



FIFTH CONGRESS
of the
EUROPEAN SOCIETY
for
EVOLUTIONARY BIOLOGY

Edinburgh, Scotland
4th-8th September, 1995

With assistance from:

University of Edinburgh
City of Edinburgh District Council
Lothian and Edinburgh Enterprise Ltd.
Genetical Society of Great Britain
International Society for Biochemical Systematics
European Science Foundation
Royal Society of London

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Spatial structures of grasshopper populations

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The analysis of species population distributions over regions, geographical landscapes and their units allows us to distinguish their groups with similar relations to ecogeographical characters, including environmental heterogeneity. It is essentially important for re-estimation of different ecologo-geographical barriers being the limits for species spreading. Completely isolated populations are exceptional. They may be observed for non-flying montane or island forms. Continuous populations with uniform structure are very rare too. On plains, we can describe at least three species population groups. These groups form the limited number of combinations in every concrete region or locality. We described 4 types of such combinations (Stebaev, Sergeev, 1982; Sergeev, 1986; Kazakova, Sergeev, 1992). Observed pattern may be essentially changed at various scales of studies. The analysis at the regional and basin levels usually shows that every part of range is a mosaic, where parcels of transitional, marginal and sometimes main types of settlement distribution intersperse throughout the dominating background.

Our data allow us to support an idea that really the majority of grasshoppers (including good flyers) and locusts do not crossed many inter- and intralandscape boundaries. As a rule, these boundaries are associated with difference of phenotypic traits of these insects. Such pattern is supposed to be general for temperate Eurasia, especially for arid and subarid regions. In this way, general population structures at various levels of studies should be evaluated and possible trends of microevolution may be estimated. The another thing is associated with understanding the problems of a biological diversity because we can evaluate both a taxonomic diversity and diversities of population and community types too.