Memo to Files: September 11, 2014 Flux and Lampshire Canyons and FS Road 69, Patagonia Mountains *Pectis imberbis* survey report

Participants: Sharon Biedenbender (Coronado National Forest), Tom Deecken (formerly of the Coronado National Forest), John Kraft (Coronado National Forest), George Montgomery (formerly of the Arizona Sonora Desert Museum), Ana Lilia Reina (botanist), Debbie Sebesta (formerly of the Coronado National Forest), Tom Van Devender (botanist), and Julie Crawford (US Fish and Wildlife Service)

On Thursday, September 11, 2014, Sharon, George, Tom V., and Ana Lilia met John and Tom D. at the gas station in Sonoita. George went with John and Tom via Vaughn Loop Road and Box Canyon into Lampshire Canyon to an area known to support *Pectis imberbis* historically (HDMS points derived from Tom Deecken's previous visits: 534165 3491098, and 536421 3488784; Figure 1). Julie and her group met Debbie in Patagonia and traveled to Flux Canyon to search the general area of Flux Canyon; the HDMS layer for this area is a large polygon with no associated information and there are no SEINet collections of *P. imberbis* from Flux Canyon (Figure 2).

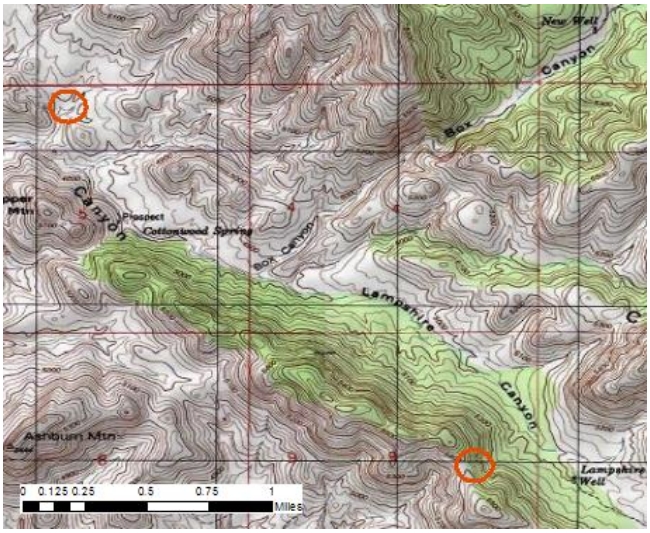


Figure 1. Location of two historic *Pectis imberbis* populations in Lampshire Canyon; the upper left population was surveyed for on September 11, 2014 when no plants were found.

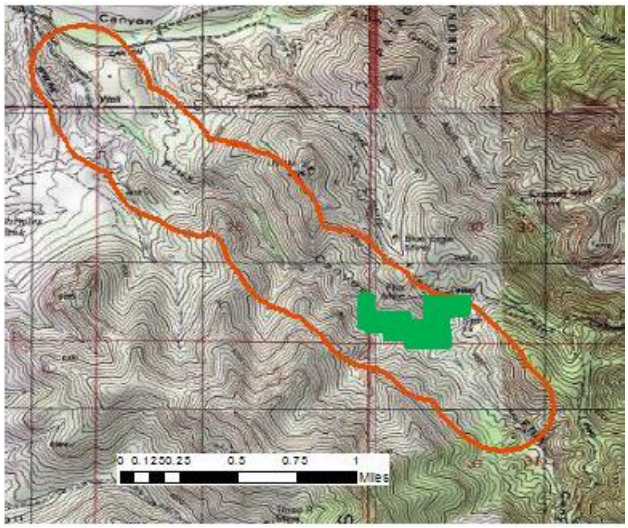


Figure 2. Location of September 11, 2014 *Pectis imberbis* survey in Flux Canyon; no plants were found.

