

Cephalaspidea (Gastropoda: Mollusca) Known from the City of San Diego Ocean Monitoring Program

Order Cephalaspidea

Superfamily Acteonacea

Family Acteonidae

Acteon traskii Stearns 1898

Rictaxis punctocaelatus (Carpenter 1864)

Superfamily Philinacea

Family Scaphandridae

Acteocina culcitella (Gould 1853)

Acteocina harpa (Dall 1871)

Meloscaphander sp A¹ SCAMIT, 1995

Family Cylichnidae

Cylichna diegensis (Dall 1919)

Family Aglajidae

Aglaja ocelligera (Bergh 1894)

Melanochlamys diomedea (Bergh 1894)

Family Philinidae

Philine alba Mattox 1958

Philine auriformis Suter 1909

Philine californica Willet 1944

Philine sp A SCAMIT 1987

Family Gastropteridae

Gastropteron pacificum Bergh 1894

Superfamily Diaphanacea

Family Diaphanidae

Diaphana californica Dall 1919

Superfamily Bullacea

Family Retusidae

Sulcoretusa xystrum (Dall 1919)

Volvulella californica Dall 1919

Volvulella catharia Dall 1919

Volvulella cylindrica (Carpenter 1864)

Volvulella panamica Dall 1919

superfamily uncertain

family uncertain

Parvaplustrum sp A SCAMIT 1995

Bullomorpha sp A Ljubenkov, 1994

¹May be present in our area but has not been recorded, thus far.

Key to the Cephalaspidea off Point Loma²

- 1 With internal shell **2**
 With external shell **8**
- 2(1) Parapodium without lateral projections (in preserved state) **3**
 Parapodium with lateral projections on either side of the body resembling wings (in preserved state) Fig 1 *Gastropteron pacificum*
- 3(2) Internal shell occupies no greater than half of the pallial lobes **4**
 Internal shell occupies more than half of the pallial lobes **5**
- 4(3) Pallial lobes long, unequal in length, Fig. 2A *Aglaja ocelligera*
 Pallial lobes short, equal in length, Fig. 2B *Melanochlamys diomedea*
- 5(3) Shell with sculpturing (ridges or pits); body oblong **6**
 Shell without sculpturing; body large and rounded, i.e., silver dollar size (reported only from trawls) *Philine alba*
- 6(5) Shell with rows of shallow pits **7**
 Shell without pits, with axial and spiral ridges forming raised nodes at their intersections,³ Fig. 3A-C *Philine californica*
- 7(6) Shell with spiral rows of separate pits; outer lip of shell formed into one or more spines, Fig. 3D; gizzard plates long oval shaped with slightly raised longitudinal ridge, Fig. 3E *Philine* sp. A
 Shell with spiral rows of pits coalesced to form irregular channel, Fig. 3I; outer lip of shell without spines, Fig. 3H; gizzard plates spindle shaped, Fig. 3G, outer side of each plate with central flat bar spanning length wise across a hollow center, Fig. 3F *Philine auriformis*
- 8(1) Shell bulloid, Fig. 4 **9**
 Shell not bulloid **11**

²Adapted, in part, from Keen and Coan, 1974.

³May be partially retracted into shell.

