

PERIWINKLES

List of species

1. *Echinolittorina biangulata* (Martens, 1897)
2. *Echinolittorina novaezelandiae* (Reeve, 1857)
3. *Littoraria intermedia* (Philippi, 1846)
4. *Littoraria scabra* (Linnaeus, 1758)
5. *Littoraria undulata* (Gray, 1839)
6. *Nodilittorina pyramidalis* (Quoy & Gaimard, 1833)

Other species reported from Sri Lanka

No other species

Littorinidae Children, 1834

Periwinkles

Top-shaped or pointed conical shells without an umbilicus and also without an anterior siphonal canal. The aperture is rounded, an operculum is present. Outer surface more or less smooth, or with spiral or nodular sculpture. Columella smooth or with a tooth-like swelling. These species are intertidal dwellers of mud flats, mangroves and rocky shores, on rocks and among seaweed, feeding on algae. Some species habitually occupy the supratidal zone. They are able to seal the aperture tightly with the operculum, enabling the animal to retain sufficient oxygen-bearing water to survive dry conditions. During such times the animal cements the edge of the outer lip to the substrate before withdrawing its foot completely and sealing the aperture.

(Poutiers, 1998; de Bruyne, 2003)



Multi coloured, patterned shells of
Littoraria undulata



Photo by Cheryl Silva

A cluster of *Nodilittorina pyramidalis*
on a supratidal rock

Littorinidae



The collection of periwinkles was identified by David Reid in Colombo in 1996, who assigned the generic name *Littoraria*. Subsequent work has re-assigned some to other genera.

1. *Echinolittorina biangulata* (Martens, 1897) Globular periwinkle
 [Nodilittorina quadricincta (von Mühlfeldt, 1824)]

Shell small with globose body whorl, spire short, crowded spiral cords (seen in clean, un-encrusted shells). Black, with spiral rows of white dashes, rectangles, chevrons and slashes forming patterned bands. Locally abundant in clusters, often mixed with *Nodilittorina pyramidalis* or *Littoraria undulata* or both.

10 x 8, 9.78 x 7.17, 8 x 5.7, 6 x 4.3 mm (ht x w).

Negombo, Duwa; Hendala, beach rock platform; Mount Lavinia, Ora Gala (Split Rock); Maggona, Thudawa Bay; Hikkaduwa, cement retaining wall land-ward of beach, up to 1.5 m above base; Galle; Trincomalee, Marble Bay; Trincomalee, Nilaveli, Pigeon Island. All on intertidal rocky shore, mostly on wet rocks, some supra-tidal on dry rock.

- David Reid pers. comm., Reid, 2007.

2. *Echinolittorina novaezelandiae* (Reeve, 1857) New Zealand periwinkle

[*Littorina novaezelandiae* Reeve, 1857]

Mis-identified as *Echinolittorina millegrana* (Philippi, 1848) in Fernando, 2009.

Shell small with a large globose body whorl, spire short, turreted. Sides of whorls rounded. Close-set shallow spiral grooves encircle whorls. Outer lip thin, columella smooth. Off-white, interior and columella brown, inner edge of lip white. Operculum semi-circular with an eccentric nucleus.

12.32 x 10, 11.6 x 9, 10 x 8, 9 x 7.3, 8 x 6 mm.

Mount Lavinia, Ora Gala (Split Rock), supratidal rocky shore, a single transient, seen only once, 11.45 x 8.6 mm.

Galle, below ramparts, supratidal rocky shore, gregarious colonies, on rocks.

Trincomalee, Marble Bay, intertidal rocky shore, on wet rocks; Nilaveli, Pigeon Islands, north cove, exposed at low tide, gregarious colonies; Clappenberg Bay, supratidal rocks and concrete pier.

- David Reid pers. comm., Abbott, 1994 p. 26.

