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A REVIEW OF THE RISSOIFORM GASTROPODS OF
SOUTHWESTERN SOUTH AMERICA
(MOLLUSCA, GASTROPODA)

W. F. PONDER AND T. M. WORSFOLD



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A REVIEW OF THE RISSOIFORM GASTROPODS OF SOUTHWESTERN SOUTH AMERICA (MOLLUSCA, GASTROPODA)

W. F. PONDER¹ AND T. M. WORSFOLD²

CONTENTS

ABSTRACT	3
RESUMEN	3
INTRODUCTION	3
MATERIALS AND METHODS	4
ABBREVIATIONS	4
TAXONOMY	5
PART 1. Species from Peru to Tierra del Fuego, South America	5
Superfamily Cingulopsoidea	6
Family EATONIELLIDAE	6
Genus <i>Eatoniella</i> Dall, 1876	6
Subgenus <i>Eatoniella</i>	6
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>turricula</i> n. sp.	6
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>denticula</i> n. sp.	7
<i>Eatoniella</i> (<i>Eatoniella</i>) cf. <i>denticula</i>	11
<i>Eatoniella</i> (<i>Eatoniella</i>) cf. <i>cana</i> Ponder, 1983	12
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>ebenina</i> n. sp.	12
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>picea</i> n. sp.	12
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>nigra</i> (Orbigny, 1840)	14
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>castanea</i> n. sp.	15
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>glomerosa</i> n. sp.	15
Subgenus <i>Albosabula</i> Ponder, 1965	19
<i>Eatoniella</i> (<i>Albosabula</i>) <i>mcleani</i> n. sp.	19
Genus <i>Pupatonia</i> Ponder, 1965	19
<i>Pupatonia magellanica</i> n. sp.	19
Family CINGULOPSIDAE	21
Genus <i>Skenella</i> Pfeffer, 1886	21
<i>Skenella hallae</i> n. sp.	21
Genus <i>Eatonina</i> Thiele, 1912	21
Subgenus <i>Mistostigma</i> Berry, 1947	21
<i>Eatonina</i> (<i>Mistostigma</i>) <i>fusca</i> (Orbigny, 1840)	21
Superfamily Rissoidae	23
Family RISSOIDAE	23
Genus <i>Pusillina</i> Monterosato, 1884	23
Subgenus <i>Haurakia</i> Iredale, 1915	23
<i>Pusillina</i> (<i>Haurakia</i>) <i>averni</i> n. sp.	23
<i>Pusillina</i> (<i>Haurakia</i>) cf. <i>averni</i>	25
Genus <i>Manzonia</i> Brusina, 1870	25
Subgenus <i>Alvinia</i> Monterosato, 1884	25
<i>Manzonia</i> (<i>Alvinia</i>) <i>limensis</i> n. sp.	25
Genus <i>Powellisetia</i> Ponder, 1965	25
<i>Powellisetia microlirata</i> n. sp.	26

1. Australian Museum, 6-8 College Street, Sydney, New South Wales, 2000, Australia.

2. % Unicomarine, 7a, Diamond Centre, Letchworth, Hertfordshire SG61LW, U.K.

Genus <i>Onoba</i> H. and A. Adams, 1852	26
<i>Onoba protofimbriata</i> n. sp.	26
<i>Onoba subincisa</i> n. sp.	31
<i>Onoba striola</i> n. sp.	36
<i>Onoba subaedonis</i> n. sp.	36
<i>Onoba sulcula</i> n. sp.	39
<i>Onoba scythei</i> (Philippi, 1868)	39
<i>Onoba fuegoensis</i> (Strebel, 1908)	43
<i>Onoba georgiana</i> (Pfeffer, 1886)	45
<i>Onoba erugata</i> n. sp.	45
<i>Onoba amissa</i> nom. nov.	46
<i>Onoba</i> (?) <i>algida</i> n. sp.	47
<i>Onoba</i> (?) <i>lacuniformis</i> n. sp.	47
Family BARLEEIDAE	48
Genus <i>Barleeia</i> Clark, 1853	48
<i>Barleeia meridionalis</i> n. sp.	48
Family Anabathridae	49
Genus <i>Amphithalamus</i> Carpenter, 1864	49
<i>Amphithalamus</i> cf. <i>inclusus</i> Carpenter, 1864	49
Superfamily RISSOELLOIDEA	49
Family RISSOELLIDAE	49
Genus <i>Rissoella</i> J.E. Gray, 1847	49
Subgenus <i>Rissoella</i>	49
<i>Rissoella</i> (<i>Rissoella</i>) <i>peruviana</i> n. sp.	49
PART 2. Additional species and records for South Georgia and Falkland Islands	51
Family Eatoniellidae	51
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>strebelsi</i> n. sp.	51
<i>Eatoniella</i> (<i>Eatoniella</i>) cf. <i>cana</i> Ponder, 1983	52
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>occulta</i> Ponder, 1983	52
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>bennetti</i> (Preston, 1912)	52
Family Rissoidae	54
<i>Onoba georgiana</i> (Pfeffer, 1886)	54
<i>Onoba subaedonis</i> n. sp.	54
<i>Onoba scythei</i> (Philippi, 1868)	54
<i>Onoba</i> cf. <i>protofimbriata</i>	54
<i>Onoba anderssoni</i> (Strebel, 1908)	54
<i>Onoba filostria</i> (Melvill and Standen, 1912)	54
<i>Onoba turqueti</i> (Lamy, 1905)	54
<i>Onoba</i> cf. <i>gelida</i> (E.A. Smith, 1907)	54
<i>Powellisetia australis</i> (Watson, 1886)	54
Family Cingulopsidae	54
<i>Skenella georgiana</i> Pfeffer (in Martens and Pfeffer), 1886	54
<i>Skenella wareni</i> n. sp.	55
Family Rissoellidae	55
<i>Rissoella</i> (<i>Jeffreysiella</i>) cf. <i>powelli</i> Ponder, 1983	55
PART 3. Species from Juan Fernández Islands	55
Family Eatoniellidae	55
<i>Eatoniella</i> (<i>Eatoniella</i>) <i>zigzag</i> n. sp.	55
Family Rissoidae	56
<i>Onoba</i> (?) <i>isolata</i> n. sp.	56
<i>Onoba</i> (?) <i>protopustulata</i> n. sp.	56
DISCUSSION	57
ACKNOWLEDGMENTS	58
LITERATURE CITED	58
APPENDIX: LIST OF LOCALITIES	59
Natural History Museum of Los Angeles County (LACM) Localities	59
National Museum of Natural History, Washington, D.C. (USNM) Material	61
Natural History Museum (London) (BMNH) Material	62
National Museum of Wales (NMW) Material	62
Swedish Museum of Natural History (SMNH) Material	62
T. Worsfold Stations	62
Locality Numbers	62

ABSTRACT. Rissoiform gastropods from southwestern South America (Peru to Tierra del Fuego) and Juan Fernández Islands are described and additional records are given. Taxa are also described for South Georgia and the Falkland Islands and new locality records of previously described taxa are listed from those areas. The southwestern South American fauna described consists of 10 species of Eatoniellidae comprising nine species of *Eatoniella*, seven of these new and one of which is in the subgenus *Albosabula*, and one new species of *Pupatonia*, the first record of the latter genus outside New Zealand. There are two species of Cingulopsidae; one, a species of *Skenella*, is new. The 15 taxa included in the Rissoidae (subfamily Rissoinae only) comprise 1 new species each of *Pusillina* (*Haurakia*), *Powellisetia*, and *Manzonia* (*Alvinia*) and 12 species of *Onoba*, 8 of which are new. A single new species of *Barleeia* (Barleeidae) and *Rissoella* (Rissoellidae) is also described and an *Amphithalamus* (Anabathridae), close to *A. inclusus* Carpenter, is recorded. Three new taxa are described from Juan Fernández Islands, one *Eatoniella* and two rissoids tentatively included in *Onoba*. New species of *Eatoniella* and *Skenella* are described from South Georgia.

The biogeography of the fauna is briefly discussed. The South American taxa as far north as latitude 42°S are similar to those encountered on sub-Antarctic islands, whereas north of latitude 42°S the few species present are like those of southern California and Mexico.

A replacement name, *Eatoniella afronigra*, is provided for the South African eatoniellid *Rissoa nigra* Krauss, 1948, a secondary homonym of *Paludestrina nigra* Orbigny, 1840, also an *Eatoniella*.

RESUMEN. Se describen los gastrópodos rissoiformes del sureste de Sudamérica (Perú a Tierra del Fuego) e islas Juan Fernández y se entregan registros adicionales. Se describen además taxa para las islas Georgia del Sur y Malvinas y se entrega una lista con nuevos registros de localidades de especies descritas previamente de estas áreas. La fauna sudamericana descrita consiste de diez especies de Eatoniellidae, comprendiendo nueve especies de *Eatoniella*, siete son nuevas y una está en el subgénero *Albosabula*, y una especie de *Pupatonia*, el primer registro de este último género fuera de Nueva Zelanda. Existen dos especies de Cingulopsidae; una de ellas, del género *Skenella*, es nueva. Los 15 taxa que se incluyen en Rissoidae (solamente la subfamilia Rissoinae) comprenden una sola especie de los géneros *Pusillina* (*Haurakia*), *Powellisetia* y *Manzonia* (*Alvinia*), y 12 especies de *Onoba*, 8 de las cuales son nuevas. Se describe también una nueva especie de *Barleeia* (Barleeidae) y de *Rissoella* (Rissoellidae) y se registra una de *Amphithalamus* (Anabathridae), cercana a *A. inclusus* Carpenter. Se describen tres nuevos taxa de las islas Juan Fernández, uno de *Eatoniella* y dos rissóideos, tentativamente incluidos en *Onoba*. Se describe una nueva especie de *Eatoniella* y de *Skenella* de las islas Georgia del Sur.

La biogeografía de la fauna se discute brevemente. Los taxa sudamericanos hasta la latitud 42°S son similares a aquellos encontrados en islas subantárticas, mientras que al norte de la latitud 42°S las pocas especies presentes se parecen a aquellas del sur de California y México.

Se proporciona un nombre de reemplazo, *Eatoniella afronigra*, para el eatoniéllido *Rissoa nigra* Krauss, 1948, un homónimo secundario de *Paludestrina nigra* Orbigny, 1840, también un *Eatoniella*.

INTRODUCTION

Small gastropods similar to members of the Rissoidae have proved to be difficult to classify on shell characters alone. It is only in the last three decades that studies on radulae and anatomy have provided a solidly based classification for these animals. Because many workers have difficulty in separating the families involved, they are treated together in this work. An attempt is made in this paper to describe the majority of rissoid and rissoid-like taxa occurring in southwestern South America from Peru to Tierra del Fuego. Three taxa from a sample from Juan Fernández Islands are also described.

The taxa reviewed in this work include members of three superfamilies, two of which are closely related. These are the caenogastropod Rissoidae (Rissoidae) and Cingulopsoidea (Eatoniellidae and Cingulopsidae) (see Ponder, 1988, for discussion on relationships) and the superficially similar but very different Rissoelloidea (Rissoellidae), which belongs in the subclass Heterobranchia. All of these groups closely resemble rissoids and have, in the past, been included in, or closely associated with, that family.

This paper is intended to supplement and complement a similar work on the Antarctic and sub-Antarctic fauna (Ponder, 1983a). The only family not dealt with herein that was included in Ponder (1983a) is the Orbitestellidae, of which taxa are present in the region (Ponder, 1990). The opportunity is also taken to report on some additional collections from South Georgia and the Falkland Islands.

There are very few studies on small marine gastropods from South America. Of the 30 species recognized below, only seven have been described previously, with two additional available names proving to be synonyms of earlier named taxa. A few species described from Argentina in the last 20 years (Castellanos and Fernandez, 1972a, b, 1974) have not been available for study but, as far as can be determined from their descriptions and figures, are different from any of the taxa dealt with in this report. Dell (1990), in his major review of Antarctic Mollusca, dealt with some material from South America but did not include records of rissoiform species from that area. Similarly, other faunistic

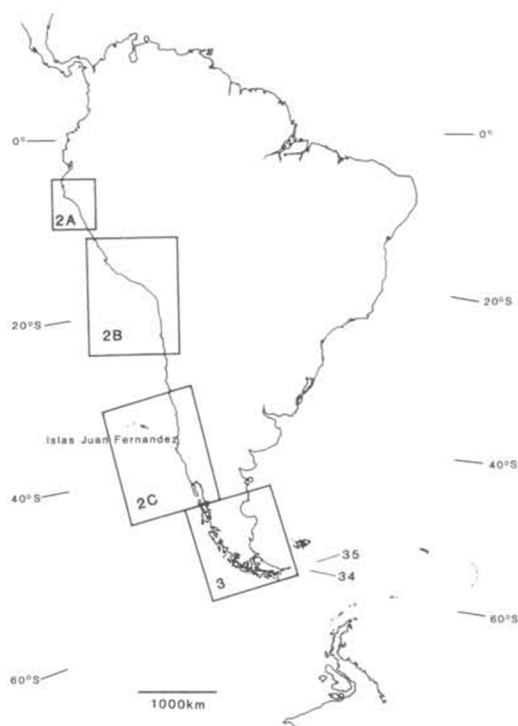


Figure 1. Map of South America showing location of outlying localities and insets indicating location of maps shown in Figures 2 and 3.

studies on the Mollusca of the Pacific Coast of South America (e.g., Dall, 1909; Dell, 1971) have mainly dealt with the larger species, the micromolluscan fauna remaining largely unknown.

Members of the genus *Rissoina* (Rissoiidae, Rissoiinae) are not discussed here, as they are being investigated by W. Sleurs.

MATERIALS AND METHODS

Shells were measured using an eyepiece micrometer in a Wild M5 stereomicroscope. The measurements presented are given as the raw data rather than means because the specimens measured were not extracted from the available material randomly, but rather well-preserved, intact adult specimens were selected.

The full locality data are given in the appendix. These data are only repeated in the material examined section for each taxon for the primary type localities of new taxa, additional material being referred to by station numbers and the institution in which it is deposited. The number of specimens in each lot that can confidently be assigned to the species is given in square brackets. Where the entire sample consists of empty shells, this is indicated by the letter "d" (=dead) in square brackets. Some juveniles, fragments, and other specimens in the lots that cannot be reliably identified are not included in the number of specimens given. The localities are listed in the appendix by institution and then numerically by station number. The location of each station is given in Figures 1-4. Because

of the large number of stations involved, these were grouped into tight geographic clusters and each cluster numbered. These numbers are given for each station in the material examined section of each species and also in the appendix. This was done to facilitate the geographic location of any particular station by reference to Figures 1-4. In addition, the locality numbers are also listed numerically with a list of all of the station numbers referable to each of these numbers.

Radulae, shells, and opercula were examined using the scanning electron microscope (SEM) after standard preparation. The orientation of the opercula (anterior and posterior ends, inner and outer edges) are given as though the operculum is retracted in the shell aperture. In each case the number of radulae examined is indicated. In the relatively few cases where ethanol-preserved material is available, the pigmentation of the head-foot and visceral coil is noted.

ABBREVIATIONS

INSTITUTIONS

- AMS—Australian Museum, Sydney
- BMNH—Natural History Museum, London
- LACM—Los Angeles County Museum of Natural History
- MCZ—Museum of Comparative Zoology, Harvard University, Cambridge
- NMNHP—Muséum National d'Histoire Naturelle, Paris
- NMNZ—National Museum of New Zealand, Wellington
- NMW—National Museum of Wales, Cardiff
- SMNH—Naturhistoriska Riksmuseet, Stockholm
- USNM—National Museum of Natural History, Smithsonian Inst., Washington, D.C.

ABBREVIATIONS USED IN LOCALITY DETAILS

- DE—Discovery Expedition Station
- E—Eltanin Station
- H—Hero Cruise 712 Station
- R/V—Research Vessel
- SNAE—Scottish National Antarctic Expedition Station
- SSPE—Swedish Southpolar Expedition Station
- Sta.—Station
- TW—T. Worsfold Station
- V—Vema Station

ABBREVIATIONS USED IN SHELL MEASUREMENTS

- AL—aperture length
- BA—number of axials on last whorl
- BS—number of spirals on last whorl
- PA—number of axials on penultimate whorl
- PD—protoconch diameter
- PS—number of spirals on penultimate whorl
- PW—number of protoconch whorls
- SL—shell length
- SW—shell width
- TW—number of teleoconch whorls

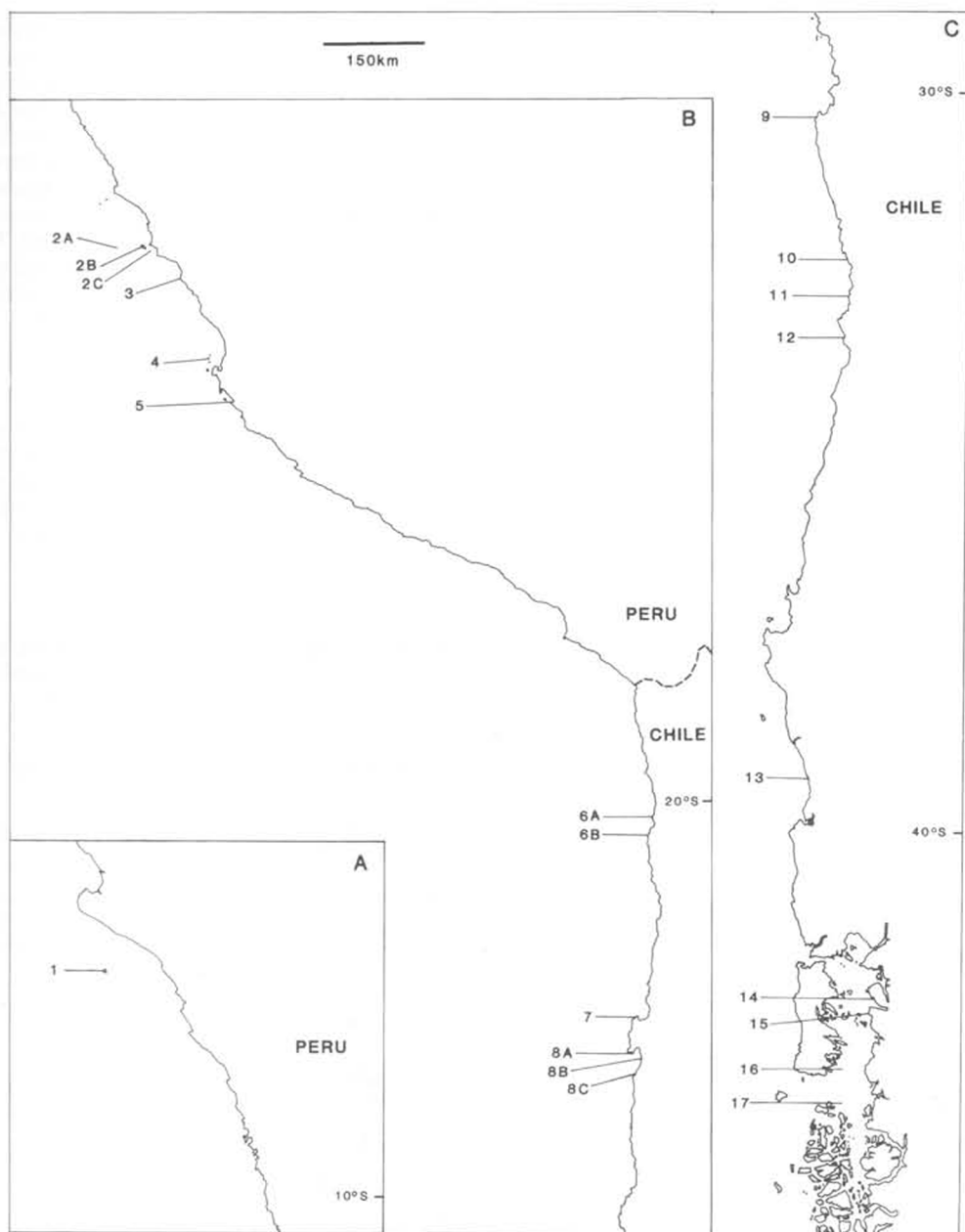


Figure 2. A, Localities in northern Peru. B, Localities in southern Peru and northern Chile. C, Localities in central Chile.

TAXONOMY

This section deals with species grouped according to three geographic areas:

1. Species from Peru to Tierra del Fuego, South America.
2. Species and records for South Georgia and the Falkland Islands additional to those recorded by Ponder (1983a).
3. Species from Juan Fernández Islands.

Part 1

Species from Peru to Tierra del Fuego, South America

Subclass PROSOBRANCHIA

This grouping is paraphyletic according to recent analyses of gastropod phylogeny (e.g., Haszprunar, 1988). It is used here in the traditional way pending an alternative ranked classification.

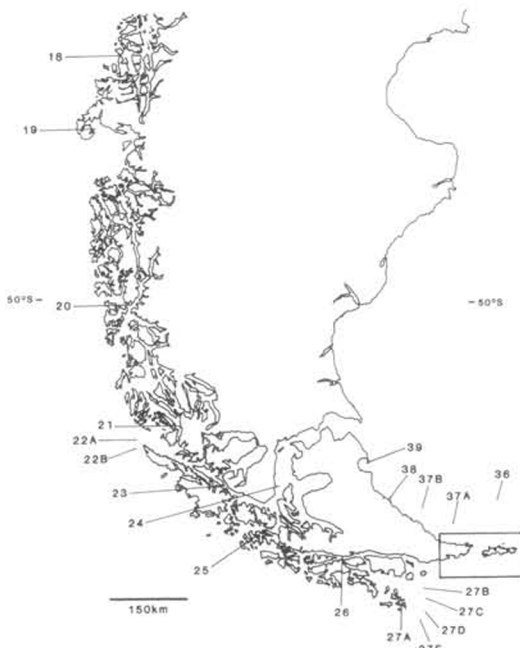


Figure 3. Localities in southern Chile and Tierra del Fuego. The inset indicates location of Figure 4.

Order Caenogastropoda

Superfamily Cingulopsoidea

Family EATONIELLIDAE

This family is distributed around the southern continents and a few taxa are found in the northern

Indo-west Pacific. None are known from northern South America, Central America, or North America where it is replaced by a family with very similar shell features, the Barleeidae. The Argentinean *Eatoniella rubrooperculata* Castellanos and Delicia, 1971, is a member of the Barleeidae. The eatoniellids of New Zealand (Ponder, 1965a), Australia (Ponder and Yoo, 1977a), and the Antarctic-sub-Antarctic (Ponder, 1983a) have been reviewed. The family is distinguished by having a well-developed peg on the operculum, a "littorinid"-like radula, no true penis, and open pallial genital ducts.

Genus *Eatoniella* Dall, 1876

Species of this genus have a depressed-ovate to conic shell with a markedly prosocline outer lip. The operculum usually has an opaque insertion area and lacks a distinct internal ridge. See Ponder and Yoo (1977a) for a formal synonymy and diagnosis.

Subgenus *Eatoniella*

The typical subgenus is differentiated from the next by having the midbasal part of the central teeth of the radula not markedly produced ventrally.

Eatoniella (Eatoniella) turricula n. sp.

Figures 5A, 6D, 7A, 8A

ETYMOLOGY. *Turricula*—Latin. A little tower. Refers to the shell shape.

MATERIAL EXAMINED. Types. Holotype, LACM 2656, 205 paratypes, LACM 2657; 8 paratypes, AMS C.167414. 33R 71-328. 6.4 km N Cabo San Juan, Isla de

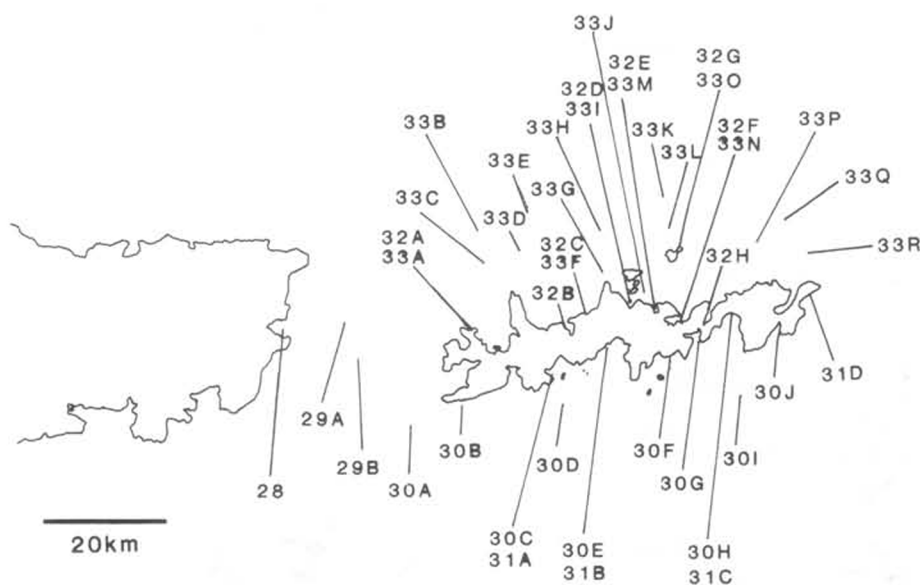


Figure 4. Map showing the localities around Isla de los Estados.

los Estados, Tierra del Fuego, Argentina. 54°39.1'S, 63°50.1'W, 135–137 m, Sta. 874, USARP-SOSC-R/V *Hero* Cr.715, 26 Oct. 1971.

Additional Material Examined. *Southern Chile:* 22A USNM E 960 [1]. 22B USNM E 958 [6]. *Tierra del Fuego:* 27B USNM V 17-48 [1(d)]. 27C USNM E 219 [3(d)]. 28 71-271 [3(d)]. 29B 71-305 [17(d)]. 30A 71-342 [4(d)]. 30H 71-332 [2]; 30H USNM H 664 [many(d)]. 30I 71-329 [many]. 33A USNM H 656 [9(d)]. 33B 71-347 [many]; 71-267 [1(d)]. 33C 71-348 [many]. 33D 71-352 [20(d)]. 33E 71-351 [many]. 33H 71-313 [4(d)]. 33K 71-315 [3(d)]. 33L 71-316 [10(d)]. 33P 71-319 [1(d)]. 33Q 71-327 [10 (+ many d)]. 35 37B USNM E 967 [2(d)]. 37A BMNH DE 88 [1(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 5A, 6D). Small (maximum length 2.8 mm), conical, thin, translucent when fresh, with 3.2–4.1 teleoconch whorls. Spire with straight outlines, whorls very lightly convex; periphery of last whorl lightly angled. Sutures impressed, simple. Teleoconch smooth and rather glossy with faint prosocline growth lines. Protoconch (Fig. 6D) smooth except for fine spiral grooves, of 1.2–1.7 whorls. Aperture moderately large, circular, with sharp peristome, lacking external varix. Inner lip narrow, outer lip moderately to strongly prosocline. Umbilical chink minute. Periostracum very thin, transparent. Color yellowish-white, sometimes pale grey, fading to white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	2.75	1.46	1.87	0.87	3.13	4.1	1.2	0.41
Paratypes	2.47	1.47	1.68	0.85	2.91	3.3	1.7	0.48
	2.75	1.50	1.83	0.94	2.91	3.8	1.3	0.46
	2.66	1.57	1.69	0.93	2.85	3.2	1.7	0.53
	2.75	1.53	1.80	0.92	2.99	4.1	1.5	0.41
	2.66	1.43	1.84	0.91	2.91	3.8	1.4	0.45
	2.78	1.53	1.80	0.95	2.90	3.4	1.6	0.48
	2.48	1.36	1.82	0.81	3.04	3.2	1.7	0.53
	2.62	1.52	1.72	0.93	2.80	3.4	1.6	0.48
	2.49	1.42	1.74	0.82	3.01	3.3	1.5	0.44

Operculum (Fig. 7A). Pale yellow, oval, weakly angled posteriorly and anteriorly; inner and outer edges equally convex. Peg curved, well developed.

Radula (Fig. 8A). Central teeth with cusp formula 3+1+3, median cusp moderately long, narrow. Lateral teeth with cusp formula 2+1+3, primary cusp narrow, pointed. Inner marginal teeth with cusp formula 5+1+5, primary cusp small, outermost cusps very small. Outer marginal teeth with about 6 small cusps (based on 2 radulae).

Animal. Unpigmented.

REMARKS. The shell of this species is distinguishable from the next (*E. denticula* n. sp.) by its slightly larger size and more conical shape, the whorls being flatter. The shell surface is also smoother and glossier when fresh. The two species also differ in radular details (see below) and occur at different depths.

Eatoniella turricula is similar to *E. cana* Ponder, 1983, but the shell has a broader base, is more conical, is glossier, and differs in color, *E. cana* having a dark spire and a non-pigmented last whorl. *Eatoniella turricula* is also similar in shell and radular features to *E. kerguelenensis* (E.A. Smith, 1875) but has a more evenly conical shell because of the flatter whorl outlines. The shell of *E. turricula* is about the same size as that of *E. kerguelenensis kerguelenensis*, but smaller than that of *E. kerguelenensis regularis* (E.A. Smith, 1915), these latter taxa also usually having a more darkly pigmented shell.

Most of the records of *E. turricula* are based on empty, faded shells. A shallow-water species, *E. ebenina* n. sp., has a darkly pigmented shell but faded specimens of the two species closely resemble one another and it is possible that some of our identifications based on dead shells may be incorrect. *Eatoniella turricula* and *E. ebenina* are contrasted in the remarks under the latter species.

DISTRIBUTION. Southern Chile and Tierra del Fuego in 40–900 m. Common.

***Eatoniella (Eatoniella) denticula* n. sp.**

Figures 5B, C, 6C, 7B, C, 8B, F, G

ETYMOLOGY. Denticula—Latin. A little tooth. Refers to the shell shape.

MATERIAL EXAMINED. Types. Holotype, LACM 2658, 9 paratypes, LACM 2659; 5 paratypes, AMS C.167415. 32H 71-287. Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.25'S, 64°2.3'W, intertidal, Sta. 71-2-37, USARP-SOSC-R/V *Hero* Cr.712, 17 May 1971.

Additional Material Examined. *Southern Chile:* 17 73-75 [8(d)]. 21 73-71 [many]. 24 75-48 [26]. *Tierra del Fuego:* 25 73-69 [21(d)]. 28 71-270 [13(+19d)]; 71-271 [4(+14d)]. 30A USNM H 654 [1(d)]. 30E 71-339 [2(d)]. 31A 71-274 [6]. 32B 71-295 [4]. 32D 71-293 [2]. 32G 71-311 [7]. 32H 71-287 [3]. 33A 71-258 [2(d)]; 71-308 [9(d)]; USNM H 656 [many(d)]. 33G 71-266 [9]; 73-66 [many(d)]. 33I 71-317 [17(d)]. 33J 71-264 [many(d)]. 33O 71-310 [many(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 5B, C, 6C). Small (maximum length 2.0 mm), ovate-conical, moderately thick, translucent when fresh, with 2.5–3.5 teleoconch whorls. Spire with lightly convex to straight outlines, whorls lightly to moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch moderately smooth with faint growth lines. Protoconch (Fig. 6C) smooth, of 1.2–1.7 whorls. Aperture subcircular, weakly angled posteriorly, with moderately sharp peristome, lacking external varix. Inner lip narrow, outer lip moderately prosocline. Umbilical chink very small. Periostracum very thin, transparent. Color pale grey to pale yellowish-white, fading to white.

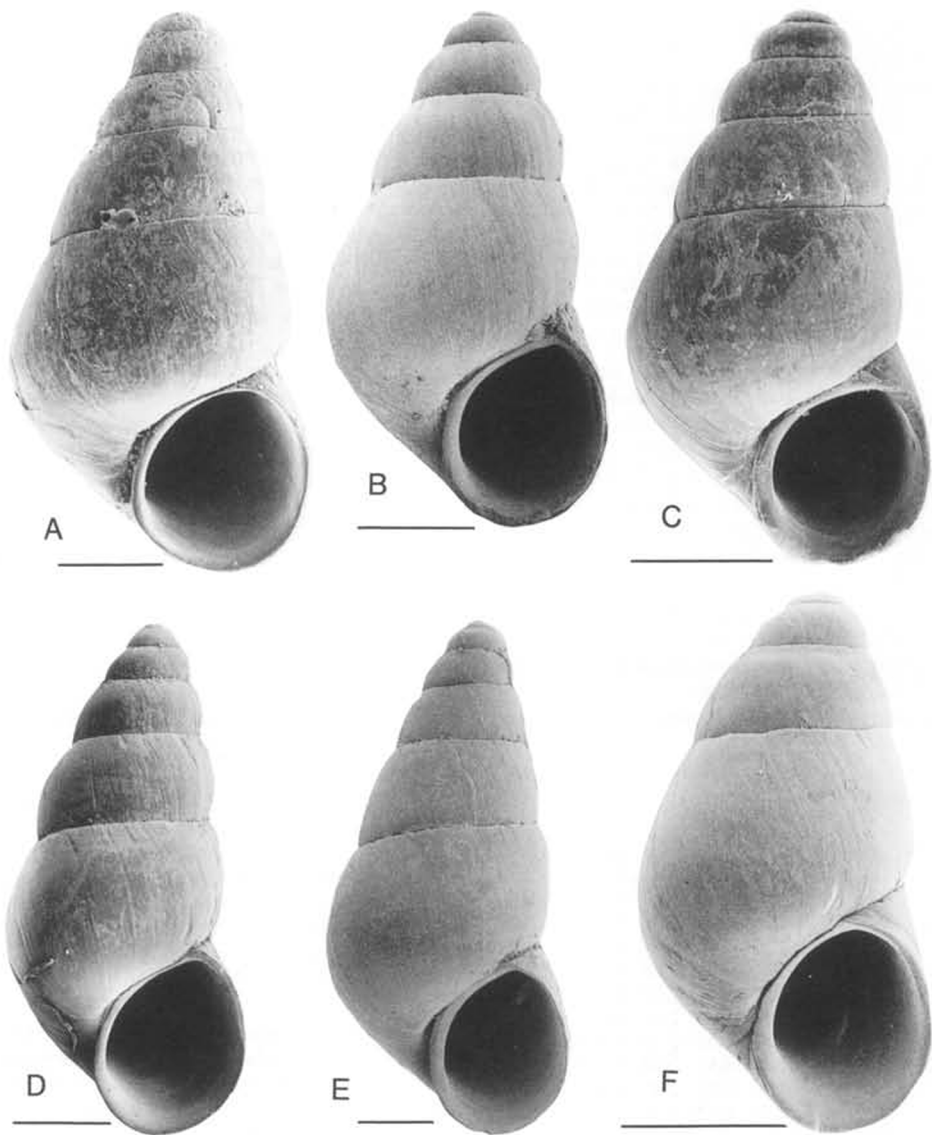


Figure 5. Shells of species of *Eatoniella*. A, *Eatoniella turricula* n. sp., holotype, length 2.75 mm. B, C, *Eatoniella denticula* n. sp.; B, holotype, length 1.87 mm; C, Sta. 71-270, shell, length 1.94 mm. D, *Eatoniella picea* n. sp., holotype, length 2.44 mm. E, *Eatoniella ebenina* n. sp., holotype, length 3.25 mm. F, *Eatoniella nigra* (Orbigny), Sta. 75-20, length 1.69 mm. Scale bars: 500 μ m.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.87	1.13	1.65	0.68	2.73	3.1	1.4	0.40
Paratypes	1.83	1.14	1.60	0.68	2.67	2.7	1.6	0.43
	1.74	1.08	1.61	0.65	2.67	2.8	1.5	0.42
	1.67	1.04	1.61	0.64	2.60	2.9	1.4	0.38
	1.71	0.98	1.74	0.63	2.71	2.8	1.5	0.43
	1.64	0.98	1.66	0.62	2.64	2.6	1.6	0.42
	1.74	1.03	1.70	0.63	2.76	2.7	1.6	0.43
	1.72	1.06	1.63	0.66	2.60	2.6	1.7	0.43
	1.67	0.98	1.70	0.63	2.64	2.5	1.7	0.42
	1.69	0.96	1.76	0.62	2.72	2.6	1.6	0.43

Sta. 71-270

Fig. 5C	1.94	1.08	1.79	0.63	3.07	3.4	1.3	0.36
	1.63	0.98	1.65	0.61	2.67	3.1	1.2	0.32
	1.62	0.98	1.64	0.56	2.90	3.2	1.2	0.33
	1.77	1.03	1.72	0.64	2.75	3.4	1.3	0.32
	1.71	1.02	1.68	0.63	2.71	3.2	1.2	0.33
Sta. 71-311	1.90	1.16	1.65	0.63	3.02	3.4	1.3	0.32
	2.04	1.21	1.69	0.63	2.77	3.5	1.2	0.33
	1.99	1.17	1.71	0.66	3.00	3.2	1.3	0.36
	1.81	1.07	1.69	0.64	2.82	3.0	1.4	0.41
	1.71	1.04	1.65	0.57	3.02	3.1	1.2	0.34

Operculum (Fig. 7B, C). Pale yellow, oval, more strongly angled posteriorly than anteriorly, inner

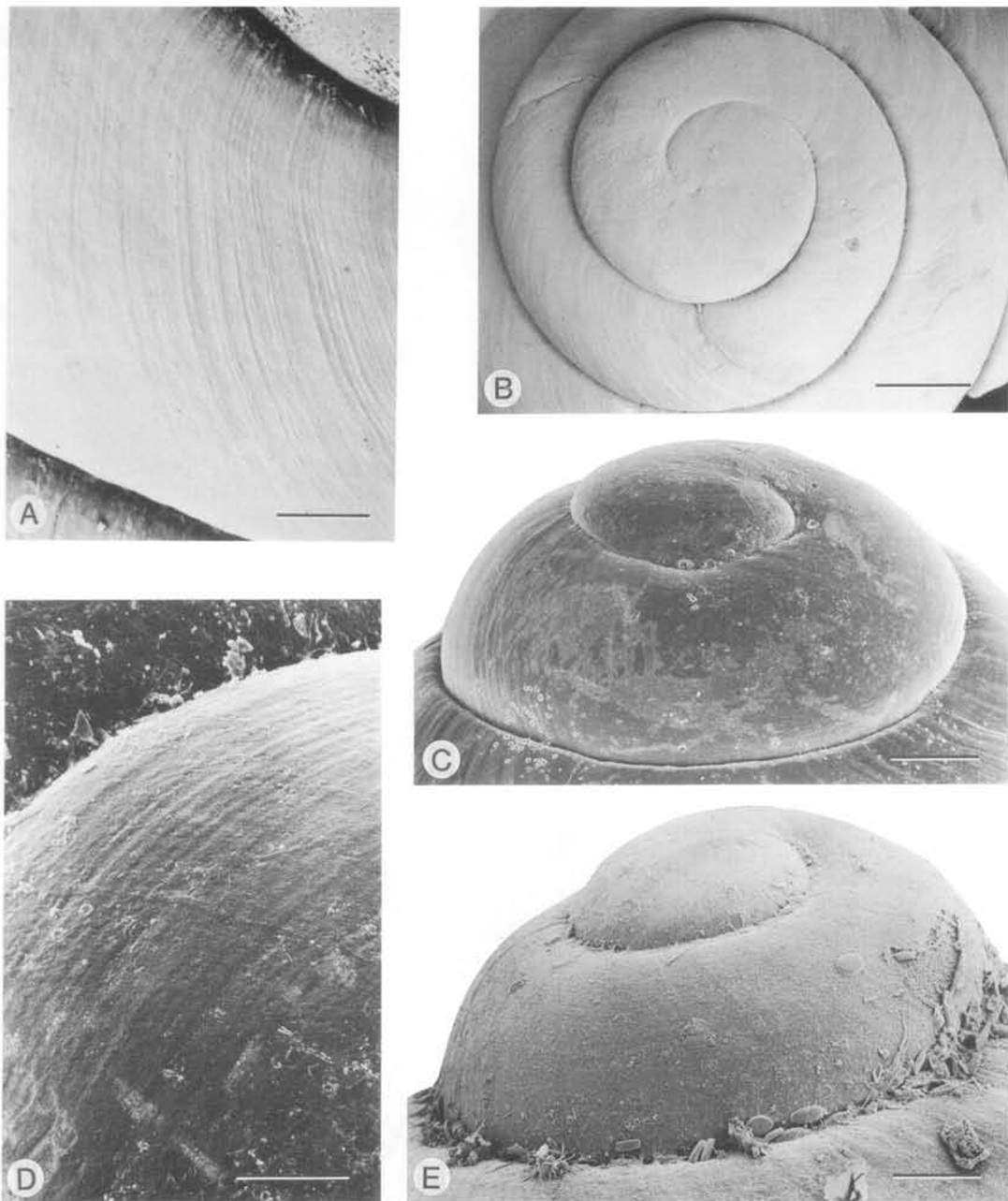


Figure 6. Protoconchs of species of *Eatoniella*. A, B, *Eatoniella castanea* n. sp., paratype, apical view (B) and teleoconch microsculpture (A). C, *Eatoniella denticula* n. sp., Sta. 71-270, lateral view. D, *Eatoniella turricula* n. sp., paratype, protoconch microsculpture. E, *Eatoniella glomerosa* n. sp., Sta. 71-283, lateral view of protoconch. Scale bars: A, D, 20 μ m; B, 100 μ m; C, E, 50 μ m.

and outer edges approximately equally convex. Peg curved, well developed.