- 9(8) Shell aperture evenly arched, Fig 4A; shell thin and transparent; animal with dark band of pigment visible through the shell oriented diagonally to the axis of the shell *Parvaplustrum* sp A
Shell aperture flaring below the body whorl, Fig. 4B **10**
- 10(9) Shell barrel shaped, Fig. 4B; single-black mantel ocellus visible through shell, Fig. 4C *Bullomorpha* sp A
Shell globose, Fig. 5A; no ocellus visible *Meloscaphander* sp A⁴
↳ no pigment Parvaplustrum sp B
- 11(8) Shell cylindrical, Fig. 7 **14**
Shell not cylindrical **12**
- 12(11) Shell with spiral sculpturing **13**
Shell without spiral sculpturing, Fig. 5B *Diaphana californica*
- 13(12) Spiral sculpturing formed by many rows of pits coalesced into irregular channels; 4 or more thin-black-spiral bands arranged in two broad stripes, Fig 6A *Rictaxis punctocelatus*
Spiral sculpturing of numerous thin shallow grooves; may have two solid-spiral bands of darker color present in larger specimens, Fig. 6B
..... *Acteon traskii*
- 14(11) Apex⁵ absent; spire sunken, Fig. 7 **15**
Apex and/or spire projecting, Fig. 8 & Plate 1 **16**
- 15(14) Axial sculpturing of moderately developed striae. Fig. 7A
..... *Sulcoretusa xystrum*
No axial sculpturing, Fig. 7B *Cylichna diegensis*
- 16(14) Spire concealed by apex, Plate 1 *Volvulella* spp.
Spire not concealed by apex; spire moderately elevated **17**
- 17(16) Spire height moderate; shoulder of whorls rounded giving the shell a tall slender appearance; shell sometimes with fine-pigmented spiral lines, Fig. 8A *Acteocina cuticella* spp.
Plate 4
Spire height low; shoulder of whorls squared giving shell a squat appearance; no spiral lines, Fig. 8B *Acteocina harpa*

⁴May be present in our area but has not been recorded, thus far.
⁵The apex is located at the tip of spire.

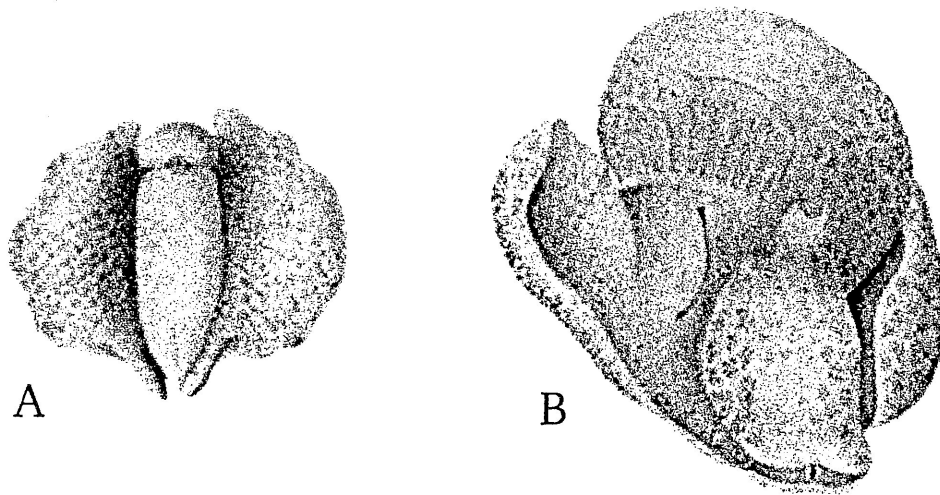


Figure 1 — *Gastropteron pacificum*: A. ventral view; B. dorso-frontal view.

