

## **Bibliography of the land and freshwater molluscs of the Cape Verde Islands, with a historical synopsis of malacological exploration in the archipelago and an annotated check-list**

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### ABSTRACT

A bibliography (including an author index) of the literature on the land and freshwater molluscs of the Cape Verde Islands is presented, encompassing 81 entries, of which 61 are directly related to land and freshwater molluscs, while another 20 deal with marine Pulmonata and/or brackish and saltwater inhabiting Hydrobiidae. A historical synopsis of the exploration of the land and freshwater mollusc fauna of the Cape Verde archipelago is presented. An annotated check-list of the land-bound gastropods of the Cape Verde Islands is also included, differentiating between freshwater, land and marine species and completed by a list of taxa that have been erroneously mentioned for the archipelago due to misidentification or confusion about the location of origin.

### RESUMO

Apresenta-se uma bibliografia sobre moluscos terrestres e de água-doce de Cabo Verde, incluindo um índice de autores. A bibliografia compreende 81 entradas directamente associadas a moluscos terrestres e de água-doce e 21 entradas relacionadas com Pulmonata marinhos e/ou Hydrobiidae de águas salgadas e salobras. Uma sinopse histórica sobre a exploração dos moluscos terrestres e de água-doce no arquipélago de Cabo Verde é igualmente apresentada. Inclui-se ainda um lista anotada de gastrópodes de base terrestre de Cabo Verde, organizada segundo espécies de água-doce, terrestres e marinhas, e completada com uma lista de taxa que foram erroneamente atribuídos a Cabo Verde devido a deficiente identificação ou a malentendidos na localização.

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## 1. HISTORY OF MALACOLOGICAL EXPLORATION

The earliest known records of terrestrial molluscs in the Cape Verde Islands were reported by Férussac (1827) in his *Catalogue des espèces des mollusques terrestres* [criticized by other early malacologists, such as Dohrn (1869) and Wollaston (1878)], in which he briefly reported on the collections made by the French navy officer Sanders Rang on his journey to the Caribbean. Four species were mentioned from ‘La Praya, l’île du Cap Verd’, of which three were *nomina nuda* and another only mentioned under a generic name. It took until the 1980s that Férussac’s questionable report of the occurrence of *Carychium minus* in the ‘Insulis Promotorii’ could be confirmed by Jochen Gerber in the collections of the Landesmuseum Wiesbaden, even though only the label was left and the specimens were destroyed due to the acidic glass-tube in which they had been kept. Férussac’s report of the North African species *Helix* [= *Levantina*] *gyrostoma* was certainly erroneous, as this species was never found in the Cape Verde Islands.

The first valid description of a terrestrial mollusc species with the Cape Verde Islands as its *terra typica* was given by King & Broderip (1831) for *Pupa subdiaphana* [= *Zootecus insularis subdiaphanus*] from ‘Portum Praya’, collected between 1826 and 1830 by the crew of the English research vessels HMS *Beagle* and HMS *Adventure* while on their way to South America.

During the following two decades, four further land snails were described from the Cape Verde Islands without or with a wrong locality in the works of Webb & Berthelot (1833), Pfeiffer (1851) and Shuttleworth (1852). However, it remains unclear who collected the three endemic helicoid species and *Zootecus insularis*, the latter already mentioned by Férussac (1827) under the name *Bulimus bamboucha*. Three of these came from Pauline Terver (who most probably did not collect them and whose collection was later acquired by the French naturalist Alfred Moquin-Tandon), another came from an unknown source. The suggestion by Rossmässler (1835) about the occurrence of *Limnaeus palustris* in the Cape Verde Islands probably does not refer to a *Stagnicola* species but to a species of *Radix*, probably

already mentioned by Férussac (1827) under the name *Limnaeus* sp.

In his *Index molluscorum*, Dunker (1853) mentioned two species from the Cape Verde Islands which were apparently collected by the German Africa explorer Georg Tams on São Vicente in 1841. Of these, the taxon described as *Melania tamsii* by Dunker (1845) proved to be a synonym of the circum-tropically distributed *Melanoides tuberculata*, which was subsequently reported as a variety of *Melania tuberculata* from São Nicolau by Wollaston (1878).

