USGS 2016 J Lovich: Drought, Fires and Turtle Mortality - Data

Dates

Start Date
2014-08-25
End Date
2015-09-16

Citation

Jeffrey E. Lovich, Mari Quillman, Brian Zitt, Adam Schroeder, David Green, Charles Yackulic, Paul Gibbons, and Eric Goode. 2016. The interaction of drought and fire on an abundant semi-aquatic species: apparent mass mortality of freshwater turtles at a lake in southern California, USA. In review.

Summary

Semi-aquatic turtles are model organisms to study the effects of drought and fire because their “dual citizenship” in terrestrial and aquatic habitats makes them susceptible to impacts that affect both environments. During the summer of 2014, we documented a significant mortality event affecting a southwestern pond turtle (Actinemys pallida) population living in Elizabeth Lake, Los Angeles County, California. The area around the lake was impacted by a large wildland fire in 2013 that occurred during a protracted drought. As the mortality event was still unfolding, we collected data in August and September of 2014 on water quality, demographic structure, and short-term survivorship of the population. We investigated causes of mortality through necropsies of recently dead turtles. Water quality was poor with low levels of dissolved oxygen and high salinity of up to 45.90 ppt. We captured 126 turtles 222 times. Many were severely emaciated and coated with a pale, friable to firm, mineralized layer (to 2.7 mm) on their shells and skin. The initial population size was estimated at
170 and the daily survival rate was estimated at 0.983. At the end of the 24-day study, the population was estimated to be 114. If maintained, these survival rates would lead to an estimated 90% decline in 134 days and a high probability of extirpation or near extirpation over the course of a year. The lake dried up in September 2015 with no evidence of live turtles. Necropsies and low volumetric body condition indices suggested death by starvation.

Purpose

These are data used to study and analyze the effects of drought and fire on semi-aquatic turtles at Elizabeth Lake, Los Angeles County, California.

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