Radula (Fig. 8B, F, G). Central teeth with cusp formula 2-3+1+2-3 median cusp moderately long, narrow. Lateral teeth with cusp formula 2+1+2 (+1 outer denticle in some), primary cusp narrow, pointed. Inner marginals apparently with cusp formula 3+1+2 (somewhat obscured in mounts).

Outer marginals also obscured but with at least 7-8 small cusps (based on 4 radulae).

Animal. Unpigmented or with a slight grey tinge on visceral coil.

REMARKS. The shell of this species is contrasted with *E. turricula* above and differs from that species in its smaller shell, which has more convex

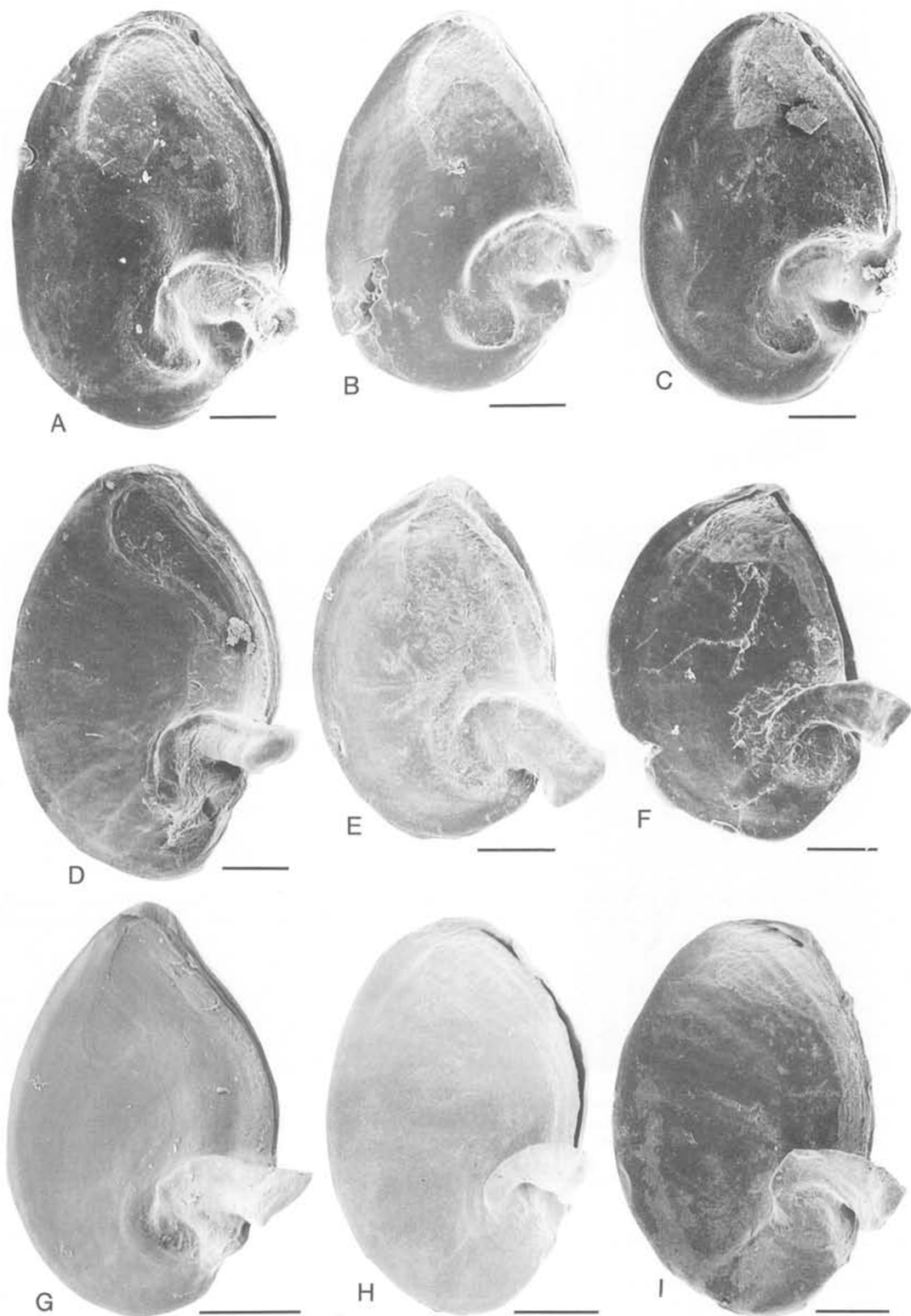


Figure 7. Opercula of species of *Eatoniella*. All views inner side. A, *Eatoniella turricula* n. sp., paratype. B, C, *Eatoniella denticula* n. sp.; B, Sta. 71-270; C, paratype. D, *Eatoniella picea* n. sp., paratype. E, *Eatoniella nigra* (Orbigny), Sta. 75-20. F, H, I, *Eatoniella glomerosa* n. sp.; F, Sta. 71-270; H, paratype; I, Sta. 71-283. G, *Eatoniella ebenina* n. sp., Sta. 73-69. Scale bars: A-F, H, I, 100 µm; G, 200 µm.

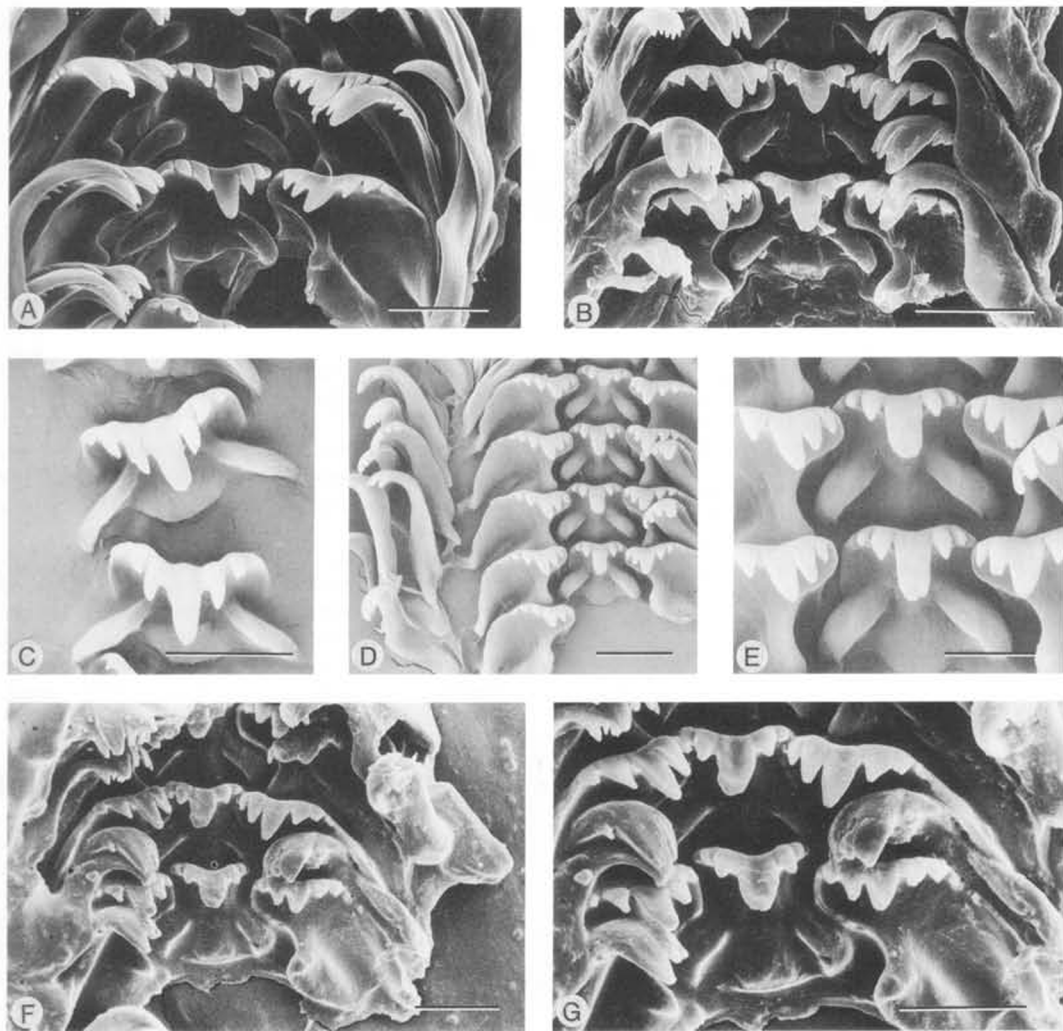


Figure 8. Radulae of *Eatoniella* species. A, *Eatoniella turricula* n. sp., paratype. B, F, G, *Eatoniella denticula* n. sp.; B, Sta. 71-270; F, G, paratypes. C-E, *Eatoniella ebenina* n. sp., Sta. 73-69; C, E, detail of central teeth. Scale bars: A-C, E-G, 10 μ m; D, 20 μ m.

whorls. The radula in the two species are similar but in *E. denticula* the primary cusps of the inner marginal, lateral, and central teeth are blunter and the number of cusps on the inner marginal teeth apparently smaller. *Eatoniella denticula* is rather similar to the Antarctic *E. demissa* (E.A. Smith, 1915), but the shell of the latter species is broader and the radula has more cusps on the central teeth. The shell of *E. denticula* is somewhat similar to the southern Australian *E. victoriae* Ponder and Yoo, 1978, but the shell of that species is thinner, slightly broader, and smaller.

DISTRIBUTION. Southern Chile and Tierra del Fuego in algae and among rocks; mainly intertidal with occasional specimens to 15 m. Empty shells have been found down to about 30 m. Common.

Empty shells and a few live specimens found down to 124 m may be a different species and are listed separately; see below.

Eatoniella (*Eatoniella*) cf. *denticula*

MATERIAL EXAMINED. *Southern Chile:* 22B USNM E 958 [6(d)]. *Tierra del Fuego:* 27B USNM V 17-48 [2(d)]. 27C USNM E 219 [1(d)]. 27E BMNH DE 388 [many(d)]. 30H USNM H 664 [28(d)]. 33A USNM H 656 [1(d)]. 33B 71-267 [1(d)]. 33C 71-348 [4(d)]. 33E 71-351 [6(d)]. 33L 71-316 [5(d)]. 33O 71-310 [2(d)]. 33Q 71-327 [10]. 33R 71-328 [2(d)]. 37B USNM E 967 [3]. (All material LACM unless otherwise indicated.)

REMARKS. Some lots of empty shells from deeper water, often occurring together with *E. turricula*, are generally similar to *E. denticula* but are

larger and more elongate and mostly (bleached?) white. Although some intermediate shell forms are seen, it is quite possible that this material represents another taxon, and we do not feel confident in unreservedly assigning it to *E. denticula*.

DISTRIBUTION. Southern Chile and Tierra del Fuego in 18–124 m.

Eatoniella (Eatoniella) cf. cana
Ponder, 1983

Eatoniella cana Ponder, 1983a: 6 (in part).

MATERIAL EXAMINED. *Southern Chile:* 17 LACM 73-75 [12(d)]. *Tierra del Fuego:* 27A NMNHP "Baie Orange," Mission du Cap Horn [11]. BMNH 37A DE 88 [1(d)]. *Falkland Islands:* SNMH SPSE 48 [10].

REMARKS. A few empty shells from LACM and *Discovery* stations and a single lot found among the old "spirit" collections in the National Museum, Paris, are very similar to *E. cana* but differ in having a slightly smaller shell and more convex whorls. They agree closely with specimens from the Falkland Islands, and it is possible that the material from these two areas is referable to a separate species-group taxon. The opportunity is taken to list an additional locality for this species from the Falkland Islands.

DISTRIBUTION. Falkland Islands, southern Chile, and Tierra del Fuego. Typical form from South Georgia and South Orkney Islands.

Eatoniella (Eatoniella) ebenina n. sp.
Figures 5E, 7G, 8C–E

ETYMOLOGY. *Ebenina*—Latin. Black. Refers to the shell color.

MATERIAL EXAMINED. *Types.* Holotype, LACM 2660, 12 paratypes, LACM 2661; 3 paratypes, AMS C.167416. 20 73-72. Bahía Tom, Magallanes Prov., Chile. 50°11.3'S, 74°47.9'W, 14 m, P. Dayton (R/V *Hero*), 21 May 1973.

Additional material examined. *Southern Chile:* 21 73-71 [15(d)]. 23 73-70 [28(d)]. 24 75-49 [13(d)]. *Tierra del Fuego:* 25 73-69 [10(+21d)]. 26 73-68 [1(d)]. 28 71-296 [4(d)]. 32F 71-326 [1(d)]. 33G 73-66 [21(d)]. 33O 71-310 [12(d)]. (All material LACM.)

DIAGNOSIS. *Shell* (Fig. 5E). Small (maximum length 3.3 mm), elongate-conic, moderately thin, opaque, with 3.5–4.1 teleoconch whorls. Spire with straight outlines, whorls very lightly convex; periphery of last whorl sometimes slightly angled. Sutures impressed, simple. Teleoconch smooth with faint growth lines and rather dull surface. Protoconch smooth, of 1.5–1.8 whorls. Aperture ovoid, weakly angled posteriorly, with sharp peristome, lacking external varix. Inner lip narrow, outer lip moderately prosocline. Umbilical chink very small or absent. Periostracum very thin, transparent. Col-

or uniform dark grey to black except for yellow-white to white patch on lower base.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	3.25	1.65	1.97	1.05	3.10	4.0	1.8	0.54
Paratypes	3.19	1.66	1.92	1.10	2.89	4.1	1.7	0.56
	3.05	1.60	1.90	1.03	2.97	4.0	1.8	0.49
	2.86	1.55	1.84	0.86	3.10	3.9	1.8	0.46
	3.03	1.73	1.75	1.07	2.83	3.8	1.5	0.49
	3.14	1.71	1.83	1.06	2.96	4.4	1.7	0.42
	2.95	1.63	1.82	1.07	2.76	3.5	1.8	0.53
	2.83	1.59	1.78	0.98	2.88	3.5	1.7	0.50
	3.04	1.62	1.88	1.00	3.05	3.8	1.8	0.52
	3.16	1.64	1.93	1.05	3.01	3.7	1.8	0.54

Operculum (Fig. 7G). Yellow, oval, with posterior end more strongly angled than anterior. Inner and outer edges of equal convexity. Peg curved, well developed.

Radula (Fig. 8C–E). Central teeth with cusp formula 3+1+3, median cusp long, bluntly pointed to spatulate, outermost cusps very small. Lateral teeth with cusp formula 2+1+3. Inner marginal teeth with cusp formula 4–5+1+3–5, outermost cusps minute. Outer marginal teeth with 10+ small, sharp cusps (based on 3 radulae).

Animal. Unknown.

REMARKS. This species can be distinguished from the other dark-colored South American species by its larger size and relatively flatter whorls. *Eatoniella turricula* is similar in shell shape but can be separated on shell color and its larger size, glossier surface, and flatter whorls. The radulae are also similar, but the primary cusps of the central and lateral teeth are blunt in *E. ebenina* and sharp in *E. turricula*. As noted under *E. turricula*, empty, faded shells of these two species are difficult to distinguish, and it is possible that some records are incorrectly assigned.

There is also some similarity with *E. cana*, but *E. ebenina* has a thinner, larger shell and uniform dark grey or black color. Other somewhat similar dark-colored eatoniellids include the thicker-shelled, broader sub-Antarctic *E. kerguelenensis*, which has more convex whorls, and the smaller and less angled New Zealand *E. olivacea* (Hutton, 1882).

DISTRIBUTION. Southern Chile and Tierra del Fuego from intertidal to 15 m. Live-collected specimens all subtidal. Not common.

Eatoniella (Eatoniella) picea n. sp.
Figures 5D, 7D, 9A, B

ETYMOLOGY. *Picea*—Latin. Pitch black. Refers to the shell color.

MATERIAL EXAMINED. *Types.* Holotype, LACM 2662, 100 paratypes, LACM 2663; 8 paratypes, AMS

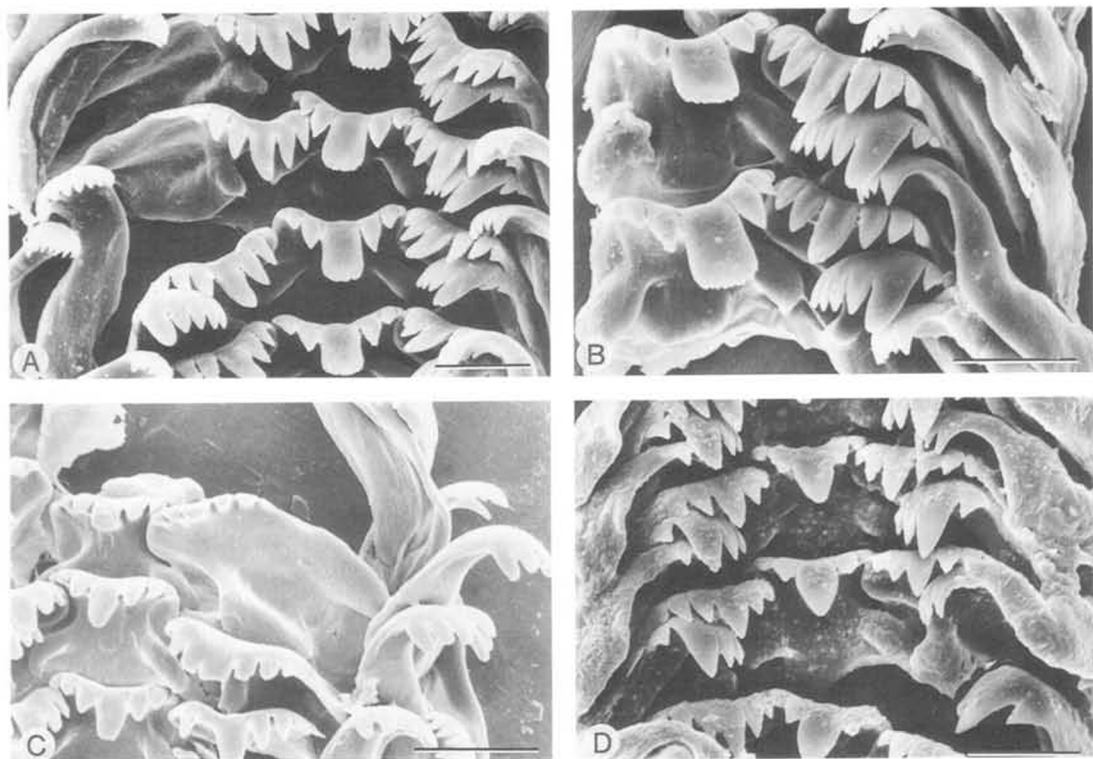


Figure 9. Radulae of *Eatonella* species. A, B, *Eatonella picea* n. sp., paratypes. C, *Eatonella nigra*, Sta. 75-20, D, *Eatonella castanea* n. sp., paratype. Scale bars: 10 μ m.

C.167417. 32G 71-311. Observatorio, Isla de los Estados, Tierra del Fuego, Argentina. 54°39.5'S, 64°08'W, intertidal rocks. Sta. 699, USARP-SOSC-R/V *Hero* Cr.715, 19 Oct. 1971.

Additional Material Examined. *Southern Chile*: 24 75-48 [1]. *Tierra del Fuego*: 28 71-270 [many]; 71-271 [many]. 31A 71-274 [1(d)]. 31B 71-276 [1(d)]. 31D 71-283 [13]. 32A 71-273 [many]. 32A 71-309 [16]. 32C 71-294 [1(d)]. 32D 71-291 [2(d)]; 71-293 [1(d)]. 32E 71-289 [many]; 71-290 [4(d)]. 32F 71-326 [2]. 33G 73-66 [21(d)]. 32H 71-287 [many]. 33F 71-265 [1(d)]. 33O 71-310 [1(d)]. 38 75-51 [1]. 39 71-268 [11(d)]. (All material LACM.)

DIAGNOSIS. **Shell** (Fig. 5D). Small (maximum length 2.4 mm), elongate-conic, moderately thin, with 3.5–4.0 teleoconch whorls. Spire with very lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth and rather glossy, with moderately prominent prosocline growth lines. Protoconch smooth, of 1.1–1.3 whorls. Aperture oval, weakly angled posteriorly, with sharp peristome, lacking external varix. Inner lip narrow, outer lip slightly to moderately prosocline. Umbilical chink very small or absent. Periostracum very thin, transparent. Color black or grey, often with reddish tinge, occasionally yellowish, paler near growing edge.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	2.44	1.23	1.98	0.85	2.89	3.9	1.3	0.35
Paratypes	2.44	1.25	1.95	0.82	2.96	—	—	—
	2.22	1.16	1.92	0.79	2.81	3.8	1.3	0.36
	2.21	1.14	1.93	0.75	2.96	3.6	1.2	0.33
	2.25	1.26	1.78	0.83	2.69	4.0	1.2	0.30
	2.40	1.25	1.91	0.80	2.99	4.0	1.2	0.35
	2.14	1.19	1.80	0.76	2.82	—	—	—
	2.30	1.28	1.79	0.85	2.83	3.5	1.3	0.38
	2.10	1.11	1.88	0.73	2.88	—	—	—
	2.28	1.22	1.87	0.83	2.73	3.8	1.1	0.35

Operculum (Fig. 7D). Pale yellow with brown markings to yellow-brown or almost black, oval with almost equally angled anterior and posterior ends, inner edge slightly angled. Peg rather narrow, curved.

Radula (Fig. 9A, B). Central teeth with cusp formula 3+1+3, median cusp large, spatulate, with finely denticulate end. Lateral teeth with cusp formula 3+1+3, primary cusp narrow, sharp. Inner marginal teeth with cusp formula 5–6+1+2, primary cusp large and rather blunt. Outer marginal teeth with about 7 small cusps, outermost largest (based on 2 radulae).

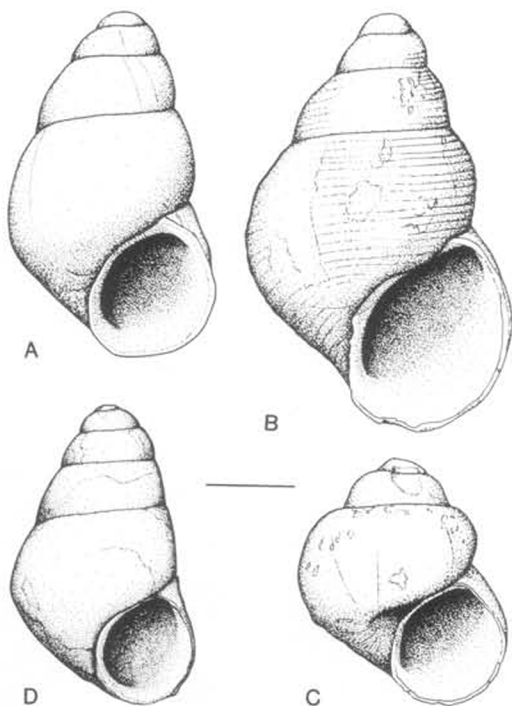


Figure 10. A, *Eatoniella nigra* (Orbigny), syntype, length 1.77 mm. B, *Onoba amissa* nom. nov. pro *Paludestrina striata* (Orbigny), lectotype, length 2.18 mm. C, *Eatonina fusca* (Orbigny), syntype, length 1.28 mm. D, *Eatoniella bennetti* (Preston), lectotype, length 1.67 mm. Scale bar: 500 μ m.

Animal. Head and foot grey, mantle and viscera mottled dark grey.

REMARKS. The shell of this species is similar in color to that of *E. ebenina* and *E. nigra* but is much smaller with more convex whorls than the former and has a higher spire and thinner, more conical shell than *E. nigra*. It also has a shell similar to the New Zealand species *E. stewartiana* Ponder, 1965, but is darker and slightly larger. The sympatric *E. denticula* has a smaller, broader shell that is, at most, pale grey in color. *Eatoniella picea* differs from other similar taxa, except *E. nigra*, in having a brown operculum and the radula is also unusual in having a blunt median cusp on the central teeth, whereas the equivalent cusp on the lateral teeth is sharp. It also shares this latter character with *E. glomerata* n. sp., but that species differs markedly in shell characters.

DISTRIBUTION. Southern Chile and Tierra del Fuego in algae and among rocks. Mainly intertidal with occasional specimens to 15 m. Empty shells to 50 m. Common.

Eatoniella (Eatoniella) nigra
(Orbigny, 1840)

Figures 5F, 7E, 9C, 10A

Paludestrina nigra Orbigny, 1840: 387, pl. 75, figs. 16–18 (36 syntypes, BMNH 1854.12.4.351, in-

cluding one very worn specimen of “*Potamolithus*” sp.; Arica, Tarapacá Prov., Chile). Orbigny, 1854: 31.

Eatoniella (Eatoniella) latina Marincovich, 1973: 26, figs. 51, 57, 58 (Holotype, Iquique, Tarapacá Prov., Chile, intertidal; LACM 1587, see Marincovich (1973) for details of paratypes).

MATERIAL EXAMINED. Types. Syntypes of *P. nigra*. 6 paratypes of *E. latina*, AMS C.167464. Iquique, Tarapacá Prov., Chile.

Additional Material Examined. Northern Chile: 6A 64–16 [many(d)]; 70–66 [1(d)]; 75–12 [many(d)]; AMS C.167467 [20(d)]. 6B 75–10 [many]; AMS C.167461 [17]; 75–21 [2(d)]. 8A 75–17 [many]; AMS C.167463 [1(+many d)]. 8B 75–19 [many]; AMS C.167465 [20]. 8C 75–15 [many]; 75–20 [many]; AMS C.167460 [19]. 9 75–25 [1]. 10 75–28 [6]; AMS C.167466 [1]. 12 75–33 [4(d)]; AMS C.167462 [5(d)]. 13 75–37 [7]. Southern Chile: 15 75–41 [7(d)]. 17 73–75 [many(d)]. 18 73–74 [1(d)]. 19 73–73 [many]. 20 73–72 [many(d)]. 23 73–70 [5]. 24 75–48 [many]; 75–49 [many]. Tierra del Fuego: 25 73–69 [many(d)]. USNM 30A H 654 [1(d)]. 31A 71–274 [1(d)]. 33G 73–66 [many(d)]. 33O 71–310 [20(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 5F, 10A). Minute (maximum length 1.8 mm), ovoid, solid, with about 3.3–3.5 teleoconch whorls. Spire and whorls with very lightly convex outlines; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth with faint prosocline growth lines. Protoconch smooth of 1.2–1.4 whorls. Aperture oval, very weakly angled posteriorly, with sharp peristome, lacking external varix. Inner lip moderately narrow, outer lip strongly prosocline. Umbilical chink absent. Periostracum very thin, transparent. Color black or grey, often with reddish tinge, paler near growing edge.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Figured syntype (Fig. 10A)	1.77	1.04	1.70	—	—	—	—	—
Paratypes of <i>E. latina</i>	1.78	1.11	1.61	0.65	2.74	3.3	1.3	0.28
	1.58	0.96	1.65	0.56	2.58	3.4	1.2	0.26
	1.58	0.99	1.60	0.61	2.56	3.5	1.3	0.26
	1.71	1.10	1.61	0.67	2.57	3.4	1.3	0.29
	1.76	1.10	1.66	0.65	2.72	3.4	1.2	0.27
Sta. 75-20 Fig. 5F	1.69	0.99	1.70	0.63	2.68	3.5	1.3	0.25
	1.71	1.04	1.65	0.66	2.58	—	—	—
	1.59	0.94	1.69	0.60	2.66	3.4	1.3	0.27
	1.77	1.06	1.67	0.68	2.58	3.5	1.2	0.24
	1.79	1.05	1.70	0.66	2.69	3.3	1.3	0.27
	1.81	1.05	1.72	0.68	2.64	3.5	1.4	0.25
	1.62	0.96	1.68	0.62	2.60	3.5	1.2	0.20
	1.72	1.03	1.64	0.62	2.77	3.4	1.2	0.26
	1.69	1.03	1.64	0.62	2.72	3.4	1.2	0.21
	1.66	1.02	1.63	0.59	2.82	3.5	1.2	0.24

Operculum (Fig. 7E). Color yellow with brown markings or brown; oval, angled posteriorly, outer edge more strongly convex than inner edge. Peg very stout, curved.

Radula (Fig. 9C). Central teeth with cusp formula

3+1+3, median cusp elongate, sharp (somewhat worn in figured radula, typically more than 2× length of adjacent cusps). Lateral teeth with cusp formula 2-3+1+2-3, primary cusp elongate, sharp. Inner marginal teeth with cusp formula 3-4+1+? cusps, outermost obscured in mounts. Outer marginal teeth with about 6 small, sharp cusps, outermost largest (based on 2 radulae).

Animal. Unknown.

REMARKS. Comparison of paratypes of *Eatoniella latina* with the types of *Paludestrina nigra* show them to have identical shells and we regard them as conspecific. *Eatoniella nigra* is shorter and more ovoid in shape than other dark-colored South American species and has a thicker shell. The shell of the most similar South American species, *E. picea*, is contrasted above. *Eatoniella nigra* has an operculum with similar coloration to that of *E. picea*, but in the latter species the opercular peg is much narrower.

A somewhat similar species from New Zealand, *E. olivacea*, has a more elongate, larger shell. The southern Australian *E. melanochroma* (Tate, 1899) has a very similar shell to that of *E. nigra*, although it is slightly thinner, with more convex whorls, and the radula and operculum in the two species are also similar.

Da Silva and Davis (1983) did not include this species in their review of Orbigny's species of *Paludestrina*.

The South African *Rissoa* (= *Eatoniella*) *nigra* Krauss (1848) is a secondary homonym of this species. A replacement name, *Eatoniella afronigra* n. sp. is provided, as none of the other South African taxa appear to be synonymous. This species also has a shell very similar to that of *E. nigra* but is slightly broader and usually has more convex whorls.

DISTRIBUTION. Northern Chile to Tierra del Fuego in algae and among rocks. Mainly intertidal; some specimens to 15 m. Empty shells to 50 m. Common.

***Eatoniella (Eatoniella) castanea* n. sp.**

Figures 9D, 11F, H, 12A

ETYMOLOGY. Castanea—Latin. Chestnut color (brown). Refers to the shell color.

MATERIAL EXAMINED. Types. Holotype, LACM 2664, 34 paratypes, LACM 2665; 5 paratypes, AMS C.167418. 31B 71-277. NW arm Bahía York, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.15'S, 64°17.9'W, intertidal rocks, Sta. 71-2-22, USARP-SOSCR/V *Hero* Cr.712, 5 May 1971.

DIAGNOSIS. Shell (Fig. 11F, H). Minute (maximum length 1.7 mm), ovoid, moderately thin, with 2.2-3.0 teleoconch whorls. Spire with lightly convex outlines, whorls lightly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth, with faint axial growth lines and faint spirals. Protoconch smooth, of about 1.2-1.5

whorls. Aperture oval, with sharp peristome, lacking external varix. Inner lip narrow, outer lip moderately prosocline. Umbilical chink minute. Periostracum very thin, transparent. Color reddish-brown, whitish near growing edge.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.31	0.85	1.53	0.54	2.44	3.0	1.2	0.27
Paratypes								
Fig. 11F	1.66	1.00	1.65	0.63	2.63	2.5	1.4	0.37
	1.42	0.93	1.53	0.60	2.37	2.4	1.2	0.35
	1.37	0.91	1.51	0.60	2.33	2.4	1.3	0.35
	1.44	0.92	1.57	0.62	2.33	2.4	1.4	0.35
	1.50	0.96	1.55	0.60	2.55	2.4	1.5	0.41
	1.36	0.91	1.49	0.57	2.40	2.2	1.5	0.39
	1.18	0.96	1.43	0.56	2.12	2.2	1.3	0.33
	1.36	0.92	1.48	0.56	2.44	2.3	1.4	0.35
	1.36	0.90	1.51	0.55	2.49	2.3	1.5	0.35
	1.25	0.86	1.46	0.55	2.29	2.3	1.5	0.38

Operculum (Fig. 12A). Yellow, oval, slightly more strongly angled anteriorly than posteriorly. Peg moderately stout, curved.

Radula (Fig. 9D). Central teeth with cusp formula 2+1+2, median cusp moderately large, trowel-shaped. Lateral teeth with cusp formula 2+1+3, primary cusp rather narrow, sharply pointed. Inner marginal teeth with cusp formula 2(?) + 1+1, primary cusp sharp, triangular. Outer marginal teeth with at least 5 small cusps, outermost largest (based on 2 radulae).

Animal. Unknown.

REMARKS. *Eatoniella castanea* is distinguished from other South American species by its small, oval, red-brown shell. Faded shells of *E. nigra* are sometimes reddish in color but are larger and broader and have more flattened whorls. *Eatoniella nigra* also differ in having a broader opercular peg and a brown operculum and in radular details. *Eatoniella subrufescens* (E.A. Smith, 1875) from Kerguelen Island is similar to *E. castanea* but has a smaller, narrower shell. *Eatoniella argentinense* Castellanos and Fernandez, 1972, from Punta Loma, Argentina, is somewhat similar as far as can be determined from the description and figures (Castellanos and Fernandez, 1972a) but is white in color.

DISTRIBUTION. Tierra del Fuego on intertidal algae. Uncommon.

***Eatoniella (Eatoniella) glomerosa* n. sp.**

Figures 6E, 7F, H, I, 11A-E, 13A-D

ETYMOLOGY. Glomerosa—Latin. Like a ball, round. Refers to the shell shape.

MATERIAL EXAMINED. Types. Holotype, LACM 2666, 230 paratypes, LACM 2667; 8 paratypes, AMS C.167419. 32H 71-287. Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.25'S, 64°02.3'W, intertidal rocks, Sta. 71-2-37, USARP-SOSCR/V *Hero* Cr.712, 17 May 1971.

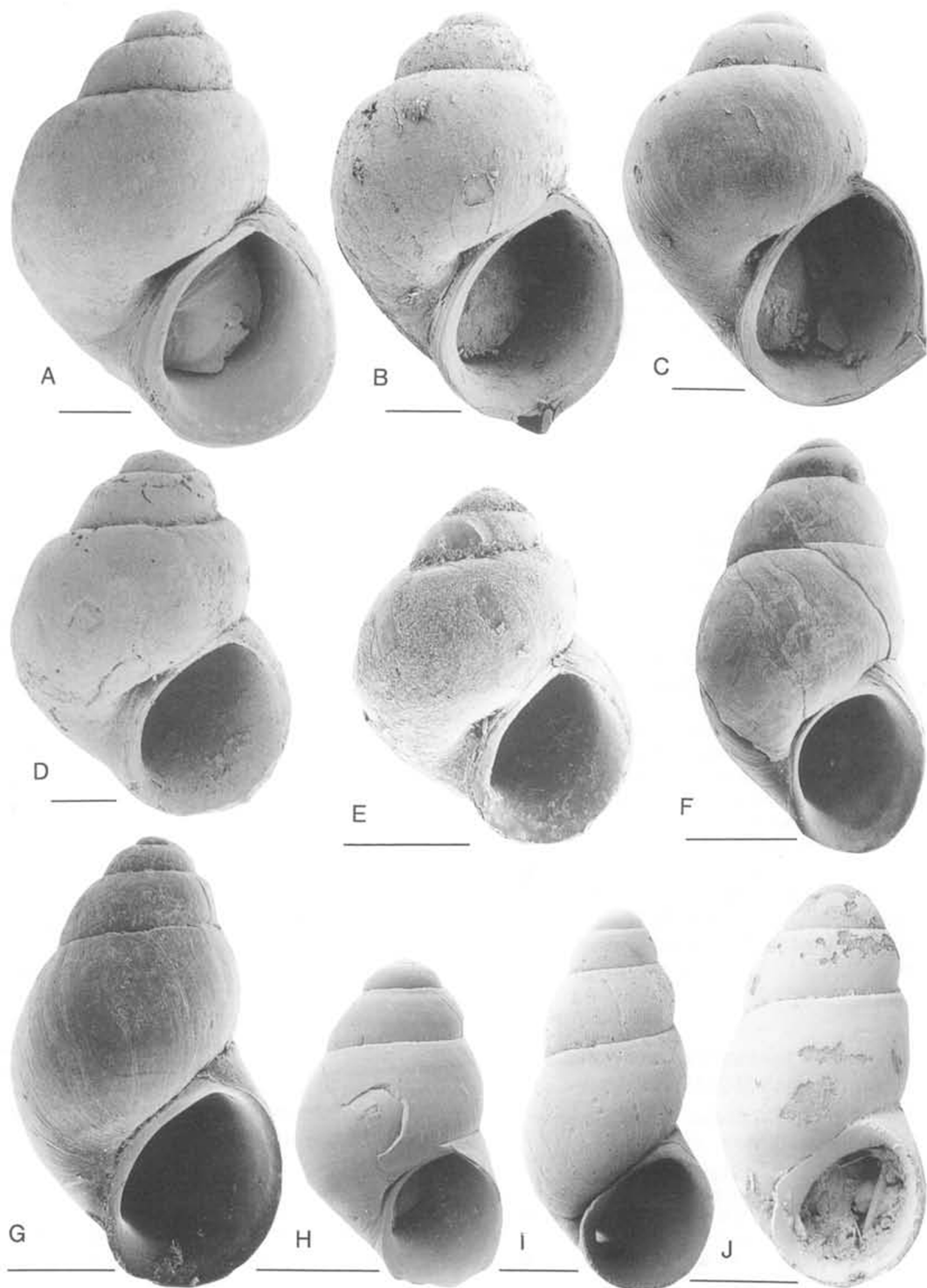


Figure 11. Shells of species of *Eatoniella*. A–E, *Eatoniella glomerosa* n. sp.; A, holotype, length 1.26 mm; B, C, E, Sta. 71–283, showing variation; B, length 1.04 mm; C, length 1.03 mm; E, length 1.48 mm; D, Sta. 73–73, length 1.16 mm. F, H, *Eatoniella castanea* n. sp.; F, paratype, length 1.66 mm; H, holotype, length 1.31 mm. G, *Eatoniella (Albosabula) mcleani* n. sp., holotype, length 0.96 mm. I, *Pupatonia magellanica* n. sp., holotype, length 1.01 mm. J, *Pupatonia* cf. *atoma* Ponder, NMNZ, 67004, 60 m, off Taieri, Dunedin, New Zealand, length 0.76 mm. Scale bars: A–D, G, I, J, 200 µm; E, H, 500 µm.

