BASTERIA, 68: 25-44

A revision of the genus *Cochlostoma*, subgenus *Titanopoma* (Gastropoda, Caenogastropoda, Cochlostomatidae), in particular the forms occurring in Albania

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Titanopoma A. J. Wagner, 1897, a subgenus of *Cochlostoma* Jan, 1830, is revised on the basis of the material in the Hungarian Natural History Museum (Budapest), the Natural History Museum of the Humboldt University (Berlin) and the Zoological Institute and Museum of the Polish Academy of Sciences (Warsaw). Two species and five subspecies are described as new to science. Shells and opercula are illustrated. Because of its relevance for species recognition in this group, the structure of the opercula is described in more detail than usual. Locality records and some new zoogeographical data are given and mapped.

Keywords: *Cochlostoma*, *Titanopoma*, Albania, Montenegro, Balkans, taxonomy, opercula, zoogeography.

INTRODUCTION

Cochlostoma Jan, 1830, is a characteristic genus of rock-dwelling land snails of the Mediterranean region. Its subgenus *Titanopoma* A. J. Wagner, 1897, differs from the other subgenera by the structure of the operculum. The species are distributed in Montenegro and Albania (fig. 1). The Montenegrian part of the subgeneric range is relatively well explored (e.g. Wohlberedt, 1909; Sturany & Wagner, 1915; Wagner, 1897, 1906; Varga, 1998). However, there are hardly any data for Albania (e.g. Wohlberedt, 1909; Sturany & Wagner, 1915; Polinski, 1922, 1924; Welter-Schultes, 1996; Fehér et al., 2001).

Since the early 1990's, as soon as the political situation allowed it, a long-term malaco-faunistical investigation is executed in Albania by staff members of the Hungarian Natural History Museum. While trying to identify the collected material the need of a revision of *Cochlostoma (Titanopoma)* became obvious. This revision is based on the material of the Hungarian Natural History Museum, Budapest, which was mostly collected in recent years (1992-2003) and the type material of the Zoological Institute and Museum of the Polish Academy of Sciences, Warsaw and the Natural History Museum of the Humboldt University, Berlin. The material was investigated conchologically, the results of anatomical studies will be published in a next paper.

Abbreviations for collections: DLB = L. Drimmer, Budapest; HNC = Haus der Natur, Cismar; HNHM = Hungarian Natural History Museum, Budapest; KKS = K. Kovács, Sydney; MMG = Mátra Museum, Gyöngyös; IZPAN = Zoological Institute and Museum of the Polish Academy of Sciences, Warsaw; NHMW = Naturhistorisches Museum, Wien; RMNH, National Museum of Natural History, Leiden (formerly Rijksmuseum van Natuurlijke Historie, Leiden); SMF, Senckenbergmuseum und Forschungsinstitut, Frankfurt am Main; ZEB = Z. Eröss, Budapest; ZMB = Natural History Museum of the Humboldt University, Berlin.

Other abbreviations: H = shell height; W = shell width. The numbers of examined opercula are indicated between square brackets.

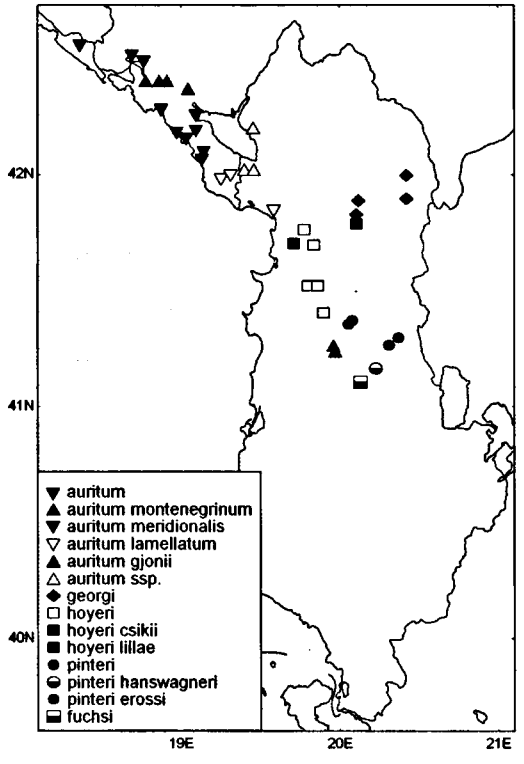


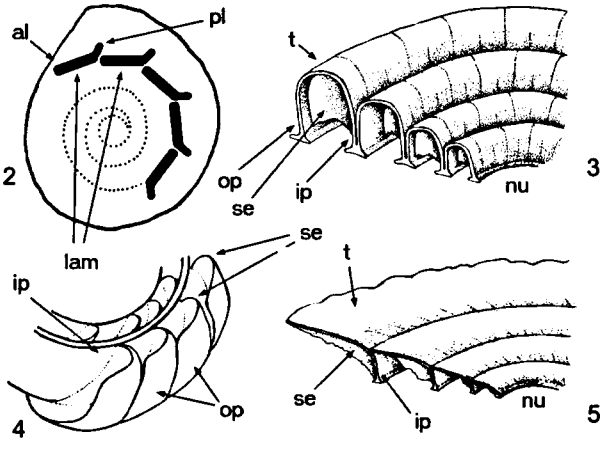
Fig. 1. Distribution of *Cochlostoma (Titanopoma)*. *C. (T.) auritum auritum* (black triangle pointing down), *C. (T.) auritum montenegrinum* (grey triangle), *C. (T.) auritum meridionalis* (grey triangle pointing down), *C. (T.) auritum lamellatum* (white triange pointing down), *C. (T.) auritum gjonii* (black triangle), *C. (T.) auritum* ssp. literature data without subspecific distinction (white triangle), *C. (T.) georgi* (black diamond), *C. (T.) hoyeri hoyeri* (white square), *C. (T.) hoyeri csikii* (black square), *C. (T.) hoyeri lillae* (grey square), *C. (T.) pinteri pinteri* (grey round), *C. (T.) pinteri hanswagneri* (black/white round), *C. (T.) pinteri erossi* (black round), *C. (T.) fuchsi* (black/white square).

SYSTEMATIC PART

Subgenus *Cochlostoma (Titanopoma)* A.J. Wagner, 1897. Type species: *Pomatias auritus* Rossmässler, 1837.

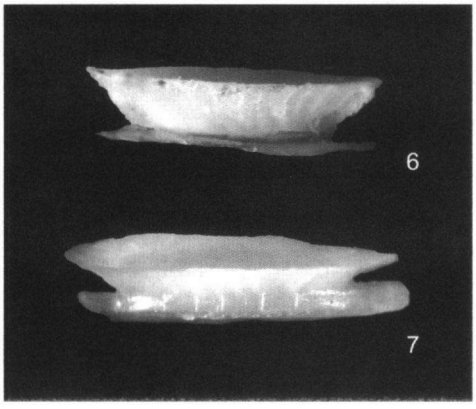
In *Titanopoma* the species have an elongated to tumid conical shell with a closed umbilicus, and a moderate to broad peristome with more or less prominent columellar and parietal auriculations (Wagner, 1897; Gofas, 2001). For anatomical details, see Varga (1984).

Uniquely, *Titanopoma* species have compound opercula, which is the main distinguishing feature of the subgenus. The operculum consists of a yellowish corneous basal plate, which is homologous with the single operculum of the other *Cochlostoma* species and an upper plate (called "Kalkplatte" by Wagner (1906: 139) superimposed on the basal one. The upper plate is composed of calcareous lamellae that are attached to the surface of the basal plate in a spiral order. Subsequent lamellae attach more or less tightly to each other forming a spire. This spire consists of 2½ to 4½ whorls. The initial whorl of the upper plate has an eccentric point of origin, thus it encompasses an area, the nucleus, where the basal plate is visible from above. Each lamella has a part, which stands in tangential direction, perpendicular to the basal plate. They form the interior part of the whorls of the spire of the upper plate. Usually, the posterior ends of the lamellae form septa, which are more or less perpendicular to the direction of the spire. In some species,



Figs 2-5. General structure of the opercula of the *Titanopoma* subspecies. **2**, simplified drawing of the general structure of the *Titanopoma* operculum, top view. **3**, operculum of *C. (T.) hoyeri*, cross-sectional view. **4**, upper plate of *C. (T.) hoyeri*, lateral bottom view. **5**, operculum of *C. (T.) auritum*, cross-sectional view. al: anterior part of the lamella; ep: exterior part of the upper plate's whorl; ip: interior part of the upper plate's whorl; lam: lamella; nu: nucleus; pl: posterior part of the lamella; se: septum; t: top (apical part) of the upper plate's whorl.

