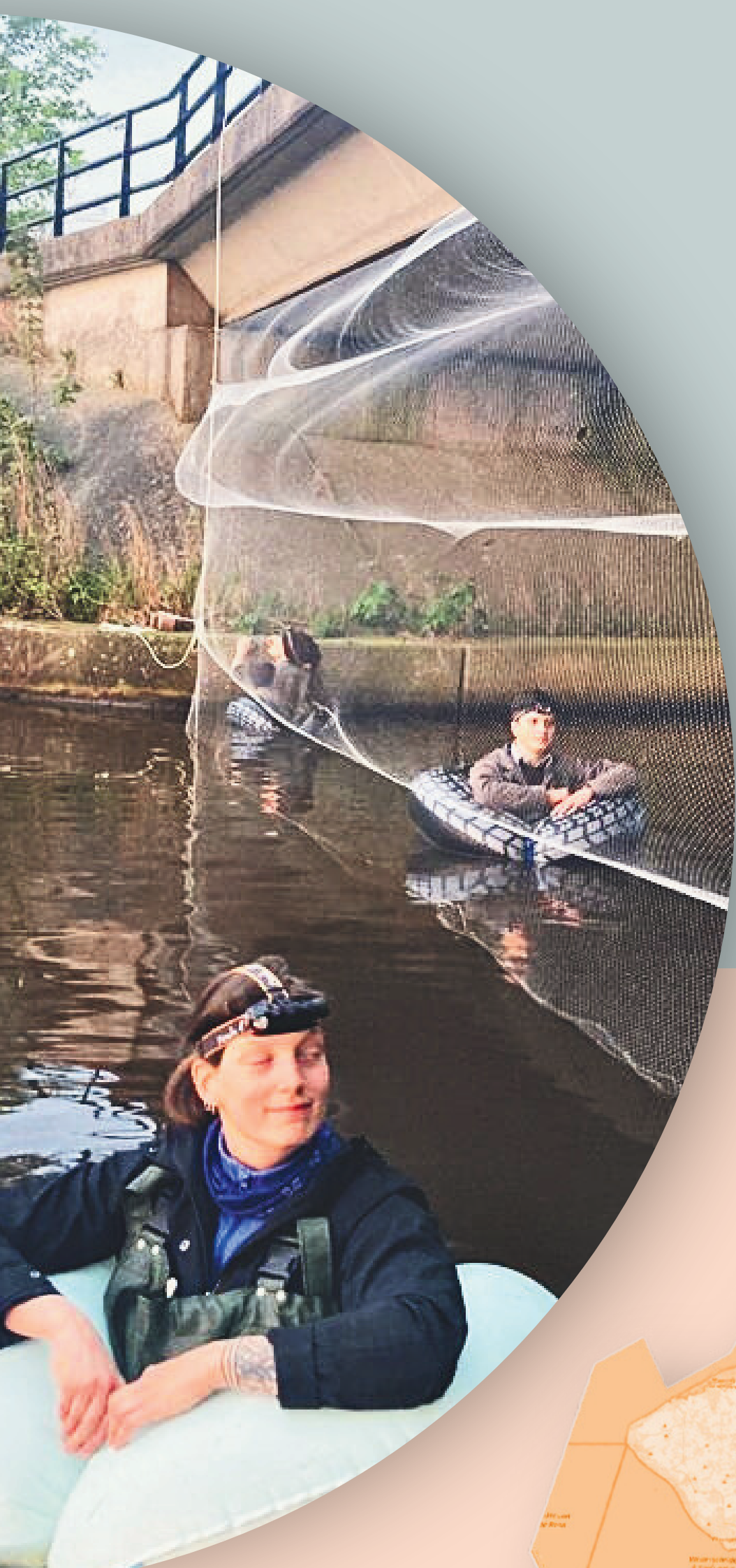
