linnaeus, 1758)** (Figure: Nesis, 1987, Dunning, 1998e)
Distribution: Tropical and subtropical oceanic waters worldwide.

### Order Sepiida

This order contains the cuttlefishes, characterised by an oval body, flattened dorsoventrally and bordered along both sides of the body by narrow fins that do not connect at the posterior end. The calcareous internal shell (i.e. sepion or cuttlebone) lies dorsally in the body beneath the skin. The shell is a thick, oval, lanceolate or rhomboidal structure containing numerous gas and/or water filled chambers. The shell is used for buoyancy control. The arms bear suckers in 2 to 4 series. The tentacles are completely retractile into pockets.

### Family Sepiidae

"Cuttlefishes" are muscular, small to medium-sized animals (to 500 mm ML) easily recognised by their internal layered "cuttlebone", which acts as a buoyancy control organ. This family contains three genera and at least 100 species, of which at least 19 species occur within the South China Sea. There are a number of problems with the taxonomy of this group. Many species are known solely on the basis of the cuttlebone, some species from a single bone. The morphology of the soft body parts is described for a small proportion of the nominal species. Many species are harvested throughout the region in both subsistence and commercial fisheries. A range of methods are used to collect these animals, ranging from spear, line and traps, to large-scale trawl operations. See Adam & Rees (1966), Adam (1979), Reid (1998), Khromov et al. (1998) and Lu (1998a, 1998b) for reviews of this family.

***Metasepia tullbergi* (Appellöf, 1886)** (Figure: Okutani, 1995)
Distribution: Japan to Taiwan, Hong Kong and Philippines.

****Sepia aculeata* Van Hasselt in Férussac & d'Orbigny, 1835** (Figure: Okutani, 1995; Reid, 1998)
Distribution: Arabian Sea to Indonesia, China and Ryukyu Islands.
Note: Significant fisheries in India, Sri Lanka, southern China and Taiwan.

***Sepia brevimana* Steenstrup, 1875** (Figure: Okutani, 1995; Reid, 1998)
Synonyms: *S. winckworthi* Adam, 1939.
Distribution: Maldives to Western Indonesia and southern China.

***Sepia carinata* Sasaki, 1920** (Figure: Sasaki, 1929)
Distribution: Sagami Bay, Japan (source: Nesis, 1987)
Note: Recorded from South China Sea on basis of Khromov (1990, 1996) record from Vietnam.

****Sepia esculenta* Hoyle, 1885** (Figure: Okutani, 1995; Reid, 1998)
Synonyms: *S. hoylei* Ortmann, 1888.
Distribution: Japan to Vietnam, Taiwan and Philippines.
Note: Significant fisheries in Japan, South Korea and China.

****Sepia kobiensis* Hoyle, 1885** (Figure: Okutani, 1995; Reid, 1998)
Synonyms: *S. andreanoides* Hoyle, 1885.
Distribution: Japan to Arabian Sea.

Note: Plus potential cryptic species. May be Voss & Williamson's (1972) *S. andreana* record from Hong Kong. Object of fisheries in southern Japan and China.

*****Sepia latimanus* Quoy & Gaimard, 1832** (Figure: Okutani et al, 1987; Reid, 1998)
Synonyms: *S. hercules* Pilsbry, 1894, *Ponderisepia eclogaria* Iredale, 1926, *S. harmeri* Robson, 1928.
Distribution: Japan to Australia and central tropical Pacific Ocean.
Note: Collected in local harvests throughout its range.

****Sepia lorigera* Wülker, 1910** (Figure: Okutani et al., 1987)
Distribution: Japan and East China Sea.
Note: Recorded from South China Sea on basis of Khromov (1990, 1996) record from Vietnam. Object of minor fishery.

*****Sepia lycidas* Gray, 1849** (Figure: Okutani et al., 1987; Reid, 1998)
Synonyms: *S. subaculeata* Sasaki, 1914.
Distribution: Japan to Vietnam, Taiwan and Sarawak.
Note: Significant fisheries in Japan, South Korea and China.

****Sepia madokai* Adam, 1939** (Figure: Okutani et al., 1987; Reid, 1998)
Synonyms: *S. robsoni* Sasaki, 1929 (name "*robsoni*" was pre-occupied by Massy, 1927 for a South African species of *Sepia*).
Distribution: Japan to East and South China Seas.
Note: Minor fisheries in southern Japan and China.

***Sepia nanshiensis* Li & Chen, 1989** (Figure: original description)
Distribution: China (Nansha Island).
Note: Very similar to *S. vietnamica* Khromov, 1987a, may prove to be junior synonym.

***Sepia papuensis* Hoyle, 1885** (Figure: Reid, 1998)
Synonyms: ?*S. galei* Meyer, 1909, *S. prionata* Voss, 1962, *Solitosepia submestus* Iredale, 1926, *S. occidua* Cotton, 1929, *S. lana* Iredale, 1954, *S. genista* Iredale, 1954.
Distribution: Philippines, Indonesia, Australia and Coral Sea.

*****Sepia pharaonis* Ehrenberg, 1831** (Figure: Okutani et al., 1987; Reid, 1998)
Synonyms: *S. torosa* Ortmann, 1888, *S. rouxii* d'Orbigny, 1839-1842, *S. formosana* Berry, 1912, *Crumenasepia hulliana* Iredale, 1926, *C. ursulae* Cotton, 1929, *S. tigris* Sasaki, 1929.
Distribution: Indian Ocean and southeast Asia.
Note: Important fishery species throughout Indian Ocean and south-east Asia including northern Australia.

****Sepia recurvirostra* Steenstrup, 1875** (Figure: Okutani, 1995; Reid, 1998)
Synonyms: *S. singaporensis* Pfeffer, 1884
Distribution: Burma to Philippines, including East and South China Seas.
Note: Object of minor fisheries in South China Sea and adjacent waters.

