

Southwest 2019 March Potato Collecting Trip Report

Arizona. March 9-12, 2019

Participants: John (JB) and Ingrid (IB) Bamberg. Collecting prefix BAM.

1. General Goals, Outcomes, and *in situ* Research-related observations:

For over 25 years we have been observing and collecting wild potatoes in the southwest USA during the August-September growing season. But only once did we visit these populations in winter months (January 1996 observed sites of 585114 in Sta Rita Mountains and 564046 in Chiricahua Mountains).

In 2019 we were planning to be in the Tucson area for other business, so took opportunity to see if any insights could be appreciated in March. Also, in our 2018 expedition, we ran out of daylight at our last collection site (Portal, AZ vicinity) before being able to explore a few nearby sites we had targeted as promising, so this March trip allowed follow-up.

Expectations and outcomes:

- 1) Where potatoes are found depends a lot on where there is moisture. Summer visits do not allow assessment of a major determinant of moisture... snow. Since southern exposures are often too dry, we always wondered why so many potatoes grow on the directly southern exposure at the top of Mt. Lemmon. Now it makes sense. In early March, there was already no snow at potato sites at 6,000 ft, but at 9,000 ft along the Caprock trail, there was still plenty of snow for the ski run to be open.
- 2) If plants were frozen, withered, and decomposed, or were eaten by animals, no stems would be detectable in the “off” season. Thus, the best sites for March exploration may be very southern areas of the potato natural range, where hard freezing of the stems is less likely. We suspect that finding no plants on Mt. Lemmon was due to more cold and snow there compared to the more southern Portal site.
- 3) Even if one found no potatoes, a winter trip would allow identification of precise spots that look promising from the ground that could be prioritized for searching in the summer. This was borne out as we drove the loop between Portal and Paradise. We found no potatoes, but documented several sites that looked particularly promising.
- 4) For crop wild relatives with only seeds, winter collection might not be possible, but potatoes have tubers in the ground that can be collected any time of the year if one knows where to dig. As above, we did easily detect potatoes at one completely new site and collected many large tubers.
- 5) Preparing for this trip brought a 2018 collection in the area to our attention. Mr. Chris Roll of Willcox had observed and photographed, on his land, a *jamesii* population that, if collected, would be germplasm from the lowest elevation in USPG. He is an experienced amateur botanist. We met him and arranged future collection and cooperation.
- 6) Dead plants would be expected to be more difficult to spot, except for the common observation that fall senesced potato plants can be bright yellow and showy. Also, in 2017, we found and collected tubers from two *jamesii* sites, *previously unknown* (686447 and 686450) from completely dead, small plants. In the current expedition, we did easily recognize dead potato plants in one new spot where they were abundant and large.

2. Preparations and logistics:

We considered our Permit from USFS for all NFs of the Southwest Region to still be in force. SEINET documented previous sites at Southwest Research Station, and north of Paradise (275170). GoogleMaps suggested other promising sites by elevation, aspect, proximity to waterways, and landmarks (like campsites).

Travel by air was based at Tucson airport. With a view to traveling only smooth roads, we rented a VW Jetta there and drove a total of 700 miles.

Personnel. This short trip exploring a limited area was judged to not justify participation by the usual four people, so involved only JB and IB.

3. Germplasm:

Wild potato *S. jamesii* was collected as one sample, BAM 393 [PI number to be assigned later].

4. Deposit of records, germplasm and files:

US Potato Genebank, 4312 Hwy 42, Sturgeon Bay, WI, 54235. 920-743-5406. john.bamberg@ars.usda.gov. Query GRIN as “BAM 393”. More details and additional photos are available from JB at USPG.

5. Trip expenses:

JB = ~\$800 federal, IB = ~\$800 private.

6. Daily Itinerary and Collections abstract:

Sat 9th: JB flies to Tucson, rents Jetta, drives up to Mt. Lemmon in Santa Catalina mountains. Top of ski run not accessible, but reported by mountain bikers to be covered with deep snow. Visited site of 689408, high, N-facing canyon across from “Control Road” near Summerhaven. Considerable snow, but not on W-facing slope where potatoes were found in 2018. Then proceeding down on Catalina Highway, stopping at sites known to have *S. stoloniferum* (previously *fendleri*). For all following sites, some snowbanks remained, but there was bare ground with dead grass and some green herbs where potatoes has been previously seen. To 658184 site at roadside pulloff just S of General Hitchcock campground. To N Butterfly trailhead. To 641040 at Middle Bear Campground. No dead potato stems were detected.

Sun 10th: Pick up IB at Phoenix airport and drive to Portal Peak Lodge to lodge.

Mon 11th: To site of robust *jamesii* population known from 2018 expedition (689431 at Sunny Flat Campground). Found many brown/black dead stems still very noticeable at bridge location, but no plants along trail. Then S to end of South Fork Road to trailhead. **Collection #1J**. In berm at trailhead. Search at bridge along South Fork Road. Idlewild Campground. Stewart Campground. Return to Portal for breakfast. To Herb Martyr Campground, John Hands Campground, Southwest Research Station, along Paradise Road to Paradise bridge over Turkey Creek. Then toward Portal, at promising pulloffs and creek crossings. At intersection of Lone Rock Road just before leaving National Forest. To Cave Creek Visitor Center (west of buildings around canal). All of the preceding sites looked promising. While no potatoes were detected, for these sites there was the great disadvantage of not knowing if, or exactly where potatoes had been growing in

the past. The proximity of the creek would provide moisture in a favorable year. Staff at visitor center said soil at South Fork Trailhead berm was imported from elsewhere, but follow-up call to District Ranger Doug Ruppel confirmed that soil had been scraped up from near the site of the berm at trailhead. On April 2, 2019 became aware of a sighting of *jamesii* at this site on iNaturalist (Aug 20, 2017).