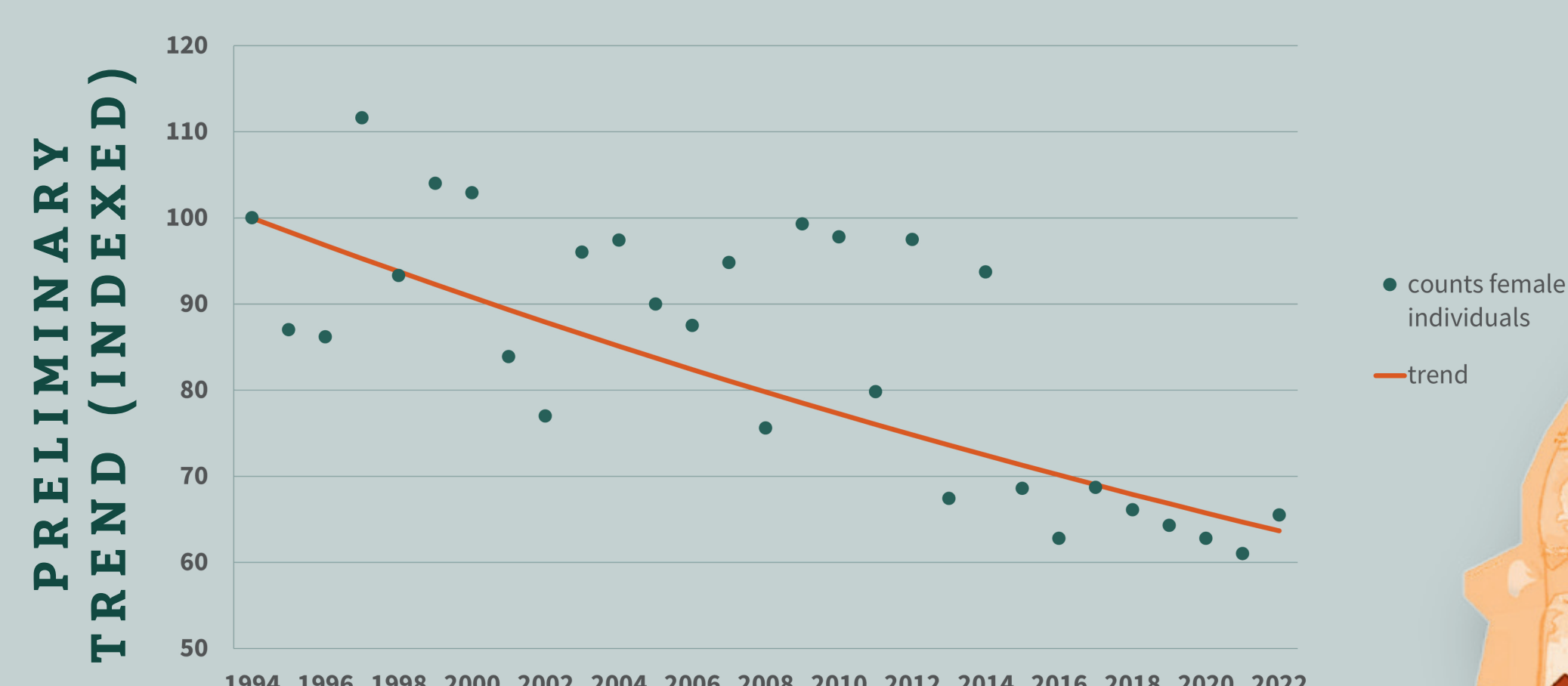


