

STUDIES ON THE FAUNA OF SURINAME
AND OTHER GUYANAS: No. 3.

SURINAME FRESHWATER SNAILS OF THE
GENUS POMACEA

by

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Of the three Guyanas on the north coast of South America, Suriname is the middle one, lying between French Guyana to the east and British Guyana to the west. The frontiers between these three countries are formed by the Marowijne River (Suriname — French Guyana) and the Courantyne River (Suriname — British Guyana).

In general the Guyanas are much alike in geographical features — covered with tropical rain forest for the most part and with savannas and swamps for the rest. The freshwater molluscs live in the large rivers and the bush creeks in the hinterland, and in the swamps, canals and trenches in the more or less cultivated coastal plain.

Of the species of *Pomacea* (= *Ampullaria*) found in Suriname, VERNHOUT (1914) lists the following: *Ampullaria lineata* Spix, *A. canaliculata* Lam., *A. levior* Sow., *A. sinamarina* (Brug.), *A. granulosa* Sow., *A. castelloi* Sow., *A. crassa* Swain., *A. sowerbyi* sp. n., *A. urceus* (Müll.), *A. guyanensis* Lam., *A. glauca* (L.), and *A. glauca* var. *oronocensis* Rve.

PAIN (1952) gave a revised list of the Suriname *Pomacea* based on VERNHOUT's material in the Rijksmuseum van Natuurlijke Historie, Leiden. The new species described by VERNHOUT as *A. sowerbyi*, based on a very immature holotype, proved to be a young specimen of *Pomacea granulosa* (Sow.), while his *A. canaliculata* appeared to be an extreme form of *P. dolioides* (Rve) with a deeply channelled suture, and his *A. levior* a typical *dolioides* with

a widely effused peristome. Furthermore VERNHOUT's *A. castelloi* was recognized as a young specimen of *P. crassa* (Swain.). His references to the occurrence of *P. urceus* (Müll.) and *P. urceus guyanensis* (Lam.) in Suriname were compiled from literature, and their presence has not so far been confirmed.

Examination of the soft anatomy of a specimen of *P. dolioides* (Rve) from Recife in Pernambuco, Brazil, by H. DE SOUZA LOPES (Instituto Oswaldo Cruz, Rio de Janeiro), has shown that it differs considerably from that of typical specimens of *P. lineata* (Spix) from Brazil (Atlantic drainage), and REEVE's species therefore ought to be maintained. Typical *lineata* have not been found in the Guyanas.

It is understandable that in the three Guyanas the faunal elements are largely identical. On the other hand it becomes clear that there are also differences, some of which are now revealed by detailed studies of the Mollusca.

We are glad to be able to present a study of this dominant group of aquatic molluscs, which in many respects demonstrates a close faunal relationship between the countries of the Guyanas. In respect of British Guyana, this has been made easier by a recent revision of the *Ampullariidae* of that country (PAIN 1950). It is to be hoped that the species inhabiting French Guyana will in due course receive greater scientific attention, since all the data available are based on old identifications of material collected a very long time ago (DROUET 1859).

This study is based on material and field observations obtained by the senior author. The collected specimens have been deposited in the "Rijksmuseum van Natuurlijke Historie", Leiden, and the "Surinaams Museum", Paramaribo.

Genus *Pomacea* Perry

(First described in March, 1810, in Arcana signature G 5 pl. 12, where it is monotypic for *P. maculata* Perry = *Ampullaria gigas* Spix. — *Ampullarius* de Montfort appeared in a publication later than March, 1810.)

Pomacea (*Pomacea*) *dolioides* (Reeve)

Plate IX

Ampullaria dolioides REEVE, 1856, Conc. Icon. 10, Mon. Amp., fig. 75 a, b; ALDERSON 1925, Studies in Ampullaria, p. 24, pl. 7.

