

# Huachuca Mts Potato Collecting Trip, 2005

## TRIP LOG

Participants: John Bamberg (JB), Paul Bamberg (PB), Charles (“Chico”) Fernandez (CF) and Alfonso del Rio (AdR) of USPG, Sturgeon Bay, WI. Collection prefix BFdR for Bamberg & Bamberg, Fernandez and del Rio continue from Bamberg et al. collection number #131 of 2004.

Species to be collected: Wild potato *Solanum stoloniferum* (previously *S. fendleri*), and *S. jamesii*.

Trip objectives: 1) collect new germplasm for genebank, 2) test sufficiency of limited local collections (does the single, low-altitude collection of *stoloniferum* from Ramsey Canyon well represent the entire location?), 3) test whether an area well known to botanists for many years, but more difficult to access can be assumed to not contain potatoes if none have been reported, 4) test germplasm isolated from cultivated areas for selection by agrichemicals to parallel the cooperative work we are doing with CIP in Peru, 5) compare collection of germplasm as botanical seed to the DNA of mother plants (we also sampled *in situ* leaves), assess potential range (can potatoes only be found at high altitudes?), 6) scout Rincon Mts. access and conditions for 2006 trip.

Preliminary Preps: Weekly survey of rainfall in the target area since January revealed very good rainfall this season. Got topo and trail maps from Douglas Ranger station and Forest Service (USFS) and made a blown-up master map of target trails, distances and GPS coordinates of key sites like trail intersections, peaks, camps and springs using all sources of info (including DeLorme Topo 4). Grid lines drawn on map at minutes (representing about one mile) were very helpful this year, as only decimal minutes were needed to orient GPS coordinates on map. All coordinates are 31 degrees N lat and 110 degrees W lon. Bought or borrowed and tested hiking equipment. Made checklist of all items needed (see attached). This year, use of zippered “barracks bags” large enough to envelope backpacks were an advantage. Planned what we assumed to be a reasonable schedule of daily hiking. Coordinated GPS and DeLorme data to NAD27 for exact match. Gathered all info about previous reports of germplasm and herbarium specimens in the area. Asked for and received financial support and borrowed two Magellan GPS from USDA/ARS/NGRL plant exploration coordinator Karen Williams, Beltsville. JB conditions by hiking 25 miles and biking 200 miles in 2

weeks preceding departure. Food: Instant breakfast of oatmeal with dried bananas, bran, ground flax, raw almonds, powdered milk. Lunches of purchased jerky and homemade instant soup of potato flakes with dried beans, onion powder and powdered milk. Anticipating that it might be advantageous to rent a second vehicle to facilitate coming back to a different trailhead than from which we started, JB contacted *Enterprise* in Sierra Vista. Employee "Joe" had experience hiking in the Huachucas and said vegetation, road and campsite (specifically Bathub spring) conditions were all very good.

## Tuesday, Sept 20<sup>th</sup>

CF picks up JB and PB at 4:30 PM for drive to Four Points Sheraton near O'Hare airport, Chicago. Arrive 9:00 PM with Wendy's supper at Manitowoc. Free parking and airport shuttle allowed early arrival at Tucson and saved airfare and parking costs.

## Wednesday, Sept 21<sup>st</sup>

Shuttle at 5:40 for 8:15 AA flight to Tucson. AdR met at gate via early morning bus from Madison. Arrive Tucson about 10:30 AM, rent *National* SUV, Chevy *Trailblazer*.

Continue to Summit Hut outdoor supply store (5045 E. Speedway) in Tucson. Buy fuel for CF's camp stove and dehydrated instant suppers (for two nights). El Charro in Tucson for lunch. Continue 75 miles S to Sierra Vista, register Motel 6, Burger King coffee break and water up.

Scout trailheads and verify map coordinates with GPS readings (perfect), and road conditions. SR92 to FR61 to Montezuma Pass (6575 ft); Miller (FR56), Carr (FR368) and Lutz Canyon (FR59) access roads. Check Oversight and Ida Canyon access road (FR771). Decided not to take the time to cover 20+ miles of rough gravel (one way) on FR61-W to revisit site of BF87 at Dusquene, where unique purple-less mutant was found in 2002. Continue NW on FR48 to near Parker Canyon Lake.

**BFdR 132.** *S. stoloniferum*. September 21, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Huachuca mountains. Along SR83 about one mile SE of Parker Lake. **N31° 25.05' x W110° 25.85'** and 5,550 ft. Mature berries on green plants to

10" tall. Rare. S side of roadway in Scotia Creek bottom among grass and brush; scrub oaks. Collected berries. New site report and germplasm. Expedition 2005 collection #1. PI 641027.

Just N of Parker Lake, 83 begins (paved). Continue to Canelo and E on FR827 (paved) to west gate of Ft. Huachuca Military Reservation. Receive day permit at gate to pass through FHMR (paved) to Sierra Vista. Lodge Motel 6 and supper at Golden Corral.

### Thursday, Sept 22<sup>nd</sup>

Depart sunup (6 AM) with McDonald's breakfast. Return to Montezuma Pass and continue via FR61 to FR771 and N at 8 AM. Part of this day's objective is to secure location of water when we pack up to the crest.

