

Southwest 2022 Potato Collecting Report

Species. *Solanum jamesii* (jam) and *S. fendleri* (fen)

Locations. Trinidad, CO through NM to El Paso TX; near Willcox, AZ; near Monticello, UT.

Timing. August 21 – September 27.

Collections. Season 2022 wild additions to USPG prefix B5R2F 425-434 for participants as listed below: Behling and four Bambergs, Roll and del Rio, and Fernandez. See Table for details.

Participants. US Potato Genebank (USPG) personnel John (JB = USDA/ARS), Ingrid (IB), Ben (BB) and Max (MB) Bamberg; Alfonso del Rio (AdR), Charles J. (Chico) Fernandez (CF). William Behling (WB) graduate student at Michigan State University doing research on jam. Chris Roll (CR), land owner and plant collector. Full participant affiliation details available on GRIN linked to each collection PI.

Summary logistics and research interests. JB and IB drove from Sturgeon Bay to ELP and back for whole CO/NM/TX expedition. BB and MB flew to ABQ to participate in central NM and departed ELP. AdR and CF then arrived ELP to participate in southern NM and TX work. Chris Roll collected from his own land at a site he had previously reported on SEInet. Will Behling collected previous site at Newspaper Rock State Park and near Canyonlands, UT based on email from Randy Jorgen sent to JB. JB and IB got 4WD Silverado pickup truck from Enterprise for very good price, same as worked very well in 2020 expedition, and drove 4365 miles total.

Site significance, previous observations and collections. Preceding good rainfall years led us to attempt to expand jam collections at three iconic sites where germplasm had been reported previously but for which USPG has very limited representation, and populations have not been observed for many years. These were Trinidad (CO), Magdalena Mountains (NM), and Franklin Mountains (TX). Despite conditions looking very good, we did not find new populations at any of these sites. We sought to observe populations at Cloudcroft and collect a more robust sample at the tunnel on Rt 82. USPG has a collection of jam at ELP from 1996 on the Mammoth Trunk trail but several subsequent visits including 2022 could not refind that population. We had never explored N Franklin Mountain although jam has been reported there as herbspecs, but rain and lighting prohibited the planned hike this year. Something was accomplished just by identifying the most promising exact habitats in a very good year and observing that plants are not obviously waiting there to be collected. The stark counterpoint is made in the visit to Baldwin Corral (PI 691559) where not one plant could be found, despite robust widespread presence of jam there in 2019. We also visited seven previous collection sites to describe the populations there, and observed one new site where permission to collect could be sought. Seven new collections were also made by the USPG team, and we coordinated three more important collections from collaborators. One was by C. Roll at lowest confirmed elevation for jam in USPG, and two more at the northern extreme of the range in UT by W. Behling at Newspaper Rock (site of 603053; USPG has no pure seedlot from there), and a new site in Salt Creek near the S border of Canyonlands National Park.

Map-based scouting, rainfall, and other preparations. As usual, GoogleEarth was used to identify likely habitats in advance which were plotted on Delorme Topo10 on a laptop with that spotted current location with a simple plug-in GPS receiver. Spots of interest were uploaded to Garmin handheld GPS for use in the field. Rainfall was tracked through the AHPS (Advanced Hydrologic Prediction Service) of National Weather Service, and the sites all had reported good rainfall.

Costs. JB = \$4083, CF = \$1456, AdR = \$2300. Other participants used private or other funding. Funding of \$7500 provided by USDA/ARS Plant Exploration Office, Beltsville.

Future work in the area. We attempted to access the Magdalena Mountains from the N and E but not the S. While in the area, one might search the San Mateo mountains as well. The crest of the Organ Mountains could be searched for fen by hiking the trail from Aguirre campground. Rain thwarted exploration of N Franklin Mountain trail and jam sites reported there, so a return, only a few minutes from ELP would be worthwhile, since the only other jam population near ELP has not been found for many years. Near Trinidad, we have searched extensively where access permits, and habitat is favorable: W of Trinidad and around Trinidad town, and N at LaVeta. We did not search the private Hill Ranch on Rt 12 S of the river near the NM border. We observed vigorous jam in the ruins S of ABQ, at a great permanent landmark, and permission to collect could be sought there as well as the other ruin site to the S. WB reports the population at Salt Creek is “dominant understory plants on both sides of the trail for almost a mile” so this might be a population to study and collect to rival the mega population at Mesa Verde (*American Journal of Potato Research* 93:564-571).

Deposit of records, germplasm and files. US Potato Genebank, 4312 Hwy 42, Sturgeon Bay, WI, 54235. 920-743-5406. john.bamberg@usda.gov. Query B5R2F collector prefix or individual PI numbers in GRIN. Detailed trip log, GPS track and Waypoints files, and additional photos and miscellaneous notes are available from JB at USPG.

Daily Itinerary

Sunday, Aug 21st. JB and IB drive from Sturgeon Bay to Colby KS to lodge Sleep Inn.

