# Two new records of the Pannonic root vole (*Microtus oeconomus mehelyi* Ehik, 1928) in Austria

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## Introduction

The root vole (*Microtus oeconomus*) has a continuous holarctic distribution from eastern Germany and northern Scandinavia, throughout Russia and Alaska to north-western Canada. In addition there are isolated populations in southern Scandinavia, on Finnish islands in the Gulf of Bothnia, in the Netherlands, at Lake Balaton (Hungary) and at the point where Austria, Hungary and Slovakia meet. These isolated populations have been described as separate subspecies. The populations of the species in Austria, Hungary and Slovakia represent the Pannonic root vole (*Microtus oeconomus mehelyi* Ehik, 1928).

The Neusiedler See area, including the Seewinkel and Waasen/Hanság, is the only part of Austria where the Pannonic root vole occurs. East of the Neusiedler See, in the Seewinkel area, the occurrence of root vole has recently been confirmed (figure 1). However, apart from some records in owl pellets, the only ever record of a root vole in the field west of the Neusiedler See is the catch of five animals by Zdenek Hubálek in the reed belt near Oggau am Neusiedler See in June 1977 (Hubálek et al. 1979, no. 74 in Thissen et al. 2015). Records of two collecting localities from the west of the Neusiedler See from the period 1984-1986 have also been published (Hoi-Leitner 1989) but were later regarded as resulting from owl pellets (Spitzenberger 2001). Recently, in 2013 and early 2015, root vole remains were recovered from owl pellets collected near Oggau (nos. 73 and 73A in Thissen et al. 2015). Triggered by these recent records from owl pellets we have tried to confirm its presence in the field in that area in October 2015 by live-trapping.

There are no field records at all of root vole in the Austrian part of the Waasen/Hanság area, apart from a recent (2014) pellet record (no. 66 in Thissen et al. 2015). We visited this area during our fieldwork in October 2015 to look for habitat of the root vole. We did not set any live-traps in the Waasen/Hanság area.

## Method

Because of the habitat preference of the Pannonic rootvole, we set Longworth live-traps



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Figure 1. Recent proven distribution of *Microtus oeconomus mehelyi* in Austria, before October 2015 (2011 – early 2015). White dots indicate localities of successful trapping and circles ($r$ = 1 km) are drawn around the localities where owl pellets with remains of *M. oeconomus mehelyi* were collected. Source: Thissen et al. 2015.

in sedge vegetation, at six neighbouring localities in the reed belt between Oggau and Donnerskirchen. The sedge vegetation consisted mainly of great pond-sedge (*Carex riparia*) mixed with reed (*Phragmites australis*). In the 1950s large tracts of sedge beds without reed were present around the Neusiedler See. Bauer (1960) considered those pure sedge beds as the prime habitat of the root vole.

At each of the localities we set ten pairs of two Longworth live-traps, starting on 6 October 2015. The pairs of traps were up to 10 m apart. The live-traps were supplied with hay and baited with carrot and a commercial mix of rodent food. Live *Tenebrio molitor* larvae (mealworms) were added to reduce mortality of caught shrews. The traps were not prebaited. At two localities the traps were used over two nights and at four localities over three nights. This made for a total of 320 trap nights: (40 * 2) + (80 * 3). The traps were checked twice every twenty-four hours: in the morning and in the early night.

## Results

Over 320 trap nights the live-traps produced only one root vole, a subadult female of 23 grams (figure 2). It was caught at a locality with 100% cover of great pond-sedge and a low cover of reed (figure 3). The animal was collected and added to the mammal collection of the *Naturhistorisches Museum Wien* (NMW).

High numbers of other mouse and shrew species were captured in the live-traps. Over-

all, 44% of the traps were occupied. Striped field-mouse (*Apodemus agrarius*) prevailed at all of the six localities. This species is a recent immigrant to the Neusiedler See area. This first striped field-mouse was found near the Biological Station at Illmitz, east of the Neusiedler See, in 2003. Striped field-mouse has rapidly expanded in the last two decades from north west Hungary and north Slovenia into Austria (Herzig-Straschil et al. 2004, Sackl et al. 2007, Spitzenberger & Engelberger 2014).