Tue 12th: To Willcox to meet Chris Roll. Then drive back to Tucson.

7. Tables. List of materials collected and narratives

Full narratives with location coordinates, habitat and plant descriptions, collection details and disposition are available in GRIN. Also access GRIN for updates and eventual evaluation data on these stocks.

Place	Temp coll #CODE	sp. Suffix	March 2019 date	BAM	PI	Coll Type	plants	tubers	fruits	seeds
South Fork	1	J	11	393	689927	New		52		

Collection Type: New = no previous germplasm collections or herbspec reports

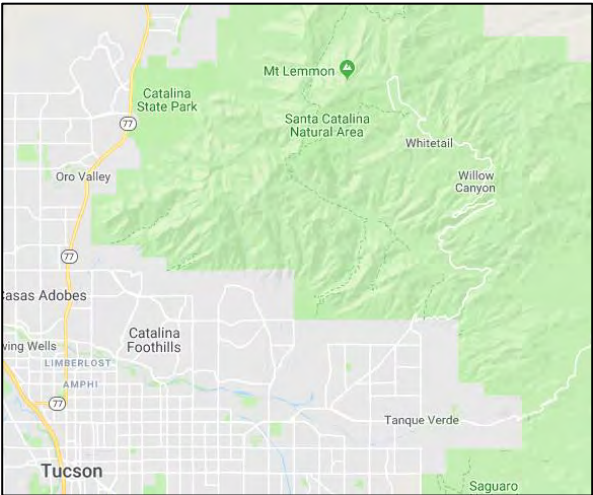
PI 689927. BAM 393. *S. jamesii*. United States. Arizona. Cochise county. Chiricahua Mountains. Coronado National Forest. Near Portal. Road Forks, NM on 10 and S on 80 to Portal Road and W into AZ about 10.5 miles. Becomes Cave Creek road = FR42. About 3.5 miles SW of Portal to Sunny Flat Campground then S to end of South Fork Road and trailhead. At WSG N31.873315° x W109.185077° and 5330 ft. About 100 plants to 24 inches, dead, brown/black. Many mature tubers, some very large, to 1 inch diameter. Dark moist soil with rocks and some green herbs on artificial berm at S end parking lot at end of road near creekbed. Shady deep valley. Collected 52 tubers.

8. Additional and more intensive future exploration possibilities related to this trip

Portal area – promising sites on road between Portal and Paradise (e.g., Paradise cemetery). Due to discovery of potatoes at Sunny Flat in 2018 and South Fork Creek trailhead this year, more exploration in fall of trail beyond trailhead. Germplasm from Mr. Chris Roll’s property (32° 01.083' N 109° 36.819' W).

10. Photos and maps of locations, habitats, and plants

General areas: Sta. Catalina mountains (*fendleri*) and Portal vicinity (*jamesii*)

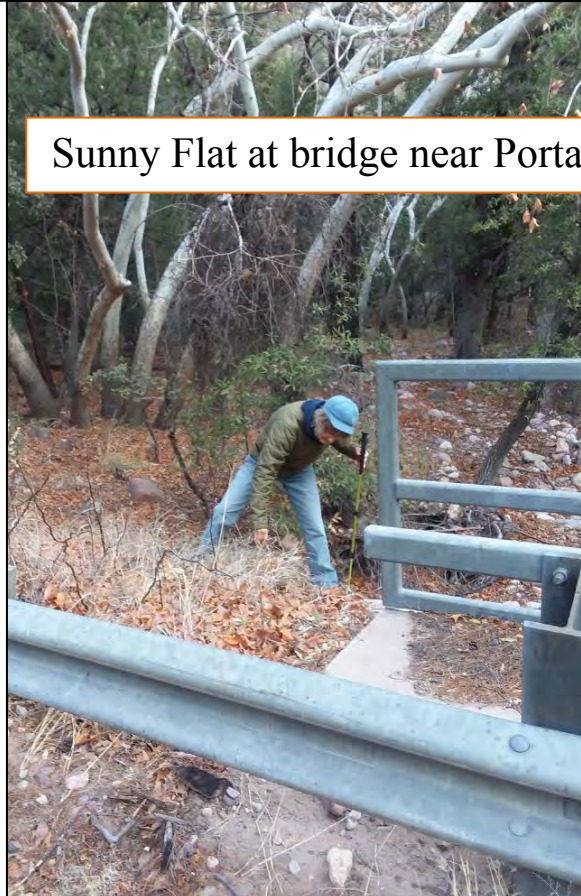


9. Collection site visuals

At “Control Road” ↓ and Hitchcock Camp →
sites, Mt. Lemmon



Sunny Flat at bridge near Portal ↓→



South Fork Trailhead Collection #1 and meeting Chris Roll at Willcox