Monday, Aug 22st. Drive from Colby KS to Trinidad CO and W on 12 to near Segundo to Horns Spring Canyon (**obs#1**), search extensively at Trinidad Lake State Park, then to Trinidad to lodge at Holiday Inn.

Tuesday, Aug 23rd. Search extensively along river in Trinidad town, Masonic cemetery, St. Mary Catholic cemetery, Fairgrounds, to Raton exit ramp site (blocked off so could not get there), Raton town park. To Pecos, Lisboa Springs fish hatchery (**obs#2**), then W on Rt 50 to near Colorado Volunteers Monument (**Coll B5R2F #1**). To Santa Fe city Cedar Street site (**obs#3**). To Sleep Inn Airport ABQ.

Wednesday, Aug 24th. Pick up BB and MB from ABQ. To Tajique site PI 592397 (**obs#4**). To Salinas Pueblo Mission National Monument (**obs#5**). To Socorro and Magdalena town to lodge Magdalena Hall Hotel.

Thursday, Aug 25th. Datil, Baldwin Station corral site of PI 691559 (**obs#6**), Datil Well Campground (**Coll B5R2F #2**), Rt 60 Magdalena pulloff SW (**Coll B5R2F #3**), Rt 60 pulloff NE (**Coll B5R2F #4**), back to Magdalena, down Hop Canyon road (**obs#7**). Only one small plant seen which could not be collected. Back to Magdalena Hall to lodge.

Friday, Aug 26th. Look extensively at Water Canyon on E side of Magdalena Mountains. Drive to Alamogordo to lodge Holiday Inn Express.

Saturday, Aug 27th. To Tunnel, Cloudcroft, and S to Apple Tree Canyon trailhead and explore numerous trailheads and campgrounds along Sunspot Highway. Cloudcroft town. See robust jam and fen (**obs#8**) in all these places as in 2021, but no collectable jam fruit at Tunnel. To ELP, Holiday Inn West to lodge.

Sunday, Aug 28th. Drop off BB and MB at ELP and pick up AdR and CF.

Monday, Aug 29th. To Las Cruces to explore Dripping Springs, Solidad Canyon, Aguirre Campground.

Tuesday, Aug 30th. Return to Dripping Springs, find jam at Boyd (**Coll B5R2F #5**) and back to ELP to lodge.

Wednesday, Aug 31st. Hike Mammoth Trunk trail looking for 1996 jam (PI 595778). Also explore trail under power lines poles to E. Return W on Transmountain Road to Franklin Mountains State Park (N side of road). Talk to park staff and arrange hike to N Franklin Peak on Thursday. Lodge ELP.

Thursday, Sept 1st. Rain and lightning thwarts planned hike to FMSP and N Franklin Peak, so begin drive home. Roadside pulloff near Corona on Rt 54 (**Coll B5R2F #6**). W from Corona on Rt 42 (**Coll B5R2F #7**). Continue to Best Western Greensburg, KS to lodge.

Friday, Sept 2nd. Drive to lodge at Cobblestone Inn, Monticello (IA).

Saturday, Sept 3rd. To Dubuque and Madison for breakfast. To Sturgeon Bay and USPG to establish collected plants in pots in screenhouse.

Sunday, Sept 4th. Return vehicle to GRB airport.

Will Behling 2022a and 2022b. Sept 4th. Newspaper Rock site of PI 603053 (**Coll B5R2F #8**). To bottom border of Canyonlands National Park at Salt Creek. (**Coll B5R2F #9**).

Chris Roll #4015. Sept 27th. Near Willcox, AZ on Mr. C. M. Roll's private land. On high (500 ft) rocky knoll above low (4300 ft) plain of farm land crop circles. (**Coll B5R2F #10**).

Table 1. Collections for 2022

Site	Type ¹	Date	State	B5R2F	PI	Plants Collected	Tubers Collected	orig fruit (seeds) collected	Total propagules seed increased	Seed increase method
Colorado Volunteers memorial	N	Aug 23	NM	425	701933	6	1	--		Hyb (w/Datil)
Datil Well Campground	N	Aug 25	NM	426	701934	5	1	--		sib
Magdalena pulloff SW	R	Aug 25	NM	427	701935	--	--	19 (350)	24	sib
Magdalena pulloff NE	R	Aug 25	NM	428	701936	--	--	5 (75)	24	sib
Boyd	N	Aug 30	NM	429	701937	3	--	--	3	Hyb (w/Datil)
Corona 54	N	Sept 1	NM	430	701938	10	8	--		sib
Corona 42	N	Sept 1	NM	431	701939	--	5	--		
Behling Newspaper Rock	R	Sept 6	UT	432	701940	1	--	--		
Behling Salt Creek	N	Sept 7	UT	433	701941	1	6	--		
Roll Farm Willcox	N	Sept 27	AZ	434	701942	2	14	--		

¹ All sites jam, N=new germplasm, R=recollect. All sites collected. See Table 2. for Site Observations
Table will be updated as propagules are incorporated into USPG

Table 2. Sites observed but not collected because USPG already has germplasm or permit needed

