

PERT Summer Research Summary

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Research Collaborators: Larry Venable, Professor of Ecology and Evolutionary Biology, UA, and Kathy Gerst, graduate student in Venable lab

Research Project: Comparing Floral and Reproductive Traits of *Bursera microphylla* (Elephant Trees) in Edge Populations.

Project Summary: *Bursera microphylla*, commonly called elephant tree, is a small tree found throughout the Mexican states of Sonora and Baja California Norte. Central Arizona is the northern-most edge of *B. microphylla*'s distribution. In Central Arizona, tree populations are isolated. Several researchers have anecdotally described unusual floral characteristics of these isolated northern populations. *B. microphylla* are usually dioecious (male and female trees are separate). However, isolated populations have some trees that produce perfect flowers (flowers with both female and male flower parts). A dioecious species producing perfect flowers may maintain its ability to reproduce in the absence of other individuals. Research questions addressed:

- Can *B. microphylla* flowers self-pollinate in an edge population?
- Are *B. microphylla* flowers pollen-limited in an edge population?
Does fruit set increase when flowers are artificially pollinated?
- What insects are pollinating *B. microphylla* in Arizona?
Do these insects vary from more centrally located *B. microphylla* populations in the Pinacates of Sonora?

Study sites included South Mountain Park in Maricopa County, Arizona, the Waterman Mountains of the Ironwood National Monument in Pinal County, Arizona, and the Pinacate Mountains of Sonora, Mexico. (I participated in research at the Arizona sites only.)

Preliminary results indicate that trees with perfect flowers can self-pollinate and set fruit. The flowers do not appear to be pollen limited, as fruit set did not increase significantly with artificial pollination. Insect pollination data are not yet available. We are still awaiting identification of some of the insect pollinators collected.

Hours Worked:

Monday, 5/23 – Friday, 5/27: 8-12, 1-5 – 40 hours

Monday 5/30 – Friday, 6/3: 8-12, 1-5 – 40 hours

Monday 6/6 – Friday 6/10: 8-12, 1-5 – 40 hours

Monday 6/13 – Thurs. 6/16: 8-12, 1-5 – 32 hours

Friday, 6/24: 8-12, 1-5 – 8 hours

Monday 6/27 – Tues. 6/28: 8-12, 1-5 – 16 hours

Wed., 6/29: 8-12, 1-4:06 – 7.1 hours

Total: 183.1 hours