the apical parts of lamellae are curved outwards, subparallel with the basal plate forming the top of the whorls. The top of the whorl can be either flat, convex or concave. Usually, not only subsequent lamellae are joined, but also adjacent whorls fuse, i.e. the top of an inner whorl is connected to the interior part of the subsequent whorl. As a consequence, a lumen is bordered by these parts. This lumen is divided into chambers by the septa, which usually do not reach down to the basal plate; thus chambers are not entirely separated from each other. The ultimate whorl is usually fenceless in lateral view. *Cochlostoma (Titanopoma) hoyeri* (Polinski, 1922) is the only example of a species in which the curvature of the apical part of the lamellae continues downwards and reaches back to the basal plate. The general structure of the opercula of the *Titanopoma* species is illustrated in figures 2-5. Wagner (1897: 626-627) classified *Cochlostoma auritum* into a separate subgenus, i.e. *Titanopoma*, on the basis of the structure of the operculum: ("...an der Vorderseite dieser hornartigen Platte befindet sich hier eine aus Kalkauflagerungen gebildete, erhobene Spiralseite, aus welcher in der früher beschriebenen Weise (s. Merkmale des Genus) die oberste, spröde und durch Luftkammern getrennte Platte gebildet wird"). Wagner (1897) considered the kind of ribbing, i.e. the alternation of lamelliform ribs and striae, to be the main distinguishing feature of *C. (T.) auritum*. Since the ribless subspecies *C. (T.) a. drimmeri* Varga, 1998, is known now, none of the conchological characters are uniform for the whole species. In contrast, the structure of the operculum seems rather conservative. Neither Wagner (1897, 1906) nor other authors (Boettger, 1886; Polinski, 1922; Varga, 1998; Westerlund, 1885) have found subspecific differences. Wagner (1906: 139) emphasized the relevance of the structure of the operculum, when he described the second species of the subgenus, i.e. *Cochlostoma (Titanopoma) georgi* (Wagner, 1906):"...die genaue Beachtung des Deckels erwies sich auch hier als roter Faden, welcher zum Ziele führt, wenn andere Merkmale im Stiche lassen". Polinski (1922), the author of *Cochlostoma*



Figs 6-7. Opercula of two *Cochlostoma auritum* subspecies in side view. **6**, *C. (T.) a. auritum* (Rossmässler, 1837) (Kotor, HNHM 31856). **7**, *C. (T.) a. gjonii* subspec. nov., paratype (Erzenit canyon, HNHM 92143).

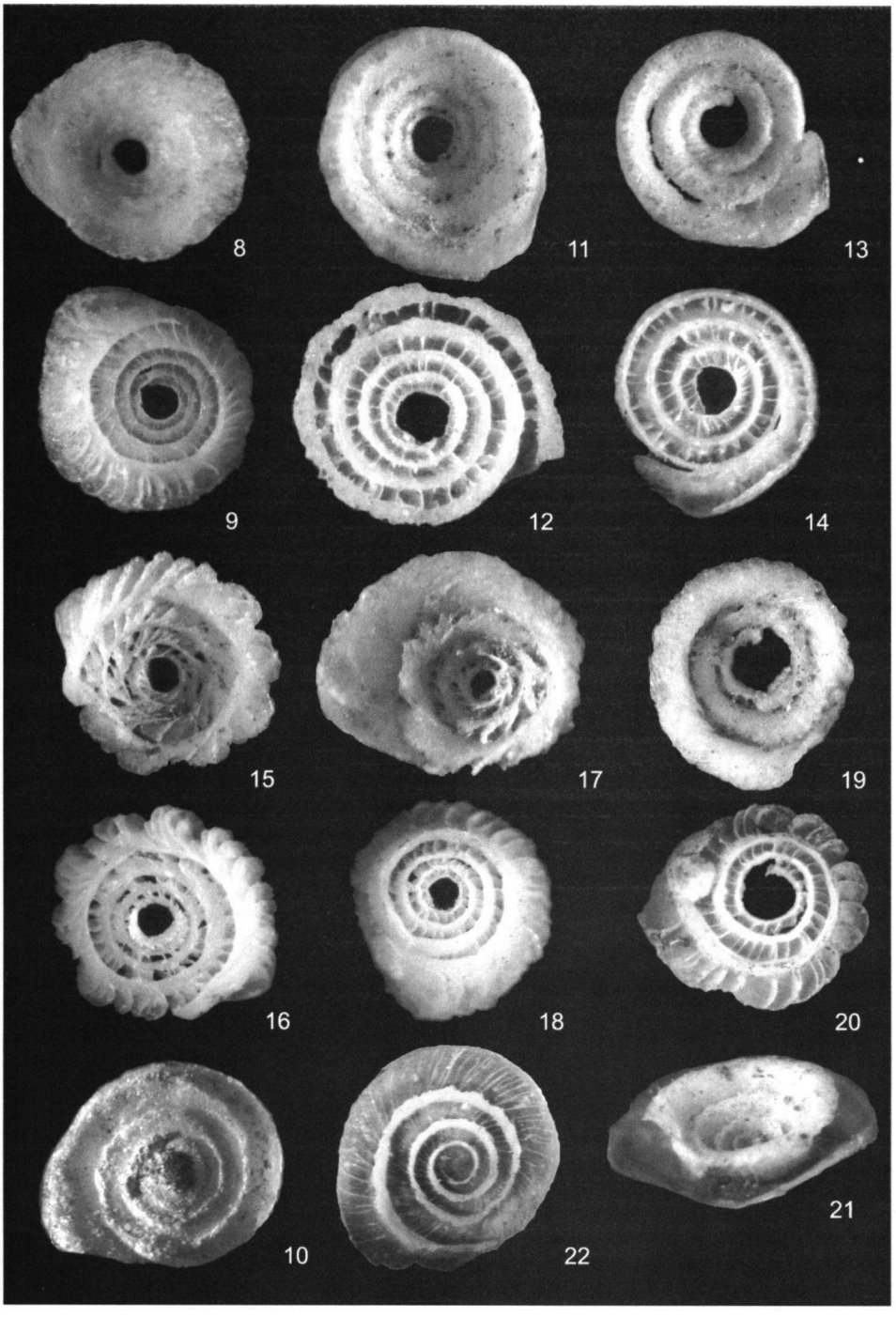
(*Titanopoma*) *hoyeri* (Polinski, 1922) also regarded the structure of the operculum as one of the most important distinguishing features. In this study, numerous specimens and opercula of several populations were examined. For the known taxa, the structure of the operculum was found to be invariable in particular details, while shell characters sometimes showed significant intra- and intersubspecific variation. Therefore, while introducing new taxa, the structure of the operculum was considered to be of primary importance.

Cochlostoma (Titanopoma) auritum auritum (Rossmässler, 1837) (fig. 6)

Cyclostoma auritum (Ziegler) Rossmässler, 1837: 50, pl. 28 fig. 398. Type locality: "Cattaro" (UTM: CM19).
Pomatias (Titanopoma) auritus Rossmässler; Wagner, 1897: 626-627, pl. 10 figs 105 a, b, 109 a-c.
Pomatias (Titanopoma) auritus var. *meridionalis* Boettger; Wagner, 1897: 627, pl. 10 fig. 106. (!)
Cochlostoma (Titanopoma) auritum (Rossmässler); Kobelt, 1902: 533-534, fig. 110 a, b.
Auritus (Titanopoma) auritus Rossmässler; Wagner, 1906: 137.
Auritus auritus Rossmässler; Polinski, 1922: 165, textfig. 2.