- Ampullaria levior*, VERNHOUT 1914 (nec SOWERBY, 1909), Notes Leyden Museum 36, p. 28.
Ampullaria lineata, VERNHOUT 1914 (nec SPIX, 1827), Notes Leyden Museum 36, p. 27.
Ampullaria canaliculata, VERNHOUT 1914 (nec LAMARCK, 1819), Notes Leyden Museum 36, p. 27.
Pomacea dolioides (Rve) PAIN, 1950, Proc. Malac. Soc. London 28, p. 68, pl. 7, fig. 4.
Pomacea lineata, PAIN 1952 (nec Spix, 1827), Basteria 16, p. 31.

This is one of the most common species of *Pomacea*, living in the swamps in the younger coastal plain of Suriname. It prefers open trenches, not deeper than a metre, with muddy soil, ricefields, and grassy swamps. Its egg masses, which are pink coloured, are fixed at night, a foot above the water, on trunks, plant stems and posts of bridges. In ricefields, when the young plants appear above the water or are planted in bunches, these snails can cause a great deal of destruction by eating the young leaves (see VAN DINTHER 1956). — Shells of this species are sometimes found in piles of hundreds of complete examples in the swamps, where they are accumulated by the snailhawk (*Rosthramus sociabilis sociabilis*), who feeds especially on this mollusc. — There is great variation in the form of the shell, with the whorls normally developed in the typical form and deeply sunken as in the specimens described as *canaliculata* by VERNHOUT (see Plate I). In some specimens the peristome is wider than normally as in those described by him as *levior*.

LOCALITIES. *Nickerie*: In swamp near Bigipan, Prins Bernhard Polder, and in swamp near Wageningen. *Coronie*: In swamp along fresh-water canal, and in swamps along the seacoast near Tweeling Creek; in swamps along the road to Coppename, between shellridges near Coppename (mostly form *canaliculata*). *Saramacca*: In swamps and ricefields near Groningen. *Suriname*: All around Paramaribo and Kwatta in the ricefields and in swamps. *Commewijne*: In swamps and trenches of plantations on the north and south side of the river. *Marowijne*: Along Cottica River and Barbakoeba Creek in swamps; Wia Wia, 2-7 km inland in the grassy swamps between sand ridges.

DISTRIBUTION. The Guyanas, Venezuela.

Subgenus *Effusa* Jousseaume

(Mém. Soc. Zool. France 2, 1889, p. 255; type *E. luteostoma* Jous. = *Helix glauca* L.)

Pomacea (Effusa) glauca (Linné)

Plate X

- Helix glauca* LINNÉ, 1758, Syst. Nat. ed. 10, p. 771 no. 594; 1767, ed. 12, p. 1245.
Ampullaria glauca (L.), VERNHOUT 1914, Notes Leyden Museum 36, p. 30; ALDERSON 1925, Studies in Ampullaria, p. 1, pl. 1, pl. 2 fig. 1.
Pomacea glauca (L.) BAKER, 1930, Occ. Papers Mus. Zool. Michigan 210, p. 12; PAIN 1950, Proc. Malac. Soc. London 28, p. 69, pl. 8 fig. 9.
Pomacea (Effusa) glauca (L.), PAIN 1952, Basteria 16, p. 31.

This species is common in the swamps of the coastal plain, where it occurs together with *P. dolioides*, but is not restricted to the swamps only, for it is found also in creeks in the interior and in quiet parts of the rivers. The light-green egg masses are found attached to plant stems and trees a foot above the surface of the water, where they often draw the observer's attention to the presence of the species. — More than once it was noticed that specimens were eaten by the black ibis birds (*Mesembrinibis cayennensis*) living along the rivers in Suriname. — Most of the shells are banded dark brown, and there is more variation in the design of these bands than in the form of the shell.

