



## CROATIA DISSERTATION/THESIS PROJECT

### CR01 Ecology of diurnal butterfly communities in Krka National Park

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To date, 40 species of diurnal butterfly have been recorded by opportunistic observations within the mixed Mediterranean scrubland and forest habitats of Krka National Park, Croatia, indicating a diverse Lepidoptera community which includes some spectacular species such as the Old World Swallowtail (*Papilio machaon*). However, thus far the only available information regarding the butterfly communities of Krka are basic species records which have been put together to constitute a draft inventory; no work has been completed examining the actual ecology of the butterfly communities found here. This is important, as understanding the overall community structure of Lepidoptera in Krka, along with the habitat associations of particular species and the relative value of different habitats for supporting high butterfly biodiversity, is essential with regards to developing effective conservation and management strategies here.

Students taking this option will work alongside an experienced Lepidopterist to complete a series of pollard count surveys within discreet habitat categories Krka National Park, including scrubby thickets, dry rocky grasslands, riparian meadows, mixed forest and Hornbeam forest. Surveys be based along a set of transects located in each habitat; these will be walked at mid-morning (when temperatures are high enough to stimulate butterfly activity) with all butterflies encountered on the walks being captured, identified and released. This will yield data on relative abundance and diversity of butterfly communities, and presence of particular indicator species in each broad habitat type. Students will also complete basic botanical surveys along each transect in order to determine which food plants are present, allowing for an analysis of habitat associations of particular species. The results of these various analyses can then be used to identify key macro and micro habitats for both the Lepidoptera community of Krka as a whole, as well as for particular species. Students also have the option of adding additional variables to their dataset, such as activity periods and flight height of particular species observed on the transects, in order to yield further basic ecological information on the Lepidoptera communities of Krka National Park.

### Recommended Reading

- Cremene C., Groza G., Rákósy L., Schileyko A.A., Baur A., et al. (2005) Alterations of steppe-like grasslands in Eastern Europe: a threat to regional biodiversity hotspots. *Conservation Biology* 19: 1606–1618
- Loos J., Dorresteijn I., Hanspach J., Fust P., Rákósy L., et al. (2014) Low-Intensity Agricultural Landscapes in Transylvania Support High Butterfly Diversity: Implications for Conservation. *PLoS ONE*
- Pollard E., Yates T.J. (1993) *Monitoring butterflies for ecology and conservation: the British butterfly monitoring scheme*; Institute of Terrestrial Ecology JNCC, editor. London: Chapman & Hall. 274 p.

Van Swaay, C.A.M., Van Strien, A.J., (2005) Using butterfly monitoring data to develop a European grassland butterfly indicator. In: Kühn, E., Feldmann, R., Thomas, J.A., Settele, J. (eds.) *Studies on the Ecology and Conservation of Butterflies in Europe. Vol. 1, General Concepts and Case studies*. Pensoft, Sofia-Moscow.

Launer, A.E. & Murphy, D.D. (1994) Umbrella species and the conservation of habitat fragments: A case of a threatened butterfly and a vanishing grassland ecosystem. *Biological Conservation* **69**: 145-153.

Wenzel, M., Schmitt, T., Weitzel, M. & Seitz, A. (1999) The severe decline of butterflies on western German calcareous grasslands during the last 30 years: A conservation problem. *Biological Conservation* **128**: 542–552.