

Morphologie und Ploidiegrade von Wasserfröschen aus unterschiedlichen Populationssystemen in Nordost-Polen

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Morphology and ploidy levels of water frogs from different population systems in Northeast Poland

In early summer 1994 several water frog populations of four different habitat types were investigated in the vicinity of Białystok (Northeast Poland). Three different population systems could be identified: one pure *lessonae*-population, one pure *esculenta*-population, and one mixed population consisting of *R. lessonae* and *R. kl. esculenta*. Triploid *esculenta*-individuals were found in the pure *esculenta*- (58,3 %) and the *esculenta-lessonae*-population (84,6 %). *R. ridibunda* was not found in the investigated area. The *esculenta-lessonae*-population inhabited a *lessonae*-typical habitat. Both, pure *lessonae*- and *esculenta*-populations were found in more typical *ridibunda*-habitats. This fact may be explained by the absence of *R. ridibunda*. Diagrammatic representation of the humerus/callus internus versus digitus primus/callus internus length ratios in addition to the assignment of phenotype characteristics provided a differentiation much more reliable than ordinary classification keys to characterise the population systems. Nevertheless, one third of all *R. lessonae* classified by this method were in fact triploids of *R. kl. esculenta* as revealed by determination of the nuclear DNA-content.

The comparison of erythrocyte sizes was inadequate to identify different ploidy levels. Best results were obtained by directly determination of the nuclear DNA contents using photometrical fluorescence measurements of Feulgen stained erythrocyte cells. The nuclear DNA content of diploid *R. kl. esculenta* was 15,6 % higher than of *R. lessonae*. No gene-dose effect was detected in triploid *R. kl. esculenta*. A significant gene flow between cohabitant water frog forms was supposed to be the reason for the missing gene-dose effect. This hypothesis was supported by two observations:

- Triploid specimens tended to resemble the phenotypes of cohabitant water frog forms.
- The phenotypes of triploid *R. kl. esculenta* from the *esculenta*-population differed statistically significant from those of *esculenta-lessonae*-populations as revealed by a discriminant analysis basing on three morphometric ratios. 86,4 % of the triploid individuals were successfully classified as belonging to their corresponding population system.

Key words: Amphibia, Anura, Ranidae, *Rana lessonae*, *Rana kl. esculenta*, morphology, erythrocyte size, nuclear DNA content, ploidy level, gene-dose effect, habitat choice, population system, Northeast Poland.

Zusammenfassung

Im Frühsommer 1994 wurde in der Umgebung von Białystok (Nordost-Polen) die Zusammensetzung einiger Wasserfroschpopulationen in vier unterschiedlichen Habitattypen untersucht. Es wurden eine reine *lessonae*-Population, eine *esculenta-lessonae*- und eine reine *esculenta*-Population charakterisiert. Triploide Tiere konnten