

The genus *Lilloiconcha* in Colombia (Gastropoda: Charopidae)

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Abstract

The name *Lilloiconcha* Weyrauch, 1965 is used tentatively for South American charopids with a reduced penis, a barely differentiated epiphallus and multicuspid marginal radular teeth. *Trochogyra* Weyrauch, 1965 is considered to be a synonym of *Lilloiconcha*. In addition to the widespread *Lilloiconcha gordurasensis* (Thiele, 1927), *Lilloiconcha costulata* new species and *Lilloiconcha laevigata* new species are described from the Cordillera Oriental in Colombia. The distribution of *Lilloiconcha gordurasensis* in South America is summarized.

Keywords: Argentina, Brazil, Charopidae, Colombia, distribution, Gastropoda, *Lilloiconcha*, new species, Paraguay, Peru

Introduction

Weyrauch (1965) established the names *Lilloiconcha* Weyrauch, 1965 for a single species which usually has basal and parietal denticles in juvenile stages, *Austrodiscus superbus tucumanus* Hylton Scott, 1963, and *Trochogyra* Weyrauch, 1965 (Gastropoda: Charopidae) as a subgenus of *Zilchogyra* Weyrauch, 1965 for a single conical species with a narrow umbilicus, *Endodonta superba* Thiele, 1927. Fonseca and Thomé (1993) separated *Trochogyra* as a genus from *Zilchogyra*. They mentioned that there is a microsculpture on the apparently smooth protoconch of *Trochogyra*, whereas the protoconch of *Zilchogyra* is completely smooth. They transferred several species included by Weyrauch (1965) in *Zilchogyra* (*Zilchogyra*) to *Trochogyra*. Moreover, they established a new subgenus, *Glabrogyra* Fonseca and Thomé, 1993, for two species from Chile. Schileyko (2001) separated *Glabrogyra* Fonseca and Thomé, 1993 as a distinct genus. The monotypic *Lilloiconcha* Weyrauch, 1965 from northern Argentina was retained by Fonseca and Thomé (1993) and Schileyko (2001). Species classified with *Trochogyra* by Fonseca and Thomé (1993) were known from Peru, Brazil, Paraguay, Argentina, and Chile.

During a land snail survey by the author and staff of the Facultad de Ciencias of the Universidad Militar Nueva Granada in Colombia, three charopid species belonging to this

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group were found in the Cordillera Oriental in the Distrito Especial and the Departamentos Cundinamarca and Boyacá. In the following review the anatomy of one of these species is described in detail, the application of the existing genus group names is discussed, and the Colombian species are described.

Material and methods

Specimens which were collected alive in the field were killed by drowning in water for a few hours and conserved in 70% ethanol. Most of the material was extracted from dried litter samples.

Radulae were prepared by dissolving the dissected buccal mass or complete dried specimens in 5% potassium hydroxide for several hours. Then they were cleaned in an ultrasonic cleaner for 10 s and washed with distilled water. The cleaned radula was mounted on a small piece of coverslip in water and allowed to dry directly on to the glass. The coverslip was fixed to a SEM stub using double-sided tape and sputtered with gold in a sputter coater (GEA004S). The radulae were examined in a Leo 1525 scanning electron microscope.

The counting of the shell whorls (accuracy 0.25) follows Kerney and Cameron (1979, p 13). Shells were photographed without coating in a variable pressure scanning electron microscope (Leo 1455VP).

The material on which this study is based is kept in the following collections: Museo de La Plata, La Plata (MLP); Instituto de Ciencias Naturales of the Universidad Nacional de Colombia, Santafé de Bogotá (UNAL); Zoologisches Museum der Humboldt-Universität, Berlin (ZMB); Zoologisches Museum der Universität Hamburg (ZMH).

The following abbreviations are used: D, shell diameter; H, shell height.

Systematics

CHAROPIDAE Hutton, 1884

Lilloiconcha Weyrauch, 1965

?*Zilchogyra* (*Trochogyra*) Weyrauch 1965, p 126. Type species (by original designation): *Endodonta superba* Thiele, 1927.

Lilloiconcha Weyrauch 1965, p 127. Type species (by original designation): *Austrodiscus superbus tucumanus* Hylton Scott, 1963.

Lilloiconcha costulata sp. n.