Obs number	Date	species	GRIN or lat/lon Reference	notes
1	22	jam	PI 695156	Horn Spring Canyon. Similar plant presentation of scattered small plants among boulders as seen as in 2020.
2	23	jam	PI 595784	Lisboa Springs Fish Hatchery. Good display of small plants similar to that seen since originally in 1996.
3	23	jam	PI 605361	Cedar Street, Santa Fe. Previous open lot in 1998 is now developed, but some parklike swaths remain where jam can be found thriving among brush and under trees.
4	24	jam	PI 592397	Tajique, Linda Vista. Scattered under trees in grass and brush along N roadside exactly as in 1995.
5	24	jam	N34.596128° x W106.295979°	Salinas Pueblo Missions National Monument land. Quarai Ruins. Abundant plants right within the ruins and along footpaths. Some large and flowering completely in open in red soil.
6	25	jam	PI 691559	Baldwin Corral. Remarkable complete absense of any jam despite ostensibly ideal conditions and abundant widespread plants seen in 2019.
7	25	jam	N34.046217° x W107.215383°	Magdalena Mountains. Hop Canyon road. Only one small jam found (see photo section). Dark muddy soil by downed tree next to streambed.
8	27	fen/jam	PI 691191	Cloudcroft area, Sacramento Ranger District. See 2021 log for all these collections e.g. Tunnel site PI 691191. Robust populations seen in all sites similar to 2021.

PASSPORT DATA CONCATENATED NARRATIVES

PI 701933. B5R2F 425. *S. jamesii*. United States. New Mexico. Santa Fe County. Santa Fe National Forest. Near Pecos. On NE roadside of Rt 50 at about 4 miles W of Rt 63 jct at Pecos. At WSG N35.567551° x W-105.745996° and 7210 ft. **Colorado Volunteers memorial**. August 23, 2022. Roadside E of NP boundary in SFNF. Occasional plants also seen near monument stones at edge of parking lot, under brush to the W and across open field to N under brush. Small to 10 inches, rarely flowering. Dark soil, open, mostly flat, in grass, under shrubs. Collected 6 plants and 2 tubers.

PI 701934. B5R2F 426. *S. jamesii*. United States. New Mexico. Catron County. Cibola National Forest. Near Datil. Campground entrance road less than 1 mile NW of Datil on Rt 60. Spread around the campsites especially E side of the loop drive. At WSG N 34.152749° x W-107.856624° and 7440 ft. **Datil Well Campground**. August 25, 2022. Frequent in a few localized areas, all sizes to rare 12 inches and flowering. In open often in pure gravel on roadside and campsite drive-ins, sometimes in short grass or under trees. Collected 5 plants and 1 tuber.

PI 701935. B5R2F 427. *S. jamesii*. United States. New Mexico. Socorro County. Cibola National Forest. Near Magdalena. South side of Rt 60 roadside pulloff and picnic site about 13 miles W of Magdalena town center. Site of 686448. At WSG N 34.076157° x W-107.453230° and 7160 ft. **Magdalena pulloff SW**. August 25, 2022. Large patch of plants to 10 inches. Mature, insect damaged and diseased. Some fruit ruined by fruit fly. In open in gravel or under trees and brush. In dry, brown, sandy soil or under needle duff, especially at edge of cement picnic table pad. Collected 19 fruit containing 350 seeds.

PI 701936. B5R2F 428. *S. jamesii*. United States. New Mexico. Socorro County. Cibola National Forest. Near Magdalena. North side of Rt 60 roadside pulloff and picnic site about 12 miles W of Magdalena town center. Site of 669607. At WSG N 34.076157° x W-107.453230° and 7160 ft. **Magdalena pulloff NE**. August 25, 2022. Colorado potato beetle observed. Many plants of all sizes, rarely flowering, occasional fruit, some ruined by fruit fly. Hiding in thick brush or in open gravel, in grass, under shade of trees, and especially around cement pad of picnic table. Collected 5 fruits with 75 original seeds.

PI 701937. B5R2F 429. *S. jamesii*. United States. New Mexico. Dona Ana County. Organ Mountains. Near Las Cruces. E of Las Cruces on Dripping Springs road to trailhead parking lot and visitor center then 1 mile E on trail to Boyd Sanitorium and beyond on trail up canyon. Right beside trail. At WSG N 32.322117° x W-106.573048° and 6240 ft. **Boyd**. August 30, 2022. Only one small colony of about 25 plants. Healthy, green, small to flowering size. Woodland habitat in W-facing grade. Sandy, gravely brown soil under oak leaf mulch with shrubs, vines and cactus. Collected 3 plants.

PI 701938. B5R2F 430. *S. jamesii*. United States. New Mexico. Lincoln County. Near Corona. On Rt 54 SW of Corona about 12.7 miles from jct with Rt 42. At roadside picnic pulloff on E side of road. At WSG N 34.105150° x W-105.699767° and 6775 ft. **Corona 54**. September 1, 2022. About 100 scattered plants, some over 12 inches, mature, no flowers or fruit. Under junipers and in brush among dead grass and herbs in rich brown soil under needle mulch. Collected 10 plants and 8 tubers.

