Two remarkable new gastropods (Muricidae: Muricinae) from the Mascarene Plateau, Indian Ocean

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Abstract. Two new species of the family Muricidae are described from Nazareth Bank and the Cargados Carajos Shoals, in the western Indian Ocean. *Haustellum loreuzi* n. sp. from Nazareth Bank is obviously different from any other known *Haustellum* species. *Chicoreus* (*Triplex*) *janae* n. sp. from the Cargados Carajos Shoals is compared with a few other species but differs mainly in having tabulate teleoconch whorls and a relatively narrow and long siphonal canal.

Résumé. Deux nouvelles espèces appartenant à la famille des Muricidae sont décrites du Banc Nazareth et des bancs Cargados Carajos, au nord de l'Ile Maurice, dans l'océan Indien occidental. *Haustellum lorenzi* n. sp. du Banc Nazareth est manifestement différente d'autres espèces connues du genre *Haustellum*. *Chicoreus* (*Triplex*) *janae* n. sp. des bancs Cargados Carajos est comparée à quelques autres espèces mais diffère surtout par sa rampe subsuturale pratiquement horizontale et par son canal siphonal relativement étroit et long.

INTRODUCTION

The Mascarene Plateau is a geographical term that designates the arc of submarine banks and shoals extending from the Seychelles in the north, to Mauritius in the south, and including Saya de Malha Bank, Nazareth Bank, and the Cargados Carajos Shoals. The Mascarene Plateau (Fig. 1) has a volcanic origin, and has been formed by the hotspot that is currently below the island of Réunion. Réunion is the youngest part of the arc, and Saya de Malha is the oldest, its origin going back to the Paleocene (65 MY ago). Between Saya de Malha and Réunion, the geological ages range from the Eocene (45 MY) for the Nazareth Bank to Miocene (20 MY) for Mauritius. Saya de Malha briefly enjoyed a period of fame when Russian trawlers discovered a spectacular suite of endemic species in the 1990s, starting with *Conus primus* Röckel & Korn, 1990, and among others, the marginellid *Closia limpida* Bozzetti, 1992, the harpid *Morum vicdani* Emerson, 1995, the volutes *Lyria doutei* Bouchet & Bail, 1991, *Callipara aphrodite* (Bondarev, 1999) and *Lyria boudarevi* (Bail & Poppe, 2004), the cassids *Semicassis boudarevi* Mulhausser & Parth, 1993 and *Phalium vector* Tucker, 1994, the olivids *Amalda trippneri* Kilburn, 1996 and *A. danilai* Kilburn, 1996 and the calliostom *Calliostoma grohi* Stratmann & Stahlschmidt, 2007. In terms of muricids, *Murex surinamensis* Okutani, 1992, *Vokesinurex danilai* (Houart, 1992) and *Haustellum boudarevi* Houart, 1999 were newly discovered. By contrast, the Cargados Carajos Shoals (also known as St Brandon) have not captured the recent attention of malacologists, although it is the origin of the elusive volute *Lyria anna* (Lesson, 1835), and the legendary muricid *Naquetia barclayi* (Reeve, 1858). Also *Lambis violacea* (Swainson, 1821) and *Bistolida piae* (Lorenz & Chiapponi, 2005) were described from there. None of these species, however, is endemic to the Atoll but found in other places along the Mascarene Plateau. In the last few years, several species apparently endemic to the shallow waters of St. Brandon have been newly discovered on Cargados Carajos by Felix Lorenz and Eric le Court de Billot, such as *Rolaniconus lecourtorum* Lorenz, 2011, *Ficus dandrimonti* Lorenz, 2012, *Morum lorenzi* Monsecour, 2011 and *Bistolida nanostraca* Lorenz & Chiapponi, 2012. Nazareth Bank, in turn, is the least explored structure of the Mascarene Plateau and not a single mollusc species seems to have been recorded from it.

The new species reported in the present paper contributes to the remarkable endemic fauna of the Mascarene Bank. *Haustellum lorenzi* n. sp., constitutes the first species known specifically from Nazareth Bank, and *Chicoreus janae* n. sp., is another endemic element of the molluscan fauna of Cargados Carajos.