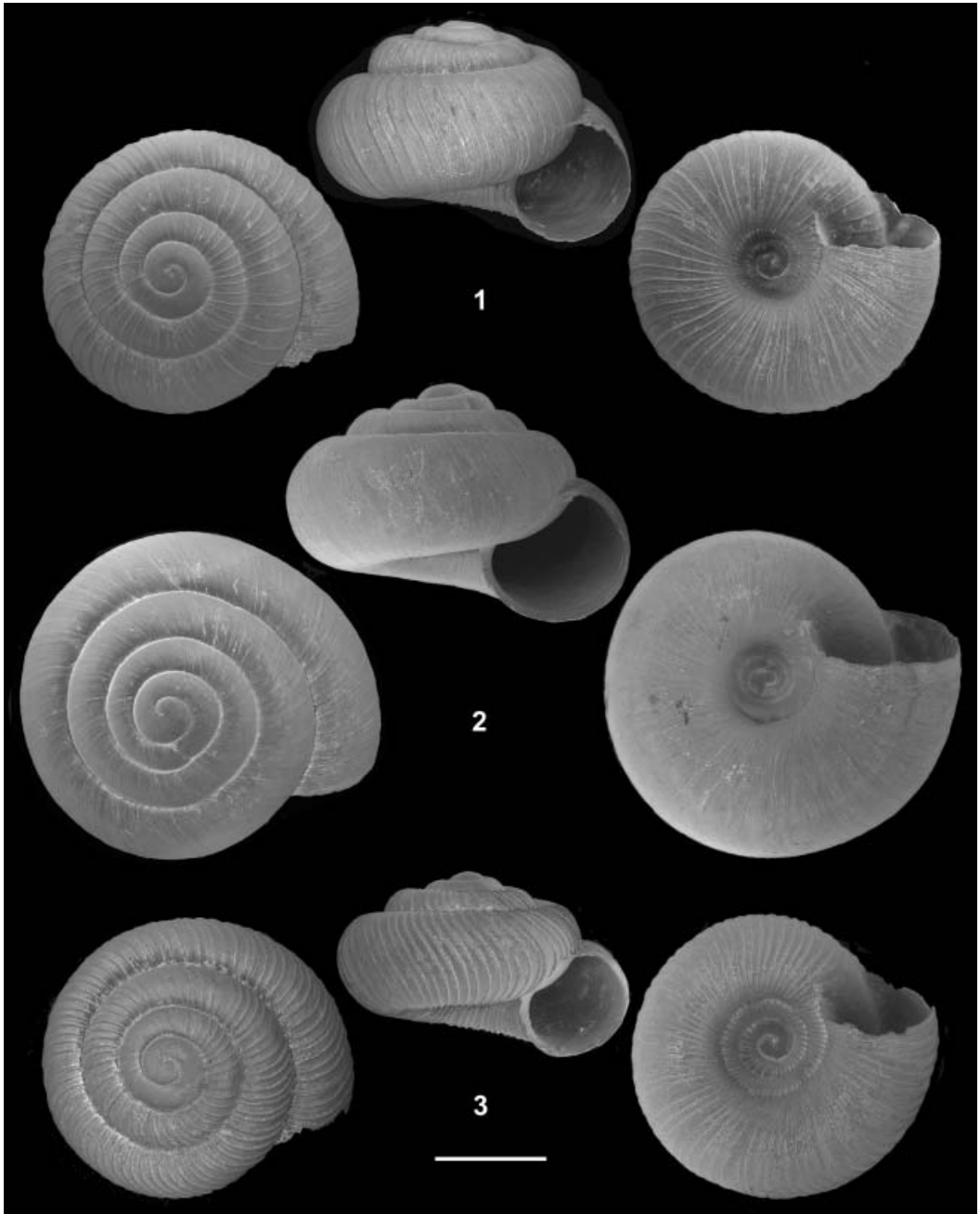
(Figures 1, 4, 5, 10–15, 21)

Diagnosis

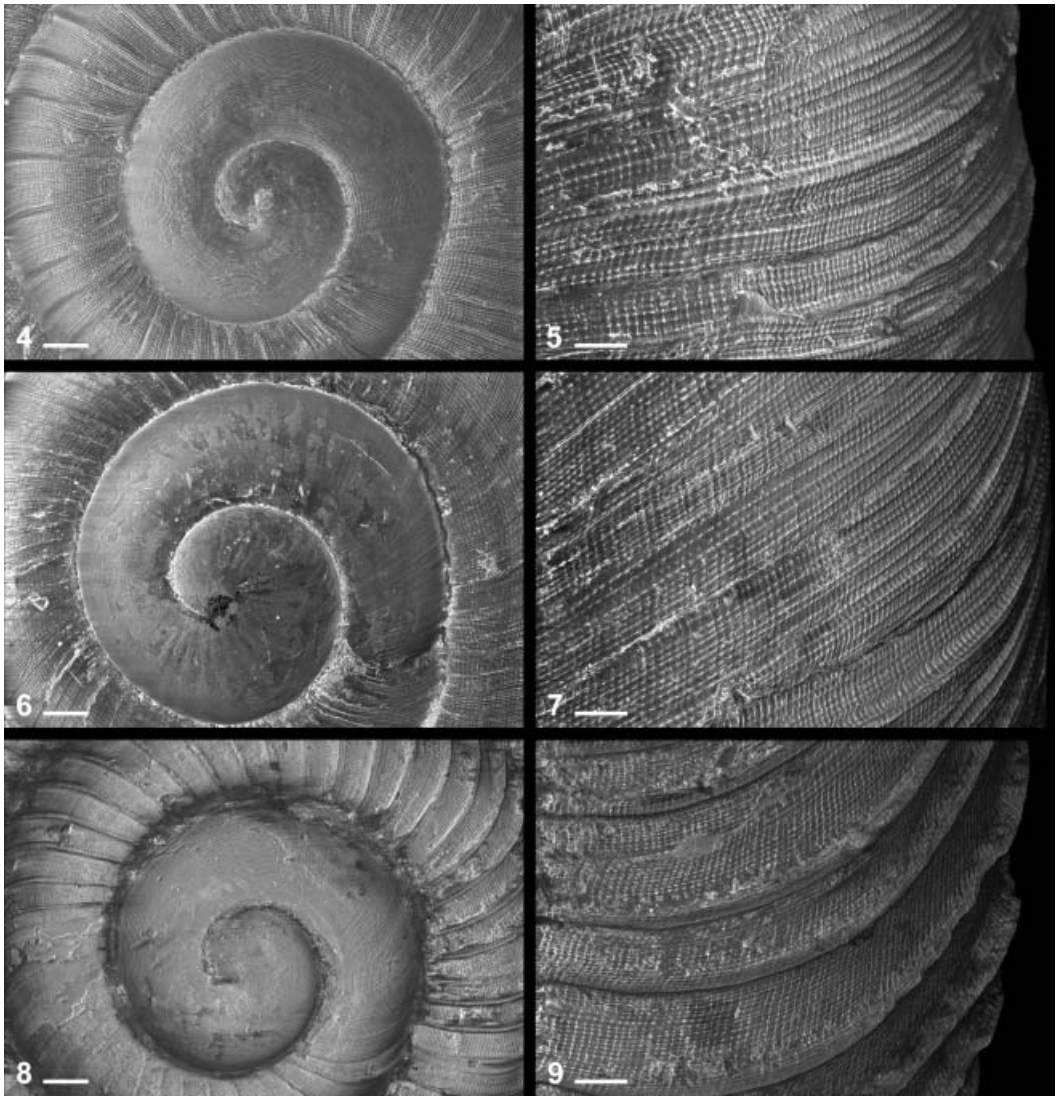
Lilloiconcha costulata differs from other *Lilloiconcha* species in the depressed conical-globular shell with moderately coarse ribs. The shell is more depressed than in the almost conical *Lilloiconcha pleurophora* (Moricand, 1846), but less depressed than in *Lilloiconcha gordurasensis* (Thiele, 1927) and the ribs are weaker than in both these species.

