Chiricahua Mts Potato Collecting Trip, 2004

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 114 of 2003.

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

Trip objectives: 1) collect new germplasm for genebank, 2) test sufficiency of single local collections (do the limited northern collections that have represented the Chiricahuas for the past 50 years 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), 6) measure extent of *in situ* genetic diversity through DNA sampling of different individuals within each population 7) if time permits, search at other local sites reported by herbarium specimens but from which no germplasm has been previously collected: Dos Cabezas for *stoloniferum* Bingham 2473 (1976), Stewart's Camp for *jamesii*, Lehto 3965, 4015, 5420 (1965).

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 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 IV). All coordinates are 31 degrees N lat and 109 degrees W lon. One second of lat or lon is about 100 feet. Bought or borrowed and tested hiking equipment. Made checklist of all items needed (see attached). Planned what we assumed to be a reasonable schedule of daily hiking. Found out that DeLorme and GPS lat/lon datum need to be coordinated to UGS84 in order to exactly match. Gathered all info about previous reports of germplasm and herbarium specimens in the area. Asked for and received financial support from USDA/ARS/NGRL plant exploration coordinator Karen Williams, Beltsville.

Saturday, Sept 11th

CF picks up JB and PB at 3:30 AM for drive to Green Bay airport for 6:00 AM UA flight to PHX via ORD. Arrive about 10:30 AM, rent *Trifty* SUV, Mitsubishi Endeavor. Meet AdR (arriving from Madison) at PHX and drive toward Tucson, eating lunch at Burger King near Casa Grande. Continue to Summit Hut outdoor supply store (5045 E. Speedway) in Tucson. Buy "power gel" packs and fuel for camp stove (CF had tested burn time and estimated there would be enough for 3 days of camp cooking in one canister). Stop at Goodwill store to buy extra pair of jeans for JB. Coffee at Starbucks. Continue to Willcox and lodge at Arizona Sunset motel, $30 per double room. Supper at Salsa Bar restaurant, Willcox.

Sunday, Sept 12th

Breakfast at Regal restaurant and to Bob's IGA for lunch groceries. Drive to Rustler park (S from Willcox 35 miles on 186, E on 181 for 3 miles, SE on gravel FR42 for 15 miles), stopping at Pinery campground and Barfoot park. *Stoloniferum* seen at all these sites with fruit, but not exceptionally abundant. In fact, not very abundant at Rustler Park. However, saw here two cases of insect mediated fruit galls containing bright orange larvae, seen only once previously about 95 miles to the W at Mt. Wrightson collection BAM 08 in 1994 (see AJPR 80:159). Picnic lunch at Rustler park, then hike with packs. Saw potatoes at many places beyond Rustler trailhead (Crest Trail 270) to wilderness boundary and beyond, often with mature fruit. Saw one more fruit gall not far from Rustler Park. To campsite at Anita Spring, observed plants here, but deferred collection until return trip. Set up base camp at Anita Park camp site (51' 08" x 17' 15" at 9,540 ft.) at 5 miles from trailhead and gain in elevation of 1,140 ft (8,400 to 9,540). Anita Spring is down trail 359 to the E about ¼ mile and 200 ft lower. Today's distance was 5 miles with packs.

Monday, Sept 13th

Start at 8:00 AM hiking S from Anita Park on trail 270. At about 1/10 mile is junction of several trails (50' 59" x 17' 21"). This spot called "The Junction" From here, trail 270A climbs to the top of Chiricahua Peak (50' 46" x 17' 29") and 9,745 ft. No potatoes seen. Refined trail number maps: 270B goes to the SW to Raspberry and Monte Vista peaks, 270C goes to SE to Sentinel peak, and trail 270D links the two on the S side of Chiricahua Peak and is called "Aspen Saddle" trail. Took 270B to the SW.

