

The geographical distribution of *Monacha* *crispulata* (Mousson, 1861)

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Monacha crispulata was first described as *Helix crispulata* from "the environments of Jerusalem" (Mousson, 1861). Among Israel's land snails it is the only one known to have rather long, curved hairs on the shell surface. These horny hairs often disappear in worn, adult shells leaving scars which are easily seen through a magnifying glass. Hesse (1910) anatomically examined a single specimen from Beyrut and demonstrated that it typically belongs to the genus *Theba* Risso, 1826, and that it is closely related to such species as *T. obstructa* Férussac, 1821, and *T. syriaca* (Ehrenberg, 1831). All these were later placed in the genus *Monacha* Fitzinger, 1833.

MATERIALS AND METHODS

All documented material in the collections of the Hebrew University in Jerusalem (HUJ), the State Teachers College "Oranim", and the author (ZB) was examined and the localities plotted on the map of Israel (1 : 250,000) compiled and drawn by the Survey of Israel in 1961 and partly revised in 1972 (English version). The distribution

pattern thus obtained was then compared with maps of several environmental components in the Atlas of Israel (1956) and with the Israel Soil Map 1 : 250.000 (Ravikovitch, 1969).

DISTRIBUTION

Monacha crispulata is so far only known from Israel and the Lebanon (Forcart, 1976).

LEBANON. Beyrut (Von Martens, 1874: 7; Hesse, 1910: 127).

HERMON. 1 km S. Mas'ada, leg. H.K. Mienis, 17.II.1976 (HUJ); Kala't Nimrud, leg. Z. Bar & E. Zehavi, 2.II.1976 (ZB 1553).

UPPER GALILEE. 1½ km NE. Mi'iliya, leg. J. Heller, 6.IV.1971 (ZB 31); 3 km E. Rama, 7.III.1968 (HUJ); Wadi Karkara, 22.II.1967 (HUJ); Elon, Wadi Karkara, leg. G. Haas, 28.III.1944 (HUJ); Nahal Namer 1½ km SW. Adamit (HUJ); Maghar-Migdal road near Nahal Tsalmon crossing 193/152, limestone with terra rossa, live in rock crevice, leg. Z. Bar, 26.IV.1975 (ZB 1257); 2 km S. Hananiya, 20.II.1967 (HUJ).

CARMEL. 3 km SW. Bet Oren, leg. H. Sandler, II. 1967 (Coll. Oranim); Nahal Oren, Tabun Cave, N. slope, dolomite with terra rossa, leg. M. Broza, III.1975 (ZB 1373).

JUDEAN HILLS. Environs de Jerusalem, terra typica (Mousson, 1861 : 12); Jerusalem, 2.II.1969 (HUJ); 1 km N. Hadassa, 14.I.1967 (HUJ); 1 km S. Hadassa, 12.I.1967 (HUJ 23.493); Shimshon, leg. H.W. Waldén, 6.IV.1971 (Naturhistoriska Museet, Göteborg, Sweden); 1 km N. Bar Giora, 3.II.1968 (HUJ); Shimshon near Monument, leg. H.K. Mienis, 13.XII.1972 (HUJ 10.108); Deir el-Banat (= Aquabella) (HUJ); Aquabella, XII.1939 (HUJ); Kariat el-Enab (= Abu Gosh) (HUJ); Deir Cermizan, 1 km NW. Bet Jala, leg. R. Neuville (HUJ); Nahal Qesalon, leg. H.K. Mienis, 10.I.1973 (HUJ); between Qiryat Anavim and Ma'ale Hahamisha, leg. H.K. Mienis, 24.I.1973 (HUJ).

