

First records of predation of grey long-eared bats (*Plecotus austriacus*) by the barn owl (*Tyto alba*) in the Netherlands

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Introduction

The Dutch National Ecological Monitoring scheme (NEM) is analysing owl pellets, predominantly from barn owl (*Tyto alba*) in order to monitor small mammals (rodents and shrews). Barn owls and bats, most frequently long-eared bats (brown long-eared bat (*Plecotus auritus*) and grey long-eared bat (*Plecotus austriacus*) both roost in the lofts of churches, monasteries, old farmhouses etc., and it is known that these bats are occasionally preyed by barn owls (Bekker & Mostert 1991, Swift 1998).

In the Netherlands grey long-eared bats are only found in the south of the country (in the provinces of Limburg, Noord-Brabant and Zeeland), which are the north-western limits of the species' range. Before now grey long-eared bats have never been recorded in owl pellets in the Netherlands.

This short paper reports on the first known occurrence of barn owl predation of a grey long-eared bat in the Netherlands. In 1997 skulls of three grey long-eared bats were found in barn owl pellets from a church in Diepenbeek (in Belgium, 25 kilometres west

of the city of Maastricht). This batch, of more than 2700 prey items also contained two serotines (*Eptesicus serotinus*) and high percentages of birds (around 120) and amphibians (more than 100) (Wout Willems, Natuurpunt, personal correspondence). There are records from other European countries of the skulls of grey long-eared bats being found in the pellets of barn owls: in Poland in the 1970s, 1980s and 1986 (Ruprecht 1979, Lesinski 1989 and Kowalski & Lesinski 1988 respectively) and Spain in the 1980s and in 2003 (the latter in Ibiza) (Pérez Barbería 1991 and Sommer et al. 2005 respectively). In the Netherlands barn owls are known to predate on the brown long-eared bat and other bat species, mainly roosting in buildings (Bekker & Mostert 1991, Hui-zenga et al. 2010).

Methods

As part of the NEM, an extensive survey was started in 2003, to gather large numbers of pellets from the breeding localities of barn owls. In 2010 a sample of pellets was collected in Noord-Brabant at a farm near Luyksgestel (figure 1). A second sample of barn owl pellets was collected in 2012 from the loft of the

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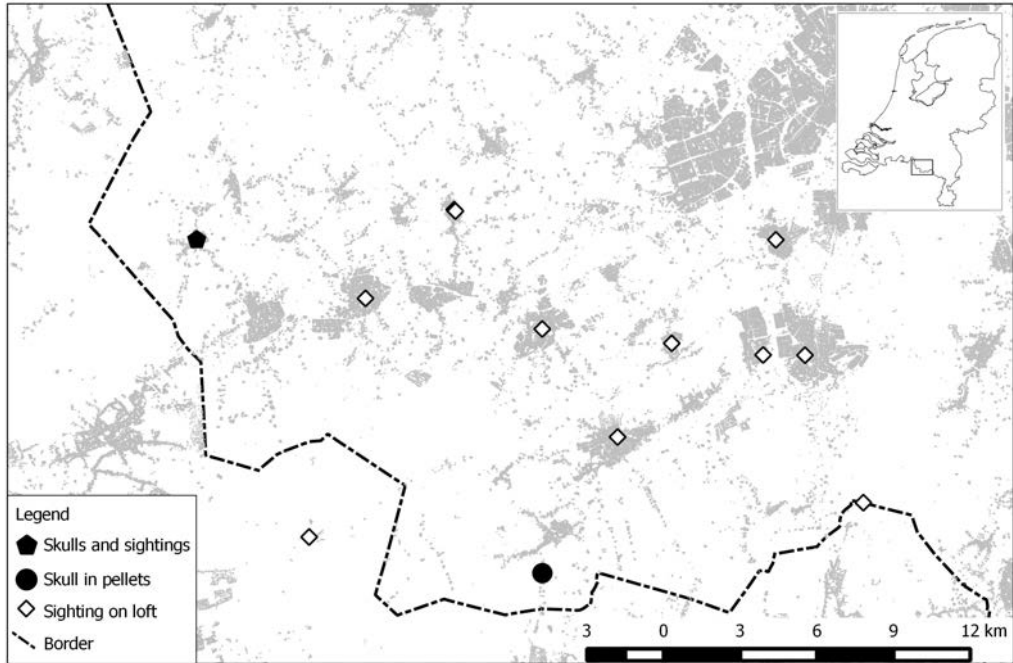


Figure 1. Findings of the skulls of grey long-eared bats in barn owl pellets and sightings of the species in lofts of churches in the south of Noord-Brabant Province, the Netherlands.

Catholic Church in Hooge Mierde (also figure 1). These pellets were analysed and prey species identified, based on field guides (Lange et al. 1994, Kapteyn 1999, Twisk et al. 2010).

