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COCHLOSTOMA ELEGANS (CLESSIN, 1879) ON THE ISLAND OF PAG (MOLLUSCA: GASTROPODA, PROSOBRANCHIA)

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The land snail *Cochlostoma elegans* (Clessin, 1879) has been found on the island of Pag (Croatia) for the first time. This is also the first ever insular finding of this species.

Key words: land snails, *Cochlostoma elegans*, island Pag, Croatia

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Kopneni puž *Cochlostoma elegans* (Clessin, 1879) prvi puta je nađen na otoku Pagu (Hrvatska). To je ujedno prvo otočno nalazište te vrste uopće.

Ključne riječi: kopneni puževi, *Cochlostoma elegans*, otok Pag, Hrvatska

INTRODUCTION

In Croatia, the flora and fauna of the karst caves, semi-caves and pits have not been extensively explored, and it thus happens that new findings may be made of various kinds of cave animals and animals that rest in caves during the daytime or at night. Examples of such insular findings are of a rare species of bat on the island of Mljet (TVRTKOVIĆ & BALTIĆ, 1996), and of a new species and genus of insect on the island of Cres (GIACHINO & ETONTI, 1996). Following the discovery of

the ferns *Phyllitis scolopendrium* (L.) Newm. and *Ph. sagittata* (DC.) Guinea et Heywood in the pits of the island of Pag (TRINAJSTIĆ & MUŽINIĆ, 1996), it was proposed that cave explorations should be carried out to establish the presence of cave fauna (TRINAJSTIĆ & MUŽINIĆ, 1996). For this purpose, three pits were explored on the island of Pag and in two of them specimens of land snails were found.

THE EXPLORED AREA

Three pits from different parts of the island of Pag were explored.

The island of Pag belongs to the group of the North Dalmatian islands and is separated from the mainland by the sub-Velebit Channel. It is 63 km long, 35 km wide, and the highest peak is Sveti Vid, 348 m. Ninety percent of its surface is rocky ground. Most of the island is made up of limestone and flysh, and ground water running off Mount Velebit accumulates at the point where these two formations meet. There are several springs, but no surface watercourses.

The investigated pits are: the Bunker pit, the pit in the area of Kozar and a pit in Veli Svetojanj Bay (Fig. 1).

1. The Bunker pit is located on the rocky south-western slopes at some 180 metres above sea-level below the highest peak of Sveti Vid. The *Stypo-Salvietum officinalis* Horvatić (1956) 1958 plant community is predominant there (HORVATIĆ, 1963), its main representatives being *Salvia officinalis* L. and *Stipa bromoides* (L.) Brand. These slopes are a pasture ground for sheep. The pit, which has two openings 60 cm in diameter, is 1.5 m deep with a surface of 3 × 1 m.
2. The pit in the Veli Svetojanj Bay is located on the northern shores, 500 m west of the ferry port, Žigljen. This part of the coastline, with the Svetojanj Bay was considered to be one the best localities for the construction of the ferry port, but because of its specific features and the beauty of the landscape it was not selected for this purpose. The pit has one entry point about 80 cm wide and it is about 6 m deep.
3. The pit in the region of Kozar is located in the northern part of the island, right above the village of Kustići. The pit has one opening 120 × 180 cm wide and it is 8 m deep.

METHODS

Snails were collected by taking individual specimens in the pits explored. The identification of the snails was carried out on the basis of conchological features as in WAGNER (1897, 1906) and WESTERLUND (1883).

