

University of South Bohemia in České Budějovice

Faculty of Science

**Demography and Dispersal Ability of a Threatened
Saproxylic Beetle: A Mark-Recapture Study of the Rosalia
Longicorn (*Rosalia alpina*)**

RNDr. Thesis

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Annotation

This thesis focuses on demography and mobility of an endangered and strictly protected icon of European saproxyllic biodiversity, the Rosalia longicorn beetle (*Rosalia alpina*). Using the mark-recapture method we estimated the size of the population, adult longevity, and dispersal ability of the Rosalia longicorn on three hills in the Ralska Upland, Czech Republic. Furthermore, we assessed the distribution pattern of another 15 populations inhabiting small patches of old beech forest in this area. Factors affecting local survival and the species conservation are discussed.

Declaration [in Czech]

Prohlašuji, že svoji rigorózní práci jsem vypracoval samostatně pouze s použitím pramenů a literatury uvedených v seznamu citované literatury.

Prohlašuji, že v souladu s § 47b zákona č. 111/1998 Sb. v platném znění souhlasím se zveřejněním své rigorózní práce, a to v úpravě vzniklé vypuštěním vyznačených částí archivovaných Přírodovědeckou fakultou elektronickou cestou ve veřejně přístupné části databáze STAG provozované Jihočeskou univerzitou v Českých Budějovicích na jejich internetových stránkách, a to se zachováním mého autorského práva k odevzdanému textu této kvalifikační práce. Souhlasím dále s tím, aby toutéž elektronickou cestou byly v souladu s uvedeným ustanovením zákona č. 111/1998 Sb. zveřejněny posudky školitele a oponentů práce i záznam o průběhu a výsledku obhajoby kvalifikační práce. Rovněž souhlasím s porovnáním textu mé kvalifikační práce s databází kvalifikačních prací Theses.cz provozovanou Národním registrem vysokoškolských kvalifikačních prací a systémem na odhalování plagiátů.

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Lukáš Drag

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Lukáš Drag is the first and corresponding author of this study. He participated in all parts of the project including the data collection (together with DH, PP, and LC), data analyses (together with KZ) and manuscript preparation (together with LC). The paper is based on his master thesis.

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Demography and Dispersal Ability of a Threatened Saproxylic Beetle: A Mark-Recapture Study of the Rosalia Longicorn (*Rosalia alpina*)

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Abstract

The *Rosalia longicorn* or Alpine longhorn (Coleoptera: Cerambycidae) is an endangered and strictly protected icon of European saproxylic biodiversity. Despite its popularity, lack of information on its demography and mobility may compromise adoption of suitable conservation strategies. The beetle experienced marked retreat from NW part of its range; its single population survives N of the Alps and W of the Carpathians. The population inhabits several small patches of old beech forest on hill-tops of the Ralska Upland, Czech Republic. We performed mark-recapture study of the population and assessed its distribution pattern. Our results demonstrate the high mobility of the beetle, including dispersal between hills (up to 1.6 km). The system is thus interconnected; it contained ~2000 adult beetles in 2008. Estimated population densities were high, ranging between 42 and 84 adult beetles/hectare a year. The population survives at a former military-training ground despite long-term isolation and low cover of mature beech forest (~1%). Its survival could be attributed to lack of forestry activities between the 1950s and 1990s, slow succession preventing canopy closure and undergrowth expansion, and probably also to the distribution of habitat patches on conspicuous hill-tops. In order to increase chances of the population for long term survival, we propose to stop clear-cuts of old beech forests, increase semi-open beech woodlands in areas currently covered by conifer plantations and active habitat management at inhabited sites and their wider environs.