***Sepia vietnamica* Khromov, 1987a** (Figure: Reid, 1998)
Synonyms: *S. nanshiensis* Li & Chen, 1989 may prove to be a junior synonym.
Distribution: North West South China Sea.

***Sepia vossi* Khromov, 1996** (Figure: Reid, 1998)
Synonyms: Treated under *S. omani* in Voss & Williamson (1972) and *S. rex* in Khromov (1988).
Distribution: Hong Kong to South Vietnam.

*****Sepiella japonica* Sasaki, 1929** (Figure: Okutani, 1995)
Synonyms: Sasaki renamed *S. maindroni* Hoyle, 1886 as it was pre-occupied (Rochebrune, 1884).
Distribution: Japan to Kwang-chow and Philippines.
Note: Significant fisheries in Japan, South Korea, Taiwan and China.

*****Sepiella inermis* (Van Hasselt in Férussac & d'Orbigny, 1835)** (Figure: Okutani, 1995; Reid, 1998)
Distribution: Red Sea to Indonesia and Gulf of Tonkin.
Note: Significant fisheries in the Arabian Sea, India and Indochina.

***Sepiella weberi* Adam, 1939** (Figure: Reid, 1998)
Distribution: Eastern Indonesia (Sumba, Timor), source Nesis (1987).
Note: Recorded from South China Sea on basis of Khromov (1990, 1996) record from Vietnam.

## Order Sepiolida

This order contains small to tiny squids (1-10cm ML) which range in shape from the spherical bobtail and bottle squids, to the elongate pygmy squids. Most species are benthic or benthopelagic. The fins are kidney-shaped to round and do not extend along the full length of the mantle. The fins have both anterior and posterior lobes free, the posterior lobes being broadly separated. Photophores, when present, have small separate oval lenses or fused lenses forming either a large medial round organ or a pair of bean-shaped lenses.

### Family Sepiolidae

"Bobtail squids" are small benthic or pelagic squids (to 100 mm ML) characterised by short rounded mantles with large semicircular fins, large eyes (covered with corneal membranes) and short arms. One or both dorsal arms are modified in males. Mantle locking apparatus simple and linear. The family contains 14 genera and over 50 species represented in tropical, temperate and sub-polar waters of all oceans. The taxonomy of certain genera is poor, particularly *Euprymna* and *Sepiola* for which most species can only be identified on the basis of mature male secondary sexual characteristics. Several species are the basis of very minor fisheries, which can be locally popular. At least 10 are likely to occur in the South China Sea. See Nesis (1987), Reid & Norman (1998) and Norman & Lu (1997) for treatments of members of this family.

***Austrorossia bipapillata* (Sasaki, 1920)** (Figure: Nesis, 1987)
Distribution: Japan to the Philippines.

****Euprymna berryi* Sasaki, 1929** (Figure: Okutani & Horita, 1987)
Distribution: Japan to northern South China Sea.
Note: Reported to be consumed locally in China (Roper et al., 1984) and in Taiwan.

***Heteroteuthis* sp.**
Distribution: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

***Inioteuthis maculosa* Goodrich, 1896** (Figure: Nesis, 1987)
Distribution: Persian Gulf to Indonesia, Taiwan and Philippines.

***Inioteuthis japonica* (d'Orbigny, 1845)** (Figure: Nesis, 1987)
Synonyms: *I. inioteuthis* (Naef, 1912).
Distribution: Southern Japan, China and Taiwan.

***Neorossia* sp.**
Distribution: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

***Sepiola birostrata* Sasaki, 1918** (Figure: Nesis, 1987)
Distribution: Russia to North and South Korea, China.

***Sepiola trirostrata* Voss, 1962** (Figure: Nesis, 1987)
Distribution: Philippines, Singapore.

***Sepiolina nipponensis* (Berry, 1911)** (Figure: Nesis, 1987)
Distribution: Southern Japan, Taiwan and Philippines to southern Australia.

***Stoloteuthis* sp.**
Distribution: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

### Family Sepiadariidae

"Bottletail squids" are small benthic squids (to 100 mm ML) characterised by short rounded mantles with large kidney-shaped to semi-circular fins, and short arms. Left ventral arm modified in males. Mantle locking apparatus with two components in *Sepioloidea* or permanently fused in *Sepiadarium*. Two genera and seven species are currently recognised in this family, however the taxonomy of this group requires revision. This family is restricted

to the tropical and temperate waters of the Indo-West Pacific. No known fisheries value. Two species occur in the South China Sea. See Nesis (1987) for treatment of this family.

***Sepiadarium gracilis* Voss, 1962** (Figure: Nesis, 1987)
Distribution: Northern Mindoro, western Philippines.

***Sepiadarium kochi* Steenstrup, 1881** (Figure: Nesis, 1987)
Distribution: Northern Indian Ocean, Indonesia, Australia and South China Sea including Taiwan.

### Family Idiosepiidae

"Pygmy squids" are tiny elongate squids (to 25 mm ML, some species mature at 8 mm ML) characterised by small and separate posterior fins and a dorsal mantle adhesive organ used to attach to the underside of seagrasses or algae. The family contains one genus and at least six species, restricted to the tropical and temperate waters of the Indo-West Pacific. The taxonomy of this group is poor with few characters separating several of the described species. The group requires a thorough revision. No known fisheries value. Two to three species occur in the South China Sea region. See treatments in Nesis (1987), Hylleberg & Nateewathana (1991a, 1991b) and Chotiyaputta, Okutani & Chaitiamvong (1991).

***Idiosepius pygmaeus* Steenstrup, 1881** (Figure: Nesis, 1987)
Synonyms: *I. pygmaeus hebereri* Grimpe, 1931.
Distribution: Southern Japan to northern Australia.