BFdR 115. *S. stoloniferum*. September 13, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness between Chiricahua and Raspberry peaks on trail 270B. N31° 50' 48" x W109° 17' 41" and 9,483 ft. Mature berries on plants to 10" tall. One open flower observed. Shady E facing slope among wild geranium, Ponderosas, and Aspen, in dark rocky soil. Collected one berry per plant. Expedition 2004 collection #1. PI 636399.

DeLorme Topo4 trail positions seem to be wrong here. We come to intersection with Mormon Ridge trail 269 which was supposed to be N of Chiricahua peak.

BFdR 116. *S. stoloniferum*. September 13, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness between Chiricahua and Raspberry peaks on trail 270B short distance S of intersection with 270D. N31° 50' 28" x W109° 17' 58" and 9,150 ft. Mature berries on a few small plants. Among yellow daisies and mauve boulders. Collected one berry per plant. Expedition 2004 collection #2. PI 636400.

BFdR 117. *S. stoloniferum*. September 13, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness between Chiricahua and Raspberry peaks on trail 270B short distance S of intersection with 270D, only about 1,000 ft from BFdR 116. N31° 50' 18" x W109° 18' 01" and 9,060 ft. Where trail bottoms out and starts to climb—meadow saddle. Some large plants with mature berries. Among grass and branches of downed trees. Collected one berry per plant. Expedition 2004 collection #3. PI 636401.

BFdR 118. *S. stoloniferum*. September 13, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness between Chiricahua and Raspberry peaks on trail 270B. N31° 50' 15" x W109° 18' 02" and 9,030 ft. Steep N facing shady slope under pines in mulchy dark soil. Plants here less mature with some flowers. Plants also closeby to the S where the trail makes a very sharp "hairpin" curve around large mauve boulders and just beyond. Plants in open spots less spindly and more mature with berries. Collected one berry per plant. Expedition 2004 collection #4. PI 636402.

BFdR 119. *S. stoloniferum*. September 13, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness on trail 270B between Paint Rock and Raspberry peaks. N31° 49' 49" x W109° 18' 01" 9,240 ft. On SE

slope among rocks and grass. Small, yellow or light green plants, some with mature berries. Collected one berry per plant. Expedition 2004 collection #5.

We proceeded a short distance beyond the last collection and stopped for lunch. Being 1:00 PM and five hours' hiking away from camp, we reasoned that we ought to turn back to be sure to reach camp before nightfall. This was a mistake, however, since a direct hike back to camp without pausing to look for and collect potatoes took less than two hours. The modest gain in elevation did not significantly increase the time needed for the return trip. We would have had time and energy to continue SW for the additional one-way trip to Monte Vista Peak, and perhaps even to some of several possible side trips that all stayed above 8,500 ft: a) 1.5 miles SE on Raspberry Ridge trail #228, b) 2.5 miles W from Monte Vista peak and past Johnson peak on trails #219 and #264, c) 0.8 miles S on trail #221. However, the collections made on this day show that potatoes do exist in the southern Chiricahuas, despite a lack of any previous reports, and that more exploration in the Monte Vista area would be warranted on a later trip.

We return to The Junction and decide to make a short exploration of trail 270C that passes the E side of Chiricahua peak and scout the reportedly good spring in that vicinity called "Ojo Aqua Fria". We see fine potato plants with mature berries along the 15 minute hike to the signpost to the spring trail 361 (which is at 50' 36" x 17' 11"), but will defer collection until the return of our trip to Sentinel peak tomorrow. The trail markers to the spring were defaced, what we assumed to be the correct path became ambiguous, and it looked like the spring could only be at the bottom of a deep canyon that would require a substantial return climb. We decided to abandon search for Ojo Aqua Fria spring and return to camp. Today's base hiking (trail distance without roaming around to search) was about 8 miles.