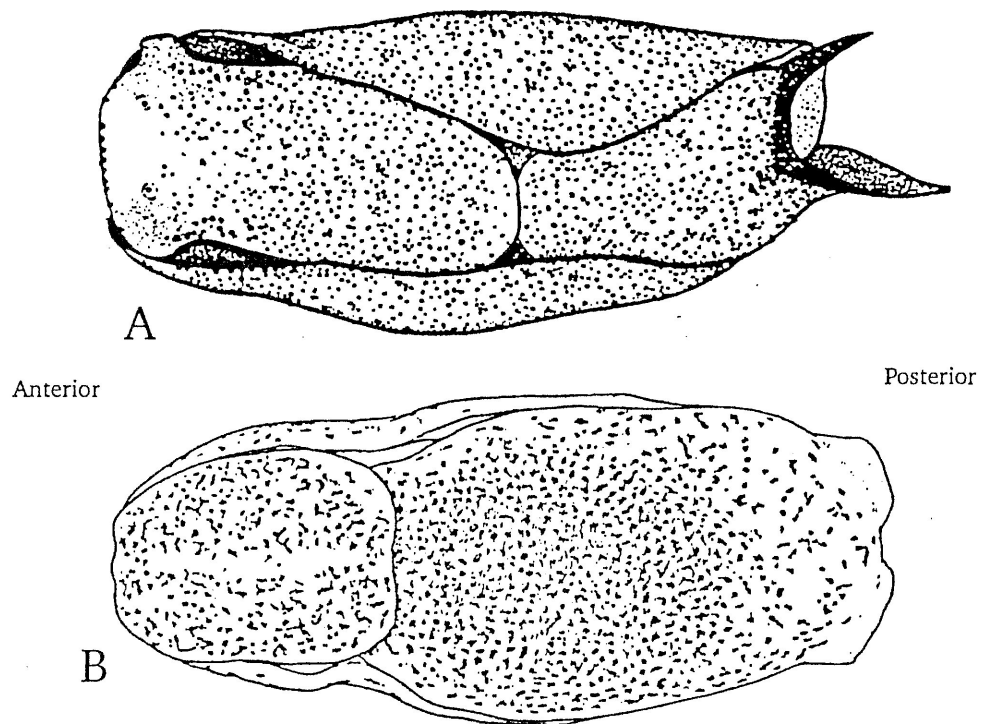


Figure 2 — A. *Aglaja ocelligera*: dorsal view. B. *Melanochlamys diomedea*: dorsal view.

