



THE HUNTINGTON
Library, Art Collections, and Botanical Gardens

***Quercus toumeyi* Collection Report**
APGA-USFS Tree Gene Conservation Partnership

October 12, 2018

Submitted by:
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Project Summary

The Huntington and Arizona-Sonora Desert Museum collaborated on a project to collect acorns of *Quercus toumeyi* from as many mountain ranges as possible where its presence is well-established and documented with recent herbarium specimens. If acorns were unavailable, we would collect material for micropropagation. Additionally, we sought to confirm or deny presence of the species in several mountain ranges which have poorly documented or otherwise dubious records. Field dates ran from 23 July to 17 August 2018. *Quercus toumeyi* was targeted for this work because it is listed as Data Deficient on the IUCN Red List.

List of Participants and Contact Information

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Objectives and Outcomes

1) Collect acorns, if available.

Acorns were collected from eight of the ten mountain ranges with well-documented populations. No acorns were observed in the Huachuca Mountains, however a vegetative accession was obtained from the range. There were no collections from the Little Dragoon Mountains because the species was not observed on accessible land where we had the necessary permits to collect. In addition to The Huntington and Arizona-Sonora Desert Museum, acorns were distributed to Boyce Thompson Arboretum and Starhill Forest Arboretum. Initial results from The Huntington show 62% germination, with two lots at 100%. Between The Huntington and Arizona-Sonora Desert Museum all accessions have germinated.

2) Collect material for micropropagation if acorns unavailable.

Micropropagation material was collected from the Huachuca Mountains due to a lack of acorns, as noted above. Micropropagation material was also collected from the Dragoon, Patagonia and Santa Rita mountains prior to finding acorns. Across the four accessions of buds that were collected for micropropagation there were a total of 19 clones. After discarding contaminated material, nine clones initiated and are currently under establishment stage (see image below). The shoots that have been successfully initiated in the micropropagation system will be maintained in culture, multiplied and rooted when needed.



Additionally, an embryo rescue technique was applied to damaged acorns from five different accessions. 11 seedlings were initiated, and 3 are still growing.



Seedlings from accession Thibault & Lahmeyer 1756 growing in tissue culture conditions

The *in vitro* repository will allow further distribution of the collected trees, and the maintenance of diversity in small space with reduced costs. The explants could be used for future cryopreservation studies on *Quercus*.

3) Scout other mountains ranges for *Quercus toumeyi*.

The Burro and Mangas mountains were scouted unsuccessfully for *Quercus toumeyi* during the course of this grant. In both ranges, small and green-leaved forms of *Quercus grisea* were probably confused for *Q. toumeyi*, at least in localities of herbarium specimens. Based on other findings, the southern portion of the Burro Mountains could have *Quercus toumeyi*. Thibault had scouted the Santa Catalina and Superstition mountains prior to grant notification, and decided to concentrate on other ranges. Small-leaved forms of other species appear to be confused for *Quercus toumeyi* in the two northern ranges. During preparation for the second trip, Thibault learned of collections in the Cookes Range. While only *Quercus grisea* was seen in that range, *Quercus toumeyi* could still be present, although grazing pressure is high in that range.

Daily Field Log

23 July 2018

Thibault made an unsuccessful attempt to access the ghost town of Ruby, AZ, where there are two previous collections. A potentially new subpopulation (could correspond to Thorne 59506) was found on the road between Ruby and Sycamore Canyon.



Still life with water bottle and rhyolitic rocks. Photo: Tim Thibault



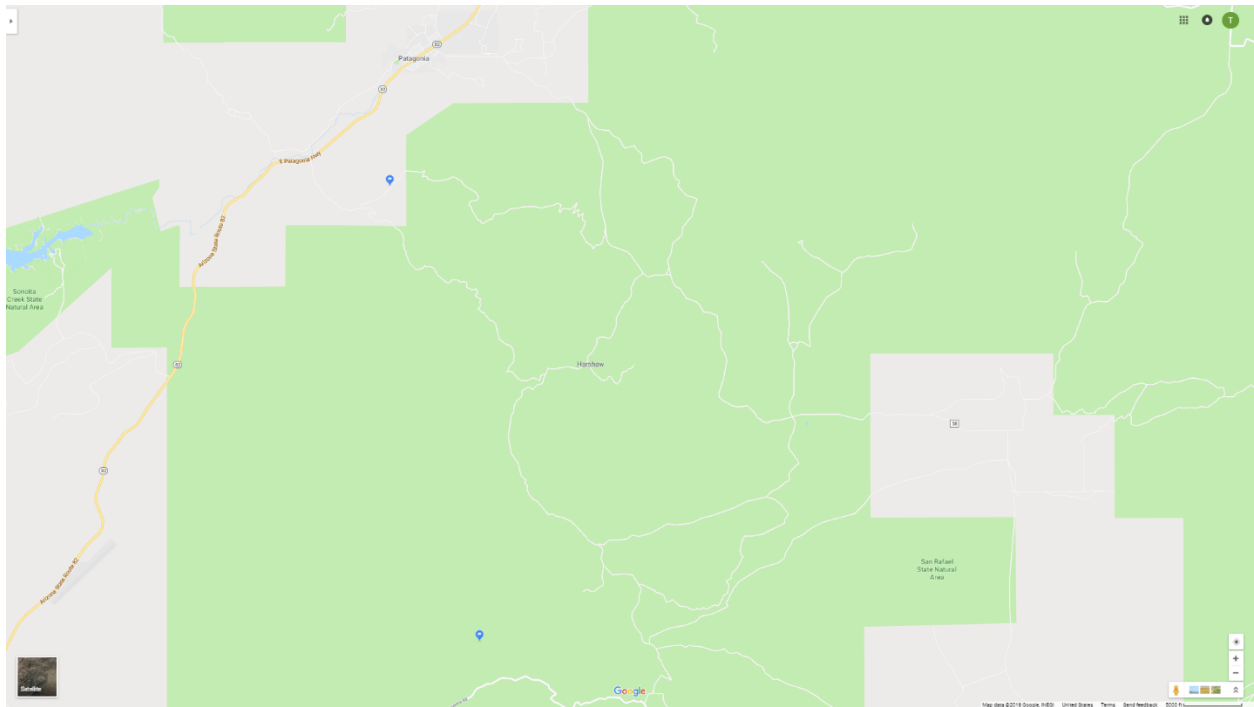
Map of collecting sites for 23 July 2018

24 July 2018



Field vehicle failed to make last 1.9 miles to collection site in Patagonia Mountains. Population without acorns found on rhyolitic outcrop only. Following shipment of vegetative buds for micropropagation, Thibault documents new subpopulation in Aztec Canyon.

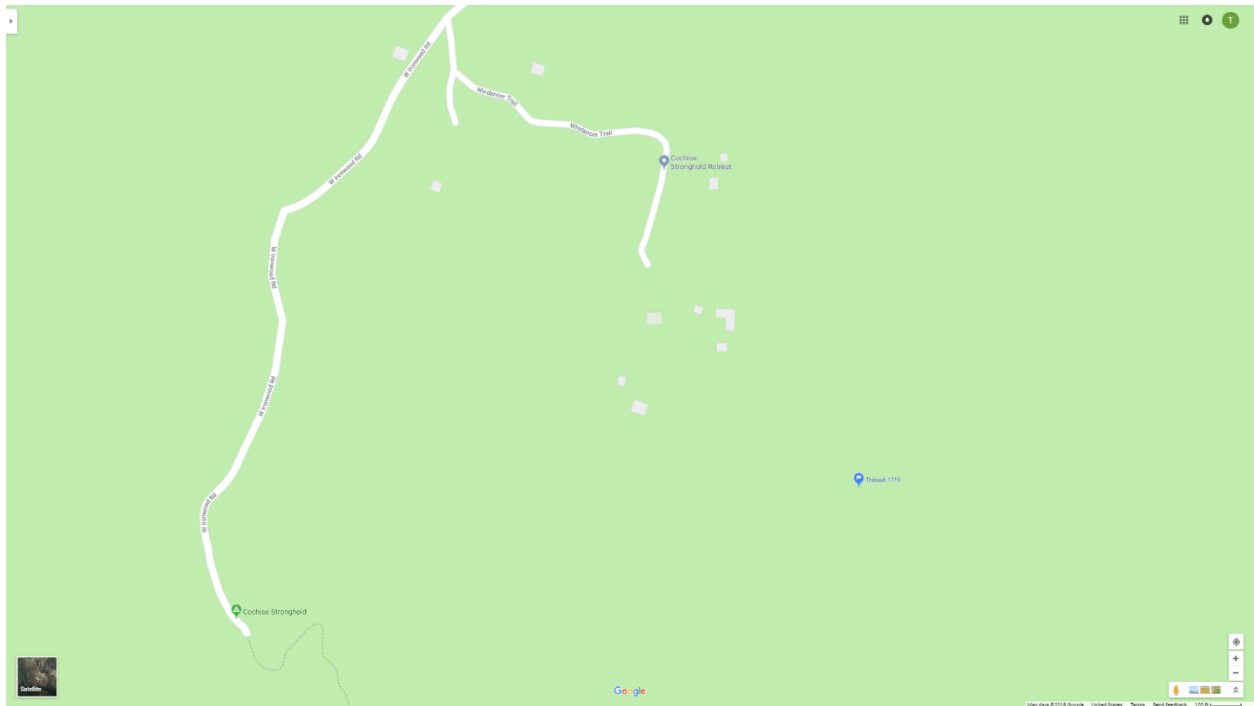
Field vehicle rests comfortably while Thibault climbs final 2 miles.
Photo: Tim Thibault



Map of collecting sites for 24 July 2018

26 July 2018

Collected acorns in Rincon Mountains. Explored Little Dragoon Mountains, unable to access private land. Collected vegetative buds for micropropagation in Cochise Stronghold, Dragoon Mountains.



Maps of collecting sites for 26 July 2018

27 July 2018

Visited Rucker Canyon population in the Chiricahua Mountains. Acorn set was heavy, but they were still green. Chased South Fork Trail population (Reese 29), but that appears to have been a misidentification of another small-leaved species. Also looked at Mangas Spring specimen in New Mexico. That site is private and farmed. Oaks in area were *Quercus grisea*, although a greener form than usual.

28 July 2018

Visited Bear Mountain population. Small-leaved form of *Quercus grisea* found and vouchered, *Q. toumeyi* not seen. Went to Cookes Range, *Quercus grisea* and hybrids with *Q. turbinella* found, but not *Q. toumeyi*.



A small- and relatively green-leaved form of *Quercus grisea* on Bear Mountain. Photo: Tim Thibault

29 July 2018

Returned to Cookes Range with more accurate information on former locality of *Quercus toumeyi*. Site heavily grazed, no oaks found. Attempted access of Red Hills population in Animas Mountains, but locked gate and thunderstorm forced retreat. Found *Quercus toumeyi* on hills N of rest area in Texas Canyon of the Little Dragoon Mountains on westbound side of I-10, but unable to access.



Quercus toumeyi N of fence at I-10 rest stop in Texas Canyon. Photo: Tim Thibault

1 August 2018



The field team of John Wiens, Tim Thibault and Alicia Baugh visited the Huachuca Mountains. The population corresponding to Landrum 9340 was found along Highway 83, but no acorns observed. Similarly, a population near Parker Canyon Lake had no acorns, although a vegetative accession was made. Mule Mountains were scouted. *Quercus toumeyi* was found on BLM land, for which we did not yet have a permit.

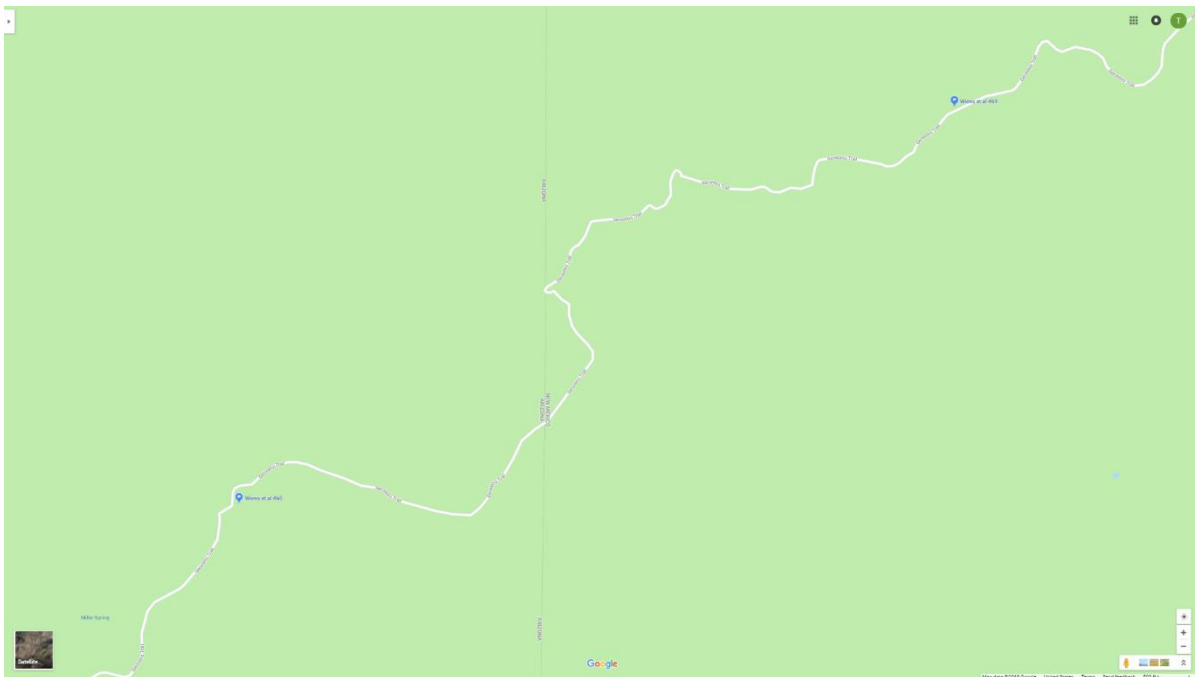
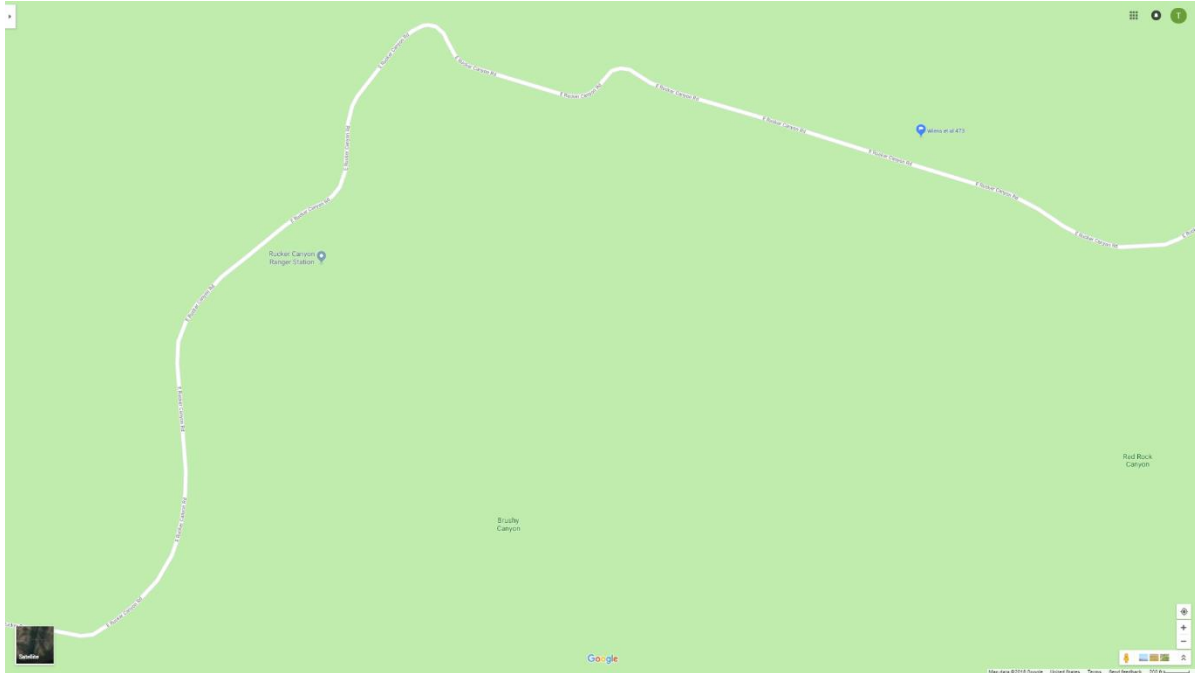
Baugh (left) and Wiens (right) process *Quercus toumeyi* buds for shipment.
Photo: Tim Thibault



