# The land Mollusca of Dominica (Lesser Antilles), with notes on some enigmatic or rare species

**D.G. Robinson, A. Hovestadt, A. Fields & A.S.H. Breure**

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D.G. Robinson, The Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103, U.S.A. (robinson@ansp.org).
A. Hovestadt, Dr. Abraham Kuyperlaan 22, NL-3818 JC Amersfoort, The Netherlands (ad.hovestadt@xs4all.nl).
A. Fields, Department of Biological and Chemical Sciences, University of the West Indies, Cave Hill Campus, Barbados (angela.fields@cavehill.uwi.edu).
A.S.H. Breure, National Museum of Natural History, P.O. Box 9517, NL-2300 RA Leiden, The Netherlands (breure@naturalis.nl).

Key words: Mollusca, Gastropoda, taxonomy, distribution, Dominica.
An overview of the land-snail fauna of the Lesser Antillean island of Dominica is given, based on data from literature and four recent surveys. There are 42 taxa listed, of which the following species are recorded for the first time from the island: *Allopeas gracile* (Hutton, 1834), *A. micra* (d'Orbigny, 1835), *Beckianum beckianum* (L. Pfeiffer, 1846), *Bulimulus diaphanus fraterculus* (Potiez & Michaud, 1835), *Deroceras laeve* (Müller, 1774), *Sarasinula marginata* (Semper, 1885), *Streptostele musaecola* (Morelet, 1860) and *Veronicella sloanii* (Cuvier, 1817). The enigmatic *Bulimulus stenogyroides* Guppy, 1868 is now placed in the genus *Naesiotus* Albers, 1850. *Helicina epistilia* Guppy, 1868 is now considered a synonym of *H. platychila* (Megerle von Mühlfeld, 1824); *H. goldfussi* Boettger, 1887 and *H. rhodostoma inermis* A.J. Wagner, 1910 are now put into the synonymy of *H. rhodostoma* Gray, 1824. *Amphicyclotulus mineri* Bartsch, 1942 is now considered a synonym of *A. amethystinus* (Guppy, 1868). *Cycloblandia* Bartsch, 1942 is treated as a junior subjective synonym of *Amphicyclotulus* Kobelt, 1912. Nine species, previously thought to occur on Dominica, are now removed from the faunal list of the island, due to inaccuracies of provenance of specimens or misidentifications. Finally, remarks are given on the distribution of species collected during the surveys.

## Introduction

"I took advantage of a vacation to visit and explore the island" wrote Guppy in 1868 after his visit to Dominica. He casually referred to his ascending Morne Diablotin, probably the first recorded ascent of this highest mountain, where even today hardly any path exists. Guppy (1868) described nine new species from the island, collected during what must have been a rather active malacological vacation.

The island of Dominica is a "superb example of an elaborately dissected, composite volcanic island" (Davis, 1926). It lies on the inner arc of the Lesser Antilles (fig. 1A) and its surface is 752 km$^2$. The island (fig. 1B) may be divided into three regions, based on the disposition of the main peaks. In the north the rather low Morne au Diable (795 m) rises steep and connects via low ridges with the centrally located Morne Diablotin (1447 m). Farther south, a series of ridges encloses a central plateau before rising again to the southern group. Of this group, the Morne Trois Pitons (1383 m) is the highest. The prevailing trade winds cause a marked difference between the east (windward) and the


Fig. 1. Study area. A, Caribbean; red box shows the position of Dominica. B, Topographical map of Dominica. Sources: Wikimedia (A), Karto-Grafik, Frankfurt/Main (B).

west (leeward) coast. The mean annual precipitation is 2096 mm, with 2552 mm in the northeast (Melville Hall) and 1641 mm in the southeast (Canefield). Rainfall data are based on the period 1999-2008 (Fields, unpublished data).

The first report on the land Mollusca of Dominica by Guppy (1868) listed 20 species. Subsequently, additional records were added by Bland (1869), Brown (1881), Angas (1884), Smith (1888a, 1888b) and Pilsbry (1892). The present overview of the terrestrial malacofauna is based on four surveys which were carried out in 2001 (Ramnath), 2003, 2005 (Robinson, Fields & Zimmerman) and 2008 (Hovestadt), respectively. The latter survey focused on rainforest specimens, more or less neglecting the cultivated areas and the lower dry forests. Fig. 2 provides the localities where land molluscs were found; details are listed in Table 1.

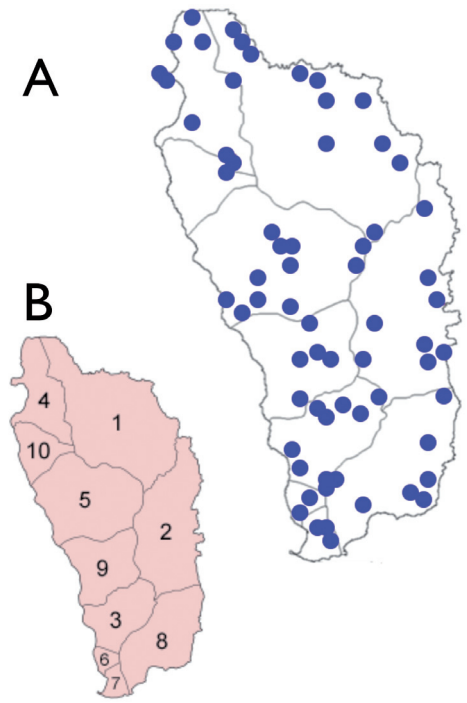



Fig. 2. A, Map showing the localities mentioned in Table 1. B, Parishes mentioned in the text. 1, Saint Andrew; 2, Saint David; 3, Saint George; 4, Saint John; 5, Saint Joseph; 6, Saint Luke; 7, Saint Mark; 8, Saint Patrick; 9, Saint Paul; 10, Saint Peter. Source: Wikimedia (B).

Table 1. Localities treated in this paper, alphabetically arranged according to parishes.

| Parish | Locality | Alt. | 2001 | 2003 | 2005 | 2008 | LAT | LON |
|---|---|---|---|---|---|---|---|---|
| Saint Andrew | Calibishie | 35 | 13 | | | | 15.583333 | -61.35 |
| Saint Andrew | W of Calibishie, Hampstead Estate | 12 | | | | 19 | 15.5925 | -61.362139 |
| Saint Andrew | Carib Territory | 259 | | 26 | | | 15.485617 | -61.26775 |
| Saint Andrew | Fourchie, Calibishie | 170 | | | 31 | | 15.569033 | -61.342316 |
| Saint Andrew | Marigot, Captain Bruce | 395 | | 24 | | | 15.4404 | -61.3216 |
| Saint Andrew | Marigot, Captain Bruce | 332 | | 25 | | | 15.518367 | -61.28975 |
| Saint Andrew | 3.5 km S Marigot | 200 | | | | | | |
| Saint Andrew | Melville Hall Estate | 115 | | | 30 | | 15.5357 | -61.343217 |
| Saint Andrew | 1 km NW Thibaud | 161 | | | | 24 | 15.607139 | -61.402167 |
| Saint Andrew | Veille Cassé | 85 | 3 | | | | 15.616667 | -61.41 |
| Saint Andrew | 1 km NW Veille Cassé | 163 | | | | 23 | 15.624917 | -61.415722 |
| Saint Andrew | Wesley | 90 | 12 | | | | 15.566667 | -61.316667 |
| Saint David | 2.1 NE Bells | 461 | | | | 28 | 15.453194 | -61.31575 |
| Saint David | Castle Bruce | 22 | 11 | | | | 15.43333 | -61.266667 |
| Saint David | 4.3 km SE Concord | 367 | | | | 27 | 15.466278 | -61.306056 |
| Saint David | Emerald Pool | 426 | 23 | 18 | | 29 | 15.3906 | -61.3061 |
| Saint David | La Plaine Agricultural Station | 54 | 20 | 21 | | | 15.337 | -61.250817 |
| Saint David | Newfoundland | 162 | 22 | 19 | | | 15.373967 | -61.26965 |
| Saint David | Rosalie River, road to La Plaine | 11 | | 20 | | | 15.369867 | -61.25205 |
| Saint David | 0.5 km S Rosalie River | 84 | | | | 10 | 15.367806 | -61.265472 |
| Saint David | Rosalie | 250 | | | | | 15.366667 | -61.266667 |
| Saint David | 1.6 km W Rosalie | 150 | | | | | | |
| Saint David | 1.4 km NW Saint Saveur | 196 | | | | 31 | 15.414667 | -61.259167 |
| Saint David | 0.65 km N Saint Saveur | 99 | | | | 30 | 15.40875 | -61.25375 |
| Saint George | Bellevue Chopin, New Florida | 610 | | 9 | | | 15.272516 | -61.338833 |
| Saint George | Bellevue Chopin, Rose Hill | 470 | | 8 | | | 15.2708 | -61.341916 |
| Saint George | E Bellevue, road to Grand Bay | 433 | | | | 6 | 15.267611 | -61.342306 |
| Saint George | Freshwater Lake area | 775 | | 11 | 11 | 5 | 15.338433 | -61.304633 |
| Saint George | Giraudel | 156 | 28 | | | | 15.2833 | -61.3667 |
| Saint George | trail to Lake Boeri | 860 | | | 28 | 4 | 15.366667 | -61.316667 |
| Saint George | 2.1 km SW Laudat | 225 | | | | 13 | 15.318111 | -61.343639 |
| Saint George | Roseau | 15 | | 1 | | | 15.3 | -61.266667 |
| Saint George | Roseau, Botanical Garden | 50 | | 16 | | 1 | 15.292566 | -61.375167 |
| Saint George | road Roseau-Laudat | 243 | | | | 12 | 15.323972 | -61..356444 |
| Saint George | 0.6 km SE Titou Gorge | 644 | | | | 11 | 15.32675 | -61.3200 |
| Saint George | Trafalgar Falls | 466 | | | 29 | | 15.3289 | -61.33485 |
| Saint John | Bornes | 115 | 6 | | | | 15.583333 | -61.416667 |
| Saint John | Cabrits National Park | 45 | | 14 | | | 15.58365 | -61.470567 |
| Saint John | 0.6 km SW Cocoyer | 79 | | | | 21 | 15.616639 | -61.462583 |
| Saint John | Fort Shirley-West Cabrits | 116 | | | | 20 | 15.587667 | -61.475 |
| Saint John | Picard | 170 | 1, 2 | | | | 15.55 | -61.45 |
| Saint John | Pointe Capucin | 65 | | 15 | | | 15.635716 | -61.4548 |
| Saint John | road Toucari-Pennville | 490 | | | | 22 | 15.616 | -61.441917 |
| Saint Joseph | Carnholm | 520 | | | 32 | | 15.455133 | -61.372467 |
| Saint Joseph | Carnholm | 409 | | | 32A | | 15.438033 | -61.376517 |
| Saint Joseph | d'Leau Grommier Forest Station | 420 | 10 | 23 | | | 15.44 | -61.321167 |
| Saint Joseph | Hillsborough | 25 | 17 | 10 | | | 15.402 | -61.40733 |
| Saint Joseph | road to Lake Matthieu | 85 | | | | 15 | 15.412889 | -61.396806 |

