

# **Determination of Geographical Distribution Types by Using GIS software: Galerucinae (s. str.) (Coleoptera: Chrysomelidae) of Turkey**

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**Aim of the study:** Knowledge of presence and the distribution types of organisms provides fundamental information for many scientific fields. This information is intensely used in systematic, taxonomic, ecological and conservational studies. Galerucinae of Turkey includes 16 genera and 71 species, constituting one of the specious groups within Chrysomelidae fauna of Turkey. GIS (Geographic Information Systems) provide significant advantages for determining the distribution ranges and types of organisms, transferring the data on digital environment, processing the information in multiple dimensions and constructing available outputs to use in various fields. The main aim of this study is to determine distribution types of galerucines in Turkey by using GIS software.

**Material and Methods:** The distributional data of 71 species belonging to Galerucinae (s. str.) of Turkey, available in the literature, was transformed into a database and transferred to a Turkey map by using ArcMap(Esri)10.2 software. The locations that were not given as geographical coordinates were treated approximately. For the locations that are given only as the province names, the city centres were treated as exact locations. Distributional maps were created for each species and the distribution types of species were determined by comparing these maps.

**Results:** Locality records of five species were reported only as Anatolia (or Asia Minor) in the older literature and 20 species has only one locality record. Distribution type of these 25 species (35.2%) was categorized as “insufficient data”. As a result of the examination of the distribution maps of remaining 46 species, eight distribution types were determined. The species that were frequently reported from many parts of Turkey were categorized as “Widespread”, the species of which distribution records were disorderly separated were categorized as “Discontinuous”, and the species that were reported from certain regions are categorized as “Eastern”, “Southern”, “South-eastern”, “Northern”, “North-eastern” and “Mid-Anatolian”. The species numbers and percentages of the determined distribution types are as follows: Widespread, 16 species (22.5%); Discontinuous, 12 species (17%); Mid-Anatolian, 5 species (7%); North-eastern, 4 species (5.6%); Northern, 3 species (4.2%); Eastern, 2 species (2.8%); Southern, 2 species (2.8%); South-eastern, 2 species (2.8%). It was an expected result that 16 species were widespread; however, 25 species with insufficient data and 12 species with discontinuous distribution suggest that the faunistik surveys on leaf beetles are still needed in Turkey.

**Keywords:** Chrysomelidae, Leaf beetles, Galerucinae, GIS, Turkey.