***Idiosepius paradoxus* (Ortmann, 1888)** (Figure: Nesis, 1987)
Distribution: Southern Japan to northern Australia.

***I. thailandicus* Chotiyaputta, Okutani & Chaitiamvong, 1991** (Figure: original description)
Distribution: Gulf of Thailand.

### Order Octopoda

This order contains all octopuses, characterised by eight arms with one or two rows of suckers. Most species possess web sectors between the arms. This order contains benthic, benthopelagic and pelagic representatives.

### Suborder Cirrata

"Cirrate or finned octopods" are semi-gelatinous deep-sea octopuses which occur at bathyal and abyssal depths throughout the world's oceans. They possess eight arms and are characterised by round to paddle- or tongue-like fins on the mantle and a single row of suckers interspersed by cirri (finger-like projections considered to be chemo- or electro-sensory). The webs are typically deep and the mantle aperture is very narrow restricted to a slit around the funnel base. Only the left oviduct is developed. Eggs are large in a coriaceous envelope, laid singly on the bottom.

### Family Opisthoteuthidae

"Flapjack or pancake devilfishes" are small to large (potentially to 1.2 m total length) semi-gelatinous octopuses found associated with the bottom in deep water. They possess a pair of paddle-shaped fins supported by a U- or V-shaped internal cartilagenous shell at the posterior tip of the mantle. They lack the secondary web of other cirrate octopods. As these soft-bodied animals are frequently damaged when hauled to the surface from deep water, material on which most descriptions have been based is typically in poor condition. As a direct result, the taxonomy of the group is unstable at the moment with both genera and the majority of the named species being ill-defined. Two genera are currently recognised with at least 20 ill-defined species having been named. Rarely encountered and of no known fisheries value. At least three species appear to occur in the deeper waters of the South China Sea. See Nesis (1987) and Voss (1988a) for treatments of this family.

***Grimpoteuthis* sp.**
Distribution: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

***Opisthoteuthis japonica* Taki, 1962** (Figure: Nesis, 1987)
Distribution: Pacific coast of southern Honshu, Japan.
Note: South China Sea record based on Khromov (1990, 1996) record from Vietnam.

***Opisthoteuthis* sp. (non *O. japonica* Taki, 1962)**
Distribution: First record for South China Sea from off Tung-Sha Island (Pratas Islands) (Lu, unpublished data).

### Suborder Incirrata

"Incirrate octopods" are a diverse group of octopuses ranging in size from tiny (mature under 1 g, <10 mm ML) to very large (to 600 mm ML, 5 m total length). They lack fins and have one to two rows of suckers and no cirri. The females of all members of this suborder appear to brood eggs until hatching. They are semi-gelatinous to muscular with pelagic, benthopelagic and benthic representatives in all oceans and at all depths (from intertidal and surface waters to more than 5000 m deep).

### Family Argonautidae

"Argonauts or paper nautiluses" are muscular pelagic octopuses, the females of which attain moderate sizes (to 150 mm ML) secrete an external shell. This calcareous brittle shell is white with fine corrugations. It is secreted from early growth stages by membranous extensions on the dorsal arms. It acts as a brood chamber in which egg strands are laid. The male is much smaller (to 15 mm ML), lacks the shell of the female and possesses a large modified third left arm which is detached during courtship and transferred to the female's mantle cavity as a sperm storage organ. The family contains a single genus and at least four species. Shells are occasionally sold through the shell trade. Three species occur in the South China Sea. See Nesis (1987) for treatment of this family and Voss & Williamson (1972) for discussion of this family in Hong Kong waters.

***Argonauta argo* Linneaus, 1758** (Figure: Nesis, 1987).
Distribution: Cosmopolitan in tropical and subtropical waters.

***Argonauta boettgeri* Maltzan, 1881** (Figure: Nesis, 1987).
Distribution: Tropical Indo-West Pacific region.

***Argonauta hians* Lightfoot, 1786** (Figure: Nesis, 1987).
Distribution: Cosmopolitan in tropical and subtropical waters.

### Family Alloposidae

Medium to large (to 400 mm ML, total length to 2 m) semi-gelatinous octopuses, pelagic to benthic in open ocean and deep water. The mantle is short with the head as wide as the mantle. The arms are short with deep webs. The male is smaller than the female but can still attain total lengths of 300 mm. The modified arm in the male is contained within a sac in front of the eyes, giving the appearance of only seven arms. The female broods the eggs on the arm bases around the mouth. The family contains a single species represented in the South China Sea. Rarely encountered and of no known fisheries value. See Willassen (1986), Nesis (1987), Young (1995) and Norman et al. (1997) for treatments of this octopus.

***Haliphron atlanticus* Steenstrup, 1861** (Figure: Nesis, 1987).
Synonyms: *Alloposus mollis* Verrill, 1880.
Distribution: Cosmopolitan in tropical to temperate waters.

### Family Ocythoidae

Football octopuses" are muscular pelagic octopuses found in subtropical and temperate surface

waters of all oceans, the females of which reach large sizes (to 300 mm ML). The female possesses a network of raised ridges on the ventral surface of the large ovoid mantle and a gas-filled swim bladder. The small male (to 30 mm ML) has a modified third right arm which is detached in mating and passed to the female as a sperm storage organ. The family contains a single species which is represented in the South China Sea. Rarely encountered and of no known fisheries value. See Roper & Sweeney (1976) and Packard & Wurtz (1994) for treatments of this octopus.

***Ocythoe tuberculata* Rafinesque, 1814** (Figure: Nesis, 1987).
Distribution: Cosmopolitan in subtropical waters of all oceans (bi-subtropical).

