

Occurrence and Habitat Status of *Osmoderma barnabita* in Lithuania

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Abstract : *Osmoderma* species complex (consisting of *Osmoderma eremita*, *O. barnabita*, *O. lassallei* and *O. cristinae*) is a scarab beetle serving as indicator species in nature conservation. *Osmoderma* inhabits cavities containing sufficient volume of wood mould usually caused by brown rot in veteran deciduous trees. As the species, having high demands for the habitat quality, they indicate the suitability of the habitat for a number of other specialized saproxylic species. Since typical habitat needed for *Osmoderma* and other species associated with hollow veteran trees is rapidly declining, the species complex is protected under various legislation, such as Bern Convention, EU Habitats Directive and the Red Lists of many European states. Natura 2000 sites are the main tool for conservation of *O. barnabita* in Lithuania, currently 17 Natura 2000 sites are designated for the species, where monitoring is implemented once in 3 years according to the approved methodologies. Despite these monitoring efforts in species reports, provided to EU according to the Article 17 of the Habitats Directive, it is defined on the national level, that overall assessment of *O. barnabita* is inadequate and future prospects are poor. Therefore, research on the distribution and habitat status of *O. barnabita* was launched on the national level in 2016, which was complemented by preparatory actions of LIFE OSMODERMA project. The research was implemented in the areas equally distributed in the whole area of Lithuania, where *O. barnabita* was previously not observed, or not observed in the last 10 years. 90 areas, such as Habitats of European importance (9070 Fennoscandian wooded pastures, 9180 Tilio-Acerion forests of slopes, screes, and ravines), Woodland key habitats (B1 broad-leaved forest, K1 single giant tree) and old manor parks, were chosen for the research after review of habitat data from the existing national databases. The first part of field inventory of the habitats was carried out in 2016 and 2017 autumn and winter seasons, when relative abundance of *O. barnabita* was estimated according to larval faecal pellets in the tree cavities or around the trees. The state of habitats was evaluated according to the density of suitable and potential trees, percentage of not overshadowed trees and amount of undergrowth. The second part of the field inventory was carried out in the summer with pheromone traps baited with (R)-(+)- γ -decalactone. Results of the research show not only occurrence and habitat status of *O. barnabita*, but also help to clarify *O. barnabita* habitat requirements in Lithuania, define habitat size, its structure and distribution. Also, it compares habitat needs between the regions in Lithuania and inside and outside Natura 2000 areas designated for the species.

Keywords : habitat status, insect conservation, *Osmoderma barnabita*, veteran trees

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