

## **Biogeography of Plecotine bats in Europe and analysis of the East-Carpathian node**

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*ЗАГОРОДНЮК І. Біогеографія роду *Plecotus* в Європі та аналіз Східно-Карпатського вузла.*

Generally accepted that the genus *Plecotus* is represented in the Palaearctic by two species, *P. auritus* and *P. austriacus*. The analysis of all the early-published data allows asserting the following. Both known species of *Plecotus* are characterised by allopatric ranges in general. The extensive zone of their sympatry in Europe is obviously a secondary phenomenon. All know data testify that it was formed as a result of range expansion of *P. austriacus* into the historical range of *P. auritus*.

The time when this process took place apparently was in the early Holocene or, as a maximum, when human expansion occurred in Europe. It is confirmed not only by direct paleontological data, but by data on species ecology also. *Plecotus auritus* clearly prefers woodlands and mountains (boreal ecosystems) and it is relatively abundant in both northern and mountain regions. *Plecotus austriacus* is the most common in the southern Palaearctic and prefers open xerothermic habitats. Its abundance in the zone of sympatry is connected with disturbed or secondary biotopes.

The situation in East Europe seems to be different. Until recently, both species were considered here as allopatric subspecies divided by the Carpathian arch. For the last 15 years, records of both species were reported from Podolia, i. e. northeast of the Carpathians. Moreover, a study of collections showed that both species are present in samples from Transcarpathia due to studies by Abelentsev and Popov (1956), who considered the Carpathians as a natural border between these species. Besides, we revealed *Plecotus austriacus* in samples from Podolia, the Black Sea region and Crimea, where only *P. auritus* was identified earlier.

The zone of sympatry of the two species refers to those parts of East Europe, where the greatest species richness of bats exists. There is the following correlation between the distribution of *P. auritus* and its sympatry zone in East Europe: (1) range of "caves", 2) range of *Fagus*, (3) ranges of *Rhinolophus* and *Paramyotis*. East-European samples of studied species are more similar than Central European ones, which is explained mainly by the increasing of the size of *P. auritus*. Similar morphology of related species in the zone of their sympatry corresponds to the model of opposite izomorphism as a way of formation of sibling species.