**BFdR 133.** *S. stoloniferum*. September 22, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Huachuca mountains. S on SR92 to FR61, W to Montezuma Pass, W to FR771 (22.31'N x 19.92'W), Ida Canyon, N 100 yards on E side of road. N31° 22.42' x W110° 19.90' and 5825 ft. Moist sandy soil and under scrub oaks. Rare. Yellowed plants to 10" with occasional mature berries. Collected berries. New site and germplasm for this species. Expedition 2005 collection #2. PI 641028.

**BFdR 134.** *S. jamesii*. September 22, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Huachuca mountains. S on SR92 to FR61, W to Montezuma Pass, W to FR771 (22.31'N x 19.92'W), Ida Canyon, N 100 yards on E side of road. N31° 22.42' x W110° 19.90' and 5825 ft. Sandy soil and under scrub oaks. Abundant (many thousands) small to large (10") yellowed plants without flowers or berries. Collected one tuber from numerous dispersed colonies. Essentially the same site as Gooding 277 (1909) herb spec; and SBV 2 (1992), BFBP 103 (2002) germplasm collections for this species. Expedition 2005 collection #3. PI 641029.

Continue on foot up rough FR771 to stream bottom, seeing abundant *S. jamesii* all along road to Ida Canyon trail #110 at Wilderness boundary (23.24' x 19.54'). At 22.73'x19.76' observe, photograph and collect very large fruit galls with bright orange larvae inside. This is the first report of such galls on *S. jamesii* (previously seen on *S. stoloniferum* from Mt. Wrightson in Sta. Rita Mts. (Bam 8, 1994) and

Chiricahua Mts. near Rustler Park (BFDR 130, 2004). Reach mines (23.88'x19.50') at 10AM. Reach point where trail follows and crosses fence (24.02'x19.59) at 10:40 AM.

**BFdR 135.** *S. stoloniferum*. September 22, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. S on SR92 S to FR61, W to Montezuma Pass, W to jct with FR771 (22.31'N x 19.92'W), N on Miller Wilderness Ida Canyon Trail #110. At N31° 24.02' x W110° 19.59' and along trail following 7550 ft. contour N about ¾ mile to Bear Spring. Along trail NE facing shady slopes under pines in moist, black soil and mulch. Common small light green plants without flowers, berries rare. Collected berries. New site and germplasm. Expedition 2005 collection #4. PI 641030.

At Bear Spring (24.38' x 19.37'). Abundant water in spring and creek, but not much level and rockless ground for a camp site, and full of trash left by illegal immigrants coming over the border. Continue ½ mile N and 600 ft up to jct with Crest Trail 103 = Bear Saddle (24.66' x 19.44'), arriving noon. There is water from a seep about half way between Bear Spring and Bear Saddle. Leave Bear Saddle at 12:30 and arrive back at vehicle at about 2:30. So going about 4 miles, up 2300 ft, and searching took about 4 hours (ave. one mile per hour), and coming down without searching was twice as fast (ave. 2 miles per hour). Near Wilderness boundary, talked to a man with a group of campers who are exploring the caves in the area. Stopped at Coronado National Memorial and talked to Ranger Maggi Daly. She claims 100-200 illegals try to pass the 3-mile Memorial boundary every night—half are caught. They leave trash and make it a nuisance for hikers and campers. There are also drug runners who might be dangerous. Recommended to be careful and camp away from trails. When we told her our business, it developed that she had worked for Bill Belknap (ARS potato physiologist at Albany, CA) for 5 years. We stopped at USFS office on Hwy 92 to ask for hiking and camping advice. Pat Simms said that for the first time, they give hikers an (orange!) one-page primer, warning them to avoid illegals and drug traffickers in the Wilderness. She said there have been no reports of harm or theft, but few people overnight camp. Warned that near main trails we would encounter many illegals and surely be visited by Border Patrol agents at night, and there would be a lot of trash at water sites, so recommended to camp away from trails. Said that Bathtub spring was the most (year-round) reliable, but most springs would likely be running considering the unusually wet season. Expect sites with water to be full of trash—they clean up periodically, but cannot keep up. Water

purification recommended. No burning bans are in effect, but use caution with our campfire such that sudden strong winds do not cause a wildfire.

Return to Sierra Vista, eat supper at Mi Casita restaurant and lodge at Motel 6. Buy lighter at Kmart and batteries and Ramen noodles at Wal-Mart. Try to download pics from digital camera at Wal-Mart, Kmart, Walgreen's and Public Library. Finally successful at Cortez Community College library.

### Friday, September 23<sup>rd</sup>.

Depart 6 AM sunup with breakfast at Burger King. Pack up, check out Motel 6. Drive to and 5 miles up gravel Carr Canyon road (FR368) to Miller Wilderness trailhead (#107) at Ramsey Vista campground. Hiking the ca. 4.5 miles to jct trail #106 where we rested (gain 1400 ft) took about 5 hours (8:30-1:30) with packs and searching—less than 1 mile per hour. Reached midpoint, jct with Carr Peak access trail #108 at about 11 AM.