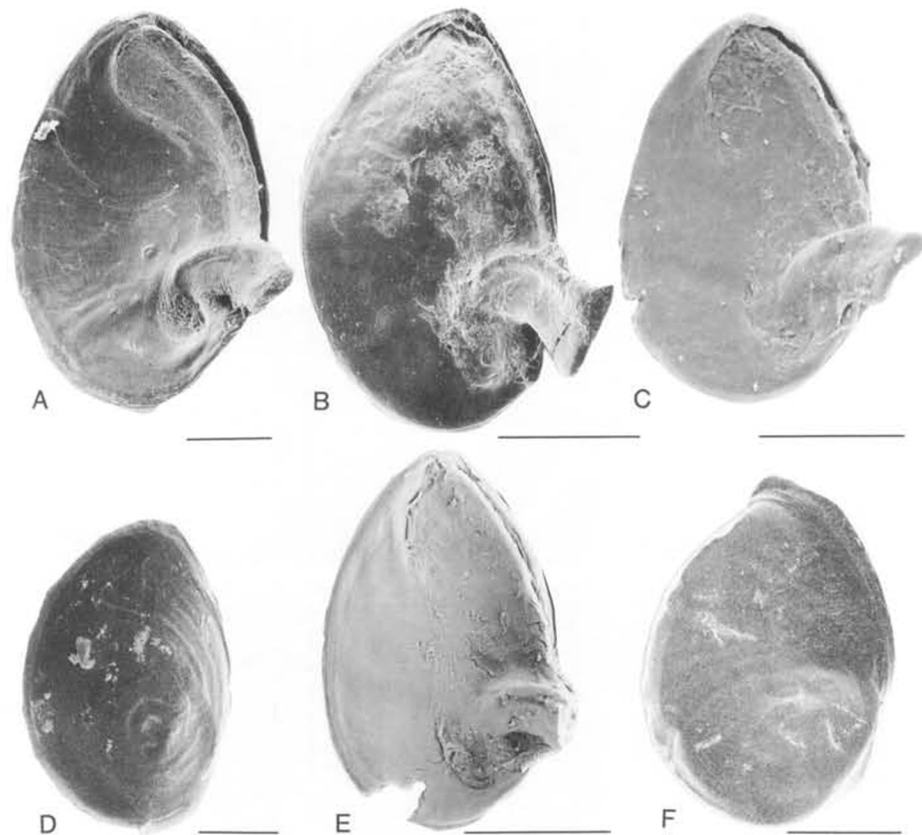


Figure 12. Opercula of Eatoniellidae and Rissoidae. All views inner side. **A**, *Eatoniella castanea* n. sp., paratype. **B**, *Eatoniella (Albosabula) mcleani* n. sp., paratype. **C**, *Pupatonia magellanica* n. sp., paratype. **D**, *Powellisetia microlirata* n. sp., paratype. **E**, *Pupatonia* cf. *atoma* Ponder, 60 m, off Taiere, Dunedin, New Zealand. **F**, "*Onoba*" *lacuniformis* n. sp., paratype. Scale bars: A-C, E, 100 μ m; D, F, 200 μ m.

Additional Material Examined. *Northern Chile*: 9 75-25 [3(d)]. 10 75-28 [11(d)]; AMS C.167459 [1(d)]. 11 75-30 [1(d)]. 13 75-37 [4(d)]. *Southern Chile*: 15 75-41 [8(d)]. 16 75-46 [1(d)]. 17 73-75 [5(d)]. 19 73-73 [many(d)]. 24 75-49 [1]. *Tierra del Fuego*: 28 71-270 [5(+2d)]; 71-271 [7]. 31A 71-345 [1(d)]. 31B 71-276 [6]; 71-277 [30]. 31C 71-281 [28]. 31D 71-283 [many]. 32A 71-273 [many]. 32B 71-295 [3(d)]. 32D 71-293 [7]. 32E 71-289 [many]; 71-290 [4(d)]. 32F 71-326 [1(d)]. 32G 71-311 [3]. 32H 71-286 [1]; 71-323 [1]. 33G 73-66 [13]. 39 71-268 [19]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 6E, 11A-E). Minute (maximum length 1.5 mm), globular, thin, translucent, with about 1.3-3.0 teleoconch whorls. Spire with convex outlines, whorls strongly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth and rather glossy, with faint prosocline growth lines. Protoconch (Fig. 6E) smooth, of 1.2-1.7 whorls. Aperture ovoid, angled posteriorly, with sharp peristome, lacking external varix. Inner lip moderately broad, upper part detached from last whorl; outer lip strongly prosocline, more strongly convex than inner lip. Umbil-

icus moderate to distinct. Periostracum very thin, transparent. Color white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.26	0.98	1.29	0.65	1.96	2.3	1.5	0.35
Paratypes	1.16	0.87	1.33	0.61	1.90	3.0	1.5	0.23
	1.13	0.77	1.47	0.50	2.26	2.9	1.4	0.23
	1.10	0.81	1.36	0.58	1.90	2.5	1.4	0.27
	1.10	0.80	1.38	0.52	2.12	2.5	1.4	0.26
	1.19	0.87	1.37	0.62	1.92	2.5	1.3	0.27
	1.23	0.99	1.24	0.62	1.98	2.5	—	—
Sta. 71-283								
Fig. 11B	1.04	0.83	1.24	0.56	1.87	1.3	1.6	0.44
Fig. 11C	1.03	0.82	1.25	0.58	1.78	1.3	1.6	0.41
Fig. 11E	1.48	1.18	1.25	0.74	2.00	—	—	—
	1.02	0.92	1.10	0.58	1.76	1.7	1.3	0.37
	1.03	0.80	1.28	0.57	1.81	1.4	1.6	0.41
	1.16	0.93	1.24	0.57	2.04	1.6	1.6	0.42
	1.03	0.84	1.21	0.57	1.81	1.4	1.4	0.38
	1.11	0.87	1.28	0.55	2.03	1.4	1.7	0.41
	1.17	0.95	1.22	0.55	2.14	1.5	1.6	0.41
	1.16	0.82	1.40	0.53	2.16	1.6	1.5	0.43

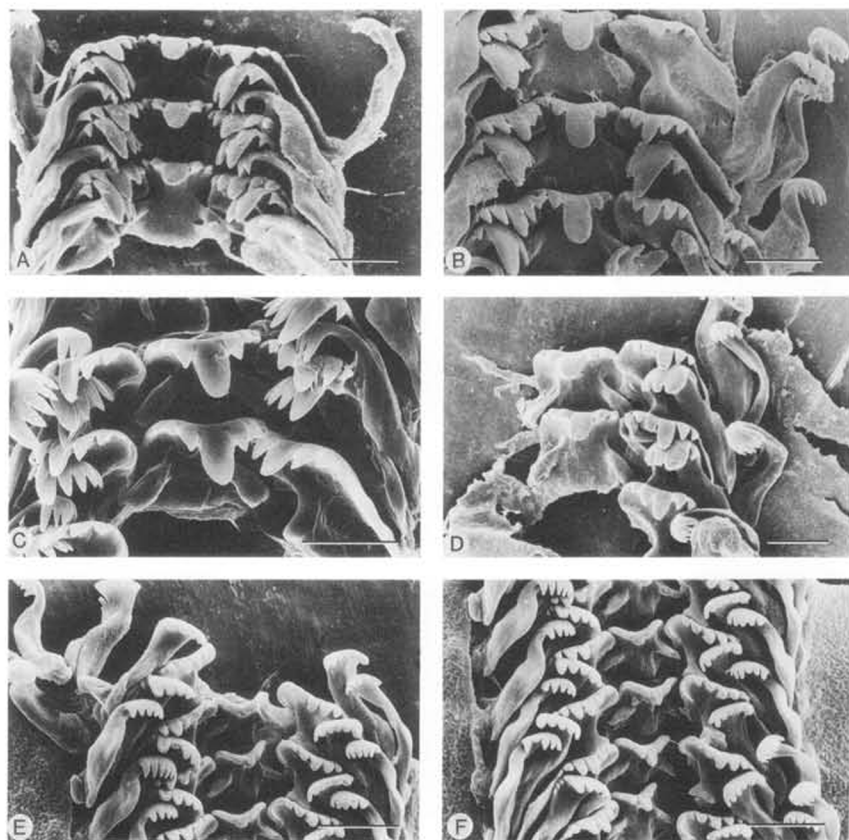


Figure 13. Radulae of *Eatoniella* species. A-D, *Eatoniella glomerosa* n. sp.; A, Sta. 71-283; B, paratype; C, Sta. 71-270; D, Sta. 71-283. E, F, *Eatoniella (Albosabula) mcleani* n. sp., paratypes. Scale bars: A-D, 10 μ m; E, F, 5 μ m.

	0.98	0.81	1.21	0.53	1.84	1.4	1.5	0.39
	1.48	1.08	1.37	0.65	2.26	—	—	—
	1.41	1.04	1.36	0.67	2.09	1.5	1.6	0.44
Sta. 73-73								
Fig. 11D	1.16	0.90	1.29	0.56	2.08	2.2	1.2	0.31
	1.07	0.86	1.23	0.53	2.00	2.2	1.2	0.27
	1.14	0.87	1.32	0.54	2.10	2.2	1.2	0.31
	1.19	0.89	1.34	0.54	2.18	2.3	1.2	0.31
	1.21	0.88	1.38	0.44	2.22	2.3	1.2	0.27
	1.20	0.93	1.29	0.56	2.15	2.3	1.3	0.30
	1.32	0.96	1.37	0.58	2.28	—	—	—
	1.23	0.92	1.37	0.59	2.09	2.3	1.3	0.31
	1.26	0.96	1.31	0.57	2.23	2.3	1.2	0.28
	1.36	1.02	1.34	0.60	2.27	2.3	1.2	0.28

Operculum (Fig. 7F, H, I). Pale yellow, oval, weakly angled posteriorly, outer edge much more convex than inner. Peg moderately narrow, curved.

Radula (Fig. 13A-D). Central teeth with cusp formula 3+1+3, median cusp large, spatulate. Lateral teeth with cusp formula 3+1+3, primary cusp small, narrow, sharp. Inner marginal teeth with cusp formula 3+1+1(-2), primary cusp large, sharp. Outer marginal teeth with about 6 small cusps, outermost largest (based on 6 radulae).

Animal. Usually unpigmented, sometimes with darker visceral coil.

REMARKS. The shell of this species is variable (see measurements) in size, shape, number of whorls, and umbilical size and may possibly represent a species complex. Specimens from the north of its range generally have a larger umbilicus. There are no other globular species of *Eatoniella* known from South America, although several species from other southern areas have similar shells. The New Zealand *E. pullmitra* Ponder, 1965, has a larger shell aperture, and the Australian *E. shepherdii* Ponder and Yoo, 1977, has a more elongate shell. The Kerguelen Island *E. hyalina* Thiele, 1912, is similar, but smaller.

A few specimens, including some in the paratype series, have narrower shells somewhat similar in shape to the New Zealand *E. aterviseralis* Ponder, 1965. This shell form, however, intergrades with the broader, typical form and agrees with it in all other respects.

DISTRIBUTION. Central Chile to Tierra del Fuego among rocks and algae. Mainly intertidal; some specimens and dead shells to 15 m. Common.

Subgenus *Albosabula* Ponder, 1965

Species in this subgenus were previously known only from New Zealand (Ponder, 1965a) and Tasmania (Ponder and Yoo, 1977a). They are distinguished by their small, conical shells that are never colored and in having the midbasal margin of the central teeth of the radula markedly produced ventrally. Ponder and Yoo (1977a) suggested that *Rissoa georgiana* Martens and Pfeffer, 1886, was possibly a member of this group, but subsequent examination of that species showed that it is a member of the rissoid genus *Onoba* (Ponder, 1983a).

Eatoniella (Albosabula) mcleani n. sp.

Figures 11G, 12B, 13E, F

ETYMOLOGY. Named for Dr. James McLean of the Natural History Museum of Los Angeles County as a small recognition of his efforts in collecting the material on which this report is largely based.

MATERIAL EXAMINED. Types. Holotype, LACM 2668, 295 paratypes, LACM 2669; 11 paratypes, AMS C.167420. 10 75-28. Los Molles, Aconcagua Prov., Chile. 32°14'S, 71°32'W, intertidal, Sta. 19, J.H. McLean, 16-18 Oct. 1975.

Additional Material Examined. *Northern Chile:* 9 75-25 [23(d)]; AMS C.167474 [3]. 11 75-30 [3(d)]; AMS C.167473 [1]. *Southern Chile:* 15 75-41 [19]. 16 75-46 [3(d)]. 19 73-73 [17(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Fig. 11G). Minute (maximum length 1.0 mm), ovate, thin, translucent, with 2.5-2.9 teleoconch whorls. Spire with lightly convex outlines, whorls lightly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth and glossy with moderately prominent prosocline growth lines. Protoconch smooth of 1.1-1.3 whorls. Aperture oval, angled posteriorly, with sharp peristome, lacking external varix. Inner lip moderately broad, outer lip slightly prosocline, slightly more convex than inner. Umbilical chink minute. Periostracum very thin, transparent. Color pale brown when fresh, empty shells often white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	0.96	0.60	1.61	0.42	2.31	2.5	1.3	0.20
Paratypes	0.93	0.56	1.67	0.39	2.35	2.8	1.2	0.16
	0.95	0.56	1.71	0.39	2.40	2.8	1.2	0.17
	0.91	0.55	1.67	0.41	2.24	2.9	1.2	0.19
	0.99	0.61	1.63	0.41	2.45	2.9	1.2	0.18
	0.95	0.57	1.70	0.39	2.41	2.9	1.1	0.17
	0.86	0.57	1.60	0.35	2.42	2.7	1.3	0.19
	0.96	0.59	1.64	0.41	2.37	2.5	1.3	0.21
	0.99	0.62	1.60	0.43	2.33	2.5	1.3	0.21
	0.97	0.59	1.65	0.42	2.33	2.5	1.2	0.19

Operculum (Fig. 12B). Pale yellow, oval, more strongly angled posteriorly than anteriorly, and more

strongly convex on outer edge. Peg stout, slightly curved, and flared at extremity.

Radula (Fig. 13E, F). Central teeth with cusp formula 2+1+2, median cusp long, narrow, pointed; with midbasal tongue. Lateral teeth with cusp formula 2+1+2-3, all cusps pointed. Inner marginal teeth with cusp formula 4+1+2, all cusps pointed, primary cusp slightly larger than adjacent inner cusp, outer adjacent cusps much smaller. Outer marginal teeth with 5-6 small cusps. (Note: Cusps somewhat worn in illustrated specimen; the second specimen examined has sharper cusps but is a very poor mount.)

Animal. Unpigmented.

REMARKS. This is the only known species referable to the subgenus *Albosabula* outside Australasia. It can be distinguished from other South American species of *Eatoniella* by its small, oval, translucent shell.

There are three species assigned to *Albosabula* in New Zealand (Ponder, 1965a). *Eatoniella* (*A.*) *lampra* (Suter, 1908) and *E. (A.) poutama* (E. Smith, 1962) both have larger shells, whereas the shell of *E. (A.) rakiura* Ponder, 1965, is broader. The only Australian species, *E. (A.) pellucida* (Tate and May, 1900), has a slightly larger, broader shell.

DISTRIBUTION. Central and southern Chile from intertidal to 17 m. Moderately common.

Genus *Pupatonia* Ponder, 1965

This genus has previously only been recorded from southern New Zealand and the New Zealand sub-Antarctic islands (Ponder, 1965a; Powell, 1979). It was distinguished from other genera in the family by the pupiform shell. The familial position of this genus has never previously been confirmed by the examination of the radula and operculum because all known specimens were empty shells. However, recently, a single dried animal of a New Zealand species, *P. cf. atoma* Ponder, 1965, was found in the NMNZ collections. The radula and operculum were extracted from this specimen and are figured here for comparison with the South American species (Figs. 11J, 12E, 14D, F). The operculum (Fig. 12C, E) in both taxa is very similar to that of species of *Eatoniella*. The radula, for which only poor mounts were available for both species, is also generally similar to that of species of *Eatoniella* but differs in having markedly less prominent basal pegs on the central teeth as well as having smaller, more equal-sized cusps on the inner marginal teeth than seen in most species of *Eatoniella*.

Pupatonia magellanica n. sp.

Figures 11I, 12C, 14A-C

ETYMOLOGY. Named after the Magellanic Province of Chile.

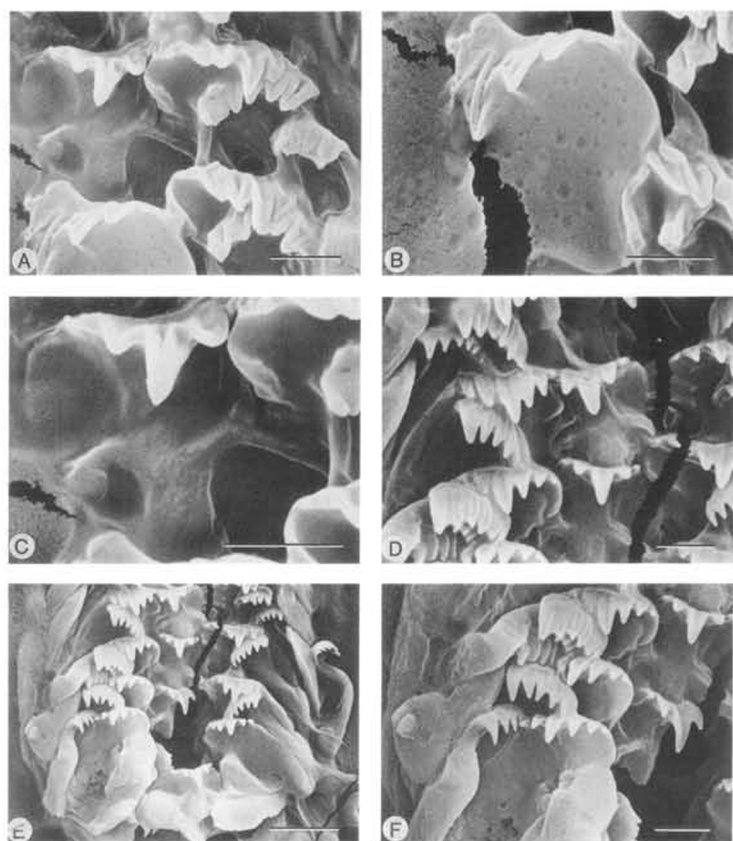


Figure 14. Radulae of *Pupatonia* species. A–C, *Pupatonia magellanica* n. sp., paratype, detail of central teeth. D–F, *Pupatonia* cf. *atoma* Ponder, 60 m, off Taiere, Dunedin, New Zealand. Scale bars: A–D, F, 2 µm; E, 5 µm.

MATERIAL EXAMINED. Types. Holotype, LACM 2670, 3 paratypes, LACM 2671. 32 71-273. Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.2'S, 64°42.7'W, intertidal, rocks and mussel beds, Sta. 71-2-16, USARP-SOSC-R/V *Hero* Cr.712, 27 Apr. 1971. 5 paratypes, LACM, 2, AMS C.167421. 17 73-75. Isla Westhoff, Chiloé Prov., Chile. 43°54'S, 73°43.5'W, 23 m, P. Dayton (R/V *Hero*), 25 May 1973.

Additional Material Examined. *Northern Chile:* 9 75-25 [1(d)]. *Southern Chile:* 14 75-43 [6(d)]. 19 73-73 [2(d)]. 22B USNM E 958 [5(d)]. *Tierra del Fuego:* 28 71-270 [1(d)]. 33D 71-352 [3(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Fig. 111). Minute (maximum length 1.1 mm), cylindrical-pupoid, thin, translucent, with 2.6–3.1 teleoconch whorls. Whorls strongly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth and glossy with faint growth lines. Protoconch of 1.3–1.5 whorls, apparently smooth (eroded in available material). Aperture oval, protruding, with sharp peristome, lacking external varix. Inner lip moderately broad and separated from last whorl, outer lip orthocline. Umbilical chink absent. Periostracum very thin, transparent. Color white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.01	0.53	1.91	0.36	2.84	2.8	1.5	0.17
Paratypes	0.99	0.51	1.94	0.35	2.84	2.7	1.3	0.17
	0.91	0.49	1.86	0.33	2.76	2.8	1.4	0.18
Sta. 75-43	0.98	0.51	1.92	0.36	2.69	3.0	1.4	0.16
	0.91	0.48	1.88	0.33	2.77	3.1	1.5	0.17
	1.05	0.57	1.85	0.37	2.83	3.0	1.4	0.17
	0.91	0.50	1.83	0.32	2.83	2.6	1.4	0.17

Operculum (Fig. 12C). Oval, angled posteriorly, and rounded anteriorly. Inner and outer edges equally convex. Peg stout, curved.

Radula (Fig. 14A–C). Central teeth with cusp formula 2+1+2, median cusp pointed. Lateral teeth with cusp formula 2+1+3, primary cusp pointed. Inner marginal teeth with 5–6 cusps about equal in size. Outer marginal teeth with about 4 cusps. Teeth apparently rather soft, causing cusps to fold (based on 1 specimen).

Animal. Unpigmented.

REMARKS. The shape of the shell of species of *Pupatonia* is distinctive. Only four species have been assigned to this genus, all from New Zealand. Of these, *P. magellanica* is most similar in shape

to *P. minutula* (Powell, 1933), which differs in its slightly larger shell and in having weak spiral sculpture. *Pupatonia gracilispira* (Powell, 1933) is about the same size as the new species but is smooth and has a narrower spire.

DISTRIBUTION. Central Chile to Tierra del Fuego; live-collected specimens all intertidal. Shells found to 100 m. Uncommon.

Family CINGULOPSIDAE

Members of this family have trochiform to elongate-conic shells that, like the other members of the superfamily, have an inner "chitinous" layer (Ponder, 1988). Like eatoniellids, they have a pegged operculum and males are aphyllate but differ in radular characters and, markedly, in anatomical details. Notable differences include the lack of a style sac in the stomach and closed pallial genital ducts. The operculum of cingulopsids never has an opaque muscle insertion area. The cingulopsid genera have been reviewed by Ponder and Yoo (1980), with some modifications by Ponder (1983a).

Genus *Skenella* Pfeffer, 1886

This genus was included in the Eatoniellidae by Ponder (1965a) and Ponder and Yoo (1977a) but was transferred to the Cingulopsidae by Ponder (1983a) following examination of topotype material of the type species. It is distinguished from the other genera included in the family by the radula having simple central teeth, the operculum having a small peg and lacking a ridge on the inner surface, and the columella of the shell having a weak bulge.

Skenella hallae n. sp.

Figure 15A, F

ETYMOLOGY. Named for Jane Hall, who was initially involved with this project, taking many of the SEM photographs and measuring many of the specimens.

MATERIAL EXAMINED. Types. Holotype, LACM 2672, 8 paratypes, LACM 2673, 1 paratype, AMS C.167422. 25 73-69. Punta Valparaíso, Canal Cockburn, Magallanes Prov., Chile. 54°22.2'S, 71°21.7'W, 17 m, P. Dayton (R/V *Hero*), 17 May 1973.

Additional Material Examined. *Tierra del Fuego*: LACM 33M 71-263 [16(d)].

DIAGNOSIS. Shell (Fig. 15A). Minute (maximum length 1.2 mm), ovate, moderately thick, with 2.3-3.0 teleoconch whorls. Spire with convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth except for faint growth lines. Protoconch apparently smooth, of 1.0-1.2 whorls. Aperture oval, weakly angled posteriorly, with sharp peristome. Inner lip moderately broad with an indistinct swelling on columella, outer lip moderately to strongly prosocline. Umbilical chink minute. Color reddish-brown.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	0.88	0.64	1.37	0.39	3.28	2.3	1.2	0.15
Paratypes	0.96	0.73	1.31	0.43	2.22	2.5	1.0	0.14
	0.98	0.71	1.38	0.43	2.27	2.5	1.0	0.14
	0.97	0.71	1.36	0.44	2.19	2.8	1.1	0.13
	0.96	0.72	1.33	0.43	2.22	2.5	1.1	0.13
	1.24	0.81	1.53	0.49	2.50	3.0	1.0	0.17
	0.97	0.73	1.32	0.43	2.25	2.7	1.2	0.14
	0.97	0.73	1.32	0.43	2.25	2.8	1.2	0.14
	1.01	0.74	1.36	0.45	2.24	2.3	1.2	0.15
	1.02	0.73	1.40	0.43	2.37	2.8	1.2	0.15

Operculum (Fig. 15F). Pale yellow, oval, anterior and posterior ends moderately angled, inner edge weakly angled. Peg short, narrow, almost straight.

Radula. Present but too poorly prepared to describe from available material.

Animal. Unknown.

REMARKS. This is the only known South American *Skenella* and can be distinguished from other rissoiform taxa with similar shells by the small swelling on the columella. The shell is most similar to *Eatoniella castanea* but is smaller and narrower.

DISTRIBUTION. Southern Chile and Tierra del Fuego; living specimens collected from 17 m; empty shells from 30 m. Uncommon.

Genus *Eatonina* Thiele, 1912

In this genus the columella of the shell is simple, the operculum has a large peg and a heavy ridge on its inner surface, and the central radular teeth usually have cusps.

Subgenus *Mistostigma* Berry, 1947

Only two species are known from this subgenus, the type species from California (*E. (M.) albida* Carpenter, 1864) and the one described below. Ponder and Yoo (1980) described the radula and operculum of the type species. The subgenus is distinguished by members of the typical subgenus on radular details (Ponder and Yoo, 1980).

Eatonina (Mistostigma) fusca (Orbigny, 1840)

Figures 10C, 15B, E

Paludestrina fusca Orbigny, 1840: 387, pl. 75, figs. 13-15 (2 syntypes, BMNH 1854.12.4.348; Arica, Tarapacá Prov., Chile). Orbigny, 1854: 31.

Eatonina (Saginus) atacamae Marincovich, 1973: 27, figs. 52, 59, 60 (Holotype, LACM 1589, many paratypes, LACM 1590; 20 paratypes, AMS C.162624).

Eatonina (Mistostigma) atacamae: Ponder and Yoo, 1980: 32, fig. 14h, i.

MATERIAL EXAMINED. Types. Syntypes of *P. fusca*; paratypes of *E. atacamae* [20].

Additional Material Examined. *Northern Chile*: 6A 64-16 [many SEM]; 75-12 [4(d)]; AMS C.167472 [1(d)].

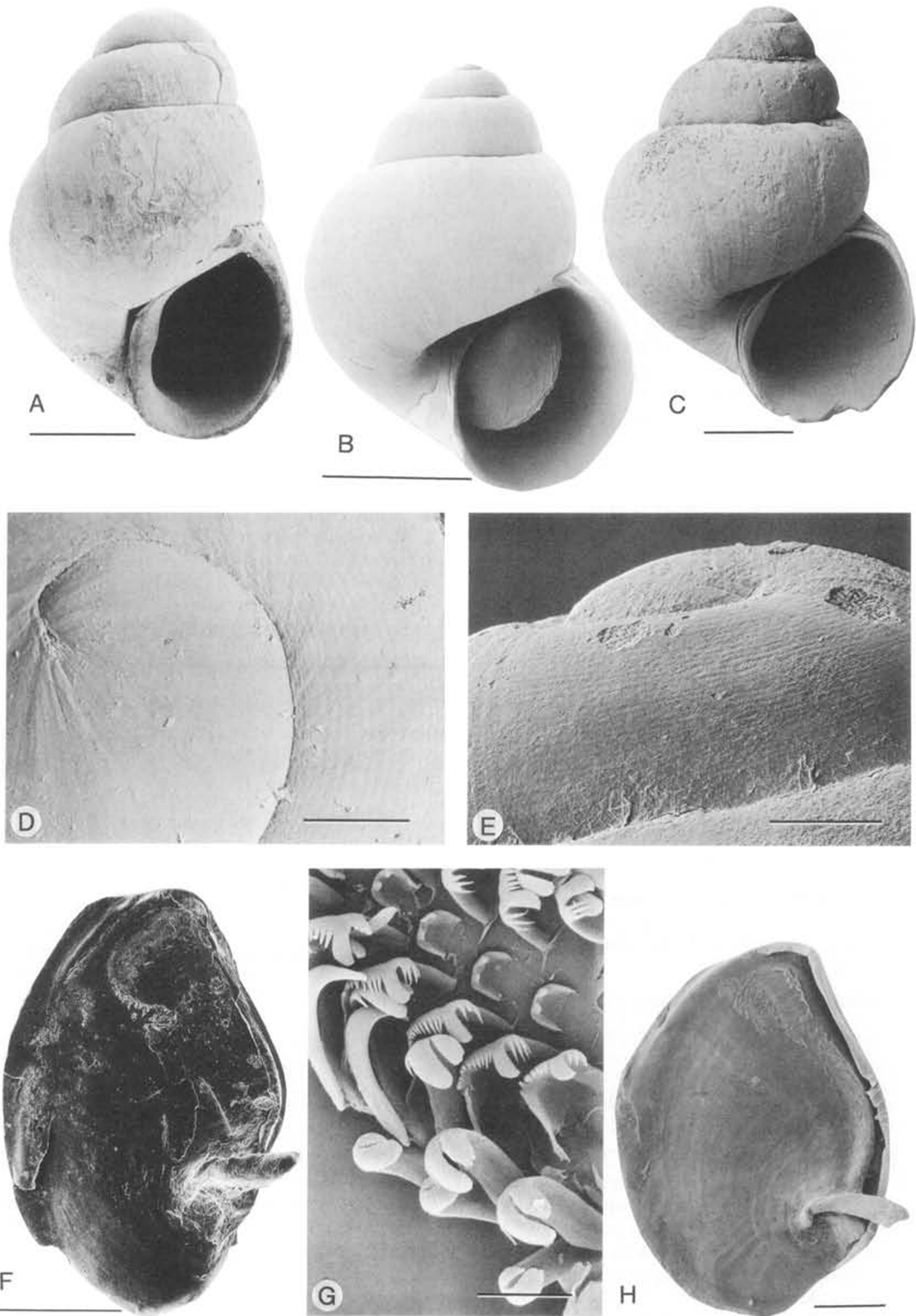


Figure 15. Shells, radulae, and opercula of Cingulopsidae. **A, F**, *Skenella hallae* n. sp.; **A**, holotype, shell, length, 0.88 mm; **F**, paratype, operculum, inner side. **B, E**, *Eatonina fusca* (Orbigny) Sta. 64-16; **B**, shell, length, 1.45 mm; **E**, paratype, Iquique, Chile, lateral view of protoconch. **C, D, G, H**, *Skenella wareni* n. sp.; **C**, holotype, shell, length 1.64 mm; **D, G, H**, paratypes; **D**, protoconch microsculpture; **G**, radula; **H**, operculum, inner side. Scale bars: **A**, 200 μ m; **B, C**, 500 μ m; **D, E**, 50 μ m; **F, H**, 100 μ m.

6B 75-10 [many]; AMS C.167469 [3(+11d)]. **7** 75-21 [9]. **8A** 75-17 [many]; AMS C.167468 [3(+13d)]. **8B** 75-19 [3(d)]; AMS C.167471 [1]. **8C** 75-15 [3(d)]; 75-20 [8]; AMS C.167470 [1]. **9** 75-25 [1(d)]. **10** 75-28 [2]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 10C, 15B, E). Minute (maximum length 1.8 mm), ovate-conic, moderately thin, opaque, with 2.8–3.3 teleoconch whorls. Spire with lightly convex outlines, whorls moderately to strongly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth with faint prosocline growth lines and extremely fine spiral striae. Protoconch (Fig. 15E) with close, fine spiral grooves, of about 1.3–1.4 whorls. Periostracum thin, transparent. Aperture oval to almost round, very weakly angled posteriorly, with sharp peristome. Inner lip narrow, detached from parietal wall; outer lip strongly prosocline. Umbilicus distinct. Color typically reddish-brown, occasionally pale or white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Figured syntype (Fig. 10C)	1.25	1.10	1.14	—	—	—	—	—
Paratypes of	1.52	1.21	1.25	0.73	2.07	3.3	1.4	0.24
<i>E. atacamae</i>	1.38	1.07	1.28	0.68	2.04	3.1	1.4	0.22
	1.17	1.02	1.15	0.66	1.77	2.8	1.3	0.25
Sta. 64-16								
Fig. 15B	1.45	1.13	1.29	0.73	1.98	3.0	1.3	0.21
Sta. 75-10*	1.57	1.20	1.30	0.72	2.18	—	—	—
	1.61	1.24	1.30	0.76	2.11	—	—	—
	1.48	1.26	1.18	0.70	2.12	—	—	—
	1.54	1.13	1.36	0.70	2.20	—	—	—
	1.75	1.21	1.44	0.74	2.36	—	—	—
	1.52	1.19	1.27	0.69	2.20	—	—	—
	1.56	1.23	1.27	0.74	2.10	—	—	—
	1.54	1.16	1.32	0.77	1.99	—	—	—
	1.48	1.11	1.34	0.71	2.09	—	—	—
	1.62	1.19	1.36	0.75	2.16	—	—	—

* Protoconch and upper whorls of shells from this station badly eroded.

Operculum. Yellow, oval to rectangular. Peg broad and short with thickened ridge running from it to opposite end of operculum (figured by Marinovich, 1973: fig. 60).

Radula. Central teeth with dorsal edge with 3 rudimentary cusps; face of teeth with 4 prominent cusps. Lateral teeth with 4 large, triangular cusps, outermost smallest. Inner marginal teeth with 4 cusps, third largest, forth (outermost) smallest. Outer marginal teeth very short, with 3 cusps (figured by Marinovich, 1973: fig. 59, and Ponder and Yoo, 1980: fig. 14h, i).

Animal. Unknown.

REMARKS. This species is much larger and more globular than *Skenella hallae* and lacks the bulge on the columella. Shell shape is somewhat similar to that of *Eatoniella glomerosa* but is immediately distinguished by its red-brown color.

DISTRIBUTION. Northern and central Chile;

mainly intertidal, occasional animals and empty shells to 30 m. Common.

Superfamily RISSOIDEA

(=Truncatelloidea,
ICZN Opin. 1664)

Family RISSOIDAE

This family is distinguished from the foregoing by the shell lacking an inner “chitinous” layer, the males are phallate, and there are also many other anatomical differences (see Ponder, 1985a, 1988). Some rissoid genera have a peg on the inner side of the operculum, but this is not the case in any of the genera covered below. The generic classification adopted here follows Ponder (1985a).

Genus *Pusillina*
Monterosato, 1884

This genus is similar to *Rissoa* in anatomy and shell morphology, differing mainly in details of anatomy, notably the possession of a pallial prostate gland.

Subgenus *Haurakia* Iredale, 1915

Members of this subgenus usually have an anterior excavation of the anterior part of the aperture and the radula has a tongue-like midventral edge on the central teeth. Species of *Pusillina* (*Haurakia*) were known from all of the southern continents and New Zealand except South America (Ponder, 1985a). The species described below is tentatively assigned to *Pusillina* (*Haurakia*) pending examination of the animal. No species in this group were recorded from the Antarctic-sub-Antarctic by Ponder (1983a), although some are known from the New Zealand sub-Antarctic islands (Powell, 1979).

Pusillina (*Haurakia*) *averni* n. sp.

Figure 16A, B

ETYMOLOGY. Named for Geoff Avern, who prepared, mounted, and photographed with the SEM some of the material used in this paper.

MATERIAL EXAMINED. Types. Holotype, LACM 2674, 5 paratypes, LACM 2675; 1 paratype, AMS C.167455. **30E** 71-339. NW arm Bahía York, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.2'S, 64°18.4'W, 38 m, Sta. 891, USARP-SOSC-R/V *Hero* Cr.715, 1 Nov. 1971.

Additional Material Examined. *Southern Chile:* 25 73-69 [1(d)]. *Tierra del Fuego:* **30H** 71-332 [1(d)]. **33A** USNM H 656 [2(d)]. **33E** 71-351 [2(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Fig. 16A, B). Small (maximum length 2.3 mm), elongate-conic, thin, translucent when fresh; with 2.7–3.2 teleoconch whorls. Spire with lightly convex to straight outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with about 6–20 fine, spiral striae on penultimate whorl

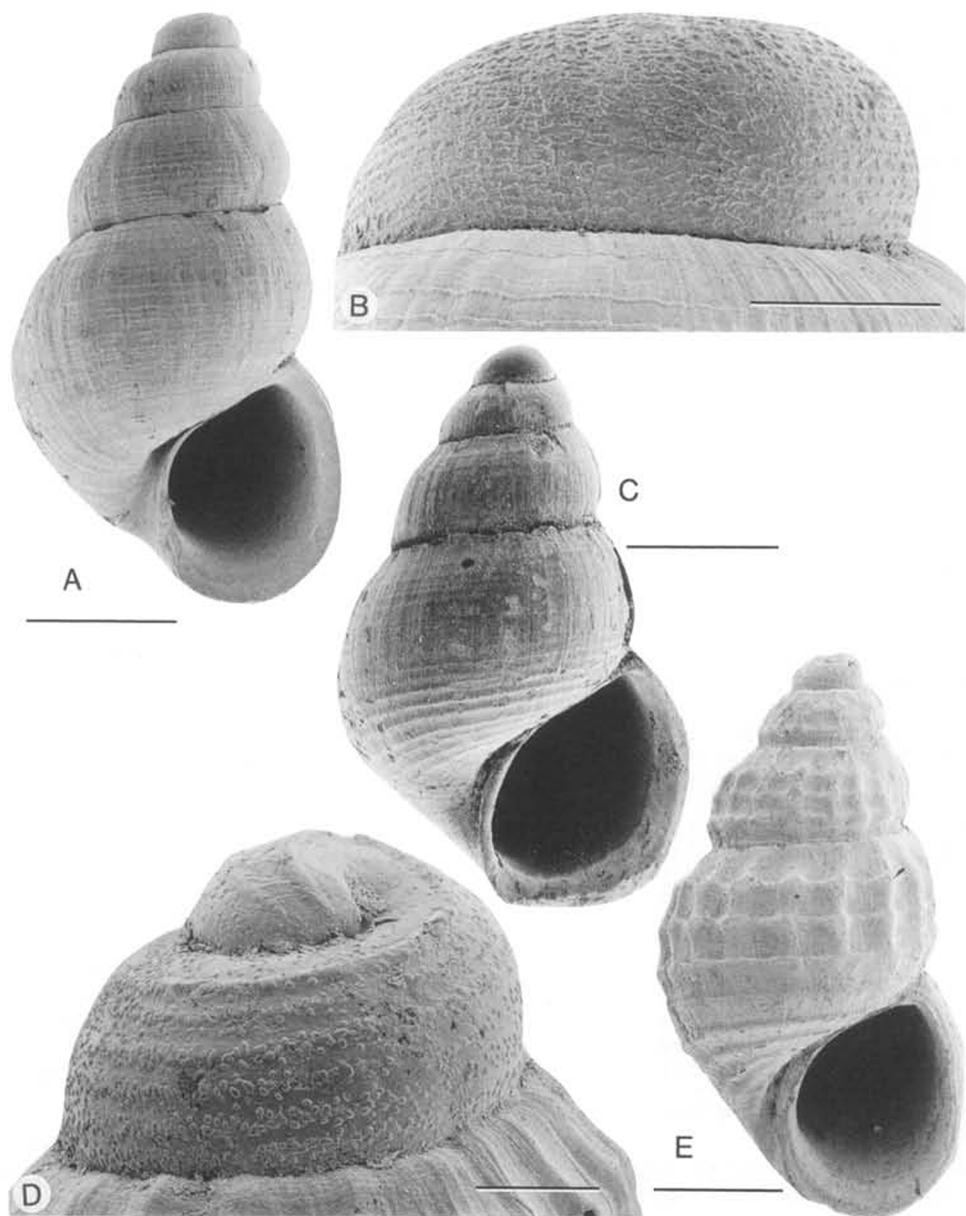


Figure 16. Shells and protoconchs of species of *Manzonina* and *Pusillina*. A, B, *Pusillina (Haurakia) averni* n. sp., holotype; A, shell, length 2.05 mm; B, lateral view of protoconch. C, *Pusillina (Haurakia)* cf. *averti*, Sta. 71-344, shell, length, 2.13 mm. D, E, *Manzonina (Alvinia) limensis* n. sp., holotype; E, shell, length, 2.03 mm; D, lateral view of protoconch. Scale bars: A–C, 250 μ m; D, E, 100 μ m; F, G, 25 μ m.

and 16–30 on last whorl and base. Protoconch (Fig. 16B) of 1.1–1.3 whorls, sculptured with irregularly shaped pits arranged more or less spirally. Aperture oval, weakly angled posteriorly. Inner lip narrow, attached to parietal wall in upper portion; outer lip orthocone with small apertural varix. Umbilical chink small to moderate. Periostracum very thin, transparent. Color white.