PI 701939. B5R2F 431. *S. jamesii*. United States. New Mexico. Torrance County. Cibola National Forest. Near Corona. On Rt 42 about 1.4 miles NW of jct of Rt 54 at Corona. Near site of 592398. South side roadway ditch. At WSG N 34.267480° x W-105.608115° and 6890 ft. **Corona 42**. September 1, 2022. About 15 very small yellow, stressed plants. In sparse dead grass, pure sand, or under layer of rotten log drift in open sun. Collected 5 tubers.

PI 701940. B5R2F 432 -- Behling 2022a. *S. jamesii*. United States. Utah. San Juan County. Near Monticello. Newspaper Rock State Park, site of PI 603053 collected 1997. At WSG N 37.989099° x W-109.517905° and 6200 ft. **Behling Newspaper Rock State Park**. September 6th, 2022. Population and habitat as observed in 1997. W. Behling collected one shoot of one genotype.

PI 701941. B5R2F 433 -- Behling 2022b. *S. jamesii*. United States. Utah. San Juan County. Near Monticello. Salt Creek Trail at Kirk Cabin vicinity. In Salt Creek wash at S border of Canyonlands National Park as reported by Randy Jorgen of Castle Valley. At WSG N 37.959411° x W-109.728911° and 6060 ft. **Behling Salt Creek**. September 7th, 2022. Large healthy plants in flower. Dominant understory plants on both sides of the trail for almost a mile. Sagebrush flats. *Ericameria* sp., *Atriplex canescens*, *Forestiera pubescens* and *Juniperus osteosperma*. W. Behling collected a shoot of one plant and 6 tuber samples from two locations.

PI 701942. B5R2F 434 -- Roll #4015. *S. jamesii*. United States. Arizona. Cochise County. Pat Hills. Near Willcox. Site of SEInet occurrence record f71d8c01-bbbc-49e4-9729-b09ea6d54c8b. South from Willcox to Pearce and Kansas Settlement road. On rocky 500 ft high hill above farmland plain. At WSG N 32.016730° x W-109.617110° and 4881 ft. **Roll Farm Willcox**. September 27, 2022. Abundant large, mature plants having flowered but without fruit. Among large granitic boulders on N-facing slope. CM Roll collected a total of 16 tubers from 2 plants.

Habitat pictures and Maps



← Silverado high clearance 4WD is good for long-haul driving and collecting.

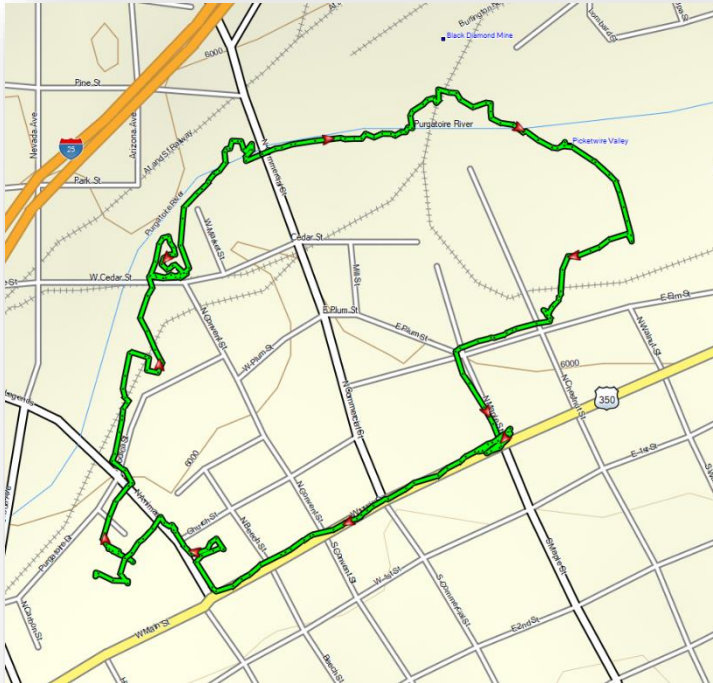
Horn Springs Canyon observation site west of Trinidad, CO was very lush in 2022