## BACKGROUND

The pond bat (*Myotis dasycneme*) is a trawling bat which forages above water-rich habitats. Around **29% of the European maternity population** of this species roosts in the Netherlands. Pond bat maternity colonies typically roost in cavity walls and under roof tiles of houses, but are also found in church attics, and other accessible spaces within houses<sup>1</sup>. Colonies use a network of 3-7 roosting sites and have a strong preference for houses built between 1950 and 1980 during pregnancy and lactation. Most of the pond bat colonies are located in the low-lying areas in the North and West of the Netherlands, and a few in the West in peat meadow areas.

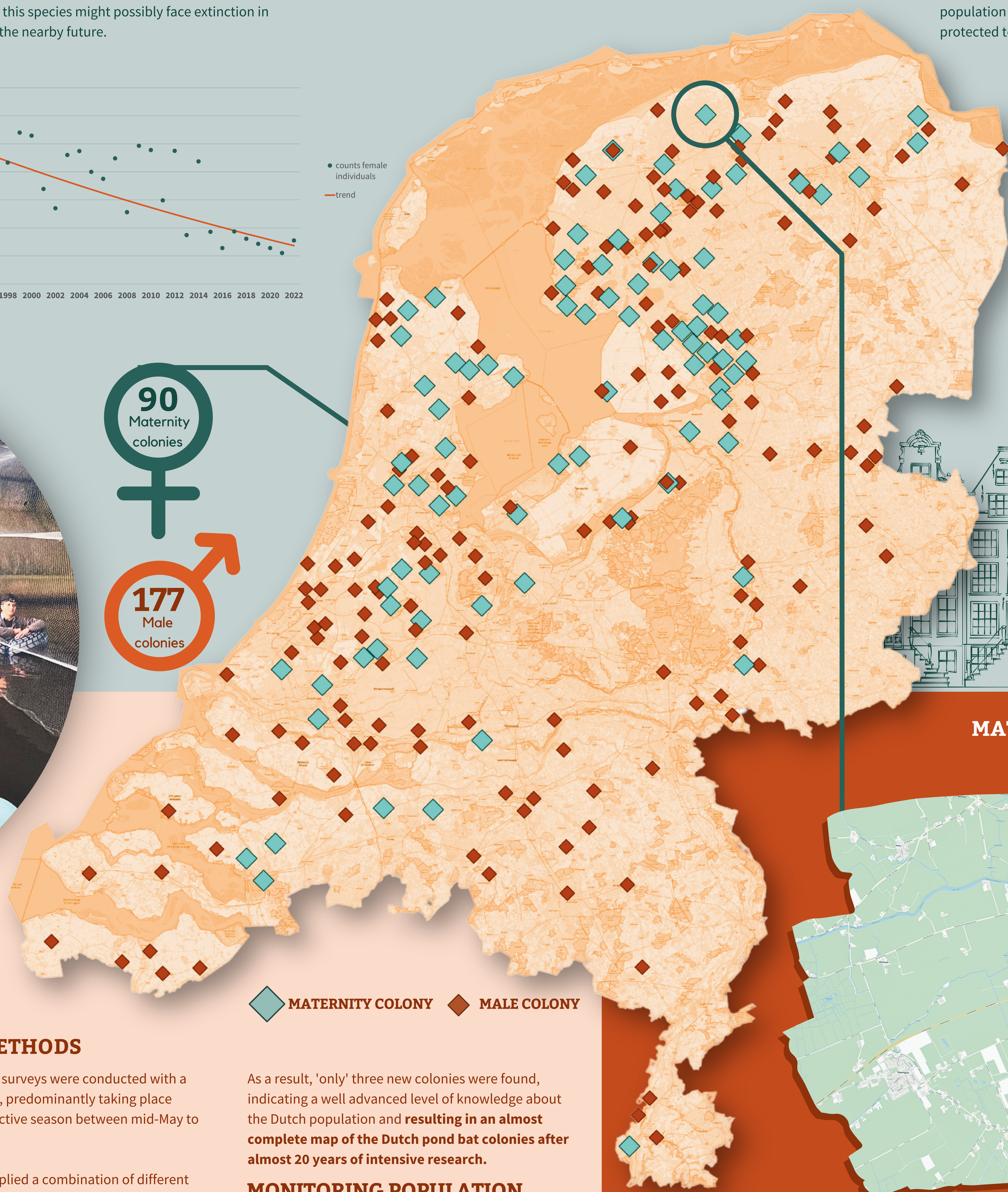
The preliminary trend shows an **alarming decline** of the Dutch pond bat population. Experts warn that if the trend continues to decline at this rate, this species might possibly face extinction in the Netherlands in the nearby future.