Shell (Figures 1, 4, 5)

Depressed conical-globular; with 3.75–4 convex whorls; protoconch with distinct microscopical spiral threads; teleoconch with moderately coarse and more or less regular

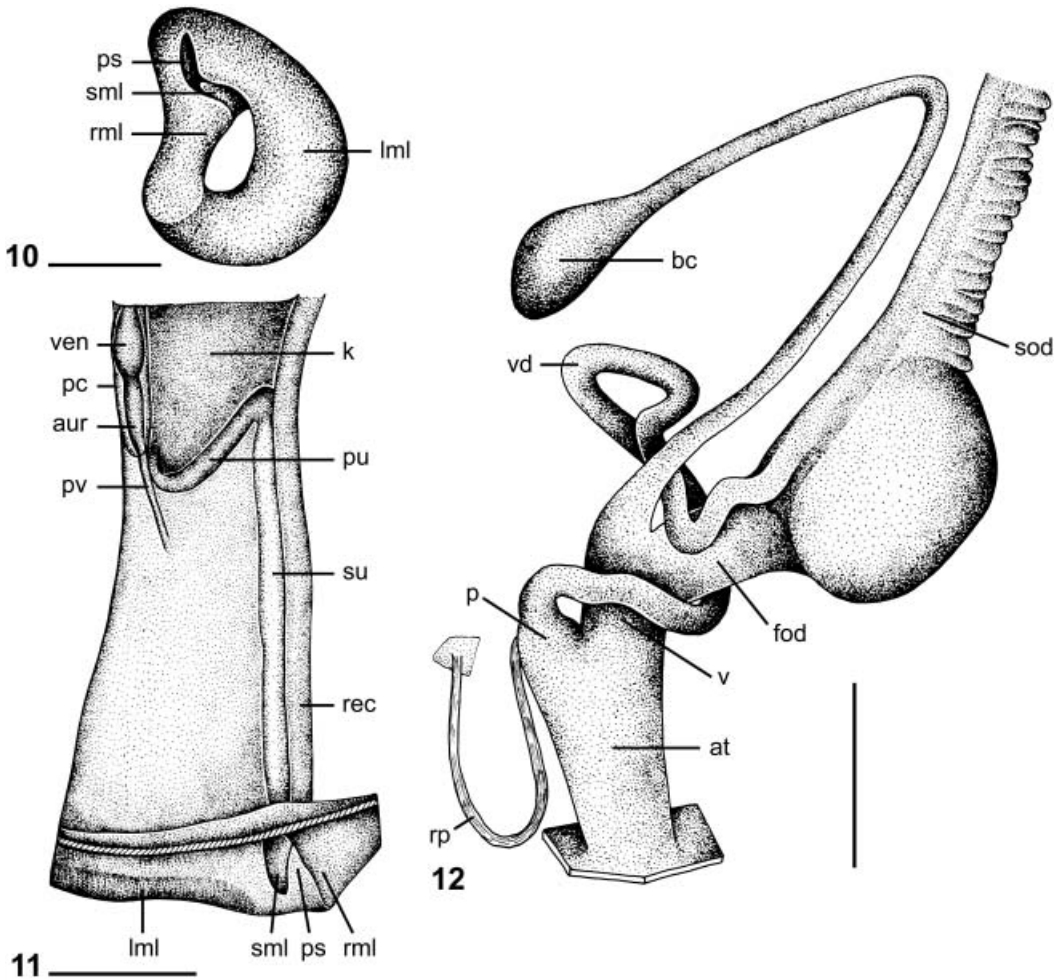


Figures 1–3. *Lilloiconcha* spp. from Colombia, shells. (1) *Lilloiconcha costulata*, sp. n., Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá (holotype ZMH 4793). (2) *Lilloiconcha laevigata*, sp. n., Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá (holotype ZMH 4792). (3) *Lilloiconcha gordurasensis* (Thiele), Colombia, Boyacá: Barbosa, 5 km towards Arcabuco (ZMH 4185). Scale bar: 1 mm.



