Memo to Files: September 3, 2014 Coronado National Memorial *Pectis imberbis* trip report

Participants: Sharon Biedenbender (Coronado National Forest), Tom Deecken (formerly of the Coronado National Forest), Laura Fawcett (National Park Service), John Kraft (Coronado National Forest), George Montgomery (formerly of the Arizona Sonora Desert Museum), Debbie Sebesta (formerly of the Coronado National Forest), Amanda Selnick (National Park Service), Maura Thoenes (National Park Service), and Julie Crawford (US Fish and Wildlife Service)

On Wednesday September 3, 2014 John Kraft and Tom Deecken arrived at the *Pectis imberbis* location along the cutbank of FS83 southeast of Parker Canyon Lake (NAD 83, 12N 0554364 3475960) at roughly 9:20 am. They surveyed the cutbank and some of the area above the cutbank, finding 6 plants and flagging them. At 10:00 Sharon Biedenbender, George Montgomery, and Julie Crawford arrived and continued surveying with John and Tom for another hour, searching further above the road-cut, further down the roadcut, as well as below the roadcut on the south side of the road. From this effort a single additional plant was located roughly 20 meters above the roadcut in juniper and oak grassland. All **seven plants** appeared healthy, multibranched, and each branch was laden with flowers; some flowers appeared to be nearing the fruiting stage.

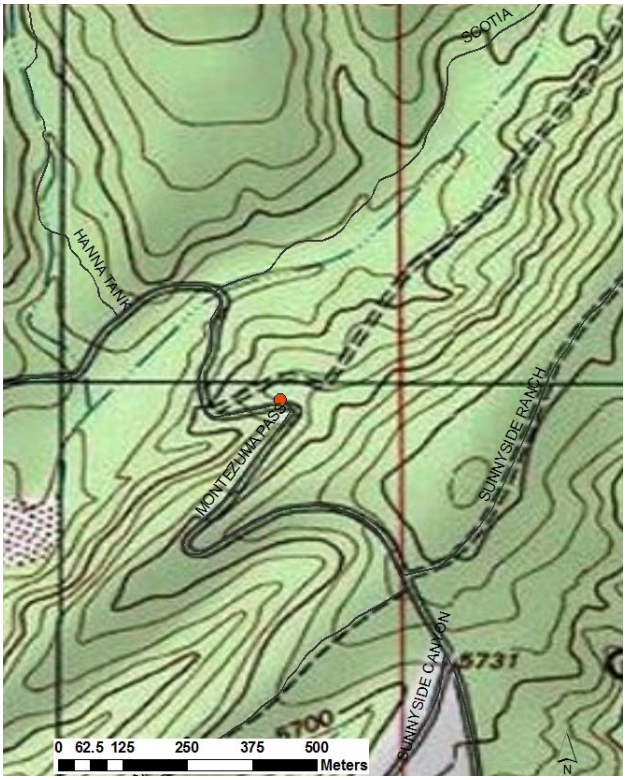

Figure 1. Location of 7 *P. imberbis* plants along FS83 south of the Huachuca Mountains. Historically, this population was reported to support "around 125 individuals" (Fishbein 1993).

The area has received considerable rainfall this monsoon season, with nearby Coronado National Memorial reporting 14 inches of rain thus far this summer. The vegetation was knee or calf high and there was great diversity of legumes, composites, and grasses present. There was no indication of any threats to the plants present.

A single *Brachystigma wrightii* (desert foxglove; Scrophulariaceae) was located ~20 meters from the *Pectis* plant above the roadcut; Debbie noted that this plant is not common. I mention it here because it was also found later in the day near *Pectis* plants in Coronado National Memorial. Perhaps it should be looked for elsewhere and possibly considered as an indicator of Pectis? I can find no information about this plant or its preferred habitat / soil type on-line or in my bookshelves.

At 12:00 we arrived in two vehicles at Coronado National Memorial Visitor Center where we met Debbie Sebesta, then proceeded to the Administration building where we met Amanda Selnick, Maura Thoenes, and Laura Fawcett. We split into two teams with Maura, Debbie, Sharon, and Julie traveling to two sites and Laura, Amanda, John, Tom, and George travelling to two sites.

