NERITIDAE

Nerites

Diagnostic characters: Shell globose, often thick and solid, with a moderately low spire and a very large, rounded body whorl. No umbilicus. Outer surface smooth, or costulate to spinose. Aperture semicircular, without a siphonal canal. Inner and outer lip often toothed. Columella forming a flat, calloused inner lip, protruding as a septum that narrows the aperture. Columellar shield smooth, ridged or pustulose. Interior of shell porcelaneous, with the inner walls of the spire whorls resorbed in adult stages. Operculum semicircular, calcified, with a few spiral coils and a projecting peg on its inner edge. Head large, with a broad, short and commonly indented snout. Cephalic tentacles slender, with eyes on prominent stalks at their outer bases. Foot oblong, wide in front and attenuated behind. Mantle cavity deep, with a single long, triangular gill.

Habitat, biology, and fisheries: Along shorelines in warm temperate to tropical, marine, brackish, or even fresh-water habitats. Marine species often live quite high in the intertidal zone, and are exposed to the air and sun for long periods. The tightly fitting operculum prevents desiccation and, in some species, the surface of the mantle cavity acts as a primitive lung. Herbivorous animals, grazing by night at low tide on fine algae and detritus covering the bottoms where they live. Sometimes forming very large colonies. Sexes separate, fertilization internal. Eggs laid in capsules, attached to the rocks or to the shells of nerites. In the area, nerites are commonly collected by coastal people, for human consumption and for shellcraft.

Similar families occurring in the area

Neritopsidae: aperture of shell suborbicular, columellar edge concave, curving in a regular arc to meet the outer lip; inner walls of spire whorls not resorbed; operculum not spiral, trapezoidal.
Key to species of interest to fisheries occurring in the area

1a. Shell rather thick; outer lip of aperture thickened and often toothed inside ............................... $\rightarrow$ 3
1b. Shell rather thin; outer lip of aperture sharp, not thickened or toothed inside ............................... $\rightarrow$ 2

2a. Spire blunt; surface of shell with many conspicuous spiral grooves; peg of the operculum
   longitudinally grooved (Fig. 1) ........................................ $\rightarrow$ 3
   Neritodryas subsulcata

2b. Spire elevated; surface of shell without conspicuous spiral grooves (Fig. 2); peg of the
   operculum not grooved longitudinally .................................. $\rightarrow$ 4
   Neritina turrita

3a. Sculpture of shell reduced to axial growth lines and grooves (Fig. 3) ................................. $\rightarrow$ Nerita polita
3b. Sculpture of shell with more or less developed spiral elements, in addition to the axial
   growth marks (Fig. 4a) .................................................. $\rightarrow$ 4

4a. Columellar shield smooth (Fig. 4b) ................................................................................ $\rightarrow$ Nerita picea
4b. Columellar shield ridged or granular ................................................................................ $\rightarrow$ 5

5a. Spire moderately high; columellar shield ridged ................................................................ $\rightarrow$ 6
5b. Spire very low to flat; columellar shield granular ................................................................. $\rightarrow$ 8

6a. Surface sculptured with numerous fine spiral cords (numbering 30 to 40 on body whorl);
   inner edge of outer lip finely toothed (apart from 1 or 2 stronger teeth posteriorly) (Fig. 5)
   .......................................................................................... $\rightarrow$ Nerita undata
6b. Surface sculptured with rather few, coarse spiral ribs (numbering 20 or less on body
   whorl); inner edge of outer lip strongly toothed (including the stronger tooth posteriorly) ....... $\rightarrow$ 7

7a. Spire relatively low; spiral ribs broader and less numerous, about 12 to 15 on body whorl;
   outer colour dull black, sometimes with yellowish lines between the ribs (Fig. 6)
   .......................................................................................... $\rightarrow$ Nerita costata
7b. Spire relatively high; spiral ribs narrower and more numerous, about 15 to 20 on body
   whorl; outer colour dull white or creamy yellow, sometimes spotted with grey or purplish
   brown (Fig. 7) ....................................................................... $\rightarrow$ Nerita plicata

Fig. 1 Neritodryas subsulcata (ventral view)      Fig. 2 Neritina turrita (ventral view)
Fig. 3 Nerita polita (dorsal view)       Fig. 4 Nerita picea
Fig. 5 Nerita undata (ventral view)       Fig. 6 Nerita costata (ventral view)       Fig. 7 Nerita plicata (ventral view)
8a. Outer surface with spiral cords and axial threads (Fig. 8) .......................... \textit{Nerita squamulata}

8b. Outer surface with spiral cords only .......................... \rightarrow 9

