2014

Intrinsic and Extrinsic Factors Influence Expression of Defensive Behavior in Plains Hog-Nosed Snakes [Abstract]

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Animals failing to deter predation are eaten. Among the many deterrents to predation, antipredator behaviors are perhaps the most variable, ranging from active (fight or flight) to passive (immobility). We assessed variation in the expression of a passive defensive behavior, death-feigning, in Plains Hog-nosed Snakes (*Heterodon nasicus*) and predicted that intrinsic and extrinsic factors would influence the duration of this behavior and the latency to its onset. We simulated predatory attacks on 27 snakes encountered in the field, and analyzed the behavioral responses of snakes as a function of differences among individuals (sex and size) and environmental factors (temperature and microhabitat). Larger snakes death-feigned for longer durations than smaller ones; this relationship was stronger for female snakes than for males. Death feints were initiated sooner when snakes were encountered at higher temperatures. Extrinsic factors had a greater influence on latency to death-feigning behavior, whereas intrinsic factors more strongly influenced its duration. Because our results involved wild snakes, they provide an improved, highly relevant understanding of individual and environmental factors that regulate the expression of immobile defensive behavior. Furthermore, additional hypotheses can now be proposed that address the evolution of defensive behaviors that leave animals prone to attack.