**90**  
Maternity colonies

**177**  
Male colonies

# FANTASTIC BATS AND WHERE TO FIND THEM: POND BAT COLONIES



## THREATS

Climate change has been a main driver for the Netherlands to insulate and renovate houses at an unprecedented rate so as to increase sustainability and to reduce energy consumption and costs. The cumulative effects of **illegal or unregulated renovation are taking its toll** and have led to the loss of numerous critical roosting sites and colonies of cavity-dwelling bat species, including the pond bat.

The current accelerated loss of available roosting sites for the pond bat may cause significant negative effects to the species' population. Contrary to popular belief, **mitigation measures such as bat boxes are not effective** as an alternative roosting site for maternity groups of pond bats. It was therefore crucial to locate existing pond bat colonies as fast as possible so that the population could be monitored, and the locations could be protected to prevent further losses.



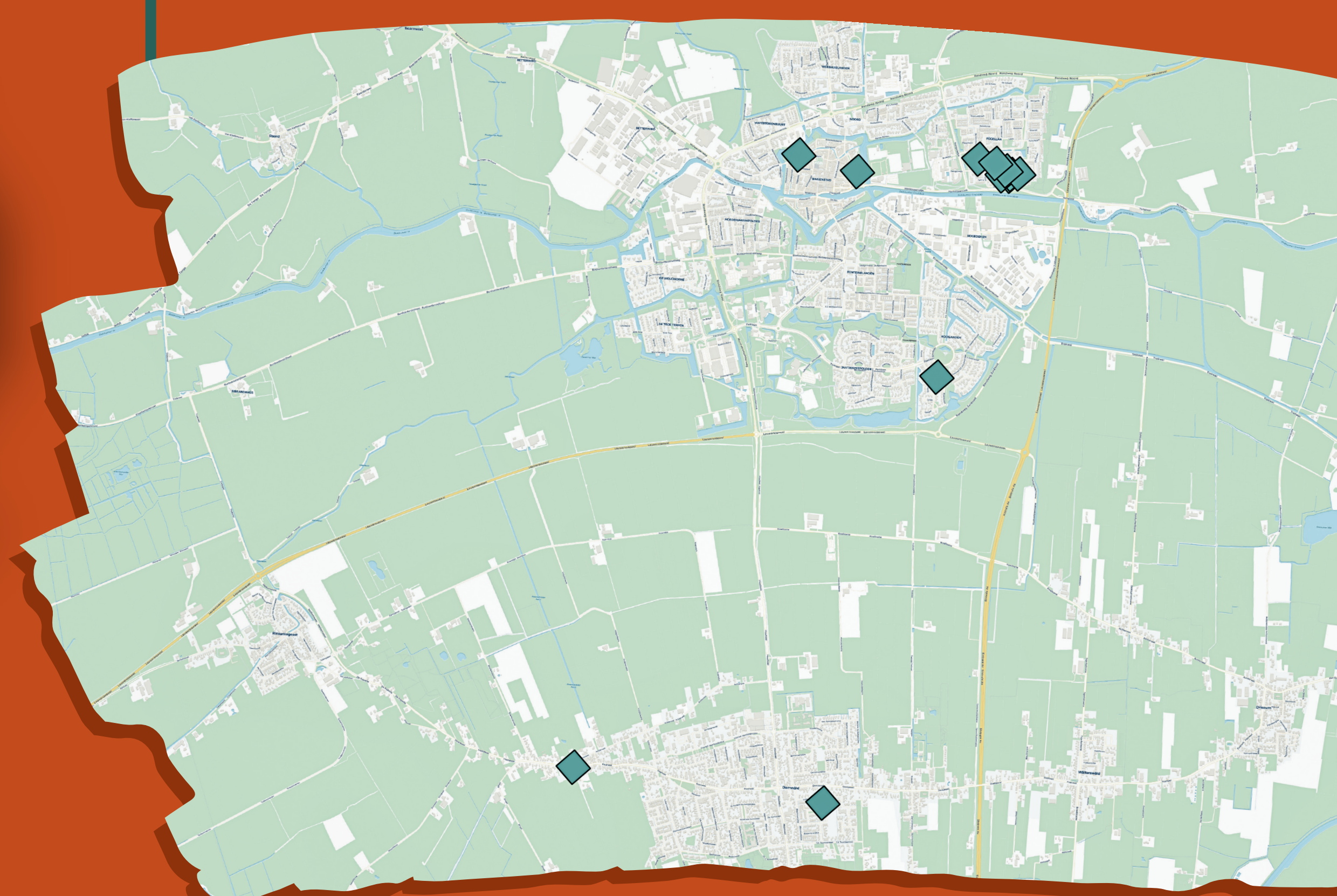
**488**  
Dutch houses have been identified as roosting sites of the pond bat until now