LOCALITIES. *Nickerie*: Kabalebo River, Avanavero Falls; Lucie River (Stahel expedition); Sipaliwini River, in Coeroeni Creek near Indian village Nelli. *Coronie*: Trenches in Totness; road to Coppename, in swamps between shellridges. *Saramacca*: Coppename River, Bakhuis Mountains in bush creek; Right Coppename River, lower part; Tanjimama River, swampy spot near Kodji Creek. *Suriname*: Paramaribo, in trenches and ricefields; Suriname River, Kabelstation, in Makambi Creek and in swamp along railroad; Gansee, in bush creek; Mamadam, along river; railroad near Gold Placer De Jong Noord, in swamp. *Marowijne*: Cottica River, in swamp near Barbakoeba Creek; Wia Wia, in swamp covered with *Cyperus giganteus* 6–8 km inland; Tapanahoni River, Sajé (Karmel), in swamp; Drietabbetje, in swampy bush creek; Saniki, in bush creek; Paloemeu River, upper part, in bush creek near Indian village Jetité.

DISTRIBUTION: The Guyanas, Venezuela, Trinidad, Martinique, Guadeloupe.

***Pomacea (Effusa) glauca gevesensis* (Deshayes) Plate X**

Ampullaria gevesensis DESHAYES, 1838, in LAMARCK's Hist. Nat. ed. 2 8, p. 541, no. 12; ALDERSON 1925, Studies in Ampullaria, p. 5, pl. 2 fig. 2.

Pomacea glauca var. *gevesensis*, PAIN 1950, Proc. Malac. Soc. London 28, p. 70, pl. 8 fig. 11.

Pomacea (Effusa) glauca gevesensis (Desh.) PAIN, 1952, Basteria 16, p. 31.

This subspecies is not common. — It is recognizable by the orange red columella, the interior white with no bands, the outer lip usually blotched with brown and the umbilicus particularly wide and deep. The light band in the middle of the last whorl is wider than the other dark and light ones.

LOCALITIES. *Coronie*: In the swamps near Totness. *Suriname*: Botanical Gardens in Paramaribo (one specimen, in Mus. Leiden).

DISTRIBUTION. The Guyanas, Venezuela.

***Pomacea (Effusa) glauca orinoccensis* (Troschel) Plate X**

Ampullaria orinoccensis TROSCHER, 1848, in SCHOMBURGK's Reisen 3, p. 348.

Ampullaria oronocensis, REEVE 1856, Conc. Icon. 10, Mon. Amp., fig. 45.

Ampullaria glauca var. *oronocensis* VERNHOUT, 1914, Notes Leyden Museum 36, p. 31, pl. 1 fig. 14; ALDERSON 1925, Studies in Ampullaria, p. 7, pl. 2 fig. 7.

Pomacea glauca var. *oronocensis*, PAIN 1950, Proc. Malac. Soc. London 28, p. 70, pl. 8 fig. 10.

Pomacea (Effusa) glauca orinoccensis (Troschel) PAIN 1952, Basteria 16, p. 31.

This large subspecies is not common. It is found chiefly in bush creeks and sometimes in rivers and swamps in the interior, and is never seen in the swamps of the coastal plain. — The columella and the very wide peristome is nicely orange coloured. — Large specimens are sometimes eaten by the Amerindians.

LOCALITIES: *Saramacca*: Upper Coppename River; Tanjimama River, in Tigri-soela. *Suriname*: Suriname River, Jandé Creek; Upper Gran Rio; Gold Placer De Jong Noord, in swamp. *Marowijne*: Litani River.

DISTRIBUTION. Suriname, British Guyana, Venezuela.

Subgenus *Limnopomus* Dall

(Journal of Conch. 2, 1904, p. 53–54; type *Ampullaria columellaris* Gould.)

Pomacea (Limnopomus) crassa (Swainson) Plate IX

Ampullaria crassa SWAINSON, 1823, Zool. Illustr. (ser. 1) 3, pl. 136; VERNHOUT 1914, Notes Leyden Museum 36, p. 29.

Ampullaria castelloi, VERNHOUT 1914 (nec SOWERBY), 1894, Notes Leyden Museum 36, p. 29.

Pomacea crassa (Swainson) PAIN, 1950, Proc. Malac. Soc. London 28, p. 72, pl. 7 fig. 7, pl. 8 fig. 13.

Pomacea (Limnopomus) crassa (Swainson), PAIN 1952, Basteria 16, p. 31.

