The role of running in predation and antipredation by the leopard lizard, *Gambelia wislizenii*

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**INTRODUCTION**

Locomotor behavior is assumed to be an integral component for meeting the ecological challenges of food acquisition, mate seeking, predator evasion, refuge seeking and dispersal in vertebrates. There have been neither comprehensive studies of locomotor capacities for any taxon of terrestrial vertebrate, nor adequate observation and testing of locomotory capacities in the field. Terrestrial lizards in desert scrub are useful model systems for studying locomotor adaptations because they perform well in the lab and can be observed easily in the field as they forage, seek mates and evade predators.

The long-nosed leopard lizard, *Gambelia wislizenii*, as a mesopredator, preys on highly mobile insects and lizards and is potential prey for raptores and snakes. We sought to determine how leopard lizards use running to evade predators and pursue prey. We expected that anti-predatory responses of *Gambelia wislizenii* would depend on the type of predator, the type and speed of approach, and in which microhabitat. We also expected that its locomotory pursuit methods would differ among prey items (i.e. running and leaping after grasshoppers and sprinting after lizards, such as the elusive prey, the western whiptail lizards, *Aspidocephalus foundalis*).

**Methods for velocities, distances and evasion runways**

- **Mean distances run** by *G. wislizenii*:
  - *Gw* chased in raceways by predators.
  - *Gw* attempting to capture grasshoppers in the field.
  - *Gw* pursuing model prey in unobstructed field conditions.
  - *Gw* evading bird model.
  - Velocities of prey and predators were measured.

**Raceway Methods**

- 80m raceways had natural sand substratum; barrier walls were constructed with aluminum tubing. A human ran in the raceway toward a refugium at the far end.
- Five to six video cameras were used to measure average velocity over the entire raceway and over large subsections of the raceway.

**Conclusions**

- *Gambelia wislizenii* is adept at rapid leaps and lunges to capture prey and is capable of rapid acceleration and bipedal running velocities virtually equivalent to its fast prey, *Aspidocephalus foundalis*.

The research site is in the Great Basin desert scrub, in the Alvord Basin, southeast of Steens Mt, in Harney Co, OR.