**BFdR 136.** *S. stoloniferum*. September 23, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. SR92 S to FR368 Carr Canyon Rd, W to #107 trailhead at Ramsey Vista campground. Along trail #107 to Carr Peak. **Between N31E 25.03' x W110E 18.30' and N31E 24.70' x W110E 17.95'. 8300-8900 ft.** Yellowed plants without flowers on open N and E facing slopes with large burned Ponderosas or among brush and in shade under Aspens. Dark, moist soil. To 12" tall with occasional mature berries. Collected berries. Essentially same site as herb spec Gooding 264 (1909) and germplasm BFBP 104 (2002). Expedition 2005 collection #5. PI 641031.

Trail #107 comes to a jct with a burned off sign propped up with rocks. Is it in the correct orientation? Expected three-way intersection here, meeting trails #103 and #106. According to map, Bathtub spring should be ½ mile E of jct on #106 down Miller Canyon. Deliberated whether we should take off packs and explore for trails. Decided to continue on descending trail to the SE. Within 1/3 mile distance, and 250 down in elevation, spring was evident—bathtub catching water from a steel pipe and sign indicating that this was intersection of trails #103 (Crest) and #106 (Miller Canyon). Scout around this spring signed as "Tub" spring for a campsite. At 1:30, JB hikes E and down on #106 looking for "real" Bathtub spring that is indicated on USFS map at end of N-S side canyon at about 24.36' x 18.29' and 8100 ft. None such found within about a mile E and to 7800 ft. Conclude that

Bathtub spring is misplaced on the map, and is really at jct trails #103/106. Return to Tub spring at 2:30 and decide to make camp at mine site just a few hundred yards E of Tub spring (24.30' x 18.69' and 8475 ft). Ample water flowing in stream above and below our mine campsite, with flat, soft spots for tent, plenty of firewood and fire ring.

**BFdR 137.** *S. stoloniferum*. September 23, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. SR92 S to FR368 Carr Canyon Rd, W on #107 trail to #103 S to jct with #106 trail. From jct trails 103/106 to ½ mile E down Miller Canyon trail #106. N31E 24.30' x W110E 18.75-18.40'. 8075-8550 ft. Abundant along trail. In narrow E-W canyon. Small yellowed or green plants in Ponderosa forest often protected by brush, with occasional mature berries. Collected berries. New site and germplasm. Expedition 2005 collection #6a. PI 641032.

Set up tents and fire ring, benches around fire ring, filter water, make fire and cook supper, retire at 8:00 PM. We did not hear or see any illegals or anyone else.

### Saturday, September 24<sup>th</sup>

Up at 5:40 AM with first light. Make fire for coffee/breakfast, organize for day hike, departing 8:20. Return up canyon 1/3 mile and 250 ft. to sign at supposed jct trails #103/107 (24.29' x 18.85' and 8700 ft). There is no obvious connection to the #103 Crest trail that should continue to the NW. But perhaps 200-300 ft to the W one finds a trail. We never investigated where it goes to the SE. We followed #103 down and to the NW, soon reaching the jct with Oversight trail #112 and then to Bear Saddle.

**BFdR 138.** *S. stoloniferum*. September 24, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. On Crest Trail #103 from jct with #107 for 1½ miles to Bear Saddle (jct with #110 and #122). From N31E 24.32' x W110E 18.92' to N31E 24.66' x W110E 19.40' and 8700-8100 ft. Small yellow to 8" green plants common on steep grade along trail shaded under Ponderosas and firs despite being S and W facing slopes. Moist black soil and rocks. No flowers, but occasional mature berries. Collected berries. New site and germplasm. Expedition 2005 collection #6b. PI 641033.

At Bear Saddle, it is again not completely clear where the #103 trail proceeds to the W. There are many “unofficial” trails here, presumably made by illegals looking for a shady spot away from the main trail to hide during the day. We decided to split up and scout for the main trail. Seeing that the trail was to skirt the S side of Granite Peak, JB and PB headed straight W and soon found a well-worn trail, and we regrouped.

The habitat here begins with dry and rocky S-facing slopes inhospitable to potato until you pass S of Granite Peak, and the trail cuts to the E side of the crest where there is intermittent shady forested habitat. Potatoes common along trail from S of Granite Peak to 25.00' N.

**BFdR 139.** *S. stoloniferum*. September 24, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. On Crest Trail #103 from Bear Saddle (jct with #110 and #122) NW to N31E 25.00' x W110E 20.14' at 8300 ft. Small yellow to 8" green plants with occasional mature berries common on steep grades along trail shaded under Ponderosas and firs. Moist black soil and rocks. Only one flower observed. One colony of a few very large, green plants with multiple large berries growing in rocky E-facing outcropping were collected as separate DNA sample #7.1. Collected berries. New site and germplasm. Expedition 2005 collection #7. PI 641034.

Continue from 31E 25.00' NW on trail #103 for nearly one mile to jct with trail #117 (Sunnyside Canyon, 25.43' x 20.75'). Lunch break here at 12:30. Note that this jct is misplaced on the official USFS map, which shows that jcts to trails #123 (to Ramsey Canyon) #114 (to Pat Scott Peak), and #116 (to Ramsey Peak) are encountered before jct with #117 as one is heading NW on #103.