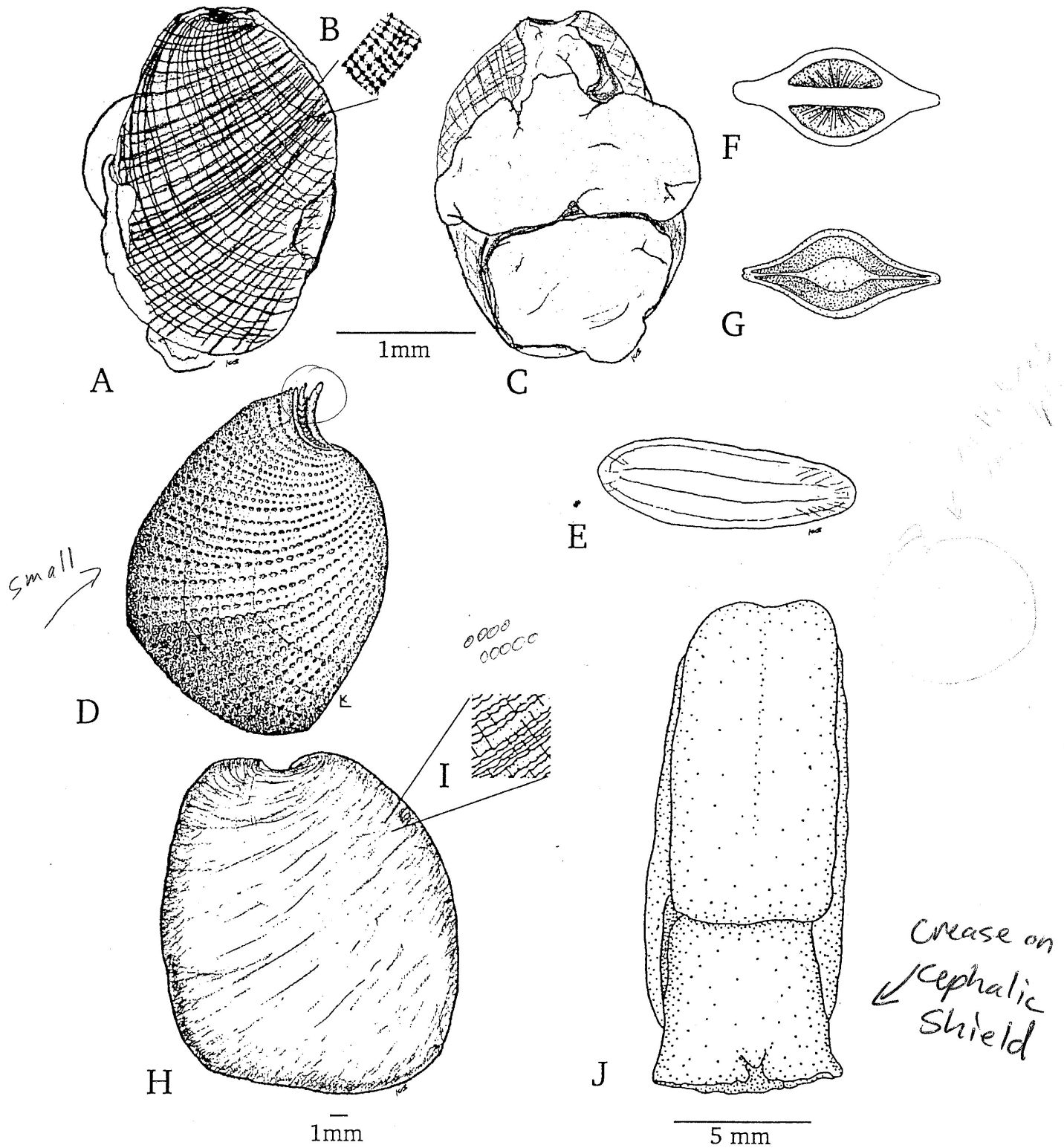


Figure 3 — *Philine californica*: A. dorsal view; B. shell surface detail; C. ventral view. *Philine* sp A: D. dorsal view of shell, animal removed; E. single gizzard plate. *Philine auriformis*: F. outer side of gizzard plate; G. crushing side of gizzard plate; H. dorsal view of shell, animal removed; I. shell surface detail; J. dorsal view of entire animal.

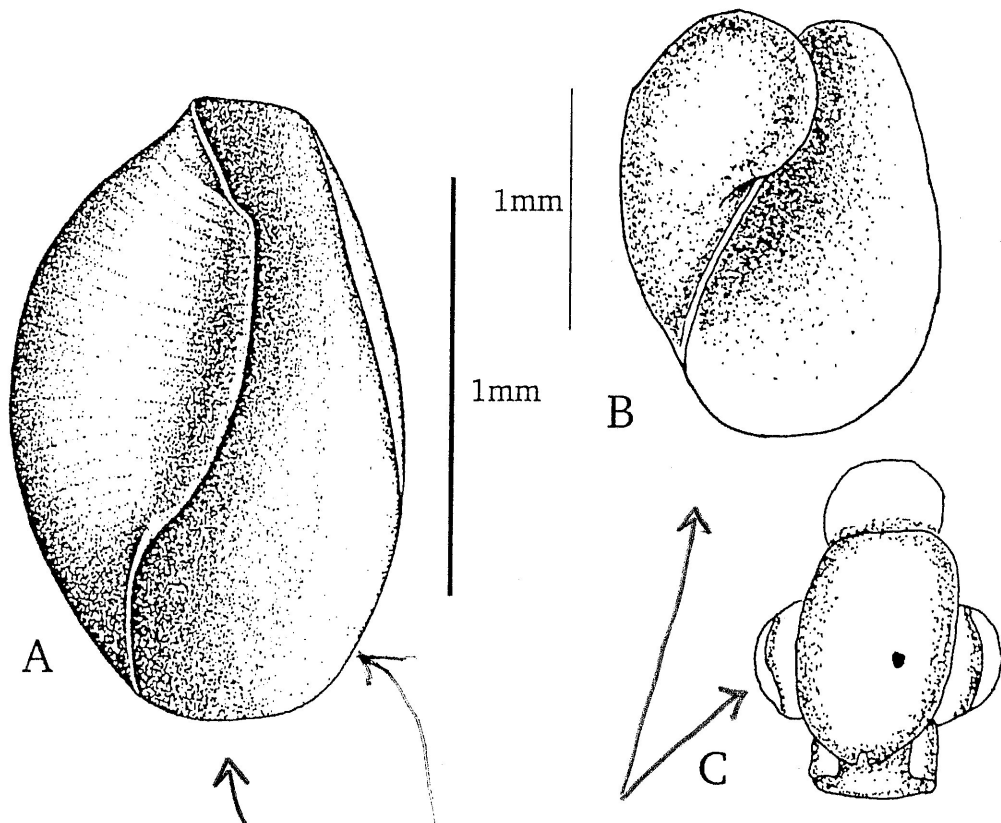


Figure 4 — A. *Parvaplustrum* sp A. *Bullomorpha* sp A: B. ventral view; C. dorsal view with animal (Not same scale).

