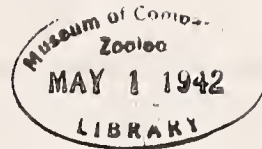


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LITTORINIDAE



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THE GENERA TECTARIUS AND ECHININUS IN THE WESTERN ATLANTIC

BY
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The species of these two genera are found abundantly along the rocky shores of the West Indian region. The Spiny Periwinkles are familiar to those who have collected in tide pools and along stretches of sun and spray beaten rocks well above high tide.

Tectarius Valenciennes

Tectarius Valenciennes 1833, [in] Humboldt and Bonpland, Voyage Regions Equin. Nouv. Contin., pt. 2, p. 271 (genotype, *Tectarius coronatus* Val., monotypic).

Echinella Swainson 1840, Treat. Malac., p. 352 (genotype, *Mouodonta corouarius* Lam.) non *Echinella* Bory de St. Vincent 1824.

Echinellopsis Roverto 1899, Atti Soc. Ligustica, 10, p. 109 (for *Echinella* Swain.).

The genus *Echinella* Swain. was based upon *T. coronarius* Lam., a species very close to *T. coronatus* Val., the type of *Tectarius* s. s. The shells of this genus are conical, extended or occasionally subdepressed and usually roughly sculptured by strong tubercles that are generally arranged in spiral rows. A few species are strongly carinated. Operculum paucispiral, chitinous and thin. (see plate 2, fig. 5)

Tectarius muricatus Linné, Plate 1

Trochus muricatus Linné 1758, Syst. Nat. ed. 10, p. 761 (Europa Australis).

Description. Shell 15 to 30 mm. in length, solid and sculptured with small tubercles. Whorls 8 to 10. Color ash gray with white tubercles. Tip of spire often tinged with pink. Lip and columella white. Interior of the aperture light tan to chocolate brown. Aperture subcircular. Outer lip simple, thickened and slightly flaring at the base. Columella grooved.

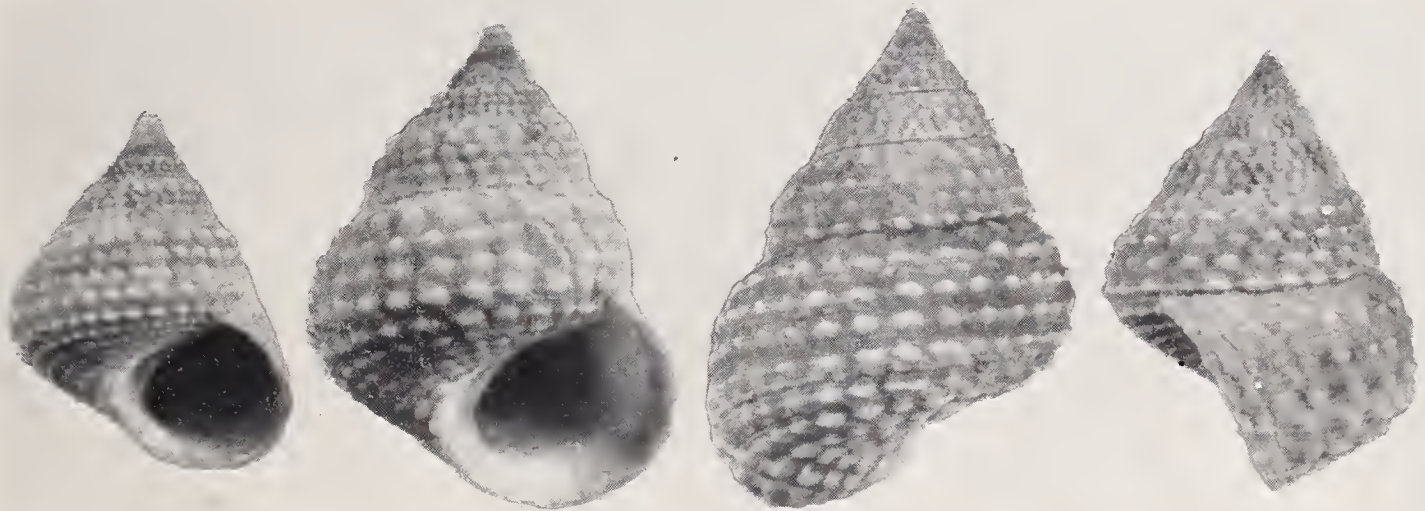


fig. 1 (Navassa Id.)

fig. 2 (Navassa Id.)

fig. 3 (Cienfuegos)

fig. 4 (Cienfuegos)

Plate 1. *Tectarius muricatus* Linné. Twice natural size.