George, Tom D., and John entered Lampshire Canyon via Box Canyon. They surveyed for *P. imberbis* throughout their hike in and, due to time constraints, looked at and all around only one of the two historic locations - near Copper Mountain. This location was last visited by Tom D. in 1994, when he found 4 *P. imberbis* plants on a southwest exposure. On August 20, 1992, Tom was at the other Lampshire Canyon site west of Lampsire Well on a steep sw facing slope when he reported finding 15+ *P. imberbis* plants on the edge of a cow path in native grasses. The group reports finding no *P. imberbis* on this day; they did report a major infestation of the exotic grass *Melinis repens* (Natal grass), especially on south-facing slopes.

Tom V., Ana Lilia, Sharon, Debbie, and Julie drove the Flux Canyon Road to the washed out entrance road of the Flux Mine and parked. We walked down this old road into Flux Canyon searching for *P. imberbis* along the way, with Tom and Ana Lilia creating a detailed species list of the roadside area and

making collections (see Appendix 1). Among the natives, there were many exotic grasses, including hillsides (tens of acres covered) of *M. repens*, primarily on south-facing slopes. Tom noted that this species does very well with warmer climates and he warned the Arizona Native Plant Society about it 15 years ago when he saw it in extensive infestations in Sonora, Mexico. Here, the plant was forming nearly a complete monoculture on the slopes from Flux Canyon road to the bottom of Flux Canyon (Figures 3 and 4). It also occurred on the slopes of Red Mountain on the east side of Flux Canyon Road. Had *P. imberbis* been on these south-facing slopes historically, I believe they have been completely out-competed. There was little diversity on these slopes, both in terms of species and in structure.

Figure 3. Infestation of exotic grass *Melinis repens* in Flux Canyon, September 11, 2014. White inflorescens show primary locations on south-facing slopes.

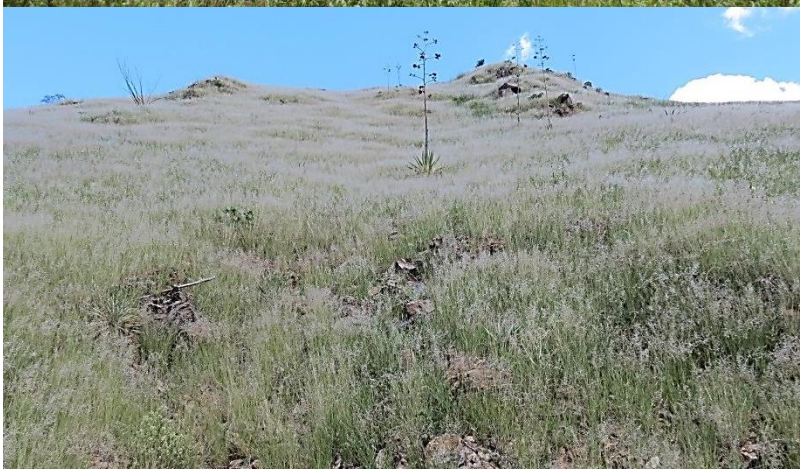


Figure 4. Looking upslope from within Flux Canyon at a south-facing slope infestation of the exotic grass *Melinis repens*, September 11, 2014. The area provided little structural or species diversity; the infestation covered most south-facing slopes in the area (tens, if not hundreds, of acres).

Tom V. returned upslope to finish his species list and collections. The ladies continued on into Flux Canyon searching hill slopes for *P. imberbis* and making casual counts of *Graptopetalum bartramii* on north-facing rock outcrops along the canyon floor. We counted a total of 63 *G. bartramii*; roughly 15% were small, the remainder large, most of these had one or more flowering stalks. We took numerous photographs (see best of in Appendix 2) and noted a fire had been in the area recently with some slumping of the habitat. After about three hours total of searching and upon reaching the first waterfall and the end of the *G. bartramii*, we went a bit farther when we began to question if *P. imberbis* was ever seen / collected so deep into Flux Canyon. Would a botanist really have taken a plant press into the canyon, or, perhaps the collector(s) were driving the Flux Canyon road and stopped to collect a more spectacular plant along the road, collecting associates (e.g. *P. imberbis*) along with it? We decided to go further investigate Flux Canyon Road, so we hiked out (nearly stepping on a blacktail rattlesnake on the way) and drove very slowly to Harshaw Canyon Road, doing vehicle-based surveys along the way.