Lisboa Springs Fish Hatchery → observation site near Pecos, NM



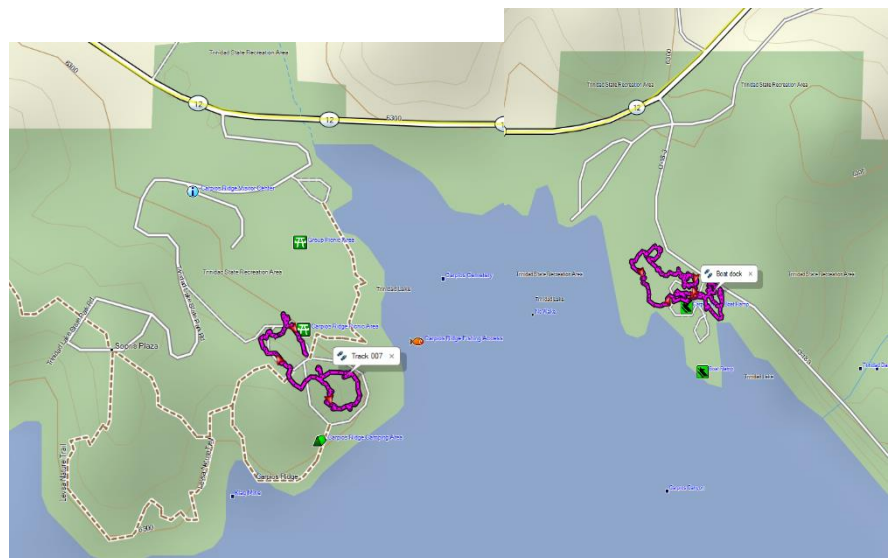
Trinidad Masonic Cemetery
habitat looked very good →



Trinidad downtown along river
habitat looked ideal



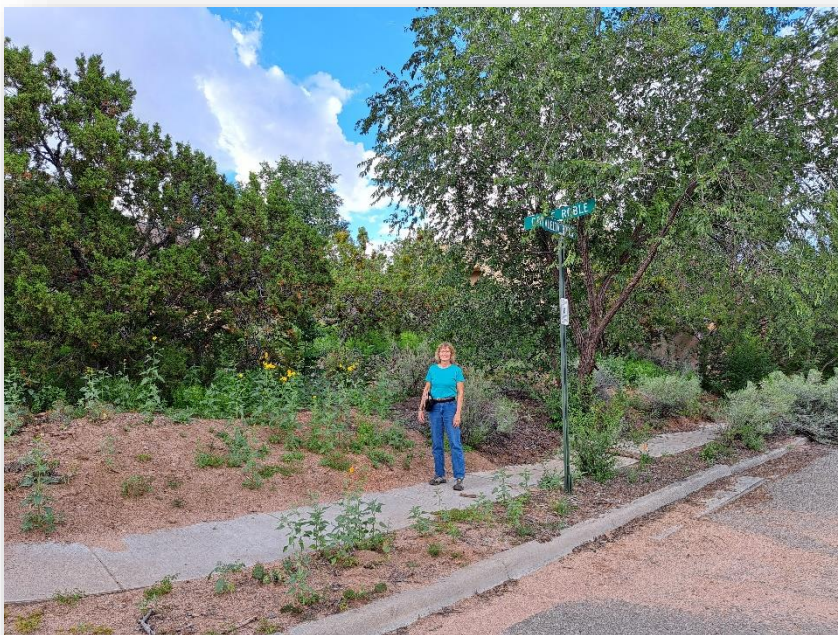
Trinidad Lake State Park
searching tracks →



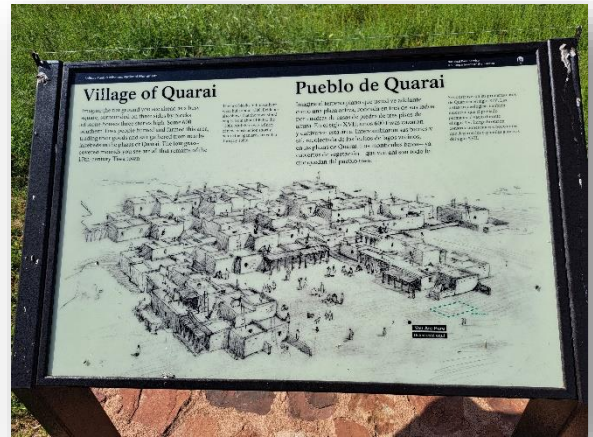
Colorado Volunteers Memorial on Rt 50 west of Pecos, NM



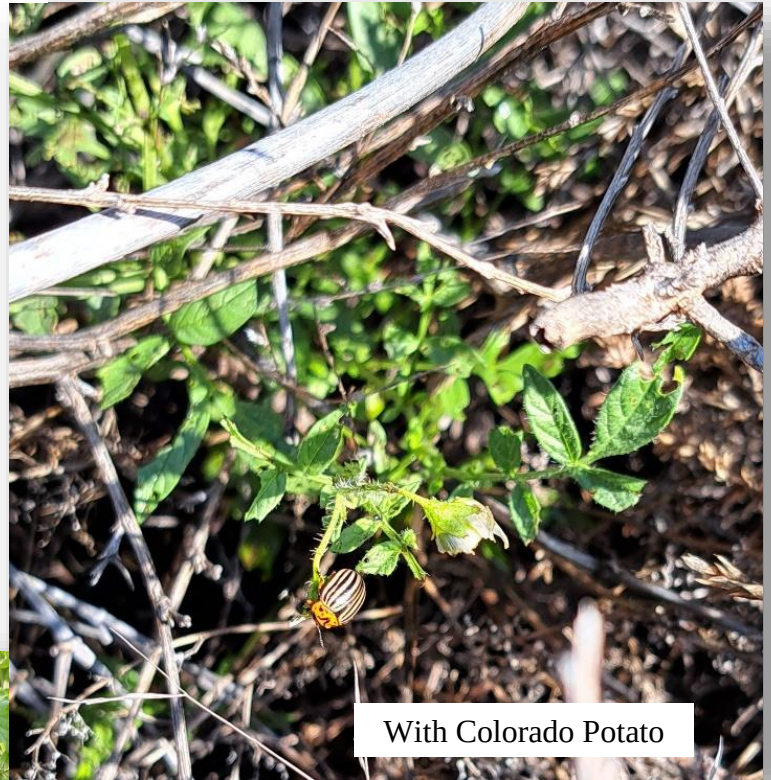
Santa Fe city residential area at end of Cedar Street.