Dimensions.

	SL/		SL/		AL	TW	PW	PD	PS	BS
	SL	SW	SW	AL						
Holotype	2.05	1.19	1.72	0.80	2.58	3.2	1.1	0.34	20	30
Paratypes	2.29	1.41	1.63	0.80	2.88	3.2	1.2	0.35	—	—
	2.12	1.29	1.64	0.80	2.66	2.9	1.2	0.40	—	—
Sta. 71-351	1.98	1.25	1.59	0.82	2.42	2.7	1.2	0.48	—	—

2.17 1.34 1.62 0.89 2.43 2.7 1.3 0.50 — —
 Sta. 71-332 2.11 1.31 1.61 0.89 2.36 2.8 1.2 0.44 11 16

Operculum, radula, and animal unknown.

REMARKS. This species is tentatively included here, pending examination of the radula. It most closely resembles *Pusillina (Haurakia) infecta* from New Zealand but differs in having a white (not brown) protoconch, more convex teleoconch whorls, stronger axials, and stronger spirals on the base. This species resembles a few taxa included in *Onoba* but has finer sculpturing than any similarly sized South American species.

DISTRIBUTION. Tierra del Fuego. Known only from empty shells; uncommon in 40–900 m.

Pusillina (Haurakia) cf. averni

Figure 16C

MATERIAL EXAMINED. *Tierra del Fuego*: 25 73-69 [1(d)]. 27C USNM E 219 [1(d)]. 29B 71-305. 30C 71-344 [1(d)]. 30I 71-329 [5(d)]. 33D 71-352 [1(d)]. 33E 71-351 [3(d)]. 35 USNM E 1596 [1(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. See Remarks.

Dimensions.

	SL/		SL/		AL	TW	PW	PD	PS	BS
	SL	SW	SW	AL						
Sta. 71-344										
Fig. 16C	2.13	1.28	1.66	0.88	2.41	2.8	1.3	0.47	8	21
Sta. 71-351	2.20	1.50	1.46	0.97	2.28	2.3	1.2	0.54	10	18
	1.94	1.35	1.44	0.92	2.10	2.0	1.2	0.46	—	—
	1.93	1.30	1.49	0.89	2.17	2.0	1.2	0.58	9	17
Sta 71-329	2.05	1.35	1.52	0.89	2.30	2.8	1.1	0.39	—	—
	2.17	1.49	1.45	0.93	2.32	2.3	1.2	0.49	—	—
Sta. 71-305	2.12	1.26	1.68	0.90	2.34	3.0	—	—	6	17

REMARKS. Specimens from the above localities differ from the types of *P. averni* in shell dimensions and/or strength of sculpturing (e.g., Fig. 16C) and may represent variations of one species or closely similar, separate species. We cannot make a decision on the available material.

Genus *Manzonina* Brusina, 1870

This genus is distinguished by its shell having a duplicated peristome and strong, smooth basal spirals as well as anatomical and other details (see Ponder, 1985a).

Subgenus *Alvinia*
 Monterosato, 1884

The species included here is related to a small group of North and Central American species that were assigned to *Manzonina (Alvinia)* by Ponder (1985a).

Manzonina (Alvinia) limensis n. sp.

Figure 16D, E

ETYMOLOGY. Named after the Province of Lima.

MATERIAL EXAMINED. Types. Holotype, LACM 2676, 2 paratypes, LACM 2677. 4 72-78. Isla Chinchá Norte, Ica Prov., Peru. 13°38'S, 76°25'W, 6–12 m, exposed side, J.H. McLean, V. Alamo, 1 Apr. 1972.

Additional Material Examined. Peru: 1 74-6 [many(d)]; AMS C.167456 [10(d)]. 2A 38-208 [1(d)]. 4 35-159 [1(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Fig. 16D, E). Small (maximum length 2 mm), ovate-conic, solid, opaque, with about 3 teleoconch whorls. Spire with lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with strong, sharp spiral ridges with wider interspaces and equally prominent axial ribs; 3 spiral ridges on penultimate and last whorl and an additional 3–5 on base; interspaces almost smooth with only very indistinct growth lines. Axial ribs reach suture, but do not extend onto base, and form low, peaked nodules at intersections with spiral ridges. Protoconch (Fig. 16D) of about 1.2 whorls, with 5–6 low spiral ridges bearing scattered granules, interspaces between spiral ridges smooth. Aperture oval, angled posteriorly. Inner lip moderately broad, attached to parietal wall in upper portion; outer lip orthocone with prominent apertural varix immediately behind lip; peristome weakly duplicated. Umbilical chink represented by narrow groove. Periostracum not observed. Color white.

Dimensions.

	SL/		SL/		AL	TW	PW	PD	PS	BS	PA	BA
	SL	SW	SW	AL								
Holotype	2.03	1.20	1.69	0.77	2.62	2.9	1.2	0.41	3	8	7	8
Paratype	1.99	1.18	1.68	0.77	2.57	2.9	1.2	0.40	3	7	7	8
Sta. AHF 534	1.97	1.16	1.69	0.74	2.66	3.0	1.2	0.38	3	6	7	8

Operculum, radula, and animal unknown.

REMARKS. This is the only known species of *Rissoinae* in Peru with coarse axial sculpture. It resembles some of the other eastern Pacific species assigned to *Manzonina (Alvinia)* by Ponder (1985a) but differs in having a broader shell than any of the known species except *M. (A.) almo* (Bartsch, 1911), which is much smaller.

DISTRIBUTION. Peru (Ica and Lima Provs.); known only from empty shells from 7 to 100 m. Uncommon.

Genus *Powellisetia* Ponder, 1965

This genus was introduced for a group of New Zealand species with diverse shell morphology by Ponder (1965b) and has subsequently been rediagnosed (Ponder, 1985a). The majority of species assigned to this genus are found in New Zealand, one from southern Australia (Ponder, 1985a), a few from the sub-Antarctic islands, and one from Antarctica (Ponder, 1983a). Members of the genus are

similar to some species included in *Onoba* but differ in usually having a more ovate shell, which is either smooth or finely spirally striate. The radula also differs in having more numerous (>10) cusps on the outer side of the lateral teeth.

***Powellisetia microlirata* n. sp.**

Figures 12D, 17A–G, 18A

ETYMOLOGY. Micro—Greek. Minute. Lirata—Latin. Ridge. Refers to the teleoconch sculpture.

MATERIAL EXAMINED. *Types.* Holotype, LACM 2678, 175 paratypes, LACM 2679; 8 paratypes, AMS C.167454. 20 73-72. Bahía Tom, Magallanes Prov., Chile. 50°11.3'S, 74°47.9'W, 14 m, P. Dayton (R/V *Hero*), 21 May 1973.

Additional Material Examined. *Southern Chile:* 16 75-46 [1(d)]. 17 73-75 [13]. 21 73-71 [2(d)]. 23 73-70 [3]. *Tierra del Fuego:* 25 73-69 [many(d)]. 30A 71-342 [1(d)]. 30F 71-334 [4(d)]. 30I 71-329 [1(d)]. 30J 71-260 [9(d)]. 33A USNM H 656 [1(d)]. 33B 71-347 [10(d)]. 33D 71-352 [20(d)]. 33F 71-357 [5(d)]. 33M 71-263 [1(d)]. 33R 71-328 [2]. 36 USNM E 974 [1(d)]. 39 71-268 [2]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. *Shell* (Fig. 17). Minute (maximum length 1.6 mm, often smaller), conical to elongate-conic, thin, translucent when fresh, with 2.4–2.9 teleoconch whorls. Spire with lightly convex to straight outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with about 20–25 fine, rounded spiral cords on penultimate whorl and 30–40 on last whorl and base but cords too indistinct to be counted precisely in available material. Protoconch (Fig. 17D–F) of 1.0–1.3 whorls, sculptured with rather scattered, spirally aligned, elongate granules and irregular low wrinkles. Aperture oval to almost round, weakly angled posteriorly. Inner lip narrow, attached to parietal wall in upper portion only; outer lip orthocone. Umbilical chink moderate. Periostracum very thin, transparent. Color white.

Dimensions.

	SL		SL/ SW	AL	SL/ AL	TW	PW	PD
	SL	SW	SW	AL	AL	TW	PW	PD
Holotype	1.00	0.67	1.49	0.43	2.32	2.6	1.3	0.25
Paratypes								
Fig. 17A	1.23	0.88	1.40	0.44	2.45	2.6	1.3	0.25
	1.47	0.99	1.49	0.62	2.36	2.8	1.1	0.32
	1.50	1.04	1.44	0.61	2.46	2.7	1.2	0.32
	1.48	0.96	1.55	0.61	2.42	2.5	1.1	0.34
	1.52	0.97	1.57	0.60	2.52	2.6	1.1	0.35
	1.49	0.98	1.53	0.58	2.57	2.5	1.2	0.34
	1.48	0.98	1.52	0.60	2.46	2.8	1.2	0.33
	1.64	1.01	1.63	0.61	2.68	2.9	1.1	0.35
	1.53	1.00	1.53	0.63	2.41	2.8	1.1	0.34
	1.52	1.00	1.52	0.62	2.43	2.8	1.0	0.33
	1.49	0.92	1.62	0.58	2.57	2.7	1.2	0.36
Sta. 71-328								
Fig. 17C	1.30	0.80	1.64	0.51	2.57	2.5	1.2	0.35
Sta. 73-71	1.36	0.92	1.48	0.56	2.44	2.5	1.2	0.35
	1.30	0.86	1.51	0.52	2.52	2.4	1.2	0.34

Operculum (Fig. 12D). Thin, horny, paucispical. Oval but with strongly convex outer edge and weakly convex inner edge. Weakly angled posteriorly, rounded anteriorly.

Radula (Fig. 18A). Central teeth with cusp formula 7-8+1+7-8, median cusp narrowly triangular; cutting edge triangular; single pair of well-developed basal denticles. Lateral teeth with cusp formula 7-8+1+c.15-19, primary cusp long, triangular. Inner marginal teeth with about 15 cusps on outer edge, inner edge not visible in mounts. Cusps on inner side of outer marginal obscured in mounts, outer side simple (3 radulae from 3 localities examined).

Animal. Visceral coil darkly colored; head, foot, and mantle apparently unpigmented.

REMARKS. This species has a shell similar to the New Zealand *P. subtenuis* (Powell, 1937) but differs in having a slightly different shell outline due to looser coiling and a less inflated last whorl (also resulting in a smaller aperture). It also lacks a varix on the outer lip.

Powellisetia microlirata is smaller than most of the South American species of *Onoba* and has much finer teleoconch sculpture. Specimens from deeper water have more elongate shells with more convex whorls than the type, but specimens of intermediate shape have been observed.

DISTRIBUTION. Valparaíso, Chile, to Tierra del Fuego; mainly intertidal. Empty shells from 30 to 900 m. Common.

Genus *Onoba* H. and A. Adams, 1852

This genus, as recognized and diagnosed by Ponder (1985a), has a worldwide distribution, with major radiations in the northeastern Pacific and the southern oceans, including the Antarctic-sub-Antarctic. The genus is distinguished from other rissoids found in South America by the elongate-conic shell, which is smooth or has predominantly spiral sculpture. The radula has fewer than 10 cusps on the outer part of the lateral teeth.

***Onoba profimbriata* n. sp.**

Figures 19F, 20B, D

ETYMOLOGY. Protos—Greek. First. Fimbriata—Latin. Fringed. Refers to the fimbriate protoconch microsculpture.

MATERIAL EXAMINED. *Types.* Holotype, LACM 2680, 11 paratypes, LACM 2681; 1 paratype, AMS C.167423. 19 73-73. Bahía San Andrés, N of Golfo de Penas, Aisén Prov., Chile. 46°35.3'S, 75°30.6'W, subtidal, P. Dayton (R/V *Hero*), 23 May 1973.

Additional Material Examined. *Southern Chile:* 17 73-75 [2(d)]. *Tierra del Fuego:* 27D USNM E 740 [1(d)]. 30G 71-259 [1(d)]. 32D 71-293 [1]. 33O 71-310 [2(d)]. *Falkland Islands:* AMS C.167498, TW4 [1(d)]; AMS C.167497, TW5 [1(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. *Shell* (Figs. 19F, 20A, B). Small (maximum length 2.2 mm), elongate-conic, mod-

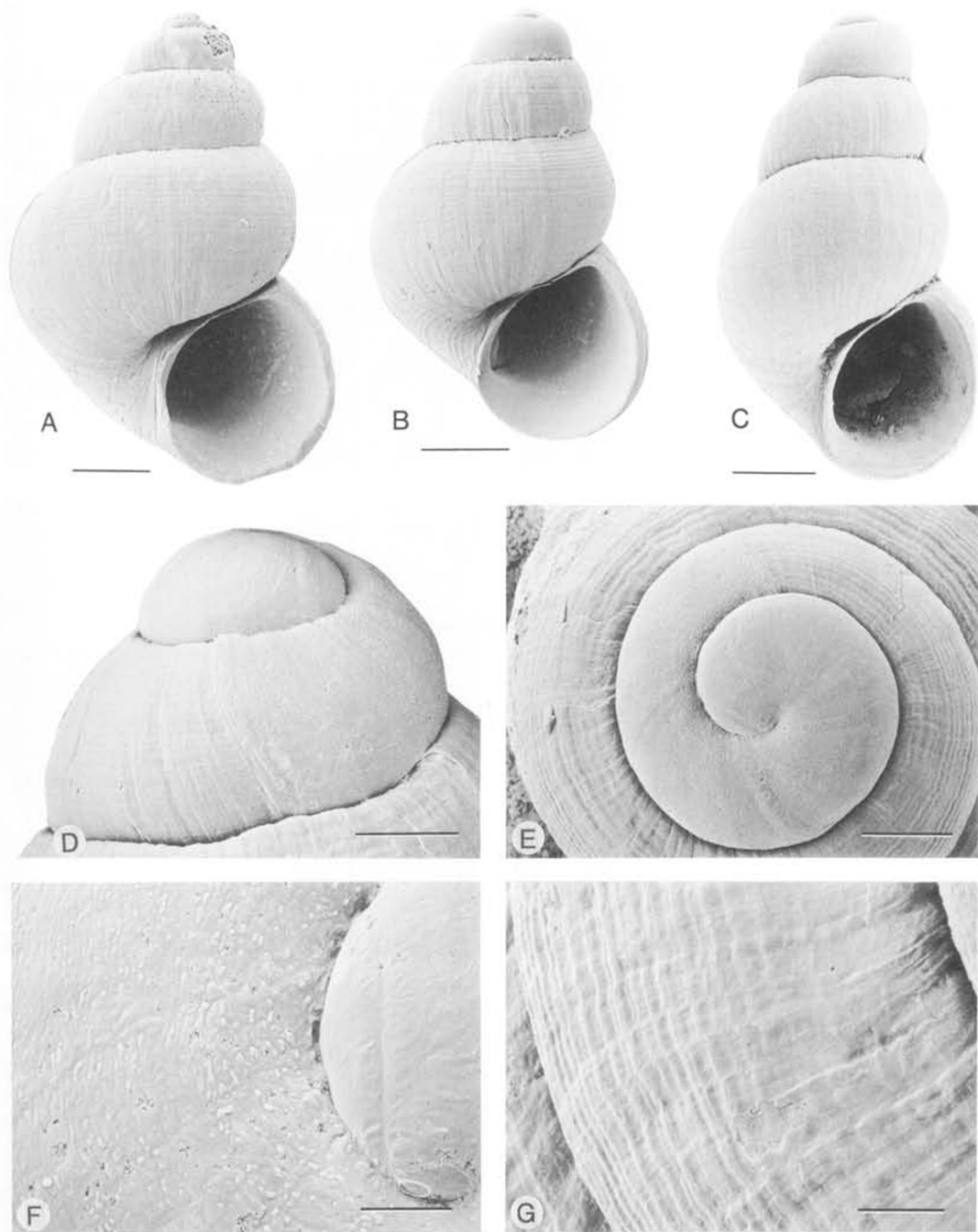


Figure 17. Details of shells of *Powellisetia microlirata* n. sp. **A**, Paratype, shell, length 1.23 mm. **B**, Holotype, shell, length 1.00 mm. **C**, Sta. 71-328, shell (deep water form), length 1.3 mm. **D–G**, Paratypes; **D**, lateral view of protoconch; **E**, apical view of protoconch; **F**, protoconch microsculpture; **G**, teleoconch microsculpture. Scale bars: **A–C**, 250 μm ; **D, E**, 100 μm ; **F, G**, 25 μm .

erately solid, possibly translucent when fresh, with 2.7–3.1 teleoconch whorls. Spire with lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with moderately flat spiral cords, in-

terspaces of approximately equal width; 8–9 (usually 8) on penultimate whorl, 13–14 (usually 13) on last whorl and base. Microsculpture in interspaces of fine but distinct axial growth lamellae and fine spiral striae. Protoconch (Fig. 20A, B) of about 1.1–

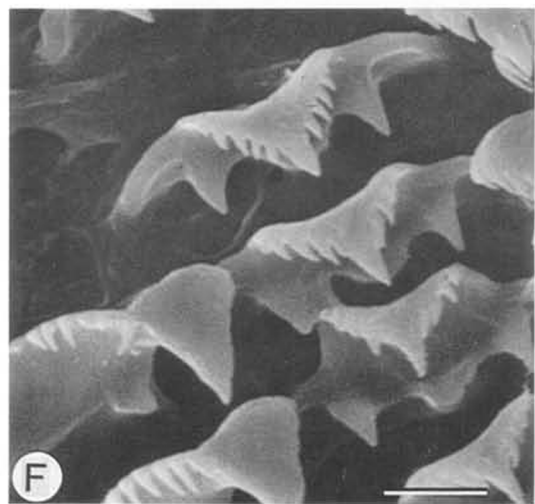
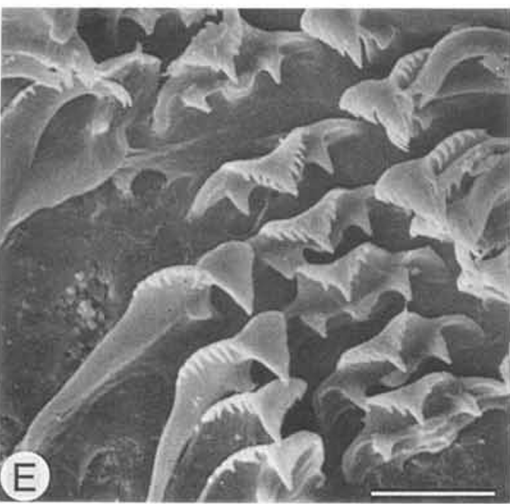
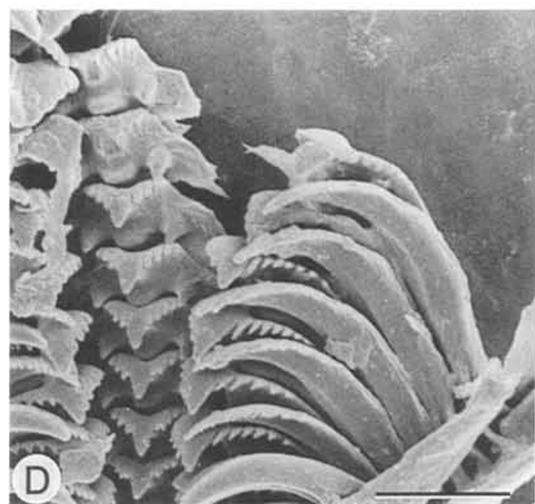
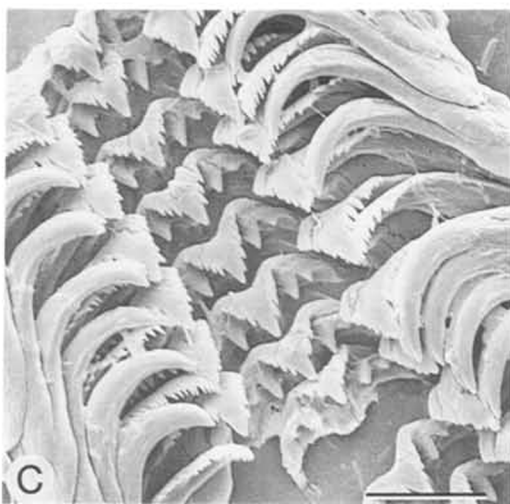
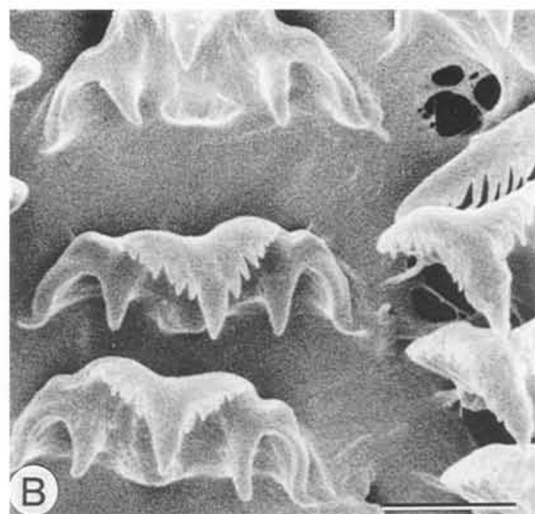
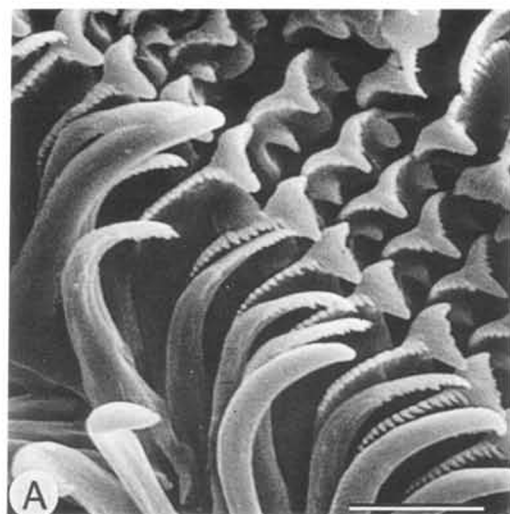


Figure 18. Radulae of species of Rissoidae. **A**, *Powellisetia microlirata* n. sp., paratype. **B**, Detail of central teeth. **C**, *Onoba striola* n. sp., paratype. **D**, *Onoba georgiana* (Pfeffer), Sta. 75-49. **E**, *Onoba erugata* n. sp., paratype. **F**, Detail of central teeth. Scale bars: **A**, **C**-**E**, 10 μ m; **B**, **F**, 5 μ m.

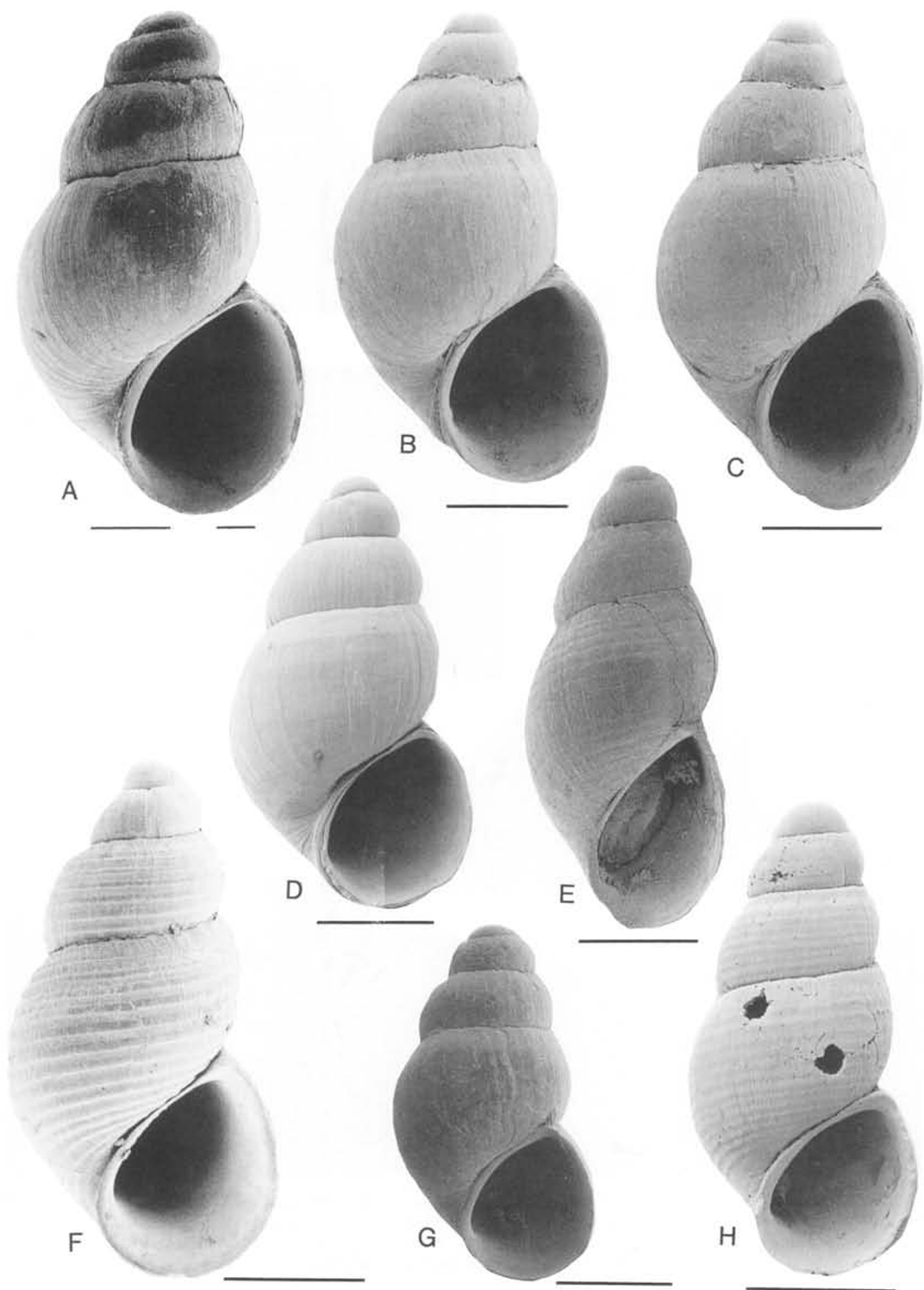


Figure 19. Shells of species of *Onoba*. A, G, *Onoba erugata* n. sp.; A, paratype, length 1.52 mm; G, holotype, length 1.49 mm. B–D, *Onoba georgiana* (Pfeffer); B, Sta. 75-49, length 1.79 mm; C, Sta. 75-49, length 1.86 mm; D, Sta. 75-48, length 1.86 mm. E, *Onoba subincisa* n. sp., holotype, length 1.79 mm. F, *Onoba protofimbriata* n. sp., holotype, length 1.90 mm. H, *Onoba* cf. *macra* (Watson), DE 399, length 1.75 mm. Scale bars: 500 μ m.

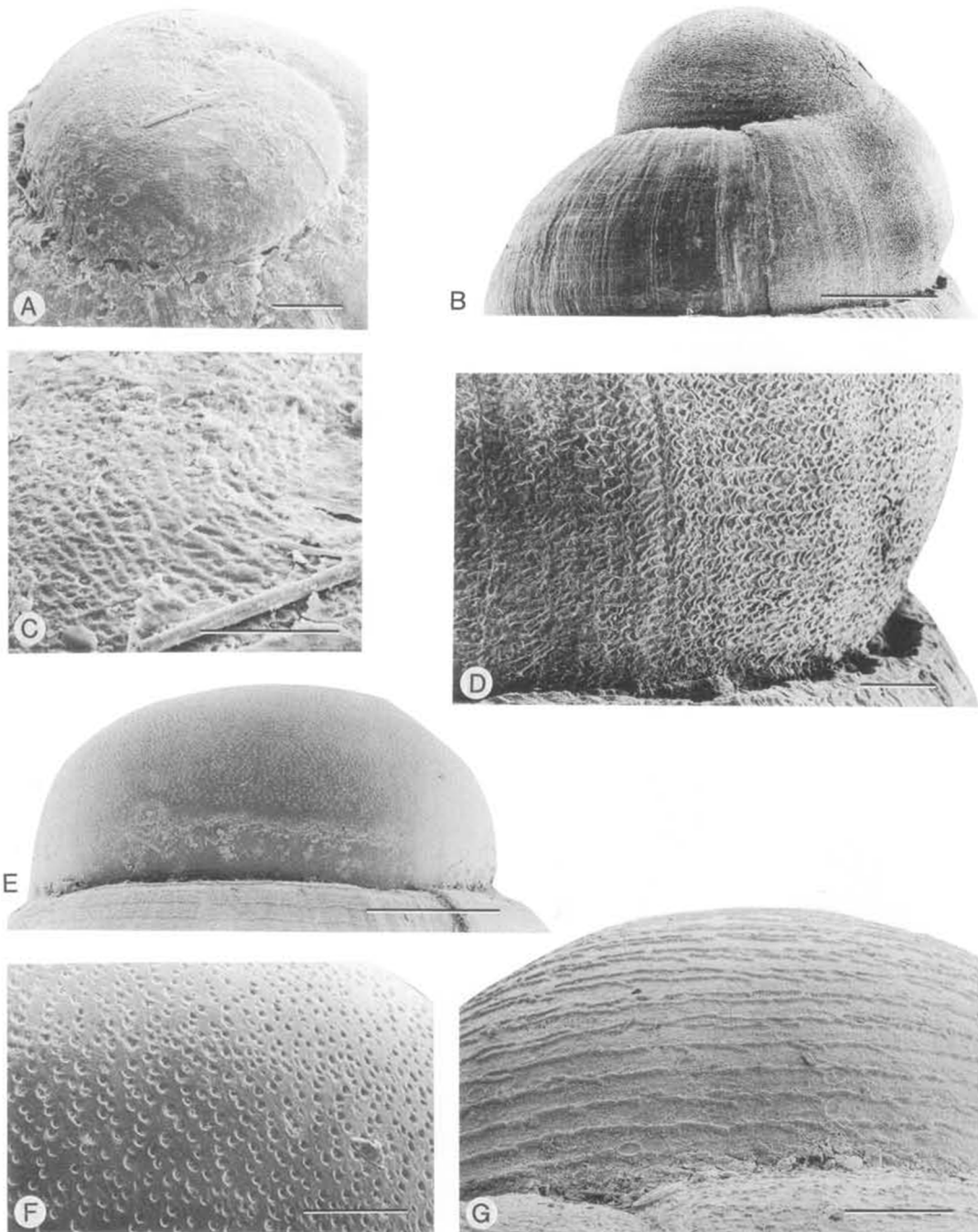


Figure 20. Detail of shells of species of *Onoba*. A, C, *Onoba ? lacuniformis* n. sp., holotype; A, lateral view of protoconch; C, protoconch microsculpture. B, D, *Onoba protofimbriata* n. sp., holotype; B, lateral view of protoconch; D, protoconch microsculpture. E, F, *Onoba sulcula* n. sp., holotype; E, lateral view of protoconch; F, protoconch microsculpture. G, "*Onoba*" *algida* n. sp., holotype, protoconch microsculpture. Scale bars: A, B, E, 100 μ m; C, G, 50 μ m; D, F, 20 μ m.

1.2 whorls, sculptured with very fine, sharp, irregular, curved axial lamellae interlocking to give a tessellated pattern showing basically spiral pattern. Aperture oval, angled posteriorly. Inner lip narrow,

detached from parietal wall; outer lip orthocline with moderate apertural varix immediately behind lip. Umbilical chink narrow groove. Periostracum not observed. Color white.

Dimensions.

	SL/		SL/		AL	TW	PW	PD	PS	BS
	SL	SW	SW	AL						
Holotype	1.90	0.99	1.91	0.72	2.66	2.8	1.2	0.35	8	13
Paratypes	1.98	0.99	1.99	0.74	2.68	2.8	1.2	0.37	9	14
	1.85	1.03	1.80	0.78	2.37	2.7	1.1	0.35	8	13
	2.01	1.04	1.94	0.77	2.61	2.9	1.1	0.38	8	13
	2.18	1.05	2.09	0.77	2.83	3.1	1.1	0.37	8	13
	2.11	0.91	2.12	0.76	2.35	3.1	1.1	0.39	8	13

Operculum, radula and animal unknown.

REMARKS. This species is somewhat similar to *O. subincisa* n. sp. described below, but the shell has stronger sculpture and sharper ribs with wider interspaces. The spiral ribs on the shell are much finer in *O. fimbriata* than in *O. fuegoensis* (Strebel, 1908), although some forms of the latter species are otherwise somewhat similar in shell shape. The distinctive protoconch microsculpture, from which this species obtains its name, is not seen in any other South American species, although it is similar, but more weakly developed, in *O. georgiana* (Fig. 21B, D, F). *Onoba protofimbriata* resembles two New Zealand taxa in teleoconch characters: *O. fallai* (Powell, 1955) from the New Zealand sub-Antarctic is similar in size and in the number of spiral cords but differs in having linear interspaces between the cords (not wider than the cords); *O. moriora* (Powell, 1933) from the Chatham Islands is very similar to *O. fallai* but has the interspaces about equal to the cords.

DISTRIBUTION. Southern Chile, Tierra del Fuego, and (possibly) Falkland Islands (see Part 2). Known mainly from dead shells from intertidal to 50 m. One similar shell from E. 740, 340–490 m, may be a different species. Uncommon.

Onoba subincisa n. sp.

Figures 19E, 22A–D, 23B, D, 24I

ETYMOLOGY. Sub—Latin. Somewhat, less than. Incisa—Latin. Cut. Refers to the teleoconch microsculpture.

MATERIAL EXAMINED. Types. Holotype, LACM 2682, 37 paratypes, LACM 2683; 4 paratypes, AMS C.167424. 24 75-48. Punta Santa Ana, Fuerte Bulnes, Brunswick Peninsula, Strait of Magellan, Chile. 53°38'S, 70°54.5'W, intertidal, Sta. 38, J.H. McLean, 16 Nov. 1975.

Additional Material Examined. Southern Chile: 24 75-48[2]; 75-49 [6(d)]. Tierra del Fuego: 28 71-270 [2(d)]. 31B 71-276 [1(d)]; 71-277 [1(d)]. 32A 71-273 [5(d)]. 32G 71-311 [2(d)]. 33G 73-66 [10(d)]. 33J 71-264 [1(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 19E, 22A–D). Minute (maximum length 2 mm), elongate-conic, thin, translucent, with 2.2–3.1 teleoconch whorls. Spire with lightly convex outlines, whorls lightly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleconch with broad, flat spiral cords separated by narrow grooves; 7–9 on penultimate whorl, 11–14 on last whorl and base; spiral cords may be very faint, especially on upper whorls. Fine,

well-spaced spiral threads over whole surface, especially in interspaces. Protoconch (Fig. 22A–C) of 1.0–1.2 whorls, sculptured with fine, close-set spiral wrinkles linked with irregular axial threads creating impression of irregular, spirally arranged shallow pits. Aperture oval, rather strongly angled posteriorly. Inner lip narrow, separated from parietal wall in lower half; outer lip orthocone with weak apertural varix immediately behind lip. Umbilical chink minute to absent. Periostracum very thin, transparent. Color white.

Dimensions.

	SL/		SL/		AL	TW	PW	PD	PS	BS
	SL	SW	SW	AL						
Holotype	1.79	0.83	2.15	0.75	2.40	2.2	1.2	0.33	9	14
Paratypes	1.69	0.90	1.87	0.66	2.57	2.6	1.1	0.33	9	12
	1.71	0.86	1.99	0.67	2.56	2.7	1.1	0.32	9	13
	1.85	0.69	2.07	0.69	2.69	2.9	1.1	0.37	8	13
	1.86	0.95	1.95	0.69	2.70	2.7	1.2	0.39	9	14
	1.73	0.88	1.96	0.67	2.58	2.7	1.2	0.38	9	13
	1.72	0.95	1.82	0.77	2.24	2.5	1.1	0.35	9	14
	1.85	0.97	1.91	0.71	2.61	2.4	1.2	0.39	—	—
	1.73	0.96	1.81	0.64	2.40	2.7	1.1	0.35	9	14
	1.62	0.87	1.82	0.69	2.36	2.4	1.2	0.38	7	12
	1.77	0.87	2.04	0.69	2.58	2.2	1.1	0.34	8	13
Sta. 73-66	1.78	0.88	2.02	0.65	2.72	2.9	1.1	0.37	8	12
	1.68	0.88	1.91	0.66	2.53	2.7	1.1	0.35	8	11
	1.73	0.86	2.02	0.67	2.57	2.7	1.1	0.35	9	13
Sta. 75-49	2.00	0.95	2.10	0.72	2.79	3.1	1.0	0.38	8	13
	2.00	0.97	2.05	0.78	2.56	3.0	1.1	0.35	9	13
	1.77	0.94	1.87	0.72	2.46	2.6	1.2	0.38	8	13

Operculum (Fig. 24I). Yellow, thin, horny, paucispiral, oval with strongly convex outer edge and moderately convex inner edge. Weakly angled posteriorly, rounded anteriorly.

Radula (Fig. 23B, D). Central teeth with cusp formula 4–5+1+4–5, median cusp narrow, sharp; cutting edge triangular; single pair of well-developed basal denticles. Lateral teeth with cusp formula 4–5+1+4–7, primary cusp narrowly triangular, sharp. Inner marginal teeth with about 16–20 sharp cusps on outer side, inner side obscured in mounts. Outer marginal teeth with 9–10 cusps on inner side, outer side simple (based on 3 radulae).

Animal. Unpigmented.

REMARKS. The characters that distinguish *O. subincisa* from *O. protofimbriata*, *O. striola* n. sp., and *O. sulcula* n. sp. are discussed in the remarks under those species. There are no other known South American elongate-conic *Onoba* species with finely spirally sculptured shells. The protoconch microsculpture is similar to that of *O. georgiana*, but the shell of that species has only subobsolete spirals and is broader.