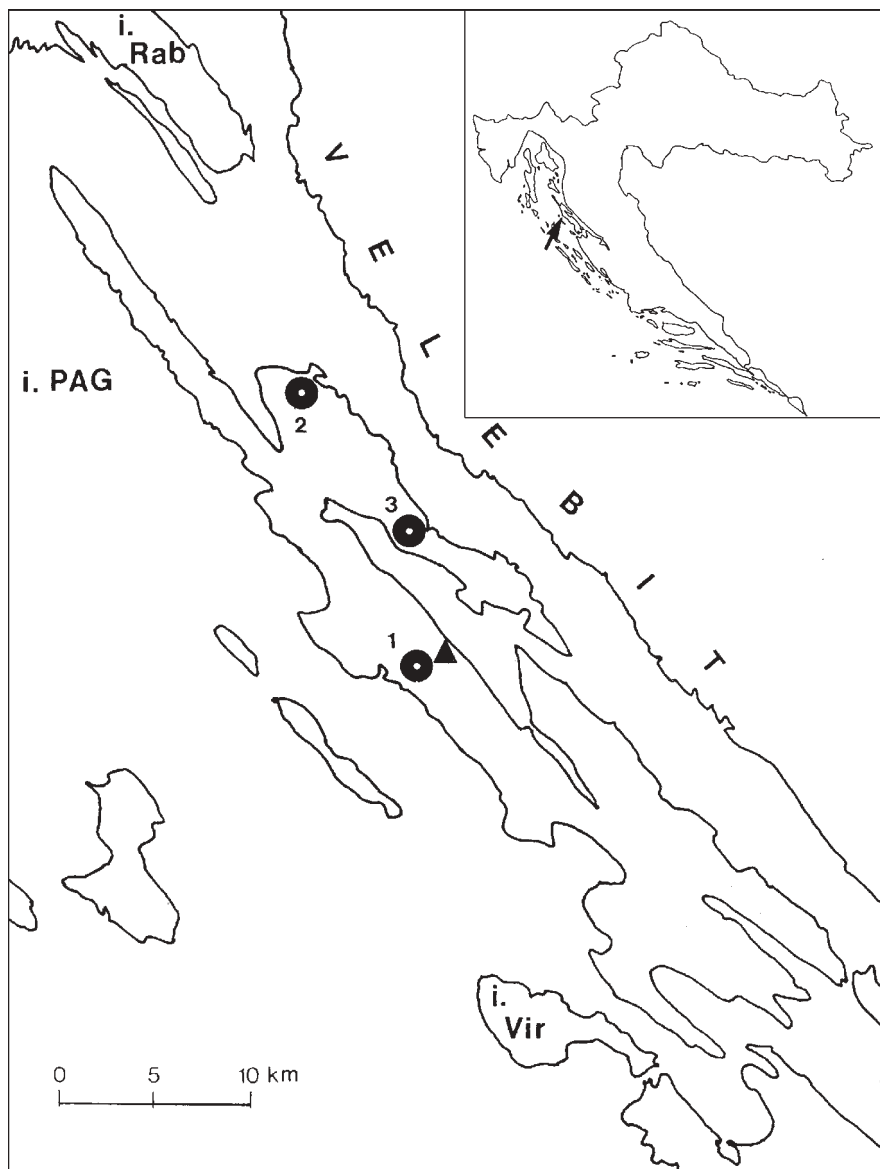


Fig. 1. Map of the island of Pag. The positions of the pits researched is marked by circles: 1. the »Bunker« pit; 2. the pit in the Veli Svetojanj Bay; 3. the pit in the region of Kozar.

RESULTS AND DISCUSSION

The snail *Cochlostoma elegans* (Clessin, 1879) was discovered at two speleological localities on the island of Pag: the Bunker pit and the pit in the Veli Svetojanj Bay. On the 14th of August 1995, some fifty live specimens of this species were noticed on the upper surface and the lateral walls of the pit, and also on the leaves of the *Phyllitis scolopendrium* fern. On the 7th of August 1996, one specimen was discovered 50 cm from the opening of the pit in the Veli Svetojanj Bay. The entire pit in the area of Kozar was searched on the 10th of August 1996, but no snails were found.

The snails of the *Cochlostoma* genus are above-ground taxa. They live in a calcareous area and feed on microflora which grows on the rocks or on dead vegetable material (FECHTER & FALKNER, 1990). The discovery of the above-ground land snail *Cochlostoma elegans* at two speleological sites on the island of Pag can be accounted for by the existence of above-ground conditions in the Bunker pit and in the pit in Veli Svetojanj Bay. Since these are very small pits, the light, temperature and humidity do not significantly differ from the external conditions. There has been no systematic research into the above-ground or subterranean land malacofauna on the island of Pag, and there is no evidence of the existence of this species on Pag. It can, nevertheless, be assumed that *Cochlostoma elegans* is a common species of the above-ground land snail fauna on this island, and that it accordingly also inhabits pits in which above-ground conditions largely prevail, i.e. the Bunker pit and the pit in the Veli Svetojanj Bay.

The genus *Cochlostoma* is circum-Mediterranean (KERNEY *et al.*, 1983). In southern Europe it is represented by 47 species, some of which have a large number of subspecies (FECHTER & FALKNER, 1990). The *Cochlostoma elegans* species was described by CLESSIN (1879) who, as WAGNER (1897) later established, used specimens obtained on Mount Velebit. Soon after, numerous varieties were described (WESTERLUND, 1883; WAGNER, 1897), but their taxonomic status has so far not been defined. All of these varieties originate from the Velebit area. In 1906 A. J. WAGNER described the subspecies *C. elegans imoschiense* from the region around Imotski and the Neretva valley, while KLEMM (1962) and SCHÜTT (1977) recorded its existence in Greece. Systematic research has been conducted into the land malacofauna of the Adriatic islands – Dugi otok (KUŠČER, 1930), Krk (BOLE, 1958), Brač (ŠTAMOL, 1986), Cres and Lošinj (ŠTAMOL & VELKOVRH, 1995) – but there have been no records of the existence of the species *Cochlostoma elegans*. There are no records of its existence on the islands in all the literature available either, so this can be said to be the first insular finding of *Cochlostoma elegans* ever made. The existence of *Cochlostoma elegans* on the island of Pag is the result of its continuous range on the northern Croatian Adriatic coast during the last glacial stage of the Ice Age, when the island of Pag was part of the mainland. After the last period of glaciation, the sea level rose and flooded the present-day Sub-Velebit Channel, making Pag an island.

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SAŽETAK

Cochlostoma elegans (Clessin, 1879) na otoku Pagu (Mollusca: Gastropoda, Prosobranchia)

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Prvi put je za otok Pag zabilježen kopneni puž *Cochlostoma elegans* koji je nađen u krškim jamama Bunker i u jami u uvali Veli Svetojanj. Dosad je u Hrvatskoj ovaj puž poznat s područja Velebita i Imotskog, u Bosni i Hercegovini iz doline Neretve u području Drežnice, a u Grčkoj s Platanuse, pa je nalaz na otoku Pagu prvi nalaz u Hrvatskoj, otočni i uopće. On ukazuje na nekadašnju povezanost otoka Paga i susjednog kopna, to jest planine Velebita.

SUMMARY

Cochlostoma elegans (Clessin, 1879) on the island of Pag (Mollusca: Gastropoda, Prosobranchia)

V. Štamol & J. Mužinić

The land snail *Cochlostoma elegans* was registered for the first time on the island of Pag, in the karst pit Bunker and in the pit in the Veli Svetojanj Bay. Up to now this snail has been registered in Croatia in the Velebit and Imotski regions, in Bosnia and Hercegovina in the Neretva river valley around Drežnice, and in Greece in Platanusa. Thus this discovery on the island of Pag is the first insular finding of this species ever made in Croatia or elsewhere. It reflects the fact that the island of Pag was once part of the mainland, connected with the Velebit mountain.