**BFdR 140.** *S. stoloniferum*. September 24, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. On Crest Trail #103 from N31E 25.00' x W110E 20.16' to jct with trail #117 (Sunnyside Canyon, N31E 25.43' x W110E 20.75') and 8300 ft. Small yellow to 8" green plants with occasional mature berries common on steep grades along trail shaded under Ponderosas and firs. Moist black soil and rocks. Collected berries. New site and germplasm. Expedition 2005 collection #8. PI 641035.

Reaching the #117 trail jct, about 4 miles from camp took about 4 hours. With only about 5 hours of daylight remaining, it did not seem safe to attempt the 4 miles RT remaining to visit Pat Scott and Ramsey peaks (as planned) and then retrace our steps another 4 miles to camp, so we returned directly to camp. At Bear Saddle we met two Border Patrol agents hiking the trail. We were concerned that illegals might molest or steal our gear while we were gone all day. Our food sacks were strung up in high branches far enough from camp to be inconspicuous, but findable. We hid our backpacks in bushes up slope from camp. Tents remained up, very close to the #106 trail, but were undisturbed like everything else when we returned. At camp, filtered water, made fire for supper and washed up. Retired at about 8:00 PM. There was no indication that any other humans had been around our campsite during the day or throughout the night.

### Sunday, September 25<sup>th</sup>

Up at 5:40 AM with first light. Make fire for coffee/breakfast, organize for day hike on Crest Trail E to Miller Peak and then back to vehicle at trailhead.

**BFdR 141.** *S. stoloniferum*. September 25, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. On Crest Trail #103 from Bathtub Spring (jct with trail #106) to jct with access trail to Miller Peak (#105). From N31E 24.30' x W110E 18.75' to N31E 23.55' x W110E 17.70' and 8500-9100 ft. Small yellow to 8" green plants with occasional mature berries very common along trail shaded under Ponderosas and Firs on flat saddles or under brush, raspberries, ferns or Aspens on steep NE-facing grades. Moist black soil with rocks. Collected berries. Includes site of herb spec McLaughlin and Bowers 6080 (1990). New germplasm site. Expedition 2005 collection #9. PI 641036.

Some wooded saddles along this trail (e.g. at 23.937' x 18.515') might make good campsites. Indeed, we noted some fire rings at such places. Near trail #105 there is a sign indicating "Miller Spring" was ¼ mile away. It was unclear if this sign was in the correct orientation or where the trail to this spring was. We did not investigate, but a reliable source of water here would be worth knowing about. Granola bar break, then up trail #105 to summit of Miller Peak.

**BFdR 142.** *S. stoloniferum*. September 25, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. On NE-facing side of Miller

Peak summit. At N31E 23.58' x W110E 17.53' and 9460 ft. Mostly green but spindly plants under brush with occasional mature berries. Moist black soil with rocks. Collected berries. Site of herb spec Wentworth 1887 (1973), [Lehto 1897 (1973) mistakenly placed here]. New germplasm site. Expedition 2005 collection #10. PI 641037.

Before we descended Miller Peak, PB, CF and AdR saw illegals (who had been hiding) running away. We again were able to retrace our way to the campsite in roughly half the time (ave. 2 mph) that it took on the outbound during which we were searching. On return it became clear that #103 and #106 trails follow opposite sides of Miller Canyon but are very close to each other near their jct at Bathtub spring. Thus, going cross-country for a few hundred feet saves going all the way around the hairpin. Arrive back at campsite, rest, eat lunch, break camp, prepare packs.

Leave camp 1:15. Arrive back at vehicle at Ramsey Vista trailhead at 3:30, taking a little more than 2 hours to descend the path that took us 5 hours inbound. Return to Sierra Vista, lodge at Motel 6. Supper at Mi Casita Mexican restaurant.

### Monday, September 26<sup>th</sup>

Depart 6:00 AM for coffee and muffin at Mountain Mocha. Then down 92 to Lutz Canyon access FR59. CF and AdR drop off JB and PB about  $\frac{3}{4}$  mile down this gravel road (where it starts to get rough) at 6:30 AM. Wilderness boundary and trail #104 starts at 23.74' x 14.76' and 5720 ft. according to GPS, but this does not match DeLorme. At trailhead #104, sign says, "Crest Trail = 3.5 miles, Miller Peak = 4.7 miles". Continue up Lutz canyon.

**BFdR 143.** *S. stoloniferum*. September 26, 2005. United States. Arizona. Cochise County. Coronado National Forest, Sierra Vista Ranger District, Miller Peak Wilderness, Huachuca mountains. In Lutz Canyon (FR59) then along trail #104 about 2.5 miles from SR92. At N31E 22.70' x W110E 16.19' and 6030 ft. Only a few light green plants among grass and under brush in alluvial bars from running stream S of trail. Oaks, redbark and small pines. One berry seen and collected. New site and germplasm. Expedition 2005 collection #11. PI 641038.

At 8:30, CF and AdR pick up JB and PB. The former had similarly hiked up Miller Canyon #106 trailhead via FR56 access road. They found nothing.

