



*An update on
Allium gooddingii*

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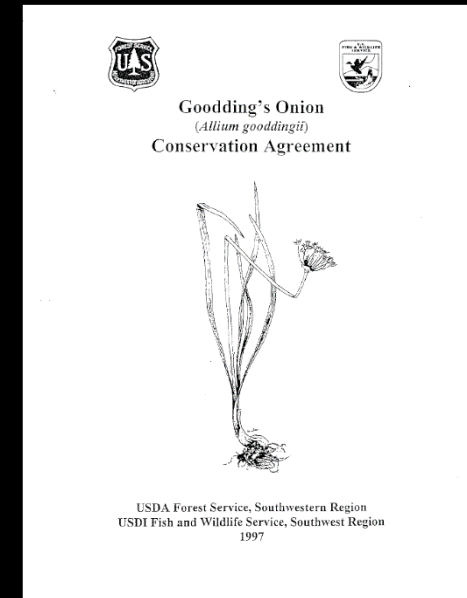
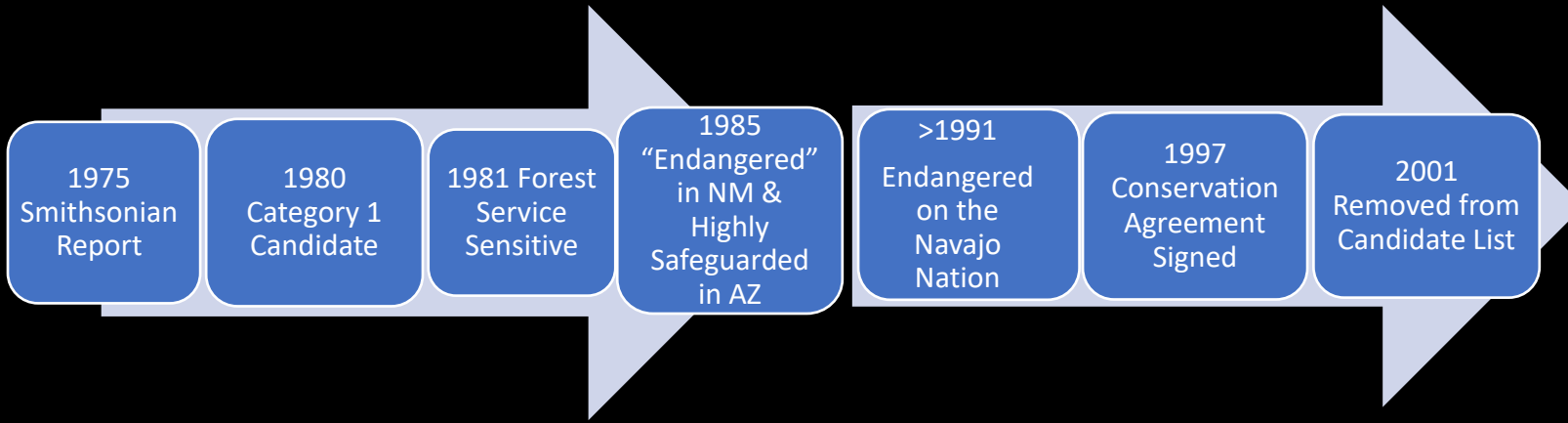
Plant Ecologist, Fish & Wildlife Service

Outline

- History
- Biology
- Habitat
- Distribution
- Threats
- History Continued
- Species Status Assessment



History



Biology

- Herbaceous perennial monocot of the Amaryllis family (Amaryllidaceae; previously Liliaceae)
- Up to 45 cm (18 in) in height
- It reproduces by seed and vegetatively from small bulbs on rhizomes
- Suspected to be long-lived (>37 years)
- Plants may be in dense clumps of up to 600 individuals in a single square meter