This species inhabits bush creeks in the mountains, where it is common on sand-bottoms and rocky places. It has never been found in the larger open rivers or in swamps. — It is probably a representative of Andean (mountainous) fauna concluding its eastern distribution in the Guyanas. — When the molluscs are alive the shells are brown with green in the lighter parts.

LOCALITIES. *Saramacca*: Coppename River, Raleigh Falls, in bush creek. *Suriname*: Suriname River, in Jandé Creek; Makambi Creek near Kabel. *Marowijne*: Gonini River, in bush creek; Upper Tapanahoni River, in bush creek.

DISTRIBUTION. The Guyanas, Brazil, Venezuela, Colombia, Ecuador, Peru.

Pomacea (Limnopomus) granulosa (Sowerby) Plate X

Ampullaria granulosa SOWERBY, 1894, Proc. Malac. Soc. London 1, p. 49, pl. 4 fig. 24; VERNHOUT 1914, Notes Leyden Museum 36, p. 28.

Ampullaria sowerbyi VERNHOUT, 1914, Notes Leyden Museum 36, p. 29, pl. 1 fig. 13.

Pomacea granulosa (Sow.) PAIN, 1949, Proc. Malac. Soc. London 28, p. 40, pl. 2 fig. 5–6; PAIN 1950, Proc. Malac. Soc. London 28, p. 68, pl. 7 fig. 5.

Pomacea (Limnopomus) granulosa (Sow.), PAIN 1952, Basteria 16, p. 30.

This species is quite common. It inhabits the middle course of the large rivers, but lives in the more quiet parts of the rapids and on sandy places between the falls. — When the molluscs are alive the peristome is orange yellow and the outside of the shell brown.

LOCALITIES. *Saramacca*: Coppename River, from Makambo Island to Wansedan Falls. *Suriname*: Suriname River, from Brokopondo to Goddo. *Marowijne*: Marowijne River, from Bonidoro Falls through the Lawa River as far as the Litani River; Tapanahoni River to Grienkasaba Falls.

DISTRIBUTION: Suriname, British Guyana.

Subgenus *Surinamia* Clench

(*Nautilus* 47, 1933, p. 71; type *Asolene* (*Surinamia*) *fairchildi* Clench = *Bulimus sinamarina* Bruguière)

Pomacea (*Surinamia*) *sinamarina* (Bruguière) Plate IX

Bulimus sinamarina BRUGUIÈRE, 1792, Hist. Nat. 1, p. 342, pl. 18 fig. 2-3.
Ampullaria sinamarina (Brug.) VERNHOUT 1914, Notes Leyden Museum 36, p. 28;
 ALDERSON 1925, Studies in Ampullaria, p. 58, pl. 11 fig. 13.
Asolene (*Surinamia*) *fairchildi* CLENCH, 1933, Nautilus 47, p. 71.
Pomacea sinamarina (Brug.) PAIN, 1950, Proc. Malac. Soc. London 28, p. 73, pl. 7 fig. 8.
Pomacea (*Surinamia*) *sinamarina* (Brug.), PAIN 1952, Basteria 16, p. 31.

A common species in all the rivers, where it lives in swift streams of the falls and rapids, firmly attached to stones and rocks. — When the molluscs are alive the peristome is often violet, the outer surface of the shell dark green or yellowish green in younger specimens. — In many older specimens the whorls are often eaten down to the last one, a condition which may be observed to a lesser extent in all the other species of *Pomacea* (and also of *Doryssa*) living in the rivers and creeks in Suriname. It is not known what kind of organism (animals or algae?) damages the shells in this way.

LOCALITIES. *Nickerie*: Nickerie River (Voltz coll.); Courantyne River, Kabalebo River, in Avanavero Falls; Lucie River; Sipaliwini River, upper part. *Saramacca*: Saramacca River, in the rapids of its middle course; Coppename River, from Kaaimanston to Tonckens Falls, and in the Left Coppename to Kankantrie-soela (near the end); Tanjimama Creek, in Tigri Soela. *Suriname*: Suriname River, from Aloesobanja Falls to the Upper Gran Rio. *Marowijne*: Marowijne River, from Armina Falls up to Loë Creek in the Litani River, and to Kodebakoe Falls in the Paloemeu River.