Return to Sierra Vista and late breakfast at Dawn's restaurant. Original plan was to spend one day accessing Huachuca, Lyle and Peterson peaks from the SW on trails #119 and #121 via FR228 access. However, we realized that driving to the access road would take time, and the 9 mile RT hike would leave insufficient time to return to Tucson and pack for an early flight the following day. Also, the NE slopes of Huachuca peak would be most promising, but the trail approaches from the least desirable SW, making it advisable to invest the extra time to go off-trail to explore the NE slopes of these peaks. Therefore, we decided to return to Tucson area to scout Rincon Mts for a possible trip in 2006, check the condition of known populations on road to Mt Lemmon (just outside of Tucson), and explore at reported sites on Mt. Lemmon road at which searches for germplasm in previous (drier) years had been unsuccessful. AdR noted source of possibly more helpful hiking maps (see appendix).

Depart for Tucson 10 AM. At 11:15 Arrive Saguaro National Monument and talk to Rangers about access, conditions, permission. Reaching Rincon peak is quite an undertaking, they say. A climb of 3,000 ft from any approach, and starting at low, desert conditions means carrying plenty of water and avoiding the hot part of the day.

Continue to Mt Lemmon (General Hitchcock Hwy) to Summerhaven and break for pie. Return down, looking near road to Oracle. Continue to road to Mt. Bigelow.

**BFdR 144.** *S. stoloniferum*. September 26, 2005. United States. Arizona. Pima County. Coronado National Forest, Santa Catalina Ranger District, Santa Catalina Mountains. On road to Mt. Bigelow near Summerhaven on Gen. Hitchcock Road to Mt. Lemmon. Along road just S of the observatory. At N32E 24.94' x W110E 43.87' and 8204 ft. Green and yellowed plants in grass, under brush or right along roadside under large Ponderosas. No flowers, but occasional mature fruit. Collected fruit. Vicinity of herb spec Benson 9702 (1939). New germplasm. Expedition 2005 collection #12. PI 641039.

Continue down Gen. Hitchcock road toward Tucson to Bear Canyon picnic and campgrounds.

**BFdR 145.** *S. stoloniferum*. September 26, 2005. United States. Arizona. Pima County. Coronado National Forest, Santa Catalina Ranger District, Santa Catalina Mountains. On Gen. Hitchcock Road to Mt. Lemmon from Tucson at Bear Canyon campgrounds and picnic area (part on S side of

highway). On W side of picnic areas near picnic tables. In moist, black alluvium just N of the (dry) Bear Creek bed, under brush, small oaks and grass. Many very large, robust plants with large dark-green leaves, often with multiple mature berries. At N32E 22.40' x W110E 41.51' and 5900 ft. Site near previous herb spec VanDevender and VanDevender 89-250 (1989). New germplasm. Collected fruit. Expedition 2005 collection #13. PI 641040.

Return to Tucson. Car wash. Check in at Motel 6 – Airport on Benson highway. Out for supper at El Charro and shopping at Park Place Mall on Broadway near Wilmot Rd.

### **Tuesday, September 27<sup>th</sup>**

Up at 4:30 AM, pack and depart for airport at 5:15. Coffee and breakfast at airport. At 7:29 take AA flight 1002 to Chicago, arrive at 12:30. AdR takes bus to Madison, others Shuttle to 4-Points Sheraton and drive to Sturgeon Bay, stopping for late lunch at Quizno's/Starbuck's at Exit 344 on Rt 94. Home by 6 PM.

# Huachucas Potato Collecting Trip Report, 2005

September, 2005

## EXECUTIVE SUMMARY and MISC OBSERVATIONS

Objectives: Huachuca mountains in the extreme SE corner of AZ are one of the isolated “sky island” ranges. Correll has said collections from here are particularly variable. This area, along with the Chiricahuas, are the source of *stoloniferum* with unique nematode resistance (*M. chitwoodi*).

Germplasm collections representing the Huachucas have been available for use from the genebank for many years, but restricted to a few collections from lower elevations (Ramsey Canyon and in Ft. Huachuca). A few reports of *S. stoloniferum* on the crest have been cited as herb specs.

Results. New potato germplasm was captured both at the herbarium specimen report sites and several completely new sites. A total of 14 germplasm samples were made. Twelve were from sites never before sampled as germplasm, and 8 of these were previously unknown sites. We also scouted for a potential trip next year in the Rincons by visiting Saguaro National Monument visitor center. We also took the final afternoon to check the condition of *stoloniferum* on Mt. Lemmon on the NE edge of Tucson, and found and collected two additional novel germplasm samples from sites previously reported as herb specs.

Ideas for future work: We were not able to explore the crest trail to its N end at Pat Scott and Ramsey peaks. We also decided we did not have enough time and information to explore Huachuca peak and search for *jamesii* at site of McLaughlin and Bowers 5922. Also, it is becoming increasingly clear that *stoloniferum* can be found at much lower elevations. This raises the question of whether more searching at the bottoms of the various canyon trails accessing the crest should be done. One might extend that search to the (apparently) unexplored Canelo Hills immediately to the W of the Huachucas.