Julie's group went first to a location reported in SEINet as a collection by Bruce D. Parfitt from August 31, 1989. His description was "hill of gray outcrop behind (north of) residence area". Again Parfitt

collected from “behind (NW of) ranger’s residence [currently the Law Enforcement Office], gray hill and surrounding area” on September 15, 1990. We didn’t have these descriptions with us this day, only the “dot on the map” SEINet provided for these herbarium collection records, which was obviously pretty far off from the written descriptions (see orange dot in Figure 2). From the picnic parking area, we walked ~400 meters through the wash through *Vitus*, *Bacharis*, etc. (not good *Pectis* habitat; though the banks were better habitat) to the area of the dot, then returned via thick grasses and yellow composites south of the wash and closer the dot, in hopes of better habitat; we found no *Pectis*.

Figure 2. Orange dot represents location from SEINet showing collection area of Parfitt. We surveyed the drainage banks up to this dot area and surveyed the upland area from the orange dot back to the picnic ground parking lot (on the left of the picture). No *Pectis* were found; the habitat was not correct nor was the point mapped correctly.

The group then went back to the Administration building and parked, walked up the road almost to the water tank, then walked east ~125 meters across the flank of a hill, then ~25 meters south-east down a drainage. This area, as well as all the areas in the Memorial that we visited this day, had burned in the 2011 Monument Fire. The extra nitrogen and excellent rainfall this summer led to lush vegetation in each site we visited. Here Debbie located the first *Pectis* plants in a gray limestone outcrop. In total we counted 31 plants across an area of roughly 50 meter^2. Debbie walked to another outcrop of limestone about 50 meters away to the southeast and found 6 more *Pectis* plants for a total of **37 individuals**. Six of the original 31 plants were considered smaller and younger than the rest; all plants were in flower and appeared healthy. We noticed no threats save a small patch of *Eragrostis lehmanniana* nearby the Law Enforcement building, some 50 meters from the nearest *Pectis* individual.

The first 31 plants were found on the lower slope of an east-facing drainage (24 degree slope). There were four of us looking for roughly 1.5 hours across this area. The population ran from roughly NAD 82 12N 570696 3468361 to 570726 3468331. The additional 6 plants Debbie found on the west-facing lower slope of a limestone outcrop, were found at 570781 3468295. Figure 3 below shows the *Pectis imberbis* locations (orange dots), as well as, a clear visual of the extent of the limestone (vs. more brown colored granite), and the Park Service buildings for location reference. Figure 4 shows photos of the habitat. Given the location of limestone in this Figure, I highly recommend NPS staff do a more thorough search of the limestone areas nearby the developed areas. These surveys are best conducted in the first three weeks of September while the plants are in flower and more easily recognized.

Figure 3. Locations (orange dots) of *Pectis imberbis* found on 9-3-2014 near the NPS Law Enforcement building of Coronado National Memorial. The two dots on the left represent the beginning and ending of a population of 31 counted individuals. The orange dot to the right represents a general area containing 6 additional plants. Gray colored limestone may be an important substrate for the species and there are other patches of it nearby that should be investigated for *Pectis imberbis*.

We created a partial species list of the area between the first two points:

POACEAE	**ALL OTHERS**
Aristida sp. (three awn)	*Acacia angustissima* (prairie acacia)
Bothriochloa barbinodis (cane bluestem)	*Agave palmeri* (Palmer's centry plant)
Bouteloua curtipendula (sideoats grama)	*Arctostaphylos pungens* (pointleaf manzanita)
Bouteloua filiformis (slender grama)	*Asclepias* sp. (milkweed)
Bouteloua hirsuta (hairy grama)	*Bouvardia ternifolia* (firecrackerbush)*
Elyonurus barbiculmis (wooly bunchgrass)	*Brachystigma wrightii* (Arizona desert foxglove)
Eragrostis intermedia (plains lovegrass)	*Calliandra eriophylla* (fairyduster)
Heteropogon contortus (tanglehead)	*Dalea pulchra* (Santa Catalina prairie clover)
Hilaria belangeri (curly mequite)	*Dasylirion wheeleri* (common sotol)
Leptochloa dubia (green sprangletop)	*Eysenhardtia orthocarpa* (Tahitian kidneywood)
Lycurus phleoides (wolftail)	*Guardiola platyphylla* (Apache plant)
Muhlenbergia emersyi (bullgrass)	*Ipomoea longifolia* (pink throat morning glory)
Schizachyrium cirratum (Texas bluestem)	*Krameria erecta* (littleleaf ratany)
Trachypogon montufari (crinkle awn)	*Quercus emoryi* (Emory oak)
	Quercus oblongifolia (Mexican blue oak)

* whiteline sphinx eating this plant – verified by Debbie

Figure 4. Habitat where *Pectis imberbis* was found above Law Enforcement building, Coronado N.M. Vegetation is lush following a 2011 fire and ample 2014 monsoon rains. Photo by Maura Thoenes.