During the years 1851-52, the German botanist Carl Bolle collected two helicoid species on either the island of São Vicente or São Nicolau, which were described by Albers (1854) under the name *Helix bollei* [= *Leptaxis bollei*] and *H. sarta* [= *Eremina advena sarta*].

Benson (1856) described three further tiny endemic species, viz. *Achatina spiculum* [= *Ceciloides* cf. *acicula*], *Bulimus* [*Pupoides*] *gemma* and *Pupa* [*Gastrocopta*] *acarus*, which the English officer E.L. Layard had collected on São Vicente during a stopover on his homebound journey from South Africa.

The first faunal list of the molluscs found in the Cape Verde Islands was published by Reibisch (1865). This was mainly based on the findings of the German geologist Alphons Stübel on the islands of Santo Antão, São Vicente, São Nicolau and Boavista in 1863. In this list, comprising 108 taxa, 11 land and freshwater snails are mentioned, 10 of which indeed originated from the Cape Verde Islands. Two lymnaeid taxa were described as varieties new to science, nowadays believed to represent endemic subspecies of two *Radix* species.

Together with the three species described by Benson (1856), of which Reibisch (1865) had no knowledge, only 13 species of terrestrial molluscs had been recorded from the Cape Verde Islands up to 1865. However, during the following decade, knowledge of the land and freshwater molluscs of the Cape Verdes increased significantly. The German naturalist Heinrich Dohrn, who visited Cape Verde from December 1864 to March 1865 while exploring the islands of Santo Antão, São Vicente, São Nicolau and Santiago, was

the first in a series of explorers working in the archipelago. In January-March 1864 the renowned British scientists John E. Gray and Richard T. Lowe visited the archipelago and on a second trip in January-February 1866 they were joined by Thomas V. Wollaston. They collected (mainly plants, insects and molluscs) on Santo Antão, São Vicente, Santiago, Fogo and Brava and generously offered their material of land and freshwater snails to Dohrn for study, forming the basis of his *Die Binnenconchylien der Capverdischen Inseln* (Dohrn 1869). Herein, 29 species were listed, 12 of them new to science. Until today, his *Pupa* [= *Truncatellina*] *molecula* from Santo Antão (cf. Hutterer & Groh 1991) and the *Vitrina* sp. mentioned by him (most probably an endemic *Plutonia*) have not been found again, while his *Ancylus milleri* was only collected again during the late 1990s (Rosa *et al.* 1999).

Two terrestrial molluscs were collected around Porto Grande, São Vicente, by the crew of the English oceanographic HMS *Challenger* during the winter of 1872-73, which were accounted for by Smith (1884).

Further important collections were made by the French naturalists Aimé Bouvier and Pierre de Cessac in 1870 (and by the latter again in 1874) on the islands of Santo Antão, São Vicente, São Nicolau, Boavista, Maio and Santiago. Morelet (1873) reported on their findings and described one Recent and two fossil helicoid taxa new to science, i.e. *Helix bouvieri* [= *Keraea gorgonarum*], *H. primaeva* [probably a species of *Eremina*] and *H. atlantidea* [probably a species of *Leptaxis*]. In his listing of 40 species, one of which is a marine pulmonate, two do certainly not belong to the Capeverdean fauna (the Australian *Helix* [*Thersites*] *corneo-virens* and the Madeiran *Glandina* [*Cochlicopa*] *maderensis*), and another two are highly questionable (*Helix draparnaldi* [= *Oxychilus draparnaudi*] and *Bulimus ventricosus* [= *Cochlicella acuta*, *fide* Germain 1927]).

