DIRECT AND INDIRECT IMPACT OF DISPERSAL ON AGE STRUCTURE AND VOLE POPULATION DYNAMICS

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The dispersal may influence animal population dynamics in two ways: directly - changing the animals' number and indirectly - changing the population structure (age, sex ratio, kinship and number of breeding females). Majority of experiments in small mammal ecology were conducted on fenced enclosures, thus the role of dispersal in population growth rate in free-living populations is not known so far.

Direct and indirect impacts of dispersal were studied in free-living cyclic root vole (*Microtus oeconomus*) population from 2003 to 2005. The dispersal rate was calculated as a number of immigrants with the usage of capture – recapture (CMR) procedure. The vole population was monitored every 4 weeks on three trapping grids (0.6 ha each) situated in homogenous grassland habitats in Biebrza National Park, Poland.

In studied root vole population dispersal rate was high and varied from 9 % in April to 85% in October. Dispersal rate showed strong seasonal differences: the highest rate of immigrants were observed in late summer (September) and autumn (October), whereas the lowest at the end of winter (February), in early spring (April) and early autumn (September). The sex ratio of dispersing individuals was female biased except winter and early spring periods (from December to April). During the breeding season (April – September) most of immigrating females (from 60 to 100%) and males (from 40 to 100%) were sexually active.

The seasonal variation in dispersal rate and sex ratio of adults showed a relationship with the proportion of pregnant females. The proportion of sexually active immigrating males showed a strong negative impact on recruitment and age structure of the root vole population.

It was concluded that: i) dispersal, in studied root vole population, is an important factor influencing vole population dynamics, ii) high dispersal of adult voles is a common phenomenon both in breeding and non-breeding periods, iii) the highest dispersal rate was observed during the late summer and late autumn periods, iv) high immigration rate (especially adult male turnover) reduced the number of pregnant females, and changed age structure of vole population and consequently reduced the population grow rate.