

Preface

The winter of 2021 was a special anniversary for bat counts in hibernacula in the Netherlands. It was 40 years after a first overview (in 1980) of the counts in the Netherlands and (almost) 25 years after the start of the National Ecological Monitoring Scheme (NEM) of bat hibernacula, but it was also the winter in which the counts were cancelled across the whole of the Netherlands and Flanders, due to the COVID-19 pandemic

This special issue starts off with a historical review of bat counts: *Eighty years of hibernation surveys: from banding to monitoring and protection* (Glas), which offers a clear view of the past. An introduction to the recent counting period is given by La Haye & van der Meij, who provide an overview of censuses in the Netherlands between 1986 and 2020, outlining how the counts of the various hibernating bat species have developed over the past 35 years. This Lutra special on hibernating bats in the Netherlands and Flanders continues with four regionally-focused articles about the marl quarries in Limburg and Flanders (Weinreich & Verheggen and Palmans, respectively), the New Dutch Waterline (Buys et al.) and the Dutch coast (Mostert et al.), all regions with their own specific characteristics, where counts have been carried out for decades. This results in impressive counting series and a clear view of the changes in species composition and the numbers of hibernating bats in these regions.

Bat hibernacula with a special story are explained separately in articles on the Voorberg and Jezuïtenberg (Beckers), Klein Heidekamp (Glas & Kaal), the Amsterdamse Waterleiding Duinen (Lange et al.) and Meijendel-Wassenaarse Slag (Lina et al.). Lefevre et al. compare visual counts with automatic counts, using an infrared light barrier system, at Fort Steendorp, near Antwerp, a foretaste of the technical developments in monitoring, and a useful additional tool when safety issues make some hibernacula inaccessible for counting. In addition, there are a number of more ecologically oriented contributions about the special phenomenon of the mass hibernacula of common pipistrelles (Jansen et al.) and about the relationship between brown long-eared bats and weather conditions (Bekker). Van Zuijlen & Groenendijk study the relationship between numbers of bats, outside temperatures and the nature of the hibernacula in a Noord-Holland dune area. Verhees et al. present a detailed study from northern Limburg, on the influence of climate change by looking at the relationship between the number of hibernating bats and outdoor temperatures. The final piece of these contributions on bat counts in hibernacula is the description of a rare sighting of a greater horseshoe bat in a bunker in the dunes (Mostert & Dijkhuizen).

The character of the counts of hibernating bats has changed over the years, and this is

described in several articles; the focus has shifted from research to monitoring, but the counts have also 'changed' in many other aspects. A clear example is the lighting used during the counts in the dark hibernacula. The technology has improved considerably over time and a number of contributions explicitly refer to this (e.g. Weinreich & Verheggen, Palmans). The time of carbide lanterns is now really history, gasoline lanterns (Petromax or Tilley) and mine lamps were only used in the 1990s, after which krypton lamps with three or four rod batteries made their appearance. Today practically every bat worker has a handy flashlight with a LED light source, sometimes supplemented with a headlamp. With such strong lamps, supplemented by mirrors, sometimes mounted on a telescopic handle, it is easier to detect and identify bats in cracks and crevices. The combination of binoculars with a LED lamp clamped underneath, and possibly a camera, has also increased the chance of identifying the species of bats hanging or crawled away at a higher altitude. The number of bats that cannot be identified with certainty, often referred to as 'indet' bats, has significantly decreased in recent years (aptly illustrated by Palmans). These developments in the method of counting, in addition to 'improving' hibernacula and ecological phenomena, such as changed hibernation preferences, make the interpretation of trends complicated. An observed trend is never 'just' a one-to-one representation of the population development of a species. The series of articles in this *Lutra* special shows that there is still an incredible amount to discover, especially with regard to the population-ecological dynamics of various bat species. At the same time, the articles show how important monitoring is and that the strict protection since the 1970s-1980s has indeed led to a recovery of populations. All in all, a wealth of information has been collected for many years by hundreds of volunteer counters

linking their hobby to science, a combination that will hopefully be sustained for many decades to come.

This publication could not have come about without the years, sometimes decades, of selfless efforts of counters. The same applies to the counting leaders and to the provincial and national coordinating bodies that also provide the necessary permissions for access. For many counters, an involuntary comparison with previous counts will often determine how the state of the bat population is perceived. The 38 different authors of the 17 contributions in this *Lutra* special have been able to present the bat counts of periods of up to 40 years for a large number of hibernacula in a concise manner, which provides a reliable picture of the ups and downs of the different populations of bat species. The editors of the *Lutra* special are grateful to all these authors for their dedication and creativity in describing their views on hibernating bats in the Netherlands and Flanders.

The regular edition for the subscribers of this *Lutra* special appears in English. To make the data and results of the years of counts more widely accessible, the editors of this *Lutra* special and the board of the Dutch Mammal Society, have decided to make an integral translated version available in Dutch for all counters, counting leaders, owners of hibernacula, those engaged in managing sites, or financing this issue of *Lutra*, and last but not least, the authors.

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