Boyce Thompson Arboretum and Desert Legume Program's Search for the Wild *Astragalus*

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The Boyce Thompson Arboretum/University of Arizona Desert Legume program (DELEP) is achieving national and international recognition for its seed bank. Portions of the DELEP seed bank are being backed up at the National Center for Genetic Resources Preservation in Fort Collins, Colorado and the Svalbard Global Seed Vault in Norway. DELEP's collection is now listed on the Botanic Gardens International database, which further raises its visibility and access to researchers. In analyzing DELEP's holdings, there are approximately 187 native taxa to Arizona either not represented or with insufficient seed to distribute. Excluding the 90 *Astragalus* taxa, collecting the remaining taxa for seed banking efforts and herbarium vouchers in support of the *Legumes of Arizona – An Illustrated Flora and Reference* project is a priority over the next several years.

As Arizona has roughly 370 legume species, one may wonder why DELEP with its 1,359 species from around the world is missing so many from Arizona. First of all, due to the variety of habitats in Arizona, some of the taxa are not necessarily from the desert or arid lands and were not initially targeted for the collection. However, with the research being done for the *Legumes of Arizona – An Illustrated Flora and Reference*, it now makes it important to collect seeds and herbarium vouchers whether they are from an arid area or not. Secondly, 90 of the taxa are from the genus *Astragalus*, which can be very hard to differentiate and gather.

The variation of the Arizona landscape makes seed collecting a challenge as the best time to collect seeds varies by species and can be anywhere from April through October. The timing of rainfall also makes the timing of seed collecting more an art than a science.

Excluding *Astragalus* from the targeted list makes for a fairly manageable number to focus on and reduces many of the identification problems associated with finding plants in the wild. However, in practice, it is difficult to ignore this fascinating genus. *Astragalus* is considered the largest genus of vascular plants in the world, with over 2,500 species according to the *Astragalus* website maintained at the University of Arizona. It is a world so large, that many avoid it as it seems impossible to actually master such a large subject.

Our first expedition was planned for June to Lyman Lake State Park and was to focus on gathering seed from *Lathyrus eucosmos, Lathyrus laetivirens, Lathyrus lanswertii, Trifolium mucronatum* and *Vicia americana*. However, the siren song of *Astragalus nutriosensis* was hard to ignore. A rare and endangered species, known from only a few locations near Nutrioso Creek in the White Mountains, we felt compelled to drive the additional 20 miles and search for this species. Sadly, the Wallow Fire was burning and we diverted to Homolovi State Park and the southern part of the Great Basin Desert. The outlines of the Wallow Fire encircled the known range of *A. nutriosensis* and it was difficult to monitor the Wallow Fire and not wonder how this rare plant was faring.

The Great Basin Desert, not being as diverse as the Sonoran, allowed us to settle in and not be bombarded by a wealth of species. In fact, as far as Fabaceae, the invasive *Alhagi camelorum* or Camelthorn from Central Asia was everywhere and growing up through the asphalt road in many places. It is easy to collect but not a new species for DELEP nor on our targeted list of Arizona Legumes. Other legume species were identified but it was too early to collect seed.

Then a shout went up that a species of *Astragalus* was found with seed pods. According to the Guidelines for Seed Collecting from the Center for Plant Conservation, no seeds could be collected until many other plants of the same species had been identified. The hunt for *Astragalus* was on. By the end of the day, two different species had been identified with a sufficient population in seed for us to collect. Our crew of 5 seed gatherers were hooked on *Astragalus*. However, *Parryella filifolia* with its scent of lemon furniture polish made us vow to return soon.

Alhagi camelorum (M Siegwarth)

Collecting *Astragalus* sp. seed (M. Siegwarth)

In July, we were able to travel to Lyman Lake State Park and search for our original targeted list, but concerns about the *A. nutriosensis* and the Wallow Fire made us schedule some additional time to search for it. Although several species on our list were identified, such as *Desmanthus cooleyi*, only *Astragalus* came through with seed pods to collect. Once more, two different species were gathered but five or six different species were identified. On this trip, our team had grown to eight enthusiasts, and again, *Astragalus* won their hearts. Close relatives, such as *Hoffmannseggia* and *Dalea* tried to draw our attention but the diversity of *Astragalus* continued to fascinate us.

Our last trip came in September and we believed we could do both parks in the same time period, since we had already identified flowering populations and could easily just go back and gather the seed pods. Although 10 species were gathered, three of them were *Astragalus*. Three other species of *Astraglus* were found but not yet in seed so were marked for a future trip. The elusive *A. nutriosensis* remained hidden from our searches. After three seed collecting trips, 14 accessions were added to the DELEP collection, half of them *Astragalus*. The only species collected on our original list was *Vicia americana*. In short, collecting seeds is more difficult than it sounds but also much more fun.

If this article has piqued your interest in *Astragalus*, the University of Arizona website http://loco.biosci.arizona.edu/astragalus/astragalus_home.htm has more information. Contact Boyce Thompson Arboretum to see how you can join the hunt for the wild *Astragalus* and other species from the Fabaceae family.

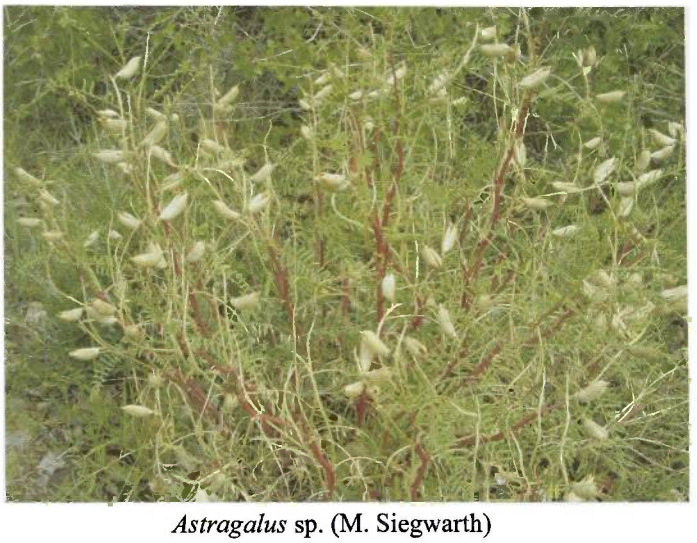
Astragalus sp. (M. Siegwarth)

Hoffmannseggia sp. (K Stone)

Astragalus sp. (M. Siegwarth)

Astragalus sp. (M. Siegwarth)

Astragalus sp. (M. Siegwarth)



Astragalus sp. (M. Siegwarth)

Homolovi State Park, Arizona (M. Siegwarth)

Lyman Lake State Park, Arizona (M. Siegwarth)