**Cont. Table 1**

| Parish | Locality | Alt. | 2001 | 2003 | 2005 | 2008 | LAT | LON |
|---|---|---|---|---|---|---|---|---|
| Saint Joseph | Layou Valley Road, 2.3 km SE bridge | 278 | | | | 14 | 15.406611 | -61.375028 |
| Saint Joseph | road to Fond Cassé, Mary Martin Farm | 430 | | 17 | | | 15.392016 | -61.359167 |
| Saint Joseph | path Mero-Salisbury | 434 | | | | 16 | 15.427667 | -61.397167 |
| Saint Joseph | path Mero-Salisbury | 489 | | | | 17 | 15.4545 | -61.38125 |
| Saint Joseph | path Mero-Salisbury | 515 | | | | 18 | 15.464167 | -61.389611 |
| Saint Joseph | Salisbury Heights | 285 | 19 | | | | 15.412667 | -61.424667 |
| Saint Luke | Morne Lofty | 551 | | 7 | | | 15.366667 | -61.3424 |
| Saint Luke | Pointe Michel | 226 | 27 | 6 | | | 15.2551 | -61.356183 |
| Saint Mark | road Soufrière-Roseau | 174 | | | | 3 | 15.242111 | -61.364917 |
| Saint Mark | road Soufrière-Sulphur Spring | 66 | | 3 | | | 15.233333 | -61.3515 |
| Saint Mark | Rock Toussaint Farm | 100 | | 4 | | | 15.224333 | -61.341267 |
| Saint Mark | Sulphur Springs | 106 | | 5 | | 2 | 15.234267 | -61.342967 |
| Saint Patrick | Geneva | 84 | 26 | | | 7 | 15.25 | -61.316667 |
| Saint Patrick | 1.5 km N Petit Savane | 332 | | | | 9 | 15.266472 | -61.265472 |
| Saint Patrick | 1 km W Petit Savane | 296 | | | | 8 | 15.257111 | -61.2795 |
| Saint Patrick | between Petit Savane and Bagatelle | 351 | | 22 | | | 15.254817 | -61.27415 |
| Saint Paul | Campbell | 287 | | 27 | | | | |
| Saint Paul | Cochrane | 470 | 14 | | | | 15.333333 | -61.366667 |
| Saint Paul | Sylvania | 521 | 16 | 12 | | | 15.367933 | -61.3521 |
| Saint Peter | road to Syndicate, path to Morne Diablotin | 618 | | | | 26 | 15.514333 | -61.418167 |
| Saint Peter | Syndicate Nature Trail | 595 | | 13 | | | 15.518633 | -61.416816 |
| Saint Peter | Syndicate Nature Trail | 535 | | | | 25 | 15.525167 | -61.417472 |

## Methods

In order to analyze the diversity of the localities in the surveys, the 'hotspots' of snail diversity were determined, following a method adapted from Raes et al. (2009). This analysis requires a number of steps. First, the number of species (S, species richness) per locality is determined. However, it may be expected that when more species occur at a given locality, also rare species will be better represented. Therefore each occurrence was given a 'rareness factor'. This was calculated as R = 1/L; L, number of localities at which the species is present; R, ranging between 0.0156 (the species occurs at all 64 localities where molluscs were found) and 1.0000 (the species occurs at a single locality only). Finally the diversity per locality is calculated, both as total and for endemic species only ($D_{tot} = \Sigma R_{tot}/S$; $D_{end} = \Sigma R_{end}/S$).

The following abbreviations are used for depositories of specimens: AH, private collection A. Hovestadt, Amersfoort, the Netherlands; ANSP, Academy of Natural Sciences, Philadelphia, U.S.A.; BMNH, Natural History Museum, London, U.K.; MNHN, Muséum National d'Histoire Naturelle, Paris, France; RMNH, National Museum of Natural History, Leiden, the Netherlands; UF, Florida Museum of Natural History, Gainesville, U.S.A.; USDA, USDA APHIS National Mollusk Collection, Academy of Natural Sciences, Philadelphia, U.S.A.; USNM, Smithsonian Institution National Museum of Natural History, Washington, U.S.A.; UWI, University of the West Indies, Cave

Hill Campus, Barbados. Voucher specimens for all species will be deposited in the ANSP collection. Observations for which no voucher specimens are present are marked with an asterisk (*).

## Systematics

Superfamily Helicinoidea *sensu* Thompson, 1980
Family Helicinidae Férussac, 1823
Genus *Helicina* Lamarck, 1799

*Helicina* Lamarck, 1799: 76.

### *Helicina fasciata* (Lamarck, 1822)

*Helicina fasciata*; Brown, 1881: 57. Dominica.
*Helicina fasciata*; Angas, 1884: 597. Dominica.

Material.— Dominica (ANSP 63031/13).

Distribution.— Lesser Antilles.

Remarks.— Although we did not collect this species from Dominica, thirteen specimens that were part of the Sharp collection definitely belong to this taxon. These specimens also lend credence to the record by Brown (1881). As the species appears to be widespread in the Lesser Antilles as a result of human activities, it is quite possible that *H. fasciata* once had a population on the island; this may still be the case, although this taxon was not collected during any of the surveys.

### *Helicina guppyi* Pease, 1871
(figs 3A, 8E)

*Helicina humilis* Guppy, 1868: 434. Dominica. Not *Helicina humilis* Hombron & Jaquinot, 1854.
*Helicina velutina* Guppy, 1868: 434. Dominica. Not *Helicina velutina* Poey, 1857.
*Helicina guppyi* Pease, 1871: 467, nom. nov. for *Helicina humilis* Guppy, 1868 not *Helicina humilis* Hombron & Jaquinot, 1854.

Material.— Saint David, Newfoundland (USDA); 0.5 km S Rosalie bridge (AH); Ibidem, 0.65 km N Saint Saveur (AH); Saint George, Bellevue Chopin, Rose Hill (USDA); Ibidem, E Bellevue, road to Grand Bay (AH); Ibidem, 2.1 km SW Laudat (AH); Ibidem, Roseau, Botanical Garden (USDA); Ibidem, road Roseau-Laudat (AH); Ibidem, Trafalgar Falls (USDA); Saint Joseph, Carnholm (USDA); Ibidem, d'Leau Grommier (USDA); Ibidem, Hillsborough (USDA); Ibidem, road to Lake Matthieu (AH); Ibidem, Layou Valley Road, 2.3 km S bridge (AH); Ibidem, path Mero-Salisbury (AH); Saint Luke, Pointe Michel (USDA); Saint Mark, road Soufrière-Roseau (AH); Ibidem, road Soufrière-Sulphur Springs (USDA); Ibidem, Sulphur Springs (AH, USDA); Saint Patrick, Geneva (AH); Ibidem, 1.5 km N Petit Savane (AH).

Distribution.— Guadeloupe, Dominica, Martinique.

Ecology.— This species is usually collected on the trunks of trees, where it is well camouflaged on tree bark, or between detritus and leaves on the ground.

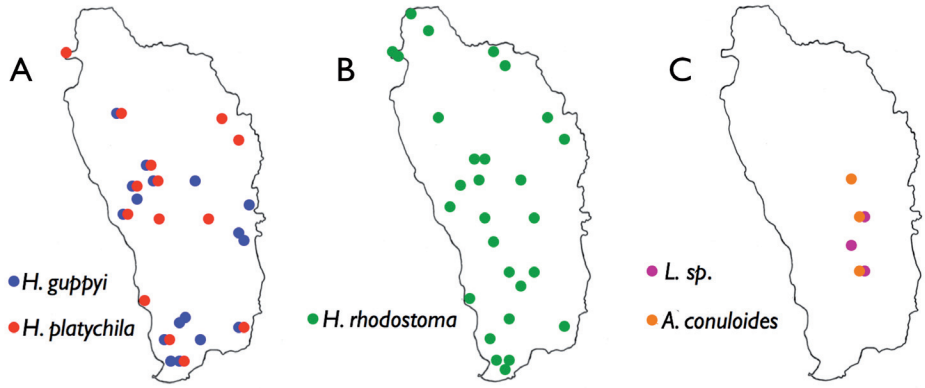



Fig. 3. Distribution of Helicinidae. A-B, *Helicina* species; C, *Lucidella* and *Alcadia* species.

Remarks.— Guppy (1868) described two taxa based on shell variation within this species; both names were preoccupied. Pease (1871) provided a substitute name in his treatment of Indo-Pacific species. This species was placed in the subgenus *Striatemoda* by H.B. Baker (1940) based on Guppy's (1868) comparison with the Puerto Rican *Alcadia subfusca* (Menke, 1828), and also on Pilsbry's (1892) erroneous placement of this species with the Hispaniolan *Alcadia rufa* (L. Pfeiffer, 1857). We refrain, however, from any subgeneric distinction, awaiting the forthcoming revision of the Lesser Antillean Helicinidae by I. Richling (Kiel).

The species is smaller and lower-spired than the other Dominican *Helicina* species, and has always a dull brown colour, a paler aperture and a hairy periostracum; 'covered with a velvety epidermis', weakly keeled, with a columellar denticle. Size 5-8.5 mm. This is the most common of the helicinids, but generally restricted to the leeward side of the island.

*Helicina platychila* (Megerle von Mühlfeld, 1824)
(figs 3A, 6A)

*Helix platychilos* Megerle von Mühlfeld, 1824: 219, pl. 3 figs 11a-b. Guadeloupe.
*Helicina lutea* Sowerby, 1847: 6, pl. 2 fig. 59, pl. 3 fig. 142. Antilles. Not *Helicina lutea* Lesson, 1831.
*Helicina epistilia* Guppy, 1868: 433. Dominica. New synonymy.
*Helicina platychila*; Richling, 2004: 392, figs 283-285.

Material.— Saint Andrew, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Saint David, 2.1 km NE Bells (AH); Ibidem, Emerald Pool (USDA); Ibidem, 0.5 km S Rosalie River bridge (AH); Saint Georges, Roseau, Botanical Garden (USDA); Saint John, Fort Shirley-West Cabrits (AH); Saint Joseph, Carnholm (USDA); Hillsborough (USDA); Ibidem, road to Fond Cassé, Mary Martin Farm (USDA); Ibidem, path Mero-Salisbury (AH); Saint Mark, road Soufrière-Roseau (AH); Saint Patrick, Geneva (AH); Ibidem, 1.5 km N Petit Savane (AH); Saint Peter, Syndicate (USDA).

Distribution.— Guadeloupe, Dominica, Martinique.

Ecology.— Fairly common arboreally on branches and leaf surfaces, and between detritus and leaves on the ground, occasionally together with *Helicina guppyi*.

Remarks.— As in many helicinid species, the shell of *Helicina platychila* can be yellow, to red, to brown in colour. The description of *Helicina epistilia* Guppy, 1868 matches this species, and these names are therefore considered synonyms.

*Helicina rhodostoma* Gray, 1824
(figs 3B, 6H, 8F-G)

*Helicina rhodostoma* Gray, 1824: 68, pl. 6 fig. 9. Guadeloupe [in error].
*Helicina rhodostoma*; Guppy, 1868: 3. Dominica.
*Helicina goldfussi* Boettger, 1887: 103, pl. 4 fig. 10. Dominica. New synonymy.
*Helicina rhodostoma inermis* A.J. Wagner, 1910: 327, pl. 66 figs 11-12. Guadeloupe [in error]. New synonymy.
*Helicina goldfussi*; Zilch, 1978: 383, pl. 19 fig. 9. Lectotype SMF 225574.

