

Seeds of Success: 2015 Field Season Report



Photo: Chicago Botanic Garden Intern, Charlotte Crowder, collecting seed at Jack Wade Creek.

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Introduction

In 2000, the Bureau of Land Management (BLM) engaged in a collaborative effort to establish a seed collection for native plants nationwide. The seed collection was specifically intended for conservation purposes, particularly for restoration and emergency fire rehabilitation projects, but also intended to bank seeds for future needs. To meet these goals protocols for documentation and methodologies were established for seed collection at the population level. This effort was part of a nationwide, interagency program known as “Seeds of Success” (SOS), and for several years was also a part of the international “Millennium Seed Bank Partnership” of the Royal Botanic Gardens, Kew in the United Kingdom.

Since 2007, the BLM Alaska State Office has partnered with the Alaska Natural Heritage Program (AKNHP), Alaska Center for Conservation Science at the University of Alaska Anchorage to collect seeds from targeted populations of Alaska native plants. To date AKNHP has made 656 SOS collections from 288 different species across Alaska (Figure 1). This report summarizes the 2015 SOS Field season where SOS collections were made, comments on challenges, and potential future SOS collection sites.

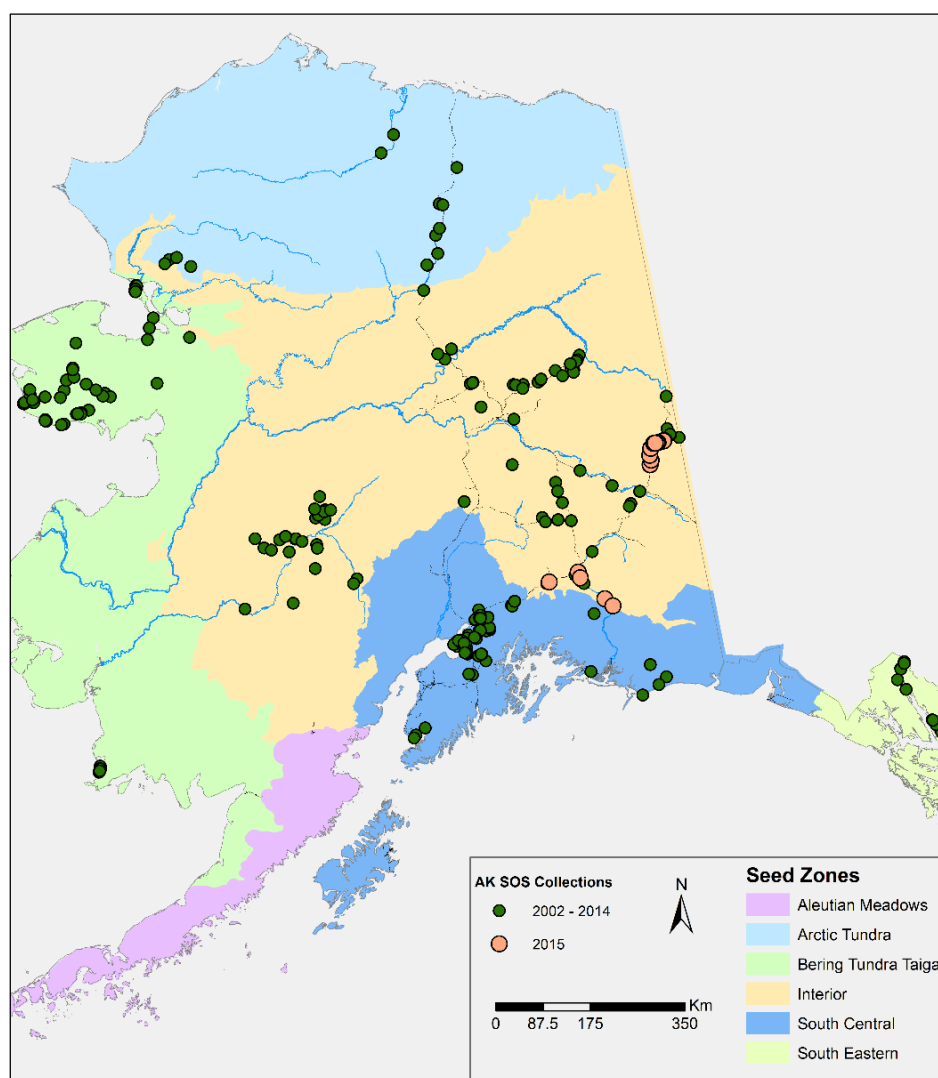


Figure 1. Alaska SOS collection sites since 2002.

