

Study of the coexistence pattern of two alternative phenotypes in the palmate newt (*Lissotriton helveticus*), the answer from microsatellite markers

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Facultative paedomorphosis is a polymorphism that occurs in several species of newts and salamanders. In contrast to metamorphosis, paedomorphosis implies the retention of larval traits - such as external gills in reproductive adults -. The coexistence of the two phenotypes in the same reproductive habitat brings then the question of their sexual compatibility. Indeed, different sexual strategies may lead to some sexual isolation between phenotypes. To determine whether the two phenotypes are part of a single population or if they show some isolation, we undertook a genetic analysis on both coexisting phenotype from a population of the palmate newt (*Lissotriton helveticus*) in Larzac (France). 10 polymorphic microsatellite markers were used to genotype 96 individuals (48 meta- and 48 paedomorphs), coexisting in the same pond. Genetic diversity was similar in the two phenotypes and the F_{st} - and F_{is} -values were low, suggesting a high gene flow and sexual compatibility between meta- and paedomorphs. In addition, several markers were significantly in Hardy-Weinberg (HW) disequilibrium with heterozygote excess. The results suggest the absence of inbreeding with a high gene flow between phenotypes. This sexual compatibility may be an adaptation to local selection pressures, contributing to the persistence of the polyphenism. Some markers appear to present HW disequilibrium suggesting selection, non-random mating or random genetic drift that could be interesting to analyse in future studies.



ZOOLOGY 2015

22nd Benelux Congress of Zoology

Amsterdam, the Netherlands

8 & 9 October 2015

Initiated by the:

Royal Dutch Zoological Society (KNDV) - <http://kndv.science.ru.nl>

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