9a. Outer surface with a few, weak spiral cords; columellar shield wide, with distinct pustules (Fig. 9) .......................... \rightarrow \textit{Nerita albicilla}

9b. Outer surface with numerous, moderately rough spiral cords; columellar shield relatively narrow, with weak pustules .......................... \rightarrow 10

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig8}
\caption{\textit{Nerita squamulata} (ventral view)}
\end{figure}

\begin{figure}[h]
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\includegraphics[width=\textwidth]{fig9}
\caption{\textit{Nerita albicilla} (ventral view)}
\end{figure}

10a. Shoulder moderately angulate; operculum smooth (Fig. 10) .......................... \rightarrow \textit{Nerita planospira}

10b. Shoulder rounded; operculum finely granulose (Fig. 11) .......................... \rightarrow \textit{Nerita chameleon}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig10}
\caption{\textit{Nerita planospira} (ventral view)}
\end{figure}

\begin{figure}[h]
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\includegraphics[width=\textwidth]{fig11}
\caption{\textit{Nerita chameleon} (ventral view)}
\end{figure}

\textbf{List of species of interest to fisheries occurring in the area}

The symbol \(\triangleright\) is given when species accounts are included.

\(\triangleright\) \textit{Nerita albicilla} Linnaeus, 1758

\(\triangleright\) \textit{Nerita chameleon} Linnaeus, 1758

\(\triangleright\) \textit{Nerita costata} Gmelin, 1791

\(\triangleright\) \textit{Nerita picea} Récluz, 1841

\(\triangleright\) \textit{Nerita planospira} Anton, 1839

\(\triangleright\) \textit{Nerita plicata} Linnaeus, 1758

\(\triangleright\) \textit{Nerita polita} Linnaeus, 1758

\(\triangleright\) \textit{Nerita squamulata} Le Guillou, 1841

\(\triangleright\) \textit{Nerita undata} Linnaeus, 1758

\(\triangleright\) \textit{Neritina turrita} (Gmelin, 1791)

\(\triangleright\) \textit{Neritodyras subsulcata} (Sowerby, 1836)

\textbf{References}


**Nerita albicilla** Linnaeus, 1758

**Frequent synonyms / misidentifications:** *Nerita imperfecta* Röding, 1798; *N. ustulata* Sowerby, 1883; *N. venusta* Dunker, 1844; *Theliostyla albicilla* (Linnaeus, 1758) / None.

**FAO names:** **En** - Oxpalate nerite; **Fr** - Nérite brûlée.

**Diagnostic characters:** Shell thick, globose, with a flat spire, width conspicuously greater than length. Outer surface dull, with broad and low, rounded spiral cords which often become obsolete towards the outer lip of aperture, in addition to fine, wavy growth lines. Outer lip somewhat flattened, with small denticles at inner margin. Anteriormost and posteriormost teeth somewhat larger than the other ones. Columellar shield wide and flat, with numerous, distinct pustules over most of its surface and with a few small teeth at centre of its inner magin. Operculum finely granulose. **Colour:** outer coloration very variable, mostly white or cream, marbled and often spirally banded with grey, brown, black, or orange. Aperture and columellar shield whitish, often tinged yellow interiorly. Operculum grey, greenish, or yellow.

**Size:** Maximum shell length 3.5 cm, commonly to 2.5 cm.

**Habitat, biology, and fisheries:** Abundant in rocky shores, forming dense colonies in upper mid-tidal pools, on damp and submerged rocks and in crevices. Collected for its edible flesh and for its shell in various localities of the area.

**Distribution:** Widespread in the Indo-West Pacific, from East and South Africa, including the Red Sea and the Persian Gulf, to eastern Polynesia; north to South Japan and Hawaii, and south to northern New South Wales.
**Nerita chameleon** Linnaeus, 1758

**Frequent synonyms / misidentifications:** *Nerita bizonalis* Lamarck, 1822; *Ritena chameleon* (Linnaeus, 1758) / None.

**FAO names:** En - Chameleon nerite; Fr - Nérite chaméléon.

**Diagnostic characters:** Shell thick, globose, with a low spire, width and length about equal. Outer surface dull, with rough spiral ribs and sometimes fine cords between them. Outer lip of the aperture with sharp outer edge and with 10 to 12 small, equal-sized denticles at inner margin. Columellar shield flat to slightly depressed, relatively narrow, with a few wrinkles and pustules, and 2 to 4 centrally placed small teeth on its inner margin. Operculum finely granulose. **Colour:** outer coloration very variable, sometimes uniformly white, grey, black, yellow or orange brown, often banded, maculated or spotted with grey, black or purplish brown. **Aperture and columellar shield white.** Operculum grey or greenish in colour.

