New estimates and a possible decline in bat populations in Estonia

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During the past few years **bat conservation research** has been carried out in several counties of Estonia. Despite the constant shortage of funds available for this research each year, a general new picture is emerging from the collected data. From the results of these studies the following are important as **nature conservation issues**.

First, the area of **forest** containing old and hollow trees is rapidly declining due to extensive logging. Consequently, bat species depending on the forest should decline (Masing, 2003). According to recent investigations (Masing, 2000, 2002b; Masing et al., 2002), some species of *Myotis* seem to be suffering most. E.g. species like *Myotis brandtii, M. mystacinus* and *M. nattereri* are known to live in the forests of so-called "primeval type" containing trees of various native species representing all age categories. These forests often contain old deciduous trees that have hollows used by animals as hiding places or roosting sites. Birds use these hollows as nesting sites and resting sites, whereas bats use them as breeding sites and day-time shelters. Such forests also have small patches of open areas (marking places where old trees with wide branches have fallen down, or places where storm has destroyed trees) and large space under the canopy used by bats as flying paths and feeding sites.

Second, many species of bat, among them rare species like those belonging to the genera *Myotis, Pipistrellus* and *Nyctalus*, live in **parks** created by man. In Estonia, which is the northern border of summertime occurrence of those species, and breeding site of their populations, the survival of these bats seems to be depending on parks. During the last decade old trees have been widely cut in parks throughout Estonia. As a result, rare bats lose their main habitat and, consequently, may face extinction!

Third, old buildings, especially those situated near main traditional feeding sites of bats like forest, parks and water bodies, are important roosting sites of most bat species occurring in Estonia. Some of those buildings contain **breeding colonies of bats**, among them rare species like *Myotis dasycneme, M. brandtii* and *Vespertilio murinus*. If these buildings are either destroyed or renovated, bats can suffer.

Fourth, according to the results of bat mapping and bat counting work carried out in summer habitats of bats in counties like Hiiumaa, Harjumaa, Raplamaa and Võrumaa **some bat species are very rare**, and their population estimates published before could have been overestimated. In the above-mentioned counties bat surveys, in which ultrasound detectors were used, revealed species like *Myotis dasycneme, M. brandtii/mystacinus, M. nattereri, Pipistrellus pipistrellus, Vespertilio murinus* and *Nyctalus noctula* as rare; all of those species were only found in a few spots and usually in small numbers.

Fifth, a special survey of *Myotis dasycneme* carried out at its preferred feeding sites (water bodies) in Raplamaa, Võrumaa and Viljandimaa in the summer of 2003 revealed that only small numbers of animals were present in each of those counties. Consequently, *M. dasycneme* is one of the species which probably occurs in much lower numbers in Estonia than estimated before (Masing, 2001, 2002a).

Table 1 gives population estimates of bats for the area of Estonia, for each species indicating both new as well as previous estimates.

Table 1. Estimates of bat populations in Estonia

Species name in Latin	Species name in Estonian	Type of occurrence in Estonia*	Previous estimate (total population in summer) (ref. Masing, 2001, 2002)	New estimate (total population in summer) (first shown here)
Myotis dasycneme	Tiigilendlane	Sedentary	5000—10000	1000—3000
Myotis daubentonii	Veelendlane	Sedentary	20000—40000	8000—20000
Myotis brandtii	Brandti lendlane	Sedentary	10000—20000	1000—5000
Myotis mystacinus	Habelendlane	Sedentary	1000—3000	100—500
Myotis nattereri	Nattereri lendlane	Sedentary	2000—5000	300—1000
Plecotus auritus	Pruun-suurkõrv	Sedentary	30000—50000	8000—20000
Pipistrellus nathusii	Pargi-nahkhiir	Migratory	20000—40000	4000—20000
Pipistrellus pipistrellus	Kääbus-nahkhiir	Migratory	1000—3000	100—500
Pipistrellus pygmaeus**	Pügmee-nahkhiir	Occasional		0—50
Eptesicus nilssonii	Põhja-nahkhiir	Sedentary	100000—300000	100000—250000
Vespertilio murinus	Hõbe-nahkhiir	Sub-migratory	1000—3000	300—1000
Nyctalus noctula	Suurvidevlane	Migratory	2000—5000	300—1000
TOTAL				123100—322050

* Type of occurrence in Estonia: a) sedentary (present in Estonia all year round); b) migratory (present in late spring and summer); c) sub-migratory (migratory but some individuals may hibernate in Estonia); d) occasional (probably occurs occasionally and in very low numbers).

** *Pipistrellus pygmaeus* is a new species for Estonia. It was found during an Estonian-Finnish joint expediton in Saaremaa Island on 10 July 2002. The bat was recorded and identified by Yrjö Siivonen using Pettersson 240x ultrasound detector, Sony D-100 DAT recorder and was analysed by BatSound 3.3 program. The sound is preserved in a sound file including calls of 5 bat species – *Eptesicus nilssonii, Pipistrellus nathusii, Myotis daubentonii, P. pipistrellus* and *P. pygmaeus*. The BLF-s (the best listening frequencies, the highest peaks on the power spectrum figure in BatSound program) of those species on this file are the following: 30, 38, ca 40, 45 and 53 kHz (Masing & Siivonen, in prep.).

References

Masing, M. (koostaja) 2000. Seireprojekti "Nahkhiired" 2000. aasta töö kokkuvõte. Nahkhiirte uurimise töörühm & Eesti Looduseuurijate Selts. Tartu, 60 lk. (käsikiri)

Masing, M. (koostaja) 2001. Eesti nahkhiirte ülevaade. Nahkhiirte Uurimise Töörühm, Sicista Arenduskeskus. Tartu, 44 lk. (käsikiri)

Masing, M. 2002a. Agreement on the conservation of bats in Europe. National report on the implementation of the agreement in Estonia during 2000—2001. Tartu, 6 pp. (Inf.EUROBATS.AC7.19)

Masing, M. (koostaja) 2002b. Seireprojekti "Nahkhiired" 2002. aasta töö kokkuvõte. Nahkhiirte uurimise töörühm & Eesti Looduseuurijate Selts. Tartu, 39 lk. (käsikiri)

Masing, M., Lutsar, L. & Tammela, H. 2002. Nahkhiired Hiiumaal (looduskaitselise uurimistöö kokkuvõte). Nahkhiirte uurimise töörühm/Sicista Arenduskeskus. Tartu, 108 lk. (käsikiri)

Masing, M. 2003. Trying to improve bat conservation in Europe. Presentation to the 8th Meeting of the Advisory Committee of EUROBATS, 12—14 May 2003, Røros, Norway. – Sicista leaflet no. 25E. Tartu, 6 pp.

Masing, M. & Siivonen, Y., in prep. Pügmee-nahkhiir (*Pipistrellus pygmaeus*) – uus nahkhiireliik Eestis.

Tartu, 06 September 2003