DISCUSSION

Monacha crispulata seems to be endemic to the central mountain ranges of Israel and the Lebanon, being limited ecologically by a substrate of limestone or dolomite with terra rossa soils, and by an average annual rainfall of not less than 600 mm (fig. 1). The snails are always uncommon and only occur as single individuals. Nothing is so

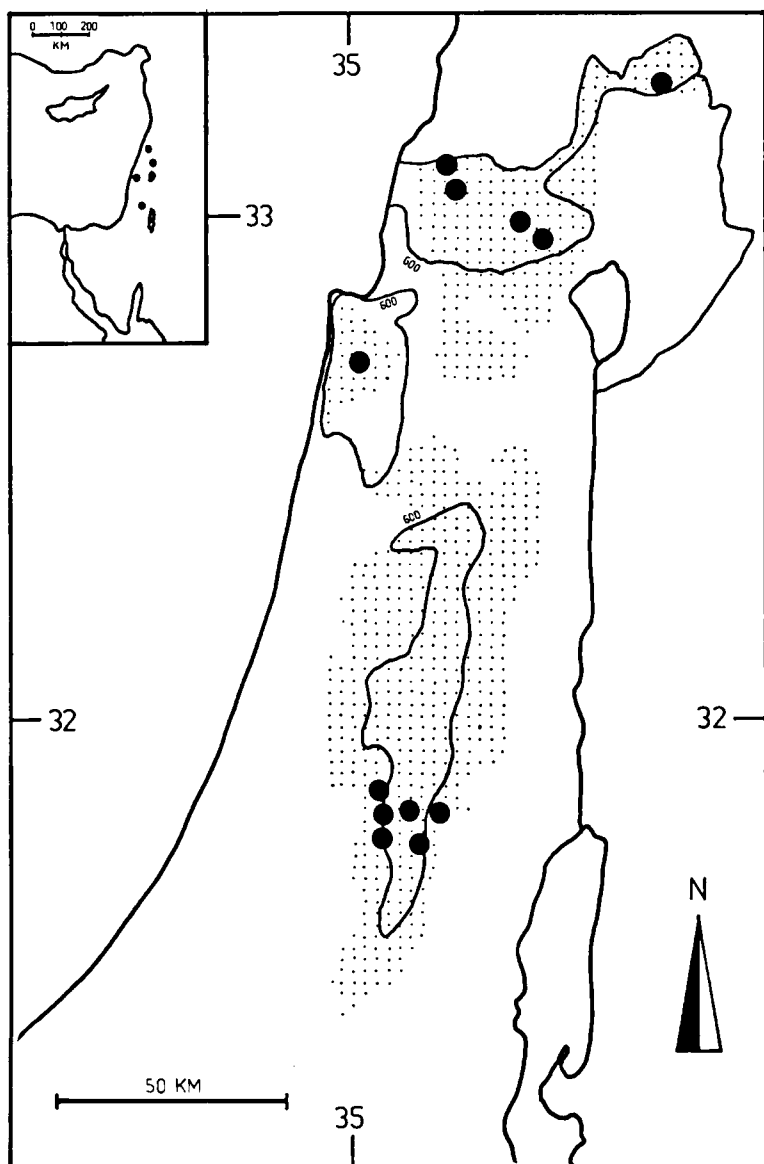


Fig. 1. Known distribution of *Monacha crispulata* (Mousson, 1861) in Israel. Solid circles = locality records, solid line = 600 mm isohyet, stippled area = terra rossa soils. Inset: known general distribution from Beirut to Jerusalem.

far known about the biology of the animals which only in a few cases have been found alive. The regions in which the species is now found, are well separated from each other as a result of gradual desiccation of the area since the end of the Pleistocene, and by later deposits of different soil types. The other *Monacha* species in Israel, *M. syriaca* and *M. obstructa*, are not substrate-specific at all: in the course of a survey in northern Israel, Bar & Nevo (unpublished) found that these two species together were about equally frequent on dolomite (17.5% of the total number of shells), limestone (25%), and chalk (23%). Of the mentioned rock types, the former two give rise to terra rossa soils, the latter to rendzina. Both these species are also found, in great numbers, on alluvial soil and on clay (Harpaz & Oseri, 1961).

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