Tuesday, Sept 14th

Breakfasted, filtered water, and planned today's hike starting at 7:30 AM. Our strategy today would be to hike directly to the farthest point we had hoped to reach, looking only casually for potatoes, then budget our time for searching and collecting when we retraced our steps on the return trip to camp. We anticipated availability of water at Juniper or Eagle springs near the intersection with trail 246 but would not depend on that. At 8:30 AM we reached that junction and Juniper spring (50' 01" x 16' 36" at 9,145 ft.). The spring box was vandalized, full of debris and unusable. The signposts here were defaced and/or broken down such that the main trail 270C to Sentinel peak was ambiguous. But we reasoned it must

pass through the saddle directly to the S. A few hundred feet in that direction, indeed was a cut stump indicating the location of the trail. In this saddle we noted potatoes to be collected later as Expedition collection #7. Slopes facing SW became very rocky and dry. The most extensive damage of the Rattlesnake fire of 1994 was evident here with all trees killed and many falling over the trail. At 10:20 AM we come to the intersection of Price Canyon trail 224 (49' 20" x 16' 00"), not same position as shown in DeLorme. No numbers, distances or directions on trail signs here. At 10:45 we reach the saddle from which you can view red rock spires to the NE. At noon, trail could no longer be found in saddle to the SE of a peak we assume to be Sentinel (but we had not pass the expected sign for intersecting trail 366). We lunched and turned back at this point, later recognized as being about one mile short of Sentinel peak.

We had climbed up the slope from the faint trail to picnic, and upon descending had difficulty finding the trail. Thanks to the GPS, we were able to retrace our steps.

BFdR 120. *S. stoloniferum*. September 14, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness on trail 270C between Chiricahua and Sentinel peaks and E of junction with Price Canyon trail 224. N31° 49' 14" x W109° 15' 37" and 9,050 ft. On W facing slope around rockslide in rocks of trail and among grass in branches of fallen trees. Small yellow plants in open and when protected about 15 larger plants with mature berries. Collected one berry per plant. Expedition 2004 collection #6. PI 636404.

BFdR 121. *S. stoloniferum*. September 14, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness on trail 270C between Chiricahua and Sentinel peaks. In saddle just S of Juniper spring (which is at junction with trail 246). N31° 49' 56" x W109° 16' 38" and 9,000 ft. On E facing slope in mulchy soil shaded under large Douglas Fir. Collected one berry from each of the 30-40 plants which had them. Expedition 2004 collection #7. PI 636405.

BFdR 122. *S. stoloniferum*. September 14, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness on E facing slope along trail 270C skirting E side of Chiricahua peak. N31° 50' 42" x W109° 17' 16" and 9,400 ft. Ponderosas and Douglas firs not burned here, and undergrowth is lush with rich black mulch soil. Many large plants. Collected more than one berry from each. Expedition 2004 collection #8. PI 636406.

Return to Anita Camp about 4:00 PM. Today's base hiking was about 10 miles.

Wednesday, Sept 15th

Break camp at 8:00 AM and begin pack-out to Rustler Park. Begin collection of potatoes previously observed near campsite.

> **BFdR 123**. *S. stoloniferum*. September 15, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness at Anita Camp, junction of trails 270 and 359 and along 270 to Chiricahua peak trail 270A. At N31° 51' 02" x W109° 17' 19" and about 9,500 ft. Many large plants among grass, fallen branches and rocks, some with mature berries. Collected one berry from each plant. Noted what appears to be mite damage on some. Expedition 2004 collection #9. PI 636407.

> **BFdR 124**. *S. stoloniferum*. September 15, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness along Crest Trail 270 from Anita Camp to Cima Park / Greenhouse trail 248. N31° 51' (28-38)" x W109° 17' (17-24)" and about 9,200-9,300 ft. Intermittent along trail in woodland and open areas. Large plants with mature berries. Collected one berry from each plant. Expedition 2004 collection #10. PI 636408.

Proceed N toward Rustler Park to intersection of trail 248 which goes to Cima Park, Cima Ranger Station, is "Greenhouse Trail" and follows the creek E toward Sanders peak. Shed packs for side trip E down 248. Stop at stream at Cima Ranger station to refill canteens.