Onoba macra (Watson, 1886) from Tristan da Cunha is similar to *O. subincisa* but differs in being larger with more and wider whorls. A few shells of a smaller undescribed species very similar to *O. macra* were available for SEM examination. This undescribed species, which was obtained from off Gough Island, near Tristan da Cunha, is figured here

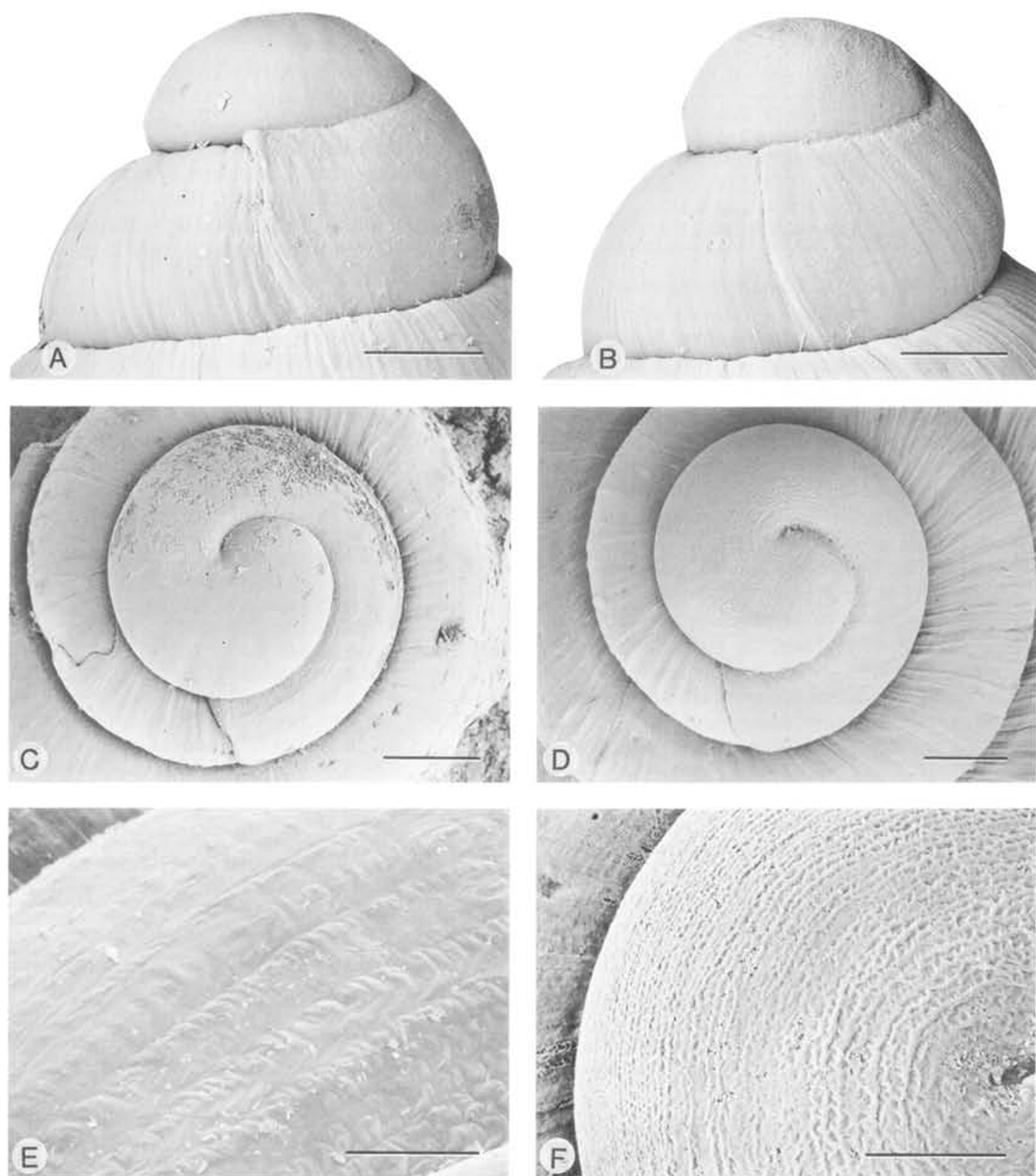
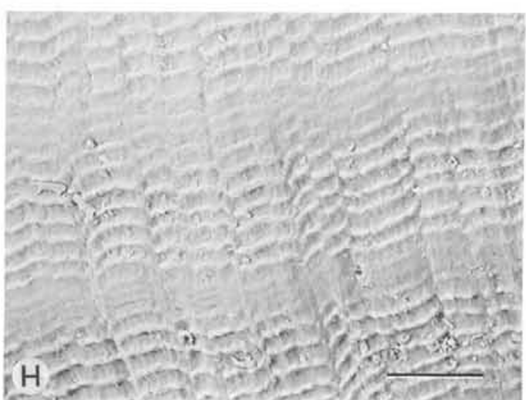
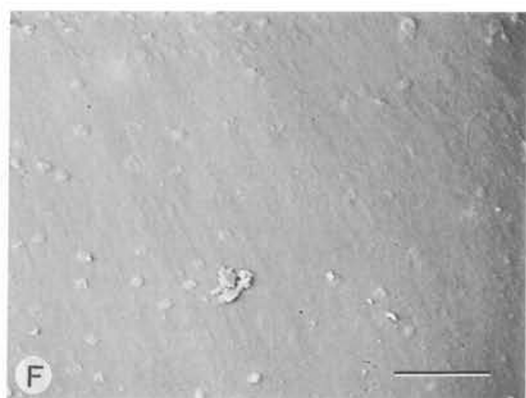
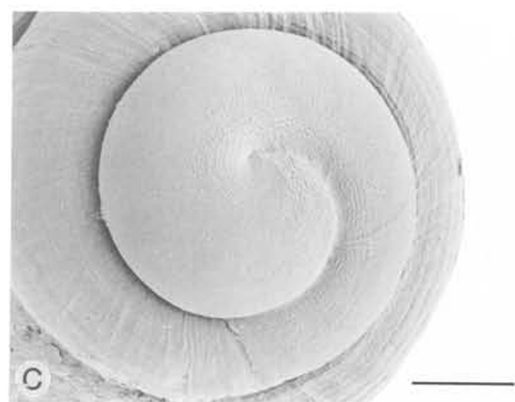
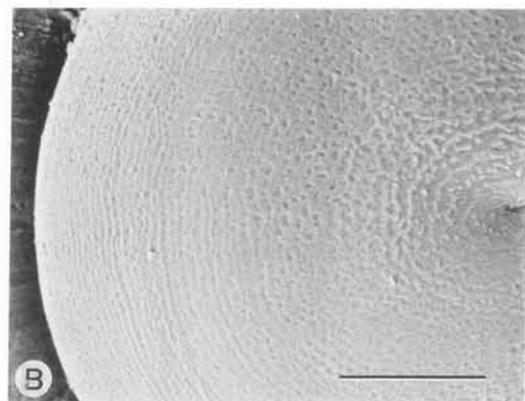


Figure 21. Details of shells of *Onoba erugata* and *O. georgiana*. **A, C, E**, *Onoba erugata* n. sp., paratypes; **A**, lateral view of protoconch; **C**, apical view of protoconch; **E**, protoconch microsculpture. **B, D, F**, *Onoba georgiana* (Pfeffer), Sta. 75-48; **B**, lateral view of protoconch; **D**, apical view of protoconch; **F**, protoconch microsculpture. Scale bars: **A-D**, 100 μm ; **E**, 20 μm ; **F**, 50 μm .

Figure 22. Details of shells of *Onoba subincisa* and *O. cf. macra*. **A-D**, *Onoba subincisa* n. sp., paratypes; **A**, lateral view of protoconch; **B**, protoconch microsculpture; **C**, apical view of protoconch; **D**, teleoconch microsculpture. **E-H**, *Onoba cf. macra* Discovery Expedition Sta. 399; **E**, lateral view of protoconch; **F**, protoconch microsculpture; **G**, apical view of protoconch; **H**, teleoconch microsculpture. Scale bars: **A, C, E, G**, 100 μm ; **B, D**, 50 μm ; **F**, 20 μm ; **H**, 200 μm .



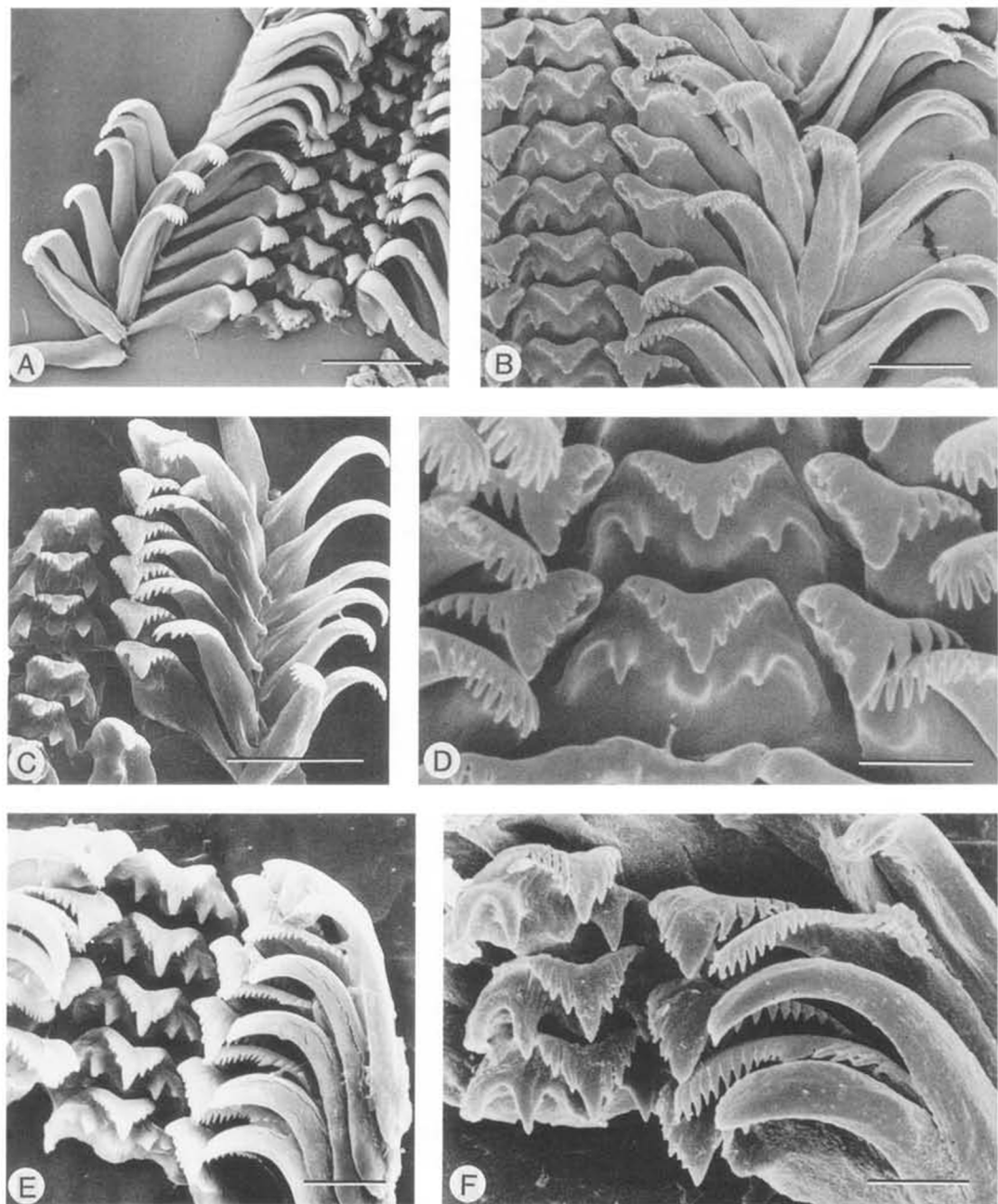


Figure 23. Radulae of species of *Onoba*. A, C, *Onoba scythei* (Philippi); A, Sta. TW3; C, Sta. 75-49. B, D, *Onoba subincisa* n. sp., paratypes. E, F, *Onoba fuegoensis* (Strebel); E, Sta. 71-262; F, Sta. 71-344. Scale bars: A, 20 μ m; B, E, 10 μ m; C, 25 μ m; D, F, 5 μ m.

for comparison with *O. subincisa* (Figs. 19H, 22E-H) but is not described because the small amount of available material is poor.

Onoba subincisa has a shell somewhat similar to that of the New Zealand *O. fumata* (Suter, 1898), but the aperture extends much more markedly forward (i.e., more opisthocline outer lip) in the New Zealand species. In addition, there are more spiral

cords (9-11 on the penultimate whorl of *O. fumata*), and the cords are narrower and flatter with narrower interspaces in *O. subincisa*. The New Zealand sub-Antarctic species *O. fallai* is usually slightly larger, with stronger spiral cords, and has a distinct apertural varix. Another New Zealand species, *Onoba inornata* (Powell, 1933), is somewhat similar in sculptural details but has a similar

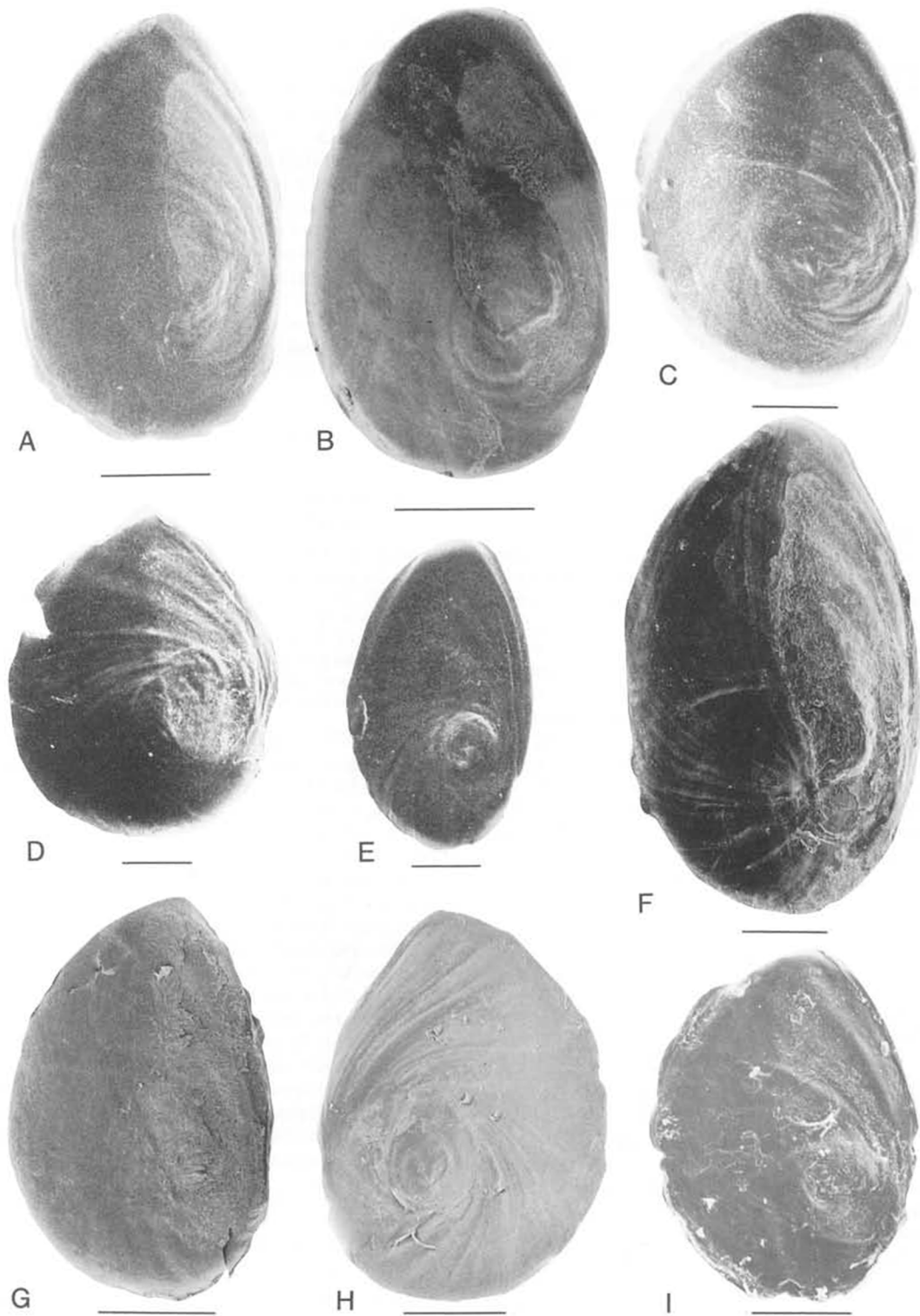


Figure 24. Opercula of species of Rissoidae. All views inner side unless otherwise indicated. A–C, *Onoba fuegoensis* (Strebel); A, Sta. 71-342; B, Sta. 71-344; C, Sta. 71-262. D, H, *Onoba scythei* (Phillippi); D, Sta. 75-45; H, Sta. TW3, outer side. E, *Onoba striola* n. sp., paratype. F, *Onoba erugata* n. sp., paratype. G, *Onoba georgiana* (Pfeffer), Sta. 75-49. I, *Onoba subincisa* n. sp., paratype. Scale bars: 200 μ m.

aperture to that in *O. fumata*. The sub-Antarctic species *O. steineni* (Strebel, 1908) and *O. turqueti* (Lamy, 1905) have much larger and broader shells, and *O. steineni* has stronger sculpture.

DISTRIBUTION. Southern Chile and Tierra del Fuego; intertidal; empty shells to 18 m. Moderately common.

***Onoba striola* n. sp.**

Figures 18C, 24E, 25

ETYMOLOGY. *Striola*—Latin. A little furrow or line. Refers to the teleoconch microsculpture.

MATERIAL EXAMINED. *Types.* Holotype, LACM 2684, 4 paratypes, LACM 2685; 1 paratype, AMS C.167426. 32H 71-287. Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.25'S, 64°2.3'W, intertidal, Sta. 71-2-37, USARP-SOSC-R/V *Hero* Cr.712, 17 May 1971.

DIAGNOSIS. Shell (Fig. 25). Minute (maximum length 2 mm), elongate-conic, thin, translucent, with 2.5–3.4 teleoconch whorls. Spire with straight to lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch glossy with faint, slightly opisthocline growth lines and weak, flat-topped spiral cords separated by much narrower grooves; about 8–9 cords on penultimate whorl, 18–20 on last whorl and base, typically very faint and sometimes almost obsolete. Protoconch (Fig. 25B–D) of 1.1–1.3 whorls, with weak, irregular but mostly spirally aligned spiral wrinkles with interconnecting transverse wrinkles giving it finely reticulated appearance. Aperture oval, weakly angled posteriorly, with sharp peristome. Inner lip narrow, separated from parietal wall; outer lip slightly opisthocline with weak apertural varix immediately behind lip. Umbilical chink very narrow to absent. Periostracum very thin, transparent. Color white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD	PS	BS
Holotype	2.00	1.01	1.97	0.73	2.73	3.4	1.3	0.35	—	21
Paratypes	1.64	0.89	1.84	0.64	2.54	2.5	1.3	0.37	—	—
	1.90	0.98	1.94	0.73	2.62	2.7	1.2	0.41	—	—
	2.02	1.00	2.01	0.71	2.85	3.0	1.3	0.43	9	—
	1.74	0.90	1.93	0.67	2.61	2.7	1.2	0.42	—	—
	2.03	1.00	2.03	0.73	2.80	3.1	1.1	0.39	—	—

Operculum (Fig. 24E). Thin, horny, paucispiral. Elongate-oval with fairly strongly convex outer edge and moderately convex inner edge. Weakly angled posteriorly, rounded anteriorly.

Radula (Fig. 18C). Central teeth with cusp formula 5–6+1+5–6, median cusp long, narrow, pointed; cutting edge triangular; single pair of prominent basal denticles and weak pair of “pseudodenticles” arise from thickened lateral edges. Lateral teeth with cusp formula 7–8+1+7–8, primary cusp narrowly triangular, outer cusps larger and less crowded than inner cusps, inner cusps rather irregular. Inner marginal teeth with about 16

small, rather irregular cusps on outer edge, inner edge obscured in mount. Outer marginal teeth simple on outer side, inner side obscured in mount (single radula examined).

Animal. Unpigmented.

REMARKS. The only species in South America with a similar shell is *O. subincisa*, which has stronger and coarser teleoconch sculpture. The operculum is narrower in *O. striola* and the radula has a distinct second pair of basal cusps developed on the lateral edges of the central teeth, and the cutting edge of these teeth is more narrowly triangular than in *O. subincisa*. The protoconch microsculpture is similar to that of *O. subincisa* and *O. georgiana* but is more weakly developed.

DISTRIBUTION. Tierra del Fuego; intertidal. Uncommon.

***Onoba subaedonis* n. sp.**

Figure 26B, C

ETYMOLOGY. Has a similar shell to *O. aedonis* (Watson).

MATERIAL EXAMINED. Types. Holotype, LACM 2686, 33 paratypes, LACM 2687; 5 paratypes, AMS C.167427. 19 73-73. Bahía San Andrés, N of Golfo de Penas, Aisén Prov., Chile. 46°35.3'S, 75°30.6'W, subtidal, P. Dayton (R/V *Hero*), 23 May 1973.

Additional Material Examined. *Southern Chile:* 17 73-75 [4(d)]. *Tierra del Fuego:* 27E BMNH DE 388 [6(d)]. *Falkland Islands:* AMS C.167499 TW5 [2(d)].

DIAGNOSIS. Shell (Fig. 26B, C). Minute (maximum length 2 mm), ovate-conic, solid, opaque, with 2.7–3.0 teleoconch whorls. Spire with straight outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with moderately strong, rounded spiral cords with interspaces of equal width; 6–10 cords on penultimate whorl, 12–18 on last whorl and base. Interspaces have extremely fine axial growth lamellae and spiral striae. Very fine irregular axial sculpture on upper spire whorls sometimes present. Protoconch (Fig. 26C) of 1.0–1.3 whorls with closely spaced, fine, irregular spirally aligned wrinkles. Aperture broadly oval, weakly angled posteriorly. Inner lip narrow to moderately broad, attached to parietal wall in upper part only; outer lip orthocline, with very small posterior notch and moderate apertural varix immediately behind lip. Umbilical chink moderate. Periostracum not observed. Color white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD	PS	BS
Holotype	1.80	1.14	1.60	0.71	2.56	3.0	1.3	0.42	—	—
Paratypes	1.92	1.18	1.63	0.73	2.63	3.0	1.1	0.41	7	15
	2.02	1.19	1.69	0.76	2.65	3.0	1.0	0.42	6	12
	1.90	1.16	1.64	0.75	2.53	3.0	1.1	0.41	7	13
	1.83	1.12	1.63	0.73	2.50	2.8	1.2	0.42	10	18
	1.85	1.12	1.65	0.74	2.49	2.8	1.0	0.41	7	13
	1.90	1.12	1.70	0.68	2.81	2.9	1.2	0.41	6	—
	1.76	1.11	1.59	0.69	2.56	2.7	1.2	0.43	7	14
	1.85	1.16	1.59	0.75	2.46	2.8	1.2	0.41	—	—

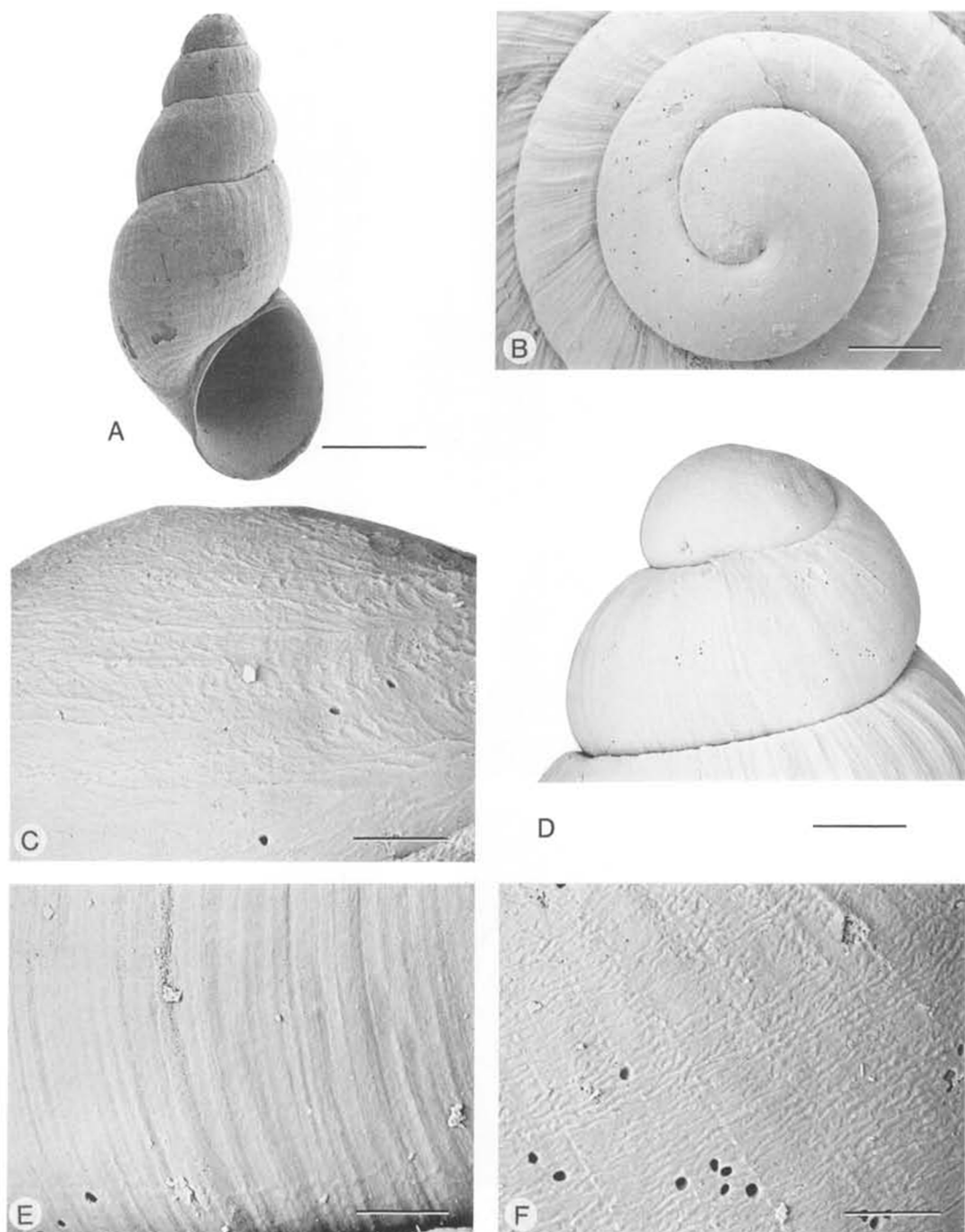


Figure 25. Details of shells of *Onoba striola* n. sp. A, Holotype shell, length 2.00 mm. B, Apical view of protoconch. C, F, Protoconch microsculpture; C, apex; F, last half whorl. D, Lateral view of protoconch. E, Teleoconch microsculpture. Scale bars: A, 500 μ m; B, D, 100 μ m; C, E, F, 25 μ m.

1.90	1.29	1.69	0.70	2.72	2.7	1.2	0.44	6	—
1.82	1.12	1.62	0.72	2.52	2.7	1.2	0.42	6	14

REMARKS. This species is very similar to *Rissoa* (*Onoba*) *aedonis* Watson, 1886, from Tristan da

Cunha. Comparison of the South American material with the types of *O. aedonis* shows that the former material is slightly smaller and has more compact coiling, less convex whorls, and a slightly shorter spire. Unfortunately, no material of *O. ae-*

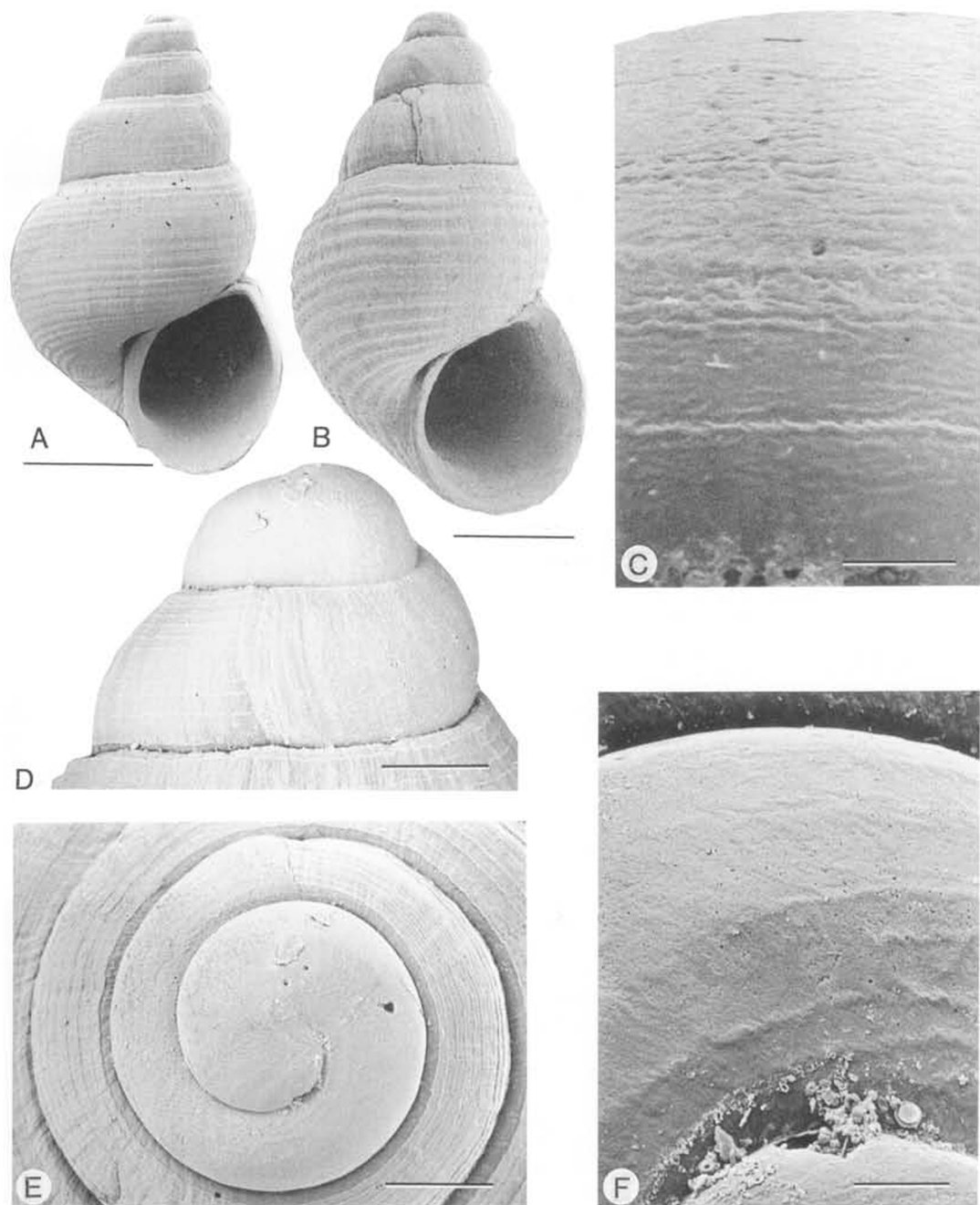


Figure 26. Detail of shells of *Onoba subaedonis* and *O. glaphyra*. A, D–F, *Onoba glaphyra* (Watson), Discovery Expedition Sta. 399; A, shell, length 1.75 mm; D, lateral view of protoconch; E, apical view of protoconch; F, protoconch microsculpture. B, C, *Onoba subaedonis* n. sp., holotype; B, shell, length 1.80 mm; C, protoconch microsculpture. Scale bars: A, B, 500 μ m; C, F, 20 μ m; D, E, 100 μ m.

donis was available for examination with the SEM. Risso (*Ceratia*) *glaphyra* Watson, 1886, another species of *Onoba* from Tristan da Cunha, has a thinner shell that is more finely sculptured. A specimen from nearby Gough Island is figured for comparison (Fig. 26A, D–F).

Compared with other similar South American species, *O. subaedonis* has a smaller shell than *O. scythei* (Philippi) and more numerous spiral cords, always with the interspaces narrower than the ribs (unlike *O. scythei*). The shell of *O. subaedonis* has a shorter spire than any other South American *Ono-*

ba. There is also some resemblance to *Powellisetia microlirata* n. sp., but that species has a smaller, more finely sculptured shell.

Although somewhat similar to *O. beta* (Powell, 1955) from the New Zealand sub-Antartic, the shell of *O. subaedonis* is much smaller, broader, and with relatively much coarser spiral cords. It also resembles the New Zealand *O. foveauxana* (Suter, 1898), but the latter species is larger and often has heavier spirals. The New Zealand species of *Onoba* tend to have the outer edge of the shell aperture inclined forward (i.e., the lip is opisthocline) whereas it is more nearly orthocline in *O. subaedonis*.

A few shells from a beach collection at the Falkland Islands are essentially indistinguishable from the South American material and are tentatively recorded as this species.

DISTRIBUTION. Southern Chile and Tierra del Fuego. Known only from empty shells from subtidal to 80 m. Uncommon. Beach specimens, probably this species, from Falkland Islands.

***Onoba sulcula* n. sp.**

Figures 20E, F, 27C

ETYMOLOGY. Sulculus—Latin. Little furrow. Refers to the teleoconch microsculpture.

MATERIAL EXAMINED. Types. Holotype, LACM 2688, 1 paratype, LACM 2689; 301 71-329. 8 km S Punta Ventana, S side Isla de los Estados, Tierra del Fuego, Argentina. 54°54.5'S, 63°56'W, 771-903 m, Sta. 875, USARP-SOSC-R/V *Hero* Cr.715, 27 Oct. 1971. 10 Paratypes, LACM; 1, AMS C.167672. BMNH 27E DE 388. Off Cape Horn, Chile. 56°19.3'S, 67°09.45'W, 121 m, Discovery Expedition, 16 Apr. 1930.

Additional Material Examined. *Tierra del Fuego:* 35 NMW, SNAE 346 [2(d)].

DIAGNOSIS. Shell (Figs. 20E, F, 27C). Small (maximum length 2.5 mm), elongate-conic, moderately solid, opaque, with 2.9-3.4 teleoconch whorls. Spire with lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with broad, flat spiral cords with slightly narrower interspaces, 5-7 on penultimate whorl and 10-11 on last whorl and base. Interspaces have crisp axial growth lamellae and very fine spiral striae. Protoconch (Fig. 20E, F) of 1.2-1.5 whorls, smooth except for numerous scattered, minute punctures (Fig. 20F). Aperture oval, angled posteriorly. Inner lip moderately broad, attached to parietal wall except for extreme lower portion; outer lip orthocline, with small posterior sinus and prominent apertural varix immediately behind lip. Each whorl usually bears weak but distinct varix. Umbilical chink absent. Periostracum not observed. Color white.

Dimensions.

	SL/	SL/								
	SL	SW	SW	AL	AL	TW	PW	PD	PS	BS
Holotype	2.27	1.31	1.74	0.88	2.58	2.9	1.4	0.48	7	11

Paratype	2.43	1.26	1.92	0.87	2.80	2.9	1.2	0.52	7	10
Sta. DE 388	2.50	1.24	2.00	0.83	3.02	—	—	—	6	11
	2.33	1.19	1.97	0.80	2.91	3.4	1.5		5	10

Operculum, radula, and animal unknown.

REMARKS. This species has a larger and broader shell than the other South American species of *Onoba* with elongate-conic shells and has a very distinctive protoconch microsculpture. Of the Antarctic species, *O. sulcula* most resembles *O. steinerti* in general shell features but is smaller and more conical in shape. It is also somewhat similar to *O. profimbriata* but is larger and differs in protoconch microsculpture. Compared with New Zealand taxa, the shell of *O. sulcula* resembles that of *O. sorenseni* (Powell, 1955), but the latter species has more numerous, narrower ribs (up to 12 on the penultimate whorl) and flatter whorls. The shell of *O. sulcula* is about the same size as that of *O. beta* but has flatter spirals with narrower interspaces.

The protoconch microsculpture suggests that *O. sulcula* might be a member of the genus *Lironoba*, although the teleoconch sculpture and shape are typical of *Onoba*.

DISTRIBUTION. Tierra del Fuego; uncommon, 120-900 m.

***Onoba scythei* (Philippi, 1868)**

Figures 23A, C, 24D, H, 28, 29

Rissoa scythei Philippi, 1868: 225 [Holotype (location unknown, presumed lost), ? Strait of Magellan]; Carcelles, 1950: 55; Carcelles and Williamson, 1951: 272.

MATERIAL EXAMINED. *Southern Chile:* 17 73-75 [4(d)]. 20 73-72 [many(d)]. 23 73-70 [8(d)]. 24 75-48 [3(+2d)]; 75-49 [many]; USNM 212271, St.2778 [27(d)]. *Tierra del Fuego:* 25 73-69 [20]. BMNH 27E DE 388 [1]. 28 71-270 [1(d)]; 71-271 [1(d)]. 32H 71-287 [1(d)]. 33B 71-267 [many(d)]; 71-347 [many(d)]. 34 USNM E 363 [1(d)]. 37B USNM E 967 [3]. *Falkland Islands:* USNM 368419, [3 (d)]; SMNH SSPE 39 [6]; AMS C.167496, TW1 [many]; AMS C.167495, TW2 [3]; AMS C.167494, TW4 [2(d)]; AMS C.167493, TW5 [5(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 28, 29). Small (maximum length 2.7 mm), ovate-conic, solid, opaque, with 2.7-3.5 teleoconch whorls. Spire with lightly convex to straight outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with strong, spiral cords that may be flat with interspaces of equal width to cords or sharp with wider interspaces; number of cords very variable, 3-7 on penultimate whorl, 7-14 on last whorl and base. Interspaces with rather coarse, distinct axial growth lamellae and very fine spiral striae. Irregular axial sculpture may be present on upper whorls. Protoconch (Figs. 28D, E, G, 29A, D, E, G) of 1.0-1.5 whorls, with numerous scattered granules. Aperture oval, angled posteriorly. Inner

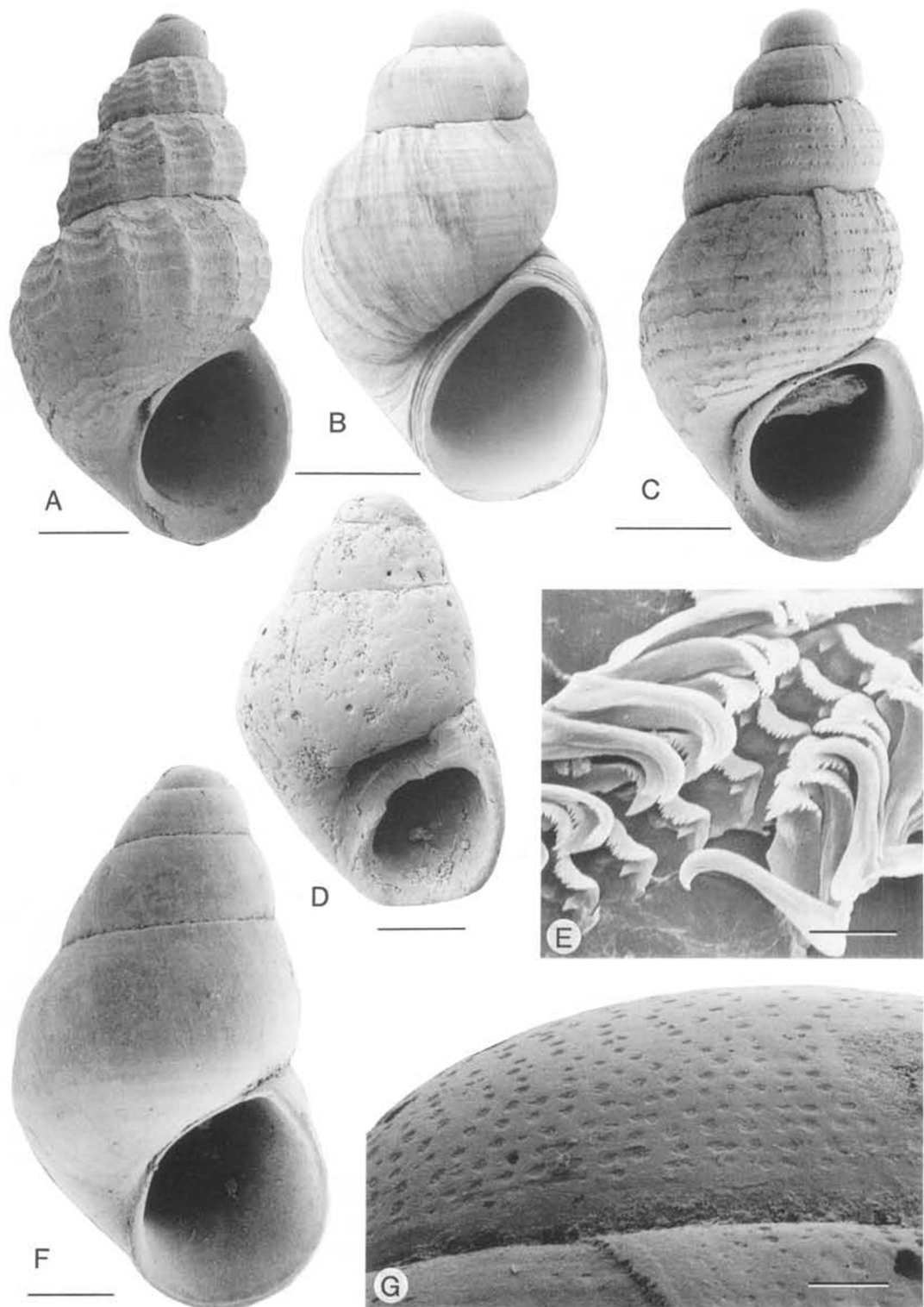


Figure 27. A, *Onoba ? algida* n. sp., holotype, shell, length 2.72 mm. B, E, *Onoba ? lacuniformis* n. sp.; B, holotype, shell, length 2.02 mm; E, paratype, radula. C, *Onoba sulcula* n. sp., holotype, shell, length 2.27 mm. D, *Amphithalamus* cf. *inclusus* Carpenter, Sta. 75-15, shell, length 1.24 mm. F, G, *Barleeia meridionalis* n. sp., holotype; F, shell, length 1.75 mm; G, protoconch microsculpture. Scale bars: A-C, 500 μ m; D, F, 250 μ m; E, 10 μ m; G, 20 μ m.