Umbilicus a narrow oblique slit. Suture slightly indented, somewhat overlapped by the whorl above. Nuclear whorls possess very fine spiral threads. Succeeding whorls beaded by 3 to 4 rows of small rounded nodules. The nodules of the top row are usually larger and form a slightly angular shoulder on each whorl. The last whorl has 10 to 11 beaded rows, between which are often developed one or two unbeaded spiral threads. The inside of the outer lip is minutely indented opposite each bead row of tubercles. The operculum is paucispiral, dark brown and chitinous. This fits snugly and well within the aperture.

	length	width	
(large)	30	21 mm.	Swan Island, Caribbean Sea
(average)	21	15	Havana, Cuba
(small)	15	13	Gonave Island, Haiti

Types. Gaultieri 1742 (Index Testarum Conchy.) pl. 45, fig. E, referred to by Linné, is here selected as the type figure. As Linné's reference to southern Europe was in error for this species, we here select Havana, Cuba, as the type locality.

Common name. Spiny Periwinkle.

Remarks. This is one of the most abundant species in the West Indies. It is found generally well above the high water line along rocky coasts. Though commonly occurring within the spray zone, it is also capable of withstanding long periods of dryness and heat. The more active snails in the wetter zone grow to a large size because of their lengthened periods of feeding. On the windward side of Navassa Id. in the Caribbean Sea we found larger specimens than we did on the lee side where there was far less spray, (pl. 1, figs. 1 and 2). *T. muricatus* Linné belongs to the subgenus *Cenchritis* V. Martens 1900.

Range. Bermuda, southern Florida, the West Indies, and Central America south to Trinidad.

Records. FLORIDA: Jupiter; Key West; Tortugas. BERMUDA: Coopers Id. BAHAMAS: Grand Bahama Id.; Bimini Ids.; Nassau, New Providence Id.; Mariguana Id.; Great Inagua Id.; Caicos Ids. CUBA: Havana; Banes; Cienfuegos. HISPANIOLA: Miragoane; Gonave Id.; Puerto Sosua; Beata Id. JAMAICA: Dunn's River. PUERTO RICO: San Juan; Guanica. VIRGIN ISLANDS: St. Thomas; St. Croix; Tortola. LESSER ANTILLES: Antigua; St. Kitts; Martinique; Barbados; Brighton, Trinidad (H.G. Kugler). CARIBBEAN ISLANDS: Navassa; Swan; Old Providence; Buen Ayre. CENTRAL AMERICA: Limon, Costa Rica; Porto Bello, Panama.

Tectarius tuberculatus Wood, Plate 2

Trochus nodulosus Gmelin 1790, Syst. Nat. ed. 13, no. 1, p. 3582 (Oceano Australi) non Solander 1766.

Turbo trochiformis Dillwyn 1817, Desc. Cat. of Recent Shells, London, 2, p. 826 (Southern Ocean) non Brocchi 1814.

Turbo tuberculatus Wood 1828, Index Testac., Suppl., p. 19, pl. 6, fig. 30 (locality unknown).

Litorina tuberculata Menke 1828, Synop. Meth. Moll., Pyrmont, p. 25 (refers to Gmelin).

Litorina thiarella Anton 1839, Verz. Conch. p. 53.

Littorina dilatata d'Orbigny 1841, [in] de la Sagra, Hist. L'Ile de Cuba, Moll. 1, p. 207, pl. 14, fig. 20-23 (Havana).

Description. Shell 12 to 20 mm. in length, solid and sculptured with fairly sharp tubercles. Whorls 7 to 8. Color brownish gray to lead gray with whitish tubercles. Edge of outer lip white. Columella and aperture dark brown with a clear white stripe below. Aperture subcircular. Outer lip simple, rather thin and projecting just below the columella. Columella wide, often excavated and forming a shelf. This shelf often runs to the upper corner of the aperture. Rarely, a small conical umbilicus is present. Suture indistinct.

