

Research, Restoration & Recovery The Arboretum at Flagstaff Research Department

Analysis of long-term *Purshia* data sets to determine population status and future recovery actions

The proposed project has five specific objectives. First, we will harvest the wealth of information available in The Arboretum's 20-year-long monitoring dataset for the Verde Valley population of *P. subintegra* to answer a variety of questions about the population's viability and the species' life history. This will include determining population trends and examining changes in demographic traits such as seed production and seedling recruitment over time; correlating these demographic changes with climate conditions and ungulate browsing damage; and projecting long-term viability of the population using a suitable population viability analysis technique. These questions have not been examined since 2006, when Maschinski et al. conducted a Population Viability Analysis using a deterministic matrix projection model. That was ten years ago. Second, we will use the same data set to specifically examine demographic and life history differences between "pure" *P. subintegra* and hybrids, as well as differences in susceptibility and response to browsing by ungulates.

Third, we will use stem cookies (similar to tree cores) to construct an age profile of a *P. subintegra* population sample, and correlate age with plant size, traits that are often difficult to determine for plants. The stem cookies were obtained during the Mingus Road Extension project in the Verde Valley (2001), when 100+ *Purshia subintegra* cookies were collected as part of the population that was sacrificed for the road extension. Fourth, we will continue annual data collection for this population's long-term monitoring. And fifth, the results of all analyses (demography, age, and browse) will be published. We will attempt to publish in a peer-reviewed journal and as a backup we will prepare a full-length report and make it available for all stake-holders through our website and appropriate agencies. Photo on left is a *Purshia* stem cookie!