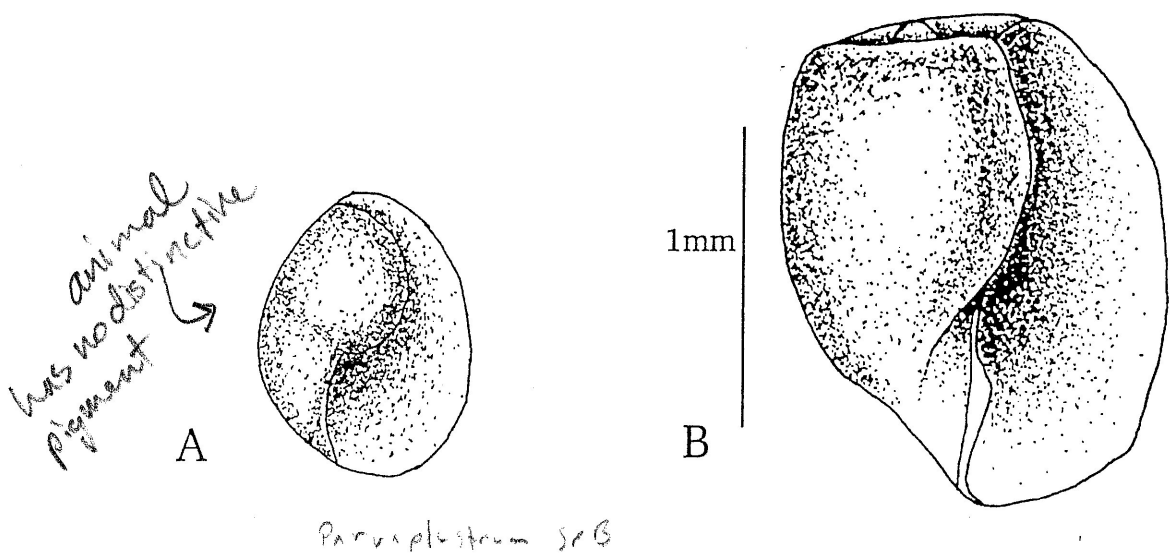


Figure 5 — A. *Meloscaphander* sp A (3 mm specimen). B. *Diaphana californica*.