> **BFdR 125**. *S. stoloniferum*. September 15, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness along Greenhouse trail 248. About ¾ mile E of Crest Trail 270 junction where trail 248 goes down to the stream and crosses it. Near site of Leithliter 179 (1975). Wooded, shady and moist habitat around rocks and fallen branches near stream and on more open, steep, rocky S facing slope above stream. N31° 51' 42" x W109° 16' 30" and about 8,700 ft. Intermittent along trail in woodland and open areas. Plants on slope were numerous, mostly small yellowed plants but with mature berries. Collected one berry per plant. Expedition 2004 collection #11. PI 636409.

Return to junction of trails 248 and 270 for lunch and reclaim packs. Depart N for Rustler Park at 12:00 noon. Pass junction of Saulsbury trail 263 (N31° 52' 19" x W109° 17' 14" and 9,200 ft.). To wilderness boundary at intersection of trails Flys Peak 337, Crest 270, Long Park FR 42D, Centella Point 334 all at N31° 52' 47" x W109° 17' 12" and 9,060 ft. Down FR 42D to Long Park. Observe potatoes all along the path and primitive road to Rustler Park, but defer collection until return tomorrow without packs.

Drive down E side of Chiricahua mts on FR 42 to Stewart's Campground (N31° 53' 11" x W109° 10' 19", 5,150 ft.), site of *S. jamesii* report, Lehto 3965 & 4015 (1964). No potatoes found.

N and E on 80 to New Mexico and Road Forks truck stop at Interstate 10 for supper. Back W on 10 to Willcox and lodge at Arizona Sunset motel. To Bob's IGA for lunch groceries for day trip tomorrow; treat at Dairy Queen.

Today's base hiking was about 6 miles, mostly with packs.

Thursday, Sept 16th

Start 6:00 AM with breakfast at Regal Diner. Toward Rustler Park, looking first at Onion Saddle, site of Cazier 681 (1966). We have driven past this junction many times, of course, but did not previously see the few small plants. Noted them for collection on the way out. Arrive Rustler Park about 9:00 and depart on foot for proximal collection sites (herbariums specimen reports) at 9:10 AM.

> **BFdR 126**. *S. stoloniferum*. September 16, 2004. United States. Arizona. Cochise County. In Coronado National Forest. Common along the N-S trail between Rustler Park and Chiricahua wilderness boundary—the western trail (Crest Trail 270). Among Ponderosas, grass and ferns in rich black soil among rocks. N31° (53-54)' 05" x about W109° 17' 03" and about 8,700-9,200 ft. Collected one berry from each of many plants along this three mile distance. Expedition 2004 collection #12. PI 636410.

Arrive wilderness boundary 11:00 AM and have lunch. Team splits to explore Centella Point to the E, site of Fishbein et al. 498 (1991) and Saulsbury Trail to the W, site of Leithliter 515 (1976), departing 11:35 AM.

CF and AdR continue S from wilderness boundary on 270 to junction with 263. Here a few plants with berries were previously noted. Down and W on 263

Saulsbury trail to supposed site of Leithliter 515 (1976). At about one mile W trail becomes ambiguous. A few small plants noted among rocks, but no berries and only immature tubers. Return to junction with trail 270.

> **BFdR 127**. *S. stoloniferum*. September 16, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness. Junction of Crest Trail 270 and Saulsbury trail 263. On relatively dry W-facing slope among herbs and rocks. Only a few plants with berries. N31° 52' 23" x W109° 17' 15" and 9,260 ft. Close to herbarium specimen report Leithliter 515 (1976). Expedition 2004 collection #13. PI 636411.

JB and PB continue E to Centella point on trail 334. Five minutes E is a stream with good water (Tub spring) and another 10 minutes E is another stream. Pass intersection with trail 333 to Bear Wallow spring. Through Douglas Fir forest and onto a high, rocky ridge. Here a few small plants observed among fallen branches and grass. Continue to Centella Point (about 2 miles from 270 junction).