Material.— Saint Andrew, Calibishie (UWI*); Ibidem, W Calibishie, Hampstead Estate (AH); Ibidem, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Saint David, Emerald Pool (USDA); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Freshwater Lake (USDA); Ibidem, Roseau, Botanical Gardens (USDA); Ibidem, 0.6 km SE Titou Gorge (AH); Ibidem, Trafalgar Falls (USDA); Saint John, Cabrits National Park (USDA); Ibidem, Fort Shirley-West Cabrits (AH); Ibidem, Pointe Capucin (USDA); Ibidem, road Toucari-Pennville (AH); Saint Joseph, Carnholm (USDA), Ibidem, d'Leau Grommier (USDA); Ibidem, Hillsborough (USDA); Ibidem, road to Fond Cassé, Mary Martin Farm (USDA); Ibidem, path Mero-Salisbury (AH); Saint Luke, Pointe Michel (USDA); Saint Mark, Rock Toussaint Farm (USDA); Ibidem, road Soufrière-Sulphur Springs (AH); Ibidem, Sulphur Springs (USDA); Saint Patrick, 1.5 km N Petit Savane (AH); Saint Paul, Sylvania (USDA); Saint Peter, Syndicate (USDA).

Distribution.— Dominica.

Ecology.— Can be found living on trees, on ferns, and also between rocks and gravel.

Remarks.— Guppy (1868) noted that this species is not found above 1000 m altitude. Three names have been used for this species, but our material shows that the forms intergrade, illustrating the variability of the species. In general, populations from higher altitudes have a more pronounced columellar spine, and are more likely to have a red to reddish-orange aperture, as seen in typical *H. rhodostoma*. Populations from drier, coastal areas tend to lack a columellar spine, and the aperture may be white or yellow. Juvenile specimens of this species often have a hairy periostracum, which is gradually worn off as the snail reaches sexual maturity.

It should be noted that despite the fact that *H. rhodostoma* was originally described from Guadeloupe – and in subsequent reports from that island the error has been perpetuated – this species is undoubtedly a Dominican endemic. It has not been found during subsequent surveys of Guadeloupe and Marie-Galante. The fact that no museum material exists labelled "Guadeloupe", not even in the MNHN in Paris, indicates that the species has never been collected on that island. The synonymy of *H. goldfussi* and *H. rhodostoma inermis* is confirmed by morphometrics and anatomical studies (I. Richling, personal communication).

## Genus *Lucidella* Swainson, 1840

*Lucidella* Swainson, 1840: 330.

### *Lucidella* sp.
(figs 3C, 8H)

*Helicina plicatula* Guppy, 1868: 433. Dominica. Not *Helicina plicatula* L. Pfeiffer, 1849.

Material.— Saint David, Emerald Pool (USDA); Saint George, Freshwater Lake area (USDA); Ibidem, trail to Lake Boeri (AH).

Distribution.— Dominica.

Ecology.— This species lives in moist leaf litter or on ferns in undisturbed forested areas of the island.

Remarks.— Although Guppy (1868) reported the Lesser Antillean *Lucidella plicatula* from Dominica, no evidence was found of the occurrence of that species. The endemic Dominican *Lucidella* is considerably larger and differs in sculptural details. Like many helicinid species, there are red and yellow colour morphs. Further research is required to establish the taxonomic position of these specimens.

## Genus *Alcadia* Gray, 1840

*Alcadia* Gray, 1840: 42.

### Subgenus *Idesa* H. Adams & A. Adams, 1856

Idesa H. & A. Adams, 1856: 304.

### *Alcadia (Idesa) conuloides* (Guppy, 1868)
(figs 3C-6B)

*Helicina conuloides* Guppy, 1868: 435. Dominica, Morne Diablotin.
*Alcadia (Idesa)? conuloides*; Baker, 1927: 22.

Material.— Saint David, Emerald Pool (USDA); Saint George, Freshwater Lake area (USDA); Saint Joseph, d'Leau Grommier (USDA).

Distribution.— Dominica.

Ecology.— This small species lives on wet leaves, being particularly active after rainfall, and on damp leaf litter. It is believed to feed on encrusting algae.

Remarks.— Guppy (1895) considered this species synonymous with the taxon *Schrammia schrammia* (Crosse, 1872) from Guadeloupe, but that species is larger and higher-spired. Therefore Guppy's name is resurrected. Baker (1927) suggested Guppy's species probably belongs in *Alcadia* subgenus *Idesa*. Until the status of *Schrammia* and its two species can be resolved, we follow the last published work, that of Baker (1927).

## Superfamily Cyclophoroidea Gray, 1847
## Family Neocyclotidae Kobelt & von Möllendorff, 1898
## Genus *Amphicyclotulus* Kobelt, 1912

*Amphicyclotulus* Kobelt, 1912: 913.

Remarks.— Bartsch, in his monograph on the cyclophorid land mollusks of America (Bartsch, 1942), presented what seems to be a clear and simple overview of the Antillean genus *Amphicyclotulus*. When spiral lamellae are absent, specimens belong to the subgenus *Cycloblandia*, when they are present the specimens should be classified in the subgenus *Amphicyclotulus*. Surprisingly, he records Dominican specimens from only three localities. *A. mineri* Bartsch, 1942 is described from Laudat, *A. dominicensis* Bartsch, 1942 from Long Dilton (not indicated on modern maps; based on only two specimens) and *A. amethystinus* (Guppy, 1868) from Danes (= Dos d'Anes). Bartsch does not comment on any variation in sculpture or size of the described specimens. In contrast, Guppy (1868) described two forms of *A. amethystinus*, one variety raised in status by Bartsch to species level.

The material collected so far defies any simple division. In some populations spiral threads are present, sometimes only on the apical side, sometimes continuing to the umbilical wall. In other specimens there are clearly raised spiral cords. Some specimens are keeled, whereas others are not and there is variation in the umbilical width. At present, and for the sake of simplicity, we recognize two species, although further studies are needed.

*Cycloblandia* Bartsch, 1942 was erected for *A. amesthystinus* and *A. beauianus* (Petit, 1853) and diagnosed as '*Amphicyclotulus* in which the whorls, even the early postnuclear turns, are without raised spiral cords or threads' (Bartsch, 1942: 60). On the basis of our current understanding of the group we see no need for a subgeneric separation and therefore now consider *Cycloblandia* as a junior subjective synonym of *Amphicyclotulus*.

Key to Dominican species:

Spiral threads absent or only weakly present …*amethystinus.*

Spiral cords clearly present and raised …*dominicensis.*

### *Amphicyclotulus dominicensis* Bartsch, 1942
### (figs 4A-B, 9A)

*Cyclotus amethystinus* var. α Guppy, 1868: 433 [in part]. Dominica, Mount Kuliabon and Morne Diablotin.

*Amphicyclotulus (Amphicyclotulus) dominicensis* Bartsch in Torre, Bartsch & Morrison, 1942: 57, pl. 10 fig. 9-11. Long Dilton. Holotype USNM 535857.

Material.— Saint David, 0.5 km south of Rosalie River bridge (AH); Saint Joseph, Hillsborough (USDA); Saint Patrick, 1.5 km north of Petit Savane (AH).

Distribution.— Dominica.

Remarks.— Smaller than the next species, *Amphicyclotulus dominicensis* is more coarsely sculptured and has a higher spire. It has been found on the leeward and windward sides of the island at low elevations only.

### *Amphicyclotulus amethystinus* (Guppy, 1868)
(figs 4C-D, 6D, 9A)

*Cyclotus amethystinus* var. α Guppy, 1868: 433 [in part]. Dominica, Mount Kuliabon and Morne Diablotin.
*Cyclotus amethystinus* var. β Guppy, 1868: 433. Dominica, Mount Kuliabon and Morne Diablotin.
*Cyclophorus schrammi* (Shuttleworth); Brown, 1881: 57. Not *Cyclostoma schrammi* Shuttleworth, 1857.
*Amphicyclotulus (Amphicyclotulus) mineri* Bartsch in Torre, Bartsch & Morrison, 1942: 55, pl. 10 figs 15-17. Laudat. Holotype USNM 535856. New synonymy.
*Cyclophorus amethystinus*; Angas, 1884: 596. Dominica, above 1200 feet [365 m] altitude.
*Amphicyclotulus (Cycloblandia) amethystinus*; Bartsch in Torre, Bartsch & Morrison, 1942: 60, pl. 11 figs 1-3.

Material.— Saint Andrew, W Calibishie, Hampstead Estate (AH); Ibidem, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Ibidem, 1 km NW Thibaud (AH); Saint David, Emerald Pool (AH, USDA); Ibidem, 1.5 km north of Petit Savane (AH); 0.5 km south of Rosalie River bridge (AH); Saint George, Bellevue Chopin (USDA); Ibidem, Freshwater Lake area (AH, USDA); Ibidem, trail to Lake Boeri (USDA); Saint Joseph, d'Leau Grommier (USDA); Ibidem, road to Fond Cassé, Mary Martin Farm (USDA); Ibidem, path Mero-Salisbury (AH); Saint Luke, Pointe Michel (USDA); Saint Paul, Sylvania (USDA); Saint Peter, Syndicate (AH, USDA).

Distribution.— Dominica.

Remarks.— Guppy (1868) noted that this species is not found above 1000 m. Although he recognized two "forms", he did not recognize two separate species. Angas (1884) subsequently recorded "*Cyclophorus amethystinus*" from altitudes above 1200 m. Bartsch (1942) restricted the name *amesthystinus* to Guppy's var. β, the "smooth, shining, not striate spirally" form. The species may have subtle spiral striation, although there exists considerable variation; axial growth lines are clearly visible.

## Superfamily Littorinoidea Gray, 1847
## Family Annulariidae Henderson & Bartsch, 1920
## Genus *Diplopoma* L.Pfeiffer, 1859

*Diplopoma* L. Pfeiffer, 1859: 73.

### *Diplopoma* sp.
(figs 8O, 9A)

Material.— Saint John, Cabrits National Park (USDA).

Distribution.— Dominica.

Remarks.— This is the first time that an annulariid snail is reported for Dominica. Most members of this family – and certainly of this genus – typically are obligate calciphiles, occurring only when the substrate contains high levels of environmental calcium carbonate. Therefore the occurrence of this species on the island was unexpected. It closely resembles *Diplopoma crenulatum crenulatum* (Potiez & Michaud, 1835) that occurs in Guadeloupe, Marie-Galante and La Désirade (Watters, 2006). This species may have been introduced from there when the British and French struggled for possession of Dominica, at the end of the 18th century. The taxon appears to be restricted

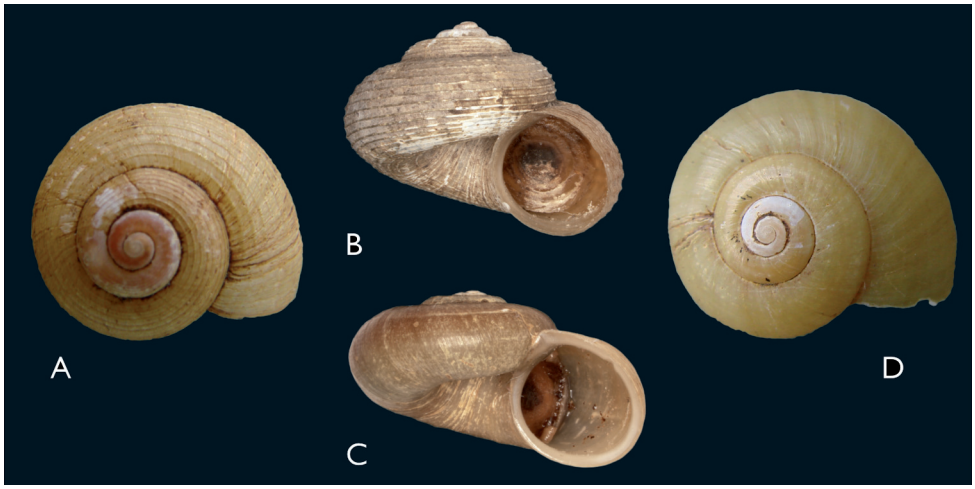



Fig. 4. Shells of *Amphicyclotulus* (actual shell diameter between brackets). A-B, *A. dominicensis* (13.2 and 11.8 mm); C-D, *A. amethystinus* (18.4 and 14.1 mm).

to the battlements of Fort Shirley at Cabrits Point, although it could not be found again in 2008.