Map of collecting sites for 1 August 2018

2 August 2018

The field team of John Wiens, Tim Thibault and Alicia Baugh made two acorn accessions. The first along Geronimo Trail in the Peloncillo Mountains, just into New Mexico after vouchering the western extension of the population in Arizona. After an incident with Border Patrol, they revisited the Rucker Canyon population where acorns were now ripe.



Maps of collecting sites for 2 August 2018



Above: A very colorful gall on *Quercus toumeyi* in the Peloncillo Mountains. Photo: Tim Thibault

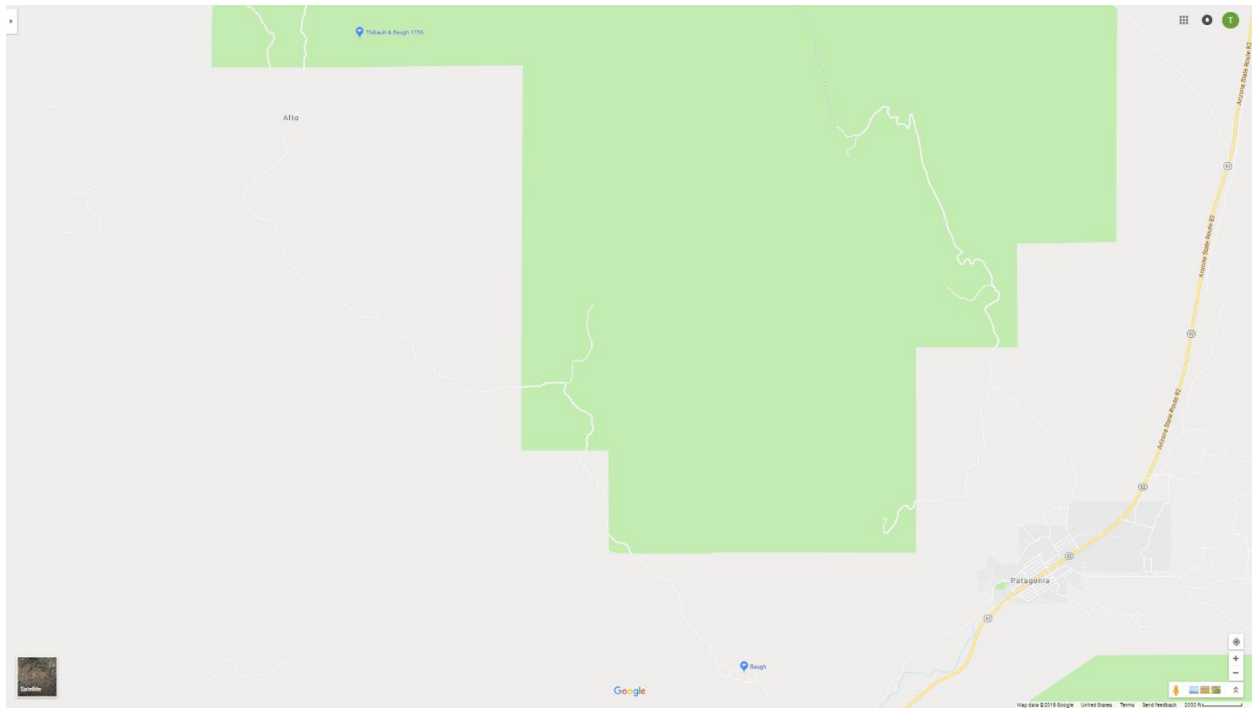
Left: Alicia Baugh enjoys collecting acorns in Rucker Canyon. Photo: Tim Thibault



Quercus toumeyi stump sprouts following fire in Chiricahua Mountains. Photo: Tim Thibault

3 August 2018

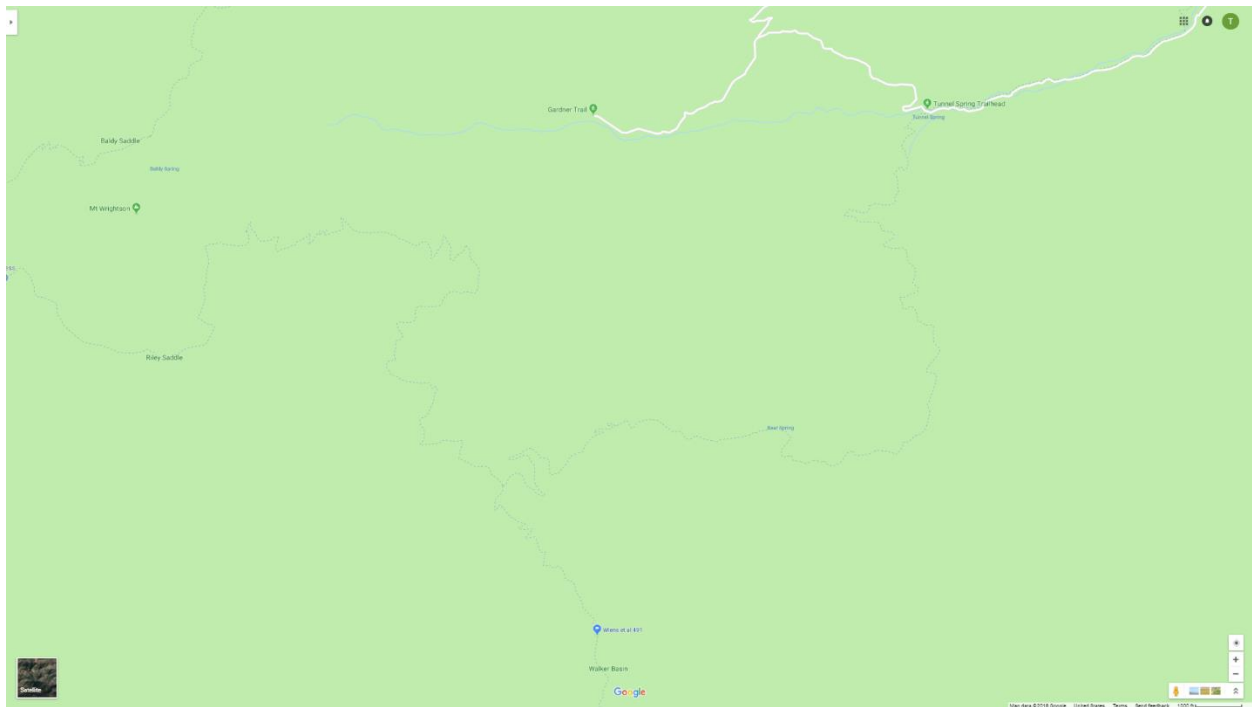
After fixing a flat tire, the field team of Tim Thibault and Alicia Baugh went to the Santa Rita Mountains. Baugh sighted a new population. GPS coordinates were recorded, but it was not vouchered as it is on private land. They proceeded through Salero Ranch and were able to make a vegetative accession near El Plomo Mine.



Map of collecting sites for 3 August 2018

14 August 2018

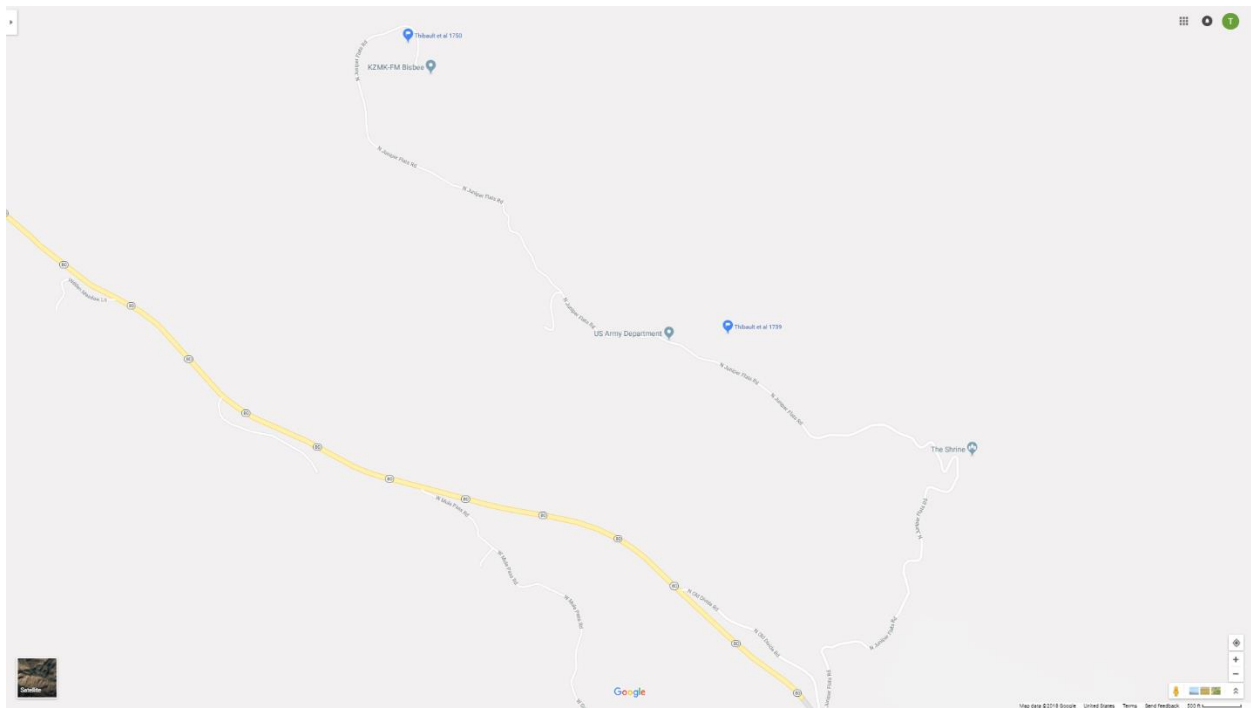
After a 6.3 mile hike through wilderness from Tunnel Spring trailhead, the field team of John Wiens, Tim Thibault and Matt Jevnikar confirmed the presence of the population corresponding to Hodgson 12684 in Temporal Gulch of the Santa Rita Mountains. Only a couple of acorns were observed, the population was vouchered, but no accessions were made. *Quercus toumeyi* was not observed in the wilderness area.