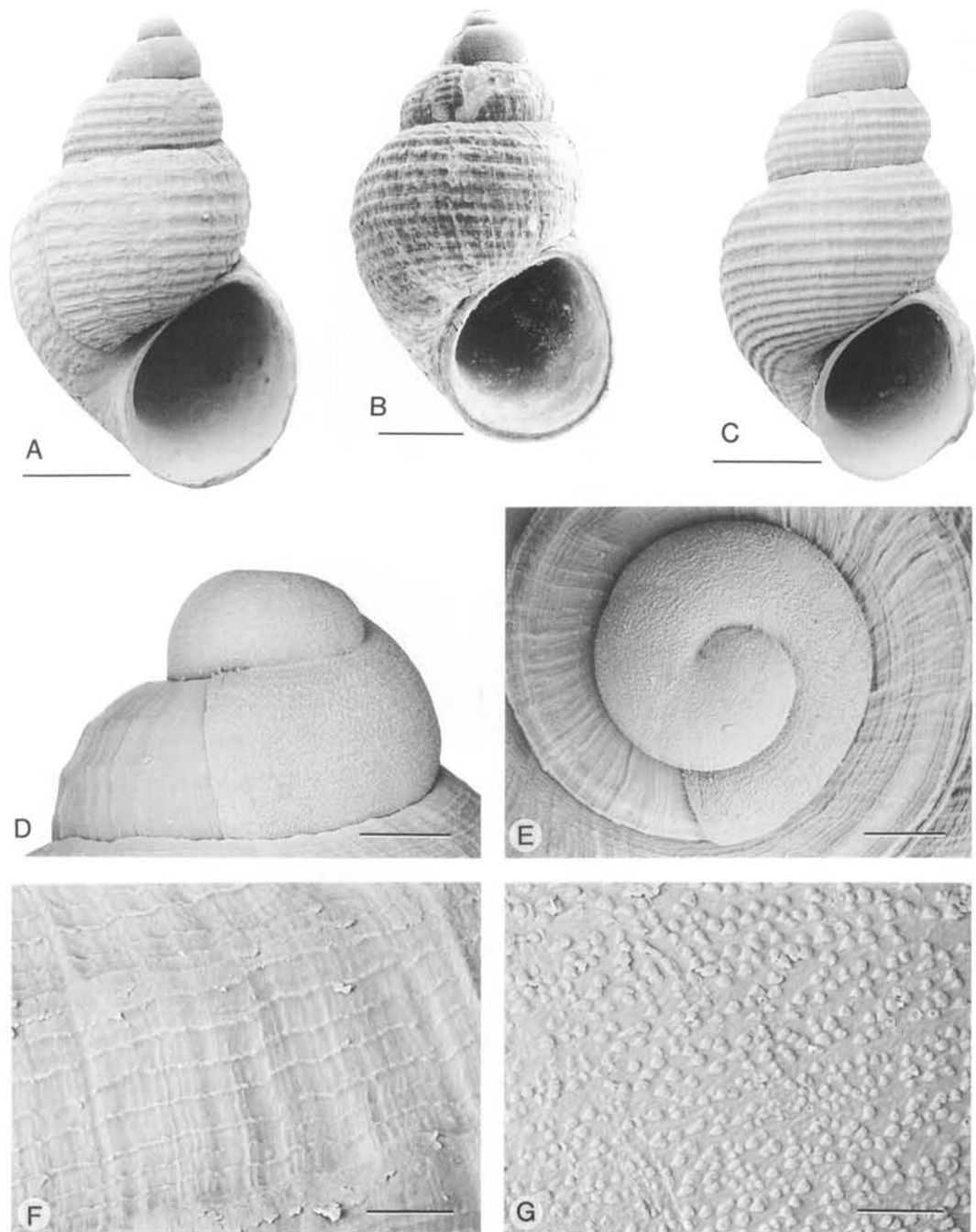


Figure 28. Detail of shells of *Onoba scythei* (Philippi). **A**, Sta. 75-48, shell, length 2.26 mm. **B**, Sta. 75-49, shell, length 2.06 mm. **C**, Sta. 73-69, shell, length 2.26 mm. **D**, Sta. 75-48, lateral view of protoconch. **E**, Sta. 75-48, apical view of protoconch. **F**, Sta. 75-48, teleoconch microsculpture. **G**, Sta. 75-48, protoconch microsculpture. Scale bars: A-C, 500 μ m; D, E, 100 μ m; F, G, 25 μ m.

lip narrow to moderately broad, attached to parietal wall in upper portion; outer lip orthocline, with weak posterior indentation and moderate apertural varix immediately behind lip. Umbilical chink very narrow to moderate. Periostracum well developed, yellowish-brown. Color white or pale yellow.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD	PS	BS
Sta. 71-267										
Fig. 29C	2.47	1.43	1.73	0.89	2.61	3.2	1.3	0.41	5	8

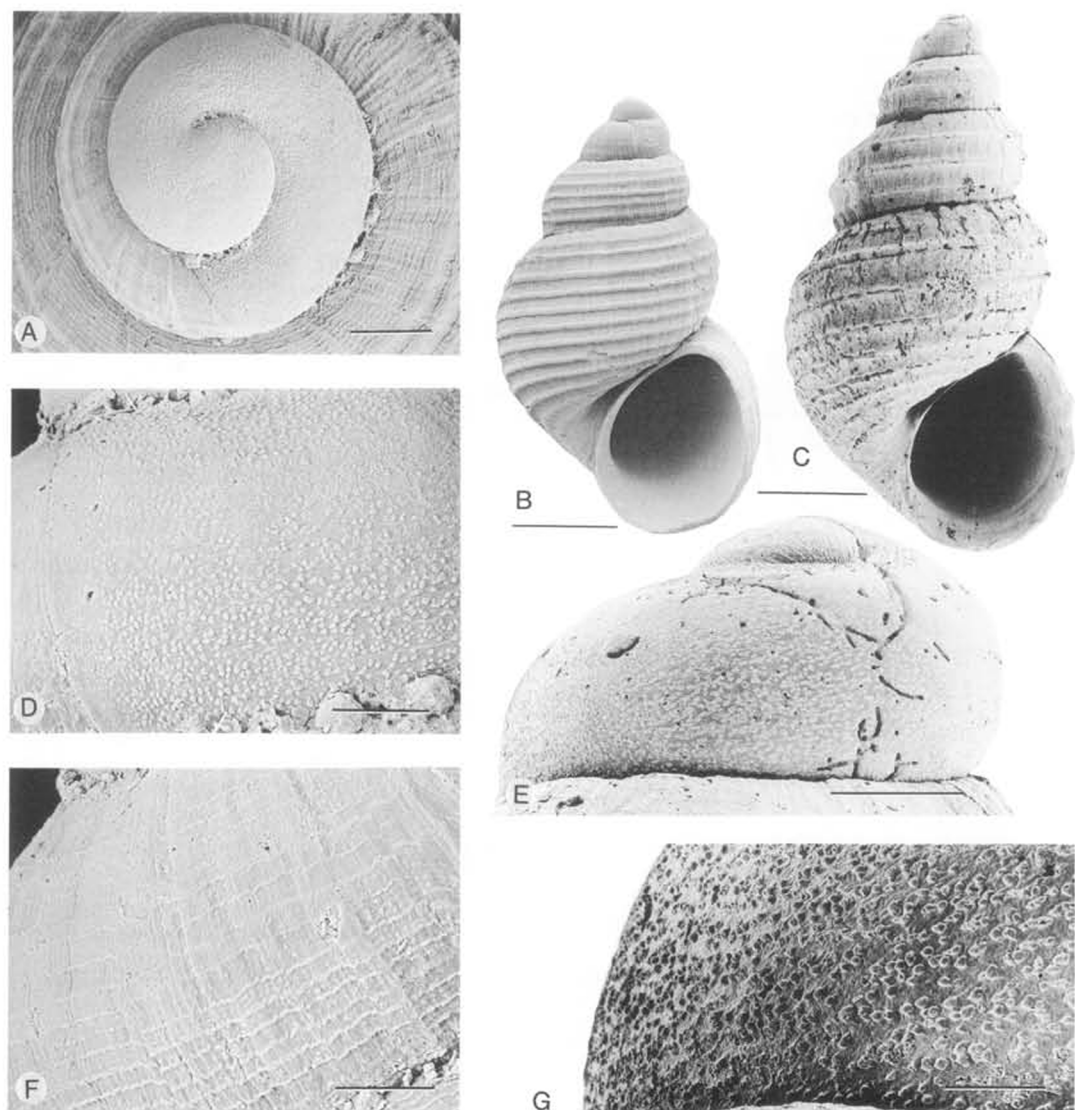


Figure 29. Detail of shells of *Onoba scythei* (Philippi). A, B, D, F, Sta. TW1; A, apical view of protoconch; B, shell, length 2.01 mm; D, protoconch microsculpture; F, teleoconch microsculpture. C, E, G, Sta. 71-267; C, shell, length 2.47 mm; E, lateral view of protoconch; G, protoconch microsculpture. Scale bars: A, E, 100 μ m; B, C, 500 μ m; D, F, 50 μ m; G, 25 μ m.

	2.26	1.37	1.65	0.90	2.50	2.9	1.2	0.41	4	8		2.24	1.30	1.72	0.91	2.45	2.7	1.3	0.42	6	12	
	2.47	1.40	1.77	0.87	2.84	3.2	1.2	0.42	5	9		2.34	1.31	1.79	1.06	2.22	2.8	1.1	0.41	6	13	
	2.50	1.44	1.74	0.97	2.50	3.4	1.2	0.38	5	9		2.20	1.33	1.65	0.91	2.41	3.0	1.2	0.35	5	12	
	2.47	1.44	1.69	0.92	2.63	3.3	1.2	0.42	4	9		2.18	1.29	1.69	0.94	2.33	2.8	1.1	0.39	7	13	
	2.47	1.48	1.67	0.95	2.61	3.3	1.2	0.34	4	8		2.24	1.38	1.62	0.88	2.54	2.8	1.2	0.43	6	12	
	2.62	1.45	1.81	0.95	2.77	3.3	1.3	0.41	4	9		2.18	1.20	1.81	0.86	2.54	2.8	1.2	0.43	6	12	
	2.26	1.45	1.80	0.94	2.79	3.5	1.1	0.34	4	8		2.28	1.40	1.63	0.98	2.33	2.9	1.0	0.38	7	13	
	2.33	1.57	1.71	0.98	2.75	3.5	1.2	0.41	5	9		2.20	1.27	1.74	0.94	2.36	2.8	1.0	0.41	6	12	
	2.68	1.53	1.75	0.97	2.77	3.5	1.2	0.41	3	7												
Sta. 75-48																						
Fig. 28A	2.26	1.41	1.60	0.99	2.29	2.8	1.4	0.41	5	13	Sta. TW1											
Sta. 73-69											Fig. 29B	2.01	1.28	1.57	0.87	2.32	2.9	1.3	0.37	5	12	
Fig. 28C	2.26	1.31	1.72	0.90	2.50	3.0	1.5	0.41	5	14												
Sta. 75-49																						
Fig. 28B	2.06	1.26	1.62	0.91	2.26	2.8	1.3	0.36	5	14												
	2.27	1.36	1.66	0.92	2.45	2.9	1.2	0.41	6	12												
	2.24	1.31	1.70	0.86	2.60	2.9	1.1	0.42	7	12												

Operculum (Fig. 24D, H). Yellow, thin, horny, paucispiral, oval, with strongly convex outer edge and weakly convex inner edge. Weakly angled posteriorly, rounded anteriorly.

Radula (Fig. 23A, C). Central teeth with cusp formula 3-4+1+3-4, median cusp blunt, short, markedly larger than adjacent cusps; cutting edge almost straight; single pair of basal denticles. Lateral teeth with cusp formula 5-7+1+4-5, primary cusp broadly triangular, pointed. Inner marginal teeth with 8-9 sharp cusps, all near distal end. Outer marginal teeth with about 9 sharp cusps on inner edge, outermost largest, about equal in size with those on inner marginal teeth; outer edge simple (single radula examined).

Animal. Apparently unpigmented (from dry material).

REMARKS. The type material of this species cannot be located, and we assume that it is lost. Philippi's description is sufficiently detailed to identify this species with reasonable confidence, even though it was not figured. This species, as we have interpreted it, is very variable in the shape and sculpture of the shell. There appear to be two main forms, although they sometimes intergrade. One is a shallow water form (Fig. 28A, B), which has a shorter, broader shell with more numerous and more flattened spiral cords than the other, an offshore form (Figs. 28C, 29C). Both forms, and the specimens from the Falkland Islands (Fig. 29A, B, D, F), all have the distinctive granules on the protoconch (Figs. 28D, E, G, 29A, D, E, G), which are also shared with *O. fuegoensis*. We have only been able to examine a radula from a shallow-water specimen, and this is unusual in the central teeth having a simple, almost straight cutting edge rather than the triangular cutting edge seen in most species of *Onoba*.

The shallow-water form is similar in shell characters to *O. foveauxiana* from New Zealand, but that species is larger and more elongate-conic in shape. The shell of another New Zealand species, *O. alpha*, is similar in size but is slightly narrower and has six to eight spiral cords on the penultimate whorl. In addition, there is a stronger posterior apertural sinus in the New Zealand species. The extreme deep water form is similar to *O. delecta* Ponder, 1983, from off South Georgia but has a larger shell with less distinct interstitial axial sculpture.

DISTRIBUTION. Southern Chile, Tierra del Fuego, and Falkland Islands. Fine sculptured form mainly intertidal; common. Coarse sculptured form known only from empty shells found from 15 to 36 m; less common.

Onoba fuegoensis (Strebel, 1908)

Figures 23E, F, 24A-C, 30

Rissoia (*Cingula*?) *fuegoensis* Strebel, 1908: 56, pl. 6, fig. 90a, b (Tierra del Fuego, 36 m).

Rissoia (*Onoba*) *fuegoensis*: Melvill and Standen, 1912: 350.

Cingula fuegoensis: Carcelles, 1950: 55, pl. 2, fig. 22; Carcelles and Williamson, 1951: 271.

Onoba fuegoensis: Ponder, 1983a: 20.

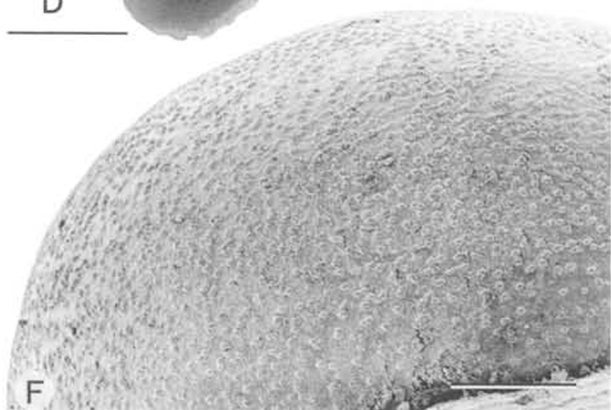
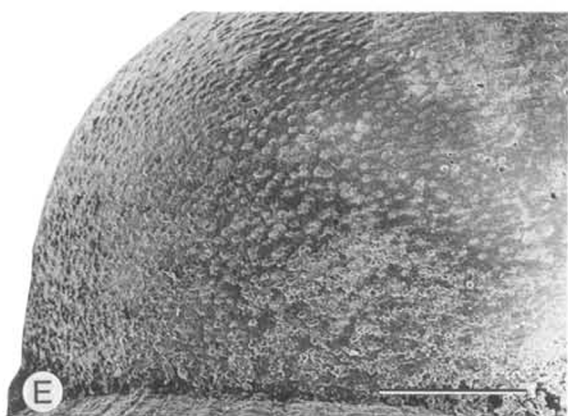
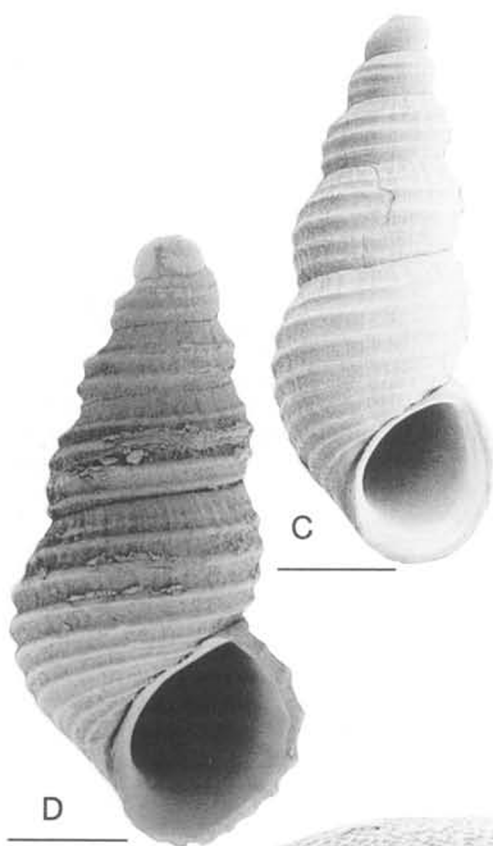
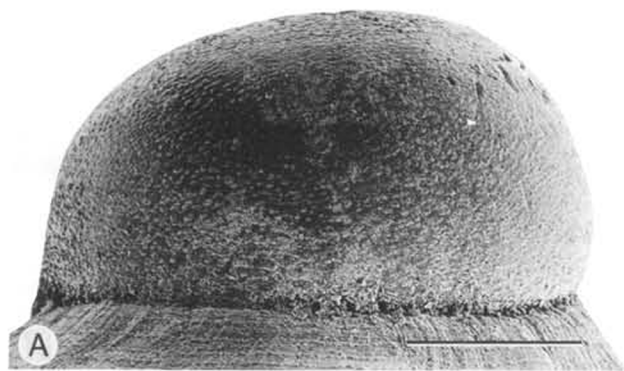
MATERIAL EXAMINED. Types. Lectotype (here chosen) and damaged paralectotype, SMNH SSPE 3, Tierra del Fuego. 54°43'S, 64°08'W, 36 m, 6 Jan. 1902.

Additional Material Examined. *Tierra del Fuego*: 27C USNM E 219 [3(d)]. 27E BMNH DE 388 [27(d)]. 29B 71-305 [2(d)]. 30A 71-342 [2]. 30B 71-346 [9(d)]. 30C 71-344 [many]; USNM H 659 [14(d)]. 30D 71-340 [1(d)]. 30I 71-329 [13]. 33B 71-267 [15]; 71-347 [11(d)]. 33D 71-352 [3(d)]. 33E 71-351 [3]. 33F 71-265 [3(d)]; 71-357 [4]. 33N 71-262 [4(d)]. 33N 71-262 [1]. 33Q 71-327 [2(d)]. 33R 71-328 [3]. 37A BMNH DE 88 [1(d)]. *Burdwood Bank*: 35 NMW, SNAE 346 [2(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. **Shell** (Fig. 30). Small (maximum length 3.1 mm), elongate-conic, solid, opaque, with 3.0-4.3 teleoconch whorls. Spire with lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with strong, sharp spiral cords with wider interspaces; 4-6 (usually 5) cords on penultimate whorl, 8-12 on last whorl and base; interspaces with rather coarse, distinct axial growth lamellae and very fine spiral striae. Irregular axial sculpture may be present on upper whorls. Protoconch (Fig. 30A, E, F) of 1.1-1.3 whorls, with numerous scattered granules, sometimes aligned more or less spirally. Aperture oval, angled posteriorly. Inner lip narrow to moderately broad, attached to parietal wall; outer lip slightly opisthocline with a moderate posterior notch and prominent apertural varix immediately behind lip. Umbilical chink absent or narrow groove. Periostracum thin, transparent. Color white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TWP	PW	PD	PS	BS
Lectotype	2.58	1.21	2.12	0.90	2.88	4.0	1.3	0.38	4	9
Sta. 71-342										
Fig. 30C	2.68	1.19	2.26	0.79	3.40	4.2	1.2	0.36	4	9
Sta. 71-346	2.73	1.19	2.29	0.81	3.39	4.3	1.2	0.37	5	10
	2.96	1.30	2.27	0.89	3.31	4.2	1.1	0.46	6	12
	2.84	1.34	2.11	0.88	3.22	3.9	1.2	0.46	5	10
	2.77	1.34	2.06	0.89	3.11	3.6	1.2	0.46	5	10
	2.88	1.37	2.11	0.92	3.12	3.8	1.2	0.47	5	10
	3.01	1.40	2.15	0.95	3.18	4.0	1.2	0.46	5	10
Sta. 71-262	3.05	1.42	2.15	0.94	3.26	4.1	1.2	0.44	5	10
	2.42	1.27	1.91	0.87	2.78	3.2	1.3	0.47	4	8
	2.99	1.34	2.22	0.91	3.27	4.2	1.2	0.41	5	10
	2.83	1.32	2.14	0.91	3.09	3.8	1.2	0.44	5	11
Sta. 73-344										
Fig. 30B	2.73	1.34	2.00	0.87	3.13	4.2	1.2	0.41	5	9
Fig. 30D	2.73	1.39	1.96	0.95	2.87	4.1	1.3	0.37	4	9
	2.61	1.26	2.08	0.83	3.16	3.7	1.2	0.47	4	10
	3.04	1.45	2.10	0.95	3.22	4.2	1.2	0.45	6	11
	2.92	1.31	2.23	0.88	3.32	4.1	1.2	0.44	5	10
	2.91	1.39	2.10	0.91	3.19	4.1	1.1	0.41	5	10
	3.00	1.38	2.18	0.91	3.29	4.2	1.1	0.41	5	9
	2.69	1.24	2.13	0.87	3.02	3.8	1.2	0.43	5	9
	2.96	1.29	2.29	0.91	3.23	4.2	1.2	0.42	5	9
	2.93	1.38	2.13	0.92	3.17	4.2	1.2	0.44	5	9
	2.96	1.40	2.11	0.97	3.06	4.0	1.2	0.44	5	11
Sta. 71-329										
Fig. 30G	1.97	1.00	1.97	0.69	2.86	3.0	1.2	0.43	5	10
	2.29	1.13	2.03	0.75	3.04	3.9	1.2	0.32	5	8



2.37 1.18 2.01 0.78 3.03 3.6 1.2 0.40 5 10
 1.99 1.00 1.99 0.69 2.89 3.1 1.2 0.42 5 8
 Sta. 71-262 2.77 1.27 2.15 0.96 2.90 3.8 1.2 0.42 5 8

Operculum (Fig. 24A-C). Yellow, thin, horny, paucispiral, oval, with strongly convex outer edge and weakly convex inner edge. Weakly angled posteriorly, rounded anteriorly.

Radula (Fig. 23E, F). Central teeth with cusp formula 4-5+1+4-5, median cusp small, sharp; cutting edge triangular; single pair of well-developed basal denticles. Lateral teeth with cusp formula 6-8+1+6-8, primary cusp triangular, outer cusps larger and less crowded than small, irregular inner cusps. Inner marginal teeth with 16-17 sharp cusps on outer edge, inner edge obscured in mount. Outer marginal teeth with c. 8 cusps on inner side, outer side simple, cusps about equal in size to those on inner marginal teeth (4 radulae from 3 localities examined).

Animal. Unpigmented.

REMARKS. There is some variation in size and shape, particularly with respect to relative width. Extremes of this variation are shown in Figure 30B-D, G. The types are closest to the elongate form shown in Figure 30C. Some specimens from deeper water are much smaller and shorter (Fig. 30G) than the typical form, although intermediates are found (Fig. 30B, D). Some forms of *O. scythei* approach the shorter varieties of *O. fuegoensis*, but this latter species is always narrower. Both species have a similar granulate protoconch microsculpture, but the radula of *O. fuegoensis* has a triangular cutting edge, not almost straight as in *O. scythei*. This latter character needs to be confirmed, however, as only a single radula of *O. scythei* has been examined.

DISTRIBUTION. Tierra del Fuego in 50-900 m; shells found as shallow as 36 m. Common.

Onoba georgiana (Pfeffer, 1886)
 Figures 18D, 19B-D, 21B, D, F, 24G

Rissoa georgiana Pfeffer (in Martens and Pfeffer), 1886: 92, pl. 2, fig. 3 (SMNH 910; Swedish Antarctic Expedition, Sta. 28, South Georgia, 12-15 m); Carcelles and Williamson, 1951: 272.

Onoba georgiana: Ponder, 1983a: 15, figs. 9f-h, 10a-h (gives full synonymy).

MATERIAL EXAMINED. *Southern Chile*: 17 73-75 [7(d)]. 18 73-74 [7(d)]. 19 73-73 [many(d)]. 24 75-48 [22]; 75-49 [7(d)]. *Tierra del Fuego*: 28 71-271 [1(d)]. 29A 71-302 [1(d)] (doubtful identification). 30H USNM H 664 [1(d)]. 39 71-268 [4]. *Falkland Islands*: AMS C.167651,

TW1 [2(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. See Ponder, 1983a.

Shell (Figs. 19B-D, 21B, D, F).

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Sta. 75-48								
Fig. 19D	1.86	1.03	1.81	0.75	2.49	2.8	1.5	0.41
	1.89	1.07	1.76	0.78	2.44	2.8	1.3	0.39
	2.30	1.20	1.92	0.87	2.63	2.9	1.4	0.42
	2.33	1.20	1.92	0.89	2.62	2.9	1.4	0.42
Sta. 75-49								
Fig. 19B	1.79	1.15	1.56	0.77	2.32	2.5	1.4	0.41
Fig. 19C	1.86	1.12	1.66	0.78	2.37	2.7	1.3	0.41
	1.69	1.09	1.55	0.75	2.24	2.7	1.2	0.39
	1.83	1.12	1.63	0.76	2.39	2.8	1.1	0.38
Sta. 73-74	2.00	1.20	1.66	0.81	2.48	2.8	1.3	0.43
	1.90	1.19	1.59	0.80	2.39	2.5	1.3	0.47
	1.87	1.17	1.60	0.76	2.45	2.8	1.3	0.42
	1.84	1.12	1.64	0.77	2.37	2.7	1.3	0.42
	2.09	1.25	1.67	0.82	2.55	2.7	1.3	0.46
	1.88	1.09	1.73	0.75	2.50	2.7	1.3	0.43
Sta. 73-73	1.96	1.10	1.78	0.76	2.56	2.9	1.3	0.39
	1.96	1.12	1.75	0.76	2.56	2.9	1.2	0.42
	1.97	1.13	1.74	0.77	2.54	2.8	1.2	0.42
	1.98	1.17	1.63	0.80	2.41	2.5	1.3	0.42
	1.90	1.14	1.67	0.78	2.42	2.8	1.2	0.40
	2.00	1.10	1.81	0.78	2.53	2.8	1.3	0.43
	1.93	1.10	1.76	0.73	2.65	2.8	1.3	0.42
	1.82	1.07	1.69	0.69	2.64	2.6	1.3	0.43
	2.00	1.13	1.79	0.77	2.58	2.8	1.3	0.43
	1.91	1.09	1.76	0.75	2.54	2.7	1.4	0.43

Operculum (Fig. 24G).

Radula (Fig. 18D).

REMARKS. This species is not redescribed here because it is fully described by Ponder (1983a), the South American material being figured here for comparison. Of the other South American species, *O. georgiana* is most similar to *O. erugata* n. sp. in shell and radular characters and is contrasted with that species below. The records from southern Chile, Tierra del Fuego, and the Falkland Islands represent a significant range extension.

DISTRIBUTION. South Georgia, South Orkney Islands, Falkland Islands, Tierra del Fuego, and southern Chile. Intertidal and shallow subtidal. Often common. One specimen, doubtfully this species, from 270 m.

Onoba erugata n. sp.

Figures 18E, 19A, G, 21A, C, E, 24F

ETYMOLOGY. E—Latin. Out of, from. Ru-

←
Figure 30. Detail of shells of *Onoba fuegoensis* (Strebel). **A, E**, Sta. 71-344; **A**, lateral view of protoconch; **E**, protoconch microsculpture. **B, D**, Sta. 71-344, shells, both length 2.73 mm. **C**, Sta. 71-342, shell, length 2.68 mm. **F, G**, Sta. 71-329; **F**, protoconch microsculpture; **G**, shell, length 1.97 mm. Scale bars: **A**, 100 μ m; **B-D, G**, 500 μ m; **E, F**, 50 μ m.

gata—Latin. Crease, wrinkle. Refers to protoconch microsculpture.

MATERIAL EXAMINED. Types. Holotype, LACM 2690, 94 paratypes, LACM 2691; 6 paratypes, AMS C.167425. 28 71-270. W side Bahía Buen Suceso, Tierra del Fuego, Argentina. 54°47.8'S, 65°16'W, intertidal, sand, rocks, and mussels, Sta. 71-2-8, USARP-SOSC-R/V *Hero* Cr.712, 23 Apr. 1971.

Additional Material Examined. *Tierra del Fuego*: 30A USNM H 654 [1]. 32A 71-273 [3]. 32B 71-295 [1(d)]. 32H 71-287 [3]. 33G 73-66 [2(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 19A, G, 21A, C, E). Small to minute (maximum length 1.6 mm), ovate-conic, thin, translucent when fresh, with 2.5–2.7 teleoconch whorls. Spire with straight to lightly convex outlines, whorls moderately to strongly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth and sometimes glossy but may have moderately strong orthocone growth lines. Protoconch (Fig. 21A, C, E) of 1.1–1.4 whorls, almost smooth but with about 14 faint, spiral rows of short, curved, axial wrinkles separated by narrow, spiral, smooth spaces (Fig. 21E). Aperture oval, weakly angled posteriorly, with sharp peristome. Inner lip narrow, attached to parietal wall in posterior part; outer lip orthocone, with moderate posterior notch and weak apertural varix immediately behind lip. Umbilical chink minute to absent. Periostracum thin, transparent. Color white to pale yellow.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.49	0.85	1.77	0.63	2.35	2.6	1.2	0.37
Paratypes								
Fig. 19A	1.52	0.96	1.69	0.63	2.39	2.6	1.3	0.31
	1.64	0.99	1.66	0.64	2.54	2.7	1.1	0.40
	1.48	0.93	1.59	0.64	2.30	2.6	1.2	0.35
	1.59	0.94	1.70	0.66	2.43	2.6	1.3	0.39
	1.53	0.97	1.58	0.66	2.32	2.6	1.1	0.33
	1.60	0.10	1.60	0.68	2.37	2.5	1.4	0.35
	1.57	0.98	1.60	0.67	2.35	2.7	1.3	0.38
	1.55	0.95	1.64	0.64	2.41	2.5	1.3	0.39
	1.59	1.00	1.59	0.64	2.46	2.6	1.2	0.39
	1.54	0.95	1.54	0.65	2.37	2.6	1.1	0.32
	1.47	0.92	1.59	0.62	2.36	2.6	1.2	0.35

Operculum (Fig. 24F). Thin, horny, paucispiral, oval with strongly convex outer edge and moderately convex inner edge. Moderately angled posteriorly, rounded anteriorly.

Radula (Fig. 18E). Central teeth with cusp formula 4+1+4, median cusp moderately long, narrow, sharp; cutting edge triangular; single pair of well-developed basal denticles. Lateral teeth with cusp formula 4–5+1+6–8, primary cusp triangular, sharp, inner cusps smaller than outer cusps. Inner marginal teeth with about 20 small cusps on outer edge and distal end, inner edge obscured in mounts. Outer marginal teeth with simple outer edge, inner edge obscured in mounts (2 radulae examined).

Animal. Unpigmented.

REMARKS. This species is very similar to *O. georgiana* but has a smaller shell (compare dimensions with those of *O. georgiana* above), typically with a relatively smaller aperture, and more convex whorls. Also, unlike *O. georgiana*, there is no spiral sculpture or obvious periostracum on the teleoconch and the protoconch microsculpture, although somewhat similar, is more weakly developed and a different pattern (compare Figs. 21A, C, E and 21D, F). In addition, fresh (“live-collected”) shells are translucent, whereas those of *O. georgiana* are opaque. *Onoba melvilli* (Hedley, 1916) from Macquarie Island SW of New Zealand is very similar to *O. erugata* in teleoconch shape and the lack of spiral sculpture but resembles *O. georgiana* in other characters, including protoconch microsculpture (Ponder, 1983a).

DISTRIBUTION. Tierra del Fuego. Mainly intertidal. Locally common.

***Onoba amissa* nom. nov.**

Figure 10B

Paludestrina striata Orbigny, 1840: 386, pl. 75, figs. 7–9 (Lectotype, BMNH 1854.12.4.349 (+3 specimens of *Powellisetia* sp.); southern coast of Patagonia, near Puerto San Julián (Argentina) and Falkland Islands); Da Silva and Davis, 1983: 144, fig. 17 (also as *Onoba*). Not *Turbo striatus* J. Adams, 1797 = *Onoba semicostata* (Montagu, 1803).

Hydrobia striata: Carcelles, 1950: 55.

Hydrobia? striata: Carcelles and Williamson, 1951: 270.

ETYMOLOGY. *Amissa*—Latin. Lost. Refers to the unknown locality of this taxon.

DIAGNOSIS. A shell description and dimensions are given by Da Silva and Davis (1983).

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW + PW
Lectotype (from Da Silva and Davis, 1983)	2.18	1.4	1.56	1.04	2.10	4.25

REMARKS. The type of this species was apparently obtained on the southeastern coast of Patagonia or at the Falkland Islands and does not appear to have been recollected. The type is figured for comparison with the fauna described herein. It differs from all of the other South American species of *Onoba* in its ovate shape and in having more numerous, closely spaced spiral cords.

Da Silva and Davis (1983) figured this species and noted that there are two species in the syntype series. The largest specimen was chosen as the lectotype (Fig. 10B) by Da Silva and Davis (1983), and they noted that the three smaller shells (Da Silva and Davis, 1983: figs. 18, 19) are a species of *Powellisetia*. They stated (p. 144) that “[t]he largest specimen is *Onoba striata*, a rissoid species.” Un-

fortunately there is another *Onoba striata* in the literature, *Turbo striatus* J. Adams, 1797, which is a synonym of *Onoba semicostata* (Montagu, 1803) because it is a primary homonym of the prior *Turbo striatus* da Costa, 1778. *Onoba striata* (Orbigny, 1840) is thus invalid (ICZN, Art. 57(c)(i)) and a replacement name is proposed above.

***Onoba* (?) *algida* n. sp.**

Figures 20G, 27A

ETYMOLOGY. *Algida*—Latin. Cold. Refers to sub-Antarctic location.

MATERIAL EXAMINED. Types. Holotype, LACM 2692, 14 paratypes, LACM 2693; 3 paratypes, AMS C.167457. **30C** 71-344. Bahía Capitán Cánepa, Isla de los Estados, Tierra del Fuego, Argentina. 54°50.2'S, 64°29.4'W, 67-71 m, Sta. 897, USARP-SOSC-R/V *Hero* Cr.715, 4 Nov. 1971.

Additional Material Examined. Tierra del Fuego: 30B 71-346 [3(d)]. **30J** 71-260 [2(d)]. **33B** 71-267 [many(d)]. **33F** 71-265 [1(d)]; 71-357 [8(d)]. (All material LACM.)

DIAGNOSIS. Shell (Figs. 20G, 27A). Small (maximum length 3.1 mm), ovate-conic, solid, opaque, with 2.8-3.5 teleoconch whorls. Spire with lightly convex to straight outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with strong, rounded spiral cords with wider interspaces and 5-9 prominent, broad axial folds that reach suture but not extending onto base. Five to 9 (usually 6 or 7) spiral cords on penultimate whorl, 11-13 on last whorl and base; interspaces with fine axial growth lamellae and very fine spiral striae. Spiral cords generally pass over tops of folds and do not form gemmules. Protoconch (Fig. 20G) of 1.2-1.3 whorls, microsculpture of short to long ridges arranged as somewhat irregular spiral lines. Aperture oval, angled posteriorly. Inner lip narrow to moderately broad, attached to parietal wall in upper portion; outer lip very slightly opisthocline with prominent apertural varix immediately behind lip. Umbilicus very small. Periostracum not observed. Color white.

Dimensions.

	SL/ SL	SW	SL/ SW	AL	AL	TW	PW	PD	PS	BS	PA	BA
Holotype	2.72	1.56	1.74	0.99	2.75	3.2	1.2	0.50	6	11	5	6
Paratypes												
2.87	1.70	1.69	1.04	2.75	3.3	1.2	0.49	9	12	6	8	
2.96	1.66	1.79	1.04	2.84	3.2	1.2	0.54	—	—	—	—	
2.70	1.55	1.77	1.02	2.64	3.1	1.2	0.54	7	13	6	7	
2.68	1.56	1.72	1.02	2.62	3.1	1.2	0.52	6	12	5	7	
3.13	1.78	1.75	1.11	2.83	3.5	1.3	0.55	7	12	5	6	
Sta. 75-357												
2.71	1.37	1.71	0.85	2.77	3.3	1.2	0.50	7	12	5	7	
2.75	1.48	1.86	0.95	2.91	3.4	1.2	0.48	7	11	5	6	
2.39	1.40	1.71	0.97	2.47	2.8	1.2	0.57	5	12	6	7	

Operculum, radula, and animal unknown.

REMARKS. This is the only known species in the area with coarse axial sculpture on the shell, giving it a superficial resemblance to *Rissoa* (*Alvania*) *luscinae* Watson, 1886, from Tristan da Cunha, but is broader, with stronger axials that persist onto the last whorl. *Rissoa luscinae* was placed in *Onoba* (*Subestea*) by Ponder (1985a: 59). The types have about seven spiral ridges on the protoconch, this character being one of the factors influencing the subgeneric placement. *Onoba algida* has weak spiral sculpture on the protoconch made up of roughly aligned, short, rather irregular ridges. Partly because we have not been able to examine *O. luscinae* using the SEM, it is by no means clear whether or not there is any likely relationship between these two species but our interpretation of the gross teleoconch and protoconch characters favors the idea that the resemblance is superficial. Although we tentatively include the new species in *Onoba*, we have no firm basis for doing this. The protoconch microsculpture (Fig. 20G) is not distinctive, somewhat similar microsculpture being seen in species of *Onoba* and *Alvania*. The general shell morphology is also somewhat similar to species included in *Alvania* and *Onoba* and, although the strong axial sculpture on the teleoconch suggests a relationship with *Alvania*, we judge this to be due to convergence. Other eastern Pacific species included in *Onoba* by Ponder (1985a) develop rather strong axial sculpture—for example *O. carpenteri* (Weinkauff, 1885)—although it is more prominently developed in *O. algida* than in other taxa included in *Onoba* s.s. to date. Final determination of the generic position of this species must await anatomical examination.

DISTRIBUTION. Tierra del Fuego; known only from empty shells, moderately common in 35-70 m.

***Onoba* (?) *lacuniformis* n. sp.**

Figures 12F, 20A, C, 27B, E

ETYMOLOGY. Similar in shape to the gastropod genus *Lacuna*.

MATERIAL EXAMINED. Types. Holotype, LACM 2694, 2 paratypes, LACM 2695; 1 paratype, AMS C.167458. **32H** 71-287. Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.25'S, 64°2.3'W, intertidal, Sta. 71-2-37, USARP-SOSC-R/V *Hero* Cr.712, 17 May 1971.