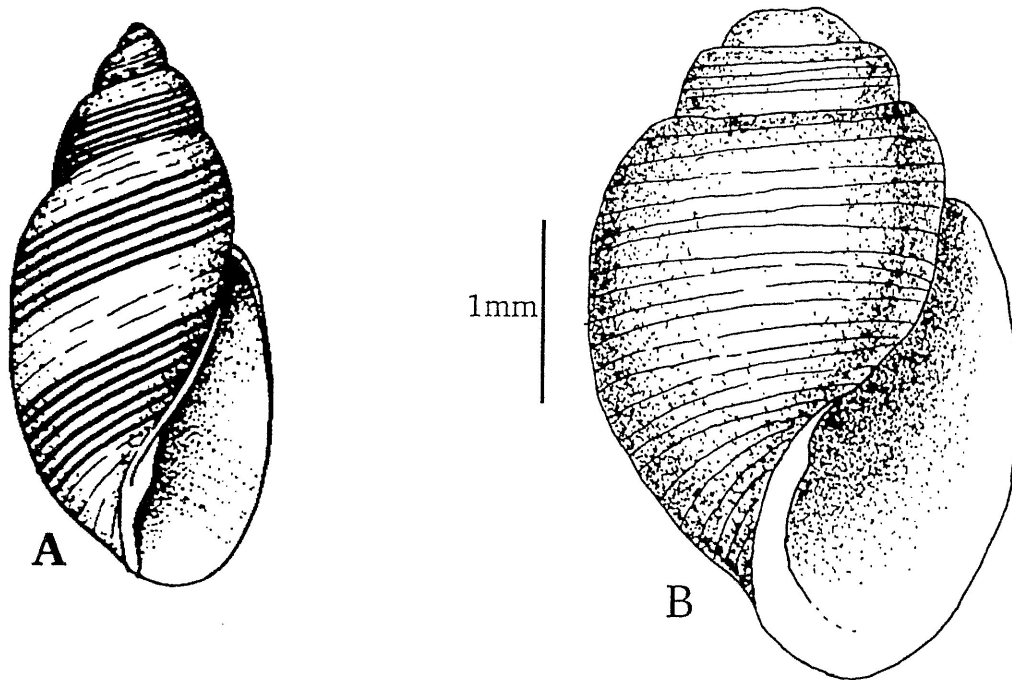


Figure 6 — A. *Rictaxis punctocelatus*. B. *Acteon traskii*.

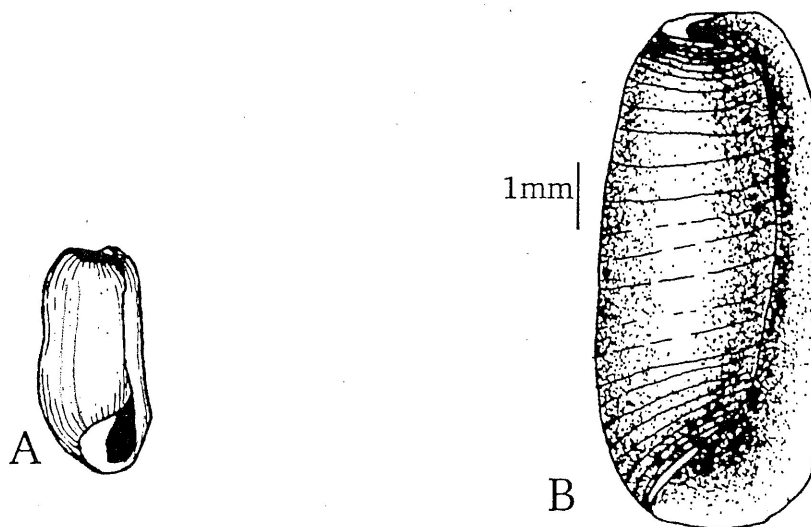


Figure 7 — A. *Sulcoretusa xystrum*. B. *Cylichna diegensis*.

