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06.04.2021

**Promotionsverfahren zur Erlangung des akademischen Grades Doktor der Naturwissenschaften
(Dr. rer. nat.) von Frau Linda Bröder**

Sehr geehrte Damen und Herren,

die Dissertation von **Frau Linda Bröder** mit dem Titel

**„Improving conservation management for the critically endangered Crau plain
grasshopper, *Prionotropis rhodanica*“**

sowie die Berichte liegen gemäß § 8 S. 2 PromO vom 27. Juli 2016 in der Zeit

vom 07.04.2021 bis zum 22.04.2021

im Dekanat (Zi. F 126) zur Einsichtnahme aus. Die Zeit der Auslagefrist entspricht den
Regelungen der PromoO des FB VI vom 27.7.2016.

**Aufgrund der aktuellen Auflagen der Corona-Bekämpfungsverordnung, ist eine
Einsichtnahme nur nach vorheriger Terminvereinbarung mit dem Dekanat möglich.**

Vorbehaltlich einer einspruchslosen Auslage ist als Termin für die Disputation vorgesehen:

Freitag, 23.04.2021, 13:00 Uhr, via Zoom

**Weitere Informationen zur Durchführung der Disputation
finden Sie auf der Homepage der Universität Trier unter:
Fachbereich VI > Der Fachbereich > Aktuelles > Disputationen am FB VI**

Mit freundlichen Grüßen

Univ.-Prof. Dr. Thomas Udelhoven
Dekan

Improving conservation management for the critically endangered Crau plain grasshopper, *Prionotropis rhodanica*

Summary

Consideration of insects in nature conservation was comparably scarce in the past, but has recently received increased attention as a result of many alarming studies on a global insect decline. Conservation plans are a crucial tool to specify and guide adequate conservation management, which is vital to counteract population declines. The two most central research targets of the strategic conservation plan of the critically endangered Crau plain grasshopper, *Prionotropis rhodanica*, were subject of my doctoral thesis. It was aimed to elucidate the causes of the drastic population decline that was observed during the last two decades (Chapter I) and to develop a suitable monitoring method for the species (Chapter II). To better understand the effect of grazing, microhabitat preferences and structural differences between populated sites and sites where the species went extinct were investigated in the first study of Chapter I. The results show that intense grazing has a negative effect on the species and that the grasshopper requires between 50 % to 70 % vegetation cover. The second study of Chapter I gave an additional indication regarding the importance of habitat quality, as population density and gene flow both positively correlated with this parameter. In the conservation strategy, the impact of several avian predator species is further suggested as another potential threat to the grasshopper. The third study of Chapter I thus addresses predation effects. Crows were identified to be main predators, and crows and cattle egrets were further shown to be positively related to grazing and negatively to grasshopper survival (which was notably affected by crow presence). Moreover, a peak in predator presence during the early reproduction period of *P. rhodanica* was observed. The overall results suggest that the simultaneous colonization and increase of these two synanthropic predators is a very plausible threat to *P. rhodanica*. The adaptation of grazing management to comply with the grasshoppers' specific requirements and to reduce predation effects should be a conservation priority. The study in Chapter II provides an optimized monitoring protocol based on capture-recapture methodology. Optimization was required, as the grasshopper has a very low detection probability, resulting in huge field effort and poor data quality, not allowing robust abundance estimates. An optimized design based on the minimum required field effort and including the phenology as analysis criterion was developed and confirmed to be efficient. The optimization method can be applied to a wide range of other elusive species. Moreover, population size estimates from simulation scenarios based on IUCN Red List thresholds showed that estimates for elusive species are mostly unbiased and robust, suggesting that capture-recapture methodology can be considered reliable for informing Red List assessments.