Figures 4–9. *Lilloiconcha* spp. (4, 5) *Lilloiconcha costulata*, sp. n., Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá (holotype ZMH 4793): (4) protoconch; (5) sculpture of the body whorl. (6, 7) *Lilloiconcha laevigata*, sp. n., Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá (holotype ZMH 4792): (6) protoconch; (7) sculpture of the body whorl. (8, 9) *Lilloiconcha gordurasensis* (Thiele), Colombia, Boyacá: Barbosa, 5 km towards Arcabuco (ZMH 4185): (8) protoconch; (9) sculpture of the body whorl. Scale bars: 0.1 mm (4, 6, 8); 0.05 mm (5, 7, 9).

ribs (ca 6–9 per 1 mm of the body whorl) and a reticulate pattern consisting of fine growth-striae and dense microscopical spiral threads between the ribs; brownish corneous with reddish brown transverse stripes; body whorl rounded; aperture almost circular; upper insertion of the peristome not descending towards the aperture; suture impressed; peristome sharp, neither expanded nor thickened; umbilicus wide, about 24–30% of the shell diameter.



Figures 10–12. *Lilloiconcha costulata*, sp. n., Colombia, Cundinamarca: La Calera, S of Entrada Fabrica de Cemento Samper (paratype ZMH 4083). (10) Mantle collar. (11) Pallial complex. (12) Genitalia. at, atrium; aur, auricle; bc, bursa copulatrix; fod, free oviduct; k, kidney; lml, left mantle lobe; p, penis; pc, pericardium; pr, penial retractor; ps, pneumostome; pu, primary ureter; pv, pulmonary vein; rec, rectum; rml, right mantle lobe; sml, subpneumostomal mantle lobe; sod, spermooviduct with eggs; su, secondary ureter; v, vagina; vd, vas deferens; ven, ventricle. Scale bars: 0.5 mm (10, 12); 1 mm (11).

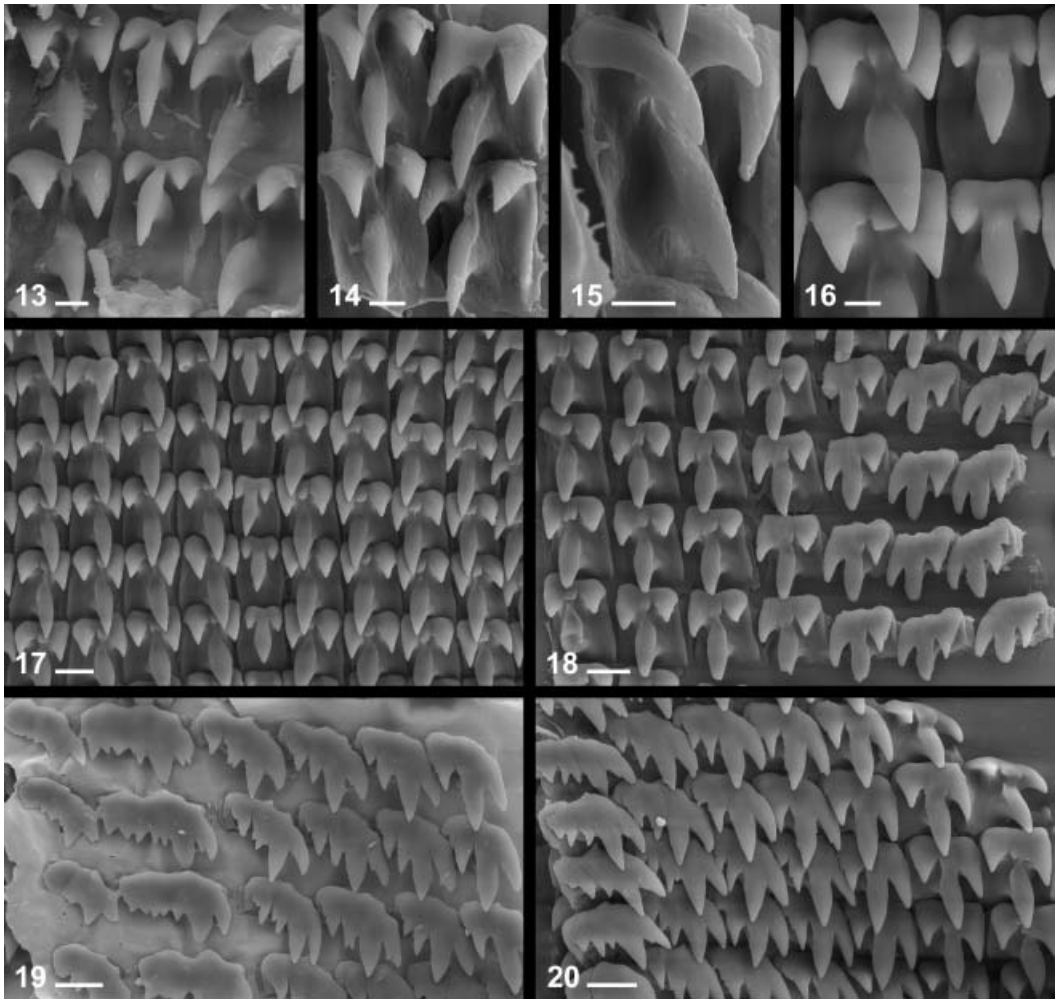
Measurements

La Calera, 0.5 km towards Bogotá ($n=15$): $D=2.9-3.4$ mm, $\phi=3.1 \pm 0.2$ mm; $H=1.9-2.4$ mm, $\phi=2.2 \pm 0.2$ mm; $D/H=1.29-1.52$, $\phi=1.43 \pm 0.06$.

