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Einfluss von Landnutzungsänderung auf das syntope Vorkommen von Erd-, Kreuz- und Wechselkröte (*Bufo bufo, Epidalea calamita* und *Bufotes viridis*) in einem rheinischen Auskiesungsgebiet

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Impact of landscape dynamics on the syntopic occurrence of *Bufo bufo, Epidalea calamita* and *Bufotes viridis* in the Rhine floodplain

From 1998–2001 and again 2014 we studied the dynamics of the herpetofauna inhabiting a 15 ha area within the Koblenz-Neuwied Basin (Rhineland-Palatinate, Germany), with focus on the syntopic toad populations of *Bufo bufo, Epidalea calamita,* and *Bufotes viridis.* From April to July we monitored the presence of amphibians in daytime shelters during 10–16 surveys of 4–6 person*hour. Location, species, sex, snout-vent length and body mass were recorded for each collected toad individual. The initial state of landscape and herpetofauna is described in Sinsch et al. (1999). Landscape dynamics during the study period consisted in more intensive industrial use of larger areas, more dense vegetation in the remaining rural areas, and in the creation of permanent sedimentation ponds for waste water accompanied by the almost complete destruction of temporary ponds. Pond destruction included the only common reproduction site of the three toad species (B9 in Sinsch et al. 1999). Moreover, herpetofaunal diversity dropped by one species (*Rana temporaria*) which bred in the destroyed pond. In response to altered landscape use the abundance of natterjack toads dramatically decreased from initially > 400 to 14 individuals per 4 months collecting period in 2014. The number of breeding ponds decreased from 10 to one. Green toads compensated the temporary loss of the only breeding site by the colonization of a newly created pond in 2009, still the abundance decreased to about 60% of the initial values. Common toads lost their only local breeding site in 2001, but immigrants from neighbouring populations maintained abundance at a constant low level. The condition as an indicator of nutritional state was significantly lower in 2014 than during the first four study years in all toad species suggesting reduced habitat quality. Altered land use in the study area and in other parts of the Koblenz-Neuwied Basin negatively impacted abundance of both *E. calamita* and *B. viridis*, while overall site occupancy of green toads decreased to a level suggesting a great risk of local extinction in the near future.

Key words: Amphibian and reptile community, *Bufo bufo, Bufotes viridis, Epidalea calamita,* condition index, land use dynamics, extinction risk.

Zusammenfassung

Von 1998–2001 und nachfolgend in 2014 untersuchten wir die Dynamik der Herpetofauna auf einer 15 ha großen Fläche im Koblenz-Neuwieder Becken (Rheinland-