Quarai Pueblo near Mountainair, NM
Abundant, robust *jamesii* right in ruins.

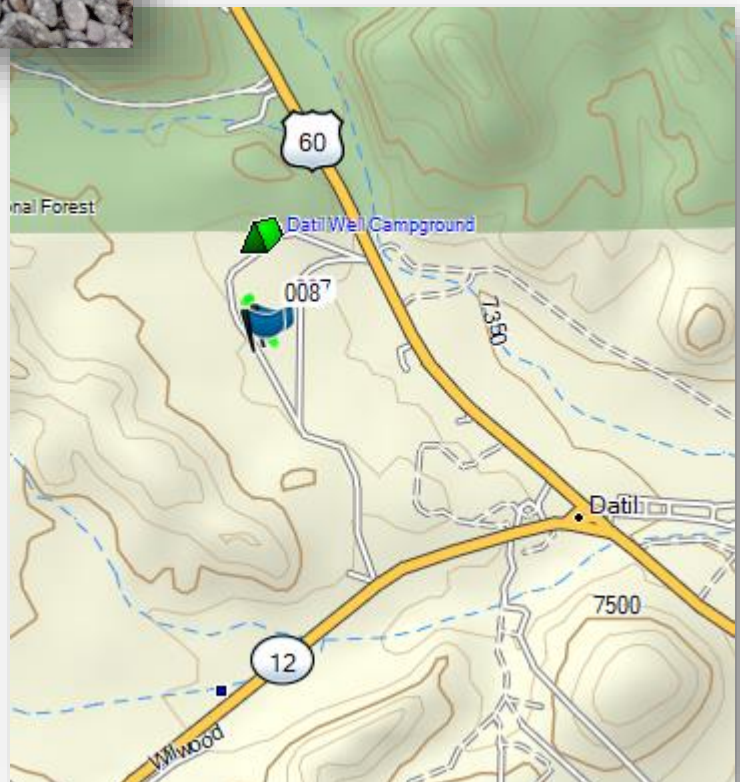


Roadside pull-offs west of Magdalena, NM



← With developing fruit

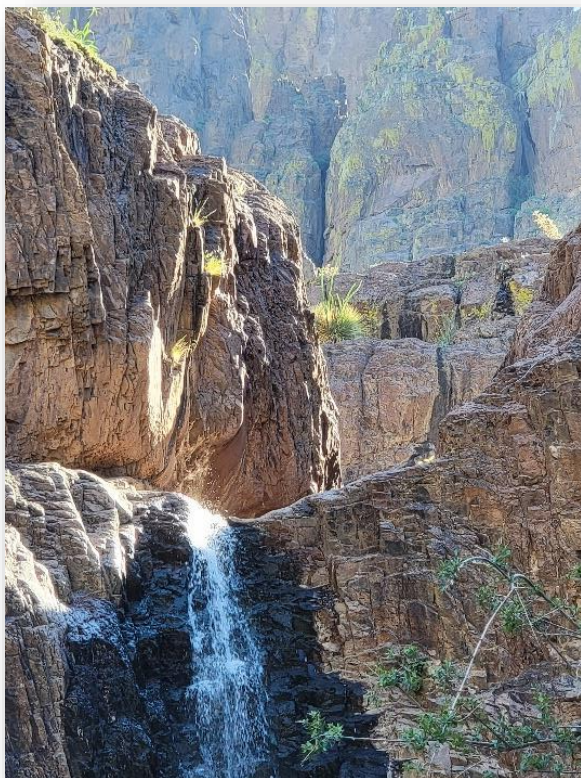
Datil Wells Campground



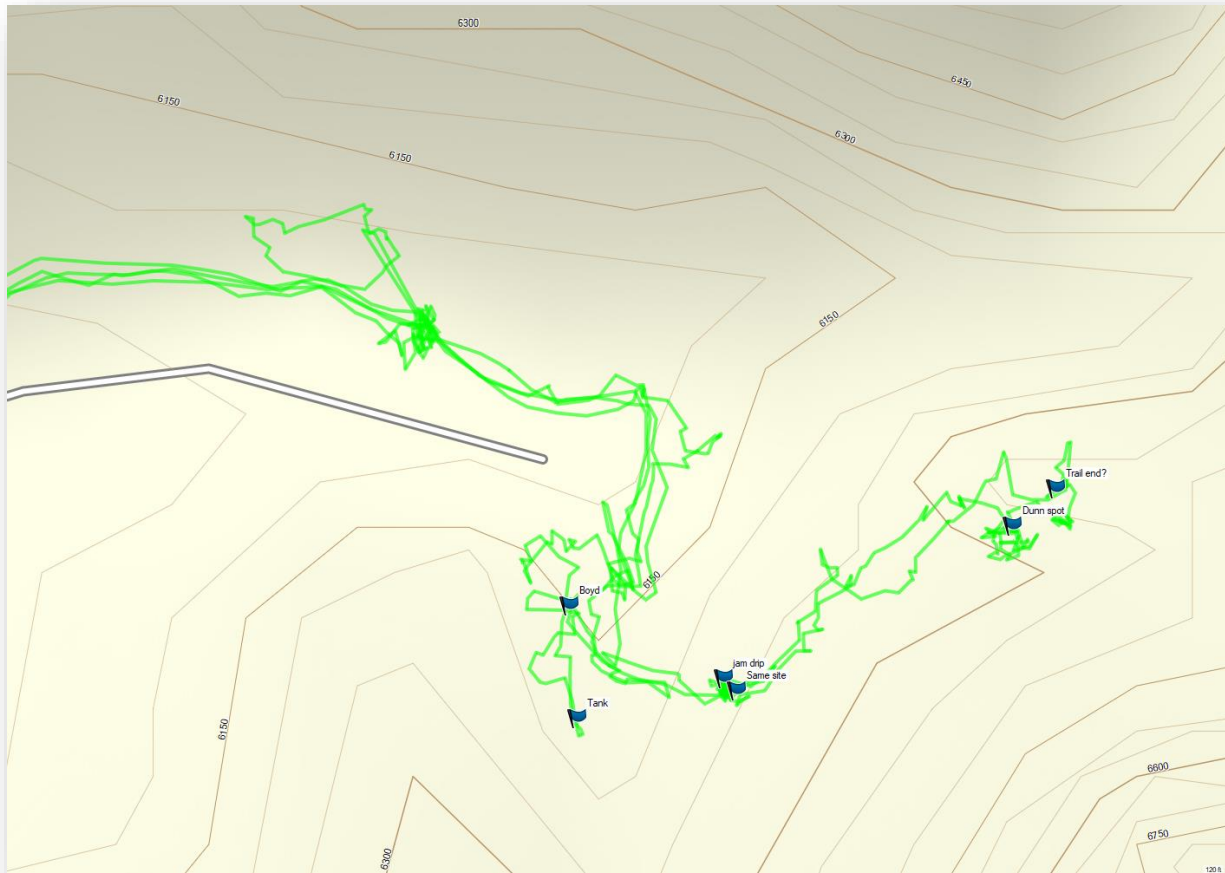