In 2007, the NEM started a monitoring scheme on grey long-eared bats and Geoffrey's bats (*Myotis emarginatus*) roosting in (church) lofts in the three southern provinces of the Netherlands (Limburg, Noord-Brabant and Zeeland). In addition, in 2008 the province of Noord-Brabant carried out a survey, aiming to establish the current status of the grey long-eared bat within its territory (Janssen 2009).

Results

The sample of barn owl pellets collected in Luyksgestel in 2010 revealed one skull of a grey long-eared bat among 239 prey items (figure 2). There is no known roost of the species within a radius of four kilometres of the

farm. The nearest known roost of grey long-eared bat to the farm in Luyksgestel, is in Bergeijk, 16 km to the northeast (figure 1). Among the 416 prey items in the owl pellets collected in Hooge Mierde in 2012 (about 50% of all pellets were collected) one skull of an adult grey long-eared bat and one skull of a juvenile, quite possibly a grey long-eared bat, were found. Peter Twisk checked and confirmed the identifications of the skulls.

During the Noord-Brabant survey, one grey long-eared bat was observed in the loft of the Hooge Mierde Catholic Church for the first time (Janssen 2009). The number rose to nine in 2011. However, in 2012 there were no grey long-eared bats nor fresh droppings and two barn owls had started roosting in the loft.

Discussion

As only 113 out of 1.01 million (0.01%) records of mammals in barn owl pellets in NEM are



Figure 2. Skull and lower right mandible of a grey long-eared bat, found in a sample of barn owl pellets collected in Noord-Brabant at a farm near Luyksgestel in 2010. The arrow points at the dent on the processus angularis, absent in brown long-eared bats (*Plecotus auritus*). Photos: Christophe Brochard.

of bats (from 1990 until now), the predation of bats by barn owls, as in other European countries, is likely to be very rare. This may partly be due to commonly-taken measures to keep birds, such as pigeons (*Columba* sp.) and jackdaws (*Corvus monedula*) out of buildings. As a result barn owls (in Dutch: church owls) often cannot enter the lofts anymore

although, in most cases, bats still have access to these lofts. The inaccessibility of the lofts to owls is often compensated for by putting up nest boxes in the same buildings or elsewhere (e.g. farm barns), and has had no harmful effect on the Dutch barn owl population, which has shown an increase over recent decades (Boele et al. 2014).

The population of the grey long-eared bat has also grown over the last decade (Schillemans et al. 2014). This enhances the chance of barn owls encountering grey long-eared bats and predated on them. The occurrence of a juvenile long-eared bat in Hooge Mierde is in accordance with the findings of Petrželková et al. (2004), which indicate that barn owls prefer to predate on young, less experienced bats.

The disappearance of the grey long-eared bats from the church in Hooge Mierde in 2012 was probably caused by the arrival of the barn owls. In an attempt to solve this situation for the bats, members of the barn owl working group chased the barn owls out of the loft and made it inaccessible to them. The following year (in September 2013) four grey long-eared bats were seen roosting in the loft.

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Samenvatting

Eerste waarnemingen van grijze grootvleermuis in braakballen van kerkuil

Grootvleermuizen en kerkuilen gebruiken zolders van gebouwen, kerken, kloosters en oude boerderijen als verblijfplaats. Het komt dan ook voor dat kerkuilen op (grootoor)vleermuizen prederen, maar dit is eerder uitzondering dan regel: slechts 0,01% van alle prooidie-

ren in de braakballen die in het kader van het Netwerk Ecologische Monitoring sinds 1990 onderzocht zijn, betreft vleermuizen. Het is in Nederland al langer bekend dat gewone grootoorvleermuizen (*Plecotus auritus*) op het menu van de kerkuil staan. Elders in Europa zijn ook gevallen bekend dat de grijze grootoorvleermuis (*Plecotus austriacus*) eindigt in een kerkuilenmaag. In 2010 werden in Luyksgestel en in 2012 in Hooge Mierde (figuur 1) braakballen verzameld, op respectievelijk een boerderij en een kerkzolder. In deze partijen zaten de schedels van grijze grootoorvleermuizen (figuur 2). In de partij in Hooge Mierde zat ook nog een

schedel van een juveniele grootoorvleermuis, die niet op soort kon worden gedetermineerd.

Hiermee is ook in Nederland vastgesteld dat kerkuilen op grijze grootoren prederen. Opmerkelijk is dat het groepje grijze grootoorvleermuizen van de kerkzolder in Hooge Mierde verdween toen een kerkuilenpaar er zijn intrek nam en weer terug kwam toen de plaatselijke kerkuilenwerkgroep er voor had gezorgd dat de ruimte niet meer toegankelijk was voor de uilen.

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