**Family Tremoctopodidae**

"Blanket octopuses" are distinctive muscular pelagic octopuses, the females of which attain large sizes (to 500 mm ML) and have longer dorsal arms bearing long membranous webs which can display regular iridescent ocelli. Sections of web can be autotomised along visible fracture lines, presumably as decoys to predators. The tiny males (to 15 mm ML) have a modified third right arm which is detached during mating and passed to the female as a sperm storage organ. This family contains one genus and two species found in all tropical and subtropical waters, one species of which is represented in the South China Sea. Rarely encountered and of no known fisheries value. See Thomas (1977) for treatment of this family and Voss & Williamson (1972) for discussion of this octopus in Hong Kong waters.

***Tremoctopus violaceus* delle Chiaje, 1830** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

**Family Bolitaenidae**

Meso- to bathypelagic semi-gelatinous octopuses of small to moderate size (to 200 mm ML) characterised by short arms with a single row of suckers and a wide mantle opening. The radula is comb-like with many cusps on all teeth and the females possess a circular light organ around the mouth. The family is represented in all subtropical and tropical waters and contains three genera each with a single species. Rarely encountered and of no known fisheries value. At least two species occur in the South China Sea. See Thore (1949), Nesis (1987) and Young et al. (1996) for treatments of this family.

***Eledonella pygmaea* (Verrill, 1884)** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

***Japetella diaphana* Hoyle, 1885** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

**Family Amphitretidae**

Semi-transparent gelatinous pelagic octopuses of small to moderate size (to 90 mm ML), characterised by a funnel which is fused to the mantle resulting in two mantle apertures. The eyes are tubular and the digestive gland is always oriented vertically, making the stomach dorsal to the digestive gland. The third right arm of males is modified. The family contains a single species which occurs throughout tropical and subtropical waters of the world and is present in the South China Sea. Rarely encountered and of no known fisheries value. See Thore (1949), Nesis (1987) and Young et al. (1996) for treatments of this octopus.

***Amphitretis pelagicus* Hoyle, 1885** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

**Family Vitreledonellidae**

Semi-transparent gelatinous bathypelagic octopuses of moderate size (to 110 mm ML), characterised by a rectangular shaped eye, a single wide mantle aperture, a single row of

suckers, and a radula with a multi-cuspid rhachidian tooth but few cusps on the first and second lateral teeth. Gills with only outer demibranch present and digestive gland cigar-shaped with pointed end. One species is recognised in this family, which occurs throughout tropical and subtropical waters including the South China Sea. Rarely encountered and of no known fisheries value. See Joubin (1918), Thore (1949) and Young et al. (1996) for treatments of this octopus.

***Vitreledonella richardi* Joubin, 1918** (Figure: Nesis, 1987)
Distribution: Cosmopolitan in tropical and subtropical waters.

## Family Octopodidae

"Benthic octopuses" are tiny to very large (to 600 mm ML) bottom-dwelling octopuses characterised by a muscular form (never gelatinous or semi-transparent), one or two rows of sessile suckers on the arms and a modified third or right arm in males. The taxonomy of this family is under review and many new genera are likely to be raised. The family currently contains 23 genera and over 100 nominal species. The taxonomy of this family requires extensive revision with more than 100 undescribed species recently recognised within Indo-West Pacific waters alone (Norman and Hochberg, unpublished data). Over 40 species occur in the South China Sea (M. Norman, unpublished data), with less than 20 having been formally described. 20 species are treated here. Many species form the basis of fisheries from small-scale subsistence harvests to large-scale commercial fisheries. The species collected and exported in the largest quantities from the region (trawled from the Gulf of Thailand) remains undescribed, being incorrectly treated in the literature under the name "*Octopus membranaceus*". See Nesis (1987) for an overview of the family and the following regional reviews: Japan and adjacent waters (Sasaki, 1929), Hong Kong (Norman & Hochberg, 1994), Philippines (Norman & Sweeney, 1997) and for commercial species of the Western Central Pacific region, Norman (1998).

****Cistopus indicus* (Rapp, 1835)** (Figure: Norman, 1998).
Synonyms: *C. bursarius* Steenstrup in Hoyle, 1886.
Distribution: India to South China Sea and Philippines.
Note: Commercial catch in South China Sea and India.

***Hapalochlaena* cf *fasciata*** (Figure: Sasaki, 1929)
Distribution: Hong Kong and Taiwan to Japan. Genuine *H. fasciata* restricted to warm temperate waters of the east coast of Australia.
Note: As for other members of this genus, this species is probably venomous.

***Hapalochlaena lunulata* (Quoy & Gaimard, 1832)** (Figure: Norman, 1998).
Distribution: Indo-Malayan Archipelago.
Note: As for other members of this genus, this species is probably venomous.

***Hapalochlaena* cf *maculosa***
Distribution: Penghu Islands, Taiwan. Genuine *H. maculosa* restricted to cool temperate waters of the south coast of Australia.
Note: First record of a small-ringed member of this genus from South China Sea (Lu, unpublished data).

***Hapalochlaena nierstrazi* (Adam, 1938)** (Figure: Adam, 1938)
Distribution: At least Singapore to Gulf of Burma.
Note: This species has been responsible for at least one human fatality in Singapore.

****Octopus aegina* Gray, 1849** (Figure: Norman, 1998).
Synonyms: *O. hardwickei* Gray, 1849, *O. dollfusi* Robson, 1928.
Distribution: India to South China Sea, Taiwan and Philippines.
Note: Harvested in commercial quantities in at least the Gulf of Thailand and India.