John's group went first to the State of Texas Mine and found 10 *Pectis imberbis* plants on a 30 degree slope at NAD83 12N 569111 3468647 as they were walking toward the mine. At this location dominant associates included:

POACEAE	**ALL OTHERS**
Bothriochloa barbinodis (cane bluestem)	*Agave palmeri* (Palmer's century plant)
Bouteloua curtipendula (sideoats grama)	*Coursetia caribaea* (anil falso)
Chloris virgate (feather fingergrass)	*Dasylirion wheeleri* (common sotol)
Eragrostis spp. (lovegrass)	*Ipomoea cristulata* (Transpecos morning-glory)
Heteropogon contortus (tanglehead)	*Juniperus deppeana* (alligator bark juniper)
Muhlenbergia emersyi (bullgrass)	*Nolina microcarpa* (bear grass)
Muhlenbergia rigens (deergrass)	*Pinus* sp. (pine)
	Quercus arizonica (Arizona oak)
	Rhus trilobata (skunkbush sumac)
	Rhus virens (evergreen sumac)

Then the group located 40 to 50 plants of various sizes at the State of Texas Mine tailings where plants were found growing on and nearby the tailings and an old road (beginning at 569248 3468692 and ending at 569307 3468667). Figure 5 shows the location of both groups of plants; note the gray limestone outcrop just to the north. Dominant plant species here included those of the previous site, as well as *Guardiola platyphylla* (Apache plant). On September 9, 1961 L. N. Gooding collected *P. imberbis* from this location where he described the plants growing both on a "timbered south-facing slope and in more open spaces". On September 30, 2008, Tom Deecken accompanied Glenn Frederick, Sierra Vista District Biologist at the time, to the State of Texas Mine to look at an experimental bat gate design. They noted the *Pectis* group growing along the trail at that time, though no population census was taken. The SEINet point in this case was accurate.

Figure 5. Locations of two groups of *Pectis imberbis* near the State of Texas Mine, Coronado N.M. The two orange dots on the right are the boundaries of one population.

John's group then attempted to locate *P. imberbis* at another location to the southwest of the visitor center. The group reported searching for one hour and covering just 1/5 of the total polygon with no *Pectis* located. They noted the area was very steep with much thicker vegetation than the previous sites they surveyed. The polygon the group was investigating came from GIS data provided by the AZ Heritage Program. The Attribute Table entry for this polygon says "Joe's Canyon Trail, observation and collection September 6, 1992". The SEINet information we also used for this trip had two collections from Joe's Canyon Train from this same date by Janice Bowers and Steve McLaughlin. Their notes say "locally common along trail with *Quercus emoryi*, *Q. arizonica*, and *Nolina*)". Unfortunately, the SEINet points for the two collections by Bowers and McLaughlin are >500 meters away to the northwest.

Figure 6. Close up of Heritage Program polygon on Joe's Canyon Trail, Coronado N.M. where John's group surveyed the upper 1/5 of the polygon. No *Pectis imberbis* were found.

In looking at this polygon from an aerial photo, there are portions in the southwestern quarter that appear to have lighter limestone soils that should be investigated further (Figure 6). In fact, if the plants really do prefer this type of substrate, there are quite a few locations that have this substrate in the Monument (Figure 7). My GIS layers for both geology and soils do not pick up these outcrops; more detailed geology layers are needed. I highly recommend further surveys by NPS, FS, FWS, or others so we can learn more about this species and get a better handle on population numbers and threats. The only threat we noted were from future fires, though fires may help the plant; that ecology remains unknown.

Figure 7. Aerial photo of central Coronado N.M. Orange dots are locations of *Pectis imberbis* visited on September 3, 2014. Orange polygons are areas reported by the Heritage Program to have historically supported *Pectis* somewhere within the polygon. Yellow circles are rough areas that appear to have these same limestone outcrops that warrant investigation.