

Verbreitung, Populationsstrukturen und Ploidiegrade von Wasserfröschen in Westfalen

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Distribution, population structure, and ploidy levels of water frogs in Westphalia

During the reproductive periods 1995 and 1996, 790 water frogs were caught at 33 breeding sites in Westphalia. In all individuals allozymes of eight enzyme systems were analysed by cellulose acetate gel electrophoresis of blood samples. Through this analysis 11 gene loci with 26 different alleles could be identified. 6 of 7 polymorphic gene loci provided 20 alleles with different diagnostic value. They allowed the identification of 141 *R. lessonae* (17,8 %), 403 *R. kl. esculenta* (51,0 %), and 246 *R. ridibunda* (31,1 %). 765 specimen were adults (96,8 %). The DNA-content of their erythrocyte nuclei revealed all frogs as diploids. Seven different population systems could be identified (7–53 specimens per population): 6 *lessonae-esculenta*, 4 *esculenta-lessonae*, 7 *esculenta*, 2 *esculenta-ridibunda*, 7 *ridibunda-esculenta*, 6 *ridibunda*, and 1 *ridibunda-esculenta-lessonae*. Pure *lessonae*-populations could not be found. *R. ridibunda* numerically predominates *R. kl. esculenta* in *ridibunda-esculenta* populations, whereas the hybrids usually exceed the number of syntopic *R. lessonae* in *esculenta-lessonae* populations. Probably primary crossbreeds take place in one *ridibunda-esculenta-lessonae*-population. The main distribution centres of *R. lessonae* are the landscapes Hohe Mark and Haard around Haltern. *R. ridibunda* is the predominant species in the Ruhr valley where pure *ridibunda*-populations are frequent. However, *R. ridibunda* is missing almost completely in the vicinity of the Lippe basin. Eleven ponds in woodlands are inhabited by *R. lessonae*. *R. ridibunda* strictly avoids those waters. The hybrids, however, prefer similar habitats as *R. lessonae*. *R. ridibunda* shows highest preference for drains and arms of rivers.

Key words: Amphibia, Anura, Ranidae, *Rana lessonae*, *R. ridibunda*, *R. kl. esculenta*, allozyme analysis, cellulose acetate electrophoresis, ploidy levels, population systems, distribution, habitat preference.

Zusammenfassung

790 Wasserfröschen wurde während der Fortpflanzungszeit in den Jahren 1995 und 1996 an 33 westfälischen Laichplätzen Blut entnommen. Mittels Allozymanalysen mit Cellulose-Acetat-Gelen als Trägermaterial konnten 11 Genorte aus 8 Enzymsystemen getestet werden. An diesen 11 Genorten wurden 26 verschiedene Allele charakterisiert; 7 Genorte erwiesen sich als polymorph, 6 eigneten sich zur Genotypendiagnose (20 Allele mit unterschiedlicher diagnostischer Wertigkeit). Anhand dieser Genorte konnten 141 Individuen als *R. lessonae* (17,8 %), 403 als *R. kl. esculenta* (51,0 %) und 246 als *R. ridibunda* (31,1 %) determiniert werden. 765 Individuen waren Adulti (96,8 %). Messungen des DNA-Gehaltes der Erythrozytenkerne zeigten, daß alle Wasserfrösche diploid waren. Sieben verschiedene Populationssysteme konnten identifiziert werden (7–53 Individuen pro Population): 6 *lessonae-esculenta*-, 4 *esculenta-lessonae*-, 7 *esculenta*-, 2 *esculenta-ridibunda*-, 7 *ridibunda-esculenta*-, 6 *ridibunda*-,