### Miscellaneous observations:

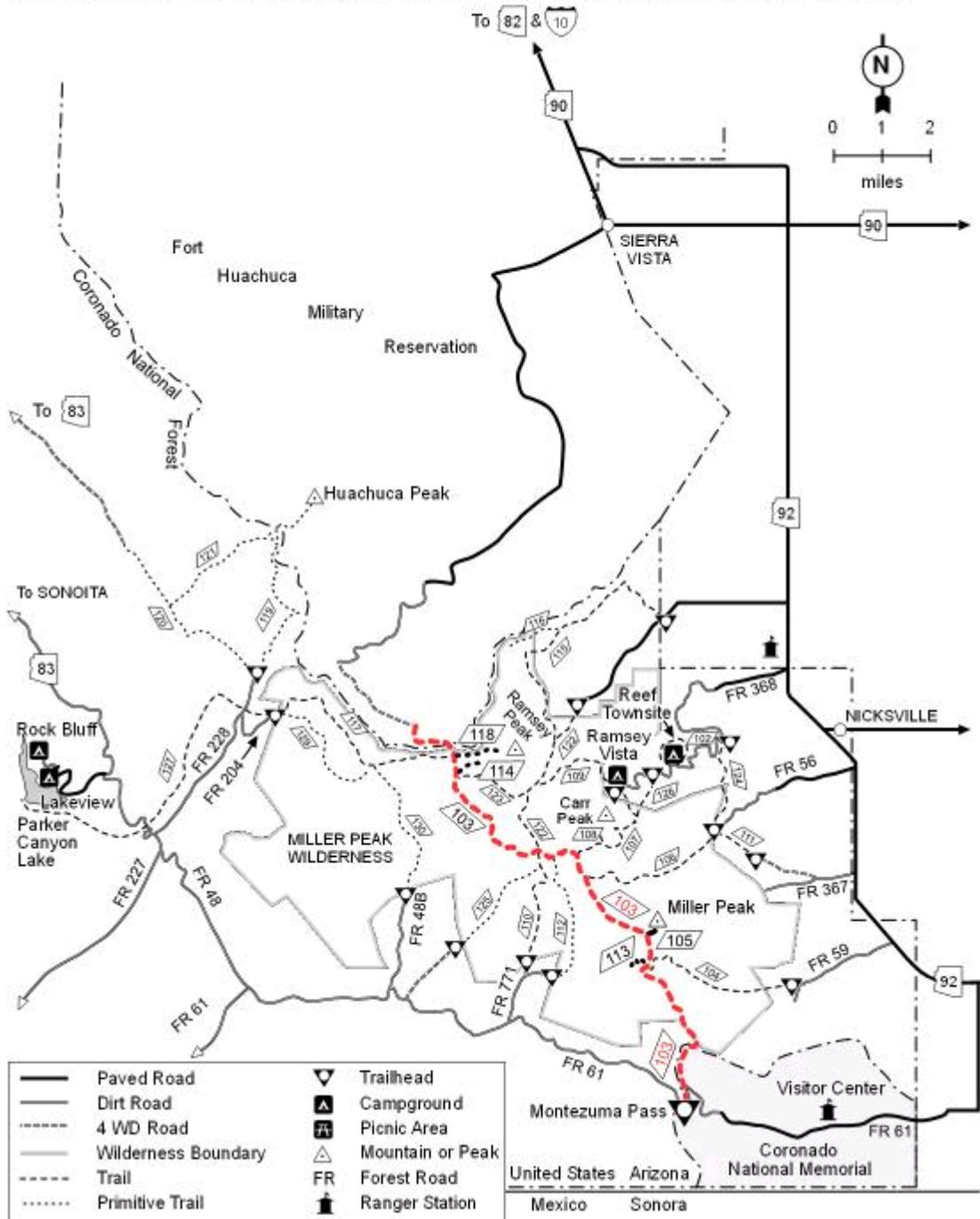
1. We used the camping checklist developed last year with success (attached). JB and PB used wood exclusively for cooking, which worked well when kindling was stored in a plastic bag to avoid the dampness of morning dew. It

was essential to carry a partial roll of duct tape on a strap clipped with a carabiner to the belt to tape toes at the first sign of soreness. Also carry dry socks and similarly hang the damp ones from your belt to dry. Two quarts water per person is reasonable for a day of hiking. We overestimated how much food we needed, being tired, but oddly un-hungry after a day of walking over rough trails.

2. Total trail distance hiked was 37.5 miles over 4.5 days, or about 8 miles per day. Searching, climbing and/or carrying weight reduces pace to 1 mph or less, but retracing can easily be done at 2-3 mph.
3. Altitude and sunburn were not significant problems.
4. Time of the year (late-Sept) seemed close to ideal, but despite reported good rainfall, berries were not as abundant this year as observed on Carr Peak in 2002.
5. As in the Chiricahuas, trails were often not clearly marked or ambiguous. Signs made of wood were *usually* burned, dislodged/disoriented, and broken. Miller spring is signed at ¼ mile away from very near the access trail to Miller Peak (#105) but is on no official map, to our knowledge. As previously noted, Bathtub spring is misplaced on the USFS map, as is the jct of trails 103/107.
6. Saw more of the fruit galls observed last year in the Chiricahuas, and 10 years earlier in the Sta. Ritas, but this time very large ones on *jamesii*. As with fruit flies (commonly noted on this trip as the small brown scars of ovipositing on fruit), how do these fruit galls (accompanied by bright orange larvae) impact reproduction in the wild? Might these galls have a new galling bacterium or strain of *Agrobacterium* more efficient for transformation?
7. Lehto 1897 *jamesii* (see p. 16) could not be on the top of Miller Peak as published in our book (Syst. Bot. Mon. 2005 vol. 68). This record was misinterpreted. Lehto 1897 site is really in Ft Huachuca, Garden Canyon at about 27.46' x 22.30' and 6200 ft.