Anatomy (Figures 10–15)

One paratype from La Calera, S of Entrada Fabrica de Cemento Samper (ZMH 4083), has been examined.

Animal greyish; foot aulacopod; tail without distinct caudal-pit, not distinctly truncated; sole not distinctly divided.



Figures 13–20. *Lilloiconcha* species from Colombia, radulae. (13–15) *Lilloiconcha costulata*, sp. n., Colombia, Cundinamarca: La Calera, S of Entrada Fabrica de Cemento Samper (paratype ZMH 4083): (13) central and adjacent lateral teeth; (14, 15) lateral teeth. (16–20) *Lilloiconcha laevigata*, sp. n., Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá (paratype ZMH 4068): (16, 17) central and adjacent lateral teeth; (18) outer lateral and first marginal teeth; (19) marginal teeth; (20) marginal and outer lateral teeth. Scale bars: 2 μ m (13–16); 5 μ m (17–20).

Mantle. Mantle with large, fused black spots and small white dots. Mantle collar (Figure 10) broad, with a narrow, indistinctly delimited left mantle lobe and a broad, almost rectangular right mantle lobe. Pneumostome separated by a small, elongate-conical subpneumostomal mantle lobe.

Pallial complex (Figure 11). Pallial complex about three times as long as the broad kidney, which extends to the hindgut. The kidney is slightly longer than the pericardium. It opens into the reflexed primary ureter near its anterior end. The primary ureter is continued

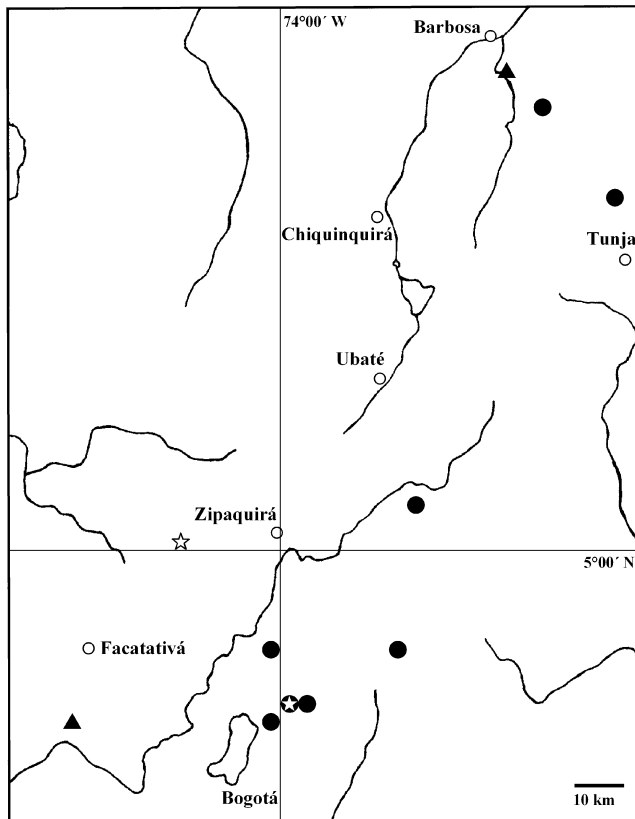


Figure 21. Distribution of *Lilloiconcha* species in central Colombia ($2'$ -squares). *L. costulata*, sp. n. (●), *L. laevigata*, sp. n. (☆), and *L. gordurasensis* (Thiele) (▲).

by a tube-like secondary ureter along the hindgut, which ends with the ureteric pore opening next to the anus inside the pneumostome. Lung long and narrow, without coarse venation.

Genitalia (Figure 12). The male copulatory organs are strongly reduced. The penis forms a lateral swelling at the large atrium and contains a conical papilla. The penis retractor inserts near the proximal end of the penis and at the diaphragm. It crosses the right ommatophoral retractor. The vas deferens is very broad and enters the penis terminally. No differentiated epiphallus could be discerned. The vagina is very short. The peduncle of the bursa copulatrix is long. The small bursa of the bursa copulatrix reaches the digestive gland. The free oviduct is short. The right ommatophoral retractor does not run between penis and vagina.

Radula (Figures 13–15). The tricuspid central teeth are narrower and shorter than the adjacent lateral teeth. The slender central cusps of the central teeth are about three times as long as the side cusps. The central cusp of the tricuspid lateral teeth is shifted backwards. It is connected with the large and strongly curved side cusps by a low bridge which begins

between the bases of the side cusps with an apparent extra denticle. The side cusps of the lateral teeth are raised above the elevation plane of the mesocone. Towards the periphery the endocone of the lateral teeth increases and approximates the mesocone. At the transition to the marginal teeth extra denticles develop next to the ectocone so that the marginal teeth are multicuspid.

Etymology

The specific epithet refers to moderately coarse ribs which characterize the species (Latin *costulatus*).

Type locality

Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá, farm Las Cabreras, Vereda San Rafael, Andean forest, N slope, 2840 m altitude, 04°42'30"N, 73°58'20"W.

Distribution (Figure 21)

Lilloiconcha costulata is known from Andean forests at 2400–3100 m altitude in the Distrito Especial and the Departamentos Cundinamarca and Boyacá in Colombia.

