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CONTRIBUTIONS TO THE MALACOLOGY OF MALTA, I: A NEW LOCATION FOR SUBFOSSIL *OXYLOMA ELEGANS* (RISSO, 1826) (PULMONATA: SUCCINEIDAE) FROM THE SALINI HOLOCENE DEPOSITS IN MALTA

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ABSTRACT
A shell of *Oxyloma elegans* (Risso, 1826) is reported from the Holocene deposits at the Salini watercourse.

KEYWORDS: *Oxyloma*, Holocene, Gastropoda, Succineidae, Malta.

INTRODUCTION

The Salini area in northwest Malta is a saltmarsh hosting a number of species which are restricted or absent from the remainder of the Maltese Islands. A valley leading from the Burmarrad area to the seashore intersects Salini, ending in an estuary where freshwater gradually mixes into the seawater, creating a salinity gradient with a large number of microhabitats exploited by a great variety of species. Especially interesting from a malacological perspective are populations of *Hydrobia acuta* (Draparnaud, 1805), *Truncatella subcylindrica* (Linnaeus, 1767), and *Myosotella myosotis* (Draparnaud, 1801). Loose shells of *Melanoides tuberculata* (Müller, 1774), *Auriculinella bidentata* (Montagu, 1808), and *Ecrobia ventrosa* (Montagu, 1803) occur as well; any indigenous populations of the former two species are now most probably extinct.

The banks of the watercourse are composed of a slightly indurated, sandy Holocene sediment of a pale brown colour (Figures 1 and 2). It contains a large number of subfossil mollusc shells that are, with care, easily separated from their matrix. During a recent investigation on a number of such shells, a single, intact subfossil shell of the succineid *Oxyloma elegans* (Risso, 1826) was found. While not to be considered a freshwater snail, this species is found in habitats of high humidity levels, such as river banks, marshes, and wetlands, usually occurring at the base of vegetation growing in water or very damp soil (Welter-Schultes, 2010).

MATERIALS AND METHODS

The shell discussed in this note occurred in a sample of material collected from a freshly-exposed site. This block of sediment was carefully dissolved in warm water, after which the resulting sediment was fractionated and examined carefully with a magnifying glass.

DISCUSSION

Fresh shells of *O. elegans* are smooth and translucent brown with a hyaline lustre. Subfossils, on the other hand, are identifiable by an opaque white shell, and, for Malta, they were previously reported by Giusti *et al.* (1995) from the Wied il-Baħrija quaternary deposits exclusively.The shells in this case were found in association with an assemblage of 'typical' freshwater and wetland gastropods, mainly planorbids, such as *Planorbis moquini* Requien, 1848 and *Gyraulus crista* (Linné, 1758).

In contrast to the assemblage from Wied il-Baħrija, the deposit at Salini yielded several species which are generally considered to be inhabitants of brackish or saline water, as well as a few terrestrial species that were probably carried into the sediment by fresh water. A single juvenile shell of *Rumina decollata* (Linnaeus, 1758), some *Cochlicella acuta* (Müller, 1774), and unidentified hygromiid juveniles are the only representatives of strictly terrestrial families. Freshwater and wetland species are represented by *O. elegans* and *Pseudamnicola moussonii* (Calcara, 1841), together with some species generally regarded as preferring brackish water, namely *H. acuta*, *M. myosotis*, and, up to a certain extent, *Potamides conicus* (Blainville, 1829). In addition, *T. subcylindrica* lives in plant debris close to the edge of the seashore or brackish water bodies. All other finds belong to species from marine families. A full list of specimens found is given in Table 1. Together with these molluscs, a number of tests of different benthic foraminifera and five tubes of the polychaete *Spirorbis* sp. were found.

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Figure 1 (left). Is-Salini estuary, Malta. Figure 2 (right) Holocene sediment on the banks of the Salini estuary. Figure 3 (bottom). Three views of the same subfossil shell of *Oxyloma elegans* (Risso, 1826) from the Holocene deposit at Salini, Malta. Photos David P. Cilia, 2011.

Table 1. List of sub-fossil mollusc shells recovered from Holocene sediment at is-Salini, Malta.

Class	Family	Species	Number
Bivalvia	Cardiidae	*Cerastoderma glaucum* (Bruguière, 1789)	12 valves
Gastropoda	Cerithiidae	*Bittium latreilli* (Payraudeau, 1826)	2
		Bittium reticulatum (da Costa, 1778)	several
	Cochlicellidae	*Cochlicella acuta* (Müller, 1774)	5
	Ellobiidae	*Myosotella myosotis* (Draparnaud, 1801)	1 juvenile
	Hydrobiidae	*Pseudamnicola moussonii* (Calcara, 1841)	7
		Hydrobia acuta (Draparnaud, 1805)	several
	Hygromiidae	indet.	8 protoconchs
	Muricidae	*Hexaplex trunculus* (Linnaeus, 1758)	6 fragments
	Nassariidae	*Nassarius cuvierii* (Payraudeau, 1826)	5
	Potamididae	*Potamides conicus* (Blainville, 1829)	several
	Pyramidellidae	*Turbonilla pusilla* (Philippi, 1844)	2
		Turbonilla sinuosa (Jeffreys, 1844)	1
	Retusidae	*Retusa truncatula* (Bruguière, 1792)	2
	Rissoidae	*Pusillina radiata* (Philippi, 1836)	1
		Rissoa membranacea (Adams, 1800)	several
		Rissoa sp.	1 juvenile
	Subulinidae	*Rumina decollata* (Linnaeus, 1758)	1
	Succineidae	*Oxyloma elegans* (Risso, 1826)	1
	Truncatellidae	*Truncatella subcylindrica* (Linnaeus, 1767)	1

The specimen of *O. elegans* is subadult, with 2.5 whorls and a height of 8mm (Figure 3). *O. elegans* is now extinct in the wild from the Maltese Islands. Extinction may have been the result of several factors, at the forefront of which could be the lack of stable freshwater habitats in Malta and the high temperatures and low rainfall experienced throughout most of the year.

The finding of a shell of *O. elegans* in the sample further confirms that the species did not become extinct in the wild until relatively recent times in the Holocene. Mifsud *et al*. (2003) report its re-introduction in the Maltese Islands through Zammit Nurseries, where it is found together with the smaller confamilial *Succinea putris* Linnaeus, 1758. Whereas Mifsud *et al.* (2003) report the finding of two fresh shells of *O. elegans* in compost;

unpublished research carried out since then by the present authors has revealed numerous live snails at the same place and also in another location (Flower Power plant nursery), mostly inhabiting wet compost beneath bushes of *Lantana* spp. and *Plumbago* spp.

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