**Size:** Maximum shell width 3.5 cm, commonly to 2.5 cm.

**Habitat, biology, and fisheries:** Abundant on intertidal rocks. Regularly collected and marketed in the northern Philippines for its shell which is extremely variable in colour, and for its edible flesh.

**Distribution:** Widespread in the Indo-West Pacific, from East Africa, including Madagascar and Reunion Island, to western Polynesia; north to southern Japan and south to southern Queensland.
**Nerita plicata** Linnaeus, 1758

**Frequent synonyms / misidentifications:** *Nerita versicolor* Quoy and Gaimard, 1834 (not of Gmelin, 1791); *Ritena plicata* (Linnaeus, 1758); None.

**FAO names:** En - Plicate nerite; Fr - Nérite plissée.

**Diagnostic characters:** Shell thick, turbinated, with a moderately high, conical spire and large globose body whorl. Outer surface dull, with about 15 to 20 coarse, rounded spiral ribs on body whorl, ribs wider spaced near the suture than toward the base. Outer lip of the aperture thick, crenulate by the external ribbing, with 5 to 7 strong, prominent teeth at its inner margin. Anteriormost and posteriormost teeth larger than the other ones. Columellar area calloused and convex, with transverse wrinkles and about 4 strong, elongate and squared teeth on its markedly rounded inner margin. Operculum smooth and shiny, with a narrow, dull thickening at anterior end. **Colour:** Outside of shell uniformly white or creamy yellow, sometimes spotted with grey or purplish brown. Aperture and columellar area white, occasionally rimmed with yellow or orange internally. Operculum fawn.

**Size:** Maximum shell length 3.5 cm, commonly to 2.5 cm.

**Habitat, biology, and fisheries:** Very common in the upper part of shores, often in crevices and pits of rock benches, or on branches of littoral trees overhanging the water. Moves up and down the shore in correlation with the prevailing high water level of the tide and can withstand heat and desiccation for long periods. Used as food by coastal populations of oceanic islands in the West Pacific.

**Distribution:** Widespread in the Indo-West Pacific, from East and South Africa, including Madagascar, to eastern Polynesia; north to southern Japan and Hawaii, and south to northern New South Wales and New Caledonia.
**Nerita polita** Linnaeus, 1758

**Frequent synonyms / misidentifications:** *Amphinerita polita* (Linnaeus, 1758) / None.

**FAO names:** En - Polished nerite; Fr - Nérite lustrée.

**Diagnostic characters:** Shell thick and heavy, subglobose, with a flat spire, width greater than length. Outer surface polished and smoothish, sculpture reduced to axial growth lines and grooves. Outer lip of the aperture with numerous, small and low denticles at inner margin. Columellar shield smooth except for several weak, rather rounded teeth at centre of its inner margin. Operculum smooth, except for a narrow, obliquely grooved area near the outer margin. Colour: outer coloration highly variable, white, cream, brown, dark grey, or green, variously marbled, streaked or spotted with brown, dark grey, or green, orange, or pink; 3 deep purplish pink spiral bands sometimes present. Aperture and columellar shield glossy white, sometimes rimmed with dark orange or red on inner margins. Operculum brownish or grey to nearly black.

**Size:** Maximum shell length 4 cm, commonly to 3 cm.

**Habitat, biology, and fisheries:** Common in the upper intertidal rocky and coral reef areas. Often buried in the sand during the day, and emerging at night to graze on nearby rocks. This very common species is prized for food and for its attractive shell. Frequently marketed in the Fiji Islands.

**Distribution:** Widespread in the Indo-West Pacific, from East and South Africa, including Madagascar, Mascareign islands and the Red Sea, to eastern Polynesia; north to southern Japan and Hawaii, and south to northern New South Wales and New Caledonia.
Neritina turrita (Gmelin, 1791)

Frequent synonyms / misidentifications: Nerita turrita Gmelin, 1791; Neritina semiconica (Lamarck, 1822); N. strigilata (Lamarck, 1822); Vittina turrita (Gmelin, 1791) / None.

FAO names: En - Turreted nerite; Fr - Nérite tourelle.