> **BFdR 128**. *S. stoloniferum*. September 16, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness at Centella Point (end of trail 334). Abundant among Ponderosas, grass and fallen tree branches and logs and among rocks in rich, moist soil. Some plants small and yellow, some in shade and spindly, occasionally with fruit. N31° 53' 02" x W109° 15' 58" and 8,650 ft. Collected one fruit per plant. Close to herbarium specimen report Fishbein et al. 498 (1991). Expedition 2004 collection #14. PI 636412.

Both parties return to trails junction at wilderness boundary about 1:30 PM and depart together for Flys Peak summit (1/2 mile S on trail 337) about 2:00 PM. Arrive Flys Peak (9,600 ft) about 2:30 PM.

> **BFdR 129**. *S. stoloniferum*. September 16, 2004. United States. Arizona. Cochise County. In Chiricahua wilderness at top of Flys Peak. Only a few plants, small and yellowed with occasional fruit, in open grassy meadow among rocks very close to the survey marker. N31° 52' 22" x W109° 17' 02" and 9,620 ft. Collected one fruit per plant. Expedition 2004 collection #15. PI 636413.

Return descending down from Flys Peak to wilderness boundary and then N to Long Park on trail and primitive road FR42D (this is the eastern route back to Rustler Park).

> **BFdR 130**. *S. stoloniferum*. September 16, 2004. United States. Arizona. Cochise County. In Coronado National Forest on three miles of trail/road FR42D from Chiricahua wilderness boundary S to near Rustler Park. Plants abundant and varying greatly with sun exposure: Larger, mature and yellowed among grass and fallen branches with fruit; very small, yellow plants in open, rocky sites; and on shady E-facing slopes plants were large dark green but immature with thin leaves and stems and occasionally with flowers and only occasionally fruiting. Along three miles S-N with midpoint N31° 53' 31" x W109° 16' 50" and ranging about 9,000-8,600 ft. Collected one fruit per plant. Expedition 2004 collection #16. PI 636414.

Arrive at vehicle at Rustler Park about 4:40 PM. Drive to Onion Saddle to collect previously-noted plants.

> **BFdR 131**. *S. stoloniferum*. September 16, 2004. United States. Arizona. Cochise County. In Coronado National Forest at intersection of FR42 and FR42D at Onion Saddle. At N31° 56' 00" x W109° 15' 47" and 7,600 ft. Site of herbarium specimen report Cazier 681 (1966). Few small and yellowed plants on dry rocky roadside under oaks and among grass and bushes. Collected a few small berries. Expedition 2004 collection #17. PI 636415. [Note: Only 11 seeds, none sprouted, so was lost].

Return down FR42 W and to Willcox. Supper at Plaza restaurant and lodge at Motel 6. Today's base hiking was about 11 miles.

Friday, September 17th

JB up early to scout breakfast and laundromat. Best Western's "Hopi Grill" for breakfast. At Espresso shop across from train depot, ask proprietor about access to Dos Cabezas. Informed that local ranchers have BLM contracts that transmit liability, so lock gates. Referred to resident of Dos Cabezas town, Orville Mickens, who runs a small museum showcasing antiques he has collected from the area. Called and drove to Dos Cabezas town and visited museum and Mickens. The road to near the top of Dos Cabezas peaks appeared to be very rough, however, and we decided more preparation, perhaps arranging a guide with a better vehicle at a later date would be wiser.

Return to Willcox and then Tucson for lunch at El Indio on 6th Ave. Toward Phoenix, stopping for gas and at Gila souvenir shop for coffee. Lodge at Phoenix Airport Motel 6. Supper at McDonalds.

Saturday, September 18th

Breakfast at Howard Johnson's next to Motel 6 and return Thrifty SUV (862 miles) and back to PHX by 9:00 AM. CF, JB and PB part company with AdR; all return to Wisconsin.