Material. – Montenegro: Kotor bay, N of Dobrota, Ljuta spring (HNHM 31851/26, 73181/21, leg. Pintér, Subai & Szigethy, 22.vii.1972); same locality (HNHM 90742/5, leg. Eröss & Fehér, 20.iv.2000); 5 km N of Herceg-Novi towards Kameno (HNHM 90743/2, leg. Eröss & Fehér, 22.iv.2000); Kotor (HNHM 9630/3, leg. W. Klemm, vi.1934); Kotor, fortress (HNHM 31856/3, leg. Pintér, Subai & Szigethy, 24.vii.1972); Kotor, at the long-distance bus station (HNHM 92231/20, leg. Eröss & Fehér, 29.vi.1996); Kotor bay, 2 km SE of Risan (HNHM 92151/5, leg. Eröss & Fehér, 29.vi.1996); Kotor bay, Risan (HNHM

Figs 8-22. Upper plates of *Cochlostoma (Titanopoma)* subspecies. Scale bar = 1 mm. **8-9**, *C. (T.) a. gjonii* subspec. nov. paratype (Fangul pass, HNHM 92142), top view and bottom view. **10**, *C. (T.) georgi* (Wagner, 1906) (Bisak, HNHM 92144), top view. **11-12**, *C. (T.) hoyeri hoyeri* (Polinski, 1922) (Mali i Krujës over Krujë, HNHM 86389), top view and bottom view. **13-14**, *C. (T.) hoyeri csikii* subspec. nov., paratype (Pllanë, HNHM 92154), top view and bottom view. **15-16**, *C. (T.) pinteri* spec. nov., paratype (3 km N of the Shtyllës pass, HNHM 92157), top view and bottom view. **17-18**, *C. (T.) pinteri erossi* subspec. nov., paratype, (1 km S of Lunik, HNHM 92160), top view and bottom view. **19-21**, *C. (T.) pinteri hanswagneri* subspec. nov., paratype (Mirakë HNHM 92163), top view, bottom view and side view together with the basal plate. **22**, *C. (T.) fuchsi* spec. nov., paratype (Byshek spring, HNHM 77618), top view together with the basal plate.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31855/6, leg. Pintér, Subai & Szigethy, 22.vii.1972). Croatia: Konavli Mts., Drvenik (HNHM 92232/24, leg. Z. Fehér, 31.VII.1998). [25]

Diagnosis. – Heterogenous ribbing on the middle-whorls: widely spaced, high and sharp, more or less lamelliform ribs with one to six fine striae on the intercostal areas. Upper plate of the operculum almost parallel to the plane of the basal plate, upper plate surface flat and smooth.

Description. – Shell conical to elongated conical, yellowish to greyish corneous. From the 5th to 6th whorl on the spire increases rapidly in size. Shell slightly concave in side view, consisting of 8-10½ convex whorls, with a deep suture. Heterogenous ribbing on the middle-whorls: widely spaced, high and sharp, more or less lamelliform ribs with one to six fine striae on the intercostal area. From the penultimate whorl towards the aperture the differences between ribs and striae decrease gradually, the ribs becoming less prominent and more widely spaced, and the striae increasing in prominence. There are uniform riblets on the last whorl.

In the nominate subspecies, the spire of the upper plate of the operculum consists of 3¾-4¼ whorls, the diameter is 2.1-2.5 mm, the height is about 0.3 mm and the nucleus is relatively narrow (about 0.3 mm). In top view, the upper plate covers the basal plate almost entirely. The tops of the whorls fuse perfectly well and form a flat and smooth surface. During the growth of the operculum its width increases more rapidly than its height, thus the plane formed by the top of the upper plate is almost parallel to the plane of the basal plate (fig. 7). The septa are rudimentary and very thin; they form low isoscaled triangles which connect the interior part and the top of the whorl, whereas they do not reach the basal plate. The direction of the septa diverges somewhat backwards from radial and only their outer third is curved forwards. Since the whorls have no exterior parts, the last whorl is fenceless laterally. Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate, 1/7-1/8; width of the nucleus versus width of the whole upper plate, 1/7-1/8. The basic structure of the operculum is similar in all subspecies, but its size varies with the shell dimensions.

Distribution. – The nominate subspecies is distributed in the coastal area around the bay of Kotor, reaching northwestwards the southernmost tip of Dalmatia (Konavli Mts).

Cochlostoma (Titanopoma) auritum montenegrinum (A.J. Wagner, 1897)

Pomatias (Titanopoma) auritus var. *montenegrina* Wagner, 1897: 628. Type locality: "Cetinje in Montenegro" (UTM: CM29).

Auritus (Titanopoma) auritus montenegrinus; Wagner, 1906: 137.

Material. – Montenegro: Cetinje, fortess (HNHM 70336/4, leg. L. Drimmer, 04.viii.1984); Cetinje, at the conjunction to Ulcinj, (HNHM 43199/7, leg. Kiss & Pintér, 09.vii.1985); Lovćen plateau, Njegusi (HNHM 43197/1, leg. Kiss & Pintér, 90.vii.1985); same locality (HNHM 93392/1, leg. Barina & Pifkó, 12.x.2003); Lovćen mountain, 20 km along the road from Kotor to Njegusi (HNHM 86216/12, leg. Eröss & Fehér, 21.iv.2000); Lovćen plateau, Popova pečina near Njegusi (HNHM 86217/7, leg. Eröss & Fehér, 21.iv.2000); Lovćen mountain, 17 km along the road from Kotor to Njegusi (HNHM 86218/2, leg. Eröss & Fehér, 21.iv.2000). [20]

Diagnosis. – Compared to the nominate subspecies, the shell is more reddish corneous, somewhat smaller, consisting of 7-8½ convex whorls. Spire increasing more quick-

ly in size, suture deeper, last whorl enlarged. Some lamelliform ribs present also on the last whorl, where they are rather sharp.

Distribution. – This subspecies occurs in the vicinity of Cetinje and on the Lovćen plateau.

Cochlostoma (Titanopoma) auritum meridionalis (O. Boettger, 1886)

Pomatias auritus Rossm. *var. meridionalis* O. Boettger, 1886: 41. Type locality: "Spitza-Sutomore, Dalm. merid." (UTM: CM36).

Auritus (Titanopoma) auritus meridionalis Boettger; Wagner, 1906: 137.

Material. – Montenegro: S of Bečići, along the main road, ca. halfway towards Kamenovo (= loc. typ. of *C. (T.) a. drimmeri*) (HNHM 86228/5, leg. Erőss & Fehér, 20.iv.2000); Bečići, near Budva (HNHM 86230/2, leg. L. Drimmer, 27.vii.1984); Bukovik (S of Virpazar) (HNHM 43202/3, leg. Kiss & Pintér, 08.vii.1985); 2 km SE of Buljarica (HNHM 86222/18, leg. Erőss & Fehér, 29.vi.1996); Donji Murici (HNHM 89415/2, leg J. Šteffek, 01.viii.1985); Kravari (HNHM 43198/13, leg. Kiss & Pintér, 08.vii.1985); 10.6 km from Kruševica towards Sotoniki (HNHM 89230/1 and HNHM 70337/3, leg. F. Seidl, 30.v.1970); Piješak, Tunel Ujtin (HNHM 43200/35, leg. Kiss & Pintér, 08.vii.1985); along a footpath from Stari Bar towards Mikulić (HNHM 86224/10, leg. Erőss & Fehér, 19.iv.2000); 8.3 km from Virpazar towards Bar (HNHM 86231/11, leg. Erőss & Fehér, 19.iv.2000);Virpazar, castle hill (HNHM 86227/1, leg. Erőss & Fehér, 19.iv.2000); Žaljevo, Mali Izvor (HNHM 86226/7, leg. Erőss & Fehér, 20.iv.2000). [40]

Diagnosis. – In comparison to the nominate subspecies, the shells are smaller and more slender. Spire increasing more gradually in size, whorls less convex, suture shallower. Heterogenous ribbing only on the upper whorls; homogenous, narrowly spaced riblets occur from the antepenultimate whorl to the aperture. Last whorl usually finely striate.

Distribution. – This subspecies occurs in Montenegro between the northwestern part of Lake Shkodra and the Adriatic Sea.

Remarks. – Wagner (1897) considered *Pomatias auritus* var. *meridionalis* a synonym of *Pomatias regularis* Letourneux, 1885. However, at that time, Wagner's concept of this subspecies was based on specimens originating from the Konavli Mts (Wagner, 1897: 627, pl. 10 fig. 106). Later on, Wagner obtained shells of the true *C. (T.) a. meridionalis* and realized that the specimens from the Konavli Mountains most probably belong to the nominate form (Wagner, 1906).

Cochlostoma (Titanopoma) auritum drimmeri Varga, 1998 (figs 23-24)

Cochlostoma (Auritus) auritum drimmeri Varga, 1998: 85-87. Type locality: "Montenegro, ca. 200 m N of Kemenovo at the left side of the highway, cliff with W exposition on the forested hillside, at a distance of ca. 200-300 m from the coast." More exactly: Montenegro, S of Bećići, along the Adriatic main road, ca. halfway towards Kamenovo, on a W exposed, artificially excavated limestone wall at the roadside, 42°17′ N, 18°53′ E (L. Drimmer, personal communication).

Type material. – Holotype, HNHM 71494; Paratypes, HNHM 71495/1, MMG 52577/1, DLB/5 (loc. typ. leg. L. Drimmer, 28.vii.1984). [2]

Diagnosis. – Shell nearly smooth, with only very fine and irregular striae.

Distribution. – This subspecies is only known from the type locality.