We stopped briefly on Flux Canyon Road where the *Astragalus hypoxalus* was discovered on October 23, 2012 (See Service 2012). We found this population still present in quantity and looking healthy. We continued to Harshaw Canyon Road and decided we had enough time before rejoining the rest of our group to investigate a *P. imberbis* location approximately 500 meters southeast of the eastern edge of Red Hill along the Washington – Montezuma Pass road (526251 3472918; a 1979 USFS observation on FS Rd 61; Figure 5).

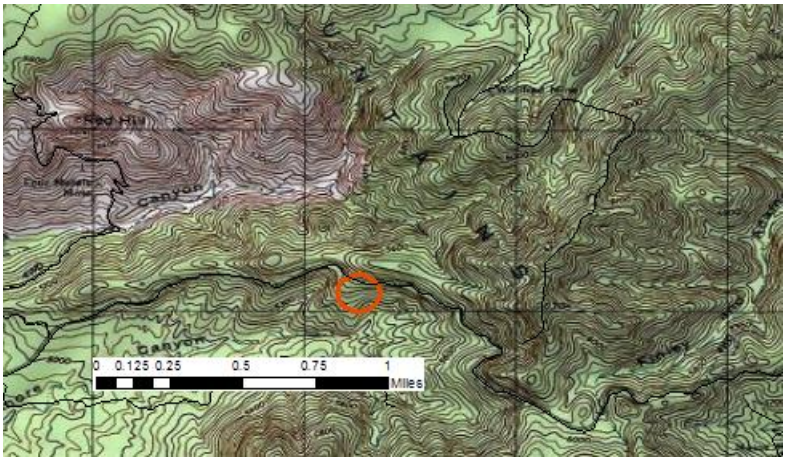
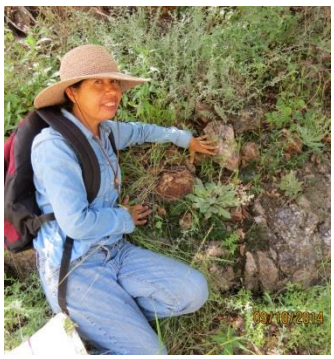


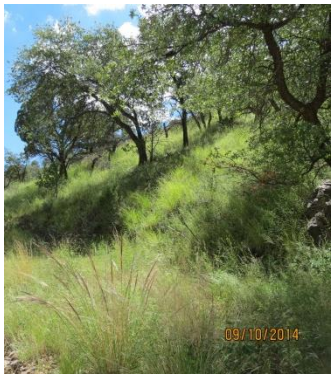
Figure 5. Location of historic *Pectis imberbis* population that was surveyed by vehicle within 500 meters up and down the road from this point on September 11, 2014. No plants were located.

We conducted slow vehicle-based surveys of more than 500 meters of road around this point as well as at other locations. While we found excellent habitat in this and a few other sections along this road (e.g. native grasses, forbs, oak and juniper overstory with good structural and species diversity), we did not see *P. imberbis*. Although the survey was vehicle-based, we could easily distinguish the grasses and forbs within the first 3 meters of the road; had *P. imberbis* been present, we should have seen its flowers. We traveled back to Patagonia to drop off Debbie and to Sonoita to meet John, Tom, and George, exchange passengers, and drive home.

Just for fun pictures: blacktailed rattlesnake; Ana Lilia, Sharon, and Debbie in Flux Canyon; Ana Lilia with giant *Graptopetalum bartramii*; *Tillandsia recurvata*; butterfly; seemingly good *Pectis imberbis* habitat.





