Summary

The PhD thesis is based on the following papers:

TEST OF CHARACTER DISPLACEMENT IN URBAN POPULATIONS OF *APODEMUS SYLVATICUS*

We studied the wood mouse, *Apodemus sylvaticus,* inhabiting parks, cemeteries, suburban woods and other green areas in the city of Prague. To assess the character displacement and (or) release hypothesis we compared seven samples from local populations occurring sympatrically with *Apodemus flavicollis* with ten samples from those localities in which *A. flavicollis* has never been recorded. The analysis included 1410 specimens of *A. sylvaticus* collected during the years 1980 - 1990. Seventeen skull and body characters were measured. Then the data were age or size adjusted, and treated by principal component analyses. Factor scores were further subjected to statistical testing. Although the results revealed a considerable variation among localities, they did not suggest character displacement and (or) release. *A. sylvaticus* from populations sympatric with *A. flavicollis* were morphometrically similar to their conspecifics from other populations collected at the periphery of the city. However, slight but statistically highly significant differences were found between samples from localities in the city centre and those from the periphery. This phenomenon may be interpreted as the effect of urbanisation or isolation by built up areas.

DISCRIMINANT ANALYSIS OF MORPHOMETRIC CHARACTERS IN FOUR SPECIES OF *APODEMUS* (MURIDAE: RODENTIA) FROM EASTERN TURKEY AND IRAN

We studied 122 wood mice of the subgenus *Sylvaemus* that were collected from seven localities in Iran (the Zagros Mts. and the Caspian region), seven localities in eastern Turkey, and one locality in Armenia. After capture, mice were kept in captivity until reaching their adult size. The following species were determined using allozyme electrophoresis: *A. uralensis (= microps)*, *A. arianus (= hermonensis)*, *A. flavicollis* and a distinct form reported provisionally as *A.* cf. *hyrcanicus*. Body weight, four external measurements and 22 dental and skull measurements were subjected to Discriminant Function Analysis in order to find morphometric criteria allowing species identification. Although there was a close similarity among studied species, 96%, 95% and 95% of individuals were classified correctly when original measurements, log-transformed data and residuals of the regression on condylobasal length ("size-out" procedure) were used, respectively. While *A. uralensis*, *A.* cf. *hyrcanicus* and *A. arianus* were clearly separated from each other, *A. flavicollis* partly overlapped with *A. arianus* as well as with *A.* cf. *hyrcanicus* in the morphometric space.

MULTIVARIATE MORPHOMETRICS OF *APODEMUS MYSTACINUS* IN THE NEAR EAST AND ITS DIVERGENCE FROM EUROPEAN *A. M. EPIMELAS* (MAMMALIA: RODENTIA)

Morphometric variation in *A. mystacinus* populations from Syria and Jordan was studied and compared with those in Turkey, Greece,

finding may suggest that studied traits exhibit evolutionary conservatism, and therefore are not fully determined by actual selective pressures. Besides this, we demonstrated that morphological differentiation of taxa belonging to the subgenus *Sylvaemus* was more pronounced in Central Europe than in the Near East. This observed phenomenon could be of adaptive nature.

ECOMORPHOLOGY OF THE GENUS *APODEMUS* (MURIDAE: RODENTIA): MORPHOMETRY OF POSTCRANIAL SKELETON

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We studied skeletons of 265 wood mice belonging to seven species from Europe and Near East: *A. agrarius*, *A. mystacinus*, *A. hyrcanicus*, *A. hermonensis*, *A. uralensis* (= *microps*), *A. flavicollis* and *A. sylvaticus*. Thirty five postcranial and body measurements were obtained and treated with multivariate statistics. The multivariate analysis, based on size adjusted data, revealed clear morphological differentiation among studied taxa. *A. (Apodemus) agrarius*, *A. (Karstomys) mystacinus* and *Sylvaemus* species formed clearly separated clusters in morphospace along the first and second canonical axes. Within subgenus *Sylvaemus*, the *A. sylvaticus* revealed morphological separation from other taxa of this subgenus along second canonical axis. The main differentiation of *Sylvaemus* species however took place along the third canonical axis. The contribution of phylogenetic conservatism and ecological strategies of studied species (in terms of above/under ground activities as digging, climbing, running etc) to observed morphological pattern is discussed.