Map of collecting sites for 14 August 2018

15 August 2018

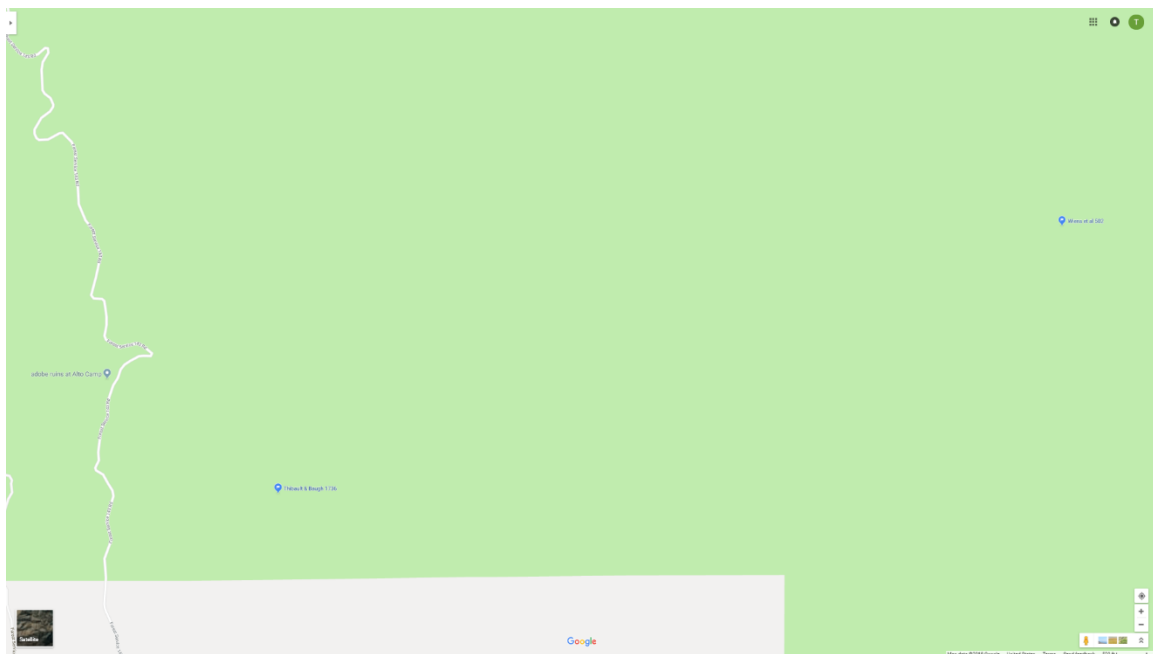
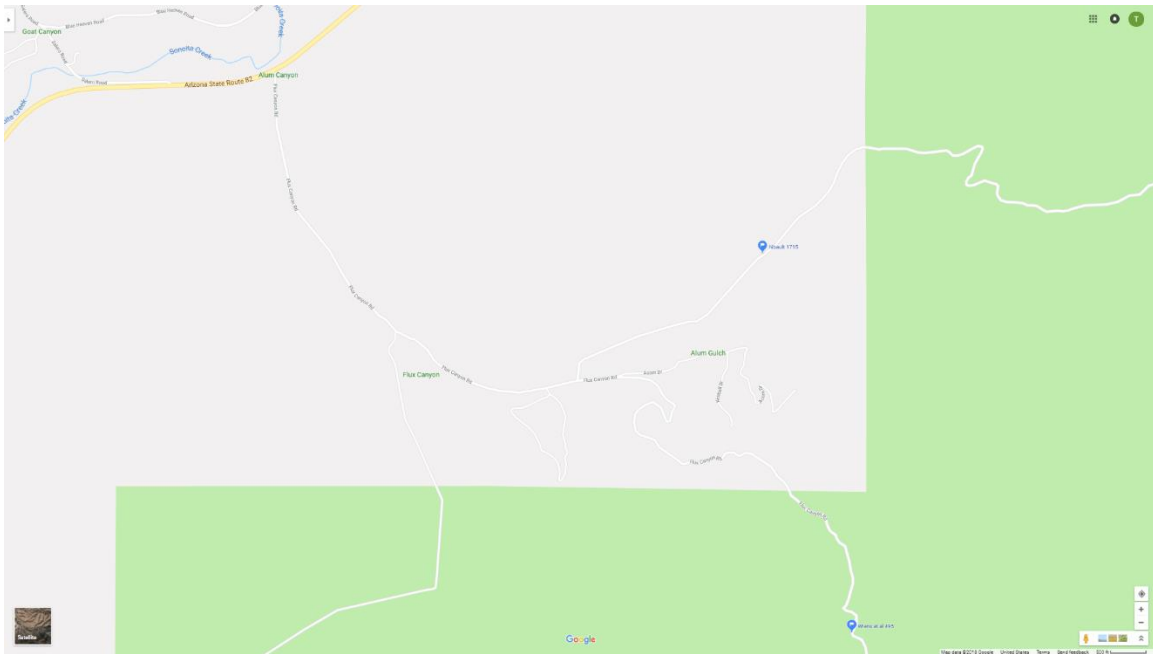
After acquiring a BLM permit, the field team of Tim Thibault, John Wiens and Julie Wiens returned to the Mule Mountains, type locality for the species. An acorn collection was made in Juniper Flats and the species was vouchered again at the end of the radio towers at the end of the road. The day was cut short by heavy rain.



Map of collecting sites for 15 August 2018

16 August 2018

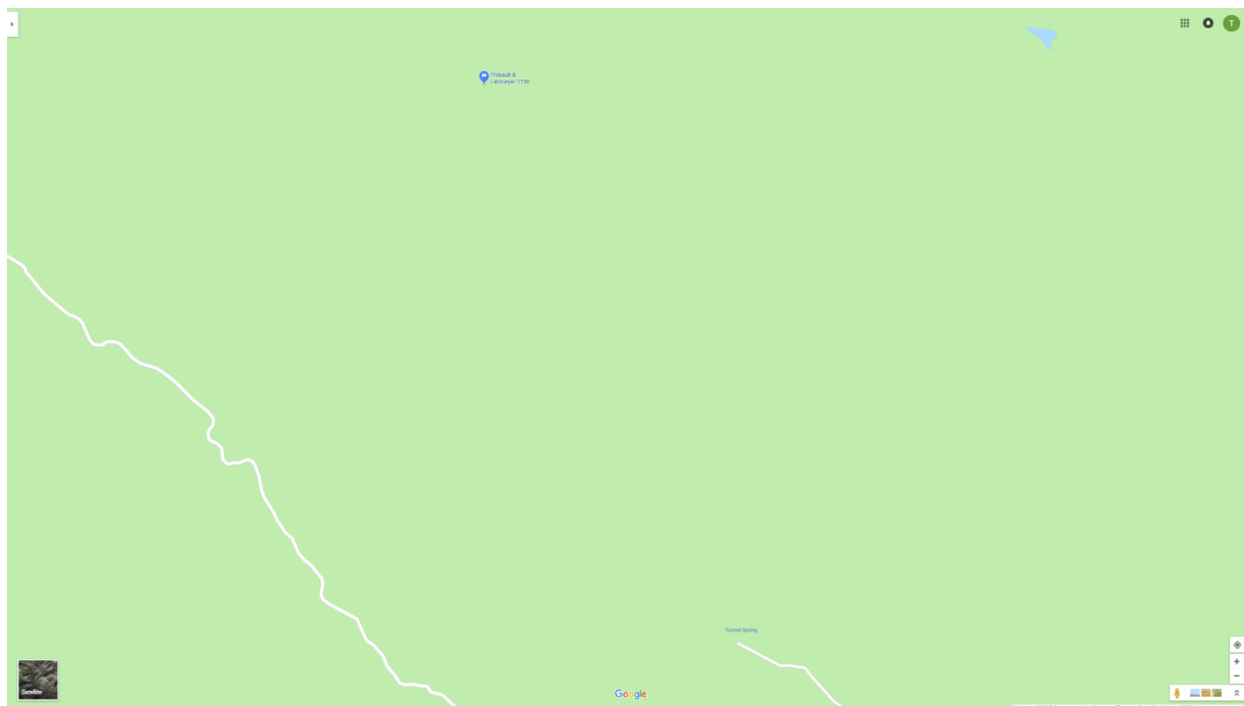
The field team of John Wiens, Tim Thibault, Sean Lahmeyer and Jason Wiley made two small acorn collections. The first was in Flux Canyon in the Patagonia Mountains near the Aztec Canyon site Thibault had previously vouchered. The second site was in a branch of Temporal Gulch in the Santa Rita Mountains, approximately 1.5 air miles ENE of where Thibault and Baugh made a vegetative collection.



Maps of collecting sites for 16 August 2018

17 August 2018

The field team of Tim Thibault and Sean Lahmeyer were able to access Middlemarch Canyon in the Dragoon Mountains, despite some roads being flooded. An acorn collection was made near the top of the saddle with Cochise Stronghold, accessing through Tunnel Spring.



Map of collecting sites for 17 August 2018

Conclusions and Future Opportunities

While the recent Red List of US Oaks (Jerome et al, 2017) listed *Quercus toumeyi* as Data Deficient, this work found the species in ten different mountain ranges throughout Arizona and New Mexico. In addition, the species has populations on protected land in nine of those ranges and these accessions were acquired from each of those ranges. Where *Quercus toumeyi* occurs, it is frequently locally common. Although there was some seed predation, one or two associated species of gall wasps, and a parasitic plant found attacking *Quercus toumeyi*, no significant threat was found to any current population on public land.

The 2014 publication of *Quercus barrancana* (Spellenberg, 2014) casts doubt about the extent of the range into Mexico, and surveying for *Quercus toumeyi* in Mexico would be valuable additional work. As for the US side, monitoring of populations to ensure that they are stable

would be beneficial. A University of Arizona study (Nolan et al, 2018) that came out during this work states that ranges are already observed to be shifting in response to climate change.

Of the several species mistakenly identified as *Quercus toumeyi*, the most interesting is *Quercus grisea*. In the Red List of US Oaks, the two come out as sister taxa. Their ranges approach each other in southern New Mexico, and may overlap in the Animas, Burro or Cookes ranges.

Quercus toumeyi seems very well adapted to the bimodal rainfall of its native range. Plants in the Rincon Mountains were observed with flowers, early fruit and mature fruit, both in January and July of 2018. It would be interesting to see if this is a weather anomaly for this particular year, or if the species in fact flowers and fruits twice a year.

Finally, this plant deserves further horticultural evaluation. It may prove a valuable foundation plant or informal hedge for dry climates.

Collaborators and Contributions

J. Travis Columbus, Rancho Santa Ana Botanical Garden, advice on sites within Cookes Range.

Cathy Babcock, Boyce Thompson Arboretum, serving as an *ex situ* site.

Guy Sternberg, Starhill Forest Arboretum, serving as an *ex situ* site.

Label Data for *Quercus toumeyi* Specimens or Observations

All data for specimens deposited at The Huntington Botanical Gardens Herbarium (HNT) is posted on SEINet at www.swbiodiversity.org.

USA: Arizona: Santa Cruz: Ruby Road E of Ruby and just W of FS 4178. 4,513 ft. 31.46733°N, 111.22166°W. Open rocky gentle E slope in association with *Quercus* spp., *Juniperus*, *Phoradendron*, *Arctostaphylos*, *Eysenhardtia*, *Rhus*, *Mimosa*, *Fouquieria*, *Erythrina*, *Dodonaea*, *Bouvardia*, *Agave*, *Dasylirion*, *Amoreuxia*, *Oxalis*. Shrub to 3 m. tall and 5 m. wide, trunk grey brown, foliage green with bluish cast, flowers orangish, developing acorns grey green, mature brown with grayish bloom. Tim Thibault 1705. 23 Jul 2018.

United States: Arizona: Santa Cruz: Patagonia Mountains: Red rock outcrop E of UX Road. 5688 ft. 31.40130°N, 110.73790°W. Steep N slope in association with *Quercus* spp., *Pinus*, *Juniperus*, *Brickellia*. Shrub to 3.5 m., bark in long grey strips, twigs yellowish tan, underside of

leaves yellow green, developing acorns green, caps greenish tan. Tim Thibault 1714. 24 Jul 2018.

USA: Arizona: Santa Cruz: Patagonia Mountains: Aztec Canyon Road. 4,230 ft. 31.50896°N, 110.76292°W. Red rocky soil, moderate-steep NW slope in association with *Quercus emoryi*, *Fouquieria splendens*, *Arctostaphylos pungens*, *Dodonaea*. Shrub to 2.25 m, developing acorns green. Tim Thibault 1715. 24 Jul 2018.

United States: Arizona: Pima: Rincon Mountains: FS 35 ca. 10 miles N of I-10. 3961 ft. 32.08608°N, 110.45698°W. Rocky alluvium in association with *Quercus emoryi*, *Platanus*, *Celtis*, *Fraxinus*, *Cephalanthus*, *Lycium*, *Baccharis*, *Vitis*. Shrub to 4 m., bark in long grey strips, twigs yellow brown, leaves green yellowish along midrib on lower surface, developing acorns green with yellow brown caps, mature acorns dark brown. Tim Thibault 1716. 26 Jul 2018.

United States: Arizona: Cochise: Dragoon Mountains: Cochise Trail between Cochise Stronghold Campground and FS 84A. 4964 ft. 31.92354°N, 109.96090°W. Gentle E drainage, decomposed granite, in association with *Quercus* spp., *Pinus*, *Prosopis*, *Fraxinus*, *Juglans*, *Juniperus deppeana*, *Garrya*, *Anisacanthus thurberi*, *Vitis arizonica*, *Arctostaphylos pungens*, *Erythrina flabelliformis*, *Mimosa*, *Castilleja*, *Penstemon*, *Opuntia* spp., *Yucca* spp., *Agave* spp., *Baccharis*, *Erigeron*, *Rhus*, xeric ferns. Shrub to 2.5 m., bark grey, twigs tan, developing acorns green with greenish white caps. Tim Thibault 1719. 26 Jul 2018.

United States: Arizona: Cochise: Huachuca Mountains: Parker Canyon Lake; near group camping area. 5550 ft. 31.43277°N, 110.45141°W. With *Pinus cembroides*, *Quercus emoryi*, *Q. arizonica*, *Juniperus deppeana*, *Arctostaphylos pungens*, *Agave palmeri*. Locally scattered shrub. 3m tall X 4m wide. Developing acorns green, bark gray. John F. Wiens, Tim Thibault and Alicia Baugh 462. 1 Aug 2018.

USA: Arizona: Cochise: Peloncillo Mountains: Along Geronimo Trail, ca. 1 mile west of state line. 4,930 ft. 31.49666°N, 109.06546°W. With *Pinus cembroides*, *Quercus arizonica*, *Juniperus deppeana*, *Agave palmeri*, *Fendlera*, *Garrya*, *Rhus aromatica*, *R. virens*, *Nolina microcarpa*, *Muhlenbergia emersleyi*. Solitary woody shrub 2m tall X 3m wide on rhyolite. Leaves bright green, stems gray-brown. John F. Wiens, Tim Thibault and Alicia Baugh 468. 2 Aug 2018.

United States: New Mexico: Hidalgo: Peloncillo Mountains: Along Geronimo Trail; ca. just east of state line. 5644 ft. 31.51396°N, 109.02886°W. With *Pinus leiophylla*, *P. cembroides*, *Quercus arizonica*, *Yucca* sp., *Juniperus deppeana*, *Nolina microcarpa*, *Garrya wrightii*. Common woody shrub to small trees on rhyolite. Leaves bright green, stems gray/brown. John F. Wiens, Tim Thibault and Alicia Baugh 469. 2 Aug 2018.

United States: Arizona: Cochise: Chiricahua Mountains: Rucker Canyon, just beyond the fire station turnoff. 5878 ft. 31.76808°N, 109.3345°W. Leaves green, twigs reddish-gray, bark gray in strips. With *Quercus emoryi*, *Q. arizonica* x *oblongifolia*?, *Juniperus deppeana*, *Mimosa dysocarpa*, *Arctostaphylos pungens*, *Aspicarpa hirtella*, *Dyschoriste*, *Acaciella angustissima*. Locally common 2.5m tall small tree. John F. Wiens, Tim Thibault and Alicia Baugh 473. 2 Aug 2018.

United States: Arizona: Santa Cruz: Santa Rita Mountains: observation FS143 in Salero Ranch.. 5051 ft. 31.61544°N, 110.86686°W. Baugh & Thibault SN. 3 Aug 2018.

United States: Arizona: Santa Cruz: Santa Rita Mountains: Old road to El Plomo mine. 5051 ft. 31.61544°N, 110.86686°W. Steep rocky NW slope in association with *Quercus oblongifolia*, *Juniperus*, *Prosopis*, *Fouquieria*, *Mimosa* spp., *Rhus* spp., *Garrya*, *Eysenhardtia*, *Bouvardia*, *Ericameria*, *Dasyllirion*, *Opuntia*, *Nolina*, *Agave palmeri*, *Jatropha*, *Oxalis*. Shrub to 2.5 m. Tim Thibault and Alicia Baugh 1736. 3 Aug 2018.