Figure 2. Subadult female *Microtus oeconomus mehelyi*, caught west of Neusiedler See, 8 October 2015. *Photo: Rob Koelman*.

On 7 October 2015 we visited the Waasen/Hanság area, east of the Neusiedler See. By sheer serendipity we found a dead adult male root vole of 40 gram (figure 4) lying in an observation tower at the great bustard reserve along the road from Tadten southwards, to the Hungarian border. This reserve is an exclave of the Neusiedler See – Seewinkel National Park. We suppose that this root vole was captured by a raptor, most likely a kestrel (*Falco tinnunculus*), and carried through the air to the tower. The dead animal was collected to become added to the mammal collection of the *Naturhistorisches Museum Wien* (NMW).

Figure 3. The spot between Oggau and Donnerskirchen where one *Microtus oeconomus mehelyi* was caught on 8 October 2015. The vegetation consists of *Carex riparia* and *Phragmites australis*. *Photo: Rob Koelman*.

Figure 4. Adult male *Microtus oeconomus mehelyi* found dead in an observation tower near Tadten, 7 October 2015. *Photo: Rob Koelman*.

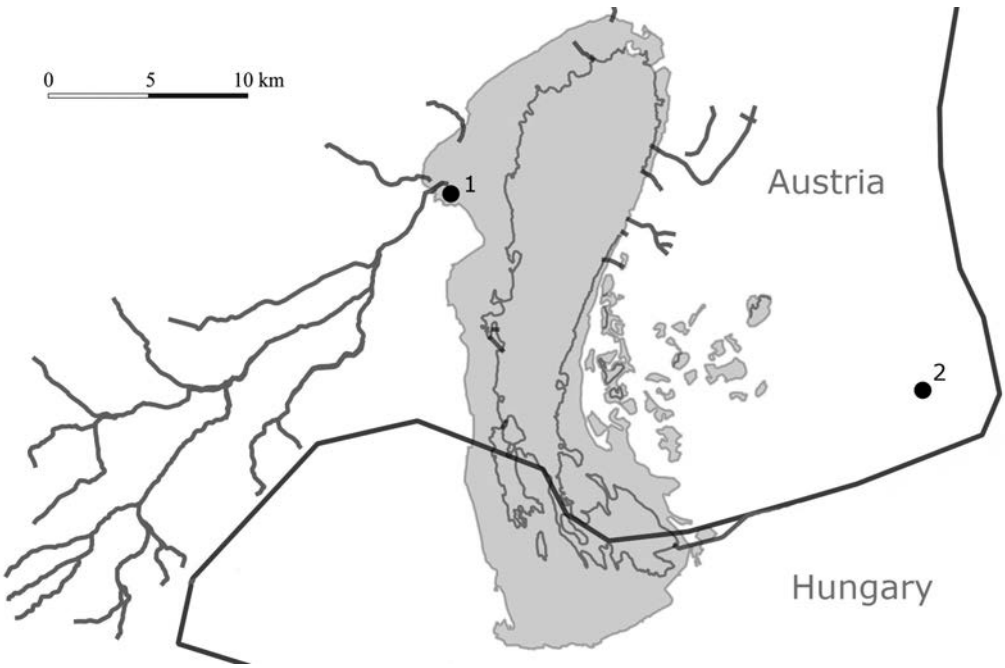


Figure 5. Map with two new records of *Microtus oeconomus mehelyi* in Austria, October 2105. 1: between Oggau and Donnerskirchen, 2: Waasen/Hanság.