DISTRIBUTION. French Guyana, Suriname, British Guyana (Courantyne).

SPECIES RECORDED FROM SURINAME BUT SO FAR UNCONFIRMED

Pomacea (*Pomacea*) *urceus* (Müller)

Nerita urceus MÜLLER, 1774, Hist. Verm. 2, p. 174. *Ampullaria urceus*, VERNHOUT 1914, p. 30. *Pomacea urceus*, BAKER 1930, p. 2; PAIN 1950, p. 65, pl. 6 fig. 2; PAIN 1952, p. 31.

During the last fifteen years, in which period fresh-water molluscs have been collected more or less intensively in most of the rivers of Suriname, not one specimen of this easily recognizable species has come into our hands. VERNHOUT recorded it on the authority of VON MARTENS (1873) who probably based his data on a false record.

DISTRIBUTION: British Guyana, Venezuela, Trinidad, Colombia, Ecuador, Peru, Brazil.

***Pomacea (Pomacea) urceus guyanensis* (Lamarck)**

Ampullarius guyanensis LAMARCK, 1822, Hist. Nat. 6 (2), p. 176; VERNHOUT 1914, p. 30. *Pomacea guyanensis* (Lam.) PAIN, 1950, p. 67, pl. 7 fig. 3; PAIN 1952, p. 31.

Although this subspecies has been recorded from both French and British Guyana, it has not so far been detected in Suriname.

DISTRIBUTION: French Guyana (Oyapok R.), British Guyana (Rupununi R.), Brazil (Amazon drainage), Venezuela, Colombia, Peru.

***Pomacea (Marisa) cornuarietis* (Linné)**

Subgenus *Marisa* Gray, 1824 = *Ceratodes* Guilding, 1826; type *Helix cornuarietis* L. — *Helix cornuarietis* LINNÉ, 1758, Syst. Nat. ed. 10, p. 771. *Pomacea (Ceratodes) cornuarietis knorri* (Philippi) BAKER, 1930, p. 26. *Pomacea (Marisa) cornuarietis* (L.), PAIN 1950, p. 73, pl. 8 fig. 14. *Marissa cornuarietis*, PAIN 1952, p. 31.

This well known species is recorded from both French and British Guyana, but has never been found anywhere in Suriname, so that up to the present *P. cornuarietis* must remain a doubtful species for the country. BAKER (1930) has mentioned Suriname, but with a question mark.

DISTRIBUTION. French Guyana, British Guyana, Venezuela, Colombia, Trinidad, Tobago, Cuba.

SYNOPSIS TO THE SURINAME SPECIES OF POMACEA

Subgenus *Pomacea*

Shell thin ovate, ventricose, narrowly umbilicate; spire short; whorls convex, the last largely swollen and expanded; aperture very large, open. — In swamps, ricefields and trenches of the coastal plain. Very common. *dolioides* (Reeve)

Subgenus *Effusa*

Shell orbicularly ventricose, widely umbilicate; spire short; aperture ovate. — In swamps of the coastal plain and swampy places and bush creeks in the hinterland. Common. . . . *glauca* (Linné)

Similar to typical *glauca*, but with very decided banding in broad belts; lip dark red or orange, often very brilliant. — In swamps of the coastal plain. Not common. . *glauca gevesensis* (Deshayes)

Shell large helicoid, very widely umbilicate, often with vivid colouring. — In rivers and swamps of the hinterlands. Not common.
 *glauca orinoccensis* (Troschel)

Subgenus *Limnopomus*

Shell small, thick imperforate; whorls convex, smooth, dull yellowish, encircled with rather distinct chestnut bands. — In bush creeks of the hinterlands. Locally common. *crassa* (Swainson)

Shell globose, very narrowly umbilicate and flattened at the sutures; the surface strongly granulose, covered by a reddish brown fibrous periostracum. — In the middle course of rivers in the hinterlands. Quite common. *granulosa* (Sowerby)