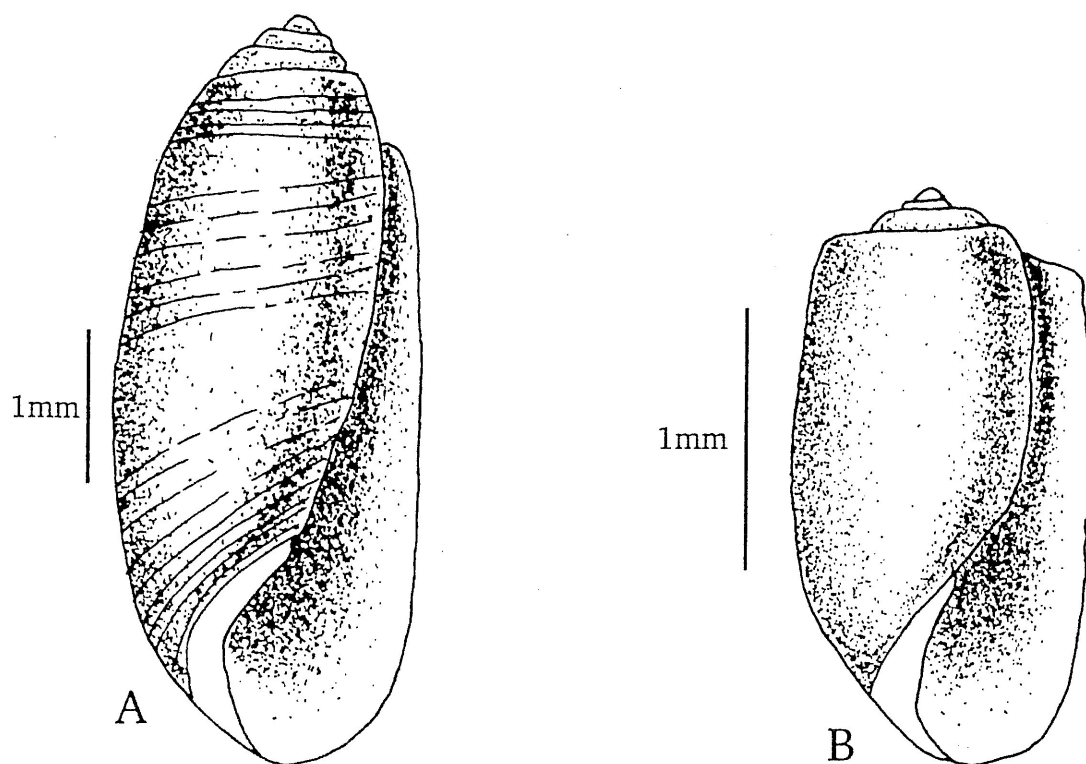


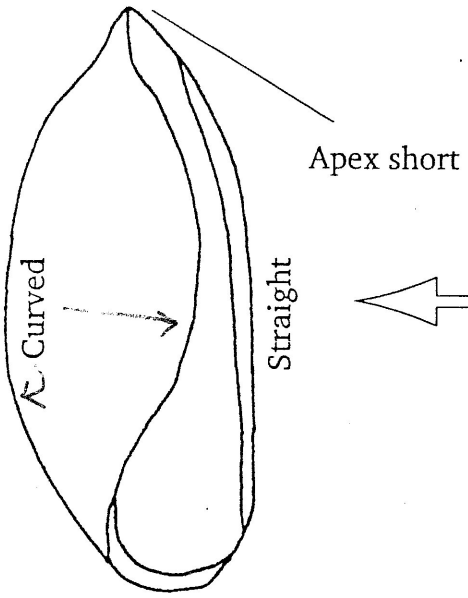
Figure 8 — A. *Acteocina culcitella*. B. *Acteocina harpa*.

Figure List

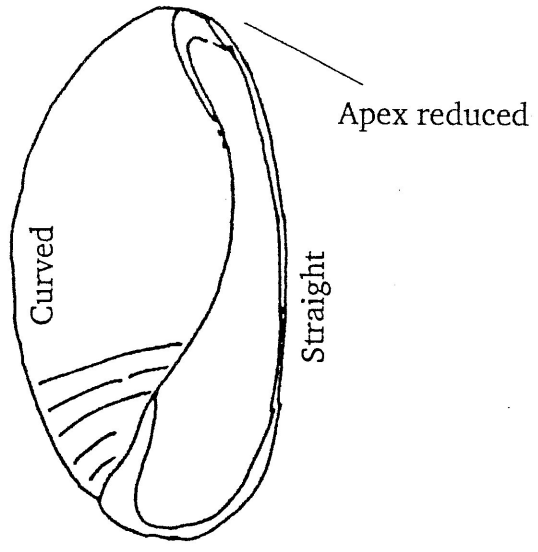
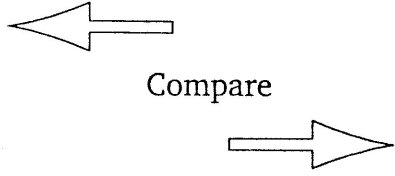
Figure 1	MacFarland 1966
Figure 2A	Modified from Farmer 1980
Figure 2B	SCAMIT 1983
Figure 3A-C, 3E,H,I, 4B, 5B, 6B, 7B, 8	Barwick
Figure 3D	SCAMIT 1987
Figure 3E,G,J	Rudman 1970
Figure 4A	SCAMIT 1995
Figure 4C, 5A	Modified from Ljubenkov 1994
Figure 6A	Modified from Smith & Carlton 1975
Figure 7A	Modified form Keen and Coan 1974
Plate 1	Modified from Zmarzly