***Octopus bocki* Adam, 1941** (Figure: Norman & Sweeney, 1997).
Distribution: Western Pacific Ocean.

***Octopus cyanea* Gray, 1849** (Figure: Norman, 1992, Norman, 1998).
Synonyms: *O. marmoratus* Hoyle, 1885, *Polypus* (=*Octopus*) *horsti* Joubin, 1898, *Polypus* (=*Octopus*) *herdmani* Hoyle, 1904, *Callistoctopus magnocellatus* Taki, 1964.
Distribution: Tropical Indo-West Pacific region.
Note: Collected in subsistence and small-scale commercial fisheries on coral reefs within the South China Sea.

***Octopus exannulatus* Norman, 1993** (Figure: Norman, 1993b, Norman, 1998).
Distribution: Australia to Philippines.
Note: Minor bycatch trawl species in Australia.

***Octopus fangsiao* d'Orbigny, 1839-41** (Figure: Voss & Williamson, 1972 as *O. membranaceus*).
Synonyms: *O. areolatus* d'Orbigny, 1835, *O. ocellatus* Gray, 1849.
Distribution: Japan to Taiwan and Hong Kong.
Note: Harvested in Japan and South China Sea, including Taiwan.

***Octopus harmandi* Rochebrune, 1882** (Figure: none available).
Distribution: Described from Vietnam.
Note: Known only from original description. Taxonomic status unclear, may be synonym of *O. aculeatus* from the Philippines.

***Octopus luteus* (Sasaki, 1929)** (Figure: Norman, 1998).
Synonyms: Frequently treated incorrectly under *O. macropus*.
Distribution: Taiwan to Philippines.
Note: Minor harvests in Hong Kong, Taiwan and the Philippines.

***Octopus marginatus* Taki, 1964** (Figure: Norman, 1998).
Synonyms: *Octopus striolatus* Dong, 1976.
Distribution: Indian Ocean and continental Western Pacific Ocean including Taiwan.
Note: Large harvests in at least Hong Kong and Taiwan.

***Octopus microphthalmus* Goodrich, 1896** (Figure: poor in original description).
Distribution: At least Andaman Islands, Singapore and Malaysia.
Note: Minor harvests turning up in Singapore fish markets.

***Octopus mototi* Norman, 1993** (Figure: Norman, 1993b, Norman, 1998).
Distribution: Southern and Western Pacific Ocean.
Note: Known as venomous on Rapa Island.

***Octopus ornatus* Gould, 1852** (Figure: Norman, 1993c, Norman, 1998).
Synonyms: *Callistoctopus arakawai* Taki, 1964.
Distribution: Tropical Indo-West Pacific region.
Note: Minor harvests within range.

***Octopus vitiensis* Hoyle, 1885** (Figure: Norman & Sweeney, 1997).
Distribution: Fiji and Indo-Malayan Archipelago.

***Octopus wolfi* (Wülker, 1913)** (Figure: Norman & Sweeney, 1997).
Distribution: Tropical Indo-West Pacific region.

***Benthoctopus* sp.**
Distribution: In deeper waters of at least the South China Sea.
Note: Species identification unresolved. South China Sea record based on MN unpublished data.

***Scaeurgus* sp.**
Distribution: In deeper waters of at least the South China Sea.
Note: Species identification unresolved. South China Sea record based on MN unpublished data.

## DISCUSSION

The South China Sea contains a high diversity of cephalopods, many of which are of significant economic value. 116 are reported here as occurring within this sea, a further four species are anticipated to be present. Two factors make this checklist preliminary: 1) the poor taxonomy of key families, and 2) lack of comprehensive regional surveys.

The taxonomy of a number of cephalopod families require considerable revision, particularly the benthic octopuses (family Octopodidae) and pencil squids (family Loliginidae). The former family contains numerous undescribed species (>100 in Indo-Pacific waters, Norman & Hochberg, unpublished data), many of which have been incorrectly lumped under the names of species restricted to European or Atlantic waters (e.g., *Octopus vulgaris* or *O. macropus*). Recent molecular studies of members of the genus *Uroteuthis* (family Loliginidae) found that supposed single species proved to be complexes of up to four cryptic species, at this stage indistinguishable on the basis of gross external morphology (e.g., Yeatman & Benzie, 1993). Segawa et al. (1993) also proposed that *Sepioteuthis lessoniana* in Okinawa represents three distinct cryptic species.

Perhaps as a product of these poor taxonomies, many erroneous records have arisen in publications dealing with the cephalopods of this region, these errors often becoming entrenched in the subsequent literature. In an attempt to remove these incorrect or unresolved records, Table 1 (Appendix) presents information on more than 70 cephalopod species reported from the South China Sea which are either synonyms, misidentifications or unresolved taxa. This large number of questionable records may reflect both the scale of undescribed cephalopods in these waters and the lack of comprehensive regional revisions.

Many of the taxonomic problems stem from the scarcity of well-preserved reference material collected from this region. There have been no comprehensive surveys undertaken in the South China Sea which have specifically targetted cephalopods. There are few reference collections in the countries bordering this sea and most of the well-preserved material available is scattered through the historical collections of European and American museums. Standardised preservation and fixation techniques (as presented in Roper & Sweeney, 1983) make development of the necessary reference collections relatively easy.

The scale of subsistence and commercial harvests of cephalopods in the South China Sea is high. Cephalopod catch statistics for the countries bordering the South China Sea in 1995 was around 750,000 metric tonnes (FAO, 1997). If the cephalopod catches of China and Indonesia are excluded to separate most of the catch from adjacent waters, the total still exceeds 500,000 tonnes annually. Even with conservative estimates of the value of this catch at $US2 per kilogram, it is worth more than one billion dollars per year. Individual species are worth considerably more per kilogram both in local consumption and as exports throughout the world: some species fetch more than $US30 per kilogram in certain markets. At this stage, it is not possible to assess the fisheries or conservation status of the majority of these cephalopod species. Poor taxonomy, a scarcity of distributional information and the absence of data for most species on standing stocks, migratory behaviour, life histories and fisheries catches prevent such assessments. Three processes need to be initiated in order to redress this situation:

- Extensive alpha taxonomy is required to describe (and produce an inventory of) all taxa present in this region, including development of detailed and "user-friendly" keys to this fauna.
- Inter-country collaboration on both initial surveys and ongoing monitoring.
- Support for, and development of, regional expertise.