The Dominican specimens differ from those of Guadeloupe by having weaker sutural crenulation and in some minor details. Further research is required to establish the taxonomic position of these specimens.

Superfamily Veronicelloidea Gray, 1840
Family Veronicellidae Gray, 1840
Genus *Diplosolenodes* Thomé, 1975

*Diplosolenodes* Thomé, 1975: 13.

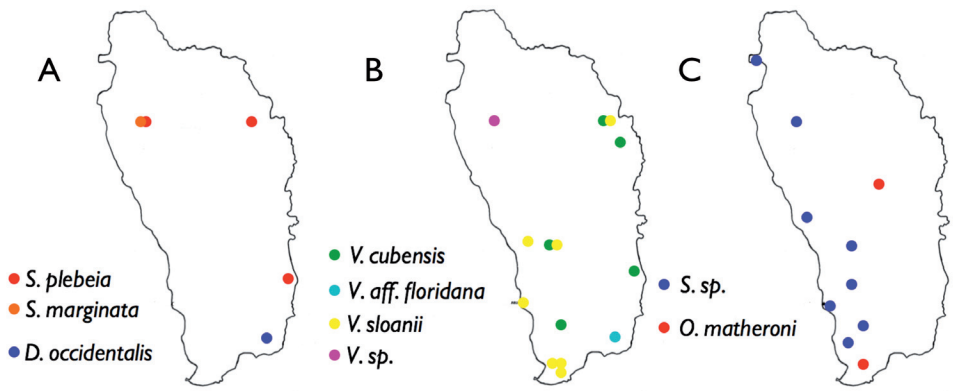



Fig. 5. Distribution of Veronicellidae and Succineidae. A, *Diplosolenodes* and *Sarasinula* species; B, *Veronicella* species; C, *Succinea* and *Omalonyx* species.

*Diplosolenodes occidentalis* (Guilding, 1825)
(fig. 5A)

*Vaginula occidentalis*; Angas, 1884: 597. Dominica.
*Vaginula punctatissima* (Semper); Pilsbry, 1892: 357. Dominica. Not *Cylindrocaulus punctatissimus* Semper, 1885.
*Diplosolenodes occidentalis*; Thomé, 1997: 522.

Material.— Saint Patrick, between Petit Savane-Bagatelle (USDA).

Distribution.— Lesser Antilles. Introduced to the Greater Antilles, Central America and northern South America.

Remarks.— Originally described from Saint Vincent, it seems likely that this species is native to most of the Lesser Antilles. It is most easily recognized by the black speckling on its hyponota. This species may be found in undisturbed environments as well as in agricultural settings, where it may be regarded as a minor pest.

Genus *Sarasinula* Grimpe & Hoffmann, 1924

*Sarasinula* Grimpe & Hoffmann, 1924: 177.

*Sarasinula plebeia* (Fischer, 1868)
(fig. 5A)

*Sarasinula plebeia*; Thomé, 1975: 530. Dominica, Portsmouth.

Material.— Saint Peter, Syndicate (USDA); Saint David, La Plaine Agricultural Station (USDA; Saint Andrew, Captain Bruce, Marigot (USDA).

Distribution.— Jamaica, Dominica, Canouan, southern USA, Mexico to Panama. Described from New Caledonia, it was also introduced to Australasia and some Pacific island groups.

Remarks.— In Central America, this species is a serious pest of agriculture.

*Sarasinula marginata* (Semper, 1885)
(fig. 5A)

Material.— Saint Peter, Syndicate (USDA).

Distribution.— Dominica, Guadeloupe, Brazil (Paraiba to Rio Grande do Sul), Peru, Colombia.

Remarks.— This species was found in a dasheen – *Colocasia esculenta* (L.) – field. It appears to be a minor pest in Dominican agriculture. This is the first record of this species for Dominica. Superficially very similar to the preceding species, it can be distinguished by minor differences in the male genitalia (S. Gomez, personal communication).

## Genus *Veronicella* de Blainville, 1817

*Veronicella* de Blainville, 1817: 440.

### *Veronicella cubensis* (L. Pfeiffer, 1840) (figs 5B, 6K)

*Veronicella cubensis*; Thomé, 1975: 531. Dominica, Clarke Hall.

Material.— Saint Andrew, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Saint David, La Plaine Agricultural Station (USDA); Saint George, Bellevue Chopin, Rose Hill (USDA); Saint Paul, Sylvania (USDA).

Distribution.— Cuba, Hispaniola, Puerto Rico, Saint Kitts, Nevis, Dominica, Barbados. Introduced to various Pacific Islands.

Remarks.— This species is a serious agricultural pest, especially in the islands of the Pacific Basin.

### *Veronicella* aff. *floridana* (Leidy, 1868) (figs 5B, 6J)

*Leidyula floridana* (Leidy & Binney); Thomé, 1975: 523. Dominica, Clarke Hall.

Material.— Saint Patrick, between Petit Savane-Bagatelle (USDA).

Distribution.— Florida, throughout the West Indies.

Remarks.— Superficially similar to the preceding species, it can be distinguished principally by differences in the male genitalia.

### *Veronicella sloanii* (Cuvier, 1817) (figs 5B, 6I)

Material.— Saint Andrew, Marigot, Captain Bruce (USDA); Saint George, Roseau, Botanical Garden (USDA); Saint Mark, road Soufrière-Sulphur Springs (USDA); Ibidem, Rock Toussaint Farm (USDA); Ibidem, Sulphur Springs (USDA); Saint Paul, Campbell (USDA); Ibidem, Sylvania (USDA).

Distribution.— Jamaica, Dominican Republic, Guadeloupe, Dominica, Barbados, Saint Vincent.

Remarks.— This is the first report of this species for Dominica, even though it is probably one of the most abundant slugs on the island. It is a serious agricultural pest where it has been introduced in the Lesser Antilles. Unlike most other veronicellids, which can only be conclusively identified by anatomical examination, this species is easily recognized by the blue-grey ocular tentacles with a distinctive pale brown zone around the eye spot (Fig. 6I).


Fig. 6. Living specimens of Dominican molluscs. A, *Helicina platychila*; B, *Alcadia conuloides*; C, *Zophos* cf. *baudoni*; D, *Amphicyclotulus amethystinus*; E, *Laevaricella perlucidens*; F, *Tamayoa decolorata*; G, *Pleurodonte guadeloupensis dominicana*; H, *Helicina rhodostoma*; I, *Veronicella sloanii*; J, *V*. aff. *floridana*; K, *V. cubensis*; L, *V*. species.

*Veronicella* sp.
(figs 5B, 6L)

Material.— Saint Peter, Syndicate (USDA).

Distribution.— Dominica.

Remarks.— A single specimen was found, of which the genitalia do not match those of any known species. Molecular analysis shows that it is related to *Veronicella portoricensis* (Semper, 1885) from the highland rainforests of Puerto Rico. It will be described in a forthcoming paper (Robinson, Barr & Fields, in preparation).

Superfamily Succineoidea Beck, 1837
Family Succineidae Beck, 1837
Genus *Succinea* Draparnaud, 1801

*Succinea* Draparnaud, 1801: 55.

*Succinea* sp.
(figs 5C, 10G)

Material.— Saint George, Bellevue Chopin, Rose Hill (USDA); Saint George, road Roseau-Laudat (AH); Ibidem, Roseau, Botanical Gardens (USDA); Saint John, Cabrits National Park (USDA); Saint Joseph, Hillsborough (USDA); Saint Luke, Pointe Michel (USDA); Saint Paul, Sylvania (USDA); Saint Peter, Syndicate (USDA).

Distribution.— Dominica.

Remarks.— As West Indian succineid taxonomy is in complete disarray, we can only place this material in the genus *Succinea*, pending a comprehensive study of this poorly understood group. More than one *Succinea* species appears to be present in Dominica.

Genus *Omalonyx* d'Orbigny, 1837

*Omalonyx* d'Orbigny, 1837: 229.

*Omalonyx matheroni* (Potiez & Michaud, 1838)
(fig. 5C)

*Succinea (Omalonyx) guadaloupensis* Lesson; Angas, 1884: 595. Dominica, Saint Arament.

Material.— Saint Mark, Soufrière, Sulphur Springs (USDA); Saint Joseph, d'Leau Grommier (USDA).

Distribution.— Lesser Antilles, Trinidad, South America.

Remarks.— There are slight differences in mantle pattern (often a diagnostic feature in some succineids) compared to typical *Omalonyx matheroni*. Further work is needed to establish the taxonomic position of the Dominican material.

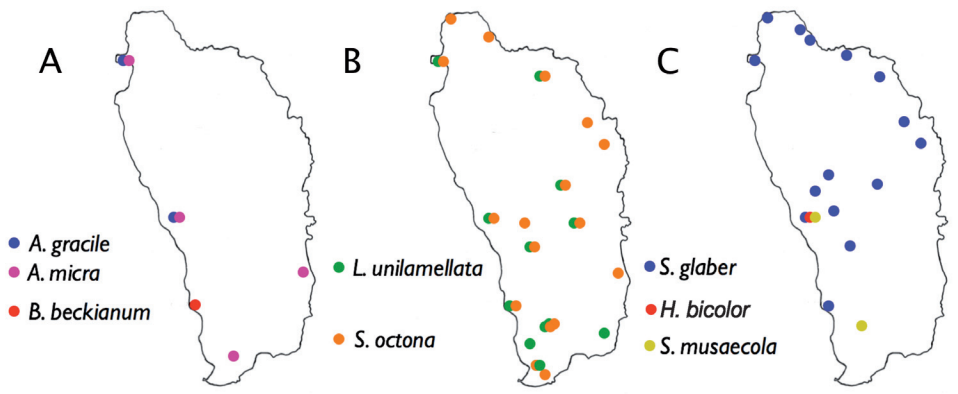



Fig. 7. Distribution of Subulinidae and Streptaxidae. A, *Allopeas* and *Beckianum* species; B, *Leptinaria* and *Subulina* species; C, *Streptartemon*, *Huttonella* and *Streptostele* species.

Superfamily Achatinoidea Swainson, 1840
Family Subulinidae Thiele, 1931
Genus *Allopeas* H.B. Baker, 1935

*Allopeas* H.B. Baker, 1935: 84.

*Allopeas gracile* (Hutton, 1834)
(fig. 7A)

Material.— Saint John, Cabrits National Park (USDA); Saint Joseph, Hillsborough (USDA).

Distribution.— West Indies, southern Mexico, Central and South America; distributed throughout the (sub)tropics worldwide.

Remarks.— This is the first report for Dominica.