Apart from the introduction of a replacement name for Dohrn's (1869) preoccupied *Pupa milleri* with *Pupa dohrni* [= *Lauria cylindracea anconostoma*] by Pfeiffer (1877), two outstanding monographs on the terrestrial molluscs of the Cape Verde Islands, Wollaston's (1878) *Testacea Atlantica* and Rochebrune's (1881) *Materiaux pour la faune de l'archipel du Cap Vert*, dealt

with material collected during the preceding decade. Wollaston (1878) added one new species name (*Helix subroseotincta* [= *Leptaxis bollei* var.]) and four varieties to Morelet's (1873) list. Wollaston (1878) reported 40 'land and freshwater' molluscs from the Cape Verdes, two of them marine, two others fossil and at least another two (*Helix corneovirens*, *Cochlicopa lubrica* var. *maderensis*) in error. Rochebrune (1881) also described a single species (*Xerophila antoniana* [= *Xerotricha apicina*]), but it is doubtful if this was indeed collected in the Cape Verde Islands. European *Cyclostomus* [*Pomatias*] *elegans* and Caribbean *Amphibulima* [*Brachyspira*] *tigrina* were wrongly attributed to the Cape Verde Islands and only specimens of *Xerophila* [*Theba*] *pisana* seem to be reliably referable to that archipelago. Additionally, *Helix ahmarina* [= *Otala lactea*], collected in the Cape Verde Islands by Bouvier and described without details of the collecting locality by Mabilie (1883), for a long time appeared to be doubtful, but was finally confirmed by specimens found during the 1980s.

Towards the end of the 19<sup>th</sup> century, a total of 37 land and freshwater molluscs and two marine pulmonates were known to exist in Cape Verde, while records of *ca.* 17 species were highly doubtful or wrongly attributed to the islands. These numbers did not change after two species had been found on the islet of Branco by the crew of the French RV *Talisman* in 1883 (Fischer 1884). Moreover, neither the Portuguese museum collector Francisco Newton, who worked on the islands of Santo Antão, São Nicolau, Boavista, Santiago and Brava in 1883, nor the chemist João Cardoso, who collected throughout the archipelago as an officer of the Portuguese army between 1893 and 1905, added new taxa to the terrestrial malacofauna of the Cape Verde Islands. The material of these two collectors was published by Nobre (1909) in his work on the molluscan fauna of the Portuguese possessions in West Africa. Another significant collection was made by the Italian naturalist Leonardo Fea in 1897 on the islands of São Vicente, São Nicolau, Boavista, Fogo and Brava, as well as on the islets of Branco, Raso and the Rombos group (see Germain 1927).

After that, it took three decades until the French botanist Auguste Chevalier collected

on all the islands in the archipelago in 1934. He reported on eight of the molluscs he had found (Chevalier 1935), but most of his not very extensive samples were only studied almost 50 years later (Groh 1983). A small collection assembled by the French naturalist Jean Cadenat on the islands of Santo Antão, São Vicente, Sal and Santiago in 1950 was also studied and published by Groh (1983).

A considerable contribution to our knowledge of the land and freshwater molluscs of the Cape Verde Islands was made by the Finnish zoological expedition under Håkan Lindberg of the University of Helsinki, especially through the extensive collecting of his assistant Samuel Panelius, who visited all islands (except Branco and Raso) from November 1953 to March 1954. In his work *The Land and Freshwater Molluscs of the Cape Verde Islands* (Panelius 1958), he combined his own findings with data from the literature into a compilation that encompassed 50 taxa, two of them marine and nine first records for the archipelago. Of these, several proved to be synonyms and at the end of the 1950s an objective total of 41 species of land and freshwater snails was known from the Cape Verdes. Also in the 1950s, the German geologist Karl Krejci-Graf brought back a number of land snails from his visits to Sal and Maio in 1957 and 1959, but it then took almost two decades before European malacologists paid attention to the Cape Verde Islands again.

Cruz e Silva (1974), in a paper on parasitology, presented data on the distribution of the freshwater snail *Radix natalensis stuebeli* [sub *Lymnaea natalensis*], based on his investigations on the island of Santiago in 1972. During the mid 1970s, an Ibero-German group began new explorations of the malacofauna of the Cape Verde Islands, at first initiated by collectors of marine molluscs, such as the Portuguese Luís Pisani Burnay, Henrique Lichtenstein and António Monteiro, the Spanish physician Emilio Rolán, later joined by German malacologist Rudo von Cosel and lawyer Dieter Röckel. All of them, except António Monteiro, were members of the first and/or second Ibero-German expedition to the Cape Verde Islands, organized by the German botanist Wolfram Lobin and carried out during December 1978 and January 1979, with a second expedition in the winter of 1979-80, again for one month.

