FACTORS AFFECTING MEATAMORPHOSIS OF THE ENDANGERED CALIFORNIA TIGER SALAMANDER ON THE SANTA ROSA PLAIN

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BACKGROUND

- Habitat loss mitigation through construction of vernal pools has occurred in the Santa Rosa Plain since 1996.
- The California Tiger Salamander distinct population segment of Sonoma County was not listed as endangered until 2003.
- Vernal pool construction designs prior to 2003 focused on maximizing habitat for rare and endangered plant species.
- Breeding and survival of the California Tiger Salamander is dependent on a narrow range of suitable vernal pool habitats.
- The California Tiger Salamander is bio-indicative of ecosystem health.[1,2,3,4,5]

ONGOING STUDY METHODS

- 4 vernal pools were selected based on CTS larval presence
- Drift fencing was used to encapsulate each pool and pitfall traps were placed every 15 feet within the fence perimeter
- Traps were checked each morning beginning in March 2017 and continuing until larvae were no longer present upon weekly dipnet surveys
- The timing of metamorph egress, size at egress, and the direction of egress was recorded
- Water depths and temperatures were recorded at each pool every 15 minutes using automatic data loggers

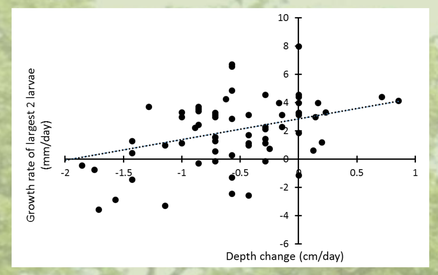
RESEARCH QUESTION

- What factors affect the timing of CTS metamorph egress and the direction of egress from natal vernal pools?

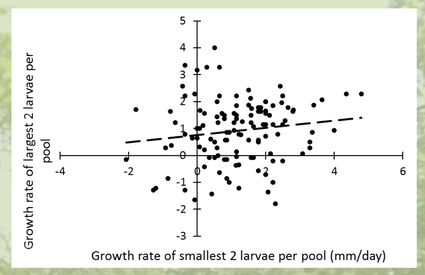
METHODS

- CTS larvae were sampled weekly using dipnets
- Larval growth rates were recorded as overall larval length
- The mean size of the largest cohort was monitored in relation to the mean size of the smallest larvae to determine the timing of metamorphic events

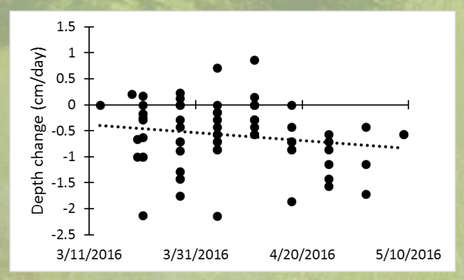
PRELIMINARY RESULTS



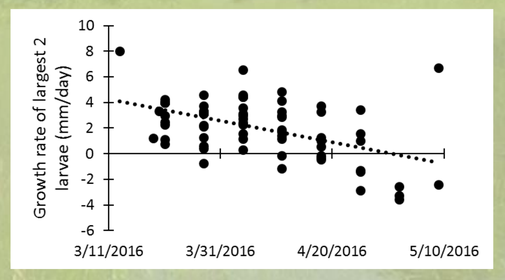
Change in size of largest two CTS larvae in each pool during weekly sampling (negative values indicate metamorphic events).



Regression of change in daily growth rate (mm/day) of the largest larval CTS individuals and smallest larval CTS individuals in 2016 showed no significant correlation ($F_{1,119} = 2.55$, $p = 0.11$).



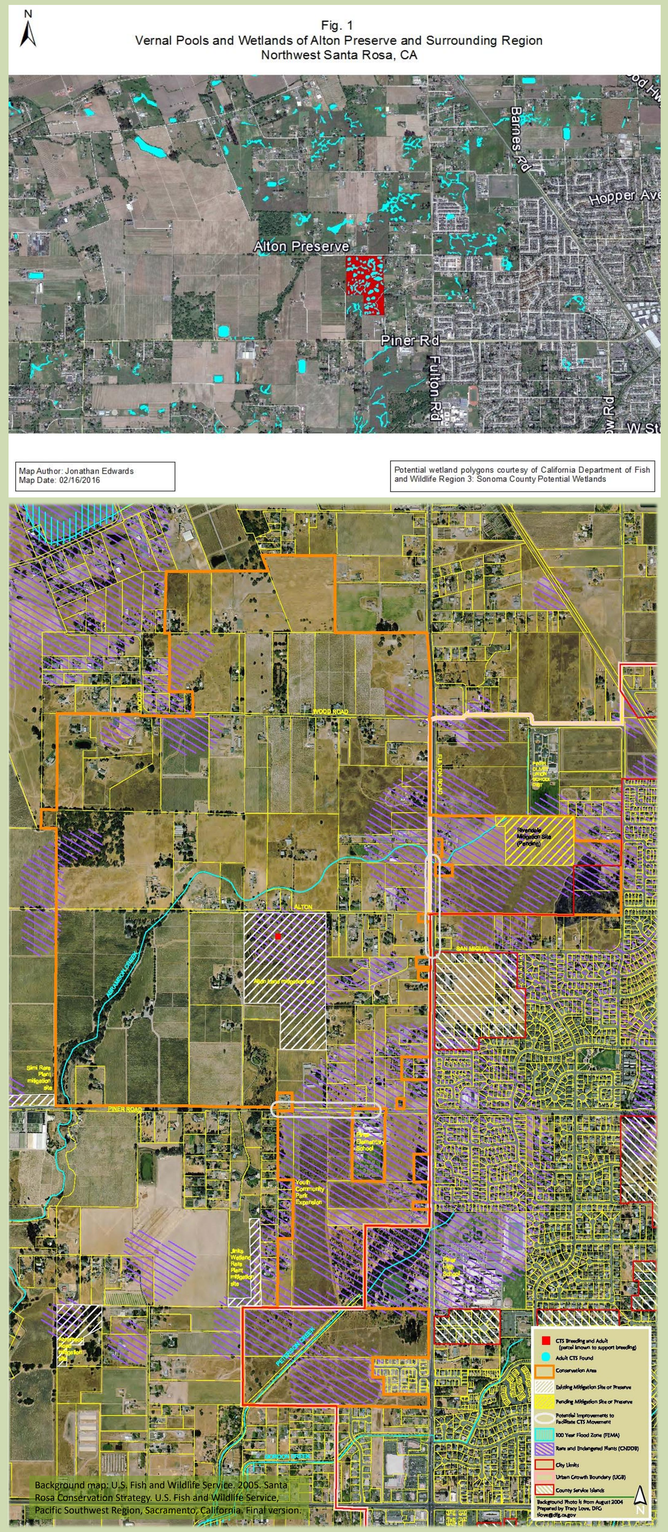
Change in depth of each pool for each week of sampling.



Average growth rate (mm/day) of the largest two larvae of each pool was significantly associated with change in depth of each pool (cm/day) in 2016. A reduction in growth rate (negative value) was considered to represent a metamorphic event .

DISCUSSION

- The timing of CTS metamorphosis and egress is determined by recent declines in depth of a vernal pool
- Monitoring the growth rate of the largest cohort of larvae within a pool allows determination of the timing of egress
- The direction of CTS metamorph egress may determine the locations of upland over-summer habitat for future conservation planning



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