## Discussion

Our catch of a Pannonic root vole (no. 1 in figure 5) on 8 October 2015 confirmed that it is still present west of the Neusiedler See and our find of a dead specimen in an observation tower (no. 2 in figure 5) confirmed that it is also present in the Waasen/Hanság area. Outside of the breeding season a raptor will only transport a prey up to some hundred metres. The remains found in owl pellets, that were documented in 2013 and early 2015 west of the Neusiedler See and 2014 in the Waasen/Hanság area (figure 1), may have been trans-

ported much further, possibly over many kilometres.

As a whole the distribution area of the root vole in Austria seems to be more or less intact, apart from a contraction in the northern part of it, between Neusiedl am See and Bruck an der Leitha or even towards Fischamend (Thissen et al. 2015). However, within parts of its distribution area it has disappeared locally, for example from wet areas with trees or grey willow (*Salix cinerea*), where it has been displaced by the bank vole (*Myodes glareolus*) (Hoi-Leitner 1989).

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## References

Bauer, K. 1960. Die Säugetiere des Neusiedlersee-Gebietes (Österreich). Bonner Zoologische Beiträge 11 (2-4): 141-344.

Herzig-Straschil, B., Z. Bihari & F. Spitzenberger 2004. Recent changes in the distribution of the field mouse (*Apodemus agrarius*) in the western part of the Carpathian basin. Annalen Naturhistorisches Museum Wien 105B: 421-428.

Hoi-Leitner, M.K. 1989. Zur Veränderung der Säugetierfauna des Neusiedlersee-Gebiets im Verlauf der letzten drei Jahrzehnte. Bonner Zoologische Monographien 29: 1–104.

Hubálek, Z., W. Sixl, Z. Šebek, D. Stünzner, H. Troger & M. Valová 1979. A diaspiromycosis of wild small mammals in Austria. Folia Parasitologica 26: 159–164.

Sackl M., M. Tiefenbach, J. Tajmel & F. Spitzenberger 2007. Weitere Ausbreitung der Brandmaus *Apodemus agrarius* (Pallas, 1771) in Österreich (Mammalia). Joannea Zoologie 9: 5-13.

Spitzenberger, F. 2001. Die Säugetierfauna Österreichs. Grüne Reihe des Bundesministeriums für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft 13. Austria Medien Service, Graz, Österreich.

Spitzenberger F. & S. Engelberger 2014. A new look at the dynamic western distribution border of *Apodemus agrarius* in Central Europe (Rodentia: Muridae). Lynx, n.s. 45: 69-79.

Thissen, J.B.M., D.L. Bekker, K. Spreitzer & B. Herzig-Straschil 2015. The distribution of the Pannonic root vole (*Microtus oeconomus mehelyi* Ehik, 1928) in Austria. Lutra 58 (1): 3-22.

## Samenvatting

### Twee nieuwe waarnemingen van de noordse woelmuis in Oostenrijk

Ter bevestiging van de aanwezigheid van de noordse woelmuis (*Microtus oeconomus mehelyi*) aan de westzijde van de Neusiedler See hebben wij daar recent een vangactie uitgevoerd. Sinds 1977 waren aan de westzijde geen waarnemingen meer in het veld geweest. De noordse woelmuis was daar alleen nog in braakballen aangetroffen. In oktober 2015 vingen wij aan de westzijde, in de rietgordel tussen Oggau en Donnerskirchen, een noordse woelmuis. Verder vonden wij toevallig een dode noordse woelmuis in een uitkijktoren bij het reservaat voor grote trap in het Waasen/Hanság gebied, ten oosten van de Neusiedler See. Ook in dat gebied waren geen waarnemingen bekend van noordse woelmuizen in het veld. Deze twee recente waarnemingen zijn belangrijke aanvullingen op het eerder gepubliceerde verspreidingsbeeld in Oostenrijk (Thissen et al. 2015) en bewijzen dat het areaal in Oostenrijk in grote lijnen stabiel gebleven is. Alleen ten noorden van de Neusiedler See is het areaal van de noordse woelmuis wat ingekrompen.

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