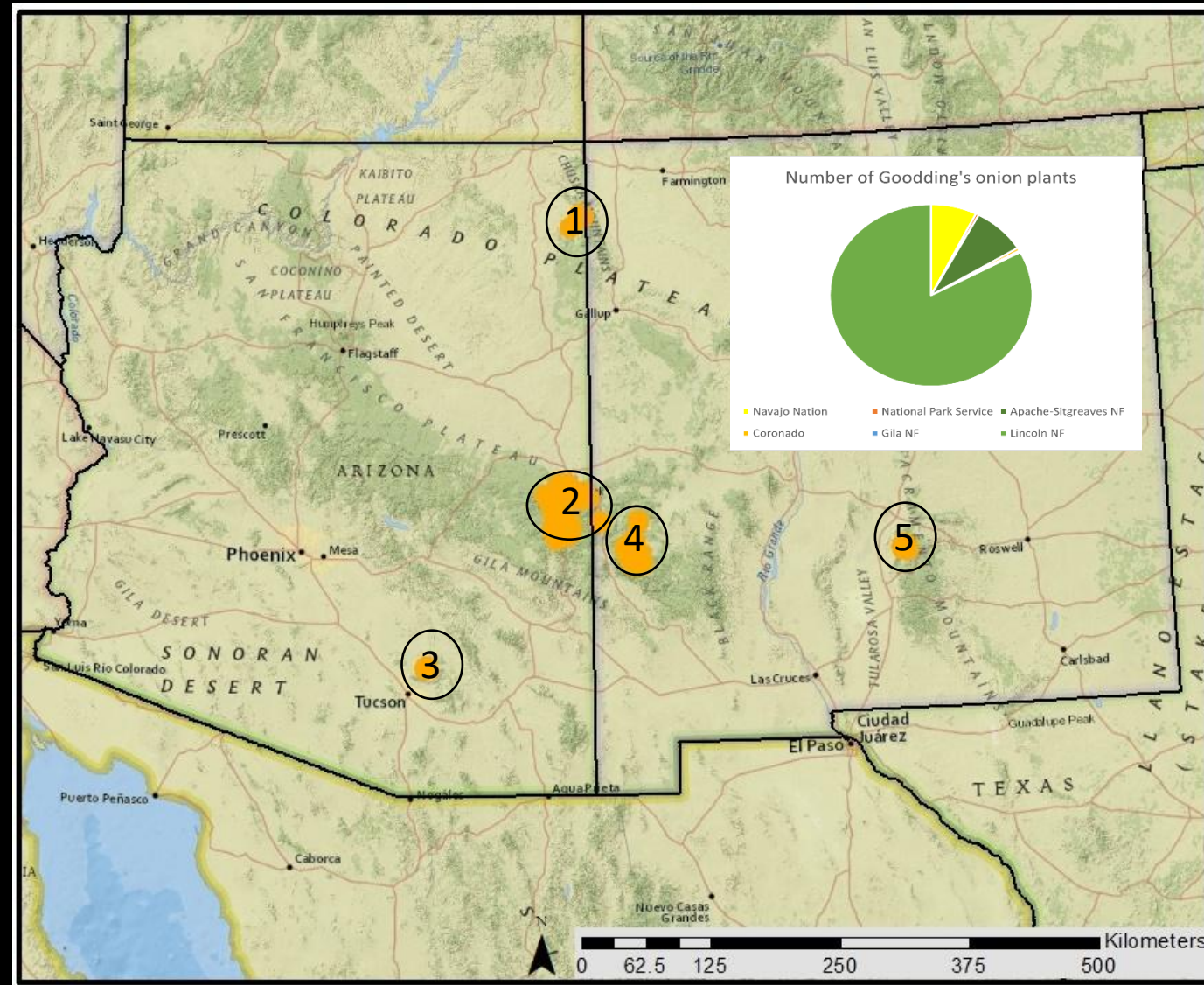
Habitat

- 6,760 to 10,310 ft elevation in Arizona; 7,640 to 11,250 ft elevation in New Mexico
- Moist shaded canyon bottoms in mature mixed conifer and subalpine spruce forests
- Typically found along north-trending drainages and slopes, and stream courses with rich organic soils
- These forests historically had infrequent, mixed-severity fires with > 50-year fire return interval
- Bimodal precipitation - mean annual precipitation 457 -> 1,000 mm (18 - >39.4 in); >50% in summer)