USA: Arizona: Santa Cruz: Santa Rita Mountains: Upper Walker Canyon, by tanks. 5,686 ft. 31.67105°N, 110.81615°W. With *Pinus ponderosa*, *P. cembroides*, *Arctostaphylos pungens*, *Quercus arizonica*, *Q. hypoleucoides*, *Q. emoryi*, *Juniperus deppeana*. Locally common small trees to 2.5m. Leaves: adaxial glabrous green; abaxial dull green with raised yellow midrib. Twigs reddish; trunk dark gray. John F. Wiens, Tim Thibault and Matt Jevnikar 491. 14 Aug 2018.

United States: Arizona: Cochise: Mule Mountains: Juniper Flats; SSE of radio towers. 6828 ft. 31.47206°N, 109.9467°W. With *Pinus cembroides*, *Arctostaphylos pungens*, *Cercocarpus*, *Quercus toumeyii* x *arizonica*, *Q. emoryi*, *Garrya*, *Fendlera*. Locally common woody shrubs to small trees. 2.75m tall X 4m wide. Leaves: adaxial glabrous green; abaxial yellowish-green. twigs orangish-tan. bark gray-brown in strips; acorns green with brownish tips; caps greenish-white. Tim Thibault, John Wiens and Julie Wiens 1739. 15 Aug 2018.

USA: Arizona: Cochise: Mule Mountains: Juniper Flats, highest peak with radio towers. 7,050 ft. 31.4823°N, 109.9599°W. In association with *Pinus cembroides*, *Juniperus deppeana*, *Arctostaphylos pungens*, *Cercocarpus*, *Quercus arizonica*. *Mirabilis*, *Castilleja*. Scattered shrubs. 2.5m tall; trunk bark brownish and checkered; twigs yellowish; leaves adaxial green; abaxial light green. Immature acorn cups brownish-white. Tim Thibault, John Wiens and Julie Wiens 1750. 15 Aug 2018.

United States: Arizona: Santa Cruz: Patagonia Mountains: Flux Canyon; along road on E-facing slope. 4795 ft. 31.49455°N, 110.75894°W. With *Quercus toumeyii* X *oblongifolia*, *Q. emoryi*, *Dodonea*, *Erythrina*, *Arctostaphylos pungens*, *Agave palmeri*. Common small trees; 4.5m tall. Leaves coppery green adaxial; abaxial green with yellow midrib; bark gray with light brown in strips. John F. Wiens, Tim Thibault, Sean Lahmeyer and Jason Wiley 495. 16 Aug 2018.

United States: Arizona: Santa Cruz: Santa Rita Mountains: Temporal Canyon; along Forest Service Road 72a below old mine and tailings. 5625 ft. 31.62752°N, 110.82519°W. With *Quercus arizonica*, *Q. oblongifolia*, *Erythrina*, *Juniperus deppeana*, *Pinus cembroides*. Solitary tree; 2.5m tall. Bark gray and shredding; leaves bright green. John F. Wiens, Tim Thibault, Sean Lahmeyer and Jason Wiley 502. 16 Aug 2018.

United States: Arizona: Cochise: Dragoon Mountains: Middlemarch Canyon, FS 277, just N of gate at saddle. 5883 ft. 31.89663°N, 109.95678°W. Moderate-steep N slope, rocky sand, in association with *Quercus* spp., *Pinus*, *Juniperus*, *Garrya*, *Arctostaphylos*, *Fallugia*, *Cercocarpus*, *Rhus* spp., *Agave*, *Cylindropuntia*, *Yucca* spp., *Nolina*, *Dasyllirion*, *Milla*, *Astrolepis*. Shrub to 2.75 m., bark gray-brown, twigs yellowish, leaves green above, yellow-green below, developing acorns green, mature acorns chocolate brown Tim Thibault and Sean Lahmeyer 1756. 17 Aug 2018. (specimen missing)

References

Jerome, D., Beckman, E., Kenny, L., Wenzell, K., Kua, C. & Westwood, M. 2017. Red List of US Oaks. Retrieved 2018.

Nolan, C., J. Overpeck, J. Allen, P. Anderson, J. Betancourt, H. Binney, S. Brewer, M. Bush, B. Chase, R. Cheddadi, M. Djamali, J. Dodson, M. Edwards, W. Gosling, S. Haberle, S. Hotchkiss, B. Huntley, S. Ivory, A. Kershaw, S. Kim, C. Latorre, M. Leydet, A. Momohara, P. Moreno, S. Muller, B. Otto-Bliesner, C. Shen, J. Stevenson, H. Takahara, P. Tarasov, J. Tipton, A. Vincens, C. Weng, Q. Xu, Z. Zheng, & S. Jackson. 2018. Past and future global transformation of terrestrial ecosystems under climate change. *Science* 361: 920-923.

Spellenberg, R. 2014. *Quercus barrancana* (Sect. *Quercus*, white oaks), a new species from northwestern Mexico. *Phytoneuron* 2014-105: 1-12.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Tucson Field Office
3201 East Universal Way
Tucson, AZ 85756
520-258-7200
www.blm.gov/az/



Date: August 10, 2018

Dear Sir

Attached are a Research Agreement, a Researcher Guidelines and a Free Use Permit for collecting plant specimens for your research project.

Read all three documents carefully. The Principal Investigator must sign the Research Agreement and a SIGNED copy either faxed or emailed back to the Tucson Field Office to Darrell Tersey, dtersey@blm.gov for approval by the Field Office Manager. The Field Office Manager will then sign it and your official authorization will be sent to you as your authorization to collect plant materials while conducting your research.

It is expected that you will continue coordination with the BLM throughout the duration of the study. This includes informing your BLM contact (for Tucson Field Office, Darrell Tersey, dtersey@blm.gov, 520.258.7218) of the dates that you will be conducting research activities and providing descriptions of research vehicles. This information is important so we can notify our law enforcement officers that you are approved to be conducting research on BLM lands.

We do have other researchers who are currently collecting plants in the area who may be of assistance to you in your collection efforts. These individuals are very knowledgeable about the local flora and know where to find particular species that you may be looking for. If you are interested in coordinating with them, we can provide their information to you.

We look forward to your research on public lands of the Tucson Field Office.

Sincerely,

Field Manager,
Tucson Field Office

Attachments:

Research Agreement
Free Use permit
Researcher guidelines



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Tucson Field Office
3201 East Universal Way
Tucson, AZ 85756
520-258-7200
www.blm.gov/az/



August 10, 2018

In Reply refer To:
4180 (AZ030)

Tim Thibault
The Huntington Library, Art Collections, and Botanical Gardens
1151 Oxford Road, San Marino, CA 91108

Dear Mr. Thibault,

Through this letter, the BLM authorizes the Principal Investigator and research field crew to conduct research activities on oak trees on BLM lands within the Tucson Field Office including the Ironwood Forest National Monument, Las Cienegas National Conservation Area and all four wilderness areas (Needles Eye, White Canyon, coyote Mountains and Baboquivari Peak). This letter is intended to clearly identify the expectations and responsibilities of the Principal Investigator and field crew's research efforts.

The Principal Investigator and field crew members associated with this research effort are expected to follow the rules and regulations for the BLM management areas where research will be conducted (see Attachment 1). Failure to comply with the rules and regulations of the BLM management areas in which research will be conducted or with the rules and regulations outlined in the enclosed attachments may result in the BLM canceling this authorization and/or use of BLM facilities.

It is expected that coordination shall continue with the BLM throughout the duration of the study. The Primary Investigator shall inform the BLM of the dates and locations that research activities will be conducted and provide descriptions of research vehicles.

Annual summary reports which give a briefing of the results of the research shall be submitted to the BLM by the end of the calendar year. Within one year after the conclusion of the study, a final report which explains the results of the research shall be made available to the BLM.

All researchers shall carry a copy of this research agreement (letter and attachment) and any other required permits when conducting research activities on BLM managed lands.

Any research equipment that is left in the field unattended (e.g. nets, traps, etc.) shall be clearly marked or tagged with the researcher's name, affiliation, and phone number.

Any research activity shall have no effect on any federally listed species under the Endangered Species Act, except as described in the research proposal and authorized by US Fish and Wildlife Service (USFWS) under a Section 10(a)(1)(A) permit. A copy of the USFWS permit, Arizona Game and Fish Department Scientific Collecting License, and any required survey certifications shall be provided to BLM before any research on BLM land begins.

This agreement is for BLM administered public lands only. The Primary Investigator shall obtain permission from all other landowners whose property is affected by this agreement, including private, state trust lands, and other federal lands. Evidence that permission has been obtained shall be available to the BLM upon request. Please note that research activities on intermixed and/or adjacent Arizona State Trust Lands require a separate study entry permit from the Arizona State Land Department.

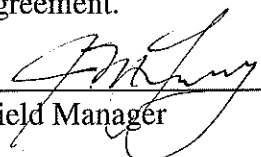
The Primary Investigator is responsible for ensuring the safety of all participants by assuring that all actions in relation to this activity shall be in conformance with local, state, and federal health and safety standards and by providing for appropriate emergency attention if necessary. All injuries requiring emergency hospital care shall be reported to the BLM within two days of the occurrence. The BLM assumes no legal liability for any and all injury, death or property damage caused by the activity identified in this agreement.

No later than December 31, annually, the Primary Investigator will provide BLM with a summary of the results of their research. All reporting for permits shall meet required deadlines.

If performance is found to be unsatisfactory, the BLM can modify or revoke this agreement at any time.

Any changes to the scope or approved activities as outlined in the Primary Investigator 2017 research proposal shall first be submitted and authorized by the BLM.

This agreement remains in effect for the duration of the first year of this research project through December 31, 2018. Subsequent years of research shall require the issuance of a new research agreement.



Field Manager

8/10/2018

Date

Attachments:
1 – Researcher Guideline

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FREE USE APPLICATION AND PERMIT
VEGETATIVE MATERIAL

FORM APPROVED
OMB NO. 1004-0001
Expires: December 31, 2019

Permit Number

Expiration Date

District

APPLICATION

Name of applicant: Tim Thibault, Curator of Woody Collections, The Huntington
Address (include zip code): 1151 Oxford Road, San Marino, CA 91108

Kind of material: Seeds, cuttings and herbarium specimens
Units: kilograms
Estimated quantity: <1

Give legal land description:
TOWNSHIP RANGE SECTION SUBDIVISION

State of: Arizona
County of: Pima, Santa Cruz and Cochise

Materials are to be used for:
Research and museum collection development

I HEREBY AGREE TO COMPLY WITH the special conditions as set forth below. I CERTIFY That the: (a) materials to be removed are to be used for the purpose noted above; (b) none of the materials removed are to be sold or bartered (Alaska subsistence exempt); (c) removal of materials can begin only upon receipt of an approved copy of this permit; and, (d) the Bureau of Land Management (BLM) must be notified upon completion of removal.

I CERTIFY That I am a citizen of the United States, and of the age of majority in the State in which I reside.

I FURTHER CERTIFY That the statements made by me in this application are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

08/07/2018

(Date)

Tim Thibault

(Signature of Applicant)

Digitally signed by Tim Thibault
Date: 2018.08.07 10:44:48 -0700

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

The Privacy Act and the regulations in 43 CFR 2.223(d) require that you be furnished with the following information:

- AUTHORITY: 16 U.S.C. 604 - 607a and 612 and 43 CFR Part 5510.
- PRINCIPAL PURPOSE: BLM uses the information to maintain an inventory of vegetation information and to adjudicate your rights to remove vegetative resources under the Free Use Regulations at 43 CFR Part 5510.
- ROUTINE USES: BLM will disclose the information on this form pursuant to the regulations in 43 CFR 2.56.
- EFFECT OF NOT PROVIDING THIS INFORMATION: Submission of the requested information is necessary to obtain a benefit. Failure to submit all of the requested information or to complete this form may result in delay or preclude the BLM's acceptance of the application.

PERMIT SPECIAL CONDITIONS

This permit is hereby issued for the vegetative materials applied for but may be canceled if it appears that this permit was issued erroneously or the terms or conditions contained herein are not observed. It will be subject to the following special conditions:

No motorized or mechanized equipment can be used in wilderness areas. No more than 1/8 pound of plant material can be collected from the Ironwood forest national Monument. No vehicles can be driven off of established roads.

Conservation practices must be carried out as provided by 43 CFR 5511.1-1(b), 5511.2-3(c), and 5511.3-3.

Equipment, personal property, and improvements must be removed within ninety (90) days after the expiration date. 43 CFR 5511.3-5.

Any use of the surface of the lands involved in this permit must not interfere with any mining claim subject to the provisions of 30 U.S.C. 613.

The permittee must clean up all work areas and must remove or dispose of all refuse resulting from the permittee's operations.

This permit is issued under 16 U.S.C. 604-607a; 16 U.S.C. 612; 16 U.S.C. 3111, 3112, and 3121 (Alaska National Interest Lands Conservation Act); and 43 CFR Part 5510 and 5511.

15 August 2018
(Date)

[Signature]

(Signature of BLM)

APPLICANT

FIELD OFFICE

The Paperwork Reduction Act of 1995 requires us to inform you that:

- The BLM collects this information to establish vegetative material, quantity, and compliance with the Free Use Regulations. Submission of the requested information is necessary to complete the permit transaction and obtain or retain a benefit.
- The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: The public reporting burden for this form is estimated to average 30 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Please send comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0001), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, NW, Room 2134, Washington, D.C. 20240.