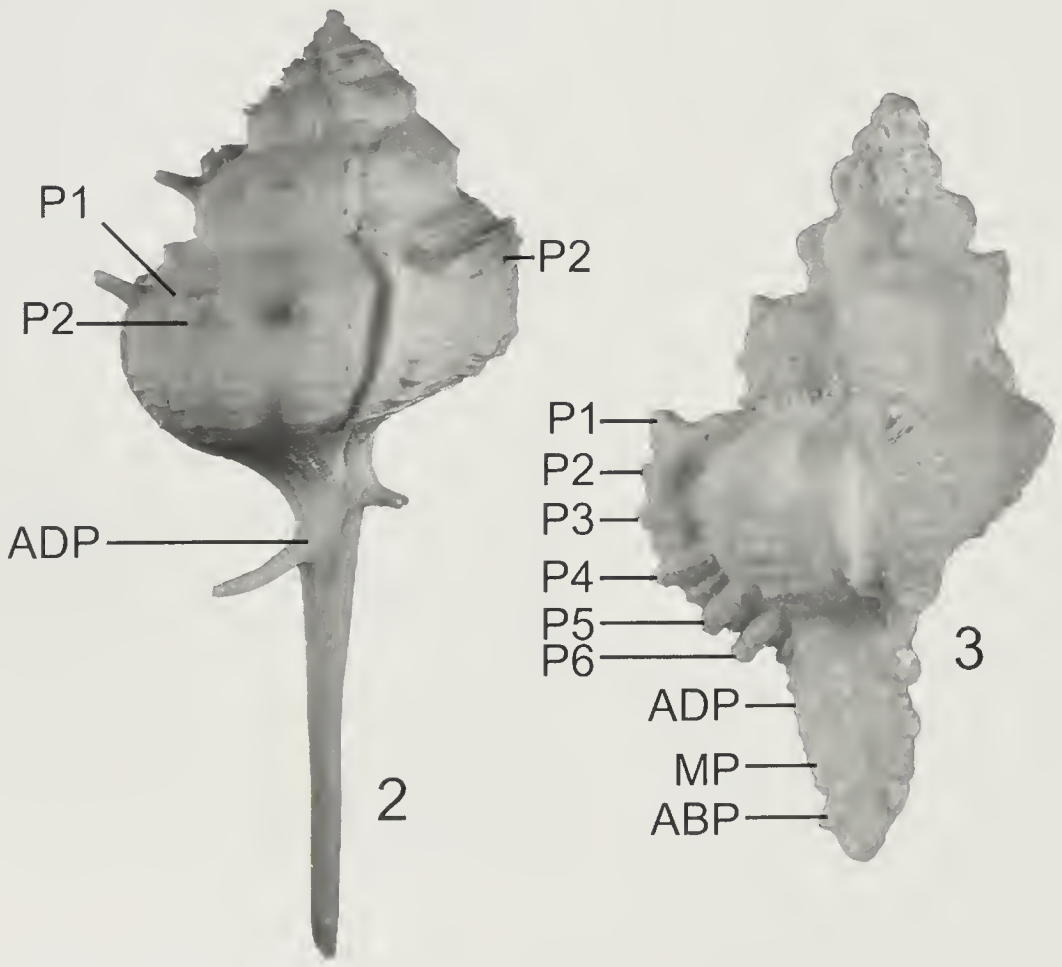
Abbreviations

Terminology used to describe the spiral cords (after Merle, 2001 and 2005)
(Figs 2-3)

P: primary cord; **S:** secondary cord; **IP:** infrasutural primary cord (primary cord on subsutural ramp); **P1:** shoulder cord; **P2-P6:** primary cords of the convex part of the teleoconch whorl; **s1-s6:** secondary ords of the convex part of the teleoconch whorl (example: s1 = secondary cord between P1 and P2;

s2 = secondary cord between P2 and P3, etc.); **ADP:** median primary cord on the siphonal canal; **ABP:** adapertural primary cord on the siphonal canal; **MP:** abapertural primary cord on the siphonal canal.

Fig. 1. Simplified bathymetric map of the southwestern Indian Ocean banks, showing the localities mentioned in the text. Stippled area, 0-100 m; thin intermediate line, 200 m isobath; thick line, 500 m isobath. Scale line 500 kilometers (from Bouchet & Bail, 1991).



Figs 2-3. Spiral cord morphology
2. *Haustellum lorenzi* n.sp., paratype F. Lorenz.
3. *Chicoreus (Triplex) janae* n.sp., holotype MNHN 26871.