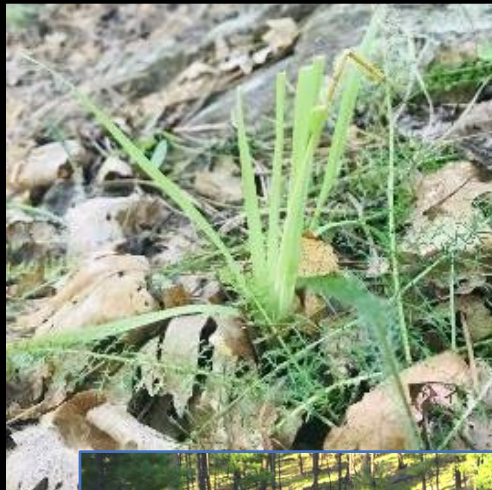
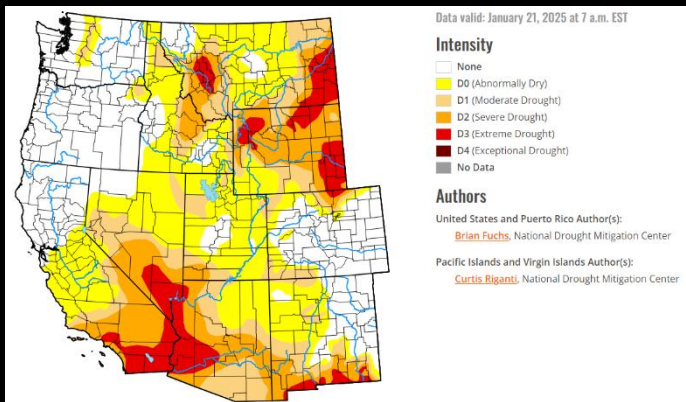
Distribution

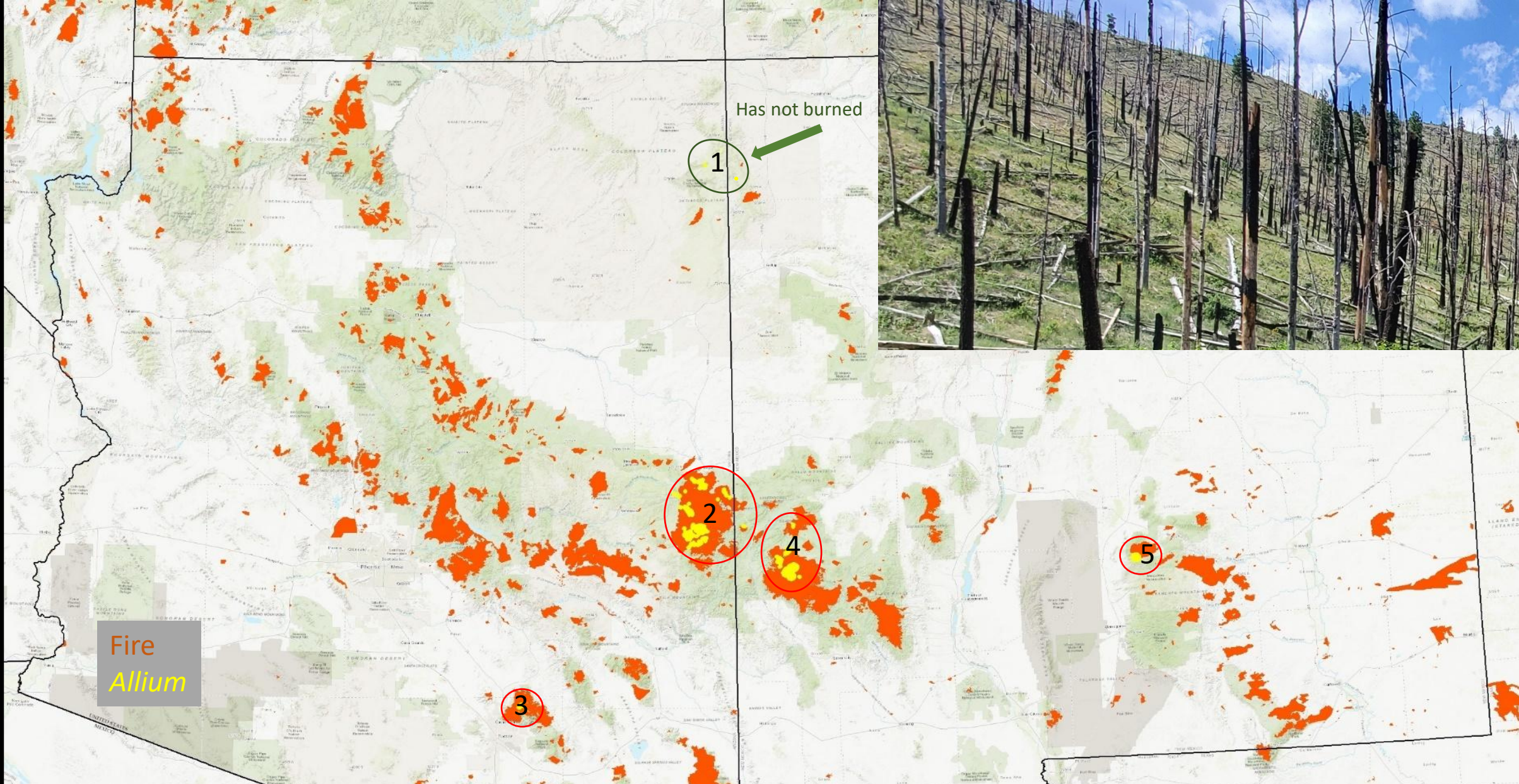
- Historically known from 5 locations and 43 sites in Arizona and New Mexico
- In Arizona, it is known from the Navajo Nation, Canyon de Chelly National Monument, White Mountain Apache Indian Reservation, and the Apache-Sitgreaves and Coronado National Forests
- In New Mexico it is known from the Gila and Lincoln National Forests and the Navajo Nation and Mescalero Apache Reservation
- Most (90%) sites are located on the Apache-Sitgreaves National Forest in Arizona and the adjacent Gila National Forest in New Mexico
- Most individuals are in one site on the Lincoln National Forest