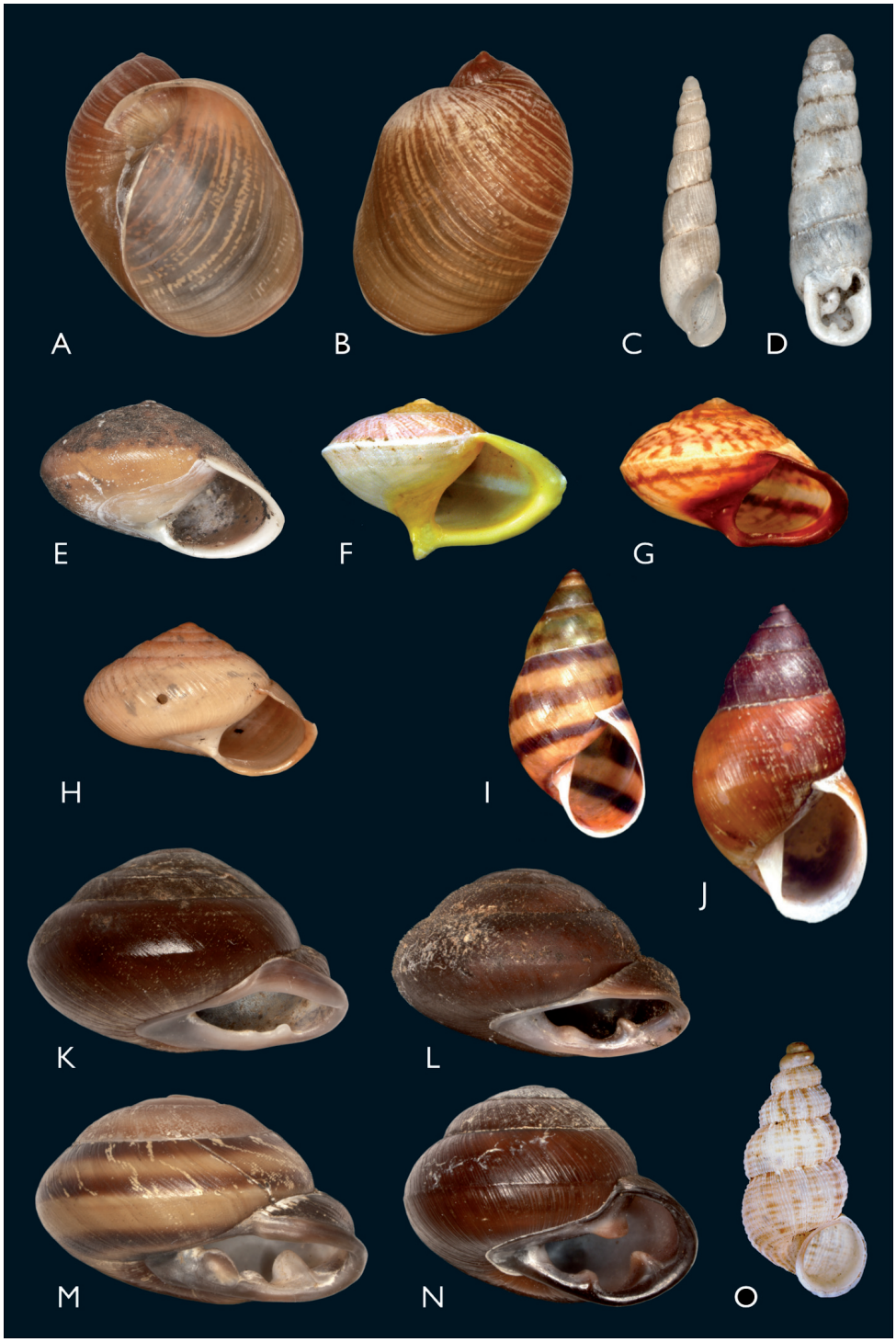
*Allopeas micra* (d'Orbigny, 1835)
(fig. 7A)

Material.— Saint David, La Plaine Agricultural Station (USDA); Saint John, Cabrits National Park (USDA); Saint Joseph, Hillsborough (USDA); Saint Marks, Sulphur Springs (AH, USDA).

Distribution.— West Indies, Mexico to Bolivia.

Remarks.— This is the first record for Dominica.

Fig. 8. Shells of Dominican snails (actual shell height between brackets). A-B, *Amphibulima patula dominicensis* (27.4 mm); C, *Streptostele musaecola* (8.71 mm); D, *Huttonella bicolor* (7.16 mm); E, *Helicina guppyi* (5.99 mm); F-G, *H. rhodostoma* (9.24 and 6.90 mm); H, *Lucidella* sp. (4.10 mm); I, *Drymaeus laticinctus* (24.5 mm); J, *Bulimulus limnoides* (22.2 mm); K, *Pleurodonte dentiens* (11.7 mm) ; L, *P. guadeloupensis dominicana* (9.52 mm); M, *P. josephinae* (12.5 mm); N, *P. nigrescens* (11.1 mm); O, *Diplopoma* sp. (11.0 mm). ▶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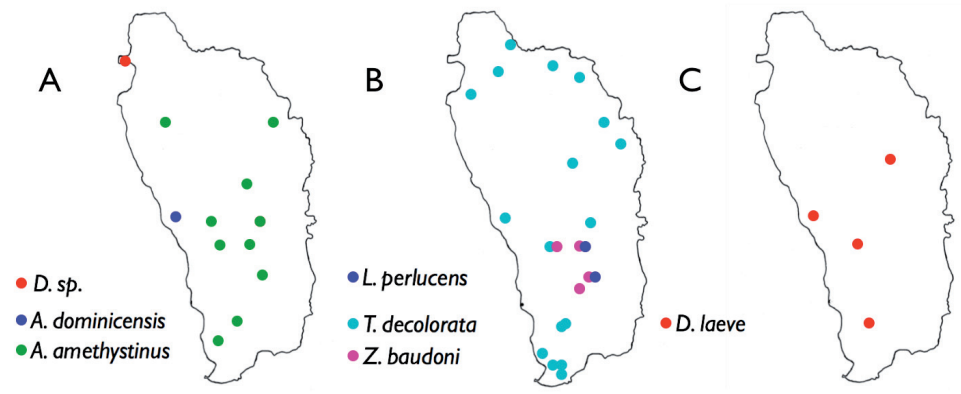


Fig. 9. Distribution of Neocyclotidae, Annulariidae, Oleacinidae, Scolodontidae, Haplotrematidae and Agrolimacidae. A, *Amphicyclotus* and *Diplopoma* species; B, *Laevaricella*, *Tamayoa* and *Zophos* species; C, *Deroceras*.

## Genus *Beckianum* H.B. Baker, 1961

*Beckianum* H.B. Baker, 1961: 84.

### *Beckianum beckianum* (L. Pfeiffer, 1846)
(fig. 7A)

Material.— Saint George, Roseau, Botanical Garden (USDA).

Distribution.— West Indies, Central America.

Remarks.— This is the first record for Dominica.

## Genus *Leptinaria* Beck, 1837

*Leptinaria* Beck, 1837: 79.

### *Leptinaria unilamellata* (d'Orbigny, 1837)
(fig. 7B)

*Tornatellina (Leptinaria) lamellata* Potiez & Michaud; Angas, 1884: 595. Dominica.

Material.— Saint Andrew, Veille Cassé (UWI*); Ibidem, Wesley (UWI*); Saint David, Emerald Pool (USDA); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Bellevue Chopin, Rose Hill (USDA); Ibidem, Roseau, Botanical Garden (USDA); Saint John, Cabrits National Park (USDA); Saint Joseph, d'Leau Grommier (USDA); Ibidem, Hillsborough (USDA); Ibidem, Layou Valley Road, 2.3 km SE bridge (AH); Saint Luke, Pointe Michel (USDA); Saint Mark, road Soufrière-Sulphur Springs (USDA); Saint Patrick, 1.5 km N Petit Savane (AH); Saint Paul, Sylvania (UWI*).

Distribution.— West Indies, Central America to Venezuela and Peru.

Remarks.— A species widespread throughout the Caribbean Basin. It is generally found in damp leaf litter and under rotten logs.


Fig. 10. Living specimens of Dominican molluscs. A-B, *Amphibulima pardalina*; C, *A. browni*; D-E, *A. patula dominicensis*; F, *Drymaeus laticinctus* (yellow form); G, *Succinea* sp.; H, *D. laticinctus* (banded form); I, *Bulimulus limnoides*; J, *Naesiotus stenogyroides*.

## Genus *Subulina* Beck, 1837

*Subulina* Beck, 1837: 76.

### *Subulina octona* (Bruguière, 1789) (fig. 7B)

*Stenogyra octona* "Chemnitz"; Guppy, 1868: 430. Dominica.

Material.— Saint Andrew, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Ibidem, Veille Cassé (UWI*); Ibidem, Wesley (UWI*); Saint David, Emerald Pool (USDA); Ibidem, La Plaine Agricultural Station (USDA); Ibidem, Newfoundland (UWI*); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Bellevue Chopin, Rose Hill (USDA); Ibidem, Roseau, Botanical Garden (USDA); Ibidem, 0.6 km SE Titou Gorge (AH*); Saint John, Cabrits National Park (USDA); Ibidem, Pointe Capucin (USDA); Saint Joseph, Hillsborough (USDA; Ibidem, road to Fond Cassé, Mary Martin Farm (USDA); Saint Mark, Rock Toussaint Farm (USDA); Ibidem, road Soufrière-Sulphur Springs (USDA); Ibidem, Sulphur Springs (AH*); Saint Paul, Sylvania (USDA).

Distribution.— Worldwide; tropics and subtropics and in greenhouses in temperate zones.

## Superfamily Streptaxoidea Gray, 1860
## Family Streptaxidae Gray, 1860
## Genus *Streptartemon* Kobelt, 1905

*Streptartemon* Kobelt, 1905: 33.

### *Streptartemon glaber* (L. Pfeiffer, 1849)
### (fig. 7C)

*Streptaxis (Streptartemon) glaber*; Chase & Robinson, 2001: 48. Dominica.

Material.— Saint Andrew, W of Calibishie, Hampstead Estate (AH); Ibidem, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Ibidem, 1 km NW Thibaud (AH); Ibidem, Veille Cassé (UWI); Ibidem, Wesley (UWI); Saint George, Roseau, Botanical Garden (USDA); Saint John, Cabrits National Park (USDA); Ibidem, Pointe Capucin (USDA); Saint Joseph, d'Leau Grommier (USDA); Ibidem, Hillsborough (USDA); Ibidem, Layou Valley Road, 2.3 km SE bridge (AH); Ibidem, path Mero-Salisbury (AH); Saint Paul, Sylvania (USDA).

Distribution.— Puerto Rico, U.S. Virgin Islands, Saint Thomas, Saint Croix, Dominica, Barbados, Venezuela, Guyana, Suriname, Brazil.

Remarks.— The effect of this introduced, carnivorous species on the native Dominican malacofauna is undocumented as yet.

## Genus *Huttonella* L. Pfeiffer, 1856

*Huttonella* L. Pfeiffer, 1856: 174.

### *Huttonella bicolor* (Hutton, 1834)
### (figs 7C, 8D)

*Ennea (Huttonella) bicolor*; Tryon, 1885: 104, pl. 19 figs 14, 17-18, pl. 20 fig. 24. Introduced to the West Indies.

Material.— Saint Joseph, Hillsborough (USDA).

Distribution.— Africa; introduced into the tropics worldwide, including U.S.A. (Florida), West Indies, Panama, and Brazil.

Remarks.— This is the first record for Dominica.