SYSTEMATICS

Family **Muricidae** Rafinesque, 1815
Subfamily **Muricinae** Rafinesque, 1815
Genus ***Haustellum*** Schumacher, 1817
Type species by original designation: *Murex haustellum* Linnaeus, 1758, Indo-West Pacific.

Haustellum lorenzi n. sp.
Figs 4-11

Type material. Holotype Muséum national d'Histoire naturelle, Paris, France, MNHN 26870, Nazareth Bank, dredged dead in 400 m, some time in the 1980s; 1 paratype F. Lorenz, same locality.

Type locality. Nazareth Bank, dredged dead in 400 m, some time in the 1980s.

Distribution. Currently only known from the type locality.

Description. Shell medium sized for the genus, up to 129.4 mm in length (paratype); teleoconch whorls broad, rounded, weakly spinose, nodose, siphonal canal long, narrow. Subsutural ramp broad, strongly sloping, convex.
Creamy white with light brown blotches on subsutural band, between axial nodes of P2 cord, between last primary abapical cord and ADP and against a few other nodes of convex part of last teleoconch whorl.
Spire high with 2.5 protoconch whorls and up to 6 broad, rounded, weakly shouldered, slightly nodose teleoconch whorls. Suture impressed. Protoconch large, broad, whorls rounded, smooth. Width holotype: 2 mm; paratype: 2.6 mm; length holotype: 2.5 mm; paratype: 3 mm.
Axial sculpture of teleoconch whorls consisting of low, weak, narrow varices, starting at the end of first teleoconch whorl. Other axial sculpture of very low, broad ribs, more apparent when crossing some spiral cords; 3 or 4 ribs from second to last whorl, more conspicuous on first whorls, very low and broad on penultimate and last whorls. Spiral sculpture of low, narrow, nodose, primary, secondary and tertiary cords and numerous threads. P1-P3 cords obviously apparent on first teleoconch whorl; P1 decreasing in strength on following whorls, to become almost obsolete on last whorl, with short spine starting from fourth whorl, increasing in length and breadth on antepenultimate, penultimate and last whorls; P2 cord growing larger than P1, more conspicuous on last whorl, giving rise to elongate nodes where crossing axial ribs; similar elongate nodes present on two or three abapical spiral cords, probably P4, s4 and P5. Other spiral sculpture consisting of primary and secondary cords of same strength and numerous tertiary cords and threads, up to ADP. Ontogeny unknown.
Aperture large, roundly ovate. Columellar lip narrow, extremely projecting, free-standing, flaring, smooth, adherent at adapical extremity. Anal notch moderately deep, narrow. Outer lip smooth, smooth within. Siphonal canal long, slightly broken at tip in both specimens, narrow, straight, open, with a single, long, acute ADP spine, otherwise completely smooth.

Etymology. This species is named for Mr. Felix Lorenz who procured the material used in this article.

Remarks. This remarkable new *Haustellum* species differs strongly from any other known Recent or fossil species (Ponder & Vokes, 1988; Houart, 1999; Merle et al., 2011) in having a particularly large, bulbous and broad protoconch (Figs 6 & 11), indicating intracapsular larval development and in having a peculiar long spine originating from the reduced P1 spiral cord and another extending from the ADP cord. The shell is also particularly light compared to other species. It is quite impossible to distinguish the primary from the secondary cords starting from P2 to P6 and between P6 and ADP without knowing the ontogeny, even when comparing it with other *Haustellum* species.

Genus ***Chicorens*** Montfort, 1810
Subgenus ***Triplex*** Perry, 1810
Type species by monotypy: *Triplex foliatus* Perry, 1810 (= *Murex palmarosae* Lamarck, 1822), Indo-West Pacific.