3. *Littoraria intermedia* (Philippi, 1846) Intermediate periwinkle

Shell conical with fairly tall pointed spire. Aperture ovate, outer lip thin, columella smooth. Sutures impressed. Shallow incised grooves encircle whorls, the intervening cords flat so that the shell is smooth to touch. Ground colour bluish-white to yellowish-brown. Cinnamon coloured dashes on the cords are aligned to form oblique lines and zigzags. Colour and general pattern seem to vary with location, but more or less uniform within the colony. Four colour patterns are illustrated.

19.4 x 13, 18.5 x 12, 14.73 x 9, 11 x 7 mm (ht x w)

Kalpitiya, Puttalam lagoon, NARA Research Station, supratidal, on near-shore boat wreckage; Maggona, Diyalagoda, Dummalamodera Ganga, on mangrove stems & leaves, 30-40 cm above water; Kaluamodera, Kaluamodera Ganga, mangrove stems & leaves, up to 1.3 m above water; Kirinda, Palatupana Lewaya, empty on shore; Batticaloa, Palameenmadu, shallow mangrove, on stilt roots; Trincomalee, Cod Bay, Mud Cove, on mangrove roots & leaves, 30 cm above mud; Trincomalee, Clappenberg Bay, CSAC, supratidal, on concrete jetty piers.

- det. David Reid pers. comm.

4. *Littoraria scabra* (Linnaeus, 1758) Rough periwinkle

Shell conical, spire pointed, the body whorl more inflated than other similar species. Encircled by incised spiral grooves, the intervening cords rounded giving a rough exterior.

This species is confined to mangroves, being found on the plant stems above water level.

10.18 x 7.4 mm.

Trincomalee, Cod Bay, Mud Cove, on mangrove stem, by the roadside.

- David Reid, pers. comm., Abbott, 1994 p. 25 (as *Littorina*), Kirtisinghe, 1978 p. 53.

5. *Littoraria undulata* (Gray, 1839) Undulate periwinkle

Shell conical with a moderate turreted spire, sides of whorls rounded. Aperture ovate, thin outer lip bulging somewhat. Columella smooth. Shell smooth, encircled by faint incised grooves that may be absent. Ground colour whitish with pinkish, brownish or purplish oblique lines and patches forming various patterns. No uniformity of colour or pattern within a colony. Usually found in small clusters well above the high tide level, where they dry out in the absence of breaking waves. In dry conditions the animal cements the edge of the outer lip of the shell to the substrate and seals itself in with the tight-fitting operculum. In wet conditions they are attached to the substrate by means of the foot.

19 x 11.36, 17.56 x 11, 14 x 9.7; 13.65 x 10; 8.2 x 5.3 mm (ht x w)

Jaffna, Delft, St. Anthony's Church Beach; Mount Lavinia, Hotel Bay, Pavilion Rocks; Maggona, Thudawa Bay; Kaluamodera, mouth of Bentara Ganga, Island; Hikkaduwa; Galle, below ramparts; Dickwella, Kudawella Blowhole; Trincomalee, Nilaveli, Pigeon Islands. Mostly found resting supra-tidally on the rocky shore, or exposed at low tide in intertidal pools. Two exceptions: at Hikkaduwa they were found on a cement parapet wall on the landward side of the beach about 1.5 m above the sand level. At Kudawella, they were on the high rock around the blow-hole, in the splash zone.

- David Reid pers. comm., Eisenberg, 1989 p. 46 as *Littorina*; Abbott, 1994 p. 25 as *Littorina*.

6. *Nodilittorina pyramidalis* (Quoy & Gaimard, 1833) Conical periwinkle

[*Littorina pyramidalis* Quoy & Gaimard, 1833 (original name); *Echinolittorina pyramidalis* (Quoy & Gaimard, 1833)]

Subspecies *Nodilittorina pyramidalis pascua* Rosewater, 1970 accepted as *Echinolittorina pascua* (Rosewater, 1970)

Shell small, conical, moderate spire, apex pointed. Whorls encircled by spiral threads, two rows of rounded granules at middle of whorl, each as wide as 2 threads, the rows 2 to 3 threads apart. Colour varies from grey to black, the granules white, often lightly encrusted and/or coated with deposits. Interior & columella purple. Locally abundant, in clusters. Often found in the supratidal splash zone.