Arizona BLM Sensitive Species List (October, 2005)	AZ-100	AZ-200	AZ-310	AZ-410	AZ-320	AZ-420	AZ-330
Key: V=Verified Occurrence X=Probable/Possible Occurrence	Arizona Strip	Phoenix	Kingman	Safford	Yuma	Tucson	Lake Havasu
Plants							
Aquarius milkvetch (<i>Astragalus newberryi</i> var. <i>aquarii</i>)			V				
Aravaipa woodfern (<i>Thelypteris puberula</i> var. <i>sonorensis</i>)			V	V			
Aravaipa sage (<i>Salvia armissa</i>)				V			
Arizona Sonoran rosewood (<i>Vauquelinia californica</i> ssp. <i>sonorensis</i>)		V					V
Bartram stonecrop (<i>Griptopetalum bartramii</i>)							V
Black Rock daisy (<i>Townsendia smithii</i>)	V						
Blue sand lily (<i>Triteleopsis palmeri</i>)					V		
California flannelbush (<i>Fremontodendron californica</i>)		V	V				
Chisos Mountains coralroot (<i>Hexaletris revoluta</i>)							X
Cliff milkvetch (<i>Astragalus cremnophyllax</i> var. <i>myriorrhaphus</i>)	V			V			
Clifton rock daisy (<i>Pentyle ambrosiifolia</i>)							
Dalhousie spleenwort (<i>Asplenium (Ceterach) dalhousiae</i>)							V
Diamond Butte milkvetch (<i>Astragalus toanus</i> var. <i>scidulus</i>)	V			X			
Fish Creek fleabane (<i>Erigeron piscaticus</i>)							X
Gentry indigo bush (<i>Dalea tentaculoides</i>)							V
Giant sedge (<i>Carex spissa</i> var. <i>ultra</i>)		V		V			
Grand Canyon rose (<i>Rosa stellata</i> var. <i>abyssa</i>)	V						V
Huachuca golden aster (<i>Heterotheca rutten</i>)							X
Huachuca milkvetch (<i>Astragalus hypoxylus</i>)		V					
Kaibab pincushion cactus (<i>Pedocactus paradigm</i>)					V		
Kearney sumac (<i>Rhus kearneyi</i> ssp. <i>kearneyi</i>)							X
Kofa Mt barberry (<i>Berberis harrisoniana</i>)		X			X		
Marble Canyon Milkvetch (<i>Astragalus cremnophyllax</i> var. <i>hevronii</i>)	V						
Mt Trumbull beardtongue (<i>Penstemon distans</i>)	V	V					
Murphey agave (<i>Agave murpheyi</i>)							
Paria Plateau fishhook cactus (<i>Sclerocactus slieri</i>)	V						
Parish phacelia (<i>Phacelia parishii</i>)			V				
Parish wild onion (<i>Allium parishii</i>)					X		X
Pima Indian mallow (<i>Abutilon parishii</i>)							
Pinto beardtongue (<i>Penstemon bicolor</i>)			V				
Purple-spike coralroot (<i>Hexaletris warrockii</i>)							V
Round-leaf broom (<i>Erazurizia rotundata</i>)				V			

**Bureau of Land Management
Tucson Field Office
Researcher Orientation and Briefing**

<p>Tucson Field Office 3201 E. Universal Way Tucson, AZ 85756 (520) 258-7200 Office Hours: Mon - Fri 8:00am - 4:30pm Jayme Lopez, Tucson F.O. Manager</p>	<p>San Pedro NCA Project Office 4070 S. Avenida Saracino Hereford, AZ 85615 (520) 439-6400 Office Hours: Mon - Fri 8:00am - 4:30pm</p>
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Please note that these numbers may change. It is recommended that researchers verify these numbers BEFORE an emergency occurs.

EMERGENCY CONTACTS

<p>Hospital - Sierra Vista.....520-458-4641 Hospitals-Tucson University Medical Center.....520-694-8888 Tucson Medical Center.....520-327-5461 Northwest Medical Center.....520-742-9000 El Dorado Hospital.....520-886-6361 St. Joseph's Hospital.....520-296-3211 St. Mary's Hospital.....520-622-5833 Kino Community Hospital.....520-294-4471 Poison Control.....800-362-0101</p>	<p>Fire / Medical.....911 BLM Law Enforcement (Tucson FO) Grady Cook (office).....520-439-6438 Fire dispatch.....520-202-2710 Jason Cary (LCNCA).....520-439-6435 Cochise County Sheriff.....520-432-9500 Pima County Sheriff.....520-741-4900 Pinal County Sheriff.....520-868-5822 Border Patrol..... 1-877-USBP-HELP (1-877-872-7435) Border Patrol, Sector Communications520-670-6902 Border Patrol (Naco).....520-432-5121</p>
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Welcome to public lands research. The Bureau of Land Management (BLM), Tucson Field Office (TFO) strongly encourages and supports research opportunities on the over 800,000 acres which it administers within Southeastern Arizona. The TFO manages a variety of habitats including Sonoran Desert-scrub, semi-desert grasslands, mesquite grasslands, Chihuahuan Desert-scrub, and several key riparian areas.

In order to provide researchers with information on the rules and regulations required by the BLM, the following items are explained. For specific information on these and other regulations, please refer to the briefing papers on each specific area, or call one of our offices.

Cooking

Cooking supplies, food and utensils are not provided. Researchers are expected to bring their own supplies for cooking if they are camping. Meals are not provided by BLM (see groceries/restaurants below).

Equipment

The BLM typically does not supply any equipment or tools for researchers. Bring all of your own needed equipment such as computers, printers, binoculars, etc. The BLM will not be able to store your field equipment during non-use. If you have a multi-year project, you will either have to make arrangements for storage in Sierra Vista or bring field equipment back to your home base when the season is completed.

Fire

Campfires are allowed only in designated areas and are prohibited during high fire danger seasons. Only dead and downed wood may be used for campfires. Fuelwood cutting is not permitted.

Firearms

Firearm discharge is permitted for the purpose of regulated hunting only. Contact the BLM for specific firearm regulations and information on closures.

Garbage

Garbage must be collected and disposed of by the researchers. For the San Pedro Riparian NCA, the dumpster at Charleston or Fairbank may be used to rid trash, provided it is not excessive. For Las Cienegas NCA, trash can be deposited at the Sonoita landfill.

Groceries / Restaurants

There are small grocery and convenience stores in Sonoita, Tombstone, and at Mustang Corners. Several major grocery stores can be found in Sierra Vista and in Tucson. Sonoita has several good restaurants, and Sierra Vista and Tucson offer a wide variety of cultural cuisine (Chinese, Thai, Japanese, Korean, Mexican, American fast food, etc.)

Hospitals

Sierra Vista Community Hospital is located at 300 El Camino Real, Sierra Vista (520) 458-4641. Tucson has several hospitals. In case of emergency, call 911 for medical attention. Fire stations in Sonoita, Huachuca City, and Sierra Vista may be able to assist in emergency situations.

Keys

Several management areas and roads within the Tucson Field Office are closed to public access to protect sensitive resources. Special permission by BLM management and keys are needed to access these areas. It is *required* that a letter be sent to the BLM from the primary investigator or research agency requesting the temporary use of keys and access

thus could be expected again in the future. It is recommended that researchers keep valuables with them during the day. Additionally, insurance for valuables may be warranted. The BLM assumes no responsibility for items which are lost, stolen, or vandalized.

Speed Limits

Obey all signed speed limits. Speed on graded or dirt roads should not exceed 25 miles per hour *at any time* due to increased road deterioration and creation of washboard effects.

Storage

BLM will not allow storage of researcher equipment. It is recommended that storage sheds be rented for this purpose.

Transportation

Air: Tucson International Airport provides access to all major U.S. cities and is approximately 1 to 2 hours from each of Las Cienegas or San Pedro Riparian National Conservation Areas or Ironwood National Monument. Most major carriers fly into Tucson or Phoenix. The Sierra Vista Airport may provide flights where travelers can connect with other flights.

Vehicle Rentals: Rental car agencies are available in Sierra Vista and at the Tucson International Airport.

Visitors

It is *required* that the BLM is notified prior to researchers bringing visitors, so that we can be aware of their presence and to coordinate with law enforcement in case of emergency.

Registration

All researchers, field crews and visitors *must* inform BLM as to number of personnel, vehicle license numbers, etc. (also see check in / check out procedures).

Water

There is potable water available at Las Cienegas NCA headquarters and the San Pedro Riparian NCA Fairbank townsite and San Pedro House.

Weather

Depending on the season of research, weather can be quite hot or quite cold. Las Cienegas NCA is approximately 4000' elevation and the San Pedro Riparian NCA is approximately 3800' elevation. Summer temperatures of over 100°F occur, and winter temperatures have been recorded as low as 5°F at the Boquillas site. Freezing nights can



United States Department of the Interior



BUREAU OF LAND MANAGEMENT

New Mexico State Office
301 Dinosaur Trail
Santa Fe, New Mexico 87508
www.blm.gov/new-mexico

IN REPLY REFER TO:
6850 (93000)

MAY 08 2018

Tim Thibault
Curator of Woody Collections
The Huntington Library, Art Galleries, and Botanical Gardens
1151 Oxford Road
San Marino, CA 91108

Dear Tim Thibault:

By this letter you and anyone working under your direction, most specifically Raquel Folgado, are given permission to collect plants and plant parts from public lands managed by the Bureau of Land Management (BLM) in New Mexico for scientific and educational purposes. This permit satisfies requirements for removal of plant materials as addressed in Title 43 of the Code of Federal Regulations parts 5510 (Free Use) and 8365 (Visitor Services, Rules of Conduct).

In addition, this letter conveys ownership of voucher specimens taken from public land to the receiving herbaria.

Project Description:

The purpose of the proposed project is to collect and evaluate germplasm in the genera *Quercus* and *Vitis*, along with ecologically related taxa. For *Quercus*, research will focus on acorn storage behavior, vegetative propagation techniques, and embryo rescue. For *Vitis*, research will be to evaluate species for cryopreservation, especially species with potential for drought and salt tolerant rootstock.

Permission is given for the following plant collections:

Taxa to be sampled or collected:

- Any species within the genera *Quercus* and *Vitis*, especially *Quercus havardii*, and associated species occurring on BLM administered public land in New Mexico that are not Federal or State listed or BLM Sensitive.

Collections/Samples:

1. Seeds and cuttings within Center for Plant Conservation Guidelines (5% guideline) per sampled population with focus on *Quercus* and *Vitis*.
2. One herbarium specimen of selected species within sampled population.

Location of Proposed Study:

The study will mainly be in the Carlsbad Field Office or elsewhere throughout the state determined by the location of the species of interest. We will consult with local field office specialists and land managers/park rangers about which populations they deem the most easily accessible populations and appropriate for this study.

Your proposed methods of access (vehicles, aircraft, boat, snowmobile, foot etc.)

Access to all sites will be by road system. We will park at designated trailheads and other legal sites and hike to sample populations.

Timeframe of Study:

2018-2019

Where will data, maps, photos, etc. (not specimens) reside upon completion of this project?

All data, maps and photos will be stored at The Huntington and provided to the interested parties upon request. Collection data will also be posted on SEINet (<http://swbiodiversity.org/seinet/collections/>).

Herbarium specimens:

We propose to collect herbarium specimens to serve as vouchers for each population sampled. We will collect one reproductive specimen per taxon per population, plus potentially additional material necessary to capture variability within a population. The vouchers will be deposited in HNT herbarium

This permit is subject to the following restrictions:

1. This permit is for scientific/educational collections only. Collections of plants, plant parts, and propagules for commercial sale or development for commercial sale are not authorized by this permit.
2. Other Federal or State law may apply. Specifically, this permit does not authorize the import and export of plants; it does not authorize the movement of plants in interstate commerce in the course of commercial activity, nor does it authorize the sale of plants in interstate or foreign commerce.
3. Permittee will exercise judgment to limit collecting only to those populations that can tolerate such collections and removal without jeopardizing the viability of the population and will consult the BLM-NM botanist whenever questions of potential jeopardy arise. Numbers of live plants to be collected from a population will be limited to the minimum needed for purposes of the permit. Collection activities should be conducted in a discrete manner if collections are permitted in public use areas. Soil surface disturbance should be kept to a minimum and disturbances repaired (i.e., holes filled, rocks replaced) as much as practical.
4. You shall provide the BLM an annual report stating which plants were collected on BLM lands during the year, their disposition (including herbarium or herbaria where deposited,

greenhouse or garden for any living progeny, and collection and/or accession number), and distributional, ecological, and population information. Copies of theses, dissertations, reports, and peer reviewed or other papers are requested. The Bureau may use information obtained through this permit as needed to further the conservation of plant species. The progress report and papers should be sent to BLM New Mexico State Botanist, at the following address:

Zoe Davidson – State Botanist
Bureau of Land Management
New Mexico State Office
301 Dinosaur Trail
Santa Fe, NM 87508

5. You are permitted to collect scientific and educational specimens in Areas of Critical Environmental Concern (ACEC), National Conservation Areas, National Monuments, and developed recreation areas administered by the BLM. Special conditions may apply or additional permits may be required for collections in each area. Please contact Bureau Field Offices for specifics regarding specific restrictions in any of these designated areas. Bureau Field Office contacts are listed in Attachment 1.

6. You may only collect plant parts (spines, leaves, flowers, fruits, or stem cuttings) in Wilderness Study Areas and designated Wilderness areas. Collection of whole plants from these areas is not permitted. Contact the BLM field office representatives in Attachment 1 to determine the locations of Wilderness and Wilderness Study areas.

7. You are not permitted to use motorized or mechanical equipment and vehicles off of designated roads. Vehicles are prohibited on all BLM roads and trails if muddy conditions exist that will cause ruts to be formed greater than two inches deep.

8. This authorization applies only to public lands (i.e., lands administered by the BLM) within New Mexico. Collection of plants on private, State, and other Federal lands, including National Forests, National Parks or Preserves, National Wildlife Refuges, or lands managed by the military require separate authorization from the managing agency or individual.

9. You shall not collect plants listed as endangered, threatened, or proposed for listing by the U.S. Fish and Wildlife Service, or listed as BLM Sensitive. You must have a permit in your possession issued by the State of New Mexico to collect plants listed as State endangered. A list of BLM sensitive species and federally listed species and critical habitat known or thought to occur on BLM lands in New Mexico is enclosed.

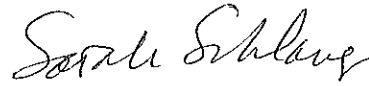
10. Please contact the local field office staff (see attachment) when you are out collecting specimens.

11. Any voucher submitted to the designated herbarium must be entered to SEINet within one year of collection for public use.

You and your accompanying colleagues must have a copy of this letter with you while you are

undertaking collection activities on BLM lands, along with proof of identification. This authorization expires May, 2019. If you have questions regarding this permit please contact Zoe Davidson at (505) 954-2045.