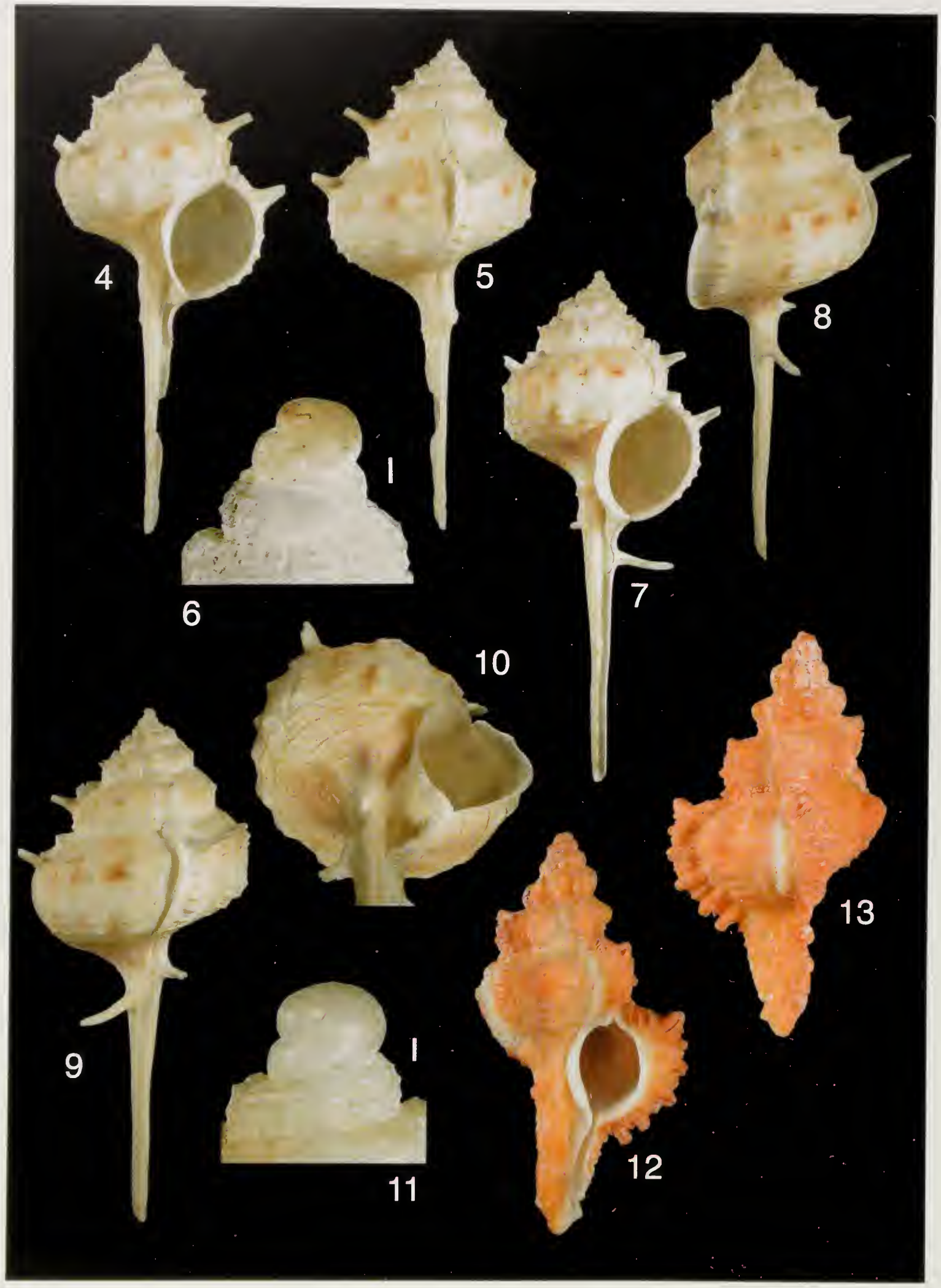
Chicorens (Triplex) janae n.sp.
Figs 12-13, 14-15

Type material. Holotype Muséum national d'Histoire naturelle, Paris, France, MNHN 26871, northern tip of the Cargados Carajos Shoals, outer side of Ile Puits à Eau, 16°39′ S, 59°34′ E; 1 paratype F. Lorenz, northern part of the Cargados Carajos Shoals, Ile Raphaël, 16°27′ S, 59°37′ E, both collected by F. Lorenz.

Type locality. Northern part of the Cargados Carajos Shoals, outer side of Ile Puits à Eau, 16°39′ S, 59°34′ E, beached.