Additional Material Examined. Southern Chile: 24 75-48 [1(d)]; 75-49 [3(d)]. **Tierra del Fuego: 32G** 71-311 [1(d)]. **Falkland Islands: AMS C.167486, TW1** [2(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Figs. 20A, C, 27B). Small (maximum length 2.2 mm), ovoid, moderately thick, opaque, with 1.5-2.2 teleoconch whorls. Spire with moderately convex outlines, whorls strongly convex and slightly shouldered; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth. Protoconch (Fig. 20A, C) of 1.1-1.3 whorls

with fine, irregular reticulation so that surface appears to be covered in small, irregular, shallow pits. Aperture oval, weakly angled posteriorly, with slightly prosocline, simple outer lip. Umbilical chink extremely narrow or absent. Periostracum not observed. Color pale yellowish grey to white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	2.02	1.27	1.59	0.93	2.17	2.2	1.3	0.49
Paratype	2.05	1.21	1.69	0.90	2.25	1.8	1.2	0.60
Sta. 75-49	2.13	1.34	1.57	0.97	2.18	1.6	1.2	0.64
	2.15	1.38	1.56	1.03	2.08	1.5	1.1	0.62
Sta. 75-48	2.02	1.38	1.47	1.02	1.98	1.9	1.1	0.53
Sta. 71-311	2.13	1.31	1.62	1.00	2.13	2.0	1.1	0.53

Note: Limits of protoconch difficult to determine.

Operculum (Fig. 12F). Simple, paucispiral with weakly angled posterior end and almost equally convex inner and outer edges.

Radula (Fig. 27E). Central teeth with cusp formula 4-5+1+4-5, median cusp minute, smaller than adjacent cusps; lateral cusps sharp, small, and somewhat irregular; cutting edge convex; single pair of short basal denticles; outer edges of tooth weakly thickened, straight. Lateral teeth with cusp formula 4+1+5, primary cusp long, triangular, sharp, inner cusps smaller than outer. Inner marginal teeth with 15-16 small, sharp cusps on inner side and distal end, outer edge obscured in mount. Outer marginal teeth with simple outer edge, inner side obscured in the single specimen available.

Animal. Unknown.

REMARKS. This species is only tentatively assigned to *Onoba*, and the Rissoidae, because, on the basis of shell and radular characters, it may represent a new genus. The shell has a somewhat larger, differently shaped aperture compared with species of *Onoba*, although the protoconch microsculpture is similar to that seen in *O. georgiana*. The radula (based on the single specimen available) differs considerably in not having the lateral edges of the central teeth strongly thickened and arched and the pair of basal cusps is smaller than in species of *Onoba*. The convex cutting edge of the central teeth bears minute cusps and the median cusp is smaller, not markedly larger as in species of *Onoba* and in all other rissoids. The shell has some similarity to members of the Elachisnidae (Ponder, 1985b), but the radula of that group differs considerably from *O. lacuniformis*. A new genus-group name is not provided pending anatomical information to establish the relationships of this species to other taxa.

DISTRIBUTION. Strait of Magellan, Tierra del Fuego, and Falkland Islands; intertidal to shallow subtidal. Uncommon.

Family BARLEEIDAE

The genera of this family have been reviewed and diagnosed by Ponder (1983b). The family is now

(Ponder, 1988) restricted to what was previously the subfamily Barleeinae (Ponder, 1983b). Barleeid shells closely resemble those of eatoniellids in shape and size and in possessing an inner "chitinous" layer, but barleuids have a straight (not curved) opercular peg and the operculum has a heavy internal ridge. In addition, barleuids are very different anatomically and are phallate.

Genus Barleeia Clark, 1853

This genus has been diagnosed by Ponder (1983b), who also listed many of the named species. A characteristic feature is the dark wine-red operculum and the protoconch having pitted microsculpture. This genus has a wide distribution but is unknown from New Zealand.

Barleeia meridionalis n. sp.

Figure 27F, G

ETYMOLOGY. Meridionalis—Latin. Southern.

MATERIAL EXAMINED. Types. Holotype, LACM 2696, 4 paratypes, LACM 2697. 2B 74-24. Isla San Lorenzo, midway on NE side, rocky point N of naval base, Lima Prov., Peru. 12°5.75'S, 77°12.9'W, 0-4.5 m, J.H. McLean, J.A. Coyer, and J.M. Engle, 29 Jan. 1974. 9 paratypes, LACM 2754; 3, AMS C.167453. 3 72-76. Pucusana (Chilca), Lima Prov., Peru. 12°30'S, 76°49'W, 0-6 m, J.H. McLean, Mar.-Apr. 1972.

Additional Material Examined. Peru: 2A 38-208 [1(d)]. 2C 35-147 [1(d)]. 4 72-78 [many(d)]; 35-159 [8(d)]. 5 35-156 [1(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Fig. 27F, G). Small (maximum length 1.75 mm), ovoid-conic, moderately thick, opaque, with 2.5-2.8 teleoconch whorls. Spire with lightly convex outlines, whorls lightly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth except for very faint axial growth lines and almost imperceptible traces of spirals on base. Protoconch with 12-14 spiral rows of punctures, of 1.2-1.3 whorls. Aperture oval, weakly angled posteriorly, with sharp peristome. Inner lip narrow, outer lip moderately prosocline. Umbilical chink absent. Periostracum not observed. Color uniform reddish-brown, some shells bleached to white.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.75	1.05	1.66	0.68	2.59	2.8	1.2	0.39
Paratypes	1.64	1.01	1.63	0.57	2.89	2.7	1.2	0.35
	1.59	1.11	1.63	0.66	2.75	2.7	1.3	0.42
Sta. 72-78	1.68	0.98	1.71	0.63	2.64	2.5	1.2	0.40
	1.66	0.99	1.67	0.63	2.61	2.6	1.2	0.34
	1.67	1.05	1.58	0.66	2.54	2.6	1.2	0.39
	1.52	1.02	1.59	0.59	2.75	2.5	1.2	0.41
	1.64	1.02	1.61	0.63	2.59	2.5	1.2	0.39
	1.71	1.00	1.71	0.63	2.69	2.7	1.2	0.35
	1.67	1.00	1.67	0.66	2.54	2.7	1.2	0.33

Operculum, radula, and animal unknown.

Subclass HETEROBRANCHIA

Superfamily RISSOELLOIDEA

Family RISSOELLIDAE

The genus-group taxa in this family were reviewed by Ponder and Yoo (1977b), who recognized only one genus and four subgenera. Comments by Haszprunar (1988) suggest that some of these are very distinct anatomically and will ultimately be raised to generic rank. Members of the family are readily distinguished by their simple, thin, translucent shells and distinctive operculum bearing a short, blunt peg in the middle of the columellar edge.

Genus *Rissoella* J.E. Gray, 1847

Subgenus *Rissoella*

Members of this subgenus have a distinctive radula with large central and lateral teeth that bear many small cusps.

Rissoella (Rissoella) peruviana n. sp.

Figure 31

ETYMOLOGY. Named after Peru.

MATERIAL EXAMINED. Types. Holotype, LACM 2698, 21 paratypes, LACM 2699; 4 paratypes, AMS C.167452. 1 74-6. Isla Lobos de Afuera (NW and NE of isthmus), Peru. 6°57.1'S, 80°42.3'W, 2-10 m, rocks and sand, J.H. McLean, J.A. Coyer, and J.M. Engle, 19-20 Jan. 1974.

Additional Material Examined. Peru: 2B 74-24 [1(d)]. Northern Chile: 6A 64-16 [13]; AMS C.167475 [2]. 8A 75-17 [10(d)]. 8B 75-19 [5(d)]. (All material LACM unless otherwise indicated.)

DIAGNOSIS. Shell (Fig. 31A, C, D). Minute (maximum length 1.7 mm), ovate-conic, thin, semi-transparent, with about 3 teleoconch whorls. Spire with straight to lightly convex outlines, whorls moderately to strongly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth with faint growth lines. Protoconch (Fig. 31D) smooth of about 1.1-1.2 whorls. Aperture oval, angled posteriorly, with sharp, simple peristome. Inner lip thin, outer lip slightly prosocline. Umbilical chink moderate. Colorless when fresh, dead shells white. (Description only based on type series.)

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.54	0.97	1.60	0.68	2.29	3.1	1.2	0.21
Paratypes	1.60	0.97	1.66	0.70	2.27	3.1	1.1	0.22
	1.64	0.99	1.65	0.73	2.24	3.1	1.2	0.27
	1.74	1.06	1.64	0.76	2.29	3.3	1.1	0.24
	1.38	0.86	1.61	0.61	2.27	2.8	1.2	0.25
	1.49	0.92	1.61	0.69	2.16	2.9	1.2	0.25
Sta. 64-16								
Fig. 31A	1.17	0.76	1.53	0.54	2.18	2.0	1.2	0.33
	0.95	0.65	1.47	0.48	1.96	2.0	1.2	0.25
	0.98	0.70	1.40	0.48	2.02	1.9	1.3	0.27

REMARKS. Because the shell (including the diagnostic protoconch microsculpture) is typical of the genus, we have no hesitation in placing this species in *Barleeia* despite the lack of confirmatory evidence from the operculum and radula. Compared with other eastern Pacific species, the shell of this species is similar in size and shape to three taxa: *B. alderi* (Carpenter, 1856) differs in its yellow color with narrow color bands; *B. californica* Bartsch, 1920, differs in its subangled periphery and is white with wide pale brown bands; and *B. carpenteri* Bartsch, 1920, is white.

Barleeia rubrooperculata (Castellanos and Fernandez, 1972) from the Golfo de San Matias, Argentina, has a much more elongate shell. This species was described as an *Eatoniella*, but the radula and operculum (Castellanos and Fernandez, 1972b: 231, 233, figs 5, 6) indicate its placement in *Barleeia* (Ponder, 1983b).

DISTRIBUTION. Peru; empty shells from intertidal to 90 m. Uncommon.

Family Anabathridae

This family was separated from the Barleidae by Ponder (1988) on the basis of anatomical differences but, like that family, the shell has an inner "chitinous" layer. The genera it contains were reviewed and diagnosed by Ponder (1983b).

Genus *Amphithalamus*

Carpenter, 1864

This genus has been diagnosed by Ponder (1983b). It has a wide distribution in temperate to tropical waters, although no Recent species are known from the eastern Atlantic/Mediterranean Sea. Species of *Amphithalamus* are distinguished by their small, thick shells that have a deep groove separating the inner lip from the parietal wall.

Amphithalamus cf. *inclusus*

Carpenter, 1864

Figure 27D

MATERIAL EXAMINED. Northern Chile: 8A 75-17 [5(d)]. 8CB 75-15 [2(d)]. 8B 75-19 [1(d)]. (All material LACM.)

DIAGNOSIS. See remarks.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Sta. 75-15								
Fig. 27D	1.24	0.83	1.49	0.54	2.32	1.8	1.4	0.34
	1.35	0.89	1.52	0.62	2.18	2.2	1.4	0.38

REMARKS. The only available material of this species is in rather poor condition. The shells are very similar to the Panamic *A. inclusus* (see Ponder, 1983b, for synonymy) and also to its Caribbean analogue *A. valleii* Aguayo and Jaume, 1947.

DISTRIBUTION. Northern Chile. Intertidal; only empty shells.

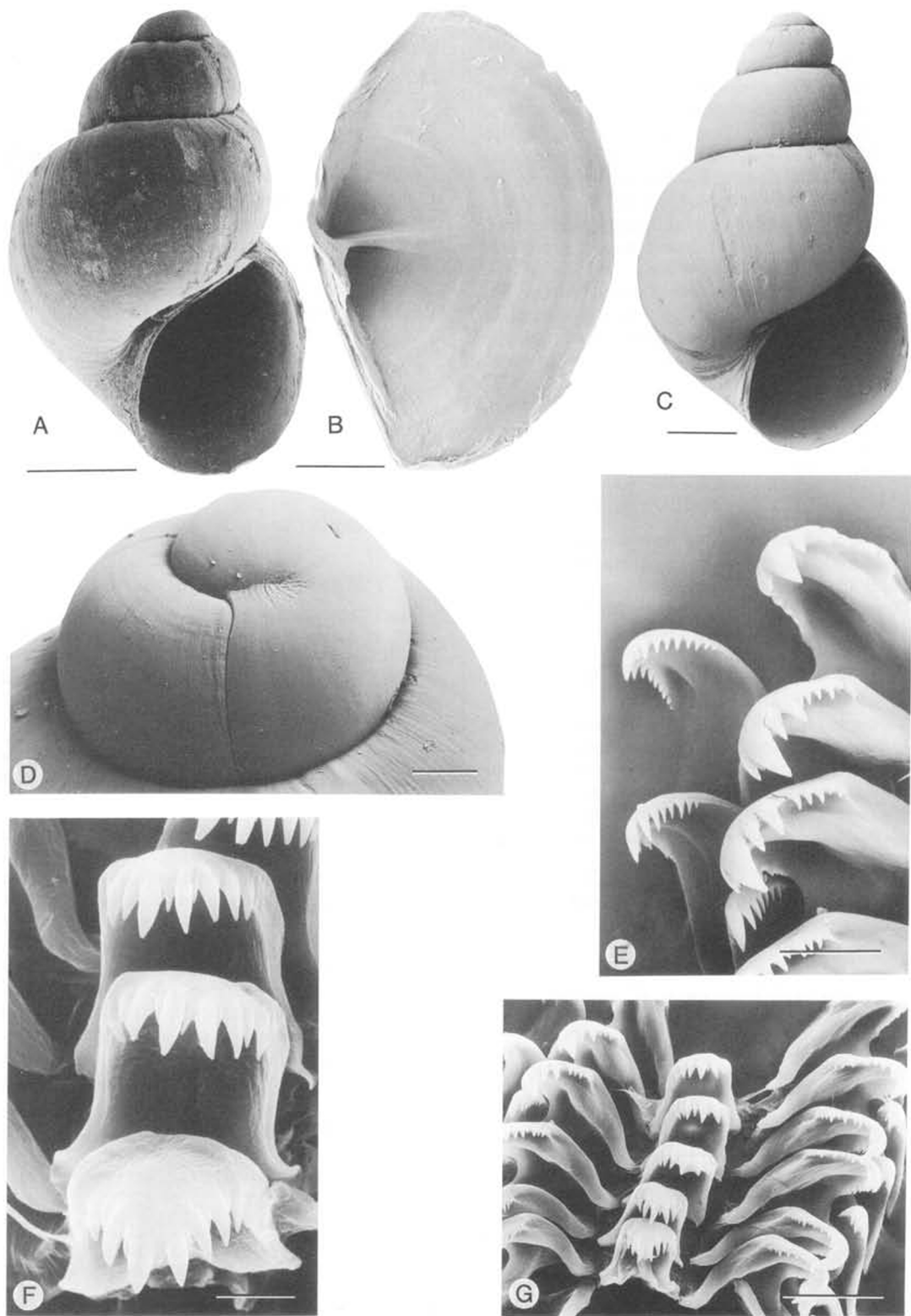


Figure 31. *Rissoella* spp. A, *Rissoella* cf. *peruviana*, Sta. 64-16, shell, length 1.17 mm. B-G, *Rissoella peruviana* n. sp.; B, D-F, paratypes; B, operculum, inner side; D, protoconch; E-G, radula; E, detail of marginal teeth; F, detail of central teeth. C, Holotype, shell, length 1.54 mm. Scale bars: A, C, 250 μ m; B, 100 μ m; D, 50 μ m; E, 10 μ m; F, 5 μ m; G, 20 μ m.

1.13	0.73	1.54	0.53	2.14	2.1	1.0	0.25
1.00	0.69	1.45	0.49	2.02	1.7	1.2	0.32
1.01	0.67	1.52	0.48	2.09	1.7	1.2	0.32
1.12	0.74	1.51	0.55	2.04	2.0	1.2	0.32
1.09	0.72	1.51	0.45	2.40	2.0	1.1	0.30
1.14	0.77	1.47	0.54	2.12	2.0	1.1	0.31
1.06	0.68	1.57	0.49	2.15	1.8	1.2	0.30

Operculum (Fig. 31B). Typical of genus, inner surface with small twisted peg, median transverse ridge and two ridges along inner edge. Nucleus marginal, at middle of inner edge.

Radula (Fig. 31E-G). Symmetrical; central teeth large, subrectangular, with about 7-8 sharp, main cusps alternating with small, sharp cusps about $\frac{1}{2}$ - $\frac{1}{3}$ size of main cusps; no clearly differentiated median cusp. Lateral teeth elongate, with cusp formula, 9-12+1+6-8, primary cusp triangular, sharp, markedly larger than adjacent cusps, with 1-2 cusps on either side larger than other lateral cusps, all cusps sharp. Marginal teeth smaller than lateral teeth (outer marginal teeth absent), 7-9+1+7-8, cusps sharp, primary cusp triangular, markedly larger than adjacent cusps (based on 2 radulae).

Animal. Dried, not obviously pigmented.

REMARKS. The only other rissoellid species recognized from the eastern Atlantic are *Rissoella tumens* (Carpenter, 1856), *R. asteriaphila* (Carpenter, 1864), and *R. bertleini* A.G. Smith and Gordon, 1948. The two former taxa are more ovate, the first having a ridge on the base. The last species is more similar in shape but is larger (length 2.2 mm compared to less than 1.8 mm) and is yellowish-brown rather than colorless. None of the other eastern Pacific species have had their radula examined to enable more detailed comparison of these otherwise rather featureless taxa.

Empty shells, which agree rather well with the type series, have been found well south of the type locality of *Rissoella peruviana* (see additional material examined). One lot (LACM 64-16) contained a specimen with a dried animal, but the radula was not successfully mounted, although the operculum is typical of the family and like that illustrated for *R. peruviana*. Until radulae are examined, the specific status of these specimens must remain in some doubt. They are usually smaller in size than the type series of *R. peruviana* and, consequently, have fewer whorls (see the dimensions section) but they agree well in most other shell characters.

DISTRIBUTION. Peru to northern Chile; intertidal to 15 m. Uncommon.

Part 2

Additional species and records for South Georgia and Falkland Islands

Family Eatoniellidae

Eatoniella (*Eatoniella*) *strebelsi* n. sp.

Eatoniella kerguelenensis forma *contusa* Strebels, 1908: 57 (in part).

Eatoniella aff. *caliginosa* Ponder, 1983a: 6, figs. 4c-e, 5h, i.

ETYMOLOGY. Named for the German malacologist H. Strebels (1834-1915) in recognition of his early work on sub-Antarctic faunas.

MATERIAL EXAMINED. **Types**. Holotype (specimen figured by Ponder, 1983a, fig. 4c) and 50+ paratypes, SMNH 5 paratypes, AMS C. 302328. SSPE 25, South Georgia. 54°22'S, 36°27'W, 24-25 m.

Additional Material Examined. *South Georgia*: SMNH SSPE 28 [2]. *Burdwood Bank*: SMNH SSPE 59 [many].

DIAGNOSIS. **Shell**. Minute (maximum length 1.7 mm), ovate-conic, moderately thick, with 3.1-3.5 teleoconch whorls. Spire with lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth with faint growth lines. Protoconch smooth, of about 1.2-1.4 whorls. Aperture oval to near circular, very weakly angled posteriorly, slightly reflexed, with moderately sharp peristome, lacking external varix. Inner lip moderately broad, detached from parietal wall, outer lip moderately prosocline. Umbilical chink absent or very narrow. Periostracum very thin, transparent. Color white to pale cream.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.54	1.12	1.38	0.74	2.07	3.1	1.3	0.26
Paratypes	1.72	1.13	1.52	0.74	2.31	3.5	1.4	0.30
	1.34	0.92	1.45	0.59	2.26	3.2	—	—
	1.70	1.10	1.54	0.72	2.37	3.3	1.2	0.29
	1.56	1.10	1.41	0.72	2.17	3.2	1.3	0.27
	1.64	1.02	1.61	0.69	2.38	3.2	1.2	0.24

Operculum. Pale yellow, oval. Peg stout, curved.

Radula. Central teeth with cusp formula 3+1+3, median cusp with rounded end, narrow. Lateral teeth with cusp formula 2+1+3, primary cusp triangular. Inner marginals with cusp formula 4+1+1-2, primary cusp triangular. Outer marginals with 6-7 small, sharp cusps (based on 2 radulae).

Animal. Unpigmented or pale yellowish, with distinct orange-brown spot on visceral coil.

REMARKS. This species was recognized as a probable undescribed taxon by Ponder (1983a), who figured the shell, radula, and operculum. Examination of the additional material now available shows that the shell form, radula, and operculum are consistent, and we are now confident in recognizing these specimens as a new species. Of the southern species, *E. strebeli* is similar to *E. caliginosa* from which it differs in its yellowish-white color (not grey or black) and smaller size. It also appears to be similar to *E. argentinensis*, being of similar size and shape, but direct comparison of specimens has not been possible. However, the radula of *E. argentinensis* has two cusps on either side of the median cusp of the central teeth, the opercular peg is straighter, and the shell aperture is not as flared.

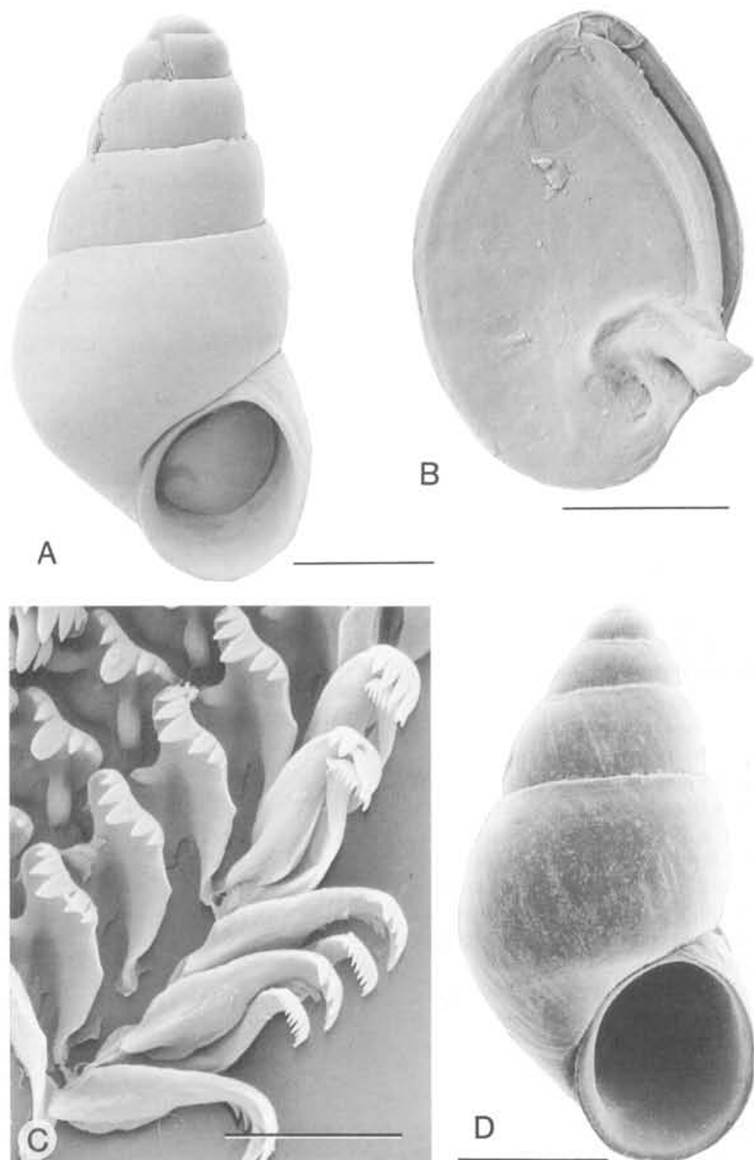


Figure 32. Species of *Eatoniella* from Falkland Islands and Juan Fernández Islands. A–C, *Eatoniella bennetti* (Preston), Sta. TW2; A, shell, length 2.01 mm; B, operculum, inner side; C, radula. D, *Eatoniella zigzag* n. sp., holotype, shell, length 2.14 mm. Scale bars: A, D, 500 μ m; B, 200 μ m; C, 20 μ m.

DISTRIBUTION. South Georgia, Burdwood Bank, and (possibly) South Orkney Islands.

Eatoniella (*Eatoniella*) cf. *cana*
Ponder, 1983

See Part 1 for details.

Eatoniella (*Eatoniella*) *occulta*
Ponder, 1983

Eatoniella occulta Ponder, 1983a: 12, figs. 2f, 8a–c.

MATERIAL EXAMINED. *Falkland Islands*: SMNH SSPE 43 [7]; SMNH SSPE 46 [many]; AMS C.167492,

TW2 [3]; AMS C.167491, TW3 [2]. *Burdwood Bank*: SMNH SSPE 59 [many].

REMARKS. This species was described from a single sample, but the above records indicate that it is rather common at the Falkland Islands and its range is now extended to the Burdwood Bank.

Eatoniella (*Eatoniella*) *bennetti*
(Preston, 1912)
Figures 10D, 32A–C

Laevilitorina bennetti Preston, 1912: 636, pl. 21, fig. 1.

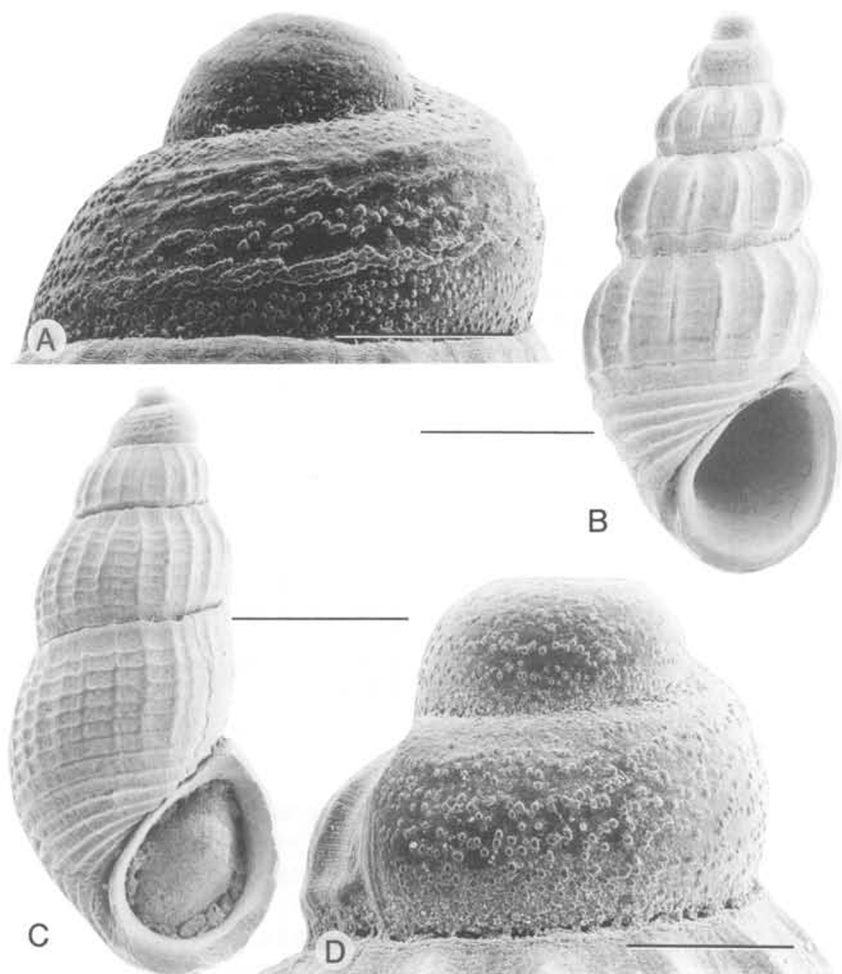


Figure 33. Species of Rissoidae from Juan Fernández Islands. A, C, *Onoba ? isolata* n. sp., holotype; A, lateral view of protoconch; C, shell, length 1.91 mm. B, D, *Onoba ? protopustulata* n. sp., holotype; B, shell, length 1.77 mm; D, lateral view of protoconch. Scale bars: A, D, 100 μ m; B, C, 500 μ m.

MATERIAL EXAMINED. Type. Holotype, BMNH, 1913.7.31.186. Port Stanley, Falkland Islands, associated with *Toncia*, A.G. Bennett.

Additional Material Examined. Falkland Islands: AMS, C.167484, C.167485 [many], BMNH [6], LACM [6], all TW2.

DIAGNOSIS. Shell (Figs. 10D, 32A). Small (maximum length 2.1 mm), elongate-conic, rather thick, opaque, with about 4 teleoconch whorls. Spire with straight outlines, whorls very lightly convex; periphery of last whorl rounded or very slightly angled. Sutures impressed, simple. Teleoconch smooth, sometimes glossy, with regular, faint growth lines. Protoconch smooth of 1.3–1.5 whorls. Aperture ovoid to almost circular, weakly angled posteriorly, with sharp peristome, lacking external varix. Inner lip narrow, outer lip moderately to strongly prosocline. Umbilicus absent. Periostracum very thin, transparent. Color uniform dark grey to black, occasionally pale grey.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Lectotype Sta. TW2	1.67	1.05	1.59	0.58	2.88	3.5	1.4	0.30
Fig. 32A	2.01	1.12	1.80	0.69	2.92	3.8	1.4	0.29
	2.14	1.13	1.89	0.76	2.82	4.1	1.4	0.29
	2.03	1.19	1.71	0.68	3.00	4.0	1.5	0.28
	1.96	1.12	1.75	0.69	2.84	4.1	1.4	0.28
	1.99	1.20	1.66	0.69	2.88	3.9	1.3	0.30
	2.10	1.16	1.81	0.72	2.92	4.1	1.5	0.29
	2.04	1.13	1.80	0.70	2.90	4.0	1.4	0.27

Operculum (Fig. 32B). Externally black with yellowish mottling; oval. Peg rather narrow, curved.

Radula (Fig. 32C). Central teeth with cusp formula 3+1+3, median cusp short, spade-like, with truncated to rounded end; cusps very small. Lateral teeth with cusp formula 2+1+2, primary cusp triangular. Inner marginal teeth with cusp 3–4+1+2–

3, primary cusp triangular, outermost cusps very small. Outer marginal teeth with 8–10 small, sharp cusps (based on 2 radulae).

Animal. Unknown.

REMARKS. The lectotype is slightly smaller than our virtually topotypic series but agrees in all other characters. Preston's measurements (2.25×1.25) are slightly larger than any of our specimens. Because of this discrepancy between the specimen labeled "holotype" in the BMNH and the published dimensions, and in the absence of any evidence to suggest that there was only one specimen before Preston when he described the species, we have designated the BMNH specimen as the lectotype.

Specimens of this species with pale-colored shells are somewhat similar to *E. cana* but are smaller, with fewer, slightly more convex whorls. Similarly colored sub-Antarctic species include *E. kerguelensis*, which is much larger, and *E. caliginosa*, which is shorter and broader. Dark-colored South American species are thinner-shelled with the exception of *E. nigra*, which is smaller and relatively shorter.

DISTRIBUTION. Falkland Islands; intertidal. Locally common.

Family Rissoidae

Onoba georgiana (Pfeffer, 1886)

See Part 1 for details.

Onoba subaedis n. sp.

Described above; see Part 1 for details.

Onoba scythei (Philippi, 1868)

Described above; see Part 1 for details.

Onoba cf. *protofimbriata* n. sp.

Described above; see Part 1 for details.

REMARKS. Small quantities of a species of *Onoba* were examined from beach sand from the Falkland Islands (TW4, TW5). They resemble *O. profimbriata* n. sp. in size and general shell form but were not well enough preserved to allow examination of protoconch microsculpture for confirmation of the specific identity.

Onoba anderssoni (Strebel, 1908)

Rissoia anderssoni Strebel, 1908: 55, pl. 4, fig. 54a–c (South Georgia).

Onoba anderssoni: Ponder, 1983a: 20, fig. 18c.

MATERIAL EXAMINED. *South Georgia*: SMNH, 28 [11].

REMARKS. The additional specimens are from residues from the same station as the holotype, the species being described from a single specimen.

Onoba filostria (Melvill and Standen, 1912)

Rissoia (Onoba) filostria Melvill and Standen, 1912: 349, fig. 9.

Onoba filostria: Ponder, 1983a: 14, figs. 9a–e, 13g.

MATERIAL EXAMINED. *South Georgia*: SMNH SSPE, Grytviken [3] (no other data).

REMARKS. These four specimens agree rather well with typical material and, if identified correctly, represent the only record of this species from outside the South Orkney Islands.

Onoba turqueti (Lamy, 1905)

Onoba turqueti: Ponder, 1983a: 16, figs. 11f, g, 12a–e, 14c–e (gives full synonymy and description).

MATERIAL EXAMINED. *South Georgia*: SMNH SSPE 28 [many].

REMARKS. This is the first record of this species from South Georgia. It was previously known from Burdwood Bank, South Orkney Islands, South Shetland Islands, Antarctic Peninsula, and Terre Adélie.

Onoba cf. *gelida* (E.A. Smith, 1907)

Onoba gelida: Ponder, 1983a: 20, figs. 13a, b, 16a–d (gives full synonymy and description).

MATERIAL EXAMINED. *South Georgia*: SMNH SSPE 34 [1].

REMARKS. A single specimen from the above station represents the second record of this taxon from South Georgia, although well-preserved specimens are needed for examination to confirm the species identification.

Powellisetia australis (Watson, 1886)

Powellisetia australis: Ponder, 1983a: 25–26, figs. 18b, 19d–f (gives full synonymy and description).

MATERIAL EXAMINED. *Falkland Islands*: AMS C.167489, TW4 [1(d)]; AMS C.167490, TW5 [5(d)].

REMARKS. This is the only record from the Falkland Islands, the species being previously known from Kerguelen and Macquarie Islands.

Family Cingulopsidae

Skenella georgiana Pfeffer (in Martens and Pfeffer), 1886

Skenella georgiana Pfeffer (in Martens and Pfeffer), 1886: 97, pl. 2, fig. 6a, b.

Skenella (Skenella) georgiana: Ponder, 1983a: 29, figs. 23a–e, 26a–c (gives full synonymy).

MATERIAL EXAMINED. *Falkland Islands*: SMNH SSPE 40 [3].

REMARKS. This species was described from South Georgia and, previously, only two specimens were recorded from the Falkland Islands by Ponder (1983a).

***Skenella wareni* n. sp.**

Figure 15C, D, G, H

ETYMOLOGY. Named after Dr. Anders Warén, as a small mark of recognition for his contributions to the study of small gastropods.

MATERIAL EXAMINED. Types. Holotype and 4 paratypes (2 damaged), SMNH. SSPE 28. 54°22'S, 36°28'W, South Georgia, 12–15 m, sand and algae, 24 May 1902. 4 Paratypes, SMNH; (1 paratype) AMS C.167673. SSPE 25. 54°22'S, 36°28'W, South Georgia, 24–52 m, algae, 12 May 1902.

DIAGNOSIS. Shell (Fig. 15C, D). Minute (maximum length 1.6 mm), ovate-conic, moderately thick, with 2.2–2.5 teleoconch whorls. Spire with very lightly convex outlines, whorls moderately convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth, with faint, irregular growth lines. Protoconch (Fig. 15D) of about 1.4–1.6 whorls with very fine spiral grooves on last half whorl. Aperture oval to near circular, weakly angled posteriorly, with sharp peristome and lacking varix (1 from SSPE 25 has strong varix on penultimate whorl). Inner lip moderately broad with indistinct swelling on columella; outer lip moderately prosocline. Umbilicus small to moderate. Color pale cream, with reddish tinge; reddish-brown when wet.

Dimensions.

	SL	SW	SL/ SW	AL	SL/ AL	TW	PW	PD
Holotype	1.64	1.27	1.29	0.76	2.16	2.5	1.6	0.42
Paratypes	1.38	1.16	1.19	0.72	1.92	2.3	1.5	0.42
	1.17	0.86	1.05	0.51	2.30	2.5	1.6	0.35
Paratypes								
Sta. SSPE 25	1.16	0.88	1.31	0.51	2.27	2.2	1.5	0.36
	1.16	0.91	1.27	0.55	2.10	2.4	1.4	0.38
	0.98	0.76	1.29	0.44	2.22	2.3	1.4	0.38
	1.17	0.84	1.39	0.57	2.07	2.4	1.4	0.36

Operculum (Fig. 15H). Oval, with posterior end angled; peg slightly curved, narrow, extends beyond edge of operculum.

Radula (Fig. 15G). Central teeth square, with 2 small, square cusps and moderate lateral thickenings. Lateral teeth with cusp formula 3–4+1+3–7, median cusp large, spatulate, lateral cusps slender, sharp. Inner marginal teeth with cusp formula 1+1+1, small pointed outer cusp, and 2 large shovel-shaped to spatulate inner cusps, median cusp being largest. Outer marginal teeth with 2 large, triangular cusps, outermost largest (based on 2 radulae).

Animal. Unknown.

REMARKS. This species is somewhat intermediate between *S. umbilicata* and *S. paludinooides* in shell shape, being more depressed and convex than *S. paludinooides* and narrower than *S. umbilicata*.

The reddish-brown color of *S. wareni* is absent in *S. paludinooides* and is more pronounced in *S. umbilicata*. Both *S. paludinooides* and *S. umbilicata* are larger than *S. wareni* and have broader opercular pegs. *Skenella wareni* is similar to *S. paludinooides* in radular details but more like *S. umbilicata* in shell morphology.

Some of the paratypes from Sta. SSPE 25 have slightly narrower shells but appear to be identical in other respects.

DISTRIBUTION. South Georgia; sublittoral; uncommon.

Family Rissoellidae

Rissoella (*Jeffreysiella*)
cf. *powelli* Ponder, 1983

Rissoella (*Jeffreysiella*) *powelli* Ponder, 1983a: 32, figs. 26i, 28a–d (Signy Island, South Orkney Islands).

MATERIAL EXAMINED. South Georgia: SNMH SSPE 25 [1].

REMARKS. A single specimen of a species of *Rissoella* resembling *R. (J.) powelli* is recorded from South Georgia. There is not enough material for confident identification.

Part 3

Species from Juan Fernández Islands

The opportunity is taken to describe three species from Juan Fernández Islands that were obtained during the Indian Ocean Expedition in 1965.

Family Eatoniellidae

Eatoniella (*Eatoniella*) *zigzag* n. sp.

Figure 32D

ETYMOLOGY. Zigzag—French (and English). Alternatively changing direction by sharp angles. Refers to the color pattern.

MATERIAL EXAMINED. Types. Holotype and 6 paratypes, MCZ 293707, 1 paratype, LACM 2700; 1 paratype, AMS C.167476. Juan Fernández Is., R/V *Anton Bruun*, Cr.12, SE 65 256, 9–12 m. 33°42'S, 78°55'W, S. Earle, 15 Dec. 1965.

DIAGNOSIS. Shell (Fig. 32D). Small (maximum length 2.1 mm), conic, moderately thick, with 2.8–3.4 teleoconch whorls. Spire and whorls lightly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch smooth and glossy. Protoconch of 1.2–1.5 whorls. Aperture oval; inner lip narrow, outer lip strongly prosocline. Umbilicus absent. Periostracum very thin, transparent. Color white, usually with pink or purple transverse zigzag lines.

Dimensions.

	SL	SW	SL/		SL/		PW	PD
			SW	AL	AL	TW		
Holotype	2.14	1.17	1.83	0.76	2.81	3.4	1.4	0.34
Paratypes	1.87	1.13	1.65	0.73	2.57	3.3	1.3	0.31
	1.60	1.07	1.50	0.64	2.50	2.8	1.4	0.34
	1.73	1.15	1.50	0.67	2.57	3.2	1.3	0.31
	1.68	1.08	1.55	0.65	2.57	3.0	1.2	0.32
	1.74	1.10	1.58	0.71	2.47	3.1	1.2	0.31
	1.59	1.08	1.47	0.66	2.40	2.9	1.2	0.32

Operculum, radula, and animal unknown.

REMARKS. The zigzag color pattern and the thick, conical shell allow this species to be distinguished from all other described eatoniellids. The only other described species with a somewhat similar color pattern, *E. limbata* (Hutton, 1883) from New Zealand, has a larger, broader shell. The shell characters allow little doubt that this species is a member of the Eatoniellidae, although confirmation with radular and opercular data is necessary before this can be stated with certainty.

DISTRIBUTION. Juan Fernández Islands.

Family Rissoidae

Onoba (?) *isolata* n. sp.

Figure 33A, C

ETYMOLOGY. *Isolata*—Latin. Detached, separate. Refers to the isolated location of this species.

MATERIAL EXAMINED. Holotype, MCZ 293708, R/V *Anton Bruun*, Cr.12, SE 65 256, 9–12 m, 33°42'S, 78°55'W, S. Earle, 15 Dec. 1965.

