

Uncommon Laxmann's shrew (*Sorex caecutiens*) recognized only 10 years after trapping

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Since 1993 the Norwegian Zoological Society (NZF) is working on an atlas mapping the distribution of the Norwegian mammals. The time frame for the atlas is the period 1980-2004 (Syvertsen et al. 1996). As a part of this atlas project, the author verified the identification of all shrews preserved in Norwegian museums. It appeared that during a study camp in the summer of 1996 an uncommon shrew species had been trapped and not recognized at that time. On August 1, 1996, 11 km north-east of Dombås (UTM_{WGS84}: 32VNP1790; municipality of Dovre; province of Oppland) a Laxmann's shrew (*Sorex caecutiens*) was found dead in a longworth-trap at the trapping location "Tjernet". At that time, the shrew was identified as a Eurasian pygmy shrew (*Sorex minutus*). The study camp was organized in cooperation with the Fieldwork Groep of the Dutch-Flemish Mammal Society "VZZ" (Gundersen 1999). Almost all dead mammals collected during the camp were handed over to the Natural History Museum in Oslo (Zoologisk Museum, Universitetet i Oslo).



It is not surprisingly that this animal was wrongly identified at that time. Laxmann's shrews may vary in appearance: juvenile animals have a two-colour fur with a (brown)grey back and a grey-white belly. They are easily mistaken for pigmy shrews, which however are smaller and generally have protruding hairs on a tail that has a constriction at its base. Furthermore, Laxmann's shrews have a clear two-colour tail, at the end of which the hairs are shaped like a brush. This is not the case for pigmy shrews. The top of the feet of Laxmann's shrews is white or at least light-coloured. In their second calendar year Laxmann's shrews have a tri-colour fur, very similar to that of the common shrew (*Sorex araneus*). However, the tail remains two-colour and also the colour of the feet remains the same. Common shrews are also different because of their bigger size. As a result of the

variation in fur of Laxmann's shrews, they were initially described as different species (Sulkava 1990). Most fieldguides describe and show only the juvenile appearance of Laxmann's shrews. This adds to the often wrong identification of this species.

At the time of the camp, the nearest location where this species was known was some 450 km north-east of the camp location in Dovre: Unkervatnet in the municipality of Hattfjeldal and in the province of Nordland (Moksnes & Vie 1975). It has only recently been discovered that this species is also present in South-Norway (Finch & van der Kooij 2005). In 2003 the author examined a series of dead shrews from an area located some 30 km south of the trapping location in Dovre (Blåhø; municipality of Vågå; province of Oppland). These animals were trapped with pitfalls for invertebrates. In this set, Laxmann's shrew was established to be present in South-Norway. However, a subsequent study in 2004 by Oliver Finch and the author, using the same type of pitfalls, did not establish the presence of the species in the adjacent mountain massifs. It was questioned whether the population near Blåhø could be a relic that survived the last ice age in the mountains, or a remnant population that had colonized Norway after the last ice age through a southern immigration route (see Finch and van der Kooij 2005 for an explanation). In the meantime however, the study mentioned above examining shrews in the various Norwegian collections as well as an additional analysis of pellets has, apart from the discovery in Dovre, resulted in discoveries in other locations north-east and east of Blåhø. Combined with new discoveries in Sweden (Birger Hörnfeldt & Bengt-Göran Carlsson, non-published data) it might be concluded that the species is present in an unbroken area from the north of Fennoscandia.

What does the wrong identification when trapping in 1996 tell us? Firstly, it shows that it is important to collect evidence during studies. This may be dead animals, tissue samples, sound recordings or even pictures. In this way, observations can always be verified in the future, eventually taking into account changed taxonomic views. In this respect, it is important not only to collect uncommon species, but also the more common ones. Especially when trapping mammals it is important to collect the dead animals. There is also a moral aspect to this: being responsible for the death of a mammal, we should ensure that the victim can be used in the best way possible. The VZZ Fieldwork Group systematically collects dead mammals during study camps abroad. These animals are handed over to the museums of the host country or to museum Naturalis in Leiden. Some animals are added to scientifically reliable private collections. In recent years, the Fieldwork Group has also started taking tissue samples (Bekker & Bekker 2006). Whether or not more Laxmann's shrews have been trapped during the camp remains unknown, since only dead animals have been kept and can be verified.

Secondly, it is important not to base the identification of a species on its distribution map. It is still possible to make new discoveries about the distribution of mammal species in Europe. Furthermore, species are regularly moved (see for instance: Koelman 2006, Canters et al. 2005) and climate changes will also result in changes in distribution.

Thirdly it is important to have a sound knowledge of identifying species. This may not be easy for species one has not seen before. Field guides not always give solid guidance. When the camp took place in 1996, none of the participants had seen a living Laxmann's shrew yet. The author only got to know the species well when living in 2002 for a year in the north-east of Norway and gaining extensive field experience with this species. Furthermore a visit to the extensive mammal collection of the university in Oulu in Finland was very helpful for identifying the fennoscandic small mammals.

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