Remarks.– Occasionally ribless specimens occur within a population of a normally ribbed *Cochlostoma* (fig. 25). There are examples of ribless subspecies as well, like for example *Cochlostoma roseoli rioliense* (A.J. Wagner, 1914) and *Cochlostoma tessellatum tepelenum* Fehér, Eröss & Varga, 2001, which are known from single populations. Genetic drift is the most probable explanation of their origin. Such isolated populations may be small, which implies a higher risk of extinction. When their genetic isolation comes to an end, a secondary contact with conspecific populations may result in merging into another form. This subspecies was collected once, in 1984, by L. Drimmer. Following his precise instructions, the author and Z. Eröss visited the type locality 16 years later, but found only specimens of *C. (T.) a. meridionalis* there.

Cochlostoma (Titanopoma) auritum lamellatum (Westerlund, 1885)

Pomatias auritus var. *lamellatus* Westerlund, 1885: 120. Type locality: "Cattaro".

P. (Titanopoma) a. var. *lamellaris*; Kobelt & Möllendorff, 1898: 148.

Cochlostoma (Titanopoma) auritum var. *lamellata*; Kobelt, 1902: 534.

Auritus (Titanopoma) auritus alatus Wagner, 1906: 138, pl. 4 fig. 13. Type locality: "Sasko blato südwestlich von Skutari in Albanien" (UTM: CM64 or CM65).

Auritus (Titanopoma) auritus alatus; Sturany & Wagner, 1915: 86.

Type material. – Syntypes: "Sasko blato süd. west von Skutari C.W. ex. Wagner A.J. 7176 *Auritus auritus alatus*" (IZPAN/2).

Other material. – Montenegro: tunnel near Kležna, on the old Bar - Ulcinj road (HNHM 70334/4, 73242/5, leg F. Seidl, 21.vii.1973); along the road between Zoganje and Kležna (HNHM 43196/169, leg. Kiss & Pintér, 08.vii.1985); 5 km N of Zoganje (HNHM 86232/12, leg. Eröss & Fehér, 20.iv.2000); Šasko Jezero, castle ruins (HNHM 86221/1, leg. Eröss & Fehér, 20.iv.2000); gorge 1 km NW of Klezna (HNHM 86225/4, leg. Eröss & Fehér, 20.iv.2000). [70]

Diagnosis. – Shell much smaller than the nominate subspecies, reddish corneous, with 7½-8½ very convex whorls. Spire increasing rapidly in size. Regularly sculptured with whitish, high, lamelliform ribs, and very fine striae in between. Lamelliform ribs not symmetric, their upper half more emergent. From the penultimate whorl to the aperture, the striae become more prominent, whereas the ribs become lower and blunter. As a consequence, striae and ribs cannot easily be distinguished anymore on the final ¾-¼ whorl.

Measurements. – Syntypes of *C. (T.) a. alatum*, H 9.1-10 mm, W 4.8-5 mm; other material, H 8.3-10.3 mm, W 4-5.2 mm.

Remarks. – Syntypes of *C. (T.) a. lamellatum* could not be studied. No such material was found in the Westerlund collection (T. von Proschwitz, Natural History Museum, Göteborg, personal communication). However, on the basis of the original description, this nominal taxon cannot be distinguished from *C. (T.) a. alatum* (A. J. Wagner, 1906).

Distribution. – The type locality of *C. (T.) a. lamellatum*, as indicated by Westerlund (1885), probably covers the vicinity of Kotor in a broad sense. There are samples of *C. (T.) a. lamellatum* in the HNHM collection only from some localities in Montenegro that are relatively far from Kotor, i.e. south of the Lake Shkodra near the Albanian border. The type locality of *C. (T.) a. alatum* is most probably also within the political borders of present-day Montenegro. There is an Albanian record in the literature (Polinski, 1924): Kakariq ("Kakarići tout prés de la route Scutari - Alessio"). Furthermore, some records of only the

Cochlostoma (Titanopoma) auritum gjonii subspec. nov. (figs 7, 8-9, 26-27)

C. auritum ssp.; Fehér et al., 2001: 71.

Type material. – Holotype: Albania, Periferi Tiranë, Qafa e Fangul, 9 km E of Ibë along the road towards Kllojkë, over the N-side of the gorge of the Pr. i Murdharit, 700 m alt., 41°14′ N, 19°59′ E. (HNHM 92140, leg. Eröss, Fehér & Kovács, 11.04.2001). Paratypes: loc. typ. (HNHM 92141/8, ZEB, leg. Eröss & Fehér, 03.vii.1996); loc. typ., (HNHM 92142/6, MMG 50385/1, RMNH 94992/1, ZMB 109033/1, NHMW 102416/1, HNC 59249/1, SMF 323887/1, IZPAN/1, ZEB, KKS, leg. Eröss, Fehér & Kovács, 11.iv.2001); Albania, Periferi Tiranë, NW of Ibë, in the canyon of Lumi i Erzenit, 300 m alt., 41°15′ N, 19°58′ E (HNHM 92143/16, ZEB, KKS, leg. Eröss, Fehér & Kovács, 11.iv.2001). [19]

Diagnosis. – Shell dark reddish-brown, ribs stout and comparatively blunt, ribbing not heterogenous. Top of upper plate of operculum diverging from the basal plate; its surface smooth.

Description. – Shell elongated conical, with 7½-8¾ convex whorls which are separated by a deep suture. Spire steadily increasing in size, resulting in a shell that is more slender than in the nominate subspecies. There are neither spots nor bands. The initial 1½ whorls are smooth and yellowish corneous. On the following whorl a uniform ribbing begins, either abruptly or after a transitional zone of a half whorl that is finely striate. On the next 4-5 whorls there are white, stout, comparatively regularly placed ribs. The intercostal areas have very fine growth-lines only. The middle whorls are dark reddish-brown with a greyish intercostal coating in most specimens. In *C. (T.) auritum gjonii* subspec. nov. the ribs are usually lower and somewhat more widely spaced on the last whorl than in the other subspecies of *C. (T.) auritum*; some of the ribs are missing, especially on the last ½ whorl. In place of the 'missing ribs' there may be white, callus-like streaks. The final 1.5-2 mm of the last whorl is ribless; it seems light-coloured in side view, since the colour of the callus inside the aperture shows through the wall.

Inside the aperture there is a white ring of callus, whereas deeper inside the aperture is brown. As in the other subspecies of *C. (T.) auritum*, the peristome is either single or double, with prominent columellar and parietal auriculations. Parietal auriculation slightly protruding.

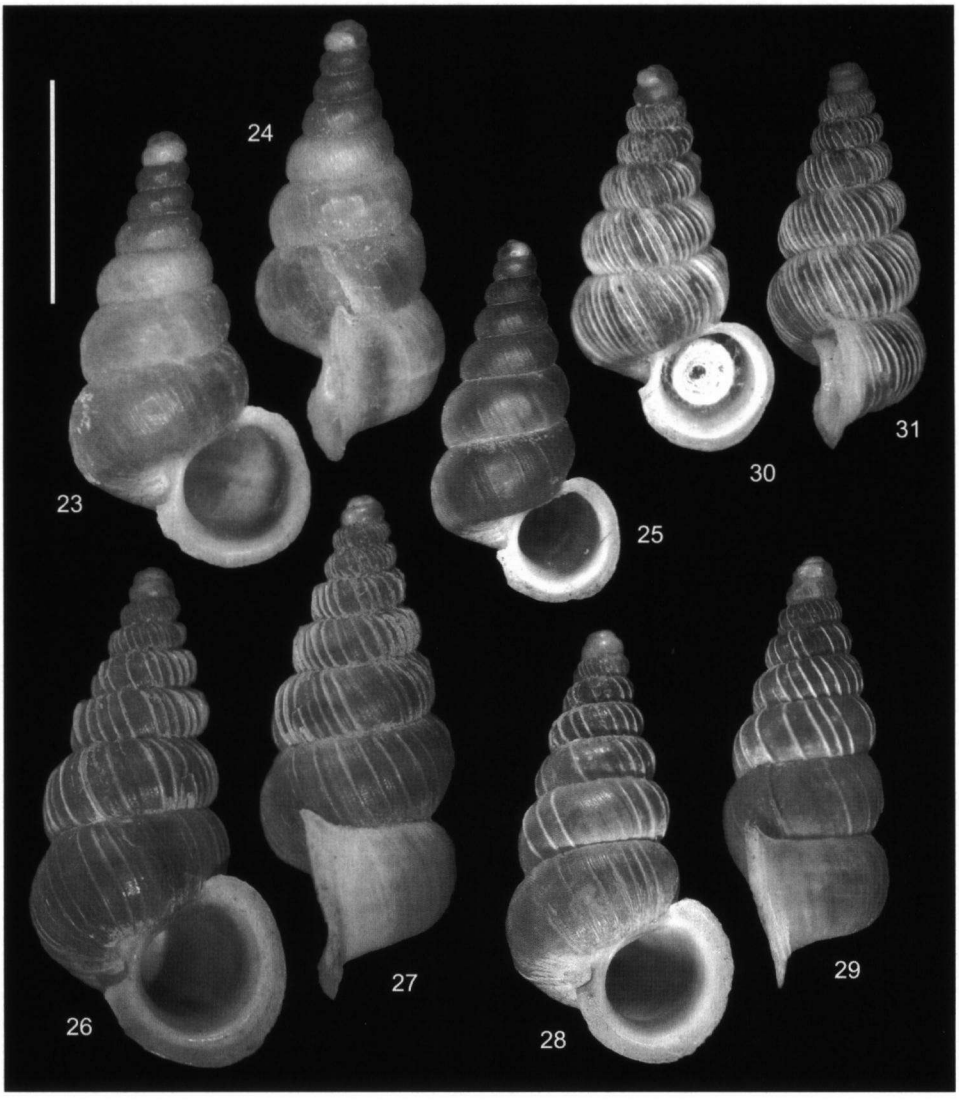
Upper plate of operculum with 3¼-3¾ whorls, diameter 1.9-2.3 mm, height 0.36-0.5 mm; nucleus relatively narrow, 0.25-0.33 mm. As usual in the species, the surface of the upper plate is smooth; it is diverging from the basal plate, thus not as parallel as in the other *C. (T.) auritum* subspecies (fig. 6). The septa are lower and more rudimentary than in the nominate subspecies.

Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate, 1/4-1/5; width of the nucleus versus width of the whole upper plate, 1/7-1/8.

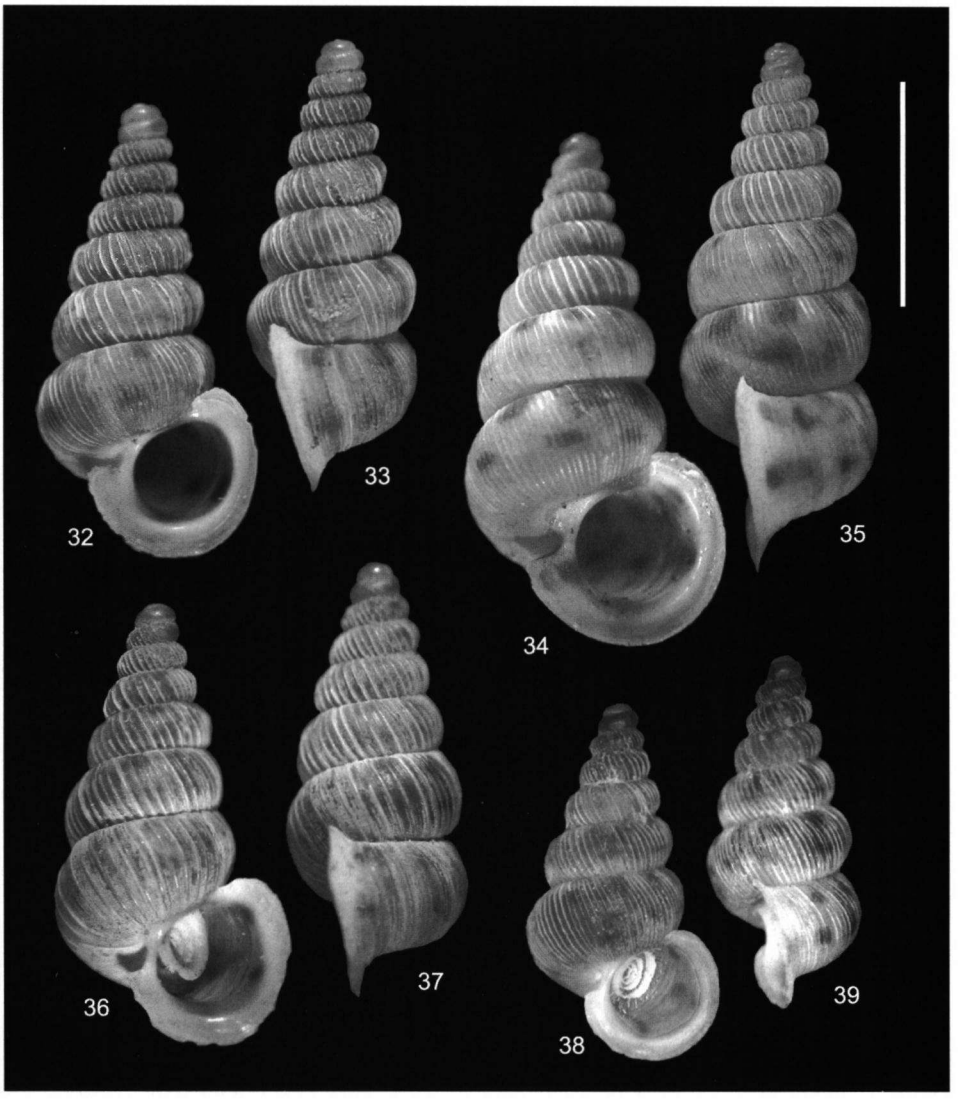
Measurements. – Holotype: H 11.0 mm, W 5.5 mm. Paratypes: H 8.7-12.3 mm, W 4.2-5.7 mm.

Etymology. – This subspecies is named after my friend, Aleksander Gjoni, an excellent Albanian painter and a master in the art of living.

Distribution. – This subspecies was discovered in Central Albania, in the vicinity of Ibë (south of Tiranë). The type locality is identical with that of *Agathylla biloba martae* (Eröss & Szekeres, 1999 [in: Eröss et al., 1999]), for which the type locality was given incorrectly as "Mangull pass".



Figs **23-31**. Shells of *Cochlostoma (Titanopoma)* forms. Scale bar = 5 mm. **23-24**, *C. (T.) auritum drimmeri* Varga, 1998, holotype (Kamenovo, HNHM 71494). **25**, an extraordinary ribless specimen of *C. (T.) hoyeri* (Polinski, 1922), (11 km W of Ulëz, HNHM 93994). **26-27**, *C. (T.) auritum gjonii* subspec. nov., holotype (Fangul pass, HNHM 92140). **28-29**, *C. (T.) hoyeri csikii* subspec. nov., holotype, (Pllanë, HNHM 92153). **30-31**, *C. (T.) hoyeri lillae* subspec. nov., holotype, (1 km N of Kurbnesh, HNHM 94000).



Figs **32-39**. Shells of *Cochlostoma (Titanopoma)* forms. Scale bar = 5 mm. **32-33**, *C. (T.) pinteri* spec. nov., holotype, (3 km N of Shtyllës pass, HNHM 92156). **34-35**, *C. (T.) pinteri erossi* subspec. nov., holotype, (1 km S of Lunik, HNHM 92159). **36-37**, *C. (T.) pinteri hanswagneri* subspec. nov., holotype, (Mirakë, HNHM 92162). **38-39**, *C. (T.) fuchsi* spec. nov., holotype, (Byshek spring, HNHM 93990).

Cochlostoma (Titanopoma) georgi (A.J.Wagner, 1906) (fig. 10)

Auritus (Titanopoma) georgi Wagner, 1906: 138, pl. 4 fig. 14 a, b. Type locality: "Mali Senjt bei Oroshi in Nordalbanien" (UTM: DM33).
Auritus (Titanopoma) georgi; Wohlberedt, 1909: 109.
Auritus (Titanopoma) georgi; Sturany & Wagner, 1915: 86.
Auritus georgi; Polinski, 1922: 165, textfig. 3.
Cochlostoma georgi; Dhora & Welter-Schultes, 1996: 177, pl. 6 figs 26-27.

Type material. – Syntypes: "Mali Senj bei Oroshi Mirdita Albanien" no. 7178, ex. Wagner A.J. (IZPAN/30); "Berg Fani b. Oroshi" (ZMB 109034/5); "Mali Senjt bei Oroshi Mirdita Albanien" (ZMB 58558/7 and ZMB 61854/9, ex. A.J. Wagner).