DIAGNOSIS. Shell (Fig. 33A, C). Minute (length 1.9 mm), elongate-conic to cylindrical, solid, opaque, with 3.5 teleoconch whorls. Spire with lightly convex outlines, whorls lightly convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with strong, rounded spiral cords with wider interspaces and slightly stronger opisthoclinal axial ribs; 7 spiral cords on penultimate whorl, 15 on last whorl and base. Interspaces smooth. Eleven axial ribs on penultimate whorl; 13 on last whorl; ribs reach suture but do not extend onto base; bluntly tuberculate at point of intersection with spirals. Protoconch (Fig. 33A) of about 1.3 whorls; microsculpture of small granules, some on upper 2/3 of last whorl run together forming broken, almost zigzag spirals. Aperture oval, rather strongly angled posteriorly. Inner lip moderately broad, attached to parietal wall; outer lip opisthoclinal with moderately distinct posterior notch and prominent apertural varix immediately behind lip. Umbilical chink absent. Periostracum not observed. Color white.

Dimensions.

	SL	SW	SL/		TW	PW	PD	PS	BS	PA	BA	
			SW	AL								AL
Holotype	1.91	0.95	2.02	0.71	2.7	3.5	1.3	0.38	7	15	11	13

Operculum, radula, and animal unknown.

REMARKS. Although known from a single specimen, this species is readily recognizable by its elongate-conic outline, regularly reticulated sculpture, and unusually sculptured protoconch. This distinctive species is tentatively included in *Onoba* on the basis of shell characters, although confirmation is needed.

DISTRIBUTION. Juan Fernández Islands.

Onoba (?) *protopustulata* n. sp.

Figure 33B, D

ETYMOLOGY. Proto—Latin. First (whorl of shell). Pustulata—Latin. Bubble, pimple. Refers to the protoconch microsculpture.

MATERIAL EXAMINED. Types. Holotype and 1 paratype, MCZ 293707a, R/V *Anton Bruun*, Cr.12, SE 65 256, 9–12 m, 33°42'S, 78°55'W, S. Earle, 15 Dec. 1965.

DIAGNOSIS. Shell (Fig. 33B, D). Small (maximum length 2.0 mm), elongate-conic, solid, opaque, with 3.6–3.8 teleoconch whorls. Spire with lightly convex outlines, whorls convex; periphery of last whorl rounded. Sutures impressed, simple. Teleoconch with sharp spiral cords with wider interspaces and prominent axial ribs, 1 spiral cord on lower part of penultimate whorl, 8 on last whorl and base; interspaces smooth; 8 axial ribs on penultimate whorl, 10 on last whorl; axial ribs reach suture but end abruptly at intersection of spiral cord immediately below periphery of last whorl, below which, on base, spirals most significant sculpture. Axials and spirals bluntly tuberculate at intersections. Protoconch (Fig. 33D) of 1.3–1.5 whorls, with numerous scattered granules loosely arranged in irregular spirals, especially near apex. Aperture oval, angled posteriorly. Inner lip moderately broad, attached to parietal wall; outer lip orthoclinal with small posterior notch and prominent apertural varix immediately behind lip. Umbilical chink absent. Periostracum not observed. Color white.

Dimensions.

	SL	SW	SL/		TW	PW	PD	PS	BS	PA	BA	
			SW	AL								AL
Holotype	1.77	0.96	1.85	0.61	2.89	3.6	1.3	0.29	1	8	8	10
Paratype	2.00	0.99	2.02	0.67	3.00	3.8	1.5	0.32	1	8	8	10

Operculum, radula, and animal unknown.

REMARKS. This species has a teleoconch sculpture superficially similar to species often included in *Alvania*, with fewer, much stronger axial ribs than *O. isolata* and markedly more convex whorls. The protoconch is similar to the last species except that the granules are not fused into irregular lines. We tentatively include this species in *Onoba*, along with the previous species, because of the likely relationship of these two taxa, judging from the teleoconch and, especially, the protoconch morphology.

DISTRIBUTION. Juan Fernández Islands.

DISCUSSION

The biogeography of the Antarctic and sub-Antarctic fauna has produced considerable interest. The area from which most of the material in this report was obtained is the Magellanic Province, which includes Patagonia (from Isla Chiloé on the west coast and Cabo Blanco on the east coast), Tierra del Fuego and the Falkland Islands, and Burdwood Bank (Powell, 1960). Excluding Tierra del Fuego, Chile comprises the majority of this region, and the South American material dealt with in this report is mainly from that country, although a few samples were available from Peru.

As can be seen from the data in Table 1, the majority of the 30 South American species-group taxa dealt with in this report are, within South America, found only in southern Chile and Tierra del Fuego or only in one of these areas (22 taxa, 73%), most (15 taxa, 55%) with distributions through southern Chile and Tierra del Fuego, with 7 taxa (23%) known only from Tierra del Fuego. Of the other South American species, one taxon (3%) is found in southern and northern Chile and two (7%) (*Eatoniella nigra* and *E. glomerosa*) are found from northern Chile to Tierra del Fuego. Of the southern species-group taxa, only six (20%) are also found at the Falkland Islands and only one (*O. georgiana*) has a wider sub-Antarctic distribution (*E. cf. cana* being regarded as a separate taxon from *E. cana*). Five species-group taxa (17%) are only found in northern Chile and/or Peru, and three of these represent families not found farther south (Barleeidae, Anabathridae, and Rissoellidae), the other two species belonging to genera (*Manzonia* and *Eatonina*) found farther north on the Pacific Coast of the Americas. The Barleeidae is well represented in western Central and North America (Ponder, 1983b) and *A. inclusus* is a Panamic species. The Anabathridae, however, as a group, is not well represented in North and Central America but is primarily a southern family, with numerous taxa in southern Australasia and southern Africa. The virtual absence of this group from South America and its presence in Central and North America, as well as the Mediterranean and eastern Atlantic, suggests that its distribution is not Gondwanan but Pangean.

The most detailed biogeographic analysis of the marine fauna of Chile is that of Brattström and Johanssen (1983). They confirmed the results of earlier investigations in showing that there are two temperate regions along the Chilean coast, a northern warm temperate and southern cold temperate region with the border at about 42°. We have used this same cutoff point to distinguish northern and southern Chile. These authors found that northern species dominate in the littoral and in shallow water and the southern species in deeper water, although they observed that in general the fauna has a "northern stamp" with northern species having wider distributions than southern ones. This is not the case with the families investigated here, the

Table 1. South American species listed according to their geographic distributions. IT = intertidal, shelf = on continental shelf, SL = sublittoral. Northern Chile = N of 42°S; southern Chile = S of 42°S.

Tierra del Fuego only	
	<i>Eatoniella castanea</i> (IT)
	<i>Onoba algida</i> (shelf)
	<i>O. striola</i> (IT)
	<i>O. sulcula</i> (shelf)
	<i>O. erugata</i> (IT-SL)
	<i>O. fuegoensis</i> (shelf)
	<i>O. lacuniformis</i> (IT-SL) (also Falklands)
Southern Chile and Tierra del Fuego	
	<i>Eatoniella turricula</i> (40–900 m)
	<i>E. denticula</i> (IT-SL)
	<i>E. cf. denticula</i> (shelf)
	<i>E. ebenina</i> (IT-SL)
	<i>E. picea</i> (IT-SL)
	<i>E. cf. cana</i> (IT-SL) (also Falklands; typical form from South Georgia and South Orkney Islands)
	<i>Pupatonia magellanica</i> (IT-SL)
	<i>Powellisetia microlirata</i> (IT-shelf)
	<i>Pusillina averni</i> and <i>P. cf. averni</i> (shelf)
	<i>Onoba subincisa</i> (IT-SL)
	<i>O. scythei</i> (IT-SL) (also Falklands)
	<i>O. subaeadonis</i> (SL) (also Falklands?)
	<i>O. profimbriata</i> (IT-SL) (also Falklands?)
	<i>O. georgiana</i> (IT) (also Falklands and sub-Antarctic)
	<i>Skenella hallae</i> (SL)
Southern and northern Chile	
	<i>Eatoniella (Albosabula) mcleani</i> (IT-SL)
Northern Chile to Tierra del Fuego	
	<i>Eatoniella nigra</i> (IT-SL)
	<i>E. glomerosa</i> (IT)
Northern Chile and/or Peru	
	<i>Eatonina fusca</i> (IT-SL)
	<i>Rissoella peruviana</i> (IT-SL)
	<i>Alvinia limensis</i> (shelf)
	<i>Barleeia meridionalis</i> (IT-SL)
	<i>Amphithalamus cf. inclusus</i> (IT-SL?)

southern elements dominating the fauna with the few northern elements being limited to northern Chile and Peru.

The main elements of the southern fauna are the Eatoniellidae and the genus *Onoba* (Rissoidae). The eatoniellids are reasonably diverse in the Antarctic and sub-Antarctic but have their greatest diversity in Australasia (Ponder, 1965a; Ponder and Yoo, 1977a) and southern Africa (Ponder and Yoo, 1977a; Ponder, unpublished). There are fewer eatoniellids in South America (11 species-group taxa) than in the Antarctic-sub-Antarctic and southern Australia (19 and 18 species-group taxa, respectively) and New Zealand (43 species-group taxa). *Onoba*, as at present recognized, is a diverse genus found in cool temperate parts of the northeastern Pacific and north

Atlantic as well as in the temperate parts of the southern continents (Ponder, 1985a) and Antarctica and the sub-Antarctic islands (Ponder, 1983a). There are 10 taxa from South America, half the number known from the Antarctic and sub-Antarctic.

None of the species-group taxa dealt with in this report have protoconchs, suggesting that they possess planktonic larvae, and yet several have considerable distributions. Some sub-Antarctic and Antarctic species-group taxa also exhibit large ranges, possibly maintaining genetic continuity through dispersal on drifting algae. Only six of the South American species appear to be conspecific with Falkland Islands taxa, although available material from the Falklands is very limited. The poor state of the knowledge of the Falklands fauna is evidenced by the collections made by one of us (TMW), just in the vicinity of Stanley, which revealed five new records. As might be expected, the three species from the isolated Juan Fernández Islands are apparently restricted to those islands. The one small sample available does not, however, enable a more definitive comment about this fauna.

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APPENDIX: LIST OF LOCALITIES

NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY (LACM) LOCALITIES

The localities are listed in order according to station number. The number in parentheses following the station number are the locality reference points used in Figures 1-4.

64-16 (6A). Iquique, near end of Ave Baquedana, Tarapacá Prov., Chile. 20°13'S, 70°10'W, intertidal, L. Marincovich, June-Aug. 1964.

70-66 (6A). end of Ave Baquedana, Iquique, Tarapaca

Prov., Chile. 20°13'S, 70°10'W, intertidal rocks, L. Marincovich, July 1970.

71-258 (33A). Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.1'S, 64°42.1'W, 13-37 m, Sta. 658 and 5257, USARP, R/V *Hero* Cr.712, 28-29 Apr. 1971.

71-259 (30G). Puerto Vancouver, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.8'S, 64°04'W, 31 m, Sta. 663, USARP, R/V *Hero* Cr.712, 9 May 1971.

71-260 (30J). Puerto San Juan del Salvo, Isla de los Estados, Tierra del Fuego, Argentina. 54°44.85'S, 63°52.9'W, 44 m, Sta. 665, USARP, R/V *Hero* Cr.712, 11 May 1971.

71-262 (33N). W side Puerto Año Nuevo, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.1'S, 64°7.3'W, 50 m, Sta. 672, USARP, R/V *Hero* Cr.712, 19 May 1971.

71-263 (33M). Puerto Basil Hall, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.5'S, 64°9.8'W, Sta. 673,674, USARP, R/V *Hero* Cr.712, 20 May 1971.

71-264 (33J). 6.6 km E Cabo Colnett, Isla de los Estados, Tierra del Fuego, Argentina. 54°43.7'S, 64°14.2'W, 18 m, Sta. 676, USARP, R/V *Hero* Cr.712, 22 May 1971.

71-265 (33F). E arm Bahía San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.5'S, 64°23.5'W, 51 m, Sta. 677, USARP, R/V *Hero* Cr.712, 24 May 1971.

71-266 (33G). 1.5 km E Cabo Colnett, Isla de los Estados, Tierra del Fuego, Argentina. 54°43.3'S, 64°19.8'W, 14 m, Sta. 678, USARP, R/V *Hero* Cr.712, 25 May 1971.

71-267 (33B). W arm Bahía San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.1'S, 64°25.1'W, 36 m, Sta. 679, USARP, R/V *Hero* Cr.712, 26 May 1971.

71-268 (39). Punta Arenas, Bahía de San Sebastián, Tierra del Fuego, Argentina. 53°9.2'S, 68°14.6'W, intertidal, rocks and mussel beds, Sta. 71-2-3, USARP, R/V *Hero* Cr.712, 20 Apr. 1971.

71-270 (28). W side Bahía Buen Suceso, Tierra del Fuego, Argentina. 54°47.8'S, 65°16'W, intertidal, sand, rock, and mussels, Sta. 71-2-8, USARP, R/V *Hero* Cr.712, 23 Apr. 1971.

71-271 (28). N side Bahía Buen Suceso, Tierra del Fuego, Argentina. 54°48.2'S, 65°14.7'W, intertidal rocks, Sta. 71-2-14, USARP, R/V *Hero* Cr.712, 25 Apr. 1971.

71-273 (32A). Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.2'S, 64°42.7'W, intertidal, rocks and mussel beds, Sta. 71-2-16, USARP, R/V *Hero* Cr.712, 27 Apr. 1971.

71-274 (31A). E arm Bahía Capitán Cánepa, Isla de los Estados, Tierra del Fuego, Argentina. 54°50'S, 64°26.8'W, intertidal rocks and mussel beds, Sta. 71-2-19, USARP, R/V *Hero* Cr.712, 3 May 1971.

71-275 (31A). N arm Bahía Capitán Cánepa, Isla de los Estados, Tierra del Fuego, Argentina. 54°49.2'S, 64°27.8'W, intertidal rocks and mussel beds, Sta. 71-2-19, USARP, R/V *Hero* Cr.712, 3 May 1971.

71-276 (31B). NW arm Bahía York, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.3'S, 64°18.7'W, intertidal, mussels and rocks. Sta. 71-2-21,71-2-25, USARP, R/V *Hero* Cr.712, 4,6 May 1971.

71-277 (31B). NW arm Bahía York, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.15'S, 64°17.9'W, intertidal rocks, Sta. 71-2-22, USARP, R/V *Hero* Cr.712, 5 May 1971.

71-281 (31C). N end Bahía Blossom Isla de los Estados, Tierra del Fuego, Argentina. 54°46.4'S, 63°57.7'W, intertidal rocks, Sta. 71-2-30, USARP, R/V *Hero* Cr.712, 10 May 1971.

71-283 (31D). NE part Puerto San Juan del Salvo, Isla de los Estados, Tierra del Fuego, Argentina. 54°44.25'S,

63°51.25'W, intertidal rocks, Sta. 71-2-32, USARP, R/V *Hero* Cr.712, 12 May 1971.

71-286 (32H). Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.4'S, 64°2.5'W, intertidal rocks and mussel beds, Sta. 71-2-36, USARP, R/V *Hero* Cr.712, 16 May 1971.

71-287 (32H). Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.25'S, 64°2.3'W, intertidal, Sta. 71-2-37, USARP, R/V *Hero* Cr.712, 17 May 1971.

71-289 (32E). Puerto Basil Hall, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.45'S, 64°10.1'W, intertidal rocks, Sta. 71-2-39, USARP, R/V *Hero* Cr.712, 20 May 1971.

71-290 (32E). Puerto Basil Hall, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.45'S, 64°9.55'W, intertidal rocks, Sta. 71-2-40, USARP, R/V *Hero* Cr.712, 21 May 1971.

71-291 (32D). 3.3 km W Puerto Basil Hall, Isla de los Estados, Tierra del Fuego, Argentina. 54°43.85'S, 64°13.6'W, intertidal rocks, Sta. 71-2-41, USARP, R/V *Hero* Cr.712, 22 May 1971.

71-293 (32D). 3.3 km W Puerto Basil Hall, Isla de los Estados, Tierra del Fuego, Argentina. 54°43.3'S, 64°14'W, intertidal rocks, Sta. 71-2-43, USARP, R/V *Hero* Cr.712, 23 May 1971.

71-294 (32C). S end of E arm Bahía San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.6'S, 64°22.35'W, intertidal rocks, Sta. 71-2-44, USARP, R/V *Hero* Cr.712, 24 May 1971.

71-295 (32B). SW arm Bahía San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.2'S, 64°24.7'W, intertidal rocks, Sta. 71-2-46, USARP, R/V *Hero* Cr.712, 26 May 1971.

71-296 (28). Bahía Buen Suceso, Tierra del Fuego, Argentina. 54°47.9'S, 65°14.7'W, 10 m, Sta. 680, USARP, R/V *Hero* Cr.715, 13 Oct. 1971.

71-302 (29A). 8 km E Caleta San Mauricio, Tierra del Fuego, Argentina. 54°45'S, 65°4.6'W, 75 m, Sta. 687, USARP, R/V *Hero* Cr.715, 14 Oct. 1971.

71-305 (29B). 12.5 km E Ensenada Patagones, Tierra del Fuego, Argentina. 54°52'S, 65°05'W, 144 m, Sta. 690, USARP, R/V *Hero* Cr.715, 16 Oct. 1971.

71-308 (33A). Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.6'S, 64°41.4'W, 9 m, Sta. 694, USARP, R/V *Hero* Cr.715, 17 Oct. 1971.

71-309 (32A). Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.6'S, 64°40.7'W, intertidal, mussels and rocks. Sta. 695, USARP, R/V *Hero* Cr.715, 17 Oct. 1971.

71-310 (33O). Isla Observatorio, Isla de los Estados, Tierra del Fuego, Argentina. 54°39.5'S, 64°7.1'W, subtidal, Sta. 698, USARP, R/V *Hero* Cr.715, 19 Oct. 1971.

71-311 (32G). Observatorio, Isla de los Estados, Tierra del Fuego, Argentina. 54°39.5'S, 64°08'W, intertidal rocks, Sta. 699, USARP, R/V *Hero* Cr.715, 19 Oct. 1971.

71-312 (33G). 6.4 km N Cabo Colnett, Isla de los Estados, Tierra del Fuego, Argentina. 54°39'S, 64°20'W, 48 m, Sta. 852, USARP, R/V *Hero* Cr.715, 20 Oct. 1971.

71-313 (33H). 14.4 km N Cabo Colnett, Isla de los Estados, Tierra del Fuego, Argentina. 54°34'S, 64°20'W, 91 m, Sta. 853, USARP, R/V *Hero* Cr.715, 20 Oct. 1971.

71-315 (33K). 16 km N Isla Observatorio, Isla de los Estados, Tierra del Fuego, Argentina. 54°29'S, 64°10'W, 110 m, Sta. 855, USARP, R/V *Hero* Cr.715, 20 Oct. 1971.

71-316 (33L). 8 km N Isla Observatorio, Isla de los Estados, Tierra del Fuego, Argentina. 54°34'S, 64°10'W, 73 m, Sta. 856, USARP, R/V *Hero* Cr.715, 20 Oct. 1971.

71-317 (33I). 3.3 km W Puerto Basil Hall, Isla de los

Estados, Tierra del Fuego, Argentina. 54°43.9'S, 64°14.1'W, 10 m, Sta. 861, USARP, R/V *Hero* Cr.715, 21 Oct. 1971.

71-319 (33P). 9.6 km NE Isla Observatorio, Isla de los Estados, Tierra del Fuego, Argentina. 54°35.5'S, 63°58.7'W, 87 m, Sta. 864, USARP, R/V *Hero* Cr.715, 22 Oct. 1971.

71-323 (32H). Puerto Cook, Isla de los Estados, Tierra del Fuego, Argentina. 54°45.6'S, 64°2.6'W, intertidal rocks and mussel beds, Sta. 869, USARP, R/V *Hero* Cr.715, 23 Oct. 1971.

71-326 (32F). Puerto Año Nuevo, Isla de los Estados, Tierra del Fuego, Argentina. 54°44.9'S, 64°6.6'W, intertidal rocks and mussel beds, Sta. 872, USARP, R/V *Hero* Cr.715, 25 Oct. 1971.

71-327 (33Q). 14.4 km N Cabo San Juan, E end Isla de los Estados, Tierra del Fuego, Argentina. 54°34'S, 63°50'W, 118 m, Sta. 873, USARP, R/V *Hero* Cr.715, 26 Oct. 1971.

71-328 (33R). 6.4 km N C. San Juan, Isla de los Estados, Tierra del Fuego, Argentina. 54°39.1'S, 63°50.1'W, 135-137 m, Sta. 874, USARP, R/V *Hero* Cr.715, 26 Oct. 1971.

71-329 (30I). 8 km S Pta. Ventana, S side Isla de los Estados, Tierra del Fuego, Argentina. 54°54.5'S, 63°56'W, 771-903 m, Sta. 875, USARP, R/V *Hero* Cr.715, 27 Oct. 1971.

71-332 (30H). 3.3 km S Bahía Blossom, Isla de los Estados, Tierra del Fuego, Argentina. 54°50'S, 63°59.7'W, 205-208 m, Sta. 880, USARP, R/V *Hero* Cr.715, 28 Oct. 1971.

71-334 (30F). 3.3 km W Cabo Kendall, Isla de los Estados, Tierra del Fuego, Argentina. 54°50'S, 64°10'W, 76 m, Sta. 882, USARP, R/V *Hero* Cr.715, 29 Oct. 1971.

71-339 (30E). NW arm Bahía York, Isla de los Estados, Tierra del Fuego, Argentina. 54°47.2'S, 64°18.4'W, 38 m, Sta. 891, USARP, R/V *Hero* Cr.715, 1 Nov. 1971.

71-340 (30D). 8 km SE Cabo Kempe, Isla de los Estados, Tierra del Fuego, Argentina. 54°55.2'S, 64°20.4'W, 303-358 m, Sta. 893, USARP, R/V *Hero* Cr.715, 2 Nov. 1971.

71-342 (30A). 11.2 km SW Cabo San Bartolome, Isla de los Estados, Tierra del Fuego, Argentina. 55°00'S, 64°48.7'W, 438-548 m, Sta. 895, USARP, R/V *Hero* Cr.715, 3 Nov. 1971.

71-344 (30C). Bahía Capitán Cánepa, Isla de los Estados, Tierra del Fuego, Argentina. 54°50.2'S, 64°29.4'W, 67-71 m, Sta. 897, USARP, R/V *Hero* Cr.715, 4 Nov. 1971.

71-345 (31A). S side Bahía Capitán Cánepa, Isla de los Estados, Tierra del Fuego, Argentina. 54°50.8'S, 64°29'W, intertidal rocks and mussel beds, Sta. 898, USARP, R/V *Hero* Cr.715, 4 Nov. 1971.

71-346 (30B). 2.4 km E Cabo San Bartolomé, Isla de los Estados, Tierra del Fuego, Argentina. 54°55'S, 64°40'W, Grab smpl, Sta. 899, USARP, R/V *Hero* Cr.715, 5 Nov. 1971.

71-347 (33B). 28.8 km N Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°29.3'S, 64°40.4'W, 116-120 m, Sta. 902, USARP, R/V *Hero* Cr.715, 6 Nov. 1971.

71-348 (33C). 20.8 km N Bahía Crossley, Isla de los Estados, Tierra del Fuego, Argentina. 54°34.3'S, 64°40'W, 84-85 m, Sta. 903, USARP, R/V *Hero* Cr.715, 6 Nov. 1971.

71-351 (33E). 22.6 km N Cabo San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°29'S, 64°29.2'W, 122-124 m, Sta. 906, USARP, R/V *Hero* Cr.715, 7 Nov. 1971.

71-352 (33D). 14.4 km N Cabo San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°34'S, 64°30'W,

73-76 m, Sta. 907, USARP, R/V *Hero* Cr.715, 7 Nov. 1971.

71-357 (33F). E arm Bahía San Antonio, Isla de los Estados, Tierra del Fuego, Argentina. 54°46.5'S, 64°23.3'W, Grab smpl, Sta. 916, USARP, R/V *Hero* Cr.715, 10 Nov. 1971.

72-76 (3). Pucusana (Chilca), Lima Prov., Peru. 12°30'S, 76°49'W, 0-6 m, J.H. McLean, 30 Mar. and 10 Apr. 1972.

72-78 (4). Isla Chinchá Norte, Ica Prov., Peru. 13°38'S, 76°25'W, 6-12 m, on exposed side, J.H. McLean, V. Alamo, 1 Apr. 1972.

73-66 (33G). Isla Colnett, off N side Isla de los Estados, Tierra del Fuego, Argentina. 54°43.45'S, 64°14.3'W, 15 m, black sand, P. Dayton, (R/V *Hero*), 4 May 1973.

73-68 (26). Beagle Canal, Caleta Awaikirrh, Tierra del Fuego, Chile. 55°00'S, 69°2.2'W, 17 m, P. Dayton, (R/V *Hero*), 16 May 1973.

73-69 (25). Punta Valparaíso, Canal Cockburn, Magallanes Prov., Chile. 54°22.2'S, 71°21.7'W, 15 m, P. Dayton, (R/V *Hero*), 17 May 1973.

73-70 (23). Isla Carlos III, Strait of Magellan, Magallanes Prov., Chile. 53°39.4'S, 72°14.8'W, 11-12 m, P. Dayton, (R/V *Hero*), 18 May 1973.

73-71 (21). Punta Dashwood, Canal Smyth, Magallanes Prov., Chile. 52°24'S, 73°39.7'W, 12 m, P. Dayton, (R/V *Hero*), 19 May 1973.

73-72 (20). Bahía Tom, Magallanes Prov., Chile. 50°11.3'S, 74°47.9'W, 14 m, P. Dayton, (R/V *Hero*) 21 May 1973.

73-73 (19). Bahía San Andrés, N of Golfo de Peñas, Aisén Prov., Chile. 46°35.3'S, 75°30.6'W, subtidal, P. Dayton, (R/V *Hero*), 23 May 1973.

73-74 (18). Canal Darwin, Aisén Prov., Chile. 45°27.8'S, 74°24.8'W, 8 m, P. Dayton, (R/V *Hero*), 24 May 1973.

73-75 (17). Isla Westhoff, Chiloé Prov., Chile. 43°54'S, 73°43.5'W, 23 m, P. Dayton, (R/V *Hero*), 25 May 1973.

74-6 (1). Isla Lobos de Afuera (NW and NE of isthmus), Peru. 6°57.1'S, 80°42.3'W, 2-10 m, rocks and sand, J.H. McLean, J.A. Coyer, and J.M. Engle, 19-20 Jan. 1974.

74-24 (2B). Isla San Lorenzo, midway on NE side, rocky point N of naval base, Lima Prov., Peru. 12°5.75'S, 77°12.9'W, 0-4.5 m, J.H. McLean, J.A. Coyer, and J.M. Engle, 29 Jan. 1974.

75-10 (6B). Pozo Toyo, S of Iquique, Tarapacá Prov., Chile. 20°25'S, 70°10.5'W, intertidal, Sta. 1, J.H. McLean, 29 Sept. and 1 Oct. 1975.

75-12 (6A). Iquique, marine lab. of Universidad del Norte, Tarapacá Prov., Chile. 20°15.5'S, 70°08'W, intertidal, Sta. 3, J.H. McLean, 30 Sept. and 2 Oct. 1975.

75-15 (8C). S end of Antofagasta, Antofagasta Prov., Chile. 23°42'S, 70°27'W, intertidal *Piura* beds, Sta. 6, J.H. McLean, J. Tomicic, 5,6 Oct. 1975.

75-17 (8A). Mainland E of Isla Santa María, N of Antofagasta, Antofagasta Prov., Chile. 23°25'S, 70°36'W, intertidal, Sta. 8, J.H. McLean and J. Tomicic, 7 Oct. 1975.

75-19 (8B). Los Colorados, rocky headland N of Bahía Antofagasta, Antofagasta Prov., Chile. 23°29'S, 70°22'W, 0-6 m, Sta. 10, J.H. McLean, 9 Oct. 1975.

75-20 (8C). Antofagasta, S end of city, Antofagasta Prov., Chile. 23°42'S, 70°27'W, 2-3 m, out from *Piura* beds, Sta. 11, J.H. McLean, 10 Oct. 1975. LACM.

75-21 (7). NW of Mejillones, N of Antofagasta, Antofagasta Prov., Chile. 23°02'S, 70°31'W, 8-23 m, Sta. 12, in *Aulacomya* beds, J.H. McLean et al., 11 Oct. 1975.

75-25 (9). S side of Bahía Herradura, S of Coquimbo, Coquimbo Prov., Chile. 29°59'S, 71°22'W, 6-17 m, Sta. 16, J.H. McLean, 14 Oct. 1975.

75-28 (10). Los Molles, Aconcagua Prov., Chile. 32°14'S,

71°32'W, intertidal, Sta. 19, J.H. McLean, 16-18 Oct. 1975.

75-30 (11). Estación de Biol. Marina, Montemar, Valparaíso Prov., Chile. 32°57'S, 71°32'W, intertidal, Sta. 20, J.H. McLean, 19,20 Oct. 1975.

75-33 (12). Algarrobo, Valparaíso Prov., Chile. 33°22'S, 71°42'W, 3-8 m, Sta. 23, T. Suchanek, K. Sebens, 23 Oct. 1975.

75-37 (13). Mehuin, small offshore island out from Río Lingue, Valdivia Prov., Chile. 39°26'S, 73°16'W, intertidal, Sta. 27, J.H. McLean, 1 Nov. 1975.

75-41 (15). Pumalín, W of Isla Talcán, Golfo de Corcovado, Chiloé Prov., Chile. 42°42'S, 72°52'W, intertidal, Sta. 31, J.H. McLean, 4-6 Nov. 1975.

75-43 (14). Islote Nihuel, Golfo de Corcovado, Chiloé Prov., Chile. 42°38'S, 72°57'W, 3-14 m, Sta. 33, J.H. McLean, 7 Nov. 1975.

75-46 (16). E side Isla Laitec, off SE end of Isla de Chiloé, Chiloé Prov., Chile. 43°14'S, 73°36'W, 3-6 m, Sta. 36, J.H. McLean, 9 Nov. 1975.

75-48 (24). Punta Santa Ana, Fuerte Bulnes, Peninsula Brunswick, Strait of Magellan, Chile. 53°38'S, 70°54.5'W, intertidal, Sta. 38, J.H. McLean, 16 Nov. 1975.

75-49 (24). Puerto el Hambre, cove S of Punta Askew, Penin. Brunswick, Strait of Magellan, Chile, 53°37'S, 70°56'W, intertidal, J.H. McLean, 16,19 Nov. 1975.

75-51 (38). S of Río Grande, Atlantic Coast, Tierra del Fuego, Argentina. 53°02'S, 70°49'W, intertidal, Sta. 41, J.H. McLean, 22 Nov. 1975.

35-147 (2C). Near rocks off Isla San Lorenzo, Calloa, Lima Prov., Peru. 12°09'S, 77°15'W, 46 m, R/V *Velero* III, Sta. BS-522, 11 Jan. 1935.

35-156 (5). E of Isla Viejas, Bahía Independencia, Ica Prov., Peru. 14°16'S, 76°10'W, 37 m, R/V *Velero* III, Sta. BS-531, 13 Jan. 1935.

35-159 (4). N of Isla Medio, Islas de Chinchá, Ica Prov., Peru. 13°39'S, 76°22'W, 33 m, R/V *Velero* III, Sta. BS-534, 15 Jan. 1935.

38-208 (2A). Off Hormigas de Afuera, Lima Prov., Peru. 11°57'S, 77°47'W, 82 m, R/V *Velero* III, Sta. BS-569, 12 Feb. 1938.

NATIONAL MUSEUM OF NATURAL HISTORY, WASHINGTON, D.C. (USNM) MATERIAL

The localities are listed in order according to station number. The number in parentheses following the station number are the locality reference points used in Figures 1-4. E = *Eltain* station, H = *Hero* cr 712 station, V = *Vema* station.

E 219 (27C). 55°47'S, 66°17'W, 115 m, off Cape Horn.

E 363 (34). 57°09'S, 58°58'W, east of Tierra del Fuego.

E 740 (27D). 56°06'S, 66°19'W, 384-494 m, off Cape Horn.

E 958 (22B). 52°56'S, 75°00'W, 92-101 m, west of Tierra del Fuego.

E 960 (22A). 52°40'S, 74°58'W, 64 m, west of Tierra del Fuego.

E 967 (37B). 53°42'S, 66°19'W, 81 m, east of Tierra del Fuego.

E 974 (36). 53°42'S, 64°57'W, 119-124 m, east of Tierra del Fuego.

E 1596 (35). 54°39'S, 57°09'W, 124 m, Burdwood Bank.

V 17-48 (27B). 55°10'S, 66°23'W, 42 m, off eastern Tierra del Fuego.

H 654 (30A). 54°40'S, 65°14'W, 12 m, off eastern Tierra del Fuego.

H 656 (33A). 54°48'S, 64°42'W, 18 m, off eastern Tierra del Fuego.

H 659 (30C). 54°51.5'S, 64°27.1'W, ? m, off eastern Tierra del Fuego.

H 664 (30H). 54°46.1'S, 63°57.9'W, 29 m, off eastern Tierra del Fuego.

Sta. 2778 (24), 212271, Strait of Magellan, 53°01.00'S, 70°42.25'W, 111 m, 23 Jan. 1887.

368419, Above battle monument, Port Stanley, Falkland Islands, boat dredge through kelp, W.L. Schmitt. 23 Feb. 1927.

NATURAL HISTORY MUSEUM (LONDON) (BMNH) MATERIAL

The localities are listed in order according to station number. The number in parentheses following each station number is the locality reference point used in Figures 1–4. DE = Discovery Expedition.

DE 88 (37A). 54°00'S, 65°00'W, east of Tierra del Fuego, 118 m.

DE Sta. 388 (27E). 56°19.3'S, 67°09.45'W, off Cape Horn, 121 m, 16 Apr. 1930.

DE Sta. 399. 1 mi southeast of southwest point of Gough I., Tristan da Cunha, 141–102 m, 18 Apr. 1930.

NATIONAL MUSEUM OF WALES (NMW) MATERIAL

Scottish National Antarctic Expedition (SNAE) Station. SNAE Sta. 346 (35). 54°25'S, 57°32'W, Burdwood Bank, 102 m, 1 Dec. 1903.

SWEDISH MUSEUM OF NATURAL HISTORY (SMNH) MATERIAL

Swedish Southpolar Expedition (SSPE) 1901–1903 Stations. Full list in Strebel, 1908: 1–6.

SSPE 3, 54°43'S, 64°08'W, Tierra del Fuego, 36 m, 6 Jan. 1902.

SSPE 25, 54°22'S, 36°27'W, South Georgia, 24–52 m, some algae, 12 May 1902.

SSPE 28, 54°22'S, 36°28'W, South Georgia, 12–15 m, sand and algae, 24 May 1902.

SSPE 34, 54°11'S, 36°18'W, center of Cumberland Bay, South Georgia, 252–310 m, a few stones, 5 June 1902.

SSPE 39, Port William, Falkland Islands, 51°40'S, 57°41'W, 40 m, sand, stones, algae, 4 July 1902.

SSPE 40, 51°33'S, 58°W, Berkeley Sound, Falkland Islands, 16 m, gravel and shells with algae, 19 July 1902.

SSPE 43, 51°33'S, 58°09'W, Greenpatch, Port Louis, near bridge, Falkland Islands, shallow subtidal, stony bottom with algae amongst *Macrocystis*, 28 July 1902.

SSPE 46, 51°32'S, 58°07'W, Carenage Creek, Port Louis, Falkland Islands, 1 m, sand with *Codium*, 9 Aug. 1902.

SSPE 48, 51°34'S, 57°55'W, Berkely Sound, Falkland Islands, 25 m, sand and stones, 10 Aug. 1902.

SSPE 59, 53°45'S, 61°10'W, Burdwood Bank, 137–150 m, broken shells and stones, 12 Sep. 1902.

T. WORSFOLD STATIONS

The localities are listed in order according to station number. Voucher material is lodged in the AMS.

TW1: Off Sparrow Pt., Port William, East Falkland, 51°39.95'S, 57°48.04'W, 3 m, coarse sand, moderately sheltered, 24 June, 1990.

TW2: 2 km east of Stanley, East Falkland, 51°41.73'S, 57°48.83'W, intertidal, filamentous algae, sheltered inlet, 24 Feb. 1990.

TW3: 1 km west of Stanley, East Falkland, 51°41.43'S, 57°52.52'W, intertidal, filamentous algae, sheltered inlet, 25 Feb. 1990.

TW4: Gypsy Cove, East Falkland, 51°40.57'S, 57°48.22'W, intertidal shell sand, sheltered bay, 8 Apr. 1990.

TW5: Surf Bay, East Falkland, 51°41.90'S, 57°46.35'W, intertidal shell sand, exposed coast, 24 Feb. 1990.

LOCALITY NUMBERS

Numbers 1 see Figure 2A; 2–8, see Figure 2B; 9–17, see Figure 2C; 18–27, 36–39, see Figure 3; 28–33, see Figure 4; 34–35, see Figure 1.

Peru (Fig. 2A, B)

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|----------------------|---------------------|
| 1. 74-6. | 3. 72-76. |
| 2A. AHF 569. 38-208. | 4. 72-78, AHF 534. |
| 2B. 74-24. | 35-159. |
| 2C. AHF 522. 35-147. | 5. AHF 531. 35-156. |

Northern Chile (Fig. 2B, C)

- | | |
|-----------------------------|-------------------|
| 6A. 64-16, 70-66,
75-12. | 8C. 75-15, 75-20. |
| 6B. 75-10. | 9. 75-25. |
| 7. 75-21. | 10. 75-28. |
| 8A. 75-17. | 11. 75-30. |
| 8B. 75-19. | 12. 75-33. |
| | 13. 75-37. |

Southern Chile (Figs. 2C, 3)

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|------------|--------------------------------------|
| 14. 75-43. | 21. 73-71. |
| 15. 75-41. | 22A. E 960. |
| 16. 75-46. | 22B. E 958. |
| 17. 73-75. | 23. 73-70. |
| 18. 73-74. | 24. 75-48, 75-49,
USNM Sta. 2778. |
| 19. 73-73. | |
| 20. 73-72. | |

Tierra del Fuego (Figs. 1, 3, 4)

- | | |
|---|---------------------------------|
| 25. 73-69. | 31A. 71-274, 71-275,
71-345. |
| 26. 73-68. | 31B. 71-276, 71-277. |
| 27A. "Baie Orange,"
Mission du Cape
Horn (NMNHP). | 31C. 71-281. |
| 27B. V 17-48. | 31D. 71-283. |
| 27C. E 219. | 32A. 71-273, 71-309. |
| 27D. E 740. | 32B. 71-267, 71-295. |
| 27E. DE 388. | 32C. 71-294. |
| 28. 71-270, 71-271,
71-296. | 32D. 71-291, 71-293. |
| 29A. 71-302. | 32E. 71-289, 71-290. |
| 29B. 71-305. | 32F. 71-326. |
| 30A. 71-342, H 654. | 32G. 71-311. |
| 30B. 71-346. | 32H. 71-286, 71-287,
71-323. |
| 30C. 71-344, H 659. | 33A. 71-258, 71-308,
H 656. |
| 30D. 71-340. | 33B. 71-267, 71-347. |
| 30E. 71-339, 71-359. | 33C. 71-348. |
| 30F. 71-334. | 33D. 71-352. |
| 30G. 71-259. | 33E. 71-351. |
| 30H. 71-332, H 664. | 33F. 71-265, 71-357. |
| 30I. 71-329. | 33G. 71-266, 71-312,
73-66. |
| 30J. 71-260. | |

33H. 71-313.	33Q. 71-327.
33I. 71-317.	33R. 71-328.
33J. 71-264.	34. E 363.
33K. 71-315.	35. E 1596, SNAE 346.
33L. 71-316.	36. E 974.
33M. 71-263.	37A. DE 88.
33N. 71-262.	37B. E 967.
33O. 71-310.	38. 75-51.
33P. 71-319.	39. 71-268.