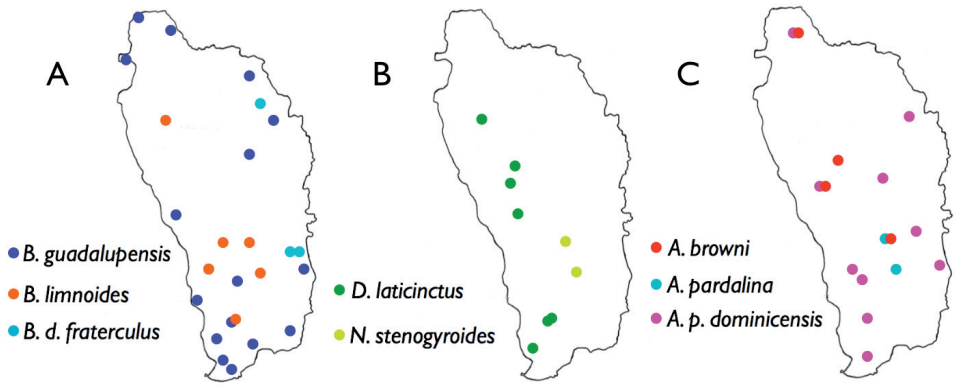


Fig. 11. Distribution of Orthalicidae and Amphibulimidae. A, *Bulimulus* species; B, *Drymaeus* and *Naesiotus* species; C, *Amphibulima* species.

Genus *Streptostele* Dohrn, 1866
Subgenus *Tomostele* Ancey, 1885

*Tomostele* Ancey, 1885: 143.

*Streptostele (Tomostele) musaecola* (Morelet, 1860)
(figs 7C, 8C)

Material.— Saint George, Bellevue Chopin, Rose Hill (USDA); Saint Joseph, Hillsborough (USDA).

Distribution.— West Africa; introduced into Australia, Melanesia and Polynesia, and throughout the Caribbean Basin.

Remarks.— This West African species has been widely reported from the Neotropics as *Luntia insignis* (E.A. Smith, 1898). It was reported as *Streptostele musaecola* from various West Indian localities by Hausdorf & Medina Bermúdez (2003); this is the first record for Dominica. It is a molluscivorous species, and its effect on the native Dominican malacofauna is undocumented.

Superfamily Orthalicoidea H.B. Baker, 1956
Family Orthalicidae Albers, 1860
Genus *Bulimulus* Leach, 1814

*Bulimulus* Leach, 1814: 42.

*Bulimulus diaphanus fraterculus* (Potiez & Michaud, 1835)
(fig. 11A)

Material.— Saint Andrew, 3.5 km S Marigot, F.G. Thompson leg., 24.v.1968 (UF 176381); Saint David, Rosalie, F.G. Thompson leg., 25.v.1968 (UF 176380, RMNH); Ibidem, 1.6 km W Rosalie, R. Thomas leg., 10.iii.1963 (UF 176379).

Distribution.— Saint Martin, Saint Barts, Saint Kitts, Barbuda, Antigua, Guadeloupe, Les Saintes, Dominica.

Remarks.— This is the first record for Dominica of this taxon. It is possible that it was introduced from one of the more northerly islands, where it was listed by Breure (1974).

*Bulimulus guadalupensis* (Bruguière, 1789)
(fig. 11A)

*Bulimulus exilis* (Gmelin); Guppy, 1868: 431. Dominica.
*Bulimus (Leptomerus) exilis*; Angas, 1884: 596. Dominica, abundant on lower slopes.

Material.— Saint Andrew, Marigot, Captain Bruce (USDA); Ibidem, Veille Cassé (UWI*); Ibidem, Wesley (UWI); Saint David, Emerald Pool (USDA); Ibidem, La Plaine Agricultural Station (USDA); Ibidem, 0.5 km S Rosalie River bridge (AH); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Bellevue Chopin, Rose Hill (USDA); Ibidem, Roseau, Botanical Garden (RMNH); Ibidem, Trafalgar Falls (USDA); Saint John, Cabrits National Park (USDA); Ibidem, Point Capucin (USDA); Saint Joseph, Hillsborough (USDA); Saint Luke, Pointe Michel (USDA); Saint Mark, road Soufrière-Sulphur Springs (USDA); Ibidem, Rock Toussaint Farm (USDA); Saint Patrick, Geneva (AH); Saint Paul, Cochrane (UWI); Ibidem, Sylvania (UWI*).

Distribution.— Probably originated in the Windward Islands (Breure, 1974); now distributed throughout the Caribbean Basin, including Florida.

Remarks.— A highly variable species, which was recorded by Breure (1974) from one locality only: Roseau, Botanical Gardens. Angas (1884) reports it as "abundant on the lower slopes". It is widely distributed in disturbed habitats throughout lowland Dominica.

*Bulimulus limnoides* (Férussac, 1832)
(figs 8J, 10I, 11A)

*Bulimus nichollsi* Brown, 1881: 57. *Nomen nudum*.
*Bulimus nichollsi* 'Brown ms.'; Angas, 1884: 596, figs 2-3. Dominica, path Roseau to Rosalie, approx. 600 m.
*Bulimulus limnoides*; Breure, 1974: 12, pl. 1 figs 1-6, pl. 6 fig. 6. Lectotype ANSP 9958, of *B. nichollsi* Angas.

Material.— Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Freshwater Lake (USDA); Ibidem, trail to Lake Boeri (AH, USDA); Saint Paul, Cochrane (UWI); Ibidem, Sylvania; Saint Peter, Syndicate (USDA).

Distribution.— Guadeloupe, Dominica, Martinique, ?Saint Vincent.

Ecology.— Living specimens were found on small shrubs.

Remarks.— Breure (1974), after having compared the type material of *Bulimulus limnoides* in the MNHN, placed the Dominican taxon in the synonymy of Férussac's species. Apart from the locality given by Angas (1884), these are the first precise records of this species from the island.

Genus *Drymaeus* Albers, 1850
Subgenus *Mesembrinus* Albers, 1850

*Mesembrinus* Albers, 1850: 157.

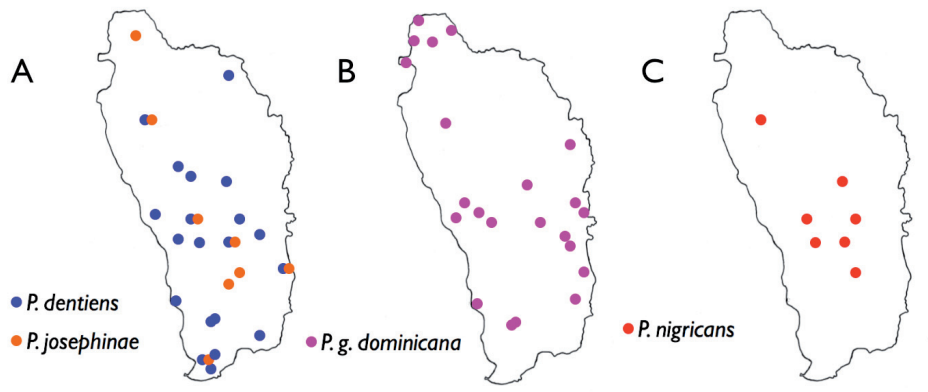


Fig. 12. Distribution of Pleurodontidae. A-C, *Pleurodonte* species.

*Drymaeus (Mesembrinus) laticinctus* (Guppy, 1868)
(figs 8I, 10F, 10H, 11B)

*Bulimulus laticinctus* Guppy, 1868: 431. Dominica.
*Bulimus (Leptomerus) multifasciatus* Lamarck; Angas, 1884: 596. Dominica, above 2000 feet [= 610 m] altitude. Not *Drymaeus multifasciatus* (Lamarck, 1822).
*Drymaeus virginalis* var. *dominicanus* Pilsbry, 1899: 12, pl. 12 fig. 24. Dominica. New synonymy.

Material.— Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Rose Hill (USDA); Saint Joseph, Carnholm (USDA); Ibidem, Layou Valley Road, 2.3 km SE bridge (AH); Saint Mark, road Soufrière-Roseau (AH); Saint Peter, Syndicate (UWI*).

Distribution.— Dominica.

Ecology.— Live animals were collected among fallen leaves and detritus on the ground.

Remarks.— This appears to be a relatively rare species, only observed in some isolated localities. There are spirally banded and unicoloured forms. In collections the colour of the latter usually fades away and becomes white, as already observed by Pilsbry (1899). His variety *dominicanus* of *Drymaeus virginalis* – a mainland taxon – appears a white specimen. This species is part of the *Drymaeus multifasciatus* species complex, of which a revision is pending (Breure, in preparation).

## Genus *Naesiotus* Albers, 1850

*Naesiotus* Albers, 1850: 162.

### *Naesiotus stenogyroides* (Guppy, 1868) comb. nov. (figs 10J, 11B)

*Bulimulus stenogyroides* Guppy, 1868: 431. Dominica.
*Bulimulus stenogyroides*; Breure, 1974: 48 (as *nomen inquirendum*).
*Bulimulus stenogyroides*; Breure, 1979: 136 (as *incertae sedis*).

Material.— Dominica, Saint George, Freshwater Lake area (USDA); path to Boeri Lake (AH).

Distribution.— Dominica.

Remarks.— This species was described from a single, incomplete shell that was subsequently lost during a fire which destroyed Guppy's collection in Port of Spain (Dance, 1966). The true status of this taxon has been enigmatic since its description, as no additional material has been reported. Breure (1974) considered this species a *nomen dubium*. The material recently collected allows us to validate Guppy's name. It proves to belong to the genus *Naesiotus*, which has also been reported from neighbouring islands (Breure, 1975). A detailed study of the anatomy and a critical comparison with its congeners will be published later (Breure, in preparation).

## Family Amphibulimidae Crosse & Fischer, 1873
## Genus *Amphibulima* Lamarck, 1805

*Amphibulima* Lamarck, 1805: 304.

### *Amphibulima patula dominicensis* Pilsbry, 1899 (figs 8A-B, 10D-E, 11C)

*Amphibulima patula* (Bruguière), Guppy, 1868: 432. Dominica.
*Amphibulima patula*; Angas, 1884: 595. Dominica, Laudat.
*Amphibulima patula* var. *dominicensis* Pilsbry, 1899: 234, pl. 61 figs 16-18. Dominica.
*Amphibulima patula dominicanus* [sic]; Breure, 1973: 53. Lectotype ANSP 26053.

Material.— Saint Andrew, Marigot Captain Bruce (USDA); Saint David, La Plaine Agricultural Station (USDA); Newfoundland (USDA); Saint George, Bellevue Chopin, Rose Hill (USDA); Ibidem, road Roseau-Laudat (AH); Saint John, road Toucari-Pennville (AH); Saint Joseph, d'Leau Grommier (USDA); Ibidem, path Mero-Salisbury (AH); Saint Mark, Sulphur Springs (USDA); Saint Paul, Cochrane (UWI*).

Distribution.— Dominica.

Ecology.— Frequently found on banana and *Citrus* plants, where it may feed on the leaves.

Remarks.— Pilsbry (1899) separated the Dominican specimens on the basis of the darker colour and by having a heavier sculptured shell. We found living specimens that were either light beige-coloured with a somewhat orange-yellowish line along the foot (fig. 10D), or entirely dark brown coloured (fig. 10E). The nominate taxon has been reported from Guadeloupe (probably now extinct) and Marie-Galante. Another variety has been reported from Saint Kitts and Saba.

### *Amphibulima pardalina* Guppy, 1868
(figs 10A-B, 11C)

*Amphibulima pardalina* Guppy, 1868: 432. Dominica, Mount Kuliabon and Morne Diablotin.
*Amphibulima pardelina* [sic]; Angas, 1884: 595. Dominica, Laudat; near Lihoo River; at the base of falls in the Roseau Valley.