Without support for such activities, it will not be possible to effectively manage or protect these valuable marine resources.

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## Appendix (Table 1)

## SYNONYMS, MISIDENTIFICATIONS AND UNRESOLVED RECORDS OF CEPHALOPODS FROM THE SOUTH CHINA SEA

| Species record: | Source: | Remarks: |
|---|---|---|
| **Family Loliginidae** | | |
| *Loligo aspera* Ortmann, 1888 | Duc (1993, 1997). | Doubtful species described from southern Japan. Nesis (1987) treats as junior synonym of *Loliolus uyii* (Wakiya and Ishikawa, 1921). |
| *Loligo formosana* Sasaki, 1929 | Voss & Williamson (1972), Duc (1978). | Junior synonym of *Uroteuthis chinensis* Gray, 1849. |
| *Loligo gotoi* Sasaki, 1929 | Duc (1978, 1993, 1997). | *L. gotoi* is a junior synonym of *Loliolus uyii* (Wakiya & Ishikava, 1921). |
| *Loligo kobiensis* Hoyle, 1885 | Duc (1993, 1997). | Junior synonym of *Loliolus sumatrensis* (d'Orbigny, 1835). |
| *Loligo oshimai* Sasaki, 1929 | Duc (1993, 1997). | Junior synonym of *Uroteuthis duvaucelii* (d'Orbigny, 1835). |
| *Loligo tagoi* Sasaki, 1929 | Voss & Williamson (1972), Duc (1978, 1993, 1997). | Junior synonym of *Loliolus uyii* (Wakiya & Ishikawa, 1921). |
| *Loligo vietnamensis* Duc, 1994 | Duc (1994, 1997). | Unresolved species name. |
| *Lolliguncula "panamensis"* cf Berry, 1911 | Chaitiamvong (1993). | Record unresolved. Genuine *L. panamensis* known only from eastern Pacific Ocean. |
| *Sepioteuthis australis* Quoy & Gaimard, 1832 | Duc (1993, 1997). | Misidentification, genuine *S. australis* restricted to southern Australian waters. Duc's record comes from earlier untraced papers of Chính (1991, 1992). |
| *Sepioteuthis indica* Pfeffer, 1884 | Robson (1932). | If record refers to a species of *Sepioteuthis*, then = *S. lessoniana* Lesson, 1830. If it refers to *Loligo indica*, then it is a junior synonym of *Uroteuthis duvaucelii* (d'Orbigny, 1835). |
| *S. loliginiformis* (Rüppell & Leuckart, 1828) | Duc (1997) | *S. loliginiformis* is an unresolved species known only from the Red Sea. Duc's record comes from earlier untraced paper of Dinh (1993). |
| **Family Enoploteuthidae** | | |
| *Abralia armata* (Quoy & Gaimard, 1832) | Chotiyaputta (1993). | Possible *nomen dubium* as it is known only from a gladius (K. Tsuchiya pers. comm.) |
| *Enoploteuthis chunii* Ishikawa, 1914 | Dong (1988). | Questionable identification based on larva from south east China Sea. Genuine *E. chuni* known only from cooler Japanese waters. |
| **Family Ommastrephidae** | | |
| *Nototodarus sloanii* (Gray, 1849) | Khromov (1990, 1996). | Misidentification, genuine *N. sloanii* restricted to New Zealand. |

**SYNONYMS, MISIDENTIFICATIONS AND UNRESOLVED RECORDS OF CEPHALOPODS FROM THE SOUTH CHINA SEA**

| Species record: | Source: | Remarks: |
|---|---|---|
| *Nototodarus sloanii philippinensis* Voss, 1962 | Voss (1964), Voss & Williamson (1972). | Junior synonym of *N. hawaiiensis* (Berry, 1912). |
| *Nototodarus philippinensis* Voss, 1962 | Roper, Sweeney & Nauen (1984), Chikuni (1987), Khromov (1990). | Junior synonym of *N. hawaiiensis* (Berry, 1912). |
| *Symplectoteuthis oualaniensis* (Lesson, 1830) | Duc (1978, 1993, 1997), Roper, Sweeney & Nauen (1984). | Species now placed in genus *Sthenotheuthis.* |
| **Family Architeuthidae** | | |
| *Architeuthis* sp. | Roper, Sweeney & Nauen (1984). | Map shows as present in South China Sea. No known records. |
| **Family Cranchiidae** | | |
| *Belonella belone* (Chun, 1906) | Khromov (1990). | Taxonomic status of this species is uncertain. Relationships with the genus *Taonius* Lesueur, 1821 need to be resolved. |
| **Family Sepiidae** | | |
| *Sepia andreana* Steenstrup, 1875 | Voss (1964), Roper, Sweeney & Nauen (1984). | Misidentification, genuine *S. andreana* is cooler water species. May be *S. kobiensis* Hoyle, 1885. |
| ? *Sepia cottoni* Adam, 1979 | Khromov et al. (1998). | Unresolved record. Prior records of *S. cottoni* restricted to Australian waters. |
| *Sepia elliptica* Hoyle, 1885 | Duc (1978, 1993). | Misidentification. Probably refers to the similar *S. esculenta* Hoyle, 1885. |
| *Sepia harmeri* Robson, 1928 | Duc (1993, 1997). | Junior synonym of *S. latimanus* Quoy & Gaimard, 1832. |
| *Sepia hercules* Pilsbry, 1894 | Duc (1978), Dong (1979). | Genuine *S. hercules* is junior synonym of *S. latimanus* Quoy & Gaimard, 1832. Khromov (1996) suggests that Duc record from Vietnam refers to *S. pharaonis* Ehrenberg, 1831. |
| *Sepia mestus* Gray, 1849 | Khromov (1990, 1996). | Misidentification, genuine *S. mestus* only known from Australia. |
| *Sepia omani* Adam & Rees, 1966 | Voss & Williamson (1972), Duc (1997). | Misidentification, genuine *S. omani* restricted to the Indian Ocean. This record refers to *S. vossi* Khromov, 1996, also treated under *S. rex* by Khromov (1988). |
| *Sepia prionata* Voss, 1962 | Voss (1964). | Junior synonym of *S. papuensis* Hoyle, 1885. |
| *Sepia rex* (Iredale, 1926) | Khromov (1988) | Record refers to *S. vossi* Khromov, 1996. Same species treated as *S. omani* in Voss & Williamson (1972). |

