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## SYMPOSIUM

### **Towards a more comprehensive understanding of Western Eurasian refugia – integrating botanical and zoological approaches**

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Climate change in geological past triggered a dramatic decrease in the ranges of multiple species, associated with humid forests. During the Last Glacial Maximum (LGM), most of the Northern Temperate biodiversity is thought to have survived in few limited areas of North America and Eurasia. These areas later became the main sources of the Holocene re-colonization. The refugia suffered from Pliocene aridization and Pleistocene Glacial Waves to less extent than the rest of the land surface. Focusing conservation efforts on these areas is important in the long-term perspective because they may function as important biodiversity reservoirs in the context of global climate change. Traditionally, locations of the refugia are judged by a particularly high diversity of the plant and animal species in certain geographic areas. Yet, this approach is inaccurate: it does not consider post-glacial biodiversity decrease or possible shift of the preferential environmental conditions in space. Neither the approach helps to specify the boundaries of the refugia, since high species diversity can reflect rapid post-glacial re-colonization of the non-refugial areas close to the refugial borders. Palaeovegetation data help a lot. Present state of palinological knowledge indicates that during the LGM, mixed or broadleaf forests of Western Eurasia were maintained in limited areas of the Alps, Carpatians, and along the south-eastern Black Sea Coast. However, the analysis of the molecular genetic data suggests that even palinological evidence is incomplete. For multiple species dependent on the humid forest landscapes, long-lasting isolated evolutionary lineages were discovered from outside the boundaries of the anticipated refugia. GIS modeling of suitable habitats, including modeling of ancient distributions, provide even deeper insight into the identification of the refugia. The objective of the Symposium will be an attempt to compare and integrate the current evidence of the refugial/relict areas of the western Palaearctics, based on different and distant taxonomic groups (plants, invertebrate and vertebrate animals) and obtained through different methodologies (analyses of the extant species distribution data, palaeovegetation studies, molecular genetic/ phylogeographic data, GIS modeling). The symposium will help to identify which approaches/ taxonomic groups provide the least controversial outcome, and to discuss the most valuable synthetic approaches that could improve our knowledge of the refugial areas.