

Habitat Occupancy and Mobility of the Violet Copper (*Lycaena helle*) in West Khentii, Northern Mongolia

Chuluunbaatar Gantigmaa¹, Michael Muehlenberg² and Magsarjav Altantsetseg³

¹Laboratory of Entomology, Institute of Biology, Mongolian Academy of Sciences, Ulaanbaatar, Mongolia, e-mail: gantigaa_ch@yahoo.de

²Centre for Nature Conservation, George-August University of Goettingen, Goettingen, Germany, e-mail: mmuehle@gwdg.de

³Department of Zoology, Faculty of Biology, National University of Mongolia, Ulaanbaatar 210646, Mongolia, e-mail: altai@biology.num.edu.mn

Abstract

The violet copper (*Lycaena helle* Denis & Schiffermueller, 1775) was studied using mark-release-recapture method in West Khentii in northern Mongolia. The netting method was used for collecting the violet copper during one hour standardised sample in different biotopes. Violet copper was found predominantly in the wet, mesophilous grassland and herb meadows, but it also found in the birch forests in the riparian zone the valley as well as in the mixed forests consisted of *Larix sibirica* and *Betula platyphylla*. We examined the movement and individual occurrence through the habitat types of West Khentii. The mean distance between the first and subsequent capture points in the open area were greater than that of in fragmented landscapes for both sexes (107 ± 76 and 44 ± 41 m for females and males, respectively). The single greatest movement distance between recaptures was 386 m for females and 163 m for males.

Key words: *Lycaena helle*, habitat occupancy, mobility, West Khentii, Mongolia

Introduction

Lycaena helle (Denis & Schiffermueller, 1775) is one of the rarest butterfly species in Central Europe (Fischer *et al.*, 1999) and is considered to be an endangered species in Germany (Bundesamt fuer Naturschutz 1998).

Afforestation, peat extraction and management to improve the quality of cattle grazing (such as drainage, burning and chemical treatment) are main factors in Central Europe in disturbing the suitable habitat of this species (Kudrna, 1986). The local extinction and decline of many butterfly species are related to changes in habitat quality (van Swaay & Warren, 1999; Summerville *et al.*, 2002; William, 1998; Rodriguez *et al.*, 1994). Many authors documented the influence of landscape patterns on butterfly community (Schneider 2003; Natuhara *et al.*, 1999; Saarinen, 2002; Dover *et al.*, 1997; Schneider & Fry, 2001; Pullin 1997; Rodriguez *et al.*, 1994; Summerville *et al.*, 2003; Summerville & Thomas, 2004). Sparks and Carey (1995) revealed the influence of the floral composition on butterfly diversity. Dover *et al.* (1997) discussed the importance of shelter

in the open habitats for butterflies. The feature of the landscape is most important predictor that influences the population and community structure of butterfly species (Hunter, 2002; Tews *et al.*, 2004; Rodriguez, 1994; Pullin, 1997; Root, 1972; Ehrlich & Murphy, 1987; Dennis & Eales, 1997).

In comparison with those environmental conditions of Europe and all other regions in the similar latitude, ecosystems in Mongolia are relatively undamaged.

In this study we chose the violet copper, *Lycaena helle*, which lives as small populations on fragmented and isolated habitat islands in Central Europe (Fischer *et al.*, 1999; Van Swaay & Warren, 1999).

The main aim of this study was to investigate the occupancy of violet copper in different habitat types of West Khentii, Mongolia. The specific objectives of this study are to characterise the influence of landscape structure and vegetation type on violet copper population with comparison of their habitat occupancy, and to determine the mobility of the individuals in natural landscape.