PI 636399 = BFdR 115
PI 636400 = BFdR 116
PI 636401 = BFdR 117
PI 636402 = BFdR 118
PI 636403 = BFdR 119
PI 636404 = BFdR 120
PI 636405 = BFdR 121
PI 636406 = BFdR 122
PI 636407 = BFdR 123
PI 636408 = BFdR 124
PI 636409 = BFdR 125
PI 636410 = BFdR 126
PI 636411 = BFdR 127
PI 636412 = BFdR 128
PI 636413 = BFdR 129
PI 636414 = BFdR 130
PI 636415 = BFdR 131

Arizona Potato Collecting Trip Report, 2004

September, 2004

EXECUTIVE SUMMARY and MISC OBSERVATIONS

Objectives: Chiricahua mountains in the extreme SE corner of AZ are one of the isolated "sky island" ranges. Germplasm collections representing the Chiricahuas have been available for use from the genebank for many years, but restricted to a few collections on the extreme N side at accessible sites in the Chiricahua National Monument and at the relatively easily-accessible Rustler Park in the Coronado National Forest (about 15 miles of gravel road, but maintained well enough for cars with normal tires and clearance). A few other sites within a day hike S of Rustler Park had been reported as herbarium specimens, but no reports had ever been made in the less accessible Sentinel and Monte Vista Peak areas another 5+ miles S, around which there are many miles of trails above 8,500 ft. This trip's objective was to collect from the herbarium specimen report sites, scout conditions, and do a preliminary exploration of these farther S regions from which no potato reports were known.

Results. New potato germplasm was captured both at the herbarium specimen report sites and completely new sites in the Monte Vista and Sentinel Peak areas. A total of 18 new collections were made as BFdR 115 – BFdR 131.

Ideas for future work in the Chiricahuas: Another trip to the Chiricahuas could be of value to more fully explore these more southern sites at which potatoes were found in 2004. It might be efficient to drop off hikers at Rustler Park with a spartan overnight pack. The first day would be spent hiking to the vicinity of one of the S extremes (Sentinel to the SE or Monte Vista to the SW). The next day could be spent exploring the side trails in the area and then hiking down to Rucker Lake for pickup. This would then be repeated on the alternate branch. Or, would it be better to attempt climbing up from the closer (southern) Rucker area directly? Rucker sits at 6,000 ft and requires only a 3-4 mile hike to the top, but a serious climb (over 3,000 ft gain). Access from the N starts much higher at Rustler Park at 8,400 ft., but is about 10 miles from the southern peaks of Monte Vista and Sentinel.

Miscellaneous observations:

1. Camping to access remote S sites in the Chiricahua wilderness was successful as planned (see attached supplies list). Total trail distance hiked was 40 miles over 5 days. Altitude and sunburn was not a significant problem. The amount of time budgeted (8 days total) and the time of the year (mid-Sept) seemed close to ideal. One surprise was that the single fuel canister was sufficient only for half the cooking. JB and PB used only campfire for cooking and fuel ran out just at the last meal of the last day of camping.

2. We were fortunate to have a preliminary season with abundant moisture, but without rain impeding our time on site, relatively warm nights (but temp drops quickly at sunset), and being able to readily find the best campsite with a good supply of firewood and water.

3. Trails were in much worse shape and apparently less traveled than anticipated, sometimes not clearly marked, ambiguous, crossed by many fallen trees; springs and trail markers vandalized. Apparent that a great numbers of hikers had not camped and passed those trails. We saw no other person the four days we were in the wilderness. There is an irony to the idea that this land is to be observed and enjoyed by people (and the FS reputedly wants more people to come to the Chiricahuas), but, at the same time, the idea that lands covered under the 1964 Wilderness Act ought to be kept unaccessible (intentionally poor trails, limited signs, unmarked springs, etc.). JB communicated to Douglas Ranger district personnel his opinion that if policy conceded to the necessary human impact of trails, spring boxes, and signs in the wilderness, they ought to be accurate and useful ones.