# Crest Trail #103

(Miller Peak #105, Bond Spring #113, Pat Scott Peak #114 & Ramsey Peak #118)



## SW Collecting 04 take-along list 090204

10-Sep-04

### FOOD and such

Boil pan (C, J)  
 Canteen(s) (2 Qt.each?)  
 Coffee, tea, cocoa  
 Fire starters (matches, lighter, mag striker)  
 Five B, L, D (Dried--Cold except for supper Mountainhouse)<sup>1</sup>  
 Plastic bags  
 Stove (C )  
 Tin cup, paper dispo cups, plastic spoons  
 Trail mix and bars for snacks  
 Water filter and tablets (CF)

### Toiletries

first aid (CF)  
 Alleve, imodium (J)  
 Tylenol PM  
 sunglasses  
 sunscreen and bug spray  
 toothbrush, etc.  
 TP  
 waterless hand towellets

### Prep

Legs in shape?  
 Test loaded pack for fit  
 Shoes broken in?  
 Test phone  
 Test food  
 Call ranger station before departure

### Collecting

Backup plan (J)  
 bags, compass, notepad (J)  
 camera (dispo-- no electronic)  
 Car - SUV? (J)  
 Computer? -- no  
 GPS (J)  
 Maps (C & J)  
 Desc of known herb sites

### Gear

Backpack  
 candles  
 Clothes (light jack & Hat)  
 compass  
 cord for clothesline, etc + pins (J)  
 daypack  
 duct tape (J)  
 extra batteries  
 knife  
 Masko  
 phone (A)  
 plastic sheet?  
 Rain poncho  
 saw (J)  
 shoes (2 pair) with extra laces  
 Sleeping bag and pad  
 Small flashlight and spare bulb  
 stuffsack to hang up  
 Tents (CF & J)  
 walkie-talkies (A)  
 watch  
 backpack check plastic sack (??)  
 needle and thread  
 safety (diaper) pins

<sup>1</sup> Will buy "cook and eat in the bag" freeze dried suppers at Tucson, bringing Ramen noodles and dried potatoes to suppliment.  
 Will make "just add water" cereal mix for breakfasts, and trail mix and bars for lunch, maybe with cheese & jerky.

## Previous Reported sites in the area...

Collector	Coll #	Species	Location	Elev.	Habitat	Date	Year
McLaughlin and Bowers	5922	jam	Cochise County, Coronado National Forest, Sunnyside Canyon, NW 1/4 Sect. 15, T23S, R19E	5850 ft	oak-juniper-pinyon woodland	Aug 11-1	1990
McLaughlin and Bowers	6080	sto	Coronado National Forest, trail to Miller Peak, saddle SE of Bathtub Spring, SE 1/4 Sect.28, T20E	8500 ft	with ponderosa pine, Quercus gambelii	25-Aug	1990
Yatskievych	80-468	jam	Huachuca Mountains, Ft. Huachuca Military Installation, Garden Canyon in upper canyon near bottom	5350 ft	scattered on limestone ledges, with Ipomoea, Carex, Cheilanthes, Piptochaetium, Muhlenbergia, Panicum, and Portulaca	10-Aug	1980
Toolin and Yatskievych	991	sto	In canyon bottom along trail about 1/2 mi up from the box, T23S R20E SW1/4 of NW1/4	6400 ft	Growing with Potentilla, Commelina, and Oenothera, mixed deciduous-conifer riparian forest	8-Aug	1980
Lehto (this collection mistakenly attributed to Miller Peak)	1897	jam	Cochise County, Huachuca Mountains, <del>Miller Peak</del> , T23S, R19E	1868	limestone, canyon pine forest	19-Aug	1973

## Huachuca and Sta. Catalina collections, 2005

Sept 21-27,  
2005

SW05 Coll No	BFdR Coll No	sp	Lat 31E + Min:	Lon 110E + Min:	Elev (ft.)	Loc Desc
1	132	sto	25.07	25.86	5550	S of Parker Lake on FR48 at pulloff by stream
2	133	sto	22.42	19.90	5820	About 100 yds up FR771 from FR61 up Ida Canyon along E roadside
3	134	jam	22.42	19.90	5820	About 100 yds up FR771 from FR61 up Ida Canyon along E roadside
4	135	sto	24.04-24.38	19.61-19.35	7600	Along 7500 ft contour from fence NE to Bear Spring on Ida Canyon trail.
5	136	sto	25.03-24.70	18.30-17.95	8300-8900	On Carr Peak access trail 107 along trail.
6a	137	sto	24.30	18.75-18.40	8075-8550	On Miller Canyon trail 106 from Tub Spring to E about one-half mile down the canyon
6b	138	sto	24.32-24.66	18.92-19.40	8700-8100	On Crest Trail 103 from jct with 107 NW to Bear Saddle
7	139	sto	24.66-25.00	19.40-20.20	8100-8400	On Crest Trail 103 from Bear Saddle, about one mile NW to 25.00' Lat
8	140	sto	25.00-25.43	20.20-20.75	8400-8500	On Crest Trail 103 from 25.00' Lat, about one mile NW to 103/117 trail jct.
9	141	sto	24.30-23.55	18.75-17.70	8500-9100	On Crest Trail 103 from jct with 106 (Tub spring) SE to Miller Peak trailhead 105
10	142	sto	23.58	17.53	9460	Top of Miller Peak
11	143	sto	22.70	16.25	6030	Lutz Canyon W from SR 92 on FR59 then trail 104 about one mile past (W of) the Wilderness boundary or 2.6 miles W of FR59/SR92 intersection
			Lat 32E + Min:	Lon 110E + Min:		
12	144	sto	24.94	43.87	8200	Highway to Summerhaven, then on Mt. Biglow access road at the observatory
13	145	sto	22.40	41.51	5900	Highway to Summerhaven at Bear Creek campground and picnic area (one S of highway)



