
Poster Session 1 – Form and Function

6 The effects of population bottlenecks on dental variation in arvicoline rodents

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The study aims to investigate dental variation in arvicoline rodent populations passing through natural or artificial bottlenecks. Phenotypic diversity arising from a limited number of founders is studied in 1) populations of invasive species that have passed through recent bottlenecks related to human-mediated introduction, either intended (*Ondatra zibethicus*) or non-intended (*Microtus rossiaemeridionalis*); 2) populations of native north-Eurasian species showing periodic depressions and outbreaks (*Myopus schisticolor*, *Microtus arvalis obscurus*); 3) captive colonies of arvicoline rodents reared through 3-11 generations (*Dicrostonyx torquatus*, *Microtus arvalis obscurus*). To study dental variation, we use interval and ordinal morphological variables that describe occlusal patterns of left and right m1, m2, m3, and M1, M2, M3 of each individual in the dataset (over 5,000 non-juveniles), with the exception of *Ondatra zibethicus*, which is represented by m1s from 513 individuals). We identify the groups of characters that vary independently of one another and those which reflect the variability of the dentition as a whole, and consider those groups with respect to the present-day knowledge of evolution, development, and function of arvicoline dentition. The results are summarized to answer the following questions. Which dental characters are the best to detect sharp reductions in population size and what kind of shifts are the most common? How many individuals does it take for a group to exhibit different types of phenotypic shifts? How soon can a founder effect and/or phenotypic distortion due to inbreeding be detected in isolated groups of animals? How do the periodic reductions in population size affect phenotypic variation in the absence of complete isolation? Based on comparisons among species, we identify general and species-specific phenotypic patterns that could be used to hypothesize the existence of a bottleneck in arvicoline rodent populations, living or extinct. Supported by Russian Foundation for Basic Research (grant 16-04-01486).

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and
16th Rodens et Spatium

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