**Summary Report for 2012 *Allium gooddingii* surveys**

**conducted by Davena Crosley**

The Gila National Forest office provided Goodding’s Onion Conservation Assessment and Strategy (1997), field survey reports from 1991 and 1984 and maps of historic populations of *Allium gooddingii*. Sites were surveyed between July 26 and September 3, 2012. A TES Plant Element Occurrence Field Form was completed for each site surveyed and representative photographs of each site were taken, surveyed populations were located on maps by Hillary Hudson of the Gila National Forest Supervisors Office (please see attached documents).

The habitat description in the 1997 Goodding’s Onion (*Allium gooddingii*) Conservation Assessment and Strategy states:

Goodding’s onion occurs within mixed conifer and spruce-fir zones, generally (but not always) in north-trending drainages at elevations ranging from 7,500 to 11,250 feet. This species is most frequently found in forested drainage bottoms associated with perennial and ephemeral stream courses. Occasionally, Goodding’s onion is found on open slopes, however, these sites are moister than those in lower elevation forested habitats. Most sites are shaded to varying degrees, on slopes or in drainages of narrow canyons, and are usually in either primary or secondary stream courses. Soils which support this species are basaltic or rhyolitic with the upper horizon comprised of loamy alluvium with a high organic content (USFS 1997).

In general, the sites *A. gooddingii* was found in matched this description, with most occurring in the drainage bottom and toe slopes of ephemeral or intermittent streams in mature mixed-conifer forest. *A. gooddingii* was not detected at nine of the twenty sites surveyed. Of these nine sites, six burned in the 2006 fire and three burned in the 2012 fire. Of the eleven sites where *A. gooddingii* was detected, one burned in 2006, six burned in 2012, and four have not burned in the recent past (Table 1).

At sites that had not burned, *A. gooddingii* was consistently found in partially shaded duff of mixed conifer forest. However, at sites that burned in 2012, *A. gooddingii* was found in bare soil and/or full sun or in remaining islands of duff that had not burned or been washed away by flooding. At some sites where the canopy had burned, brown needles remained on trees providing some shade (Site ID 030606EO00011 and 030606EO00010, Rainy Mesa area). At FS Site ID 030606EO00024, near Indian Creek, fire destroyed much of the mixed conifer canopy in 2006, leaving a small patch of trees. *A. gooddingii* was found in this shaded area, but was also found downstream in an open (full sun) meadow growing under ferns and other herbaceous plants.

*Allium gooddingii* was generally not found in areas that experienced a stand replacing fire in 2006 (the exception is discussed above Site ID030606EO00024, near Indian Creek). Based on this trend, the populations of *A. gooddingii* at the six sites that burned in 2012 are at risk (FS Site ID 030604EO00016 Bearwallow Creek, 030604EO00018 BS Canyon, 030604EO00020 Little Turkey Creek, 030604EO00023 Little Turkey Creek, 030606EO00011 Rainy Mesa Canyon, and 030606EO00010 Rainy Mesa-Water Canyon). The Goodding’s Onion conservation Assessment and Strategy states:

Prescribed fires and prescribed natural fires (PNF) have been identified as potentially impacting Goodding’s onions. There is no available information on how Goodding’s onions respond to fire. Presumably, very hot fires that destroy the protective tree canopy, sterilize the soils, or result in extensive erosion soil erosion would adversely impact the species. However, low-intensity ground fires as would be anticipated under prescribed/PNF fires would likely have much less adverse impact. The actual impacts of prescribed/PNF fires would probably depend largely on the growth stage of the plants and their immediate proximity to heavier fuels. Low-intensity fires occurring either prior to spring growth or after plants have died-back in the autumn would probably have little adverse impact. Where plants are very close to heavy fuels, adverse impacts may occur because of extended exposure to very hot temperatures (USFS 1997).

The 2012 *A. gooddingii* surveys provide evidence that the species can survive “very hot fires that destroy the protective tree canopy, sterilize the soils, or result in extensive erosion soil erosion” (USFS 1997) the year of the fire. Whether the species can persist in these areas in subsequent years, and how long, is of interest and warrants further monitoring.

**Table 1: Sites, presence/absence of *A. gooddingii* and recent fire history**

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| **FS Site ID** | **Site Name** | ***A. gooddingii* detected** | **Fire** |
| 030604EO00016 | Bearwallow Creek | Y | 2012 |
| 030604EO00018 | BS Canyon | Y | 2012 |
| 030604EO00033 | Copper Creek | N | 2012 |
| 030603EO00020 | Frieborn Canyon | Y | None |
| 030606EO00006 | Gilita Creek | N | 2006 |
| 030606EO00008 | Indian Creek | N | 2006 |
| 030606EO00012 | Indian Creek | N | 2006 |
| 030606EO00013 | Indian Creek | Y | None |
| 030606EO00015 | Indian Creek | N | 2006 |
| 030606EO00023 | Indian Creek | N | 2006 |
| 030606EO00024 | Indian Creek | Y | 2006 |
| 030606EO00026 | Indian Creek | Y | None |
| 030604EO00020 | Little Turkey Creek | Y | 2012 |
| 030604EO00022 | Little Turkey Creek | N | 2012 |
| 030604EO00023 | Little Turkey Creek | Y | 2012 |
| 030606EO00009 | Long Canyon | Y | None |
| 030606EO00011 | Rainy Mesa Canyon | Y | 2012 |
| 030606EO00014 | Rainy Mesa-Hail Canyon | N | 2012 |
| 030606EO00010 | Rainy Mesa-Water Canyon | Y | 2012 |
| 030606EO00025 | Willow Creek | N | 2006 |

**Literature Cited**

U.S. Forest Service, U.S. Fish and Wildlife Service. 1997. Goodding’s Onion (*Allium gooddingii*) Conservation Assessment and Strategy. Southwestern Region.