4. Other nearby future target areas: Rincon and Peloncillo mountains might be targets for future hiking/camping – oriented trips. Need to make contacts in advance for access and transport if we make collecting on Dos Cabezas mountain, site of Bingham 2473 (1976), a goal for the future.

5. Saw more of the fruit galls observed only once 10 years ago. How to collect and identify galling organism? Whom to contact about its possible utility as a scientific tool or reproductive impact *in situ*?

6. Berries were observed to have fruit fly scars. We tried to avoid collecting such berries, but some fruit flys were subsequently found in our collections.

7. Searching along all remote trails is already a challenge, even in this range with a relatively small area at appropriate altitude (about 35 square miles). Although trails pass through various habitats, one cannot help but wonder how much more diversity may exist in off-trail habitats that would be very much more difficult and time-consuming to explore (because that would involve going up and down steep grades instead of mostly following the contours).

8. Relative to the extent of diversity mentioned above, in 2002 we resampled at nearby Barfoot park with Chuck Brown, looking for more plants with a rare nematode resistance he had detected. Previous re-collections had been variously susceptible and resistant. The 2002 collections were recently found to have sampled both resistant and susceptible plants. This illustrates that certain *practical traits* of great value are not necessarily common to all plants in a collection area or even site, suggesting that more intensive collecting and recollecting may be needed to provide a reasonable probability of surveying most of the genetic potential of in situ germplasm. In other words, it may be wrong to assume that a single sample now in the genebank adequately represents the genetic potential of a broad geographic area.

9. A small portable computer with Topo IV integrated with GPS would be helpful to exactly track and document the hikers' location, particularly significant in areas where the location and direction of the trail becomes unclear so as to make getting lost a risk. What about solar battery recharging?

10. It might have been more efficient to split up into two parties of two persons more often. At sites like this where it is most practical to look only on or near the trail, and plants are relatively conspicuous, having numerous searchers is not as much of an advantage as elsewhere.

11. Potatoes grow conspicuously along trails several miles farther S than ever reported, even in this well-known wilderness area, relatively close to Tucson. Is this a good example of how a lack of reports does not necessarily mean potatoes are unlikely to exist if the area is more difficult to visit (i.e., requires backpacking and camping, as in this case)?

12. Are potatoes actually becoming more successful here, by invading a burned area?

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)[1]
Plastic bags
Stove (C)
Tin cup, paper dispo cups, plastic spoons
Trail mix and bars for snacks
Water filter and tablets (CF)

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 (2?)
needle and thread
safety (diaper) pins