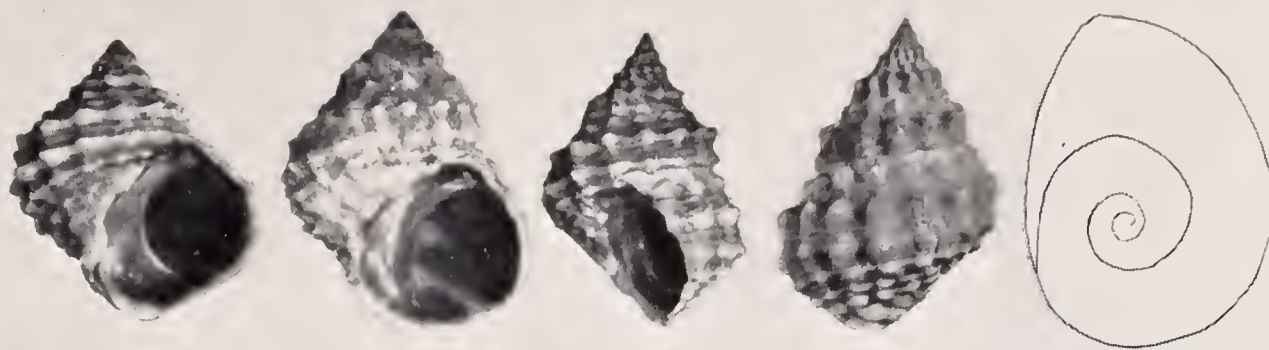


fig. 1 (Havana) fig. 2 (Havana) fig. 3 (Swan Id.) fig. 4 (Swan Id.) fig. 5 (Operculum, 6×)

Plate 2. *Tectarius tuberculatus* Wood. Twice natural size.

Nuclear whorls possess very fine spiral threads. Succeeding whorls beaded by two or three rows of small pointed nodules. The second and third rows on each whorl usually have the largest nodules. The last whorl has seven beaded rows, between which run one or two rough spiral threads. These are crossed by rather coarse growth lines. Operculum (pl. 2 fig. 5) is paucispiral, dark brown and chitinous.

	length	width	
(large)	20	14 mm.	Bermuda
(average)	15	12	Havana, Cuba
(small)	12	9.5	Knights Key, southern Florida

Types. Gmelin refers to Chemnitz 1781, Conchy-Cab. (1), 5, pl. 168, fig. 1545-6, which are here selected as the type figures. We also designate Havana, Cuba, as the type locality.

Common name. Common Prickly-winkle.

Remarks. This species is often confused with *Echininus nodulosus* Pfr. (see next species). The two are superficially very similar in appearance and only close examination discloses the significant differences. *Tectarius tuberculatus* possesses a paucispiral operculum, a strongly developed columellar ledge and nearly always a projecting lip just below the columella. On the other hand, *E. nodulosus* Pfr. possesses a multispiral operculum, has no columellar ledge and the aperture, though somewhat flaring, is never pointed below.

The ecology of *T. tuberculatus* differs materially from that of *Echininus*. The former lives solely in tide and splash pools, while the latter is associated with *T. muricatus* high up on the dry rocks.

Tectarius tuberculatus Wood belongs to the subgenus *Nodilittorina* v. Martens 1897.

Range. Bermuda, southern Florida, south through the West Indies and Central America to Trinidad.

Records. FLORIDA: Tavernier; Jupiter; Knights Key; Tortugas. BERMUDA: Doe Bay. BAHAMAS: Grand Bahama Id.; Bimini Ids.; Cat Id.; Long Id.; Eleuthera; Great Abaco. CUBA: Havana; Cienfuegos; Matanzas. HISPANIOLA: Jeremie; Cap Haitien; Monte Cristi; Puerto Sosua. JAMAICA: Port Antonio. PUERTO RICO: Guanica; Ponce. VIRGIN ISLANDS: St. Croix; Virgin Gorda. LESSER ANTILLES: Carriacou Id., Grenadines; Martinique; Barbados; Trinidad. CARIBBEAN ISLANDS: Navassa; Roatan; Swan. CENTRAL AMERICA: Colon (Aspinwall), Panama.

Echininus, *new name*

Nina Gray 1850, Figures of Molluscous Animals, London, 4, p. 78 (genotype, *Trochus cumingii* Phil.), non *Nina* Horsfield 1829, non *Nina* Gray 1855 (Echinoderm).

This genus is similar to *Tectarius* in appearance, but differs in having a multispiral operculum. (see plate 3, fig. 5)

***Echininus nodulosus* Pfeiffer, Plate 3**

Litorina nodulosa Pfeiffer 1839, Archiv für Natur., (Wiegmann), 1, p. 357 (Cuba), exclusive of synonymy.

Litorina scabra Anton 1839, Verz. Conch., p. 53, non Linné 1758.