**SYNONYMS, MISIDENTIFICATIONS AND UNRESOLVED RECORDS OF CEPHALOPODS FROM THE SOUTH CHINA SEA**

| Species record: | Source: | Remarks: |
|---|---|---|
| **Family Sepiidae (cont).** | | |
| *Sepia robsoni* (Massy, 1927) | Duc (1978, 1993), Dong (1991). | Sasaki's name of *robsoni* was pre-occupied by Massy (1927) who used it for a South African species. Adam (1939) renamed the Asian species *S. madokai*. |
| *Sepia singaporensis* Pfeffer, 1884 | Robson (1932). | Junior synonym of *S. recurvirostra* Steenstrup, 1875. |
| *Sepia stellifera* Homenko & Khromov, 1984 | Khromov et al. (1998). | Unresolved record. Described from East Arabian Sea but recorded from Gulf of Thailand by Khromov et al. (1998). |
| *Sepia subaculeata* Sasaki, 1914 | Duc (1978). | Junior synonym of *S. lycidas* Gray, 1849. |
| *Sepia tigris* Sasaki, 1929 | Duc (1978). | Junior synonym of *S. pharaonis* Ehrenberg, 1831. |
| *Sepia torosa* Ortmann, 1888 | Duc (1993, 1997). | Junior synonym of *S. pharaonis* Ehrenberg, 1831. |
| *Sepiella maindroni* de Rochebrune, 1884 | Duc (1978, 1993, 1997). | Unresolved species. As the name was preoccupied, Hoyle's *S. maindroni* (1884) was renamed *S. japonica* by Sasaki (1929). Khromov (1996) suggests that Duc's record from Vietnam refers to *S. inermis* (Van Hasselt in Férussac and d'Orbigny, 1835). |
| **Family Sepiadariidae** | | |
| *Sepiadarium malayense* Robson, 1932 | Robson (1932). | Unresolved record and species, type lost. |
| **Family Sepiolidae** | | |
| *Euprymna morsei* (Verrill, 1881) | Duc (1978, 1993, 1997), Roper, Sweeney & Nauen (1984). | Misidentification. Records probably refer to *E. berryi* Sasaki, 1929. |
| *Euprymna phenax* Voss, 1962 | Voss (1962, 1964). | Unresolved species from the Philippines, known only from single male type. |
| *Euprymna stenodactyla* (Grant, 1833) | Voss (1964), Chaitiamvong (1993), Chotiyaputta (1993). | Misidentification. Genuine *E. stenodactyla* known with certainty only from Mauritius. Records may refer to *E. hoylei* Adam, 1986, *E. berryi* Sasaki, 1929 or new species. |
| *Inioteuthis ? bursa* (Pfeffer, 1884) | Robson (1932). | Unresolved record and species, types unrecognisable females. |
| **Family Idiosepiidae** | | |
| *Idiosepius biserialis* Voss, 1962 | Chaitiamvong (1993). | Misidentification. Genuine *I. biserialis* known only from South Africa. Record probably refers to *I. thailandicus* Chotiyaputta, Okutani and Chaitiamvong (1991). |

**SYNONYMS, MISIDENTIFICATIONS AND UNRESOLVED RECORDS OF CEPHALOPODS FROM THE SOUTH CHINA SEA**

| Species record: | Source: | Remarks: |
|---|---|---|
| **Family Argonautidae** | | |
| *Argonauta nodosa* Lightfoot, 1786 | Voss (1964). | Questionable Philippines record based on inadequate checklists from the turn of the century. Genuine *A. nodosa* is primarily found in the cool temperate waters of the southern hemisphere. |
| **Family Bolitaenidae** | | |
| *Bolitaena microtyla* Steenstrup in Hoyle, 1886 | Khromov (1990, 1996) | Unresolved record. Genus and species ill-defined. |
| **Family Octopodidae** | | |
| *Callistoctopus arakawai* Taki, 1964 | Dong (1987). | Junior synonym of *O. ornatus* Gould, 1852. |
| *Hapalochlaena fasciata* (Hoyle, 1886) | Duc (1978, 1997, as *Octopus fasciatus*). | Misidentification, genuine *H. fasciata* restricted to warm temperate waters of eastern Australia. |
| *Hapalochlaena maculosa* (Hoyle, 1883) | Chaitiamvong (1993), Chotiyaputta (1993), Khromov (1990). | Misidentification, genuine *H. maculosa* restricted to southern Australia. |
| *Octopus arakawai* (Taki, 1964) | Dong (1979). | Junior synonym of *O. ornatus* Gould, 1852. |
| *Octopus aegina* Gray, 1849 | Voss & Williamson (1972), Roper, Sweeney & Nauen (1984), Chaitiamvong (1993). | Misidentification. These records refer to *O. marginatus* Taki, 1964. |
| " " | Robson (1929), Dong (1987). | Misidentification. These records refer to and illustrate *O. kagoshimensis* Ortmann, 1888. |
| *Octopus berenice* Gray, 1849 | Li (1983), Dong (1987). | Unresolved record and species, no type locality. |
| *Octopus bimaculatus* Verrill, 1883 | Dong (1979, 1987), Li (1983). | Misidentification, genuine *O. bimaculatus* restricted to the west coast of the United States. Record refers to *O. cyanea* Gray, 1849. |
| *Octopus dofleini* Wülker, 1910 | Roper, Sweeney & Nauen (1984). | Unresolved record. The distribution of this cold water species is shown by Roper et al. (1984) as extending to the South China Sea. |
| *Octopus dollfusi* Robson, 1928 | Robson (1928), Voss & Williamson (1972), Li (1983), Roper et al. (1984), Chikuni (1987), Dong (1987), Chaitiamvong (1993), Chotiyaputta (1993). | Junior synonym of *O. aegina* Gray, 1849. |
| *Octopus filamentosus* Blainville, 1826 | Robson (1932). | Misidentification. Genuine *O. filamentosus* known only from Mauritius. |