Material

Colombia, Distrito Especial: Bogotá, forest near brook above Escuela Militar de Caballeria, 2750 m altitude, 04°41'15"N, 74°01'33"W (ZMH 4322). Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá, farm Las Cabreras, Vereda San Rafael, 2820–2840 m altitude, 04°42'30"N, 73°58'20"W (holotype ZMH 4793, leg. B. Hausdorf, 11 March 2000, measurements: D=3.2 mm, H=2.2 mm; UNAL; ZMH 4021, 4037, 4069); La Calera, S of Entrada Fabrica de Cemento Samper, degraded Andean forest, NW slope, 2750 m altitude, 04°43'15"N, 73°56'46"W (ZMH 4083); Bosques de Torca, Andean forest, W slope, 2800 m altitude, 04°49'18"N, 74°01'07"W (ZMH 4334); Laguna Guatavita, Andean forest, S slope, 3030 m altitude, 04°58'45"N, 73°46'24"W (ZMH 4096); Bogotá towards Tunja, Alto del Sisga, Andean forest, N slope, 2890 m altitude, 05°04'58"N, 73°44'42"W (ZMH 4103). Colombia, Boyacá: Arcabuco 21 km towards Tunja, Alto del Sote, Andean forest, 3100 m altitude, 05°39'N, 73°22'W (ZMH 4240); Moniquira 13.2 km towards Arcabuco, waterfall above road, 2400 m altitude, 05°49'23"N, 73°30'31"W (ZMH 4142).

***Lilloiconcha laevigata* sp. n.**

(Figures 2, 6, 7, 16–20, 21)

Diagnosis

Lilloiconcha laevigata differs from *Lilloiconcha costulata* in the lack of ribs and the on average larger shell with more whorls. It also differs from other *Lilloiconcha* species in the lack of ribs.

Shell (Figures 2, 6, 7)

Depressed conical-globular; with 4–4.25 convex whorls; protoconch with indistinct microscopical spiral striae; teleoconch with a reticulate pattern consisting of fine growth-striae and dense microscopical spiral threads; brownish corneous with reddish brown transverse stripes; body whorl rounded; aperture almost circular; upper insertion of the peristome not descending towards the aperture; suture impressed; peristome sharp, neither expanded nor thickened; umbilicus wide, taking about 22–30% of the shell diameter.

Measurements

La Calera, 0.5 km towards Bogotá ($n=20$): $D=3.2-3.7$ mm, $\phi=3.5\pm 0.1$ mm; $H=2.1-2.5$ mm, $\phi=2.3\pm 0.1$ mm; $D/H=1.38-1.64$, $\phi=1.50\pm 0.06$.

Anatomy (Figures 16–20)

Only the radula of one paratype from La Calera, 0.5 km towards Bogotá (ZMH 4068) could be examined. The tricuspid central teeth are narrower and shorter than the adjacent lateral teeth. The slender central cusps of the central teeth are more than twice as long as the side cusps. The central cusp of the tricuspid lateral teeth is shifted backwards. It is connected with the large and strongly curved side cusps with a low bridge which begins between the bases of the side cusps with an apparent extra denticle, sometimes with two tips. Towards the periphery the endocone of the lateral teeth increases and approximates the mesocone. At the transition to the marginal teeth extra denticles develop next to the ectocone so that the marginal teeth are multicuspid.

Etymology

The specific epithet refers to the comparatively smooth (Latin *laevigatus*) shell which characterizes the species.

Type locality

Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá, farm Las Cabrerías, Vereda San Rafael, Andean forest, N slope, 2840 m altitude, $04^{\circ}42'30''N$, $73^{\circ}58'20''W$.

Distribution (Figure 21)

Lilloiconcha laevigata is known from Andean forests at 2820–3430 m altitude in the Departamento Cundinamarca in Colombia. *Lilloiconcha laevigata* and *Lilloiconcha costulata* occur sympatrically at the type locality of both species near La Calera.

Material

Colombia, Cundinamarca: La Calera, 0.5 km towards Bogotá, farm Las Cabrerías, Vereda San Rafael, 2820–2840 m altitude, $04^{\circ}42'30''N$, $73^{\circ}58'20''W$ (holotype ZMH 4792, leg. B. Hausdorf, 11 March 2000, measurements: $D=3.6$ mm, $H=2.5$ mm; UNAL; ZMH 4020, 4036, 4068); Subachoque towards radar station at El Tablazo, chusque forest, S slope, 3430 m altitude, $05^{\circ}00'39''N$, $74^{\circ}11'38''W$ (ZMH 4284).

Lilloiconcha gordurasensis (Thiele, 1927)
(Figures 3, 8, 9, 21, 22)

Endodonta gordurasensis Thiele 1927 p 321, Plate 26 Figure 19. Type locality: “Gorduras”, Brazil.

Amphidoxa gordurasensis: Jaeckel 1952, p 330.

Radiodiscus (Radiodiscus) gordurasensis: Haas 1959, p 365, 366.

Austrodiscus golbachi Hylton Scott 1963, p 51, Figure 2. Type locality: “Quebrada de Cainzo, Tucumán”, Argentina.

Zilchogyra gordurasensis: Weyrauch 1965, p 122.

Zilchogyra golbachi: Weyrauch 1965, p 122.

Trochogyra (Trochogyra) gordurasensis: Fonseca and Thomé 1993, p 103.

Zilchogyra gordurasensis: Miquel et al. 2004, p 930.

Diagnosis

Lilloiconcha gordurasensis differs from the other Columbian *Lilloiconcha* species in the on average smaller, more depressed shell with coarser and denser ribs and a wider umbilicus.