Methods

The seed collecting team used the SOS national protocols for seed collections and associated voucher specimens and data. We attempted to achieve the recommended collection of 10,000 to 20,000 seeds from each species in a given plant population. However, 6,000 viable seeds at minimum are required for the SOS program. Seeds were gathered from at least 50 individual plants to maximize genetic diversity and collectors did not gather more than 20% of the seed produced by a population. Species of conservation concern, agricultural species, and species with recalcitrant seeds were not within the scope of the project; these, as well as non-native species, were not collected. Collecting efforts were focused on species with traits that would provide advantages in the contexts of stabilization, restoration, and rehabilitation. Seed collections were transferred to the Alaska Plant Materials Center, Division of Natural Resources, for processing, storage, and in some cases grown for an increase of seed quantity.

In addition to the seed collections, digital photographs and data on the location, habitat, associated species, landform, land use, geology, and soil type were recorded for each collection site. These data were submitted to the national program offices in Washington DC and copies are kept at AKNHP in Anchorage. Photographs are located in Appendix A and scanned data sheets are in Appendix B. Three voucher specimens were taken for each collection. These specimens were sent to the U.S. National Herbarium at the Smithsonian (US), the herbarium of the Museum of the North at the University of Alaska Fairbanks (ALA), and the herbarium the University of Alaska Anchorage (UAAH). Herbarium voucher data from UAAH can be viewed online



Figure 2. Jack Wade Creek Reclamation Project site.

at: <http://www.pnwherbaria.org/>. This project fell within the State of Alaska guidelines for non-commercial harvesting, and thus did not require a permit for collections on state land. Permits were acquired and are on file from Chitina Native Corporation, a Native Corporation managing land around Chitina and Glennallen. For the 2015 field season, SOS AK930 had a goal of 50 collections.

The scope of work was concentrated in the Yukon-Tanana Uplands ecoregion (Nowacki et al. 2001), specifically the area of Chicken in the Interior Seed Zone to compliment the Jack Wade Creek Reclamation Project (Figure 1; Figure 2). The Jack Wade Creek Reclamation Project, is located approximately 2 km east of the confluence of Jack Wade Creek and the Walker Fork of the Fortymile River. This site, like many of the tributaries of the Fortymile River, had historical mining operations in the 1930's and 1940's that included mechanical dredging. The upper section of Jack Wade Creek has current mining operations, while the lower section mining claims (toward the confluence of the Walker Fork) were abandoned in the 1980's. As a consequence of the historical mining operations, the project site was no longer able to provide habitat to support fish or wildlife populations (BLM 2015). The Jack Wade Creek Reclamation Project was used to

develop new reclamation techniques for placer-mined streams of the region (BLM 2015; Figure 2). Project construction began in June 2015 and ended late July 2015.

Three Chicago Botanic Garden (CBG) interns aided AKNHP staff for the Seeds of Success project this season. Scouting of the Copper River Basin for potential suitable sites was done by CBG Intern Charlotte Crowder on June 17 and 18 and data are summarized in Appendix C. A scouting trip of the Jack Wade Creek and surrounding town of Chicken was done by AKNHP staff and CBG Interns Charlotte Crowder and Jennifer MacMillan from July 7th – 9th. Seed collections were made from 8 July to 13 August 2015 in Chicken area with CBG interns Charlotte Crowder and Joel Shute.

Results

A total of 66 collections were made from 51 different species (Table 1). Ten collections were made in the Copper River Basin area, while the remainder were made in the Yukon-Tanana Uplands, specifically within the area of Chicken and the Fortymile River. Scouting trips were a valuable tool for finding plant populations in the peak of flower that enhanced accurate plant identification. Furthermore, scouting trips with the interns provided essential plant identification skills, practice in data and plant collection, and education of general Alaska ecology.

Copper River Basin Collections

Ten total collection were made from the Copper River basin, with eight originating from Chitina Native Corporation land (Figure 3). Six of the collections were grasses or sedges with the