The present author and his wife Christina were members of both of these expeditions and visited all islands except Maio, Santa Luzia and the islets of Branco and Raso, collecting land and freshwater snails as well as material of other animal groups. The results of these two expeditions, which subsequently gave rise to a number of research projects in different European countries, were published in several volumes of the *Courier Forschungsinstitut Senckenberg*. The findings on terrestrial molluscs, based on the author's own collections and material received from Wolfram Lobin, Ursula Winter, Brigitte Kegelmann and Hans-Hermann Schleich, were presented in numerous articles by the author (Groh 1982 ff.), the most significant of which was the *Revision der Land- und Süßwassergastropoden der Kapverdischen Inseln* (Groh 1983). Herein, based on a revision of all accessible material in European museums and material mentioned above, 43 Recent and two fossil species and subspecies of land and freshwater snails were presented, while four species were mentioned for the first time for the archipelago. In addition, two marine hydrobiids, two siphonariids, two ellobiids and one trimusculid from different sources were reported. A Red List of non-marine molluscs of the Cape Verde Islands was published by Groh (1996).

Rosa *et al.* (1999) published the results of their collecting activities on the island of Santiago, in which they presented data on the distribution of six freshwater snails. One of these was *Ancylus milleri*, recorded for the first time since it was found by Dohrn in 1864-65, and another one under the name of the marine species *Hydrobia acuta* [= *Pseudamnicola* sp.].

Since 1983, the author has occasionally received samples of land and freshwater molluscs from the Cape Verde Islands via Wolfram Lobin and Emilio Rolán and pictures of shells from Alain Bertrand. As a result, it was possible to add several species to the check-list of Cape Verde land and freshwater molluscs compiled for an INTERREG-programme of the EU (Groh & Garcia 2005). The author also contributed to Rolán's (2005) *Malacological Fauna from the Cape Verde Archipelago*, in which four marine and seven land-dwelling species of 'continental' gastropods new to the Cape Verdes were introduced. The number of 'continental'

molluscs known from the Cape Verde Islands now stands at 11 marine, 10 freshwater and 43 land-dwelling species, with two of the latter being only known as fossils. This is a surprisingly high diversity for a small oceanic island group such as the Cape Verdes. Hopefully, the large number of unidentified species in the check-list presented below will

stimulate new interest in this still poorly investigated group of highly interesting animals, leading to a much needed revision of the 'continental' malacofauna of this archipelago. More and freshly collected material, preferably preserved in alcohol, is much needed.

## 2. BIBLIOGRAPHY OF THE LAND AND FRESH WATER MOLLUSCS OF THE CAPE VERDE ISLANDS

The bibliography includes 88 entries, of which 81 provide specific information on terrestrial and freshwater molluscs of the Cape Verde Islands, 61 give special or occasional attention to land and freshwater snails and another 20 include data on marine

pulmonates. Table 1 and Figs. 1 and 2 show how publication activity changed over time, demonstrating that the most productive periods were between 1850 and 1900 and 1975 and 2000. Fig. 3 shows the increase of taxa known from the Cape Verdes over time.

Period	Mainly or partly on land and freshwater molluscs	On marine molluscs only, but including pulmonates	Total
Before 1850	8	1	9
1851-1875	10	1	11
1876-1900	13	3	16
1901-1925	2	1	3
1926-1950	3	1	4
1951-1975	5	1	6
1976-2000	17	10	27
After 2000	3	2	5
Total	61	20	81

Table 1. Number of publications on land and freshwater molluscs of the Cape Verde Islands in 25-year periods.