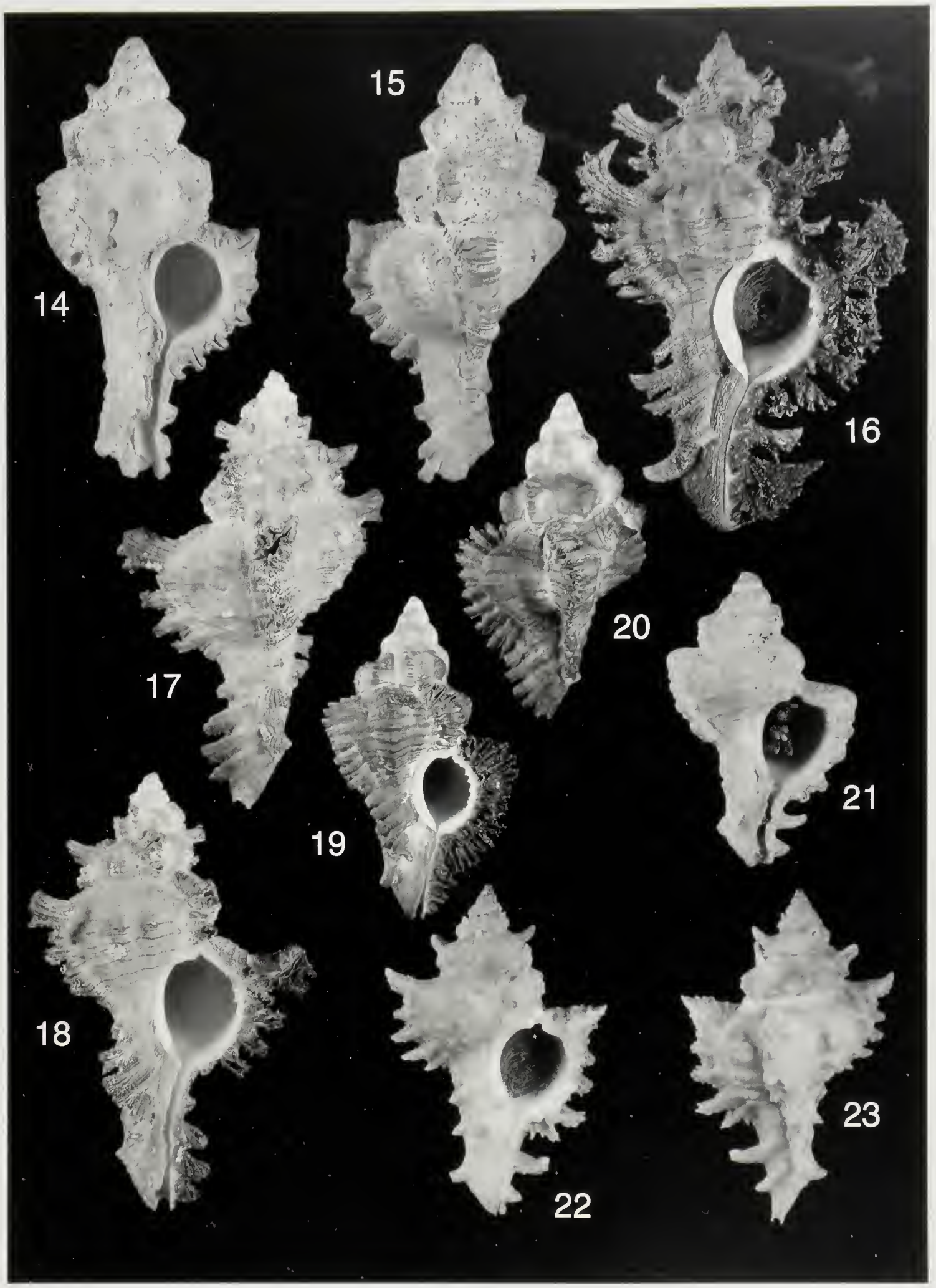
Distribution. Currently only known from the type material.

Description. Shell medium sized for the subgenus, up to 67.8 mm in length (paratype), narrow, heavy, nodose. Subsutural band broad, weakly sloping, very weakly concave or convex.
Light tan or orange. Aperture white.
Spire high, teleoconch of up to 7+ strongly shouldered, nodose, whorls. First teleoconch whorls eroded. Suture impressed. Protoconch eroded.
Axial sculpture of teleoconch whorls consisting of 3 moderately high, narrow, rounded, frondose varices; each varix with short, open, blunt primary spines. Other axial sculpture of 1 or 2 intervarical nodes. Last



Figures 4-13 (scale bars: 500 µm)

4-11. *Haustellum lorenzi* n. sp.
4-6. Nazareth Bank, dredged dead in 400 m, holotype MNHN 26870, 122.6 mm; **7-11.** paratype F. Lorenz, 129.3 mm; **12-13.** *Chicoreus (Triplex) janae* n. sp. Northern of the Cargados Carajos Shoals, outer side of Ile Puits à Eau, 16°39′0.0″S 59°34′0.0″E, beached, holotype MNHN 26871, 62.6 mm.



