

Fossil terrestrial snails (Mollusca: Gastropoda) from the
Cape Verde Archipelago

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The few fossil non-marine gastropods reported from the Cape Verde Archipelago in the literature as being sub- or semifossil date from Pleistocene deposits. The various deposits are described and a new record of *Leptaxis (L.) advena myristica* is given.

Key words: Gastropoda, Pulmonata, Helicidae, *Leptaxis*, Pleistocene, Cape Verde Archipelago.

In his monograph on the non-marine Mollusca of the Cape Verde Archipelago, Groh (1983) reported a few "subfossil" or "semifossil" terrestrial gastropods. We present some additional information concerning the absolute age of the material in question. Furthermore one record can be added.

It should be emphasized that recent Cape Verde land snails are frequent on and around small calcarenite inliers such as the older Quaternary beach terraces north of Tarrafal. They are very scarce, though, on the volcanic rocks that largely constitute the surface of the islands. Recent shells can have a deceptive fossil-like appearance in calcarenite outcrops.

Marine and continental deposits of Quaternary age are preserved in three stretches along the coasts of São Tiago, viz. (1) between Praia and S. Francisco, (2) at Praia Baixo, and (3) around Tarrafal. Fossil terrestrial gastropods have also been reported from (4) limestone strata at the eastern coast of the island of Sal.

(1) The Praia-S. Francisco sedimentaries, known since Darwin's visit in 1832, consist of rhodolite limestones grading upward in mudstones with *Turritella* and, finally, in coastal conglomerates. Many marine fossils were found here, among which the corals discussed in Boekschoten & Borel Best (1987). The sequence is capped by a lava stream, which was dated radiometrically as 700.000 ± 200.000 years, i.e. Middle Pleistocene.

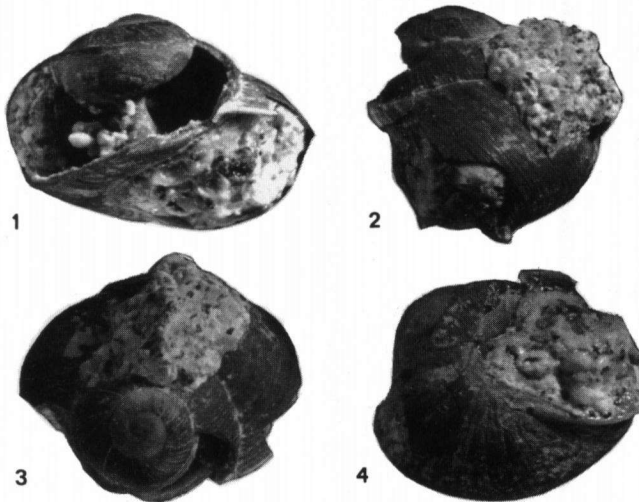
"Semifossil" "*Helix myristica*" was reported from Praia by Morelet (1873: 234) and subsequently baptized "*var. depressiuscula*" by Wollaston (1878: 504). Morelet's specimen(s) was (were) collected by De Cessac from limestone under a basalt flow, 12 to 14 m thick, that underlies Praia town. This is obviously the same deposit dated here as Middle Pleistocene. Groh (1983: 197), who studied shells representing this form, classified it as *Leptaxis (L.) advena myristica* (Shuttleworth, 1852), a subspecies which is

still represented in the recent malacofauna of São Tiago and some other Cape Verde islands (Groh, 1983: 197).

The species mentioned from "conglomérats de Santiago" by Rochebrune (1881) might have been collected in these sedimentaries, but this is far from certain for some of them. Two extinct *Leptaxis* species, viz. *L. (L.) atlantidea* (Morelet, 1873) and *L. (L.) primaeva* (Morelet, 1873) are probably located correctly here. The fossil occurrence of *Zootecus insularis* (Ehrenberg, 1831), also known from e.g. Late Miocene deposits on Lanzarote, Canary Islands (Gittenberger & Ripken, 1985: 399), is also not improbable. However, it is seriously doubted by both Germain (1927: 400) and Groh (1983: 164, 184) that Rochebrune's records of both *Pomatias elegans* (Müller, 1774) and *Rumina decollata* (L., 1758) apply to fossil material.

(2) At Praia Baixo the largest body of Quaternary sediment of the whole island is found. Oldest is a mesalike hill of soft rhodolite limestones, about 10 m high and capped by a thin veneer of beach conglomerate. The deposit contains few marine mollusc fossils. In the shelter of this outlier, dune sands are accumulated that are some 8 m thick. In a sandpit, many tree roots preserved in calcareous concretions were observed, but no animal fossils.

(3) Around Tarrafal, older Quaternary deposits have been preserved on the westward slope of Monte Graciosa, to the north of the village. Biotite tuffs are overlain at 100 m by erosion remnants of some 10 m conglomerate and calcarenite, with marine



Figs. 1-4. *Leptaxis (Leptaxis) advena myristica* (Shuttleworth) from the Pleistocene of Tarrafal, island of São Tiago (Rijksmuseum van Geologie en Mineralogie, Leiden, no. 229 365); $\times 2.6$. Photographs by E. Gittenberger.

fossils. Somewhat lower, at 70 m, a different coastal terrace has been preserved that consists of 1½ m indurated calcarenite cut by calcite veins and containing marine fossils. The embayment around which Tarrafal is built shows a profile very similar to that at Praia. Soft rhodolite limestones overlie a volcanic basement. These grade into mudstone with *Turritella*, overlain in turn by coarse beach conglomerates. Part of the 15 m thick deposit is overlain by a lava stream, on which the former custom house is standing. The heat of the lava has burned red the uppermost part of the sedimentaries. From this slightly altered level a specimen of *L. (L.) advena myristica* was collected (figs. 1-4). Its age has not been verified by potassium-argon dating, but the volcanics may well reflect the renewal of volcanic activity, dated at Praia as 700.000 ± 200.000 years ago.

(4) We have no data concerning the limestone strata at the eastern coast of the island of Sal, except that the two extinct *Leptaxis* species mentioned from the Middle Pleistocene deposits (1), viz. *L. (L.) atlantidea* and *L. (L.) primaeva*, have been originally described from these strata. During the fieldwork on Sal no such fossils were unearthed.

Only a single, badly damaged shell of *Leptaxis (L.) advena myristica* (figs. 1-4) has been collected from deposits (3). Its main taxonomic characters are clearly discernible. The shell is depressed globular and has 3½ whorls. The initial 1½ whorls are not sculptured; the subsequent ones are provided with rather prominent transverse riblets. The apertural lip is reflected and the umbilicus is completely closed by a thick callus. The shell is c. 14.5 mm broad and c. 10.5 mm high.

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