**2.5 Mio**  
Additional houses have to be post-insulated by 2023 following plans of the Dutch government (30% of all Dutch houses)



## MATERNITY COLONY NETWORK STRUCTURE



## SURVEY METHODS

Since 2005, several surveys were conducted with a focus on pond bats, predominantly taking place during the reproductive season between mid-May to mid-June.

The researchers applied a combination of different survey methods consisting of **searching for morning swarmers, tracking back commuting routes<sup>4</sup> and mist-netting combined with telemetry<sup>2</sup>**.

Mist-nets were set up underneath bridges crossing canals, rivers or other waterways. Researchers used a wading suit and a floating tube to be able to extract the pond bats from the net<sup>3</sup>. Lactating females were then radio tagged, released and followed to their maternity roosts. In 2023 a large scale survey was conducted to fill in the remaining knowledge gaps.

As a result, 'only' three new colonies were found, indicating a well advanced level of knowledge about the Dutch population and **resulting in an almost complete map of the Dutch pond bat colonies after almost 20 years of intensive research**.

## MONITORING POPULATION TREND

Since 1994, between the 5th and 19th of June of every year, all known pond bat colonies and their entire network of roosts were counted by **volunteers and professional bat researchers**. During the span of the two monitoring weeks, emergence counts give a good estimation of the number of adult individuals. In the weeks thereafter, either groups fall apart or the numbers get diluted by large numbers of flying young of the year. Maternity colonies vary in size from a few dozen to a few hundred individuals. To keep track of all the colonies and their counts, the Dutch Mammal Society, Batweter, and Statistics Netherlands have developed a **pond bat portal**.



## POND BAT PORTAL

The aim of the portal is to gather monitoring data and to facilitate structured data input. The portal contains historical data, where the first observations date back to 1919, and the first maternity colonies were found in 1954. Since 1994, the data is gathered systematically; with 40-70% of all maternity colonies (and all their roosts) counted every year. The data is organized per province. Each of the 12 Dutch provinces has a provincial coordinator who coordinates and guides volunteers and is responsible for data management. All participants have access to their relevant section of the portal, to keep the execution, organization and documentation as simple and standardized as possible.

On a regular basis, the data gathered in the portal is shared with the competent authority for nature legislation and facilitates active protection of colonies and their roosts.

## FUTURE APPLICATION

Based on the pond bat portal, Statistics Netherlands will calculate short-term and long-term population trends for this house-dwelling species. These trends will be used as a benchmark to observe whether and to what extent the conflicting goals of sustainability (and renovation of houses) limit the population growth. As pond bats are currently the only house-dwelling species with a successful monitoring program, these trends will also be used for species with similar roost preferences (such as the Serotine bat).

We aim to continue this research to increase knowledge about the colony locations, the use of their intricate networks, and to better understand the behavior and ecology of the pond bat. These unique insights into this species' population is an important foundation for all necessary conservation actions and the reconciliation of climate goals and bat conservation in the Netherlands.