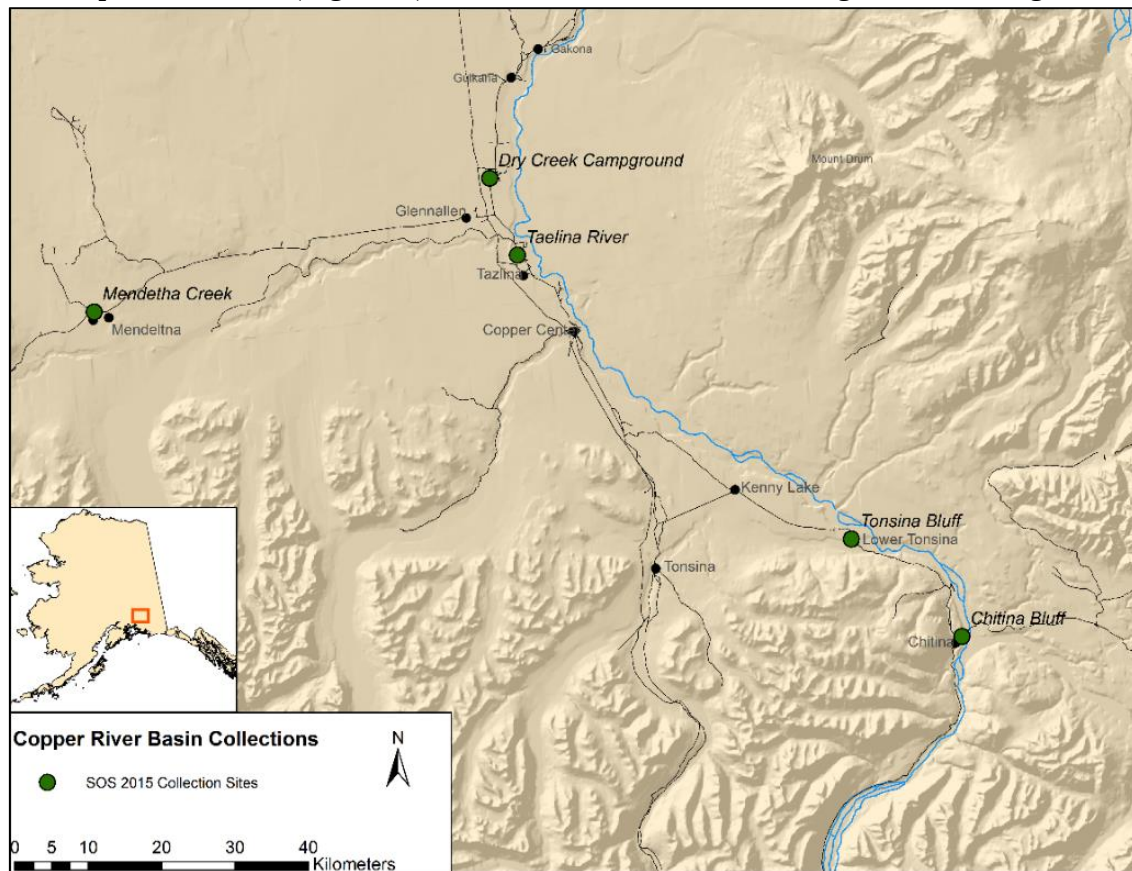


Figure 3. SOS Copper River Basin collections.

remainder being forb/herb species (Table 1). The Tonsina Bluff and Chitina Bluff sites were steppe bluff habitat, a rare ecosystem of Alaska that is characterized by open, graminoid-sagebrush dominated sites on steep, south-facing slopes (Figure 4). Steppe bluffs support a high proportion of Alaska endemic species and a high diversity of insects, including pollinators (Guinn and Armbruster 1985, Roland 1990). The steppe bluff habitat is rich in early seral species and the habitat benefits from periodic disturbance such as fire or



Figure 4. Steppe bluff habitat in Chitina area. Habitat of SOS collection of *Calamagrostis purpurascens*, AK930-648.

mass wasting events to prevent encroachment of competitive forest plant species. Additional collections in the Copper River Basin were made from floodplains and habitats adjacent to more recently disturbed substrates that harbored early to mid-seral stage graminoids.

Yukon-Tanana Uplands

A total of 56 seed collections from 12 site locations were collected in the Yukon-Tanana Uplands ecoregion, specifically in the vicinity of Chicken (Figure 5). There were 43 species collected this year from this region (Table 1). There were 24 SOS collections made in this region in 2011 and 19 collections in 2014 (Appendix D.; Duffy 2012, Fulkerson et al. 2014). Species were chosen that would provide reclamation value for the Jack Wade Reclamation site and for future riparian reclamation sites in the region. As with most SOS collections, generally these species are early seral species that are adapted to establish quickly, secure loose soil, and provide wildlife habitat. There were 12 sedge/rush species collected, which would be most suited for mesic to wet soil, shallow standing water, or gravel bar microsites (Table 1). Nine grass species were collected and would be best suited for mesic to dry soils, stream bank edges, and upland microsites (Table 1). Finally, seed was collected from 21 forb/herb species (Table 1). There are a wide range of habitats the collected forb and herb species originate from and include dry steep upland slopes, upland slopes, floodplains, gravel bars, point bars, and streambanks.

