

## UNEXPECTED RECORD OF A PYGMY WHITE-TOOTHED SHREW *SUNCUS ETRUSCUS* IN CENTRAL SLOVENIA (INSECTIVORA, MAMMALIA)

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### ABSTRACT

A single *Suncus etruscus* skull was found in an *Asio otus* pellet in Ljubljansko barje wetland, central Slovenia. The record is 60 km to the east of the actual range of *Suncus etruscus*. Since the pellet originates from the breeding season and includes also three *Microtus arvalis* skulls, it is unlikely to be of a migratory owl.

**Key words:** *Suncus etruscus*, Slovenia, distribution

Pygmy white-toothed shrew *Suncus etruscus* (Savi, 1822), one of the smallest living mammals, populates an extensive area ranging from southern Europe and northern Africa as far east as Burma, Thailand and Yunnan (Hutterer, 1993). In Europe, it is strictly confined to the Mediterranean belt (Spitzenberger, 1990). Different authors found average temperatures to predict well the distribution of this species in various European regions: July 20°C isotherm in France (Fayard, 1984) and mean annual temperature above 12°C in Bulgaria (Popov & Nijagolov, 1991) as well as in the entire European range (Kahmann & Altner, 1956). Lipej & Kryštufek (1992) demonstrated close concordance of *S. etruscus*' distributional border with the 0°C isotherm of the coldest month, which further corresponds exactly to the 20°C isotherm of the warmest month.

During a long-term study on the long-eared owl *Asio otus* biology in the wetlands of Ljubljansko barje (central Slovenia), skull remnants of a single *S. etruscus* specimen were found in the owl pellet. Available are a rostral fragment and both mandibles (Fig. 1). Four unicuspid are clearly visible on the rostrum, which is diagnostic character of the genus *Suncus*. Coronoid height is 3.2 mm and thus within the range of *S. etruscus* from Slovenia (Kryštufek, 1991). The exact locality is Mah (9 km south, 2 km east of Ljubljana; 45°59'N,

14°33'E) and is situated at an altitude of 290 m above sea level. Ljubljansko barje is approximately 60 km (in a line) to the east of the eastern *S. etruscus*' distributional border as defined by Lipej & Kryštufek (1992), being further separated from it by the mountain chain of the Dinaric Alps. The habitats of Ljubljansko barje (fairly wet meadows and mixed/deciduous forests) as well as its climate (average annual temperature is around 9.5°C, average of the coldest month is -1.0°C, and annual precipitation averages approximately 1500 mm) strongly contradict the conditions reported from the *S. etruscus*' area elsewhere in Europe. All this speaks in favour of the introduction of the specimen by the migratory owl.

However, pellet samples were collected at regular intervals and the pellet with *S. etruscus* originates from the nesting period (May 1<sup>st</sup>, 1995). Furthermore, three common voles *Microtus arvalis* (Pallas, 1779) occurred in the same pellet. According to the present state of knowledge (Kryštufek, 1991; Lipej & Kryštufek, 1992) the distribution areas of the two species do not coincide (see also Fig. 2). Based on this evidence, introduction seems highly unlikely. On the other hand, this particular specimen is the only *S. etruscus* we found among 8422 small mammals extracted from the long-eared owl pellets from Ljubljansko barje between 1982 and 1996. Anyhow, shrews were rarely preyed by the long-eared

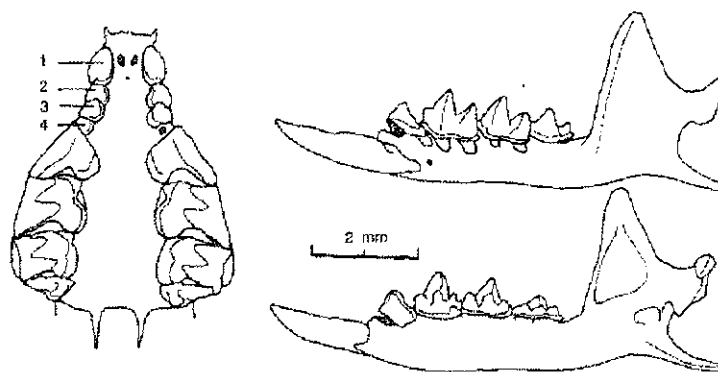


Fig. 1: Skull fragments of *Suncus etruscus* which were extracted from a long-eared owl pellet from Ljubljansko barje. Rostral fragment (left) is in ventral view; numbers indicate unicuspid. On right side are left (above) and right (below) side of a mandible.

Sl. 1: Lobanjski ostanki etruščanske rovke *Suncus etruscus*, ki so bili najdeni v izbljvku male uharice z Ljubljanskega barja. Od fragmenta rostruma (desno) je prikazana ventralna stran; številke označujejo enogrbičaste zobe. Desno sta leva (zgoraj) in desna (spodaj) spodnja čeljustnica.

