

PROGENESIS AS AN INTRINSIC FACTOR OF ECOLOGICAL OPPORTUNITY IN NEWTS

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Ecological opportunity plays an important role in the persistence of polyphenisms by allowing for niche differentiation. It is generally defined as the existence of ‘vacant niches’ that become available when resource diversity increases or following ecological release. Yet, beyond extrinsic factors of ecological opportunity, few authors consider the potential role of developmental plasticity itself as a factor able to provide the ability, *hitherto* unavailable, to exploit available resources. Here, we studied pond living facultatively paedomorphic newts that depict a progenetic pathway to paedomorphosis (i.e. earlier offset inducing the acquisition of sexual maturity at a smaller body size than metamorphs). Facultative paedomorphosis has been shown to promote niche expansion towards underused resources in spatially heterogeneous habitats such as deep lakes. In ponds, we hypothesized that, despite low ecological opportunity associated to ecosystem size, progenesis could promote niche differentiation intrinsically, via body size reduction. We used stable isotopes and stomach contents to assess trophic niche use of the two phenotypes in relation to body size in ponds of varying dimensions. We show that not only did paedomorphs occupy a different trophic niche in all populations, corresponding to an expansion towards resources underused by metamorphs, but the smaller they were due to progenesis, the more different they were from metamorphs in terms of trophic ecology. These results suggest that beyond generally recognized fitness advantages of progenetic development, this process may also bring immediate ecological advantage by intrinsically generating ecological opportunity, allowing for the persistence of this polyphenism in spatially low heterogeneous habitats.



XX European Congress
of Herpetology
Milan, 2-6 September 2019

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