Magdalena Mountains. Top right is Water Canyon campground habitat.
Others pictures are habitat and close-up of single plant found.



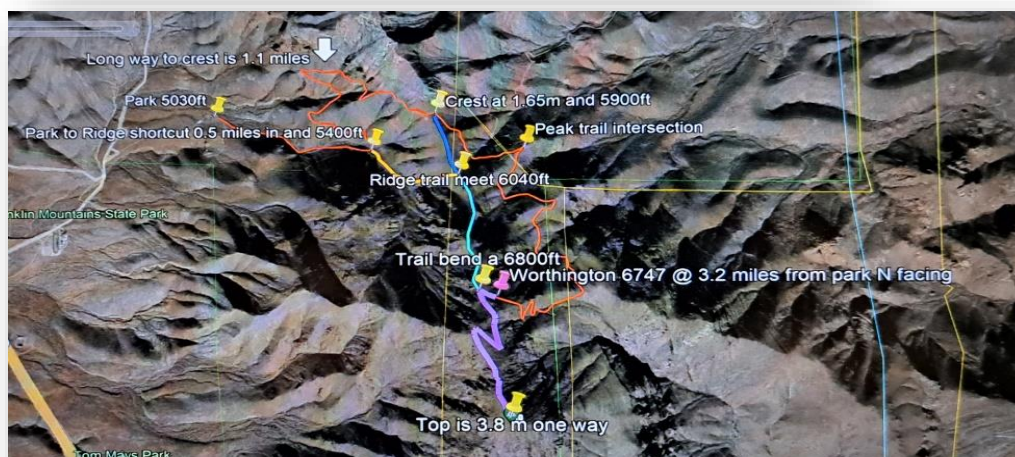
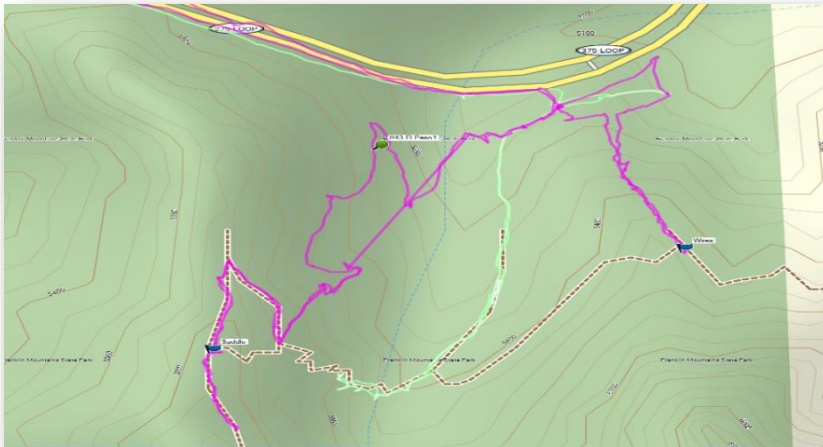
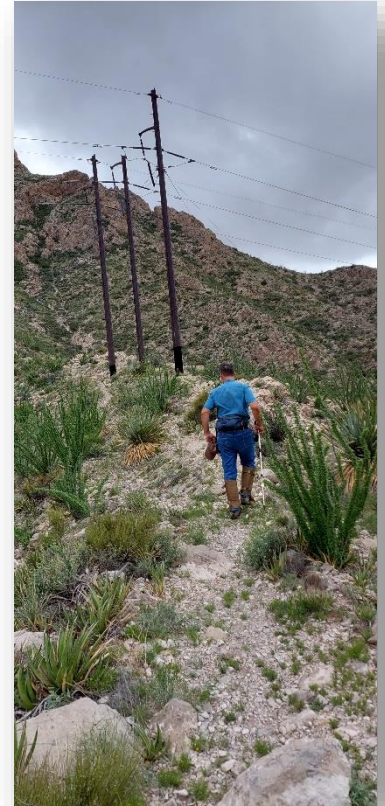
Las Cruces area. Dripping Springs



