

HORMONAL AND REPRODUCTIVE PLASTICITY IN VARIABLE ENVIRONMENTS IN THE MANGROVE RIVULUS (*KRYPTOLEBIAS MARMORATUS*)

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We investigate age-dependent changes in steroid hormones (cortisol, estradiol, and 11-ketotestosterone) and life-history trait variation in response to environmental variability, in the mangrove rivulus *Kryptolebias marmoratus*. Rivulus are amphibious and frequently seek refuge in terrestrial habitats or “emerge” from the water during tidal recessions and accompanying food shortages. We tested the hypothesis that changes along environmental (emersed, tidal, immersed) and food availability (fed, fasted) gradients would drive age-dependent shifts in steroid hormones and that these changes underlie plasticity in life-history traits. Fish exposed to environmental and food availability gradients exhibited different hormones profiles and changes in body mass, condition, and gonad mass. We found young fish exposed to tidal and immersion treatments had lower cortisol levels than young, emersed fish. All fish showed a significant shift in estradiol and residual gonad mass following exposure to the tidal and emersed treatments. Fasted fish in the tidal treatment had significantly lower 11-ketotestosterone relative to fed fish. Additionally, fasted fish in the immersed and tidal treatments lost significantly more body mass than fed fish. Our results provide support for the association between age-dependent changes in steroid hormones and life-history plasticity in response to environmental variation.