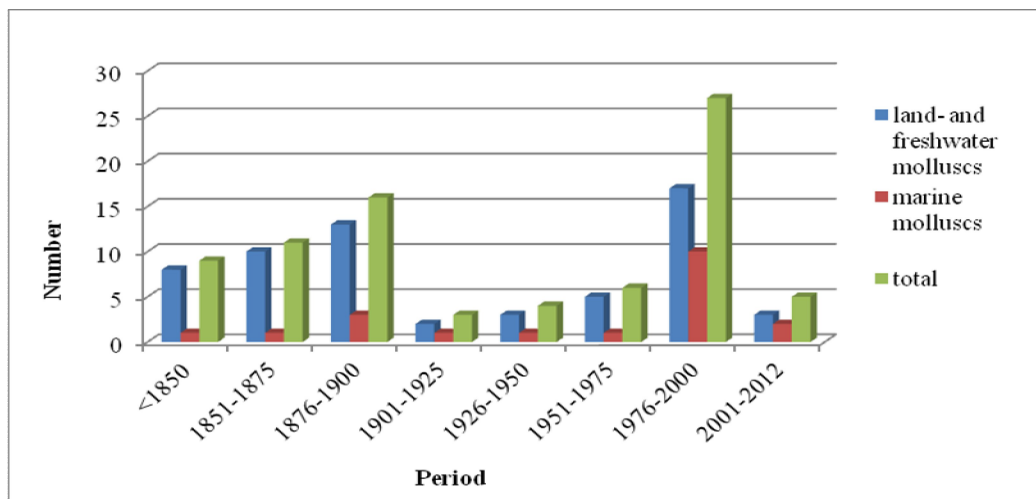


Fig. 1. Number of publications on land and freshwater molluscs of the Cape Verde Islands in 25-year periods (individual data). 'Marine molluscs' indicates marine pulmonates and hydrobiids.

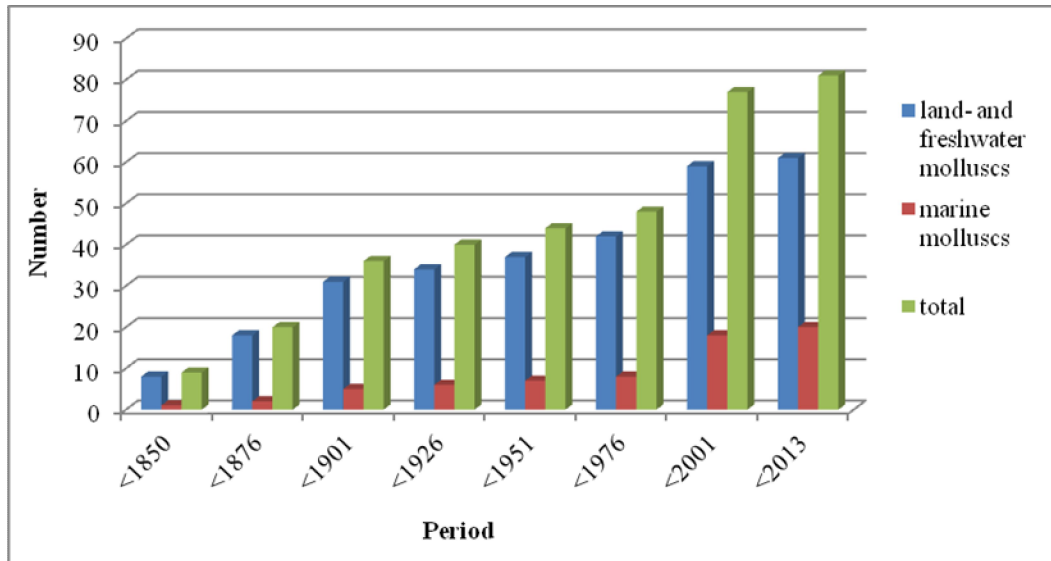


Fig. 2. Number of publications on land and freshwater molluscs of the Cape Verde Islands in 25-year periods (cumulated data). ‘Marine molluscs’ indicates marine pulmonates and hydrobiids.

