



## Taming the shrew

Jan M. Wójcik & Mieczysław Wolsan (eds) 1998. *Evolution of Shrews*. Mammal Research Institute, Polish Academy of Sciences, Białowieża. 458 pp. Price \$38,00 + postage. Available from Mammal Research Institute, PL-17-230, Białowieża, Poland.

Shrews (Soricidae) make up about 10% of the extant taxa of mammals. During their long history they have preserved many primitive characters and at the same time successfully competed with more derived groups of small mammals. Despite their importance in fossil and recent mammalian communities of the Northern Hemisphere, the number of studies concerning the shrews is disproportionately small.

A volume devoted to the biology of shrews which contains contributions presented during a symposium organized in Powdermill (United States) was published some years ago (Meritt *et al.* 1994). Of the 45 papers only three concerned palaeontological material and a few others were connected indirectly to the problems of evolution of this group. The book *Evolution of Shrews* published four years later has a more limited scope, being devoted entirely to the problems of evolution of Soricidae, but its aim was more ambitious.

This volume was dedicated to Professor Zdzisław Pucek on his 65th birthday and contains 14 review articles prepared by an international group of specialists.

In 1949 the Polish zoologist August Dehnel discovered the existence of important seasonal changes in the dimensions of the brain case in *Sorex araneus*. This unexpected observation was the starting point of research on the biology of shrews in the Mammal Research Institute of the Polish Academy of Sciences in Białowieża, founded by Dehnel. Zdzisław Pucek (Dehnel's student and successor in the post of the director of Białowieża institute) and collaborators carried on these investigations. In other Polish laboratories the research into different aspects of the biology and evolution of shrews have been conducted as well.

The aim of the editors was to publish an up-to-date review of research in all branches of study on the evolution of shrews: in palaeontology and neontology. The first chapter by J.W.F. Reumer, presents his view, in many details original, on the classification of fossil and Recent Soricidae. The following four chapters contain reviews of the history of Soricidae in Europe (B. Rzebik-Kowalska), Asia (G. Štorch, Zh. Qiu, and V.S. Zazhigin), Africa (P.M. Butler) and North America (A.H. Harris). Comparing the extent of these chapters and the number of citations in each of them, one notes immediately how much larger the amount of work devoted to fossil shrews was in Europe compared with other continents. It is evident how much has still to be done to collect adequate data on the evolution of shrews in non-European countries.

The remaining chapters discuss different aspects of the evolution of shrews on the basis of investigations of Recent material. E. Donnellid reports on dental adaptations in different taxa. Teeth are the hardest elements of the body of mammals and they are most common material for the study of fossil remains; they are often the unique link between the fossil remains and Recent populations.

J. Zima, L. Lukáčova, and M. Mácholán outline the chromosomal evolution, J.B. Searle and J. Wójcik write about particularly well known variability of the karyotype in *Sorex araneus* and

M. Ruedi about the evolution of proteins. J. Hausser, L. Fumagalli, and P. Taberlet present the evolution of the mitochondrial DNA in shrews. Following group of contributions concerns the ecological and etological aspects of shrew biology. J.R.E. Taylor writes on energetic strategy of shrews, L. Rychlik about social behavior in these mammals, P.C. Stockley and J.B. Searle about their mating system.

The volume does not contain any discussion of ecological problems of shrews in relation to their biotic environment, such as food reserves accessible to them, factors limiting their population (predators, parasites, diseases), and their competitors. These factors surely have had a strong impact on the evolution of shrews, as well as on their distribution and extinction, but it has not been studied.

All morphological, physiological, karyological, etological and ecological patterns reflect mechanisms of speciation, morphological and physiocal evolution and changes in distribution of shrews. Nevertheless it is still difficult to explain how these phenomena determined the evolution of shrews, such as known from palaeontological material collected in different continents. Such relations are in some cases quite obvious. For example, the different history of distribution of the subfamilies Soricinae and Crocidurinae depended on their different energy strategies and reproduction.

In most cases, in spite of a lot of research, the presentation of the history of shrews is limited to the description of appearance of particular taxa and disappearance of others, in the best case on the background of changes in the inorganic environment. Causal relation of enviromental factors and evolutionary processes such as speciation, morphological changes and extinction remain obscure.

The book contains very extensive reference lists and a good index of systematic names. Very useful also will be the appendix with a list of the extant species of shrews compiled by M. Wolsan and R. Hutterer.

There is no doubt that the *Evolution of Shrews* will become a basic work for all further studies on shrew evolution and biology.

## Reference

Merritt, J.F., Kirkland, G.R. Jr., & Ros, R.K. (eds) 1994. *Advances in the Biology of Shrews*. — *Special Publication of Carnegie Museum of Natural History* **18**, 1–458. Pittsburgh.

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