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EFFECTS OF PREDATION RISK AND FOOD AVAILABILITY ON TADPOLES' ONTOGENETIC DEVELOPMENT

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It is well-documented that predators and competitors trigger the expression of phenotypic plasticity. While the former may induce the expression of defenses that result in risk reduction (for instance, through development of structural defenses or anti-predator behaviors), the latter may constrain the nutrient-energy intake and increase foraging activity or even alter diet, which may result in a faster growth and increases in competitive ability. Such situations trigger stress, which alters in prey the physiological demand for nutrients and generally culminates in competitive environments, as a result of lower food acquisition or resource reallocation. In amphibians, morphological and developmental characteristics have a high degree of plasticity in response to stressful environments and tadpoles reared in stressful environments metamorphose with a minor body structure; thus, the juveniles are more likely to exhibit lower growth rates and lower survival rates when exposed to an environment with limited resources. Thus, we investigate how the predation risk induces morphological plasticity in tadpoles when exposed to scenarios with different levels of food availability by varying experimentally the amount of food resources available for tadpoles and crossing that manipulation with predation risk. We observed a morphological trade-off in which predation risk inhibits the expression of tadpoles' morphological traits and that there was no interaction between resource and predation risk. In addition, tadpoles under threat presented higher metamorphosis rates. We propose that the adaptive implications of morphological responses are due to predator-induced plasticity in metamorphosis and morphological constraints, which may have large effects on survival and important consequences for individual fitness. Such responses may also be influenced by the physiological responses trigged by predation risk and are not only constrained by dietary nutrient composition.

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