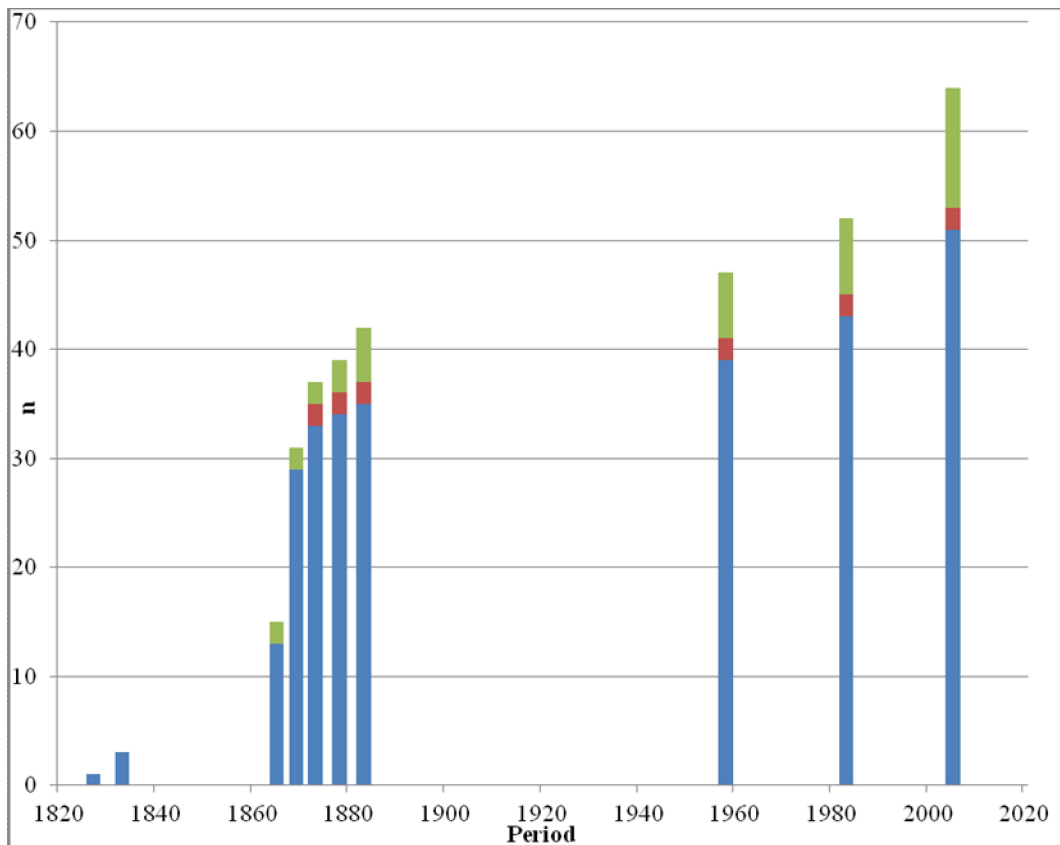


Fig. 3. Increase over time of the number of land and freshwater molluscs known from the Cape Verde Islands. Blue: Recent land and freshwater molluscs; Red: Fossil land and freshwater molluscs; Green: Marine Pulmonata and Hydrobiidae.

Symbols used in the bibliography:

- \* = on marine molluscs only, but contains information on marine pulmonates or hydrobiids.
- † = contains information, exclusively or partly, on fossil terrestrial molluscs.
- = general source, containing malacologically relevant articles or contributions by different authors.

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### 3. CHECK-LIST OF THE LAND AND FRESHWATER MOLLUSCS OF THE CAPE VERDE ISLANDS

Abbreviations used to indicate status:

E	= endemic	NP	= probably native
NE	= not endemic	NO	= possibly native
IS	= surely introduced, not invasive	cf.	= confer to, similar to
II	= surely introduced, invasive	gen.	= genus
IP	= probably introduced	indet.	= not determined
NS	= surely native	sp.	= species, undetermined
		?	= correct generic status not verifiable

Table 2. Species of land and freshwater molluscs (including marine pulmonates and hydrobiids) documented to occur in the Cape Verde Islands.

