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**Anthropogenic Disturbance, a High Constraint on the
Evolution of Paedomorphosis in Newts**

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Paedomorphosis is a developmental pathway in which larval traits are retained in adults, which bypass then the abrupt morphological and habitat changes caused by metamorphosis. In newts and salamanders, the evolution of these developmental pathways results from varied advantages and pressures occurring in the aquatic and terrestrial environments. The study of contemporary facultative paedomorphic species, which exhibit both paedomorphosis and metamorphosis, can therefore learn us on the benefits but also the constraints that may canalize species into single developmental pathways. To this end, we examined more than one hundred facultative paedomorphic populations of newts in Europe and carried out targeted lab experiments in light of recent habitat disturbance: fish introduction and drying. Although paedomorphosis is expressed in a plethora of taxa, it was rare at the species level in facultative paedomorphic newts, with hundreds less populations of paedomorphs than metamorphs. Lab experiments showed that, in presence of fish and drying, newts can opt for metamorphosis instead of remaining paedomorphs. Longitudinal surveys showed that fish was the main global determinant of the shift from paedomorphosis to metamorphosis in wild populations. Although drying could be favorable in some ecosystems, such as Mediterranean ponds, it can also constraint paedomorphosis in some populations in preventing larvae to reach an adult gilled stage. In contrast, despite being impacted at local scales, metamorphosed phenotypes can subsist in alternative habitats. The level of rarity of paedomorphosis over metamorphosis is thus increasing across years at a such high rate that it is now getting almost extirpated from entire biogeographic regions and environments. Altogether, these results show us that focusing on current anthropogenic environmental constraints can help us to disentangle across the

selective factors that may have driven the evolution of alternative developmental pathways.

BOOK OF ABSTRACTS

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