Diagnostic characters: Shell rather thin but solid, elongate-ovate in outline, with an elevated, conical spire and large, inflated body whorl. Spire often eroded at the apex, whorls rapidly increasing in size, convex but slightly concave just below the strongly embracing suture. Outer surface smooth except for fine axial growth marks, with a shiny, thick and adherent periostracum which is covered by a microscopical pattern of crowded, tiny, cancellate lines. Outer lip of the aperture thin, sharp and smooth, not toothed inside. Columellar shield thick and smoothish, with numerous, small teeth along its inner edge. Operculum finely granulose, with a rounded, protruding knob near anterior end, in addition to the projecting peg of the inner margin. Colour: outer coloration variable, shiny, usually bluish grey, mahogany or yellowish brown with black, somewhat undulating and oblique, axial stripes, or with fine, light axial lines on a dark background, or sometimes with 3 or 4 spiral row of dark spots on a light brown background. Aperture whitish, columellar shield porcelaneous white or yellowish. Operculum creamy or yellowish brown.

Size: Maximum shell length 3.5 cm, commonly to 2.5 cm.

Habitat, biology, and fisheries: On muddy bottoms, in brackish water of estuaries and in mangrove areas, but also in running fresh water. This species is used as food, and the shell is collected for its conspicuously striped colour. Sold in local markets of the northern Philippines.

Distribution: Eastern part of the Indian Ocean and the tropical West Pacific, from the Andaman Sea to eastern Polynesia; north to southern Japan, and south to southern Indonesia and Melanesia.
**Nerita costata** Gmelin, 1791

**Frequent synonyms / misidentifications:** *Nerita grossa* Born, 1780 (not of Linnaeus, 1758); *N. scabricosta* Delessert, 1841; *Ritena costata* (Gmelin, 1791) / None.

**En** - Costate nerite; **Fr** - Nérite côtelée.

Maximum shell width 3.5 cm, commonly to 2.5 cm. Common on intertidal rocks. Collected for food and for the shell by coastal populations. Indo-West Pacific, from the Gulf of Bengal to Papua New Guinea; north to southern Japan and south to Queensland.

**Nerita picea** Récluz, 1841

**Frequent synonyms / misidentifications:** None / None.

**En** - Pitchy nerite; **Fr** - Néréte ébène.

Maximum shell length 3 cm, commonly to 2 cm. On rocks and corals. Intertidal. Used as food where common. Oceanic islands of Polynesia, from Hawaii to the Society Islands.
**Nerita planospira** Anton, 1839

**Frequent synonyms / misidentifications:** *Theliostyla planospira* (Anton, 1839) / None.

**En** - Flatspired nerite; **Fr** - Nérite à spire plate.

Maximum shell length 3.5 cm, commonly to 2 cm. On intertidal mud and rock bottoms and in mangrove areas. Locally common. Occasionally collected for food and shellcraft. Indo-West Pacific, from the Gulf of Bengal to western Polynesia; north to southern Japan and south to northern Queensland.

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**Nerita squamulata** Le Guillou, 1841

**Frequent synonyms / misidentifications:** *Ritena squamulata* (Le Guillou, 1841); *Theliostyla squamulata* (Le Guillou, 1841) / *Nerita chameleon* Linnaeus, 1758.

**En** - Scaly nerite; **Fr** - Nérite écailleuse.

Maximum shell width 3.5 cm, commonly to 2.5 cm. Common on intertidal rocks. Collected with other nerites by coastal populations. Used as food and for shellcraft. Distribution imperfectly known because of frequent confusion with *Nerita chameleon*. Probably from India to western Polynesia; north to southern Japan and south to northern Queensland.
**Nerita undata** Linnaeus, 1758

Frequent synonyms / misidentifications: *Nerita chrysostoma* Récluz, 1841; *N. striata* Burrow, 1815; *Ritena undata* (Linnaeus, 1758) / None.

**En** - Waved nerite; **Fr** - Nérite ondée.

Maximum shell length 4 cm, commonly to 3 cm. On rocky shores, often in crevices and other protected areas. Collected where common, for food and shellcraft, in many localities of the whole Indo-West Pacific. Widespread in the Indo-West Pacific, from East and South Africa, including Madagascar and the Red Sea, to eastern Polynesia; north to southern Japan, and south to southern Queensland and New Caledonia.

**Neritodryas subsulcata** (Sowerby, 1836)

Frequent synonyms / misidentifications: *Neritina subsulcata* Sowerby, 1836 / *Neritodryas cornea* (Linnaeus, 1758).

**En** - Weakly cut nerite; **Fr** - Nérite sillonnée.

Maximum shell width 3 cm, commonly to 2.5 cm. Abundant in mangrove, brackish-water areas. Intertidal. Locally collected for food in Indonesia. Shell used to make ornaments. Tropical West Pacific, from Malaysia and Indonesia to Melanesia; north to the Philippines and south to southern Indonesia.