

Scientific note

The importance of secondary habitats for extremely rare Lepidoptera in Bavaria

(Arthropoda)

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Fig. 1. Aspect of the former military training area near Siegenburg with abundant plants typical for poor sandy grassland and heathland.



Fig. 2. *Aproaerema captivella* (Herrich-Schäffer, 1854), rediscovered after 150 years in Bavaria.

Butterflies and moths of Bavaria are in strong decline but recently, a number of species previously considered as lost have been rediscovered, many of them in secondary anthropogenic habitats like quarries and military training areas, respectively (Haslberger & Segerer 2021).

One example is a former NATO training area located at inland sand dunes near Siegenburg, southern Bavaria which we investigated in the years 2021–2023 (Fig. 1). The biotope is dominated by heathland and a number of unique biotopes, e.g. *Koeleria glauca*-*Jasione montana*-communities which are critically endangered in Germany (Finck et al. 2017). In our survey we documented a total of 923 lepidopteran species, including 11 extremely rare species that, according to current knowledge, have their only remaining population in Bavaria at this place (e.g. Fig. 2). All of them are specialists adapted to nutrient-poor environments in open or semi-open landscapes; they have long since disappeared from all other previously known locations including conservation sites in Bavaria, mainly due to effects of structural degradation and airborne fertilization of the habitats (Haslberger & Segerer 2021).

These results underline the importance of anthropogenic habitats as secondary refuges for extremely rare Lepidoptera in a densely populated and highly

fragmented cultural landscape. In terms of responsibility for critically endangered species, a systematic, nationwide survey is suggested to look for further, potentially existing populations of these species (e.g., in other comparable habitats); and, more generally, to identify distribution and hot spots of any relic populations of extremely rare Lepidoptera in order to generate a robust scientific knowledge base necessary for development of effective conservation measures (e.g., see Verovnik et al. 2013).

References

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