Sincerely,



for
Melanie G. Barnes
Deputy State Director
Lands and Resources

2 Enclosures

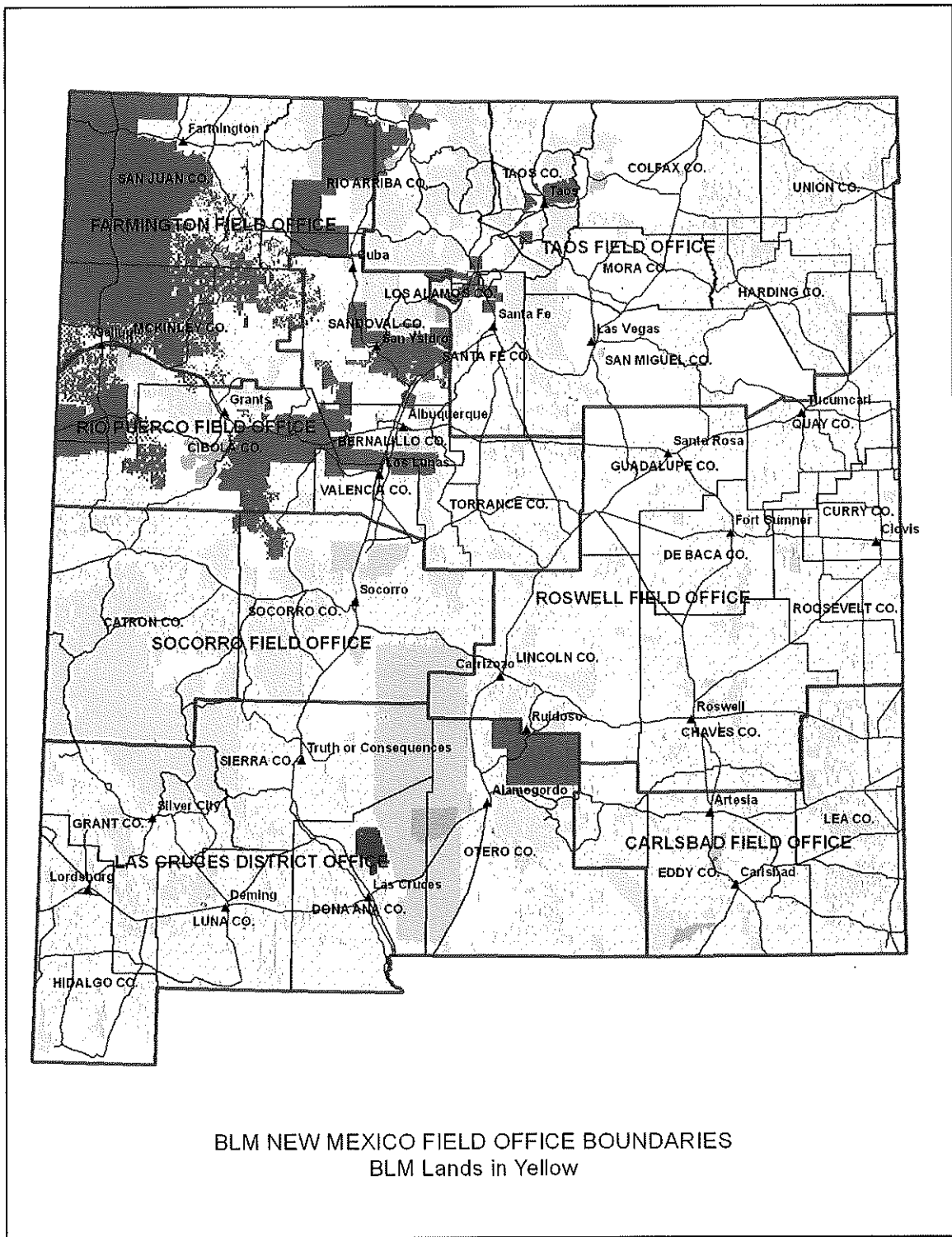
- 1 - BLM New Mexico Contacts, Map, and NM Special Status Species Plant List for Plant Collection Permit Issues
- 2 - BLM Form 5510-1

cc: (w/o enclosures)

NMA0120, A. Lujan
NMA0220, M. Atencio
NMF0120, V. Barr
NMF0210, J. Tafoya
NML0320, L. Lister
NMP0120, K. Arnold
NMP0230, R. Reta

Permit Attachment 1 - BLM New Mexico Contacts, Map, and NM Special Status Species Plant List for Plant Collection Permit Issues

- New Mexico State Office Botanist – Zoe Davidson – 505-952-2045
- Farmington Field Office – John Kendall – 505-564-7685
- Taos Field Office – Lillis Urban – 505-751-4712
- Rio Puerco Field Office (Albuquerque Area) – Andrea Chavez 505-761-8789
- Socorro Field Office – Carlos Madril – 575-838-1281 or Denny Apachito 575-838-1252
- Las Cruces District Office – Patrick Alexander – 575-525-4314
- Roswell Field Office – Dan Baggao – 575-627-0264
- Carlsbad Field Office – Katie Sandbom – 575-234-2236



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FREE USE APPLICATION AND PERMIT
VEGETATIVE MATERIAL

FORM APPROVED
OMB NO. 1004-0001
Expires: December 31, 2019

Permit Number
NMSFP-18-0020

Expiration Date
05/03/2019

District
New Mexico statewide

APPLICATION

Name of applicant
Tim Thibault- The Huntington Botanical Garden

Address (include zip code)
The Huntington Library, Art Galleries, and Botanical Gardens,
1151 Oxford Road, San Marino, CA 91108

Kind of material
Vegetative plant material

Units
Seeds and cuttings

Estimated quantity
5% of native population

Give legal land description

TOWNSHIP	RANGE	SECTION	SUBDIVISION
T16N	8E	Section 24	

State of
New Mexico

County of
All counties

Materials are to be used for
Scientific research

I HEREBY AGREE TO COMPLY WITH the special conditions as set forth below. I CERTIFY That the: (a) materials to be removed are to be used for the purpose noted above; (b) none of the materials removed are to be sold or bartered (Alaska subsistence exempt); (c) removal of materials can begin only upon receipt of an approved copy of this permit; and, (d) the Bureau of Land Management (BLM) must be notified upon completion of removal.

I CERTIFY That I am a citizen of the United States, and of the age of majority in the State in which I reside.

I FURTHER CERTIFY That the statements made by me in this application are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

(Date)

(Signature of Applicant)

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PERMIT SPECIAL CONDITIONS

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- Conservation practices must be carried out as provided by 43 CFR 5511.1-1(b), 5511.2-3(c), and 5511.3-3.
- Equipment, personal property, and improvements must be removed within ninety (90) days after the expiration date. 43 CFR 5511.3-5.
- Any use of the surface of the lands involved in this permit must not interfere with any mining claim subject to the provisions of 30 U.S.C. 613.
- The permittee must clean up all work areas and must remove or dispose of all refuse resulting from the permittee's operations.
- This permit is issued under 16 U.S.C. 604-607a; 16 U.S.C. 612; 16 U.S.C. 3111, 3112, and 3121 (Alaska National Interest Lands Conservation Act); and 43 CFR Part 5510 and 5511.

5/8/18
(Date)

[Signature]
(Signature of BLM)

APPLICANT

FIELD OFFICE

The Paperwork Reduction Act of 1995 requires us to inform you that:

- The BLM collects this information to establish vegetative material, quantity, and compliance with the Free Use Regulations. Submission of the requested information is necessary to complete the permit transaction and obtain or retain a benefit.
- The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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Scientific Name	Common Name	FWS T/E Status	BLM Status	Rio Puerco	Socorro	Farmington	Taos	Las Cruces	Roswell	Carlsbad
THREATENED & ENDANGERED										
ARGEMONE PINNATISECTA	PRICKLY-POPPY, SACRAMENTO	ENDANGERED	ENDANGERED					VERIFIED		
ASTRAGALUS HUMILLIMUS	MILKVETCH, MANCOS	ENDANGERED	ENDANGERED			VERIFIED				
ECHINOCEREUS FENDLERI VAR. KUENZLERI	HEDGEHOG CACTUS, KUENZLER'S	ENDANGERED	ENDANGERED					VERIFIED	VERIFIED	VERIFIED
ERIGERON RHIZOMATUS	FLEABANE, ZUNI	ENDANGERED	ENDANGERED		VERIFIED					
ERIOGONUM GYPSOPHILUM	BUCKWHEAT, GYPSUM WILD	THREATENED	THREATENED							VERIFIED
ESCOBARIA SNEEDII VAR. LEEI	CACTUS, LEE'S PINCUSHION	THREATENED	THREATENED							VERIFIED
ESCOBARIA SNEEDII VAR. SNEEDII	CACTUS, SNEED'S PINCUSHION	ENDANGERED	ENDANGERED					VERIFIED		
HEDEOMA TODSENII	PENNYROYAL, TODSON'S	THREATENED	THREATENED					VERIFIED		
HELIANTHUS PARADOXUS	SUNFLOWER, PECOS	ENDANGERED	ENDANGERED						VERIFIED	
PEDIOCACTUS KNOWLTONII	CACTUS, KNOWLTON	ENDANGERED	ENDANGERED			VERIFIED				
SCLEROCACTUS MESAE-VERDAE	CACTUS, MESA VERDE	THREATENED	THREATENED			VERIFIED				
BLM SENSITIVE										
ABRONIA BIGELOVII	SAND VERBENA, GALISTEO	NONE	SENSITIVE	VERIFIED			PERIPHERAL			
ACAROSPORA CLAUZADEANA	LICHEN, ACAROSPORA CLAUZADEANA	NONE	SENSITIVE						VERIFIED	
ALICIELLA FORMOSA	GILIA, AZTEC	NONE	SENSITIVE			VERIFIED				
AMSONIA FUGATEI	AMSONIA, FUGATE'S	SPECIES OF CONCERN	SENSITIVE		VERIFIED					
AMSONIA THARPII	BLUESTAR, THARP'S	SPECIES OF CONCERN	SENSITIVE							VERIFIED
ANULOCAULIS LEIOSOLENUM VAR. HOWARDII	RINGSTEM, HOWARD'S GYP	NONE	SENSITIVE					VERIFIED		
AQUILEGIA CHRYSANTHA VAR. CHAPLINEI	COLUMBINE, CHAPLINE'S	NONE	SENSITIVE					VERIFIED		VERIFIED
ASCLEPIAS SANJUANENSIS	MILKWEED, SAN JUAN	NONE	SENSITIVE			VERIFIED				
ASTRAGALUS COBRENSIS VAR. MAGUIREI	MILKVETCH, COPPERMINE	SPECIES OF CONCERN	SENSITIVE					VERIFIED		
ASTRAGALUS GYPSODES	MILKVETCH, GYPSUM	NONE	SENSITIVE							VERIFIED
ASTRAGALUS KNIGHTII	MILKVETCH, KNIGHT'S	NONE	SENSITIVE	VERIFIED						
ASTRAGALUS RIPLEYI	MILKVETCH, RIPLEY	SPECIES OF CONCERN	SENSITIVE	HYPOTHETICAL			VERIFIED			
CYMOPTERUS SPELLENBERGII	TAOS SPRINGPARSLEY	NONE	SENSITIVE				VERIFIED			
DERMATOPHYLLUM GUADALUPENSE	MESCALBEAN, GUADALUPE	NONE	SENSITIVE					VERIFIED		VERIFIED
ECHINOCEREUS X ROETTERI VAR. ROETTERI	CACTUS, ROETTER'S HEDGEHOG	NONE	SENSITIVE					VERIFIED		
ERIGERON ACOMANUS	FLEABANE, ACOMA	NONE	SENSITIVE	VERIFIED		HYPOTHETICAL				
ERIOGONUM LACHNOGYNUM VAR. COLOBUM	WILDBUCKWHEAT, CLIPPED	NONE	SENSITIVE	HYPOTHETICAL		HYPOTHETICAL	VERIFIED			
ESCOBARIA DUNCANII	CACTUS, DUNCAN'S PINCUSHION	SPECIES OF CONCERN	SENSITIVE					VERIFIED		
ESCOBARIA VILLARDII	CACTUS, VILLARD'S PINCUSHION	SPECIES OF CONCERN	SENSITIVE					VERIFIED		
LEPIDOSPARTUM BURGESSII	SCALEBROOM, GYPSUM	SPECIES OF CONCERN	SENSITIVE					VERIFIED		
LINUM ALLREDII	FLAX, ALLRED'S	NONE	SENSITIVE							VERIFIED
MENTZELIA HUMILUS VAR. GUADALUPENSIS	STICKLEAF, GUADALUPE	NONE	SENSITIVE					VERIFIED		
OPUNTIA ARENARIA	PRICKLYPEAR, SAND	SPECIES OF CONCERN	SENSITIVE					VERIFIED		
OPUNTIA X VIRIDIFLORA	CHOLLA, SANTA FE	SPECIES OF CONCERN	SENSITIVE				VERIFIED			
PEDIOMELUM PENTAPHYLLUM	SCURFPEA, CHIHUAHUA	SPECIES OF CONCERN	SENSITIVE					VERIFIED		
PENIOCEREUS GREGGII VAR. GREGGII	CEREUS, NIGHT-BLOOMING	SPECIES OF CONCERN	SENSITIVE					VERIFIED		