13 x 8, 10 x 6.32, 8.7 x 6.08, 7.74 x 4.6 mm (ht x w)

Jaffna, Delft, St. Anthony's Church beach, pools in intertidal rocky shore, exposed at low tide; Negombo, Duwa, intertidal rocky shore, mixed colony with *E. biangulata*; Maggona, Thudawa Bay, intertidal rocky shore, abundant, clustered in dry fissure, few on wet rocks; Hikkaduwa, supratidal, cement retaining wall, landward border of beach, up to 2 m above base; Galle, supratidal rocky shore; Dickwella, Kudawella Blow Hole, supratidal on rock around blow hole receiving water from water-spout; Trincomalee, Nilaveli, Pigeon Islands, intertidal rocky shore.

- Eisenberg, 1989 p. 46, Abbott, 1994 p. 25 *N. pyramidalis*.

Note: This collection was initially identified by David Reid, in Colombo, as *Littoraria trochoides* - later accepted as *Echinolittorina pascua* (Rosewater, 1970).

N. trochoides (Gray, 1839) and the similar *N. pyramidalis* (Quoy and Gaimard, 1833) were both found in Hardy's Internet Guide. The collection was thought to agree more with 'trochoides' rather than 'pyramidalis' and the name *E. pascua* came to be used. This identification has been reviewed and the name *Nodilittorina pyramidalis* has been adopted for this work. This identification is supported by the following:

- Poutiers, 1998 lists *N. pyramidalis* with a distribution from the west coast of India eastwards as far as Australia and Norfolk Island.
- Subba Rao and Dey (2000) list *N. pyramidalis* as occurring in Sri Lanka.
- The Yale Peabody Museum of Natural History collections include this species from Trincomalee Big Sober Island and Dutch Bay, near Fort Frederick.

BIBLIOGRAPHY

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

De Bruyne, R. H. (2003) *The Complete Encyclopedia of Shells*, Rebo Productions, Lisse, The Netherlands.

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

Fiene-Severns, Pauline, Mike Severns & Ruth Dyerly (1998) *Tropical seashells of India and Sri Lanka*, Periplus, Hong Kong.

Fernando, Malik (2009) *Shells of the Sri Lanka Seashore*, Biodiversity Secretariat, Ministry of Environment, Sri Lanka.

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

MolluscaBase eds. (2020). MolluscaBase. *Nodilittorina pyramidalis* (Quoy & Gaimard, 1833). Accessed through: World Register of Marine Species at: <http://www.marinespecies.org/aphia.php?p=taxdetails&id=437429> on 2020-07-07

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.

Siddiqui, K.U., Islam, M.A., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A., Haque, E.U., Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A., Khondker, M. and Rahman, M.M. (eds.) (2007) *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 17, Molluscs, 415 pp. Asiatic Society of Bangladesh, Dhaka.

Reid D.G. (1989) The comparative morphology, phylogeny and evolution of the gastropod family Littorinidae. Philosophical Transactions of the Royal Society B 324: 1-110.,
available online at <https://royalsocietypublishing.org/doi/pdf/10.1098/rstb.1989.0040>

Reid, D. G., Williams, S. T. (2004). The subfamily Littorininae (Gastropoda, Littorinidae) in the temperate Southern Hemisphere: the genera Nodilittorina, Austrolittorina and Afrolittorina. Records of the Australian Museum. 56: 75-122., available online at http://australianmuseum.net.au/Uploads/Journals/17969/1393_complete.pdf page(s): 81-86

Reid D.G. (2007) The genus *Echinolittorina* Habe, 1956 (Gastropoda: Littorinidae) in the Indo-West Pacific Ocean. Zootaxa 1420: 1-161.

Williams S.T. & Reid D.G. (2004). Speciation and diversity on tropical rocky shores: a global phylogeny of snails of the genus *Echinolittorina*. *Evolution* 58(10): 2227-2251

Yale Peabody Museum of Natural History: <https://collections.peabody.yale.edu/search/Record/YPM-I2-050970>