

HELMET and BONNET SHELLS

List of species

1. *Cassis cornuta* (Linnaeus, 1758)
2. *Cypraecassis rufa* (Linnaeus, 1758)
3. *Phalium areola* (Linnaeus, 1758)
4. *Phalium fimbria* (Gmelin, 1791)
5. *Phalium glaucum* (Linnaeus, 1758)
6. *Semicassis canaliculata* (Bruguière, 1792)

Other species reported from Sri Lanka

Casmaria erinaceus (Linnaeus, 1758)
Casmaria ponderosa (Gmelin, 1791)
- Kirtisinghe, 1978

CASSIDAE Latreille, 1825

Helmet shells and Bonnet shells

Shells medium sized to very large, often thick and solid, elongate-ovate to cylindrical or globose in shape, with a large body whorl and a rather small spire. Sculpture variable, ranging from nearly smooth to ridged or nodular, with both axial and spiral elements; axial varices sometimes present. Periostracum very weak to absent. Aperture elongate, with a short siphonal canal recurved dorsally. Outer lip thickened, often denticulate inside. Inner lip with a well-developed, usually shield-like callus which may be confined to the columellar area or forms a flange along the left side of the body whorl. Operculum small.

These are sand dwelling, slow moving carnivorous animals, ranging from intertidal levels to considerable depths. They feed almost exclusively on echinoderms—sea urchins and starfish—mainly at night. Cassids first squirt neurotoxic secretions over their prey to paralyse their spines, protected by the thick epidermis of their foot. Then, the snout of the predator is pushed through the unprotected anus of the prey, or through a hole in the test (shell) rasped by the radula (teeth covered “tongue”) of the gastropod.

The family is made up of two subfamilies: the Cassinae, comprising the larger and heavier helmet shells, and the Phaliinae, containing the smaller and lighter bonnet shells.

(Poutiers, 1998 – p. 532.)



Cassidae



Left: a faded beached shell.
Right: a shell showing some of the original colour and pattern.



1. *Cassis cornuta* (Linnaeus, 1758)

Horned helmet shell

[*Buccinum cornutum* Linnaeus, 1758]
Subfamily Cassinae

"The largest of all helmet shells, up to 35 cm. A very solid, heavy, rotund shell with large, horn-like knobs and a wide, flat base. Dorsally pale orange, base vivid orange, faintly marked with white and brown. Habitat: sand and coral rubble, often around reefs. Distribution: Indo-Pacific." (Richmond, 1997).

Shell thick and very heavy, the spire low, the greatest body width is at the shoulder, the body whorl tapering sharply to the anterior. The shoulder with strong, horn-like knobs that extend beyond the parietal shield to either side. The shield extends beyond the apex. Juvenile shells do not have the heavy knobs of the adult or the shield. The measurements given are the antero-posterior shield length (= ht), the shield width (= w) and the distance between the shield and the highest dorsal knob (= t).

250 x 160 x 190 mm (ht x w x t). A juvenile shell measures 120 mm in height.

Chilaw, Udappuwa, fishing trash, a juvenile; Off Colombo, Pitagala shoal, 24 to 28 m, observed, not collected; off-shore, south-west coast, snagged on fishing net. A number used as household doorstops dating from the 1940's in the Gladys Soysa collection.

This species is protected under the Fauna & Flora Protection Ordinance of Sri Lanka as amended by Acts Nos. 44 of 1964, 1 of 1970, 49 of 1993 (Schedule IVA) and 22 of 2009 (Schedule VII). It is listed in Schedule VII under the name *Cassis cornuta*.

2. *Cypraecassis rufa* (Linnaeus, 1758)

Bull-mouth or red helmet shell

[*Buccinum rufum* Linnaeus, 1758; *Cassis rufa* (Linnaeus, 1758)]
Subfamily Cassinae

"A conspicuous, solid, thick, heavy shell, up to 17 cm, with a narrow aperture. Dorsally reddish with 3 or 4 broad spiral bands bearing rounded nodules. Thick outer lip light orange with strong, lighter teeth, and columella orange with white ridges. An important predator of sea urchins. Habitat: shallow, sandy substrates close to coral reefs. Distribution: Indo-Pacific." (Richmond, 1997).

Short spire, 4 rows of tubercles on body, those at shoulder heaviest. Outer lip thick, recurved, twenty-two long teeth inside. Columella wrinkled. Short, recurved (pointing upwards) anterior canal.

130 mm.

Provenance unknown. A family ornament possessed since the 1940's, Gladys Soysa collection.

This species is protected under the Fauna & Flora Protection Ordinance of Sri Lanka as amended by Acts Nos. 44 of 1964, 1 of 1970, 49 of 1993 (Schedule IVA) and 22 of 2009 (Schedule VII). It is listed in Schedule VII under the name *Cypraecassis rufa*.