Other material.– Albania: Periferi Mirditë, Bisak, 2 km on the road towards Klos, on the right side of Lumi i Fani i Vogël (430 m alt., (HNHM 92144/7, HNHM 92233/42, ZEB, KKS, leg. Eröss, Fehér & Kovács, 08.iv.2001); Periferi Mirditë, Klos, over the village (580 m alt.) (HNHM 92145/15, ZEB, KKS, leg. Eröss, Fehér & Kovács, 08.iv.2001); Periferi Mirditë, 1 km NE of Ndërshenë, below Maja e Gurit te Çikut (1350 m alt.) (HNHM 91875/7, ZEB, leg. Eröss, Fehér, Kontschán & Murányi, 21.x.2002); Periferi Kukës, 2.5 km N of Bushtricë along the road towards Lusën, in a gorge at "Ura e Lapavës" (600 m alt.) (HNHM 93997/25, ZEB, leg. Eröss, Fehér, Kontschán & Murányi, 25.vi.2003); Periferi Kukës, Bicaj, gorge of the Pr. i Tershanës and Shkalla e Bicaj (cca. 500 m alt.) (HNHM 93998/22, ZEB, leg. Eröss, Fehér, Kontschán & Murányi, 25.vi.2003). [50]

Diagnosis. – Shell elongated conical with a greyish-white coating and three bands of dark brown spots. Ribs on the middle whorls equidistant, white, relatively stout and high. On the antepenultimate whorl some ribs are missing. From the antepenultimate whorl on, the intercostal spaces become slightly wider and ribs may be absent more often. On the last whorl, which is usually ribless, there is a reticulate microsculpture.

Surface of upper plate of the operculum corrugate; whorls of the operculum concave.

Description. – Spire of the upper plate of the operculum with 3-3½ whorls, diameter 1.8-2 mm, height 0.15-0.2 mm, and nucleus 0.3-0.35 mm. Compared to the consubgeneric other species, the upper plate is relatively thin. The whorls are fused perfectly well; their tops are concave and, as a consequence, the surface of the upper plate is corrugated. The plane of the top of the upper plate is almost parallel with the plane of the basal plate. Septa low, not reaching the basal plate; therefore, isolated chambers are not formed. The septa diverge backwards from the radial axle. As in *Cochlostoma auritum*, the last whorl is fenceless laterally.

Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate $^1/_9$-$^1/_{12}$; width of the nucleus versus width of the whole upper plate $^1/_5$-$^1/_7$.

Measurements. – Syntypes: H 7.5 - 10.0 mm, W 3.5 - 4.5 mm.

Distribution. – In the literature (Wagner, 1906; Sturany & Wagner, 1915) the species is reported from Mali Senjt bei Oroshi, Merdita (= Mali i Shejtë), Berg Munela bei Oroshi (= Mali i Munellës), Fandi bei Oroshi, and the Berg Zebia bei Oroshi (= Mali i Zebës). Our recent findings indicate that its range is larger. The species is known now from the Mirditë, Gjalica e Lumës and Korab Mts. In the Mirditë Mts it was found at all sampling sites on limestone outcrops.

Cochlostoma (Titanopoma) hoyeri hoyeri (Polinski, 1922) (figs 11-12, 25)

Auritus hoyeri Polinski, 1922: 153, pl. 12 fig. 1-3, textfig. 3. Type locality: "der nördliche Teil von Mittel-Albanien, und zwar die Felsen im Durchburche des Fll Terküza durch den Kreidekalk-Höhenzug des Mali Dajtit, n.-ö. der Stadt Tirana" (UTM: DL08).

Type material. – Syntypes: "Albania, Przetom Terküzy ne wapieniu rudistouym 21/VII/1918 leg St Weigner, detm. W. Polinski, ex. coll. W Polinski 228/37, Typi descr.", (IZPAN/18).

Other material. – Albania: Periferi Tiranë, NE of Tiranë, 4 km N of the bridge of Lumi i Tiranës between Ferraj and Shtish (270 m alt.) (HNHM 92146/3, leg. Erőss, Fehér & Kovács, 10.iv.2001); Periferi Tiranë, Shkalla e Trianit, 7 km N of the bridge of Lumi i Tiranës between Ferraj and Shtish (400 m alt.) (HNHM 92147/3, leg. Erőss, Fehér & Kovács, 10.iv.2001); Periferi Krujë, E slope of Mali i Krujës, over Krujë (800 - 1000 m alt.) (HNHM 86389/4 , leg. Z. Fehér, 13.ix.1992); same locality (HNHM 92148/9, leg. Z. Fehér, 14.ix.1994); same locality (HNHM 92149/3, ZEB, leg. Erőss, & Fehér, 03.vii.1996); same locality (HNHM 92150/23, ZEB, KKS, leg. Erőss, Fehér & Kovács, 09.iv.2001); Periferi Krujë, 1 km E of Cudhi-Zall, along the road from Burrel to Krujë (730 m alt.) (HNHM 91626/16, ZEB, leg. Erőss, Fehér, Kontschán & Murányi, 26.x.2002.); Periferi Krujë, NW slope of Mali i Krujës over Noi, along the road from Burrel to Krujë (700 m alt.) (HNHM 91873/21, leg. Erőss, Fehér, Kontschán & Murányi, 26.x.2002); Periferi Mirditë, Rubik, church hill (100 m alt.) (HNHM 92152/11, leg. Erőss, Fehér & Kovács, 09.iv.2001); Periferi Mirditë, Rubik, a quarry in the S edge of the city (60 m alt.) (HNHM 93993/1, leg. Erőss, Fehér, Kontschán & Murányi, 27.vi.2003); Periferi Mat, in the gorge of Lumi i Matit, along the Burrel - Milot main road, 11 km W of the conjunction to Ulëz (100 m alt.) (HNHM 93994/1 and HNHM 93995/20, leg. Erőss, Fehér, Kontschán & Murányi, 27.vi.2003); Periferi Mat, in the gorge of Lumi i Matit, along the Burrel - Milot main road, 13 km W of the conjunction to Ulëz (90 m alt.) (HNHM 93996/12, leg. Erőss, Fehér, Kontschán & Murányi, 27.vi.2003). [48]

Diagnosis. – Shell dark brown, elongated conical,with a greyish-white coating, evenly ribbed with white, inclined, relatively stout, high ribs (intercostal space 0.31-0.5 mm on the last whorl). Last whorl angular at the basis.

Whorls of the upper plate of the operculum convex, their tops mostly fused, forming a corrugated surface. Whorls of the operculum laterally fenced.

Description. – Spire of the upper plate of the operculum consisting of 3½-4½ whorls, with a diameter of 1.9-2.1 mm, a height of 0.45-0.60 mm, and a nuclear diameter varying between 0.3 and 0.45 mm. The upper plate does not cover the basal plate entirely. Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate 1/4; width of the nucleus versus width of the whole upper plate 1/5-1/7. The spire becomes steadily broader and higher outwards. Unlike the structure in the other species of the subgenus, the curvature of the apical part of the lamellae continues downwards and reaches back to the basal plate. With this exterior part, the whorls of the upper plate look like closed arches in cross-section, and the ultimate whorl is fenced laterally. In the nominate subspecies, the interior and the exterior part of the whorls fit to the basal plate by a more or less wide base. The walls of this archway are not strictly perpendicular to the basal plate, but lean slightly outwards. Except for short sections, adjacent whorls join. The septa are thin, their heights differ, some of them reaching almost to the basal plate, others extending down to only 20% of the height of the whorl. Viewed from below, the internal and the external parts of a lamella, connected by septa, look like a "U".

Measurements. – Syntypes: H 11.5-12.6 mm, W 5.9-6.5 mm; other material: near Tiranë and Krujë H 10.2-12.6 mm, W 5.0 - 6.5 mm; in the Mat valley H 7.3-9.8 mm, W 3.7-

4.7 mm.

Remarks. – Usually there are no bands of spots on the shell, but some specimens from Noi and the Mat valley have three, single, rusty-brown spots, thus traces of three bands, shortly behind the aperture.

Dwarf specimens were found in the gorge of the Mat river. Apart from the small size all shell characters are similar to those of the typical specimens. Therefore, I see no reason to consider them as representing a separate subspecies.

Distribution.– Up to now, the nominate subspecies was known only from the valley of Tiranë (Terküza) river and from the vicinity of Krujë (Polinski, 1922; Welter-Schultes, 1996). The recently discovered populations indicate a wider range in Central Albania.

Cochlostoma (Titanopoma) hoyeri csikii subspec. nov. (figs 13-14, 28-29)

Type material. – Holotype: Albania, Periferi Lezhë, Pllanë, along the main road from Rubik to Milot, 70 m alt., 41°42′ N, 19°42′ E. (HNHM 92153, leg. Erőss, Fehér & Kovács 09.iv.2001). Paratypes: loc. typ. (HNHM 92154/22, MMG 50382/1, RMNH 94993/1, ZMB 109029/1, NHMW 102412/1, HNC 59245/1, SMF 323891/1, IZPAN/1, ZEB, KKS, leg. Erőss, Fehér & Kovács, 09.iv.2001); loc. typ. (HNHM 92155/15, ZEB, leg. Erőss, Fehér, Kontschán & Murányi, 21.x.2002). [35]

Diagnosis. – Compared to the nominate subspecies, the ribs are lower, less clearly inclined, less sharp, light coloured but not white. From the antepenultimate whorl towards the aperture, ribs are absent increasingly more often. Last whorl almost ribless and nearly smooth.