Family	Species	Endemism	Origin	Validity
FRESHWATER				
Hydrobiidae	<i>Pseudamnicola</i> sp.	E?	NP	Valid, to be determined
Lymnaeidae	<i>Radix auricularia ribeirensis</i> (Reibisch, 1865)	E	NS	Valid
Lymnaeidae	<i>Radix natalensis stuebeli</i> (Reibisch, 1865)	E	NS	Valid
Planorbidae	<i>Afrogyrus coretus</i> (Blainville, 1824)	NE	NP	Valid
Planorbidae	<i>Ancylus milleri</i> Dohrn, 1869	E	NS	Valid
Planorbidae	<i>Bulinus forskalii</i> (Ehrenberg, 1831)	NE	NO	Valid
Planorbidae	<i>Gyraulus parvus</i> (Say, 1819)	NE	IP	Valid
Planorbidae	Planorbidae gen. et sp. indet.	E?	NO	Valid, to be determined
Planorbidae	<i>Planorbis moquini</i> (Requien, 1848)	NE	NP	Valid
Thiaridae	<i>Melanoides tuberculata</i> (O.F. Müller, 1774)	NE	NO	Valid

Table 2 continued

TERRESTRIAL				
Agriolimacidae	<i>Deroceras laeve</i> (O.F. Müller, 1774)	NE	IS	Valid
Agriolimacidae	<i>Deroceras reticulatum</i> (O.F. Müller, 1774)	NE	IS	Valid
Carychiidae	<i>Carychium</i> cf. <i>tridentatum</i> (O.F. Müller, 1774)	NE	IP	Valid, to be determined
Cochlicellidae	<i>Cochlicella acuta</i> (O.F. Müller, 1774)	NE	IP?	Valid
Discidae	<i>Keraea bertholdiana</i> (L. Pfeiffer, 1852)	E	NS	Valid
Discidae	<i>Keraea gorgonarum</i> (Dohrn, 1869)	E	NS	Valid
Ferussaciidae	<i>Ceciloides acicula</i> (O.F. Müller, 1774)	NE	IP	Valid
Ferussaciidae	<i>Conollya</i> sp.	E?	NO	Valid, to be determined
Ferussaciidae	<i>Ferussacia</i> sp.	E?	NO	Valid, to be determined
Ferussaciidae	<i>Hohenwarthia</i> sp.	E?	NO	Valid, to be determined
Ferussaciidae	<i>Sculptiferussacia</i> sp.	E?	NO	Valid, to be determined
Gastrocoptidae	<i>Gastrocopta acarus</i> (Benson, 1856)	E	NS	Valid
Gastrodontidae	<i>Zonitoides</i> cf. <i>jaccetanicus</i> (Bourguignat, 1870)	NE	IP	Valid, to be confirmed
Helicidae	<i>Eremina advena advena</i> (Webb & Berthelot, 1833)	E	NS	Valid
Helicidae	<i>Eremina advena fogoensis</i> (Dohrn, 1869)	E	NS	Valid
Helicidae	<i>Eremina advenaserta</i> (Albers, 1854)	E	NS	Valid
Helicidae	<i>Eremina myristica</i> (Shuttleworth, 1852)	E	NS	Valid
Helicidae	? <i>Eremina primaeva</i> (Morelet, 1873)	NE	NS	Valid, fossil
Helicidae	<i>Otala lactea lactea</i> (O.F. Müller, 1774)	NE	IS	Valid
Helicidae	<i>Theba pisana pisana</i> (O.F. Müller, 1774)	NE	IS	Valid
Hygromiidae	<i>Candidula</i> cf. <i>intersecta</i> (Poiret, 1801)	NE	IS	Valid, to be determined
Hygromiidae	? <i>Leptaxis atlantidea</i> (Morelet, 1873)	E	NS	Valid, fossil
Hygromiidae	<i>Leptaxis bollei</i> (Albers, 1856)	E	NS	Valid
Hygromiidae	cf. <i>Xeropicta</i> sp.	NE	IS	Valid, to be determined
Hygromiidae	<i>Xerotricha apicina</i> (Lamarck, 1822)	NE	IS	Valid
Hygromiidae	<i>Xerotricha conspurcata</i> (Draparnaud, 1801)	NE	IS	Valid
Lauriidae	<i>Lauria cylindracea</i> (E.M. da Costa, 1778)	NE	NS	Valid
Milacidae	<i>Milax gagates</i> (Draparnaud, 1801)	NE	IP	Valid
Punctidae	<i>Paralaoma servilis</i> (Shuttleworth, 1852)	NE	NP	Valid
Pupillidae	<i>Pupilla fontana gorgonica</i> (Dohrn, 1869)	E	NS	Valid
Pupillidae	<i>Pupoides coenopictus senegalensis</i> (Morelet, 1848)	NE	IP	Valid
Pupillidae	<i>Pupoides gemmula</i> (Benson, 1856)	E	NS	Valid
Streptaxidae	<i>Gulella capitata</i> (Gould, 1852)	NE	II	Valid
Subulinidae	<i>Lamellaxis gracilis</i> (Hutton, 1834)	NE	IP	Valid
Subulinidae	<i>Opeas hannensis</i> (Rang, 1831)	NE	IP	Valid
Subulinidae	<i>Opeas micra</i> (d'Orbigny, 1835)	NE	IP	Valid
Subulinidae	<i>Pseudopeas saxatile</i> (Morelet, 1885)	NE	IP	Valid
Subulinidae	<i>Rumina decollata</i> (Linnaeus, 1758)	NE	NP	Valid
Subulinidae	<i>Zootecus insularis subdiaphanus</i> (King, 1831)	E	NS	Valid
Succineidae	<i>Quickia concisa wollastoni</i> (Dohrn, 1869)	E	NS	Valid
Succineidae	<i>Quickia? lowei</i> (Dohrn, 1869)	E	NS	Valid
Trissexodontidae	<i>Caracollina lenticula</i> (A. Férussac, 1821)	NE	NO	Valid
Valloniidae	<i>Vallonia pulchella</i> (O.F. Müller, 1774)	NE	IP	Valid
Vertiginidae	<i>Truncatellina molecula</i> (Dohrn, 1869)	E	NS	Valid