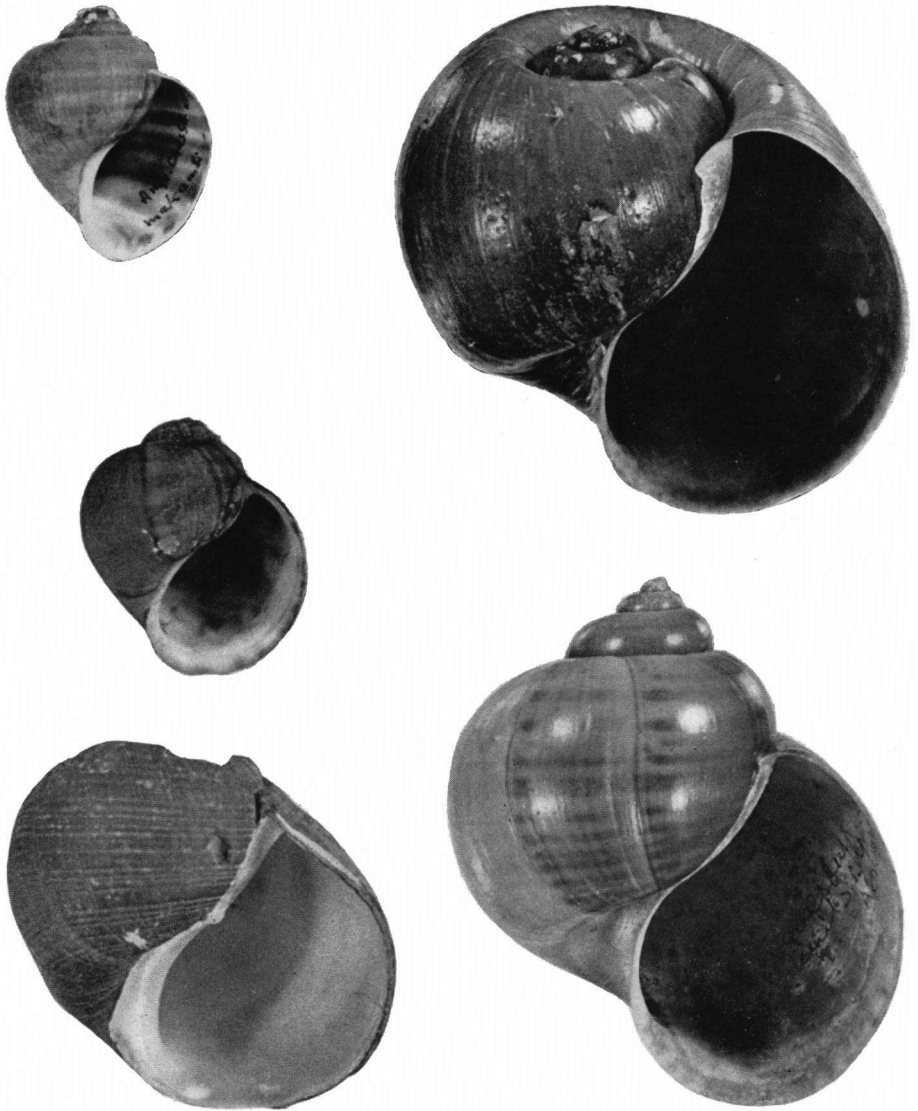
Subgenus *Surinamia*

Shell very thick, imperforate, the spire always much eroded, the surface very roughly striated, without bands; aperture widely expanded, violet within; lip and columella reddish brown. — In the rivers, especially in falls and rapids in the hinterlands. Locally common. *sinamarina* (Bruguère)

