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Fossorial preferences of three West Central Florida treefrogs: implications for conservation

Species in the family Hylidae (Amphibia: Anura) are generally known as treefrogs because of their ability to climb and use branches to perch and move about. This behavior clearly contrasts with that of burrowing frogs such as the Pelobatids (spadefoot toads). The fossorial habits of treefrogs are not well known but anecdotal accounts have reported burrowing in many Hylid taxa including the barking treefrog (*Hyla gratiosa*). *Hyla gratiosa* has been the focus of considerable concern because it is rare in comparison to other treefrogs. The purpose of this study was to assess the potential fossorial behavior of three Hyla species known from west central Florida: *H. gratiosa*, *H. cinerea* (green treefrog), and *H. femoralis* (pinewoods treefrog). In laboratory conditions, individuals of the three species were placed in terraria containing leafy tree branches from natural vegetation on a sandy substrate. *Hyla gratiosa* spent nearly 14 % of the time perched on branches and was the only species that burrowed significantly (43.0 % the time). *Hyla femoralis* rarely burrowed or spent time directly on top of the soil (5.3 % of the time). *Hyla cinerea* was never found burrowed in, or directly on top of, the soil. The fossorial behavior of the barking treefrog has implications for the protection of appropriate habitats for this species, as the burrowing behavior of *H. gratiosa* in the laboratory may reflect an ecological requirement in its natural environment. Given that substrate type influences the biomechanics of burrowing in other frogs, and that natural substrates are often altered by human disturbance, the preservation of suitable substrates should be an additional consideration when establishing natural preserves for populations of the barking treefrog.

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Evolutionary ecology of paedomorphosis in the Alpine newt *Triturus alpestris*

Paedomorphosis, in which individuals retain ancestral characteristics in the adult stage, is widespread in newts and salamanders and is suspected to play an important role in evolution. In some species, paedomorphosis is facultative with some individuals skipping the metamorphic stage. Dimorphic populations of the Alpine newt inhabit a large variety of aquatic habitats such as permanent lakes and temporary ponds. The aim of this study was to determine the benefits of the alternatives in these different habitats. To this end, I focused on resource partitioning, energy intake, body condition and age structures in different populations composed of the two morphs. In deep lakes, there was a substantial trophic differentiation between morphs. Paedomorphs primarily preyed on plankton whereas metamorphs foraged on terrestrial invertebrates that fell to the water surface. By reducing competition, resource partitioning may contribute to the coexistence of the alternative morphs in heterogeneous habitats. On the contrary, in a small pond, resource use was similar in the two morphs. Maturity is reached earlier in the paedomorphs from this small pond than in metamorphs (progenetic process), favoring then a rapid turn-over of the population, while similar gonadal development was observed in one of the deep lake (neotenic process). Body condition was generally higher in paedomorphs than in metamorphs in each studied population. These results show that facultative paedomorphosis is adaptive in varied habitats, but that different factors may favor it depending of the characteristics of the environment. Paedomorphic phenotypes can thus be selected in low altitude productive ponds and high altitude oligotrophic lakes.

Abstracts

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