CHENOPODIUM CYCLOIDES	GOOSEFOOT, SANDHILL	NONE	WATCH				HYPOTHETICAL		HYPOTHETICAL	HYPOTHETICAL
CIRSIIUM WRIGHTII	THISTLE, WRIGHT'S MARSH	NONE	WATCH			HYPOTHETICAL		HYPOTHETICAL	HYPOTHETICAL	HYPOTHETICAL
CLEOME MULTICAULIS	SPIDERFLOWER, SLENDER	SPECIES OF CONCERN	WATCH					HYPOTHETICAL		
CORYPHANTHA ROBUSTISPINA SSP. SCHEERI	CACTUS, SCHEER'S BEEHIVE	NONE	WATCH					VERIFIED		VERIFIED
CUSCUTA FASCICULATA	DODDER, SANTA FE	NONE	WATCH				HYPOTHETICAL			
CUSCUTA WARNERI	DODDER, WARNER'S	NONE	WATCH					HYPOTHETICAL	HYPOTHETICAL	
DALEA SCARIOSA	PRAIRIE CLOVER, LA JOLLA	SPECIES OF CONCERN	WATCH	HYPOTHETICAL	HYPOTHETICAL					
DESMODIUM METCALFEI	TICK-TREFOIL, METCALFE'S	NONE	WATCH					PERIPHERAL		
DRABA SMITHII	WHITLOWGRASS, SMITH'S	NONE	WATCH				HYPOTHETICAL			
EPHEDRA CORYI	JOINT-FIR, CORY'S	NONE	WATCH							HYPOTHETICAL
ERICAMERIA NAUSEOSA SSP. NAUSEOSA VAR. TEXENSIS	RABBITBRUSH, GUADALUPE	SPECIES OF CONCERN	WATCH					VERIFIED		HYPOTHETICAL
ERIGERON BISTIENSIS	FLEABANE , BISTI	NONE	WATCH			VERIFIED				
ERIOGONUM ALIQUANTUM	WILD BUCKWHEAT, CIMARRON	NONE	WATCH				HYPOTHETICAL			
ERIOGONUM LACHNOGYNUM VAR. SARHIAE	BUCKWHEAT, SARAH'S	NONE	WATCH			HYPOTHETICAL				
ESCOBARIA GUADALUPENSIS	CACTUS, GUADALUPE PINCUSHION	NONE	WATCH							HYPOTHETICAL
ESCOBARIA ORGANENSIS	CACTUS, ORGAN MOUNTAINS PINCUSHION	NONE	WATCH					VERIFIED		
FISSIDENS LITTLEI	FISSIDENS MOSS, LITTLE'S	NONE	WATCH					HYPOTHETICAL		
GRINDELIA ARIZONICA VAR. NEOMEXICANA	GUMWEED, NEW MEXICO	NONE	WATCH					HYPOTHETICAL		
HEDEOMA APICULATA	PENNYROYAL, MCKITTRICK	NONE	WATCH							VERIFIED
HELIANTHUS ARIZONENSIS	SUNFLOWER, ARIZONA	NONE	WATCH			HYPOTHETICAL				
HELIANTHUS NEGLECTUS	SUNFLOWER, NEGLECTED	NONE	WATCH							HYPOTHETICAL
HEXALECTRIS NITIDA	CORALROOT, SHINING	SPECIES OF CONCERN	WATCH					HYPOTHETICAL		HYPOTHETICAL
HEXALECTRIS REVOLUTA	CORALROOT, CHISOS MTN	PETITIONED	WATCH					HYPOTHETICAL		HYPOTHETICAL
HEXALECTRIS SPICATA VAR. ARIZONICA	CORALROOT, ARIZONA	NONE	WATCH					HYPOTHETICAL		HYPOTHETICAL
HEXALECTRIS SPICATA VAR. SPICATA	CORALROOT, CRESTED	NONE	WATCH					HYPOTHETICAL		
HYMENOXYIS AMBIGENS VAR. NEOMEXICANA	BITTERWEED, NEW MEXICO	NONE	WATCH					HYPOTHETICAL		
HYMENOXYIS VASEYI	BITTERWEED, VASEY'S	NONE	WATCH					HYPOTHETICAL		
JUSTICIA WRIGHTII	WATER-WILLOW, WRIGHT'S	SPECIES OF CONCERN	WATCH							VERIFIED
LIMOSELLA PUBIFLORA	MUDWORT, CHIRICAHUA	SPECIES OF CONCERN	WATCH					PERIPHERAL		
MENTZELIA CONSPICUA	BLAZINGSTAR, RIO CHAMA	NONE	WATCH				VERIFIED			
MENTZELIA SPRINGERI	BLAZINGSTAR, SPRINGER'S	NONE	WATCH	PERIPHERAL			PERIPHERAL			
MENTZELIA TODILTOENSIS	STICKLEAF, TODILITO	NONE	WATCH	HYPOTHETICAL	HYPOTHETICAL		HYPOTHETICAL			
NAMA XYLOPODUM	NAMA, CLIFF	NONE	WATCH					VERIFIED		VERIFIED
OENOTHERA ORGANENSIS	EVENING PRIMROSE, ORGAN MOUNTAINS	SPECIES OF CONCERN	WATCH					VERIFIED		
PACKERA SPELLENBERGII	GROUNDSEL, SPELLENBERG'S	SPECIES OF CONCERN	WATCH				HYPOTHETICAL			
PANICUM MOHAVENSE	PANICUM, MOHAVE	NONE	WATCH			HYPOTHETICAL		HYPOTHETICAL		
PERITYLE QUINQUEFLORA	ROCKDAISY, FIVE-FLOWERED	NONE	WATCH					HYPOTHETICAL		HYPOTHETICAL
PERITYLE STAUROPHYLLA VAR. STAUROPHYLLA	ROCKDAISY, NEW MEXICO	NONE	WATCH					VERIFIED		
PHACELIA SERRATA	PHACELIA, CINDER	SPECIES OF CONCERN	WATCH	PERIPHERAL						
PHACELIA SIVINSKII	SCORPIONWEED, SIVINSKI'S	SPECIES OF CONCERN	WATCH	VERIFIED						

PHEMERANTHUS HUMILIS	FLAMEFLOWER, PINOS ALTOS	SPECIES OF CONCERN	WATCH					HYPOTHETICAL	
PHLOX CARYOPHYLLA	PHLOX, PAGOSA	NONE	WATCH			HYPOTHETICAL	HYPOTHETICAL		
PHYSARIA NAVAJOENSIS	BLADDERPOD, NAVAJO	PETITIONED	WATCH			HYPOTHETICAL			
PHYSARIA NEWBERRYI VAR. YESICOLA	TWINPOD, YESO	NONE	WATCH	VERIFIED					
PHYSARIA PRUINOSA	BLADDERPOD, PAGOSA SPRINGS	NONE	WATCH			HYPOTHETICAL	HYPOTHETICAL		
POLYGALA RIMULICOLA VAR. RIMULICOLA	MILKWORT, GUADALUPE	NONE	WATCH						VERIFIED
RUBUS ALICEAE	RASPBERRY, SANTA FE	NONE	WATCH				PERIPHERAL		
SCROPHULARIA LAEVIS	FIGWORT, ORGAN MOUNTAIN	SPECIES OF CONCERN	WATCH					VERIFIED	
SENECIO CLIFFORDII	GROUNDSEL, CLIFFORD'S	NONE	WATCH			HYPOTHETICAL			
SILENE PLANKII	CATCHFLY, PLANK'S	NONE	WATCH		VERIFIED			HYPOTHETICAL	
SILENE THURBERI	CAMPION, THURBER'S	NONE	WATCH					HYPOTHETICAL	
SILENE WRIGHTII	CATCHFLY, WRIGHT'S	NONE	WATCH		HYPOTHETICAL			VERIFIED	
SPHAERALCEA PROCERA	GLOBEMALLOW, PORTER	NONE	WATCH					HYPOTHETICAL	
STELLARIA PORSILDII	STARWORT, PORSILD'S	NONE	WATCH					HYPOTHETICAL	
TALINUM BRACHYPODIUM	FAMEFLOWER, LAGUNA	NONE	WATCH	HYPOTHETICAL	HYPOTHETICAL				
VALERIANA TEXANA	VALERIAN, GUADALUPE	NONE	WATCH						VERIFIED
VAUQUELINIA CALFORNICA SSP. PAUCIFLORA	ROSEWOOD, ARIZONA	SPECIES OF CONCERN	WATCH					HYPOTHETICAL	

STATUS DEFINITIONS

THREATENED= Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. (Designated by the USFWS)

ENDANGERED= The classification provided to a species in danger of extinction within the foreseeable future throughout all or a significant portion of its range. (Designated by the USFWS)

BLM SENSITIVE= (a) Species is a federally designated candidate or proposed for ESA listing or has proposed critical habitat, or is a delisted species within 5 years of delisting; (b) Species is native to BLM-administered lands for which the BLM has the capability to significantly affect the conservation status through management; (c) There is evidence that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of its range; (d) The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

BLM WATCH= An informal list of species that are declining or otherwise rare, and occur peripherally to BLM land or hypothetically occur on BLM land, or are species that are declining or may decline in the future, but do not meet the criteria for sensitive designation. Species on the watch list have no protection under BLM policy. No action via NEPA or coordination with species specialists or outside agencies or entities is required for the completion of land use activities. The list represents species for which additional information on rarity, occurrence, and population trends is needed before further consideration for BLM sensitive designation can be given.

PETITIONED= Positive 90-day finding. Consensus to amend the status of a species based on the support of adequate biological data. (Designated by the USFWS)

SPECIES OF CONCERN= Refers to species which might be in need of concentrated conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. At one extreme, there may only need to be periodic monitoring of populations and threats to the species and its habitat. At the other extreme, a species may need to be listed as a Federal threatened or endangered species. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species. (Designated by the USFWS)



United States
Department of
Agriculture

Forest
Service

Southwestern Region
Regional Office

333 Broadway SE
Albuquerque, NM 87102
FAX (505) 842-3800
V/TTY (505) 842-3292

File Code: 2450

Date: October 31, 2017

Mr. Tim Thibault
Henry E. Huntington Library
1151 Oxford Road
San Marino, CA. 91108

Dear Mr. Thibault:

The USDA Forest Service has approved your request to collect botanical specimens on USFS lands in the Southwestern Region in accordance with the free-use regulations as written in 36 CFR 223.5-10.

Timely action is required on your part to complete the process. Enclosed are two (2) copies of the permit with my signature as Forest Officer. You will need to sign both copies where indicated as the Permittee and return one (1) copy to me. I have included an addressed return envelope for your convenience.

The additional enclosures are for your records. As indicated on the permit, the permit and the additional information must be with you in the field at all times.

Your permit does not authorize the collection of any federally listed or regionally sensitive species. However, if you do encounter a federally listed species in the field, we ask that you inform the Regional Botanist (contact information below), as well as the local Forest Service Supervisor's Office or Ranger District Office of the species and its location. This information will assist ongoing efforts to compile records of our sensitive species populations.

If you have any questions regarding the terms and conditions or other aspects of this permit, please do not hesitate to contact me at (505) 842-3423 or ahargrave@fs.fed.us. Technical questions related to your collection activities should be directed to Kathryn Kennedy, our Regional Botanist at (505) 842-3263 or kathrynlkennedy@fs.fed.us.

I hope you have both a safe and productive collection season.

Sincerely,

ASHTON HARGRAVE
Forest Officer

Enclosures: FS-2400-8 #RO-301, Small population addendum, Wilderness addendum, Federal threatened-endangered plant list, USFS R3 Regional Forester's sensitive species: plants
cc:



Region: Southwestern
 National Forest: All
 Ranger District: All

**FOREST PRODUCTS FREE USE PERMIT
 PERSONAL USE ONLY (Not for Resale)**
 (Ref. FSM 2460 and FSH 2409.18)

Permit FS-2400-8 (11/2003)
 OMB No. 0596-0085
 Expires 01/31/2014

U.S. DEPARTMENT OF AGRICULTURE – FOREST SERVICE

Permittee's Name and Complete Address:			Permit No.	Preparation Date	
Name:	Tim Thibault		RO-301		
Address:	Henry E Huntington Library		Effective Date	Termination Date	Load Ticket Numbers
	1151 Oxford Road		10/31/2017	11/1/2018	From: NA Thru: NA
City/State:	San Marino, CA		Product Plan		From: NA Thru: NA
Zip Code:	91108		Number: NA	Name: NA	
Permittee Identification		Type	Permit Area Description:		
		Drivers License	All national forests and national grass lands in the Southwestern Region (Arizona, New Mexico, Oklahoma and Texas) excluding Primitive Areas, Wilderness, Research Natural Areas, Botanical Areas, Scenic Areas, Forest Service Campgrounds or Picnic Areas. <u>Permittee is authorized to collect in the Gila and White Mountain Wilderness areas.</u>		
Vehicle(s) Information					
Year:	1999	Year:			
Make:	Honda	Make:			
Model:	Civic	Model:			
Color:	Black	Color:			
License:	4SMA111	License:			
State:	CA	State:			

Remarks:

Permittee shall contact the local Ranger District where collection is planned prior to beginning work for you safety and information on closed areas, special forest orders, etc.

Permittee shall acknowledge the cooperation of the USDA Forest Service in any publications, whenever possible

Permittee agrees to deposit the required voucher specimen in a recognized herbarium in either New Mexico or Arizona.

The Small Population Addendum (rev.8/2017) is included with this permit. The addendum defines additional terms and conditons for botanical collections from small populations. Permittee must carry the addendum at all times when collecting, and must be shown upon request to a Forest Service officer.

Permittee has been issued the Federal Threatened-Endangered Plant List of Arizona and New Mexico National Forests (undated) and the USFS R3 Regional Forester's Sensitive Species: Plants (2013). Permittee must carry both lists at all times when collecting, and must be shown upon request to a Forest Service officer.

Permittee is authorized to collect N/A (amt) of N/A (spp) from the above lists subject to all terms and conditions of the permit and small population addendum.


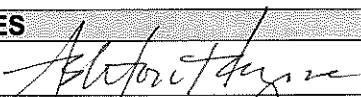
Name of Other Authorized Collector(s): Sean Lahmeyer, Brian Dorsey, Heather Huggins, Jim Folsom, Raquel Folgado, John Trager, Alicia Ruvalcaba, Karen Zimmerman, Dan Berry, Kelly Shunn.

For questions regarding the intent and use of collections authorized under this permit: Kathryn Kennedy (505) 842-3263
 Issuing Forest Officer: Ashton Hargrave (505) 842-3423

PRODUCT DESIGNATION					
Product	Species	Unit of Measure (UOM)	Quantity	Rate per Products (UOM)	Total Value (Free)
35 - Seed	General collection of all species subject to the remarks and conditions of the permit	Pound (lb)	Two pounds per species per collection site or 10% of the available material, whichever is less	\$2/lb	\$10
55 - Plants		Each (ea)		\$1/ea	\$20
Total Permit Value \$					\$30

PRODUCT QUANTITY REMOVAL RECORD											
Date	Time	Quantity Removed	Date	Time	Quantity Removed	Date	Time	Quantity Removed	Date	Time	Quantity Removed

SIGNATURES

_____ Date: 2 Nov 2017 _____ Date: 10/28/17
 PERMITTEE Date FOREST OFFICER Date

Under the Paperwork Reduction Act of 1995, an agency shall not conduct or sponsor, and no persons are required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0085. Public reporting burden for this collection of information is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

**SMALL POPULATION ADDENDUM
PERMIT NUMBER RO-301**

Thank you for your cooperation in observing best practices for protection of wild population viability and helping ensure materials are used, documented, and disposed of in a manner that meets highest priority needs of sensitive species.

Additional Terms and Conditions for Botanical Collection Permits from Small Populations

1. The Permittee must obtain permission from the Regional Botanist (contact information below) to study and/or collect from newly discovered listed species, SCC, or FSS species populations prior to beginning such work.
2. If populations less than 25 individuals are encountered no voucher specimens should be collected, nor manipulative studies conducted. The populations should be documented photographically, preferably digitally, and include information about locality, GPS coordinates, date and photographer. Such documentation shall be submitted to designated herbaria in lieu of a voucher specimen and to the Regional Botanist.
3. For populations of 100 individuals or less, herbarium specimen collections shall be limited to collection of diagnostic plant parts and not the removal of whole plants. Further documentation using photographs of the vouchered plant would be helpful to include with the specimens obtained.
4. The permittee shall provide the Forest Service with one copy of each publication or report resulting from collections in small populations.
5. The permittee shall acknowledge the cooperation of the USDA Forest Service in any publications, whenever possible.
6. Equipment used to obtain plant parts and manipulate flowers shall be cleaned between plant populations to avoid the transference of disease organisms.
7. The Permittee shall seek written permission from the Forest Service to convey any materials collected from small populations to a third party prior to conveyance.
8. The Permittee shall keep materials collected from small populations separated by population source and within populations by maternal lines if possible. Separate collections of fruit/seed from each individual plant into separate paper coin envelopes or similar appropriately-sized sturdy paper envelopes. The Permittee shall keep seed produced in ex-situ studies labeled as such and separate from wild-collected population samples. Do not dispose of unused seed. Priority for any excess wild collected seed, or seed or other materials produced in the study will be for secure gene/seed banking, DNA samples, or tissue banking to meet future research and recovery needs. Contact the Regional Botanist for assistance.