Appendix 1. Plants observed along the Flux Canyon Mine entrance road, Patagonia Mountains, AZ by Tom Van Devender, Ana Lilia Reina-G., Sharon Beidenbender, and Debbie Sebesta, September 11, 2014. Life forms: GA = annual grass/sedge, GP = perennial grass/sedge, HA = annual, HP = perennial herb, HQ = aquatic herbs, SR = rosette succulent, SS = stem succulent, WH = subshrub, WP = perennial parasites, WS = shrub, WT = tree, WV = woody vine. * = non-native

Family	Species	LF
Acanthaceae	*Elytraria imbricata*	HP
Acanthaceae	*Tetramerium nervosum*	HP
Agavaceae	*Agave palmeri*	SR
Agavaceae	*Dasylirion wheeleri*	SR
Agavaceae	*Nolina* cf. *texensis*	SR
Agavaceae	*Yucca madrensis*	SR
Amaranthaceae	*Amaranthus fimbriatus*	HA
Amaranthaceae	*Froelichia interrupta*	HP
Amaranthaceae	*Gomphrena sonorae*	HP
Amaranthaceae	*Guilleminea densa*	HP
Anacardiaceae	*Rhus aromatica*	WS
Anacardiaceae	*Rhus virens* ssp. *choriophylla*	WS
Araliaceae	*Aralia humilis*	WS
Asteraceae	*Acourtia thurberi*	HP
Asteraceae	*Ambrosia confertiflora*	HP
Asteraceae	*Artemisia ludoviciana*	HP
Asteraceae	*Baccharis thesioides*	WS
Asteraceae	*Bidens leptocephala*	HA
Asteraceae	*Brickellia californica*	WH
Asteraceae	*Brickellia venosa*	WH
Asteraceae	*Conyza bonariensis*	HA
Asteraceae	*Erigeron* sp.	HP
Asteraceae	*Heliomeris longifolia*	HA
Asteraceae	*Heterosperma pinnatum*	HA
Asteraceae	*Lasianthaea podocephala*	WH
Asteraceae	*Melampodium longicorne*	HA
Asteraceae	*Melampodium* sp.	HA
Asteraceae	*Pectis* cf. *prostrata*	HA
Asteraceae	*Porophyllum macrocephalum*	HA
Asteraceae	*Pseudognaphalium leucocephalum*	HP
Asteraceae	*Pseudognaphalium* sp.	HP
Asteraceae	*Sanvitalia abertii*	HA
Asteraceae	*Trixis californica* var. *californica*	WH

Family	Species	LF
Bixaceae	*Amoreuxia palmatifida*	HP
Brassicaceae	*Hesperidanthus linearifolius*	HP
Bromeliaceae	*Tillandsia recurvata*	HP
Cactaceae	*Echinocereus rigidissimus* var. *rigidissimus*	SS
Cactaceae	*Echinocereus santaritensis*	SS
Cactaceae	*Opuntia chlorotica*	SS
Cactaceae	*Opuntia engelmannii*	SS
Commelinaceae	*Commelina dianthifolia*	HP
Commelinaceae	*Commelina erecta*	HP
Convolvulaceae	*Evolvulus arizonicus*	HP
Convolvulaceae	*Ipomoea costellata*	HA
Convolvulaceae	*Ipomoea cristulata*	HA
Convolvulaceae	*Ipomoea* sp.	HA
Crassulaceae	*Graptopetalum bartramii*	HP
Cupressaceae	*Juniperus deppeana*	WT
Ericaceae	*Arctostaphylos pungens*	WS
Euphorbiaceae	*Cnidoscolus angustidens* var. *angustidens*	HP
Euphorbiaceae	*Euphorbia albomarginata*	HP
Euphorbiaceae	*Euphorbia heterophylla*	HA
Euphorbiaceae	*Jatropha macrorhiza*	HP
Euphorbiaceae	*Manihot angustiloba*	HP
Fabaceae	*Calliandra humilis*	HP
Fabaceae	*Chamaecrista nictitans*	HP
Fabaceae	*Chamaecrista serpens* var. *wrightii*	HP
Fabaceae	*Crotalaria pumila*	HA
Fabaceae	*Dalea pogonathera*	HP
Fabaceae	*Desmodium cinerascens*	HP
Fabaceae	*Erythrina flabelliformis*	WS
Fabaceae	*Galactia wrightii*	WV
Fabaceae	*Mimosa dysocarpa*	WS
Fabaceae	*Phaseolus acutifolius*	HA
Fabaceae	*Rhynchosia senna*	WV
Fagaceae	*Quercus emoryi*	WT
Fagaceae	*Quercus oblongifolia*	WT
Fagaceae	*Quercus toumeyi*	WT
Fagaceae	*Quercus viminea*	WT
Fouquieriaceae	*Fouquieria splendens*	WS
Garryaceae	*Garrya wrightii*	WS
Lamiaceae	*Hedeoma* sp.	HP

