Biodiversity, Biogeography & Ecology

ENDEMISM IN ITALIAN ORTHOPTERA

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In Europe the endemism proportion in Orthoptera is generally high; in Italy, according to the most recent contribution to the Italian Orthoptera, overall 144/380 (37.9%) Italian taxa are endemic. The present authors discuss the list of 144 endemic Italian taxa, highlighting the existence of biodiversity 'hot spots' in the Italian Apennines and islands. Most of them are taxa linked to central mountainous systems along the Italian peninsula (Apennines), and isolated on the islands of Sardinia and Sicily; a number of species very probably of trans-Ionian origin gave rise to endemic taxa in different areas of South Italy (not Apennines).

The authors consider endemic those taxa, whose distribution is limited to a geographically distinct and localized territory. Generally the geographic endemic area is considered not larger than 50,000 km2 (spot-like endemism). To Italian grasshoppers and locusts may apply also the Endemic Bird Area (EBA) proposed for the birds, that is an area holding two or more restricted range species (= with a range covering less than 50,000 Km2).

The Italian territory has been divided into main mountainous areas, Alps and Apennines, Sicily and Sardinia. When more than one subspecies was present in the regions, only one taxon was considered. The proportion of endemism was calculated as follows: % endemism = endemic taxa/ total number of taxa in the concerned area * 100, where the % endemism was calculated for each of the above listed areas, endemic taxa of these areas were obtained from available bibliography.

The particular shape of the Italian peninsula has been the subject of biogeographical interest by different authors, mainly concerning the North-South gradient of impoverishment. Italian Peninsula, different from other peninsulas has two separated tips, one in Apulia and another in Calabria, with very different landscapes and altitudes. This probably contributes to the increase taxonomical diversity. Nevertheless, authors have highlighted that the peninsular effect and related patterns and processes are strongly linked to selected contexts, scales, ecological and taxonomic levels. The case of the Orthoptera is particularly interesting because this order includes species with very different dispersal power, due to their characters (presence/absence of wings, need of peculiar habitats/altitudes, higher or lower thermophily, relations with vegetation structure, etc).

Generally they may be considered allopatric subpopulations, maintained by spatial segregation, that share i) a unique geographic range or habitat, ii) a group of phylogenetically concordant array of phenotypic and genetic characters, iii) a unique natural history relative to other subdivisions of the species, (still) genetically compatible with other subpopulations. Of course, island populations do not have a gene-flow with continental populations, and consequently we could expect that they diverge in isolation; therefore, island populations will diverge at a faster rate than continental ones. We consider that the origin of these taxa is mainly due to a more or less old isolation, which in different times of the biogeographical history separated populations that for a longtime were not able to mix. Thus, high mountains (Alps, Apennines and other isolated reliefs) and islands, have contributed considerably to the endemism proportion in the Italian Orthoptera.

Key Words: Teflubenzuron, Insect Growth Regulator, impact, side effect, non-target fauna, barrier treatment.

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