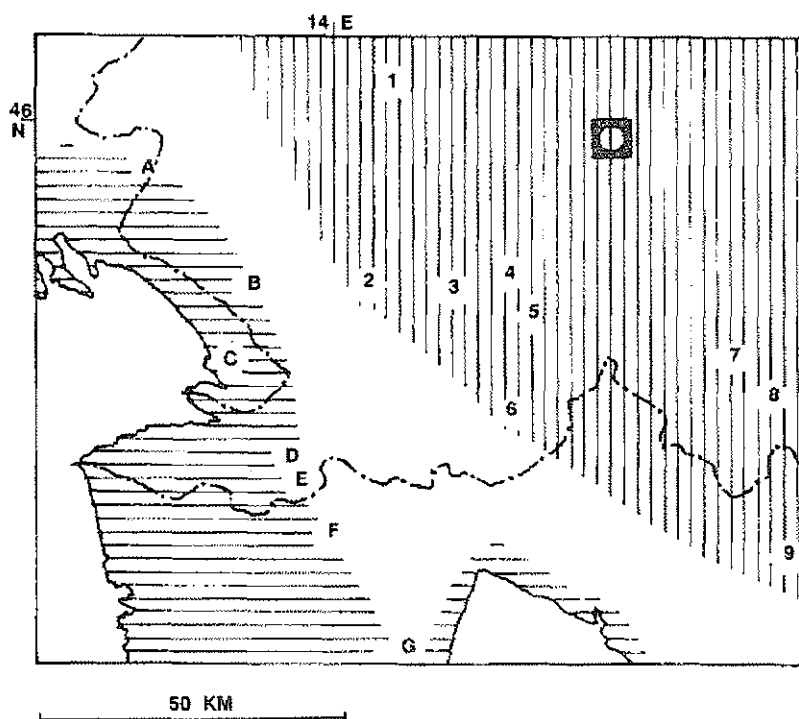


Fig. 2: South-western Slovenia with adjacent regions of Croatia and Italy. Position of the *Suncus etruscus* locality in Ljubljansko barje is indicated by a square. Tentative ranges are given for *Suncus etruscus* (horizontal stripes) and *Microtus arvalis* (vertical stripes), both with bordering records. See text for explanation.

Sl. 2: Jugozahodna Slovenija s sosednjimi deli Hrvaške in Italije. Nahajališče etruščanske rovke na Ljubljanskem barju je označeno s kvadratom. Podana sta približna areala razširjenosti za etruščansko rovko *Suncus etruscus* (ležeče črtano) in poljsko voluharico *Microtus arvalis* (pokončno črtano); za obe vrsti so vrisana mejna nahajališča. Razlaga je v besedilu.

Localities. - *Suncus etruscus*: A - Gorizia; B - Dutovlje; C - Trieste; D - Hrastovlje; E - Movraž; F - Čirčež; G - Lazarići. *Microtus arvalis*: 1 - Žirovski vrh; 2 - Razdrto; 3 - Postojna, Jurišče; 4 - Cerknica; 5 - Otok; 6 - Mt. Snežnik, Sviščaki; 7 - Slovenska vas; 8 - Črni potok; 9 - Ravna gora. Corresponding references: Lapini et al. (1996): A; Lipej & Kryštufek (1992): B-G; Kryštufek (1987): 1, 3; Petrov (1992): 5, 6; Remžgar (1990): 7, 8; new records: 2, 4.

owl and only 54 white-toothed shrews (*Crocidura suaveolens* and *C. leucodon*) were obtained so far (i.e. 0.6% of the total prey). In the 1995 sample (containing *S. etruscus*) we found only two *Crocidura* specimens among 788 small mammals.

Although we do not believe that this record alone provides sufficient evidence on the occurrence of *S. etruscus* in central Slovenia, we consider it worth publishing for two more reasons:

(1) Although *S. etruscus* is restricted in the western Palaearctic mainly to the coastal belt, there are several records also inland in Transcaucasia, Kazakhstan, Turkmenistan and Uzbekistan (Spitzenberger, 1970). Many of these bordering, if not even extralimital re-

ords, are also based on owl pellet remnants (Spitzenberger, 1970; Gromov & Baranova, 1981).

(2) Ljubljansko barje, which is a flat wetland area of 160 km<sup>2</sup>, supports a rich shrew guild. Seven species were found so far in a ten hectare study plot, situated approximately 3 km away of the locality of *S. etruscus*: *Sorex araneus*, *S. minutus*, *S. alpinus*, *Neomys fodiens*, *N. anomalus*, *Crocidura leucodon*, and *C. suaveolens* (Kryštufek, 1982 and unpublished results). In the event that the pellet record proves to indicate actual occurrence of *S. etruscus* in Ljubljansko barje, this will raise the number of sympatric shrew species to eight. Eight shrews co-occurring in a fairly restricted area might be the highest number ever recorded for Europe.

## NEPRIČAKOVANA NAJDBA ETRUŠČANSKE ROVKE *SUNCUS ETRUSCUS* V OSREDNJI SLOVENIJI (INSECTIVORA, MAMMALIA)

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### POVZETEK

V izbljuvku male uharice *Asio otus* z Ljubljanskega barja smo našli ostanke enega samega primerka etruščanske rovke *Suncus etruscus*. Nahajališče leži 60 km vzhodno od znanega areala vrste. Ker izbljuvek izvira iz gnezditvenega obdobja, v njem pa so bile prisotne tudi lobanje treh poljskih voluharic *Microtus arvalis*, je malo verjetno, da pripada sovi na migraciji.

**Ključne besede:** *Suncus etruscus*, Slovenija, razširjeno

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