Threats

include increased drought and temperatures, native and nonnative invasion, herbivory, recreation, mechanical disturbance, and fire...





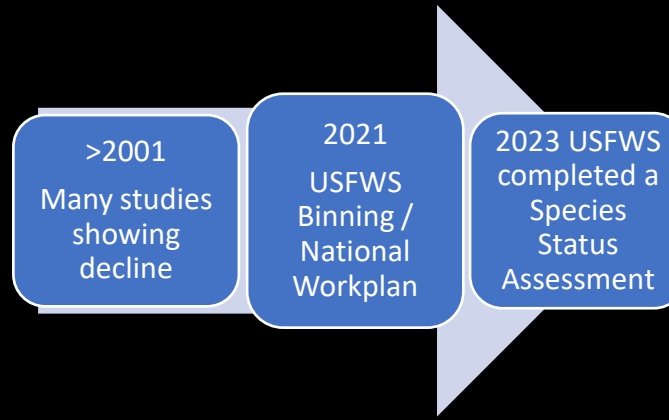
Most populations have experienced large-scale wildfires in the past few decades resulting in reduced population size, abundance, and loss of habitat.

Impacts From Fires

- Direct loss by burning of Goodding's onion plants
- Loss of pollinator plants and overstory shade trees
- Scorching of soils, rhizomes, and mycorrhizae
- Scouring of soils, erosion, transport of soil material, sedimentation, burial, and channel alteration
- Loss of precipitation interception, quicker snow melt, and infiltration reduced
- Increased solar radiation, drought, and temperatures post-fire
- Replacement of conifers with shrubs
- Severe competition from understory associates
- Post-fire recovery actions including timber harvest, addition of hay or wattles, and potential seeding with nonnative or not locally sourced seed



History - continued



In the SSA we evaluated population size & number + annual precipitation & size of wildfires over the past 20 years.

We had the following condition categories for each population: High, Moderate, Low, Very Low and Extirpated.

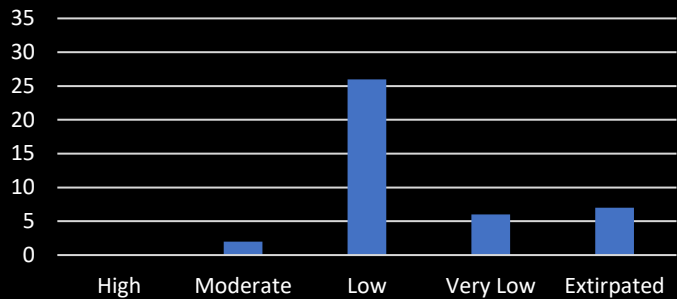
Very Low condition category may become extirpated without conservation actions.



