



**2006 Annual Meeting
Memphis, Tennessee**



 PARENT SESSION

Tuesday, August 8, 8:00-11:30 am

COS 19 - Population dynamics II: animals

L-4, Lobby Level, Cook Convention Center

Presiders: J Maerz

Mechanisms of cohort suppression and population fluctuation in tiger salamanders.

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ABSTRACT- The mechanisms underlying population fluctuation have been well studied in mammals and insects but less research has focused on amphibians. Yet, the current global decline of amphibians requires that we understand these mechanisms, and be able to distinguish between anthropogenically induced declines and natural population fluctuations. We have followed a marked population of the Arizona tiger salamander, *Ambystoma tigrinum nebulosum*, for over 16 years during which time the population has completed two "boom and bust" cycles, generated by a dominant cohort that appears to suppress larval recruitment until it senesces. We tested two hypotheses for this suppression, cannibalism and resource depression, using a series of meso- and microcosm experiments. We found significant lethal and sublethal (behavior, diet, growth rates) effects of cannibalism by large larvae and paedomorphic adults on hatchling and 1st-year larvae, suggesting that both cannibalism and the threat of cannibalism are important in cohort suppression. Resource depression experiments revealed that paedomorphic adults did not affect larval survival, diet, or growth, despite reduced prey densities, because paedomorphs mainly reduced large bodied prey, whereas hatchlings fed primarily on smaller benthic and zooplanktonic invertebrates. Future experiments will determine how hatchlings are impacted by boom cohorts that are more similar in size and diet. Our results lend insight into the mechanisms underlying fluctuations in this population, and suggest that a better understanding of natural population fluctuations will aid amphibian conservation efforts.

Key words: population fluctuation, amphibian, alpine ponds