Important Contact Information

Kathryn Kennedy
Regional Botanist
333 Broadway Boulevard SE
Albuquerque, NM. 87102
kathrynlkennedy@fs.fed.us
(505) 842-3263

**WILDERNESS ADDENDUM
PERMIT NUMBER RO-301**

Requirements for Collection of Botanical Specimens in Wildernesses:

1. Collections may occur in the following wildernesses:
New Mexico National Forest
 - a. **Gila National Forest:** Gila
 - b. **Lincoln National Forest:** White Mountain
2. Limit of three people at one time in the sampling group, unless otherwise approved by District Ranger or Forest Supervisor. Transportation will be by foot or horseback. No motorized equipment or mechanical transport is allowed.
3. In addition to contacting the appropriate Ranger District as indicated in the Remarks section of the permit, (FS 2400-8), the following people shall be notified at least **48** hours prior to collection on the listed Forest, with the following information – when and where collections will occur, how many people in the group, and duration of trip:
New Mexico National Forest
 - a. Gila National Forest: Christa Osborn, (575) 388-8421
 - b. Lincoln National Forest: Rafael Castanon, (575) 434-7373
4. Provide a summary of when and where collections actually occurred to contacts listed in #3 above within one month after collections were made.
5. Collection teams shall follow Leave No Trace Practices. For information on Leave No Trace see <http://www.lnt.org/programs/lnt7/index.html>.
6. Some wildernesses have special regulations which must be followed.
7. Plants will not be recollected from the same area in wilderness without prior approval from the Regional Botanist, Kathryn Kennedy, (505) 842-3263, email: kathrynlkennedy@fs.fed.us

USFS R3 REGIONAL FORESTER'S SENSITIVE SPECIES: PLANTS - 2013

Common Name	Scientific Name	Forest(s)
TUFTED SAND VERBENA	<i>Abronia bigelovii</i>	CAR, SFE
PIMA INDIAN MALLOW	<i>Abutilon parishii</i>	COR, TON
WRIGHT'S DOGWEED	<i>Adenophyllum wrightii</i> var. <i>wrightii</i>	GIL
TONTO BASIN AGAVE	<i>Agave delamateri</i>	COC, PRE, TON
HOHOKAM AGAVE	<i>Agave murpheyi</i>	TON
SANTA CRUZ STRIPED AGAVE	<i>Agave parviflora</i> ssp. <i>parviflora</i>	COR
PHILLIPS' AGAVE	<i>Agave phillipsiana</i>	COC, PRE
TRELEASE AGAVE	<i>Agave schottii</i> var. <i>treleasei</i>	COR
SACRED MOUNTAIN AGAVE	<i>Agave verdensis</i>	COC
PAGE SPRINGS AGAVE	<i>Agave yavapaiensis</i>	COC
GOODDING'S ONION	<i>Allium gooddingii</i>	A-S, COR, GIL, LIN
SAIYA	<i>Amoreuxia gonzalezii</i>	COR
LARGE-FLOWERED BLUE STAR	<i>Amsonia grandiflora</i>	COR
MOGOLLON DEATH CAMAS	<i>Anticlea mogollonensis</i> (= <i>Zigadenus m.</i>)	GIL
CHAPLINE'S COLUMBINE	<i>Aquilegia chaplinei</i> (= <i>A. chrysantha</i> var. <i>chaplinei</i>)	LIN
CHIRICAHUA ROCK CRESS	<i>Arabis tricornuta</i>	COR
MT. DELLENBAUGH SANDWORT	<i>Arenaria aberrans</i>	COC, KAI, PRE, TON
LEMMON MILKWEED	<i>Asclepias lemmonii</i>	COR
GREENE MILKWEED	<i>Asclepias uncialis</i> ssp. <i>uncialis</i>	A-S, CIB, COR, GIL, PRE, SFE
ZUNI MILKVETCH	<i>Astragalus accumbens</i>	CIB
GUMBO MILKVETCH	<i>Astragalus ampullarius</i>	KAI
TALL MILKVETCH	<i>Astragalus altus</i>	LIN
MAGUIRE'S (COPPERMINE) MILKVETCH	<i>Astragalus cobrensis</i> var. <i>maguirei</i>	COR
MARBLE CANYON MILKVETCH	<i>Astragalus cremnophylax</i> var. <i>hevronii</i>	KAI
CLIFF MILKVETCH	<i>Astragalus cremnophylax</i> var. <i>myriorrhaphis</i>	KAI
VILLOUS GROUNDCOVER MILKVETCH	<i>Astragalus humistratus</i> var. <i>crispulus</i>	A-S, CIB, GIL
HUACHUCA MILKVETCH	<i>Astragalus hypoxylus</i>	COR
KERR'S MILKVETCH	<i>Astragalus kerrii</i>	LIN
CHACO MILKVETCH	<i>Astragalus micromerius</i>	CIB, SFE
PAGOSA MILKVETCH	<i>Astragalus missouriensis</i> var. <i>humistratus</i>	CAR
RIPLEY MILKVETCH	<i>Astragalus ripleyi</i>	CAR
RUSBY'S MILKVETCH	<i>Astragalus rusbyi</i>	COC, KAI
ONE-FLOWERED MILKVETCH	<i>Astragalus wittmannii</i>	CIB
AYENIA	<i>Ayenia jaliscana</i> (= <i>A. truncata</i>)	COR
SIERRA BLANCA KITTENTAILS	<i>Besseya oblongifolia</i>	LIN
CRENULATE MOONWORT	<i>Botrychium crenulatum</i>	COC
BUSH-VIOLET	<i>Browallia eludens</i>	COR
PECOS MARIPOSA LILY	<i>Calochortus gunnisonii</i> var. <i>perpulcher</i>	SFE
CHILTEPIN	<i>Capsicum annuum</i> var. <i>glabriusculum</i>	COR
CHIHUAHUAN SEDGE	<i>Carex chihuahuensis</i>	COR, TON
COCHISE SEDGE	<i>Carex ultra</i> (= <i>C. spissa</i> var. <i>ultra</i>)	COC, COR, PRE, TON

Common Name	Scientific Name	Forest(s)
SHOOTINGSTAR GERANIUM	<i>Geranium dodecatheoides</i>	LIN
BARTRAM STONECROP	<i>Graptopetalum bartramii</i>	COR
FLAGSTAFF PENNYROYAL	<i>Hedeoma diffusum</i>	COC, KAI, PRE
ARIZONA SNEEZEWEED	<i>Helenium arizonicum</i>	A-S, COC
ARIZONA SUNFLOWER	<i>Helianthus arizonensis</i>	A-S, COC
RUTTER'S FALSE GOLDENASTER	<i>Heterotheca rutteri</i>	COR
EASTWOOD ALUM ROOT	<i>Heuchera eastwoodiae</i>	A-S, COC, PRE, TON
ARIZONA ALUM ROOT	<i>Heuchera glomerulata</i>	A-S, COR, TON
SANDIA ALUM ROOT	<i>Heuchera pulchella</i>	CIB
CAPITAN PEAK ALUMROOT	<i>Heuchera woodsiaephila</i>	LIN
COLEMAN'S CRESTED CORALROOT	<i>Hexalectris colemanii</i>	COR
CHISOS MT. CRESTED CORALROOT	<i>Hexalectris revoluta</i>	LIN
WOOTON'S ALUMROOT	<i>Heuchera wootonii</i>	LIN
ARIZONA CORALROOT	<i>Hexalectris spicata</i> var. <i>arizonica</i>	COR, GIL, LIN
TEXAS PURPLE-SPIKE	<i>Hexalectris warnockii</i>	COR
MOGOLLON HAWKWEED	<i>Hieracium brevipilum</i> (= <i>H. fendleri</i> var. <i>mogollense</i>)	A-S, GIL
RUSBY HAWKWEED	<i>Hieracium abscissum</i> (= <i>H. rusbyi</i>)	COR, GIL
NEW MEXICO BITTERWEED	<i>Hymenoxys ambigens</i> var. <i>neomexicana</i>	COR
TALL BITTERWEED	<i>Hymenoxys brachyactis</i>	CIB
SIERRA BLANCA CLIFF DAISY	<i>Ionactis elegans</i> (= <i>Chaetopappa e.</i>)	LIN
KAIBAB BLADDERPOD	<i>Lesquerella kaibabensis</i>	KAI
LEMON LILY	<i>Lilium parryi</i>	COR
WOOD LILY	<i>Lilium philadelphicum</i>	LIN, SFE
CHIRICAHUA MUDWORT	<i>Limosella pubiflora</i>	COR
ALAMOS DEER VETCH	<i>Lotus alamosanus</i>	COR
HORSESHOE DEER VETCH	<i>Lotus mearnsii</i> var. <i>equisolensis</i>	TON
HUACHUCA MOUNTAINS LUPINE	<i>Lupinus huachucanus</i>	COR
BROADLEAF LUPINE	<i>Lupinus latifolius</i> ssp. <i>leucanthus</i>	PRE
LEMMON'S LUPINE	<i>Lupinus lemmonii</i>	COR
MAPLELEAF FALSE SNAPDRAGON	<i>Mabrya acerifolia</i> (= <i>Maurandya a.</i>)	TON
SUPINE BEAN	<i>Macroptilium supinum</i>	COR
ARIZONA MANIHOT	<i>Manihot davisiae</i>	COR
CHAMA BLAZING STAR	<i>Mentzelia conspicua</i>	CAR, SFE
SPRINGER'S BLAZING STAR	<i>Mentzelia springeri</i>	SFE
WIGGINS MILKWEED VINE	<i>Metastelma mexicanum</i> (= <i>Cynanchum wigginsii</i>)	COR
LADIES'-TRESSES	<i>Microthelys rubrocallosa</i> (= <i>Schiedeella r.</i> , <i>Spiranthes r.</i>)	LIN
SOUTHWESTERN MUHLY	<i>Muhlenbergia palmeri</i> (= <i>M. dubioides</i>)	COR
SYCAMORE CANYON MUHLY	<i>Muhlenbergia elongata</i> (= <i>M. xerophila</i>)	COR
HEARTLEAF GROUNDSEL	<i>Packera cardamine</i> (= <i>Senecio cardamine</i>)	A-S, GIL
TOUMEY GROUNDSEL	<i>Packera neomexicana</i> var. <i>toumeyi</i> (= <i>Senecio n.</i> var. <i>t.</i>)	COR, TON
SPELLENBERG'S GROUNDSEL	<i>Packera spellenbergii</i> (= <i>Senecio s.</i>)	CIB
VIRLET PASPALUM	<i>Paspalum virletii</i>	COR
ARIZONA PASSIONFLOWER	<i>Passiflora arizonica</i>	COR

Common Name	Scientific Name	Forest(s)
GALIURO SAGE	<i>Salvia amissa</i>	COR, TON
MEARNS SAGE	<i>Salvia dorrii</i> ssp. <i>mearnsii</i>	COC, PRE
CHIRICAHUA MOUNTAIN BROOKWEED	<i>Samolus vagans</i>	COR
MIMBRES FIGWORT	<i>Scrophularia macrantha</i>	GIL
NEW MEXICAN STONECROP	<i>Sedum integrifolium</i> ssp. <i>neomexicana</i>	LIN
HUACHUCA GROUNDSEL	<i>Senecio multidentatus</i> var. <i>huachucanus</i> (=s. <i>huachucanus</i>)	COR
NODDING BLUE-EYED GRASS	<i>Sisyrinchium cernuum</i>	COR
GUADALUPE MOUNTAINS GOLDENROD	<i>Solidago wrightii</i> var. <i>guadalupensis</i>	LIN
GUADALUPE MESCAL BEAN	<i>Sophora gypsophila</i> var. <i>guadalupensis</i>	LIN
PORSILD'S STARWORT	<i>Stellaria porsildii</i>	COR, GIL
LEMMON'S STEVIA	<i>Stevia lemmonii</i>	COR
GUADALUPE JEWELFLOWER	<i>Streptanthus sparsiflorus</i>	LIN
PINOS ALTOS FLAME FLOWER	<i>Talinum humile</i>	COR, GIL
TEPIC FLAME FLOWER	<i>Talinum marginatum</i>	COR
ARAIPA WOODFERN	<i>Thelypteris puberula</i> var. <i>sonorensis</i>	COR, TON
SONORAN NOSEBURN	<i>Tragia laciniata</i>	COR
MOGOLLON CLOVER	<i>Trifolium longipes</i> ssp. <i>neurophyllum</i> (=T. <i>neurophyllum</i>)	A-S, GIL
TUMAMOC GLOBEBERRY	<i>Tumamoca macdougallii</i>	COR
SHADE VIOLET	<i>Viola umbraticola</i>	COR
DEFINITIONS		
1	Species is proposed for federal listing, and will be removed from the RFSS list if/once the final rule is published implementing the Federal protections provided by the ESA.	
A-S	Apache-Sitgreaves National Forests	
CAR	Carson National Forest	
CIB	Cibola National Forest	
COC	Coconino National Forest	
COR	Coronado National Forest	
GIL	Gila National Forest	
KAI	Kaibab National Forest	
KRB	Kiowa/Rita Blanca National Grasslands	
LIN	Lincoln National Forest	
PRE	Prescott National Forest	
SFE	Santa Fe National Forest	

Federal Threatened-Endangered Plant List
Arizona and New Mexico National Forests

<u>Scientific Name</u>	<u>Common Name</u>	<u>State</u>	<u>Forest</u>
<i>Argemone pleiacantha</i> ssp. <i>pinnatisecta</i>	Sacramento prickly poppy	New Mexico	Lincoln
<i>Cirsium vinaceum</i>	Sacramento Mountains thistle	New Mexico	Lincoln
<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	Kuenzler's hedgehog cactus	New Mexico	Lincoln
<i>Erigeron rhizomatous</i>	Zuni fleabane	New Mexico	Cibola
<i>Hedeoma todsenii</i>	Todsen's pennyroyal	New Mexico	Lincoln
<i>Ipomopsis sanciti-spiritus</i>	Holy Ghost ipomopsis	New Mexico	Santa Fe
<i>Coryphantha scheeri</i> var. <i>robustispina</i>	Pima pineapple cactus	Arizona	Coronado
<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>	Arizona hedgehog cactus	Arizona	Tonto
<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i>	Huachuca water umbel	Arizona	Coronado
<i>Purshia subintegra</i>	Arizona cliffrose	Arizona	Coconino, Tonto
<i>Senecio franciscanus</i>	San Francisco Peaks groundsel	Arizona	Coconino
<i>Spiranthes delitescens</i>	Canelo Hills ladies'-tresses	Arizona	Coronado