Shell (Figures 3, 8, 9)

Depressed conical-globular; with 3.75–4.25 convex whorls; protoconch with distinct microscopical spiral threads; teleoconch with coarse and regular ribs (10–13 per 1 mm of the body whorl) and a reticulate pattern consisting of fine growth-striae and dense microscopical spiral threads between the ribs; brownish corneous with reddish brown transverse stripes; body whorl rounded; aperture almost circular; upper insertion of the peristome not descending towards the aperture; suture impressed; peristome sharp, neither expanded nor thickened; umbilicus very wide, taking about 34–38% of the shell diameter.

Measurements

Various localities ($n=6$): $D=2.5-3.0$ mm, $\phi=2.8 \pm 0.2$ mm; $H=1.5-1.9$ mm, $\phi=1.8 \pm 0.2$ mm; $D/H=1.53-1.71$, $\phi=1.59 \pm 0.08$.

Distribution (Figures 21, 22)

Lilloiconcha gordurasensis was known so far from eastern Brazil, Paraguay and north-western Argentina (Thiele 1927; Jaeckel 1952; Haas 1959; Hylton Scott 1963; Miquel et al. 2004). In Colombia it was found in Andean forests at 1700–1840 m altitude in the Departamentos Cundinamarca and Boyacá. The occurrences in Colombia represent the highest localities from which *Lilloiconcha gordurasensis* has been recorded. The species has also been discovered in the Departamentos San Martín and Huánuco in Peru by Z. Guevara.

Material

Colombia, Cundinamarca: La Mesa, 12 km towards Bogotá, Los Alpes near El Rosario, W slope with forest, 1700 m altitude, $04^{\circ}40'14''N$, $74^{\circ}23'43''W$ (UNAL; ZMH 4317). Colombia, Boyacá: Barbosa, 5 km towards Arcabuco, forest near quarry El Cairo in Vereda



Figure 22. Distribution of *Lilloiconcha gordurasensis* (Thiele) in South America (2°-grid).

Pueblo Viejo, 1840 m altitude, 05°53'55"N, 73°35'08"W (ZMH 4185). Peru, San Martín: Moyobamba, Jepelacio, Carrizal, 22 km SE of Moyobamba, 100 m altitude, 06°13'04"S, 76°54'55"W (ZMH 10004); Moyobamba, Jepelacio, Carrizal, 23 km SE of Moyobamba, 200 m altitude, 06°14'06"S, 76°54'52"W (ZMH 10039); Rioja, Belén, 29 km SW of Moyobamba, 450 m altitude, 06°12'27"S, 77°09'28"W (ZMH 10070); Rioja, Belén, 27 km SW of Moyobamba, 500 m altitude, 06°12'26"S, 77°09'27"W (ZMH 10092); Rioja, Florida, 40 km NW of Moyobamba, 500 m altitude, 05°57'32"S, 77°18'42"W (ZMH 10218). Peru, Huánuco: Río Oro, 5 km SW of Tingo Maria (Parque Nacional Tingo Maria), 550 m altitude, 09°20'12"S, 76°02'12"W (ZMH 10536). Brazil, Pernambuco: Goyanna, 30 m altitude, 7°33'S, 34°59'W (ZMB 90828, specimen to Jaekel 1952). Brazil, Minas Gerais: Gordura, 730 m altitude, 20°39'S, 46°22'W (SMF 3985, holotype of *Endodonta gordurasensis* Thiele, 1927). Brazil, Paraná: Pinhal Preto, 610 m altitude, 25°37'S, 52°27'W (Haas 1959). Brazil, Santa Catarina: São Carlos, 300 m altitude, 27°04'S, 52°59'W (Haas 1959); Nova Teutônia, 640 m altitude, 27°11'S, 52°23'W (Haas 1959). Brazil, Rio Grande do Sul: São Francisco de Paula, Centro de Pesquisas e Conservação da Natureza Pró-Mata, 891 m, 29°29'04"S, 50°12'59"W (Miquel et al. 2004). Paraguay, Guairá: Villarrica, 130 m altitude, 25°45'S, 56°26'W (Hylton Scott 1963). Argentina, Jujuy: Banda de los Perales, San Salvador de Jujuy, 26°10'S, 65°18'W (Hylton Scott 1963). Argentina, Tucumán: Tucumán, 430 m altitude, 26°49'S, 65°13'W (MLP, paratype of *Austrodiscus golbachi* Hylton Scott, 1963); Quebrada de Cainzo, Tucumán (MLP, holotype and paratype of *Austrodiscus golbachi* Hylton Scott, 1963); Tucumán towards Tafi del Valle, valley of the Río Las Sosas, 600–1400 m altitude (Weyrauch 1965).

Discussion

The name *Lilloiconcha* Weyrauch, 1965 is used here tentatively for charopids which differ from the type species of *Zilchogyra* Weyrauch, 1965, *Zilchogyra costellata* (Orbigny, 1835) (see Hylton Scott 1964), in the reduced penis, the hardly differentiated epiphallus and multicuspid marginal radular teeth. Moreover, the mesocone of the lateral radular teeth is shifted backwards in relation to the side cusps in *Lilloiconcha superba* (Thiele, 1927), *Lilloiconcha costulata* new species, and *Lilloiconcha laevigata* new species. However, this is not clear from the drawing and the description of the radular teeth of *Lilloiconcha pleurophora* (Moricand, 1846) of Vaz (1991). So far, the genitalia of only two species with the described characteristics, *Lilloiconcha pleurophora* from eastern Brazil and Paraguay (Vaz 1991) and *Lilloiconcha costulata* new species from Colombia (see above), are known. These species resemble *Endodonta superba* Thiele, 1927 and *Austrodiscus superbus tucumanus* Hylton Scott, 1963, the type species of *Trochogyra* Weyrauch, 1965 and *Lilloiconcha* Weyrauch, 1965, respectively, in the conical to globular shells with brown transverse stripes. Moreover, *Lilloiconcha superba* corresponds with *Lilloiconcha costulata* new species and *Lilloiconcha laevigata* new species in the backwards shifted mesocone of the lateral radular teeth (see Thiele 1927). Otherwise, the anatomy of *Lilloiconcha superba* and *Lilloiconcha tucumana* is unknown. Thus, we can only suppose that the conchological similarities indicate close relationships.