Las Cruces area. Dripping Springs walking track and Aguirre Springs Campground



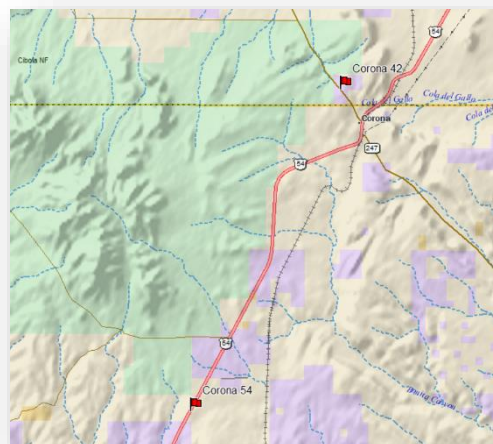
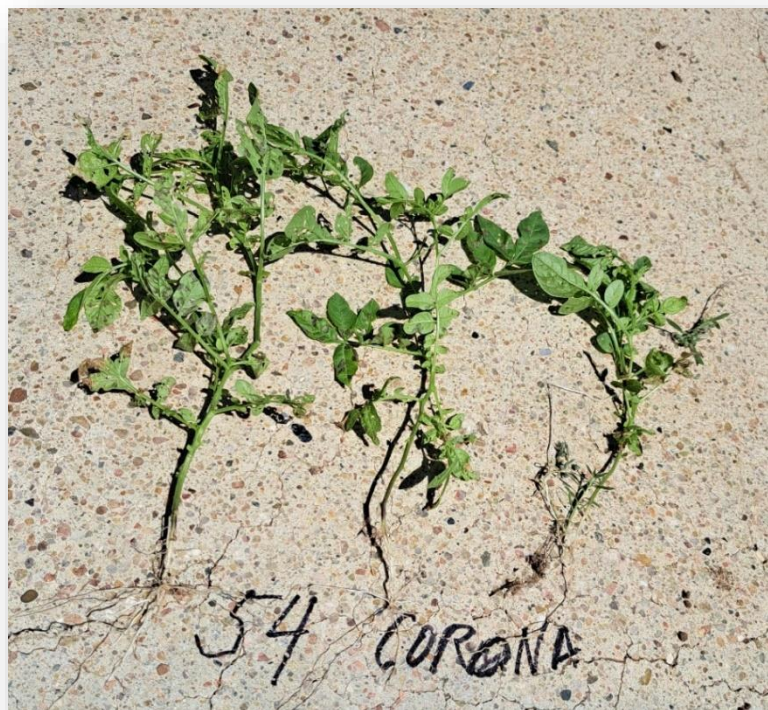
El Paso area. Mammoth Trunk Trail tracks searched and (lower) proposed trails to N Franklin Mountain
(light green = 2021 track on old trail)



Cloudcroft area observations. Clockwise from top left: Tunnel, Tunnel, Deerhead, Cloudcroft city, 1000 mile trailhead, *ibidem*, *ibidem*.



Corona, NM area collections. Roadsides of Rt 54 and Rt 42.



Establishing plant collections at USPG.



Chris Roll collections.

