

# The Biodiversity Database of the Hohe Tauern National Park as a base for research and management: distribution of threatened species in the national park, based on butterfly data

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## Abstract

A survey was conducted on the spatial distribution of threatened butterfly species in the Hohe Tauern National Park by means of the national park's database maintained at the "Haus der Natur" museum for natural science and technology in Salzburg. It led to the insight that butterfly species of conservation interest especially occur in edge areas of the national park, often finding habitats close to the national park, yet outside of the legal borders. As these habitats are cultivated, it is essential to stop the intensification of farming spreading inconspicuously even within the national park boundaries, and to target conservation measures at these habitats, even if just outside the legal borders.

## Keywords

biodiversity database, distribution, Hohe Tauern National Park, hotspot, threatened butterfly species

## Introduction

The biodiversity database of the Hohe Tauern National Park contains nearly 300 000 records on animal and plant species. Apart from the general documentation of biodiversity the focus is directed towards species of conservation interest. Butterflies are a well-known group of organisms, information on their ecology and conservation status are readily available. Furthermore, their spatial distribution is known, even at small scale. This makes it possible to evaluate their distribution in the Hohe Tauern region. We aimed to delimit hotspots for threatened butterflies in the Hohe Tauern National Park, in order to highlight sensitive areas for the corresponding species as a background information for management measures.

## Study area

The geographic area covered is the region of the Hohe Tauern National Park, comprising a core and a buffer zone (together ca. 1 800 km<sup>2</sup>), as well as an area outside the national park including those municipalities in Salzburg, Tyrol and Carinthia, which share a part of the Hohe Tauern National Park (Figure 1). The study area thus covers a natural spatial unit and is not confined to legislative boundaries such as the borders of the national park.

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| 1. <b>Hohe Tauern National Park core zone</b>   |
| 2. <b>Hohe Tauern National Park buffer zone</b>   |
| 3. <b>Municipalities:</b> area outside the national park including all municipalities sharing a part of the National Park |

Figure 1: The three zones of the Hohe Tauern region considered in this survey

## Methods

The biodiversity database is maintained at the "Haus der Natur" museum for natural science and technology in Salzburg. Database management and data entry is carried out by a small team of biologists specialised in the taxonomy and ecology of vertebrates, invertebrates and plants and with in-depth knowledge of informatics.

The main software used in the project is "BioOffice", a software package designed for the documentation of biodiversity data. The database program is based on a Microsoft SQL server and a client software with integrated GIS functionality.

Record sets on threatened butterflies documented in the database were queried and analysed with respect to their spatial distribution, whereby we firstly only distinguished between the three zones of the national park (see Figure 1).

The conservation status of butterflies follows the Austrian red list (ZULKA 2005).

## Results

128 butterfly species were recorded in the study area. 54 of them are considered as being threatened at a national level. All these threatened butterfly species are known in the area outside the national park including all municipalities sharing a part of the national park (zone “municipalities”). On the other hand, only 35 of these threatened butterfly species have been recorded in the buffer zone and 28 in the core zone of the national park.

The most endangered species (categories “critically endangered”, “endangered” and “vulnerable”,  $N = 20$ ) are almost exclusively found outside the borders of the national park. In the core zone only 4 species have been recorded for the “vulnerable” category, 23 species occurring here are considered as “near threatened”. Most of the latter are alpine specialists: they have a restricted geographical range, but are currently not threatened by human activities (e. g. *Boloria napaea*, *Polyommatus eros*). The buffer zone occupies an intermediate position (Figure 2). Thus most species occurring in the national park are not threatened. The few species threatened at a higher level occur mostly in the buffer zone. An example is the Large Heath (*Coenonympha tullia*), which settles in the national park only in low altitude fens.

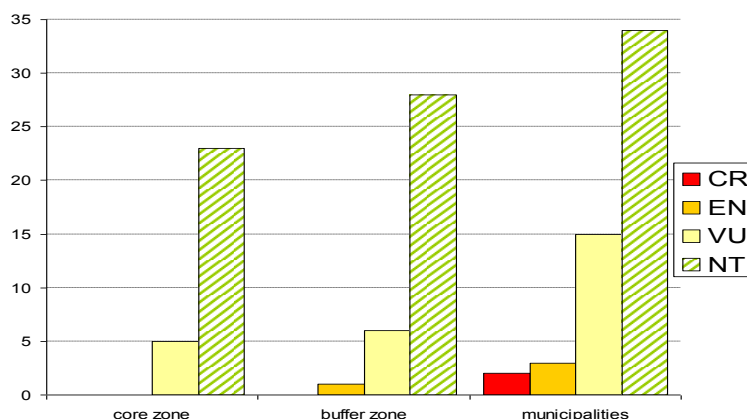


Figure 2: Threatened butterfly species in the three different zones of the area studied. Categories of threat (after ZULKA 2005): CR – critically endangered; EN – endangered; VU – vulnerable; NT – near threatened

## Discussion

Butterfly species threatened at national level occur mostly in the transition zone between the area of the Hohe Tauern National Park and its surroundings (in our case the zone “municipalities”).

The uncultivated core zone of the national park is home to only a few threatened species, most of which are alpine species with a restricted geographical range, but which are widespread throughout European mountainous region. Thus with respect to butterflies the role of the core zone of the national park as a refuge for threatened species is limited: only few habitats are likely to sustain populations of more highly endangered butterfly species there (e. g. dwarf shrub habitats in case of species such as *Colias palaeno* or *Agriades optilete*).

In the national park, more highly endangered species find refuge mostly in the buffer zone, with a preference for cultivated grassland. Of crucial importance are traditionally used pastures and fens very low in nutrients. As such sites are a limited resource, even within the national park, it is essential to target conservation measures at these habitats, for example by promoting their traditional management. It is essential to stop the intensification of farming spreading inconspicuously even within the boundaries of the national park!

On the other hand, we were able to show that most of the nationally threatened butterfly species find habitats close to the national park, but outside of its legal borders. This situation is changing very rapidly, also due to the intensification of farming. Hence efforts must be made to save these habitats, even though they are outside the protected zone. We have to take responsibility for these refuge habitats, because populations of (inter)nationally threatened species occurring there have to be considered as an important reservoir. The national park within its current legal borders cannot act as a safeguard for these species, as they do not occur there naturally (or are very scarce) for ecological reasons. Therefore we have to keep our focus also on habitats just outside the legal borders.

## References

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