



2021 Update – *Allium gooddingii*, Lincoln National Forest

Daniela Roth, EMNRD-Forestry Division

SIERRA BLANCA SOUTH SUB-POPULATION

The Sierra Blanca South sub-population on the Lincoln National Forest burned in the 2021 Three Rivers Fire. Prior to the fire this was the largest intact population in New Mexico and likely rangewide. A site visit on 7/21/2021 found approximately 95% of the population burned severely, leaving the site without canopy cover. Prior population estimates ranged from 276,950+ individuals (2020) to <700,000 plants (1998) (Figure 1). Although the fire burned the majority of the overstory spruce and fir trees associated with this site, the soil and duff layer remained intact. Therefore, the majority of plants appeared to have survived the direct impacts of the fire (Figure 2). Four randomly selected monitoring plots were established by the Forest Service within the fire perimeter to monitor post-fire population trends. This site is located on a south facing slope and therefore is not expected to persist over time.



Figure 1. Site conditions at the Sierra Blanca South sub-population in 2020, prior to the Three Rivers Fire.



Figure 2. Site conditions at the Sierra Blanca South sub-population 2 month following the Three Rivers Fire

SKI APACHE SUB-POPULATION

Trees felled on top of known *Allium gooddingii* sites (in September 2019?) were supposed to be removed in the fall of 2020, after the ground froze. However, the effort was delayed and moved into late winter 2021. Although the project was supposed to be completed by the end of April to protect emerging plants, crews didn't arrive at the site until April 27, the day the Three Rivers Fire started. Due to the fire the project was delayed again and didn't commence again until almost mid-May lasting until the end of May. Plants were already sprouting at that time. Four randomly selected monitoring plots were set up to monitor recovery following slash removal on 7/20/2021. None of these sites had slash removed to a level that recovery documentation will be possible, in fact, most sites with documented impacts from tree felling were untouched by the slash removal operation (Figure 3). Some trees were bucked and material was moved onto the roadside where it remained on site 2 months after the removal (Figures 4 & 5). Trees were removed from areas that had no onions and slash removed was piled on top of existing documented onion sites along the road. Clearly no one used the GPS points provided to locate onion sites for slash removal and slash piles. Based on this site visit it is estimated that no more than 10% of felled trees were removed from onion sites. Additional damage was done to the already fragile population and recovery is now more uncertain than ever.



Figure 3. Setting up a randomly selected monitoring plot where felled trees were supposed to be removed within the Ski Apache sub-population.



Figure 4. Bucked trees piles along the road in the immediate vicinity of known Goodding's onion sites at the Ski Apache sub-population two months after removal.



Figure 5. Gooding's onion peeking out from a slash pile along the road at the Ski Apache sub-population.

Since the original intact population reference site (Sierra Blanca South) for the monitoring effort burned in the 2021 Three Rivers Fire, a relatively intact site at Ski Apache was chosen for reference. This site extends over approximately 6 acres and is located in the SE corner of Ski Apache and shares a boundary with Mescalero Apache lands. There are more plants on Mescalero lands, visible from the Forest Service side. Some additional intact habitat remains in the vicinity of this site on Forest Service and Apache lands. It is unclear whether the potential habitat on the Forest Service side was surveyed during the initial 1998 survey but is presumed so. In 2020 only sites mapped in 1998 were surveyed. The known occupied habitat is very small and has evidence of some impacts of management practices. An old boundary fence cut runs through this site from east to west and a steep road cut is located along the northern boundary. There is also a road along the southern boundary on Apache lands and ski runs are located to the east and the west. Trees were felled in 2019 above the Forest Service access road. None of these trees were removed and plants remain buried underneath. The far east side of this site is within the 2012 Little Bear Fire perimeter, but the forest canopy remains intact and impacts are no longer visible. Managing this site as a desired condition population should be a priority for the Forest Service.

UPPER RIO BONITO SUB-POPULATION

The Three Rivers Fire burned into the Little Bear fire scar only along the margins of the remaining Upper Rio Bonito sub-population (Figure 6). Four randomly selected monitoring plots were established among the remaining Goodding's onion population of the Upper Rio Bonito sub-population, as documented in 2020. No obvious change was observed in the habitat since 2020. Monitoring plots will document population trends of surviving plants in the 2012 fire scar.



Figure 6. 2021 Three River Fire meets the 2012 Little Bear fire scar. A very small occupied intact habitat section is located near the crest, above the monitoring sites of the Upper Rio Bonito Sub-population.