**SYNONYMS, MISIDENTIFICATIONS AND UNRESOLVED RECORDS OF CEPHALOPODS FROM THE SOUTH CHINA SEA**

| Species record | Source: | Remarks: |
|---|---|---|
| **Family Octopodidae (cont).** | | |
| *Octopus fontanianus* d'Orbigny, 1834 | Duc (1997). | Misidentification, genuine *O. fontanianus* restricted to South America. Duc's records comes from Robson (1928) record and untraced papers of Dawydoff (1952) and Gurianova (1972). |
| *Octopus fusiformis* Brock, 1887 | Dong (1979, 1987, 1991), Li (1983). | Record and species unresolved, type destroyed. |
| *Octopus* ? *gardineri* (Hoyle, 1905) | Robson (1932). | Record and species unresolved. Genuine *O. gardineri* described from the Maldives. |
| *Octopus guangdongensis* Dong, 1976 | Dong (1987). | Unresolved species, poor description and inaccessible/lost type. |
| *Octopus horridus* d'Orbigny, 1826 | Voss (1964), Robson (1932). | Misidentification. Genuine *O. horridus* restricted to the northwest Indian Ocean. |
| *Octopus macropus* Risso, 1826 | Robson (1932), Voss (1964), Voss & Williamson (1972), Roper, Sweeney & Nauen (1984). | Misidentification. Genuine *O. macropus* restricted to Atlantic Ocean and Mediterranean Sea. |
| " " | Chikuni (1987). | Recorded under FAO common name "white spotted octopus". |
| *Octopus maculosa* Hoyle, 1883 | Dong (1987). | Misidentification. Genuine *Hapalochlaena maculosa* restricted to southern Australia. |
| *Octopus membranaceus* Quoy and Gaimard, 1832 | Voss (1964), Voss & Williamson (1972), Roper, Sweeney & Nauen (1984), Chaitiamvong (1993), Chotiyaputta (1993), Khromov (1990). | *Nomen dubium.* Records refer to a range of ocellate species including *O. fangsiao* d'Orbigny, 1835 and undescribed species. |
| *Octopus nanhaiensis* Dong, 1976 | Dong (1987, 1991). | Unresolved species, limited description & inaccessible/lost type. |
| *Octopus ocellatus* Gray, 1849 | Li (1983), Duc (1978, 1997). | Junior synonym of *O. fangsiao* d'Orbigny, 1835. |
| *Octopus oshimai* (Sasaki, 1929) | Duc (1978, 1997), Dong (1979, 1987, 1991), Li (1983), Khromov (1990). | Unresolved species, described from Taiwan. |
| *Octopus ovulum* (Sasaki, 1917) | Duc (1978, 1997), Li (1983), Dong (1987, 1991). | Unresolved species, known only from description from Japanese fish market specimens. |
| *Octopus pallida* (Hoyle, 1885) | Dong (1987). | Misidentification, genuine *O. pallidus* restricted to southern Australian waters. |
| *Octopus rugosus* Bosc, 1792 | Li (1983). | Misidentification. Genuine *O. rugosus* is unresolved species from the Atlantic Ocean. |
| *Octopus smedleyi* Robson, 1932 | Robson (1932). | Unresolved species, type lost. |

**SYNONYMS, MISIDENTIFICATIONS AND UNRESOLVED RECORDS OF CEPHALOPODS FROM THE SOUTH CHINA SEA**

| Species record: | Source: | Remarks: |
|---|---|---|
| **Family Octopodidae (cont).** | | |
| *Octopus striolatus* Dong, 1976 | Dong (1979, 1987). | Junior synonym of *O. marginatus* Taki, 1964. |
| *Octopus tuberculatus* Blainville, 1826 | Robson (1928, 1929), Duc (1997). | Unresolved species. Inadequate original description from Sicily. No type material. |
| *Octopus variabilis* (Sasaki, 1929) | Duc (1978, 1997), Li (1983), Dong (1987), Khromov (1990). | Unresolved species, described from Japan. Okutani et al. (1987) consider the valid name of this species to be *O. minor* (Sasaki, 1920). |
| *Octopus vulgaris* Cuvier, 1797 | Voss (1964), Duc (1978, 1997), Li (1983), Roper, Sweeney & Nauen (1984), Dong (1987, 1991), Khromov (1990). | Misidentification. Genuine *O. vulgaris* restricted to Atlantic Ocean and Mediterranean Sea. |
| " " | Chikuni (1987). | Recorded under FAO common name "common octopus". |
| " " | Dong (1988). | Misidentification based on larva. |