Figures 14-23

14-15. *Chicoreus (Triplex) janae* n. sp. Northern of the Cargados Carajos Shoals, Ile Raphaël, 16°27′0.0″S, 59°37′0.0″E, beached, paratype F. Lorenz, 67.8 mm; **16-18.** *Chicoreus (Triplex) bourguignati* (Poirier, 1883); **16.** Kenya, RH, 62.6 mm; **17-18.** Ethiopia, collected dead, RH, 67.5 mm; **19-20.** *Chicoreus (Triplex) monicae* Bozzetti, 2001. Madagascar, RH, 57.3 mm; **21-23.** *Chicoreus (Chicoreus) austramosus* Vokes, 1978, Transkei, South Africa, RH; **21.** Collected dead, 44.9 mm; **22-23.** 55.3 mm.

whorl with a high node, close to preceding varix and a second, much lower one, near succeeding varix. P1 spine broadest, P2 shortest and narrow, P3-P6 almost of same strength and length. Spiral sculpture of low, weak, rounded, narrow, nodose primary, secondary and tertiary cords and narrow lirae. Last teleoconch whorl with adis, IP, abis, followed by P1, s1, P2, s2, P3, s3, P4, s4, P5, s5, P6, s6, ADP, MP, ABP, abs, with additional tertiary cords and narrow threads. Antepenultimate and penultimate whorls with adis, IP, abis and visible P1, s1, P2, s2, P3 and additional tertiary cords between primary and secondary cords.
Aperture large, broadly ovate. Columellar lip narrow, smooth, rim partially weakly erect, adherent at adapical extremity, with strong parietal tooth at adapical extremity, anal notch moderately deep, narrow. Outer lip with weak striae within. Siphonal canal long, relatively narrow, straight, open, with short, broad, abapically bent, frondose spines.

Etymology. At the request of Felix Lorenz, I am pleased to name this new species after his partner, Jana Kratzsch.

Remarks. Even though both specimens are worn, they can be separated without too much difficulty from other *Chicoreus* species occurring in the Indian Ocean or more widely, in the Indo-West Pacific (Houart, 1992).
Chicoreus (*Triplex*) *janae* differs from other species in having strongly shouldered teleoconch whorls with only a very weakly sloping, broad, subsutural ramp, especially obvious on the last teleoconch whorl, being almost tabulate, in having a strong, relatively high and broad intervarical node, closer to the preceding varix, occasionally with a second, much lower one, and in having a long, relatively narrow, siphonal canal.
The closest species, *C.* (*T.*) *bourguiguati* (Poirier, 1883) (Figs 16-18), differs in having a less shouldered shell with less tabulate whorls, a less impressed suture, and in having 2 or 3 low intervarical ribs.
Chicoreus (*T.*) *monicae* Bozzetti, 2001 (Figs 19-20) from Madagascar also has a single, broad, intervarical node but consistently differs in having a lower spire, an adpressed suture and a shorter, comparatively broader siphonal canal.
Chicoreus (*T.*) *brunneus* (Link, 1807) and *C.* (*T.*) *groschi* Vokes, 1978 also differ in having less tabulate teleoconch whorls, a comparatively lower spire and a broader, obviously shorter, siphonal canal.
Chicoreus (*Chicoreus*) *austranosus* Vokes, 1978 (Figs 21-23) from the Transkei coast in South Africa, also has tabulate teleoconch whorls but constantly differs in having a lower spire, a much shorter siphonal canal with different ornamentation, and chiefly, in having a labral tooth, characteristic of *Chicoreus* s.s. species. This tooth is visible on the apertural varix but also on previous varices. It is obviously absent in *C. janae* n. sp.
Both worn and live collected specimens of the comparative material are illustrated to give a more reliable comparison with the new species.

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