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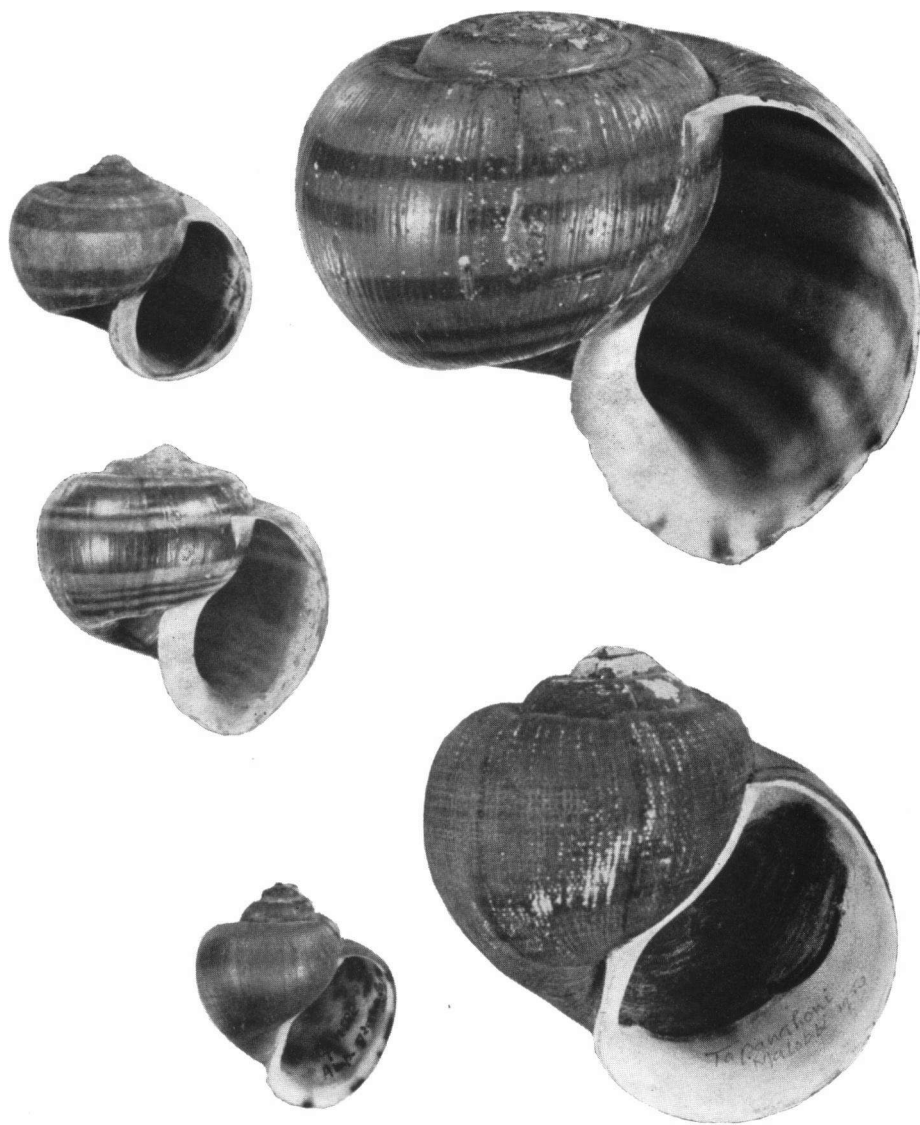
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PLATE IX



Pomacea from Suriname: (top left) *P. crassa*, Makambi Creek near Kabel; (centre and bottom left) *P. sinamarina* immature and adult, Marowijne, Apoma Falls; (bottom right) *P. dolioides*, Charlesburg near Paramaribo, and (top right) *P. dolioides* forma *canaliculata* Vernhout, Coppenameweg km 7 near Coronie. – Natural size. Photographs by WALLACE C. CUMMING, Technical Advisor, U.S. Operations Mission to Suriname.

PLATE X



Pomacea from Suriname: (centre) *P. glauca*, Agr. Exp. Sta. at Paramaribo; (top left) *P. glauca gevesensis*, Totness near Coronie; (top right) *P. glauca orinoccensis*, Upper Coppename; (bottom left) *P. granulosa* immature, Marowijne, Gonsoetoe, and (bottom right) adult, Tapanahoni, Malobbi. – Natural size. Photographs by WALLACE C. CUMMING, Technical Advisor, U.S. Operations Mission to Suriname.