Table 2 continued

MARINE				
Ellobiidae	<i>Melampus monile</i> (Bruguère, 1789)	NE	NS	Valid
Ellobiidae	<i>Pedipes pedipes</i> (Bruguère, 1792)	NE	NS	Valid
Ellobiidae	<i>Pedipes dohrni</i> d' Ailly, 1896	NE	NS	Valid
Ellobiidae	<i>Pseudomelampus exiguus</i> (R.T. Lowe, 1832)	NE	NS	Valid
Hydrobiidae	<i>Hydrobia</i> sp. of Panelius 1958 = sp. 1 of Groh 1983	E?	NP	Valid, to be determined
Hydrobiidae	<i>Ventrosia ventrosa</i> (Montagu, 1803)	NE	NS	Valid
Onchidiidae	<i>Onchidella</i> cf. <i>celtica</i> (Cuvier, 1817)	NE	NS	Valid, to be confirmed
Onchidiidae	<i>Onchidella</i> sp.	E?	NS	Valid, to be determined
Siphonariidae	<i>Siphonaria pectinata</i> (Linnaeus, 1758)	NE	NS	Valid
Siphonariidae	<i>Williamia gussoni</i> (O.G. da Costa, 1829)	NE	NS	Valid
Trimusculidae	<i>Trimusculus mammilaris</i> (Linnaeus, 1758)	NE	NS	Valid

Table 3. Species of land and freshwater molluscs that have been reported erroneously as occurring in the Cape Verde Islands. A: by misidentification; B: by confusion about the location of origin.

Agriolimacidae	<i>Deroceras agreste</i> (Linnaeus, 1758)	A
Camaenidae	<i>Thersites corneovirens</i> (L. Pfeiffer 1851)	B
Gastrodontidae	<i>Zonitoides nitidus</i> (O.F. Müller, 1774)	A
Helicidae	<i>Levantina gyrosoma</i> (J. Férussac, 1821)	B
Oxychilidae	<i>Oxychilus draparnaudi</i> (Beck, 1837)	B
Planorbidae	<i>Gyraulus laevis</i> (Alder, 1838)	A
Pomatiidae	<i>Pomatias elegans</i> (O.F. Müller, 1774)	B
Succineidae	<i>Brachyspira tigrina</i> (J. Férussac, 1821)	B
Succineidae	<i>Cochlicopa lubrica</i> (O.F. Müller, 1774)	B
Succineidae	<i>Levantina gyrostoma</i> (J. Férussac, 1821)	B

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