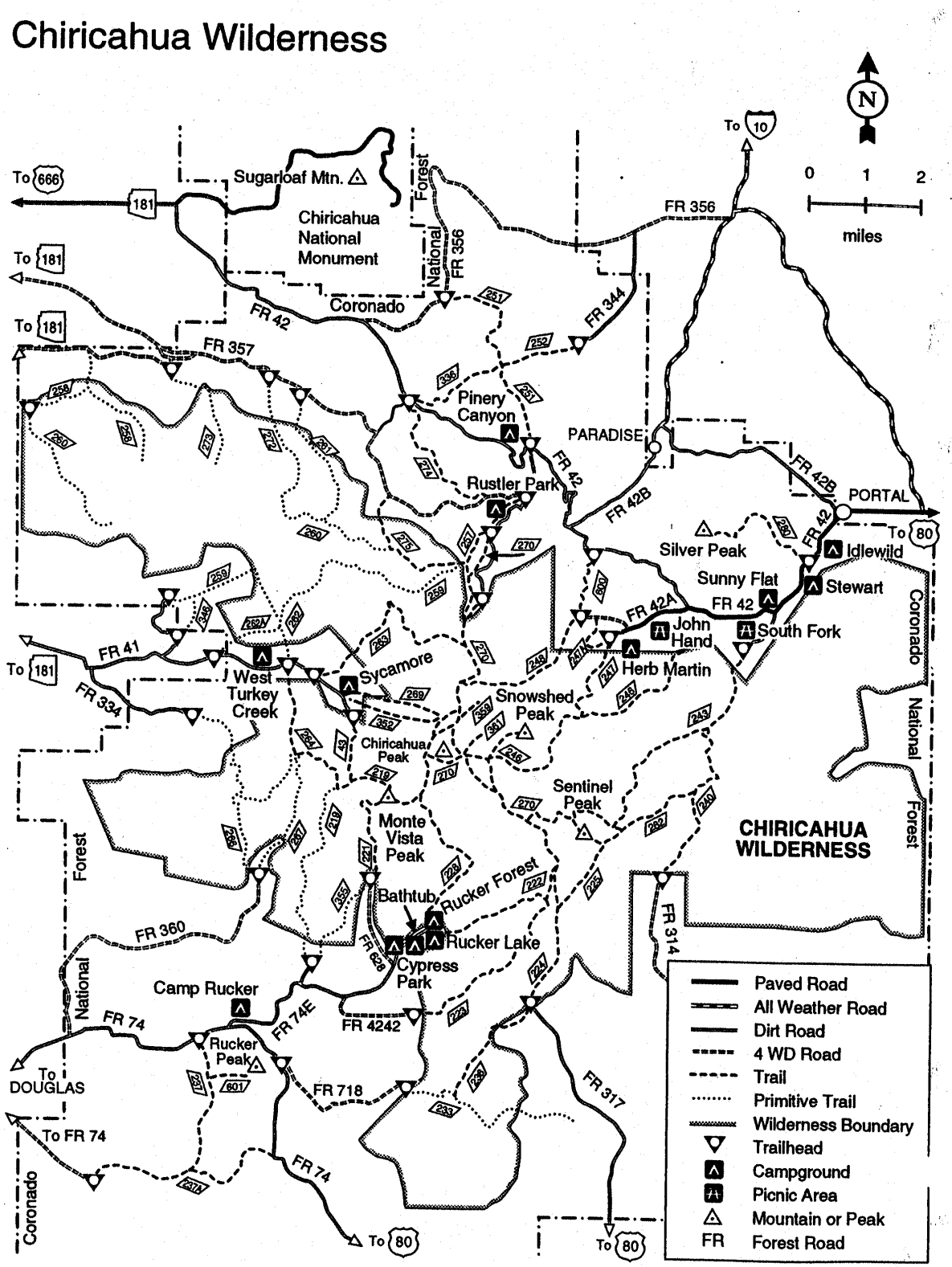
Toiletries

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

Prep

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

[1] 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.


Chiricahua Wilderness
N
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miles
To 10
To 666
181
Sugarloaf Mtn.
Chiricahua National Monument
Forest
National
FR 356
To 181
FR 42
Coronado
FR 344
FR 357
Pinery Canyon
PARADISE
Rustler Park
FR 42B
PORTAL
To 80
Silver Peak
Idlewild
Sunny Flat
Stewart
FR 42A
John Hand
South Fork
Herb Martin
FR 41
West Turkey Creek
Sycamore
Snowshed Peak
FR 334
Chiricahua Peak
Sentinel Peak
CHIRICAHUA WILDERNESS
Monte Vista Peak
Bathtub
Rucker Forest
FR 360
Rucker Lake
Cypress Park
Camp Rucker
FR 74
FR 74E
FR 4242
Rucker Peak
To DOUGLAS
FR 718
FR 317
FR 314
To FR 74
Coronado
Paved Road
All Weather Road
Dirt Road
4 WD Road
Trail
Primitive Trail
Wilderness Boundary
Trailhead
Campground
Picnic Area
Mountain or Peak
FR Forest Road