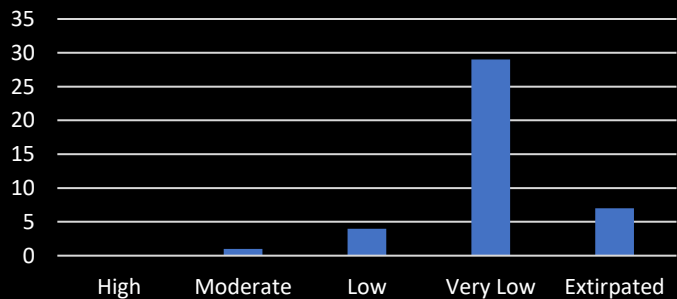
Species Status Assessment



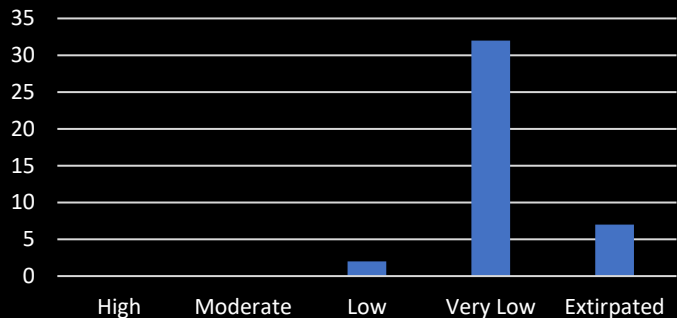
Current Condition



Low Effects



High Effects



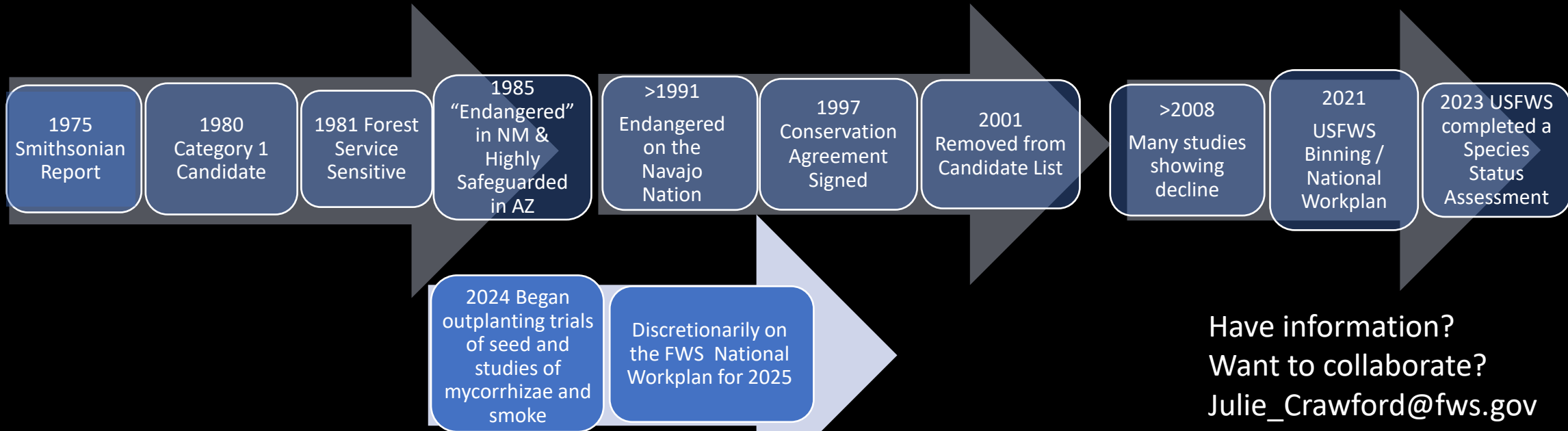
Condition Class

Historically: 41 populations containing > 1,000,000 plants (17 subpops had no counts)
 Currently: 34 populations containing ~400,000 plants (9 of 17 had 0 ALGO)
 Most populations are in Low or Very Low Condition Class

In the next 30 years under Low Effects Scenario, we expect impacts from wildfire, drought, and other threats continue as in the near past with an increased confidence in climate change impacts based on IPCC 4.5 model projections, but with conservation measures addressing some threats to the species.

In the next 30 years under High Effects Scenario, we expect available water to be further reduced, and drought and high temperatures continue to worsen; Emissions scenario 8.5. There is an increase in herbivory or predation; recreational or timber harvest projects impact populations.

Listing History Continued



Have information?
Want to collaborate?
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