Material.— Saint Georges, Freshwater Lake (USDA); Ibidem, trail to Lake Boeri (USDA, AH).

Distribution.— Dominica.

Ecology.— Found in very damp and cool habitats in cloud forest at higher altitudes.

Remarks.— This rare species, considered by Pilsbry (1899) to be distinct on account of its coarse sculpture, was found both as a light and a dark colour form (fig. 10A-B).

### *Amphibulima browni* Pilsbry, 1899
(figs 10C, 11C)

*Amphibulima browni* Pilsbry, 1899: 238, pl. 61 figs 28-31. Dominica, 330 m, on bananas.

Material.— Saint George, trail to Lake Boeri (AH); Saint John, road Toucari-Pennville (AH); Saint Joseph, d'Leau Grommier (USDA); Ibidem, path Mero-Salisbury (AH).

Distribution.— Dominica.

Remarks.— Few specimens were collected alive. The status of a third species of *Amphibulima* on Dominica has been somewhat doubtful for a long period, since this taxon has not been reported since its original description. The collection during the recent surveys allows us to confirm its presence, and although it appears rare, it seems to be less restricted in distribution than *A. pardalina*.

## Superfamily Oleacinoidea H. & A. Adams, 1855
## Family Oleacinidae H. & A. Adams, 1855
## Genus *Laevaricella* Pilsbry, 1907

*Laevaricella* Pilsbry, 1907: 123.

### *Laevaricella perlucens* (Guppy, 1868)
(figs 6E, 9B)

*Glandina perlucens* Guppy, 1868: 430. Dominica.

Material.— Saint George, Freshwater Lake (USDA); Ibidem, trail to Lake Boeri (AH).

Distribution.— Dominica.

Remarks.— This species had never been collected since it was described by Guppy (1868) and, as stated above, his type material was subsequently lost. The single specimen collected alive allows us to figure it for the first time.

Superfamily Rhytidoidea Pilsbry, 1895
Family Scolodontidae H.B. Baker, 1925
Genus *Tamayoa* H.B. Baker, 1925

*Tamayoa* H.B. Baker, 1925b: 15.

*Tamayoa decolorata* (Drouët, 1859)
(figs 6F, 9B)

Material.— Saint Andrew, Calibishie (UWI); Ibidem, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Ibidem, 1 km NW Thibaud (AH); Ibidem, Wesley (UWI); Saint David, Emerald Pool (USDA); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Bellevue Chopin, Rose Hill (USDA); Saint John, Bornes (UWI); Ibidem, Picard (UWI); Saint Joseph, Hillsborough (USDA); Saint Mark, road Soufrière-Roseau (AH); Ibidem, road Soufrière-Sulphur Springs; Ibidem, Rock Toussaint Farm (USDA); Ibidem, Sulphur Springs; Saint Paul, Sylvania (USDA).

Distribution.— Jamaica, Guadeloupe, Dominica, Barbados, Saint Vincent, Tobago, Trinidad, French Guiana, Brazil.

Remarks.— This species is probably an introduced one, as it was found only in disturbed habitats. We followed Tillier (1980) and Schileyko (2000) in placing this species in the genus *Tamayoa*.

Family Haplotrematidae H.B. Baker, 1925
Genus *Zophos* Gude, 1911

*Zophos* Gude, 1911: 269.

*Zophos* cf. *baudoni* (Petit, 1853)
(figs 6C, 9B)

*Hyalina baudoni*; Guppy, 1868: 430. Dominica.

Material.— Saint Georges, Freshwater Lake (USDA); Ibidem, trail to Lake Boeri (AH, USDA); Ibidem, 0.6 km SE Titou Gorge (AH); Saint Paul, Sylvania (USDA).

Distribution.— Guadeloupe, Dominica.

Ecology.— Living on the rainforest floor. Carnivorous; feeding on earthworms and immature *Pleurodonte* specimens.

Remarks.— Guppy (1868) expressed some doubts whether the Dominican specimens belonged to this species, which was described by Petit de la Saussaye from Guadeloupe. Ramnath & Fields (2002) were of the same opinion, considering it possibly new to science.

Superfamily Limacoidea Lamarck, 1801
Family Agrolimacidae H. Wagner, 1935
Genus *Deroceras* Rafinesque, 1820

*Deroceras* Rafinesque, 1820: 10.

*Deroceras laeve* (Müller, 1774)
(fig. 9C)

Material.— Saint Andrew, Marigot, Captain Bruce (USDA); Saint Georges, Bellevue Chopin, Rose Hill (USDA); Saint Joseph, Hillsborough (USDA); Saint Paul, Sylvania (USDA).

Distribution.— Holarctic; introduced into the tropics, subtropics and temperate environments worldwide.

Remarks.— This small slug is reported here from Dominica for the first time. Although generally associated with cooler climates, it survives on the island at higher altitudes and is locally quite common.

Superfamily Helicoidea Rafinesque, 1815
Family Pleurodontidae von Ihering, 1912
Genus *Pleurodonte* Fischer von Waldheim, 1807

*Pleurodonte* Fischer von Waldheim, 1807: 229.

*Pleurodonte dentiens* (Férussac, 1822)
(figs 8K, 12A)

*Helix dentiens*; Guppy, 1868: 431. Dominica.

Material.— Saint Andrew, Marigot, Captain Bruce (USDA); Ibidem, Wesley (UWI*); Saint David, Emerald Pool (USDA); Ibidem, La Plaine Agricultural Station (USDA); Ibidem, Newfoundland (USDA); Ibidem, 0.5 km S Rosalie River bridge (AH); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem E Bellevue, road to Grand Bay (AH*); Ibidem, Rose Hill (USDA); Ibidem, trail to Lake Boeri (USDA); Ibidem, 2.1 km SW Laudat (AH*); Ibidem, road Roseau-Laudat (AH*); Ibidem, Roseau, Botanical Garden (AH, USDA); Saint Joseph, Carnholm (USDA); Ibidem, d'Leau Grommier (USDA); Ibidem, Hillsborough (USDA); Ibidem, road to Fond Cassé, Marty Martin Farm (USDA); Ibidem, path Mero-Salisbury (AH*); Saint Mark, road Soufrière-Sulphur Springs (AH, USDA); Ibidem, Sulphur Springs (AH); Ibidem, Rock Toussaint Farm (USDA); Saint Patrick, 1 km W Petit Savane (AH); Saint Patrick, (AH*); Saint Paul, Campbell (USDA); Ibidem, Sylvania (USDA); Saint Peter, Syndicate (USDA); Ibidem, road to Syndicate, path to Morne Diablotin (AH*).

Distribution.— Guadeloupe, Dominica, Martinique.

Remarks.— This species is widespread on the island, especially in disturbed habitats and agricultural areas. It is suspected to cause feeding damage to various crops.

### *Pleurodonte guadeloupensis dominicana* Pilsbry & Cockerell, 1937 (figs 6G, 8L, 12B)

*Helix badia* Férussac; Guppy, 1868. Dominica. Not *Helix badia* Gmelin, 1791.
*Pleurodonte guadeloupensis dominicana* Pilsbry & Cockerell, 1937: 34, pl. 2 fig. 3. Dominica. Holotype ANSP 78306.

Material.— Saint Andrew, Carib Territory (USDA); Ibidem, Marigot, Captain Bruce (USDA); Ibidem, 1 km NW Vielle Cassé (AH); Saint David, Emerald Pool (USDA); Ibidem, La Plaine Agricultural Station (USDA); Ibidem, Newfoundland (USDA); Ibidem, 0.5 km S Rosalie River bridge (AH); Ibidem, (AH); Ibidem, 0.65 km N Saint Saveur (AH); Saint George, Bellevue Chopin, New Florida (USDA); Ibidem, Rose Hill (USDA); Ibidem, 2.1 km SW Laudat (AH); Ibidem, Roseau (USDA); Ibidem, Roseau, Botanical Garden (USDA); Saint John, Cabrits National Park (USDA); Ibidem, 0.6 km SW Cocoyer (AH); Ibidem, Fort Shirley-West Cabrits (AH*); Ibidem, Pointe Capucin (USDA); Ibidem, road Toucari-Pennville (AH); Saint Joseph, d'Leau Grommier (USDA); Ibidem, Hillsborough (USDA); Ibidem, road to Fond Cassé, Marty Martin Farm (USDA); Ibidem, road to Lake Matthieu (AH); Ibidem, Layou Valley Road, 2.3 km SE bridge (AH); Ibidem, path Mero-Salisbury (AH*); Saint Luke, Morne Lofty (USDA); Ibidem, Pointe Michel (USDA); Saint Mark, road Soufrière-Sulphur Springs (USDA); Ibidem, Rock Toussaint Farm (USDA); Ibidem, Sulphur Springs (USDA); Saint Patrick, between Petit Savane and Bagatelle (USDA); Ibidem, 1.5 km N Petit Savane (AH*); Saint Paul, Cochrane (UWI); Sylvania (USDA); Saint Peter, Syndicate (USDA).

Distribution.— Dominica.

Remarks.— Like the preceding species, this one is also widespread and may be found in disturbed habitats and agricultural areas. It is the smallest *Pleurodonte* species of the island and has a velvety periostracum on the shell surface.

### *Pleurodonte josephinae* (Férussac, 1832) (figs 8M, 12A)

*Helix josephinae*; Guppy, 1868: 429. Dominica.
*Helix (Dentellaria) josephinae;* Angas, 1884: 597. Dominica, above 1500 feet [457 m] altitude.

Material.— Saint David, La Plaine Agricultural Station (USDA); Saint George, Freshwater Lake (USDA); Ibidem, trail to Lake Boeri (USDA); Ibidem, 0.6 km SE Titou Gorge (AH); Saint John, road Toucari-Pennville (AH); Saint Joseph, Marty Martin Farm (USDA); Saint Mark, road Soufrière-Sulphur Springs (USDA); Saint Peter, Syndicate (USDA).

Distribution.— Saint Kitts, Nevis, Montserrat, Guadeloupe, Dominica.

Ecology.— Living in damp litter on the ground.

Remarks.— This species is generally associated with relatively undisturbed habitats at higher altitudes. It differs in shell characters from the typical form described from Guadeloupe. In Dominica thicker- and thinner-shelled forms have been found, which require further research to establish their precise taxonomic relationship.

*Pleurodonte nigrescens* (Wood, 1828)
(figs 8N, 12C)

*Helix nigrescens*; Guppy, 1868: 429. Dominica.
*Helix (Dentellaria) nigrescens*; Angas, 1884: 597. Dominica, Lake-mountain road.

Material.— Saint David, Emerald Pool (USDA); Saint George, Freshwater Lake (USDA); trail to Lake Boeri (AH, USDA); Ibidem, 0.6 km SE Titou Gorge (AH); Saint Joseph, d'Leau Grommier (USDA); road to Fond Cassé, Marty Martin Farm (USDA); Saint Paul, Sylvania (USDA); Saint Peter, Syndicate (USDA).

Distribution.— Guadeloupe, Dominica.

Ecology.— In damp leaf litter on the forest floor.

Remarks.— This species appears to prefer relatively undisturbed habitats, especially in rain forest at higher altitudes. It differs from all other Dominican *Pleurodonte* species by the characteristic parietal tooth opposite the basal teeth in the aperture. The shell can be chesnut-brown with fine axial lines (fig. 8N) or purple-black with a purple aperture.