Weyrauch (1965) separated *Lilloiconcha* from *Zilchogyra* (including *Trochogyra*) because of the presence of basal and parietal denticles in juvenile shells. However, he admitted that the number and the position of the denticles are highly variable in *Lilloiconcha tucumana*, and that the denticles were even missing in one examined shell. Weyrauch (1965) did not

examine juvenile shells of *Zilchogyra* (*Trochogyra*) *superba*. No denticles have been found in juvenile shells of *Lilloiconcha costulata*, *Lilloiconcha laevigata*, *Lilloiconcha gordurasensis*, and *Lilloiconcha pleurophora*. The variability of the development of the denticles in *Lilloiconcha tucumana* shows that their presence is not even species specific and can hardly be used to substantiate the establishment of a distinct genus. Weyrauch (1965) states that *Lilloiconcha tucumana* differs from *Zilchogyra* (*Trochogyra*) *superba* also in the completely smooth protoconch. Thus, *Lilloiconcha tucumana* should be related to *Zilchogyra* rather than to *Trochogyra* according to the diagnosis given by Fonseca and Thomé (1993). However, the spiral sculpture of the protoconch can sometimes be recognized only by means of a scanning electron microscope, and the protoconch of well-preserved specimens of *Lilloiconcha tucumana* has not yet been examined with a scanning electron microscope. It cannot be excluded that there is also a spiral protoconch sculpture in that species. Thus, the known conchological differences between *Endodonta superba* and *Austrodiscus superbus tucumanus* are not sufficient to classify these very similar and geographically neighbouring species in different genera at the present state of knowledge. Of course their classification has to be reconsidered when their anatomy becomes known. According to Article 24.1 of the *International Code of Zoological Nomenclature* (International Commission on Zoological Nomenclature 1999), *Lilloiconcha* Weyrauch, 1965 has priority over *Zilchogyra* (*Trochogyra*) Weyrauch, 1965 because it was established for a genus.

There is another conchologically similar species of which the anatomy is known, *P. leptotera* Rochebrune and Mabile, 1882 from Patagonia (see Hylton Scott 1970). This species differs from *Lilloiconcha pleurophora* and *Lilloiconcha costulata* in the well-developed penis, a differentiated epiphallus, the lack of a vagina, and tricuspid radular marginals. It differs from *Zilchogyra costellata* in the shorter penis (perhaps with two sections) and shorter epiphallus, the insertion of the penis retractor at the distal section of the epiphallus and the lack of a vagina. Nevertheless, Hylton Scott (1970) and Schileyko (2001) included it in *Zilchogyra*, whereas Fonseca and Thomé (1993) classified it with *Trochogyra*. Probably a new genus has to be established for that species. This makes clear that a classification of the species belonging to the discussed groups based on conchological characters only is hardly possible. As long as the anatomy of the type species of the established genus group names like *Lilloiconcha* Weyrauch, 1965, *Trochogyra* Weyrauch, 1965, and *Glabrogyra* Fonseca and Thomé, 1993 is not known, the classification and nomenclature of the groups involved will remain tentative.

The suprageneric classification of the Punctoidea is also in confusion. Vaz (1991) included *Lilloiconcha pleurophora* (which he classified as *Austrodiscus* (*Zilchogyra*)) in the Helicodiscinae (Endodontidae). Fonseca and Thomé (1993) classified *Trochogyra* with the Rotadiscinae (Charopidae), but *Lilloiconcha* and *Zilchogyra* with the Helicodiscidae. Schileyko (2001) included all these genera in his Trachycystinae (Endodontidae), which are characterized by "spermatophores found in penis" according to his diagnosis. However, a spermatophore has not so far been found in any of the mentioned South American genera. Also, the other classifications lack a thorough substantiation.

A phylogenetic analysis of the Punctoidea is still not available. Therefore, the classification of the Punctoidea proposed by Solem (1976, 1983) is used here. According to that classification, *Lilloiconcha* can be classified with the Charopidae, because of the presence of a secondary ureter, the fusion of the prostate and the oviduct, the tricuspid radular lateral teeth (the side cusps of which are raised above the elevation plane of the mesocone), the dominant spiral threads on the protoconch and the lack of apertural denticles. According to Solem's (1983) diagnosis, *Lilloiconcha* does not belong to the Rotadiscinae where it has been included by Fonseca and Thomé (1993), but to the

Charopinae, because the spiral sculpture on the protoconch is not composed of short segments, but of continuous threads. The Charopinae *sensu* Solem are probably only a non-monophyletic conglomerate of charopids which were not assigned to one of the other, more restrictively defined subfamilies (Solem 1983). Both *Lilloiconcha* and *Zilchogyra* differ from most other sufficiently known Charopidae in the lack of a rectal lobe of the kidney. However, this might be only a symplesiomorphy.

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