Description. – Shell elongated conical, with 7½-8½ convex whorls, which are separated by a deep suture, greyish-brown, with a greyish-white coating and neither spots nor bands. The initial 1½-2½ whorls are smooth. On the following whorl, fine ribs occur. On the third whorl the density of the ribs is slightly higher than on the lower whorls. From the fourth whorl towards the aperture the ribs are stout and blunt, their colour is lighter than the colour of the intercostal areas, but in contrast to the nominate subspecies they are not white and they are less clearly inclined. From the middle of the spire on, single ribs can be missing, leaving a doubled intercostal area; this becomes more frequent towards the aperture. On the last whorl, there are hardly any ribs left, apart from a few that may be present just behind the apertural border. The few ribs on the last whorl are very blunt, relatively thick and very low. The last whorls seem to be nearly smooth but there are fine striae in the intercostal areas and on some shells very fine spiral lines can also be detected at high magnification. The peristome is single or double. Inside, just behind the rim of the aperture, there is a ring of white callus, whereas deeper inside the aperture is light corneous. The peristome is broad and slightly protruding; it has characteristic parietal and large columellar auriculations.

The upper plate of the operculum is similar to that of the nominate subspecies, but it is somewhat smaller (diameter 1.7-1.9 mm) and lower (0.35-0.45 mm) and consists of significantly less whorls (2½-3). The nucleus is relatively large (0.3-0.4 mm). The spire of the upper plate grows moderately higher and wider outwards, thus the last whorl seems hardly larger than the penultimate one. The bases of the interior and the exterior parts of the whorls are not as wide as in the nominate subspecies. Septa thin, their height varying, some of them almost touching the basal plate.

Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate 1/4-1/5; width of the nucleus versus width of the whole upper plate 1/5-1/6.

Measurements. – Holotype, H 9.6 mm, W 4.8 mm; paratypes, H 9.0-11.0 mm, W 4.5-5.0 mm.

Etymology. – This subspecies is named after Ernö Csiki (1875-1954), a prominent Hungarian entomologist, the leader of the remarkable North Albanian zoological expedition organized by the Hungarian Natural History Museum between 1916 and 1918.

Distribution. – This form is hitherto known only from the type locality.

Cochlostoma (Titanopoma) hoyeri lillae subspec. nov. (figs 30-31)

Type material. – Holotype: Albania, Periferi Mirditë, 1 km N of Kurbnesh, bank of Lumi i Urakës, 805 m alt., 41°47′ N, 20°06′ E (HNHM 94000, leg. Erőss, Fehér, Kontschán & Murányi, 27.vi.2003). Paratypes: loc. typ. (HNHM 94001/35, ZEB, leg. Erőss, Fehér, Kontschán & Murányi, 27.vi.2003); Albania, Periferi Mirditë, 2 km N of Kurbnesh, a spring in the bank of Lumi i Urakës (805 m alt.) HNHM 93999/23, ZEB, leg. Erőss, Fehér, Kontschán & Murányi, 28.vi.2003). [59]

Diagnosis. – Shell smaller and less elongated than in the nominate subspecies, whorls more convex, last whorl regularly curved instead of angular at the basis, ribs denser (intercostal space 0.18-0.22 mm on the last whorl), smaller columellar and parietal auriculations.

Description. – Shell elongated conical, with 7¼-7¾ very convex whorls, which are separated by a deep suture, dark brown with white ribs and three bands of dark brown spots (the spots and the intercostal areas are of the same colour, but the spots are visible because they stain the white ribs). The initial 1½ whorls are whitish and smooth, the next ½ whorl is finely striate. From the 3rd whorl on, the ribs are equidistant and almost uniform; only on the last whorl they become slightly lower. Compared to the nominate form, the ribs are lower and denser (intercostal space 0.18-0.22 mm on the last whorl). The peristome is broad, the inner rim is white, the collar is light brown; small but recognizable parietal and columellar auriculations.

The upper plate of the operculum is like that of the nominate form, but the bases of the interior and exterior parts of the whorls are less wide.

Measurements. – Holotype, H 8.6 mm, W 4.5 mm; paratypes, H 8.4-10.2 mm, W 4.3-4.9 mm.

Distribution. – This subspecies was discovered in the vicinity of Kurbnesh (fig. 1).

Etymology. – This subspecies is named after my wife, Lilla Tamás.

Cochlostoma (Titanopoma) pinteri pinteri spec. & subspec. nov. (figs 15-16, 32-33)

Type material. – Holotype: Albania, Periferi Mat, 3 km N of Qafa e Shtyllës, along the road from Tiranë to Klos (1500 m alt. 41°21′ N, 20°03′ E) (HNHM 92156, leg. Erőss, Fehér, Kontschán & Murányi, 12.x.2002). Paratypes: loc. typ. (HNHM 92157/28, MMG 50383/1, RMNH 94994/1, ZMB 109030/1, NHMW 102413/1, HNC 59246/1, SMF 323888/1, IZPAN/1, ZEB, leg. Erőss, Fehér, Kontschán & Murányi, 22.x.2002); Albania, Periferi Tiranë, 6 km S of Qafa e Shtyllës, along the road from Tiranë to Klos (1420 m alt.) (HNHM 92158/26, ZEB). [12]

Diagnosis. – Shell elongated conical, with three bands of rusty-brown spots, evenly ribbed between the 3rd and the penultimate whorl; ribs on last ½-1 whorl denser, lower

and blunter. Upper cover plate of operculum consisting of tangential lamellae, which are partially fused, forming a rosette-like structure. Top of the lamellae curving slightly outwards.

Description. – Shell elongated conical, with 8-9¼ convex whorls, which are separated by a deep suture; light or dark corneous, with three bands of rusty-brown spots and sometimes a greyish coating. The initial 1½ whorls are smooth and yellowish-white, the following ½-¾ whorl is corneous and very finely striate. From the 3rd whorl on, the shell is evenly ribbed; only on the final ½-1 whorl the ribs are less dense. Towards the aperture the ribs become lower and somewhat blunter, but they remain well visible even on the last few millimetres. The ribs are somewhat lighter in colour than the intercostal areas. The peristome is double or single; behind the rim of the aperture there is a white ring of callus; behind that, in some specimens, the band of spots and the ribs sometimes may shine through the wall and are visible inside the aperture. The peristome is broad and slightly protruding below the parietal auriculation. The prominent columellar auriculation is far from the last whorl; the parietal auriculation is smaller but recognizable.

The spire of the upper plate of the operculum consists of 4 whorls, its diameter is 1.5-1.9 mm; it does not cover the basal plate entirely; its height is 0.45-0.5 mm, the nucleus is relatively narrow (0.25 mm). The whorls become increasingly higher and broader.

The lamellae stand tangentially, their anterior parts fused and their posterior parts detached and reaching backwards. In side view, the lamellae are not perpendicular to the basal plate, but diverging outwards at an angle of 35-40°. Their tops curve outwards, and stand almost parallel with the basal plate. Since the tops of the lamellae do not fuse, the upper plate looks like a rosette in top view.

Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate 1/3-1/4; width of the nucleus versus width of the whole upper plate 1/7-1/8.

Measurements. – Holotype, H 10.1 mm, W 4.8 mm; paratypes, H 9.7-11.3 mm, W 4.6-5.1 mm.

Distribution. – This species was found in Central Albania, in the vicinity of the Shtyllës pass (east of Tiranë) (fig. 1).

Etymology. – The new species is dedicated to and named after my mentor, the late László Pintér (1942-2002), one of the most prominent Hungarian malacologists.

Cochlostoma (Titanopoma) pinteri erossi subspec. nov.
(figs 17-18, 34-35)

Type material. – Holotype: Albania, Periferi Librazhd, 1 km S of Lunik, along the Librazhd - Peshkopi road, 700 m alt., 41°16′ N, 20°19′ E (HNHM 92159, leg. Erőss, Fehér, Kontschán & Murányi, 24.x.2002). Paratypes: loc. typ. (HNHM 92160/16, RMNH 94995/1, ZMB 109031/1, NHMW 102414/1, HNC 59247/1, SMF 323889/1, IZPAN/1, ZEB, leg. Erőss, Fehér, Kontschán & Murányi, 24.x.2002); Albania, Periferi Librazhd, 3 km N of Lunik, along the Librazhd - Peshkopi road (1050 m alt.) (HNHM 92161/8 leg. Erőss, Fehér, Kontschán & Murányi, 24.x.2002). [12]

Diagnosis. – Shell similar to that of the nominate subspecies. Lamellae of the final 1-1½ whorls of the upper plate of the operculum larger, with a longer part curving outwards; lamellae of the final 1-1½ whorls completely fused.