3. *Phalium areola* (Linnaeus, 1758)

Large-spot bonnet shell

[*Buccinum areola* Linnaeus, 1758; *Cassis areola* (Linnaeus, 1758)]
Subfamily Phaliinae

Shell oval, prominent pointed spire. Impressed suture, sub-sutural portion flattened leading to a rounded shoulder. Two varices per whorl. Outer lip greatly thickened, backed by a groove, smooth externally, toothed internally. Parietal shield adherent to body whorl, anterior half wrinkled. Axial lines more marked near lip. Bluish-grey with four rows of reddish rectangular blotches convex towards the aperture. Periostracum remnants reddish-brown. Shield and outer lip whitish.

69 x 38.5 mm; 67 x 37.5 mm (ht x w).

Purchased at Hikkaduwa shell shop for Rs. 1200/-; Purchased at Naotunne shell shop for 500/-, faded, parietal shield partly formed.

4. *Phalium fimbria* (Gmelin, 1791)

Fimbriated bonnet shell

[*Buccinum fimbria* Gmelin, 1791]
Subfamily Phaliinae

Oval, pointed spire, a varix opposite the lip. Nodular cord at suture, sloping subsutural band to angulated shoulder with a row of pointed tubercles that continue over the body whorl as low, flexuous ribs. Thickened outer lip with a row of long teeth on inner aspect, anterior extremity with three spines. Columella plicate anteriorly, callus, with a parietal shield. White, covered with flexuous, yellow-brown axial streaks and spiral bands of the same colour. Upper side of outer lip and varix with rectangular cinnamon blotches. Outer lip and teeth white, interior reddish-brown.

78 x 46 mm (ht x w).

Purchased for Rs. 2,500/- at Naotunne South. shell shop. Said to be rare (de Bruyne, 2007; Abbott. 1994).

5. *Phalium glaucum* (Linnaeus, 1758)

Glaucous or Grey bonnet shell

[*Buccinum glaucum* Linnaeus, 1758]
Subfamily Phaliinae

"Moderately large, globular shell with a short, pointed spire, up to 12 cm. Outer lip thickened and denticulate with 3-4 sharp spines on outer edge. Exterior ash grey; lip and columella orange to yellow, aperture dark brown. Habitat: fine sandy substratum from 10-50 m deep. Distribution: Indo-Pacific." (Richmond, 1997).

101 x 66 mm (ht x w) largest; also 65 mm; 75 mm; 94 mm height.

Off Colombo, Palagala, seaward, 13 m, sand; crab occupied; Batticaloa, Kalmunai (?), fishing trash; Kalkudah, 18 m, sand bottom, fishing trash.

5. *Semicassis canaliculata* (Bruguière, 1792)

Grooved or Channelled bonnet shell

[*Cassidea canaliculata* Bruguière, 1792]
Subfamily Phaliinae

Shell small, light. Low stepped spire, suture deeply channelled, body whorl swollen. Outer lip thickened, recurved, inner edge toothed; inner lip callus, shield extending on to the body whorl. Columella with groove in middle, smooth above, deeply grooved below. External shallow grooves. Light pink-brown with darker square blotches, outer lip darker, spire pale. Under side, interior whitish. The beached shells all faded to a uniform pale colour, only one shell purchased showing colour and pattern, but even this looks somewhat faded.

35.9 x 27.3 mm; 38.22 x 28.2 mm, 46 x 33mm (ht x w).

Hendala, Usutikeiyawa, N. of Dikkowita fisheries harbour, beached; Purchased from the Naotunne shell shop, a shell showing colour, the largest in the collection; Kayankerni, Thennadi Bay, beached, faded.

Reported by Kirtisinghe (1978) and in the 2012 checklist as *Phalium canaliculatum* (Bruguière), a synonymised name. This taxon was not listed in the World Register of Marine Species in 2015 but was included in Hardy's Internet Guide to Marine Gastropods and in Apte (1998), Eisenberg, 1989 and Dance, 1977 under this name. It is included in MolluscaBase (2019)/ WoRMS as *Semicassis canaliculata*. It has a restricted distribution around India and Sri Lanka.

BIBLIOGRAPHY

Abbott, R. Tucker (1994) *Seashells of Southeast Asia*, Graham Brash, Singapore.

Apte, Deepak (1998) *The Book of Indian Shells*, Bombay Natural History Society/Oxford University Press, Mumbai.

Dance, S. Peter Ed. (1977) *The Encyclopedia of Shells*, Blandford Press, Poole.

Eisenberg, Jerome M. (1989) *A collector's guide to seashells of the world*, Crescent Books, New York.

Hardy, Eddie (2007 and later) Hardy's Internet Guide to Marine Gastropods. Release 20.00 (Accessed 15.09.2007) and subsequent releases. <http://www.gastropods.com/index.html>

Kirtisinghe, Parakrama (1978) *Sea shells of Sri Lanka*, Tuttle, Tokyo.

Poutiers, J. M. (1998) *Gastropods* In: Carpenter, K. E. and Niem, V. H. (eds.), In: FAO Species Identification Guide for Fishery Purposes, The Living Marine Resources of the Western Central Pacific. Vol. 1. pp. 364-686, FAO, Rome.

Richmond, M. (Ed.) (1997). A guide to the seashores of Eastern Africa and the Western Indian Ocean islands. SIDA/Department for Research Cooperation, SAREC: Stockholm, Sweden. ISBN 91-630-4594-X. 448 pp.