Litorina autoni Philippi 1847, Abbild. Besch. Conchy., 2, p. 145, pl. 2, fig. 18 (new name for *scabra* Anton).

Litorina (Tectarius) pfeifferianus Weinkauff 1882, Conchy.-Cab. (2), 2, pt. 9, p. 46, pl. 5, figs. 15-16.

Description. Shell 12 to 20 mm. in length, solid and sculptured with fairly sharp tubercles. Whorls about 7. Color brownish gray to lead gray. Edge of outer lip white. Columella and aperture black brown with a white stripe below. Aperture nearly circular. Outer lip simple, thin and with the base not projecting below. Columella rounded but not forming a ledge. Without an umbilicus. Suture indistinct. Nuclear whorls possess very fine spiral threads. Succeeding whorls beaded by one or two rows of sharp nodules. The second row usually has the largest nodules, though in the last whorl the second and third rows are prominent. There are six rows on the last whorl, between which are often two or three coarse spiral threads. These are crossed by fine growth lines. Operculum (pl. 3, fig. 5) is multispiral, dark brown and chitinous.

	length	width	
(large)	20	15 mm.	Matanzas, Cuba
(average)	16	13	Havana, Cuba
(small)	10.5	9	Tavernier, Florida

Types. As Pfeiffer did not figure his species, we here select that of d'Orbigny 1841 [in] de la Sagra, Hist. L'Isle de Cuba, 1, pl. 14, fig. 17 and 19. In addition we select the type locality as Havana, Cuba.

Common name. False Prickly-winkle.

Range. Southern Florida, the Greater Antilles including the Bahamas (and probably southwards into the Lesser Antilles).

Remarks. For comparisons and ecological data see remarks under *Tectarius tuberculatus* Wood. The umbilicated species, *E. cumingii* Phil., of the East Indies is an *Echininus* s.s. We propose a new subgenus, *Tectininus*, with the non umbilicated *E. nodulosus* Pfr. as its subgenotype.

Records. FLORIDA: Jupiter (McGinty); Bonefish Key (Bales). BAHAMAS: Grand Bahama Id.; Bimini Ids.; Acklin Id.; Great Abaco; Little San Salvador; Great Inagua; Eleuthera. CUBA: Bahia Honda; Matanzas; Havana. HISPANIOLA: Jeremie; Puerto Plata. JAMAICA: Port Antonio. CARIBBEAN ISLANDS: Swan Id.

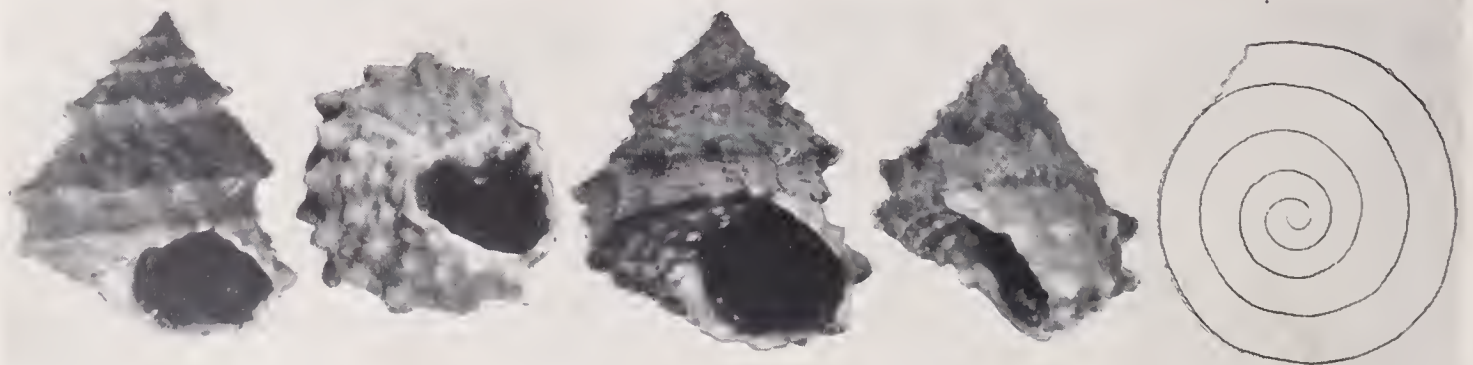


fig. 1 (Matanzas) fig. 2 (Matanzas) fig. 3 (Bimini Ids.) fig. 4 (Bimini Ids.) fig. 5 (Operculum, 6×)