Family	Species	LF
Lamiaceae	*Salvia subincisa*	HA
Loasaceae	*Mentzelia* sp.	HA
Lythraceae	*Cuphea wrightii* var. *wrightii*	HA
Molluginaceae	*Mollugo verticillata*	HA
Papaveraceae	*Argemone pleiacantha*	HA
Pinaceae	*Pinus discolor*	WT
Poaceae	*Aristida adscensionis*	GA
Poaceae	*Aristida ternipes* var. *ternipes*	GP
Poaceae	*Bothriochloa barbinodis*	GP
Poaceae	**Bothriochloa ischaemum*	GP
Poaceae	*Bouteloua curtipendula*	GP
Poaceae	*Bouteloua hirsuta*	GP
Poaceae	*Bouteloua repens*	GP
Poaceae	*Bromus* sp.	GA
Poaceae	*Chloris virgata*	GA
Poaceae	*Cynodon dactylon* var*. dactylon**	GP
Poaceae	*Disakisperma dubium*	GP
Poaceae	*Eragrostis cilianensis**	GA
Poaceae	*Eragrostis curvula*	GP
Poaceae	*Eragrostis intermedia*	GP
Poaceae	*Eragrostis lehmanniana**	GP
Poaceae	*Eragrostis pectinacea* var. *pectinacea*	GA
Poaceae	*Eragrostis superba**	GP
Poaceae	*Eriochloa* sp.	GA
Poaceae	*Hopia obtusa*	GP
Poaceae	*Lycurus setosus*	GP
Poaceae	*Melinis repens* ssp. *repens**	GP
Poaceae	*Muhlenbergia emersleyi*	GP
Poaceae	*Panicum hirticaule* var. *hirticaule*	GA
Poaceae	*Pennisetum ciliare**	GP
Poaceae	*Schizachyrium cirratum*	GP
Poaceae	*Trachypogon* cf. *secundus*	GP
Poaceae	*Zuloagea bulbosa*	GP
Polemoniaceae	*Loeselia glandulosa*	HP
Portulacaceae	*Portulaca suffrutescens*	HP
Pteridaceae	*Bommeria hispida*	HP
Pteridaceae	*Cheilanthes lindheimeri*	HP
Pteridaceae	*Cheilanthes* sp.	HP
Rubiaceae	*Galium proliferum*	HA

Family	Species	LF
Salicaceae	*Salix gooddingii*	WT
Santalaceae	*Comandra umbellata*	WH
Sapindaceae	*Dodonaea viscosa* var. *angustifolia*	WS
Saxifragaceae	*Philadelphus microphyllus*	WS
Selaginellaceae	*Selaginella rupincola*	HP
Solanaceae	*Datura discolor*	HA
Solanaceae	*Physalis* sp.	HA
Solanaceae	*Solanum* cf. *nigrescens*	HP
Viscaceae	*Phoradendron serotinum* ssp. *tomentosum*	WP

Appendix 2 ***Graptopetalum bartramii*** **- best of photos.** We lazily counted 63 plants; George Ferguson reported 141 living and 38 dead from these locations in March of this year.