Description. – Spire of the upper plate of the operculum with 3¾-4 whorls, diameter 1.7-2 mm; the upper plate does not cover the basal plate completely. The height of the upper plate is 0.6-0.7 mm, the nucleus is relatively narrow (0.16-0.25 mm). The initial 1½-

2½ whorls of the upper plate are similar to those of the nominate subspecies, but the calcareous lamellae in the final 1-1½ whorls are larger, they have a longer part curving outwards, and the subsequent lamellae are fully fused.

Measurements. – Holotype: H 11.7 mm, W 5.4 mm; paratypes, H 9.5-11.8 mm, W 4.4-5.4 mm.

Remarks. – In shell characters and the structure of the initial whorls of the upper plate of the operculum, this form is very similar to *C. (T.) pinteri*. However, taking into consideration the dissimilarity in the last whorls of the operculum among both taxa, as well as the geographical distance between the sampling sites, a subspecific differentiation seems to be reasonable.

Etymology. – This subspecies is named after Zoltán Eröss, my friend and companion during several field trips.

Distribution. – This subspecies was discovered in the vicinity of Lunik, north of Librazhd (fig. 1).

Cochlostoma (Titanopoma) pinteri hanswagneri subspec. nov. (figs 19-21, 36-37)

Cochlostoma auritum (det?); Welter-Schultes, 1996: 24.

Type material.– Holotype: Albania, Periferi Librazhd, Mirakë, Ura e Kamarës, by the left bank of Lumi i Shkumbinit, 210 m alt., 41°10′ N, 20°14′ E(HNHM 92162, leg. Eröss, Fehér & Kovács, 14.iv.2001). Paratypes: loc. typ. (HNHM 92163/21, ZEB, KKS, leg. Eröss, Fehér & Kovács, 14.iv.2001); loc. typ. (HNHM 92164/10, MMG 50384/1, RMNH 94996/1, ZMB 109032/1, NHMW 102415/1, HNC 59248/1, SMF 323890, IZPAN/1, ZEB, leg. Eröss, Fehér, Kontschán & Murányi, 23.x.2002); Albania, Periferi Librazhd, 6 km W of Librazhd, on the right bank of Lumi i Shkumbinit (HNHM 93992/2, leg. Eröss, Fehér, Kontschán & Murányi, 30.vi.2003). [15]

Diagnosis. – Shell elongated conical, angular at the basis of the last whorl. Less ribs on the final ¼ whorl. Tops of the lamellae of the upper plate of the operculum curved outwards and fusing. Surface of the upper plate corrugated; whorls convex like in *C.(T.) hoyeri*, but laterally fenceless.

Description. – Shell elongated conical, with 7¾-8¾ convex whorls, angular at the basis of the last whorl, coloured lighter than in the nominate subspecies, yellowish, corneous, with a greyish-white coating in some specimens. With three bands of dark brown spots on the final two or three whorls; towards the aperture the spots become longer and tend to fuse on the final ¼ whorl. Ribbing similar to that in the nominate subspecies, but there are fewer or even a finely striate region only on the final ¼ whorl. The ribs are somewhat lighter than the intercostal areas; they are inclined and slightly curved. The spire of the upper plate of the operculum consists of 3-3¾ whorls, the diameter is 1.5-1.8 mm, the height is 0.45-0.6 mm, and the diameter of the nucleus is 0.2-0.3 mm. The upper plate does not cover the basal plate completely. The whorls of the spire become higher and broaden outwards rapidly. In top view, the upper plate resembles that in *C. (T.) hoyeri*, since its whorls are convex and in cross-section their tops are arch-like. However, unlike in the case of *C. (T.) hoyeri*, the exterior parts of the whorls are missing, thus the last whorl is laterally fenceless. Moreover, in sections where the whorls join imperfectly, the inner whorls are also fenceless. Septa, which are to be considered the rudiments of the posterior parts of the lamellae that are present in the nominate form, are thin and small. They span the arch and do not reach the basal plate. In bottom view the direction of the septa is radial; their

outer third curves forwards.

Relative dimensions of the upper plate: height of the last whorl versus width of the whole upper plate 1/3-1/4; width of the nucleus versus width of the whole upper plate 1/6-1/7.

Measurements. – Holotype, H 9.8 mm, W 4.9 mm; paratypes, H 9.2-10.9 mm, W 4.5-5.1 mm.

Remarks. – The structure of the last whorl of the operculum in *C. (T.) p. erossi* suggests, that there might be a close relationship between *C. (T.) pinteri* and *C. (T.) p. hanswagneri*. On the basis of the available material, *C. (T.) p. erossi* is here considered an intermediate form between *C. (T.) p. pinteri* and *C. (T.) p. hanswagneri*.

Etymology. – The subspecies in named after János [Hans] Wagner (1906-1948), an outstanding Hungarian malacologist.

Distribution. – This subspecies was discovered in the vicinity of Mirakë (fig. 1.).

Cochlostoma (Titanopoma) fuchsi spec. nov.
(figs 22, 38-39)

C. tessellatum excisum ("Auritus bischoffi"); Fehér et al., 2001: 71.

Type material. – Holotype: Albania, Periferi Elbasan, Shushicë, Burimi te Byshekut, 175 m alt., 41°06' N, 20°07' E (HNHM 93990, leg. Eröss, Fehér, Kontschán & Murányi, 30.vi.2003), paratypes: loc. typ. (HNHM 93991/30, ZEB, leg. Eröss, Fehér, Kontschán & Murányi, 30.vi.2003); loc. typ. (HNHM 77618/2, leg. Fuchs A., 1936(?), ex. coll. Schlesch H.). [50]

Diagnosis. – Shell evenly ribbed, conical to tumid conical, with three bands of reddish-brown spots. Upper plate of operculum rudimentary, its top absent, and septa reduced to ribs on the perpendicular branch and the basal plate.

Description. – Shell corneous, varying from conical to tumid conical, with 7-7½ convex whorls, which are separated by a deep suture. First whorl smooth; the following ones finely striate. After a transitional zone of ½ whorl, the shell is evenly ribbed down to the aperture. The ribs are somewhat lighter than the corneous intercostal areas. Three bands of reddish-brown spots are well recognisable. The peristome is broad, with prominent columellar and parietal auriculations.

The upper plate of the operculum consists of 3-3½ whorls, its diameter is 1.6-1.7 mm with a nucleus of 0.3-0.4 mm; its height is about 0.2 mm. The upper plate is rudimentary. It consists of a spiral, calcareous tape, which is perpendicular to the basal plate and, right at the top curves slightly outwards. This structure is homologous with the interior part of the whorls of other *Titanopoma* species. There are only rudiments of septa, which are fine, rib-like structures at the exterior side of the spiral tape; they continue on the surface of the basal plate. These parts run parallel with the growth-lines of the basal plate; they are curved and diverge backwards from the radial axle.

Measurements. – Holotype: H 7.8 mm; W 4.2 mm, paratypes: H 7.2-9.8 mm, W 3.9-4.5 mm.

Remarks. – This species was incorrectly identified as *Cochlostoma (Holcopoma) tessellatum excisum* (Mousson, 1859) by Fehér et al. (2001), because the plates of the available specimens (HNHM 77618/2) were not visible. In *C. (T.) fuchsi* the ribs are more prominent and more widely spaced as compared to *C. (H.) t. excisum*, and the shell is more tumid. The best distinguishing feature however, is the structure of the operculum.

The material listed above was originally labelled as "*Auritus bischoffi* Fuchs", with the

hand-writing of Hans Schlesch. However, that name was not found in any of the publications of Fuchs.

Etymology. – This new species is named after Anton Fuchs, an Austrian malacologist, who first collected it.

Distribution. – This species is hitherto known only from the type locality (fig. 1).

ACKNOWLEDGEMENTS

Thanks are due to A. Varga, M. Szekeres and P. Sólymos for their useful comments. Prof. A. Riedel and M. Glaubrecht are acknowledged for providing their material on loan. I am also grateful to Cs. Csúzdi, A. Gubányi, D. Murányi and J. Pelbárt for their help in making photos and drawings. I wish to thank A. Maliqi, E, Pinguli and M. Qirjo for their help in organizing the Albanian field-trips and my colleagues Z. Eröss, J. Kontschán, K. Kovács and D. Murányi, for their assistance during the field work. The map was made using the DMAP 7.2c software (www.dmap.co.uk).

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