Literature Cited

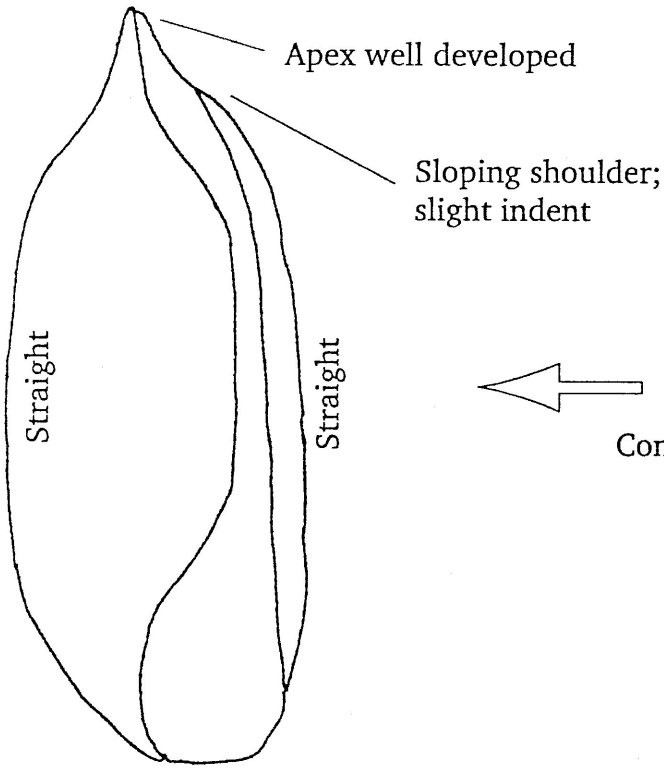
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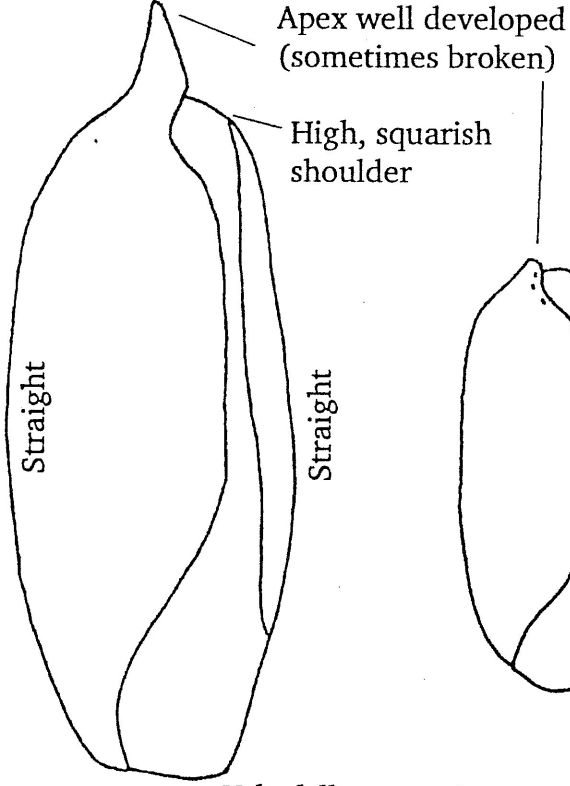
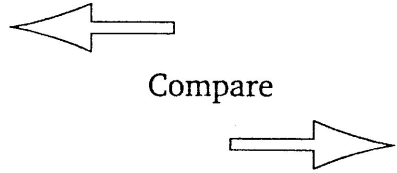
Volvulella californica



Volvulella catharia



Volvulella cylindrica



Volvulella panamica

