

Sexual dimorphism in forearm length of two bat species: *Nyctalus noctula* and *Eptesicus serotinus*

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VLASHCHENKO A. Sexual dimorphism in forearm length of two bat species: *Nyctalus noctula* and *Eptesicus serotinus*. — The variability of forearm length in 539 individuals of the common noctule and the serotine bat was investigated. Sexual dimorphism was revealed: the length of the forearm in females was statistically longer than in males. It is suggested that the difference in forearm length is due to the fact that females need to carry more weight in flight during pregnancy and lactation than males.

Introduction

It is known that the presence of primary sexual features in Chiroptera allows to identify whether the specimen belongs to one or another sex. Nevertheless, detailed study of sexual dimorphism is of key importance to a better understanding of species' biology or the group's biology in general.

Materials and methods

In order to reveal any possible sexual dimorphism in such an important character as forearm length, we analysed 539 specimens of *Nyctalus noctula* (Schreber 1774) and *Eptesicus serotinus* (Schreber 1774) collected in 1961 to 1999 in the building of Kharkiv National University (KhNU). The same data in *Nyctalus noctula* were additionally collected by the author in 1998 to 1999 in animals found in the building of KhNU.

Results

***Nyctalus noctula*.** Data on *N. noctula* were collected by the author from 1998 until 1999 in animals found in the building of KhNU. Measurements of 248 specimens are analysed (72 females, 176 males). The average forearm length for both sexes is 53.6 mm. In males, the average value of this parameter is 53.4 mm, while it is 54.3 mm in females (Table 1). The difference between these two parameters (0.9 mm) proved to be statistically significant ($p = 0.01$).

***Eptesicus serotinus*.** Data on forearm length of *E. serotinus* were taken from the catalogue of bat findings in the building of KhNU in 1961–1991 (collected by

A. Lysetsky). Measurements of 291 specimens are analysed (143 females, 148 males). The average forearm length for both sexes is 52.6 mm. In males, the average value of this parameter is 52.1 mm, while it is 53.3 mm in females (Table 1). The difference between these two parameters (1.2 mm) proved to be statistically significant ($p = 0.01$).

Table 1. Forearm length in males and females of *N. noctula* and *E. serotinus*

Species	Sex (sample)	Limits of variation (min–max)	Mean (X)	Standard error of the mean (Sx)
<i>Nyctalus noctula</i>	females (n = 72)	51,6–58,5	54,3	0,17
	males (n = 176)	48,9–56,9	53,4	0,11
<i>Eptesicus serotinus</i>	females (n = 143)	49,0–57,9	53,3	0,14
	males (n = 148)	48,0–56,3	52,1	0,13

Discussion

Sexual dimorphism in forearm length in *N. noctula* and *E. serotinus* exists but there are no indications on it in the literature. I. Rakhmatulina (1980) earlier found statistically reliable difference in forearm length in favour of females in *Myotis blythii* and *Rhinolophus mehelyi*.

The difference in forearm length in males and females of *N. noctula* and *E. serotinus* is not by chance: in our opinion, it is related to the fact that females are to carry more weight than males. During pregnancy and the first days of lactation, their whole flying weight increases because of the offspring's weight. The increase in forearm length led to the increase of the area and ascension power of wings.

References

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Резюме

ВЛАЩЕНКО А. Статевий диморфізм за довжиною передпліччя у двох видів кажанів: *Nyctalus noctula* та *Eptesicus serotinus*. — Досліджено мінливість довжини передпліччя у 539 особин вечірниць рудої та пергача пізнього. Виявлено статевий диморфізм: довжина передпліччя у самиць статистично більша, ніж у самців. Припускається, що різниця у довжині передпліччя пов'язана з тим, що самицям під час вагітності й лактації необхідно нести у польоті більшу вагу, ніж самцям.