

Zur Bestandsentwicklung und Populationsdichte von Amphibien in Lebensräumen mit konstanten Bedingungen

Andreas Zahn¹ & Ursina Tobler^{2,3}

¹H.-Löns-Str. 4, D-84478 Waldkraiburg, andreas.zahn@tiv.de

²Koordinationsstelle für Amphibien- und Reptilienschutz Schweiz (karch), Passage Maximilien-de-Meuron 6, CH-2000 Neuchâtel, ursina.tobler@unine.ch

³Institut für Evolutionsbiologie und Umweltwissenschaften, Universität Zürich, Winterthurerstr. 190, CH-8057 Zürich

Amphibian population development and density in habitats subject to little change

The study describes fluctuations in counts of amphibians (*Rana temporaria*, *Bufo bufo*, *Bufo viridis* and *Hyla arborea*) in habitats subject to little change. Regular monitoring based on counts of spawn clumps (*Rana temporaria*) and males (the other species) at the spawning sites was conducted in two parks, a cemetery, a riparian wetland and a swimming pond in the Lower Inn Valley (Mühldorf administrative district, Upper Bavaria), for periods ranging between 12 and 17 years. All populations underwent considerable fluctuations during the study periods. In three of four *B. bufo* populations, the maximum male counts (507, 434 and 271) were 14.5 times, 8.5 times and twice as high as the minimum ones. In the fourth population the counts varied between one and 74. The maximum numbers of spawn clumps (172 and 232) in the two *R. temporaria* populations were 43 and 10 times as high as the minimum ones. In the case of *H. arborea*, where 38 males were counted at the most, the factor was 13. The numbers of *B. viridis* males fluctuated between 0 and 13. It was possible in some cases to demarcate the population areas by determining migration barriers with the help of aerial photos and thus calculate minimum adult population densities. This was achieved by assessing the number of *B. bufo* females and *R. temporaria* adults in reference to literature data. In the case of *B. bufo* these were 59.5 adults/ha at the most, and 92.6 adults/ha (maximum) in the case of *R. temporaria*. The size fluctuations observed in some of the populations indicate the likelihood of their extinction simply by chance. In fact, the *B. viridis* population indeed seemingly became extinct during the study period. This risk can only be minimized if individuals are able to move between local populations. Corridors that allow such movements would thus seem to be decisive for the long-term survival of populations even in habitats subject to little change.

Key words: Amphibia, population fluctuation, density, *Bufo bufo*, *Bufo viridis*, *Rana temporaria*, *Hyla arborea*.

Zusammenfassung

Basierend auf Zählungen an den Laichgewässern wurden die Bestandsschwankungen von Populationen der Arten Grasfrosch (*Rana temporaria*), Erdkröte (*Bufo bufo*), Wechselkröte (*Bufo viridis*) und Laubfrosch (*Hyla arborea*) in Lebensräumen mit relativ gleichbleibenden Bedingungen untersucht. Die Erfassung erfolgte in zwei Parkanlagen, einem Friedhof, einer Aue und einem Freibad im unteren Inntal (Oberbayern)