Hauchuca Mt. Fruit and Seed Notes:  
October 19, 2005

Temp 2005 Collecting number

- =====
- #1: Parker Lake 9/21/04 8 fruit fen no larvae Extracted 8 fruit (hand)  
10/7/05. 227 seed.
  
  - #2: FR 771 to Ida Canyon  
9 fruit fen no larvae? Extracted 7 fruit (hand) 10/9/05. 331 seed.
  
  - #3: 11 tubers jam
  
  - #4: 7 fruit collected, 3 had no seeds because larvae had eaten them, 2 pupa in  
bag. 4 total fruit, cut 2 to extract larvae, couldn't find larvae although 1  
fruit looked eaten. Extracted 4 fruit (hand) 10/7/05. 145 seed.
  
  - #5: 31 fruit collected Aspen to 108 trail.  
1 pupa in bag. 28 fruit total. Cut larvae out of 6 fruit, 3 other fruit totally  
eaten. Extracted 18 fruit (blender). 984 seed.
  
  - #6a: 9 fruit collected no larvae 8 total fruit 10/11/05. 510 seed.
  
  - #6b: 18 fruit collected no larvae 17 fruit extracted 10/13/05. 738 seed.
  
  - #7: Bear Saddle. 38 fruit collected (1 tuber discarded). Cut out 4 larvae. 38  
total. Extracted 25 fruit (blender) 10/9/05. 2120 seed.
  
  - #8: Sunnyside Canyon trail 117. 44 fruit collected. 4 larvae cut out. 44 total  
fruit. Extracted 33 fruit (blender) 10/9/05. 1633 seed
  
  - #9: Trail to Miller Peak. 53 fruit collected. 4 larvae cut out. 51 total. 2 eaten  
(discarded). Extracted 49 fruit (blender) 10/11/05. 2600 seed
  
  - #10: Top of Miller Peak. 8 fruit collected no larvae? Extracted 5 fruit (hand)  
10/9/05. 92+-seed.
  
  - #11: Lutz Canyon. 1 fruit collected. No larvae. Extracted 1 fruit (hand) 10/7/05.  
62 seed.

- #12: Mt. Biglow Observatory. 16 fruit collected. No larvae. 13 fruit extracted 10/12/05. 47,65,67,49,102,65,69,89,74,111,64,59,86 = 947 seed.
- #13: Santa Catalina Mts., Bear Canyon Campground. 84 collected. 1 larvae in bag. 2 larvae cut out. Extracted 60 fruit (blender) 10/9/05. 2225 seed

## Distribution List

Karen Williams, USDA/ARS/PEO  
David Spooner, USDA/ARS/USPG

October 14, 2005

Maps by Leonard Taylor  
Thunder Peak Productions  
PO Box 121  
Sierra Vista, AZ 85636.

Dear map company rep,

We saw what looked to be a useful map made by your company at the trailhead to Miller Canyon trail off MC road.

I am interested in any maps you may have of Huachuca Mt. hiking trails.

Please call with info on how to order the map mentioned above and/or mail documentation of what else you have available.

Many thanks,

John Bamberg

Date: Thu, 13 Oct 2005 15:29:31 -0400 (EDT)  
From: John Bamberg <nr6jb@ars-grin.gov>  
Subject: A. t. transformation of potato -- new strain?  
To: s.millam@scri.sari.ac.uk  
Cc: "Dr. Alfonso Del Rio" <adelrioc@facstaff.wisc.edu>

Dr. Millam,

I'm contacting you due to your publications on the subject of A.t. transformation (Plant Cell Rept 24:10-), and its reference to a bookchapter you wrote on the subject.

While collecting potato species in the wild in the southwestern USA, we have observed fruit galls (see attached pic). We do not know what insect these larva belong to, what organism causes the galling, have never observed this phenomenon at the Genebank or elsewhere, and know of no published reports. We have now observed these on both wild species in the USA, *Solanum fendleri* and *S. jamesii*.

I'm no expert on A.t. transformation, so ask your advice on whether there could be something of value here that bears some follow-up investigation. For example, is there any reason to hope that this natural galling organism in potato could be different and better than the A.t. currently used?

Any help would be appreciated, even if it is specifying someone else more appropriate to ask.

Thanks,  
JB