The following species have been reported from Dominica in the literature, but supporting material has not been found. These species, recorded due to inaccuracies of provenance of specimens or misidentifications, should be removed from the faunal list of the island.

*Helicina antillarum* (G.B. Sowerby, 1842)

*Helicina antillarum*; Brown, 1881: 57.

Remarks.— The identity of Sowerby's taxon remains uncertain. Brown's report (Brown, 1881) might be a misidentification of *Helicina guppyi* Pease, 1871.

*Lucidella plicatula* (L. Pfeiffer, 1849)

*Helicina plicatula*; Guppy, 1868: 433.

Remarks.— This helicinid has been reported from throughout the West Indies. However, the Dominican *Lucidella* is clearly different.

*Amphicyclotulus schrammi* (Shuttleworth, 1857)

*Cyclophorus schrammi*; Brown, 1881: 57.

Remarks.— Brown (1881) incorrectly synonymized the Dominican *Amphicyclotulus amythestinus* with the Guadeloupe taxon.

*Succinea approximans* Shuttleworth, 1854

*Succinea approximans*; Bland, 1869: 191; Angas, 1884: 595.

Remarks.— This taxon occurs on Puerto Rico and has not been reported from intermediate islands. The reports from Bland (1869) and Angas (1884) are thus dubious.

*Vaginulus buergueri* (Simroth, 1914)

*Vaginulus (Angustipes) buergueri;* Forcart, 1973: 25.

Remarks.— This slug was reported from "Salilia, Dominica" by Forcart (1973). This locality is not known in the island and could not be found in any gazetteer. However, the taxon is reported from the Dominican Republic (Baker, 1925a), so confusion seems likely.

*Veronicella tenax* H.B. Baker, 1931

*Veronicella (Tenacipes) tenax*; Forcart, 1973: 25.

Remarks.— This Cuban endemic species was reported from Dominica by Forcart (1973), based on some specimens that — judging from his descriptions — probably belong to either *Veronicella cubensis* or *V. floridana*.

*Drymaeus liliaceus* (Férussac, 1821)

*Drymaeus liliaceus* Guilding ms.; Angas, 1884: 596.
*Bulimus (Leiostracus) liliaceus*; Smith, 1888a: 230.
*Drymaeus liliaceus;* Pilsbry, 1899: 11.

Remarks.— This species was reported from Dominica by Angas (1884) and Smith (1888a). Férussac's species is from Puerto Rico and Pilsbry (1899) mentions that he had not seen Dominican specimens. So far, no trace was found of any material that could confirm the presence of this taxon on Dominica. However, the occurrence of a *Drymaeus* species with a "uniform pale primrose colour" from the island should be further investigated.

*Drymaeus multifasciatus* (Lamarck, 1822)

*Bulimus (Leiostracus) multifasciatus*; Smith, 1888a: 230.
*Drymaeus multifasciatus*; Pilsbry, 1899: 14, pl. 12 fig. 8.

Remarks.— This name was used by several authors for the endemic Dominican species that is here recognized as *Drymaeus laticinctus* (Guppy, 1868). See remarks under the latter species.

*Amphibulima rubescens* (Deshayes, 1830)

*Succinea rubescens*; Brown, 1881: 57.
*Amphibulima (Rhodonyx) rubescens*; Pilsbry, 1899: 240, pl. 61 figs 26-27.

Remarks.— This species has been reported by various workers from Guadeloupe, Marie-Galante, Dominica and Martinique. It is assumed now that this taxon is endemic to Martinique and all other reports are misidentifications.

## Discussion

The list of Dominican land Mollusca (Table 2) contains at present 42 species, making it one of the richest in the Lesser Antilles with respect to snails and slugs. Of these, 16 species (38%) are endemic to the island (i.e., single island endemics, SIEs). The table

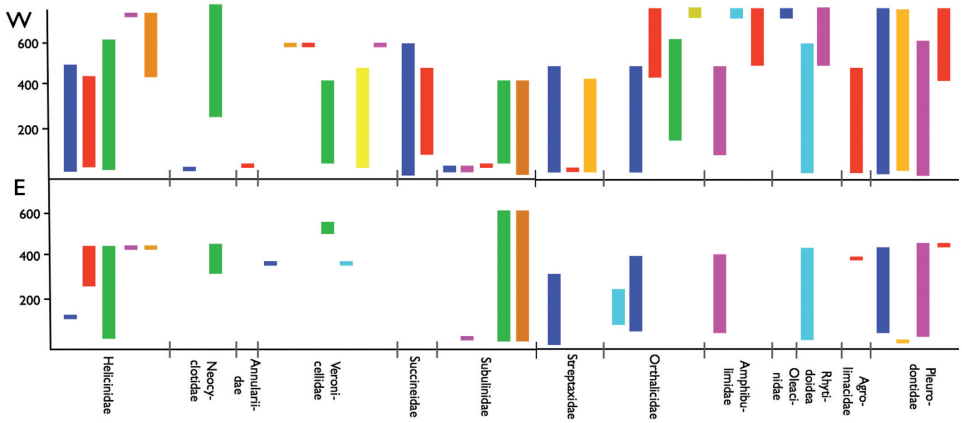


Fig. 13. Altitudinal distribution of the taxa treated in this paper. Colours correspond to those used in Figs 3, 5, 7, 9, 11-12.

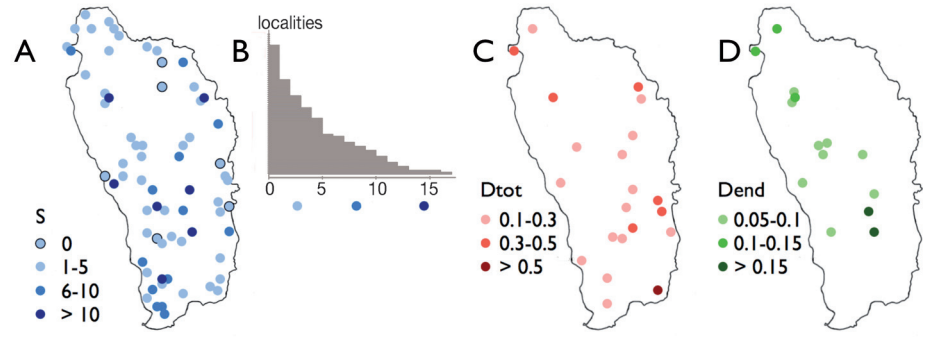


Fig. 14. Diversity of land snails on Dominica. A, Species richness per locality; B, Frequency of species richness; C, Total diversity; D, Diversity of endemic species. C and D are calculated using rareness (see methods) and only the higher scoring localities are shown.

Table 2. Summary of species, alphabetically arranged, and their distribution. Abbreviations: E, endemic; I, introduced; X, collected during surveys mentioned in this paper (Dominica) or known from literature (others); ?, questionable reports. Species reported for Dominica for the first time are shown in bold type.

| Taxon | Dominica | Guadeloupe | Martinique | Lesser Antilles, other | Other |
|---|---|---|---|---|---|
| *Alcaldia conuloides* | E | | | | |
| ***Allopeas gracile*** | I | I | I | I | X |
| ***Allopeas micra*** | I | I | I | I | X |
| *Amphibulima browni* | E | | | | |
| *Amphibulima pardalina* | E | | | | |
| *Amphibulima patula dominicensis* | E | | | | |
| *Amphicyclotus amethystinus* | E | | | | |
| *Amphicyclotus dominicensis* | E | | | | |
| ***Beckianum beckianum*** | I | I | I | I | X |
| ***Bulimulus diaphanus fraterculus*** | X | X | | X | |
| *Bulimulus guadalupensis* | I | I | I | X | I |
| *Bulimulus limnoides* | X | X | X | ? | |
| ***Deroceras laeve*** | I | I | I | I | X |
| ***Diplopoma* sp.** | E | | | | |
| *Diplosolenodes occidentalis* | X | X | X | X | I |
| *Drymaeus laticinctus* | E | | | | |
| *Helicina fasciata* | X | X | X | X | I |
| *Helicina guppyi* | X | X | X | | |
| *Helicina platychila* | X | X | X | | |
| *Helicina rhodostoma* | E | | | | |
| ***Huttonella bicolor*** | I | I | I | I | X |
| *Laevaricella perlucens* | E | | | | |
| *Leptinaria unilamellata* | I | I | I | I | X |
| ***Lucidella* sp.** | E | | | | |
| *Naesiotus stenogyroides* | E | | | | |
| *Omalonyx matheroni* | I | I | I | X | I |
| *Pleurodonte dentiens* | X | X | X | | |
| *Pleurodonte guadeloupensis dominicana* | E | | | | |
| *Pleurodonte josephinae* | X | X | | X | |
| *Pleurodonte nigrescens* | X | X | | | |
| ***Sarasinula marginata*** | X | ? | | | X |
| *Sarasinula plebeia* | X | | | X | X |
| *Streptartemon glaber* | X | | | X | X |
| ***Streptostele musaecola*** | I | I | I | I | X |
| *Subulina octona* | I | I | I | I | X |
| ***Succinea* sp.** | E | | | | |
| *Tamayoa decolorata* | X | X | | X | X |
| *Veronicella cubensis* | I | | | I | X |
| *Veronicella* aff. *floridana* | I | | | I | X |
| ***Veronicella sloanii*** | I | I | | I | X |
| ***Veronicella* sp.** | E | | | | |
| *Zophos* cf. *baudoni* | X | X | | | |

also shows the striking faunal relationships with Guadeloupe and Martinique. Furthermore, it is remarkable that 9 species (21%) are widespread, whereas 13 are considered to have been introduced into Dominica.

The land-snail fauna can be analyzed according to the elevational range of the species. We have made a distinction between the windward (east) and leeward (west) side of the island, according to the parishes in which the localities are situated. While most species exhibit a rather wide elevational range, several are restricted in this respect (fig. 13). Very few only occur at lower elevations, viz. *Diplopoma, Allopeas, Beckianum* and *Huttonella* species. These taxa are largely introduced species. More interestingly, some species are restricted to higher localities: *Lucidella* sp., veronicellids (except the introduced *Veronicella cubensis* and *V. sloanii*), *Naesiotus stenogyroides, Amphibulima pardalina* and *Laevaricella perlucens*. They do not occur, however, on the upper slopes of the higher peaks, but seem to be restricted to the hygrophytic vegetation zone (Hodge, 1943).

When analyzing the localities according to their diversity (see Methods), it becomes clear that many localities have a rather low species richness. At six localities no snails have been encountered; at the remaining 64, species richness ranges from 1 to 17 (mean 4.54; figs 14A-B). Counting the rareness of species, the southeast of the island scores well when total diversity is considered (fig. 14C). Finally, we have focussed on the endemic species of Dominica. These are mainly distributed on the leeward side of the island (fig. 14D). *Amphibulima pardalina, Diplopoma* sp., *Laevaricella perlucens, Naesiotus stenogyroides* and *Veronicella* sp. are very restricted in range and probably meet the IUCN-criteria of Critically Endangered species (IUCN, 2001). *Amphibulima browni* and *Lucidella* sp. are likely to meet the criteria for listing as Endangered species. Based on our data, it may be concluded that the area of Freshwater Lake in Morne Trois Pitons National Park is a biodiversity hotspot for land-snails. However, several other localities situated in National Parks are also important areas for the occurrence of SIEs: Syndicate area and Lake Boeri area. All lie on the leeward side of the island at relatively high elevations (above 600 m).

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