The MP 36.8 Taylor Highway site was a disturbed roadside pull off with a mix of forb and grass species and encroachment of *Alnus viridis* from the surrounding forest. Logging Cabin Creek provided easy access to riparian and gravel bar species of *Astragalus alpinus* and *Wilhelmsia physodes*. There was also a nearby wet sedge-*Equisetum fluviatile* meadow that provided significant collections of *Calamagrostis canadensis*, *Beckmannia syzigachne*, and *Carex saxatilis*. The general area was seasonally inundated with water and surrounded by thickets of *Salix glauca* that transitioned to black spruce forests. Collectable populations of *Artemisia tilesii* and *Achillea millefolium* ssp. *borealis* were present, however they were not ready for seed collection. The Dennison Creek Campground held a large population of *Oxytropis campestris* ssp. *gracilis* on the edge of the campground. There were nearby seasonally wet ponds filled with various *Carex* species, however the populations were not large enough or ripe for collecting. The area was surrounded by open black spruce forest, tussocks and sedges, and oxbow lakes. Gravel

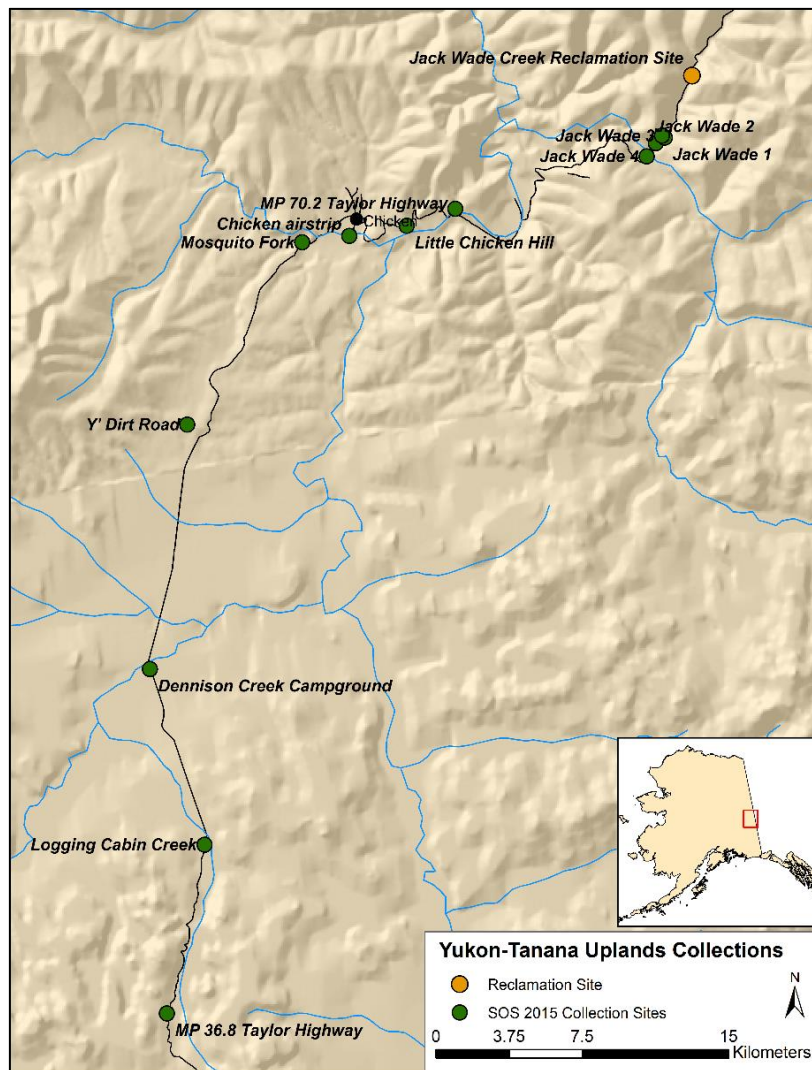


Figure 5. SOS 2015 Yukon-Tanana Uplands collections.

retrofracta (syn. = *Boechera retrofracta*), however they were past the appropriate seed collection stage. These gravel pits had interconnected back roads that paralleled the Taylor Highway, unseen from the highway. Exploration of these back roads would be recommended for future collections in the area. One such back road, known locally as Y' Dirt Road, was seen from the highway to lead up toward Taylor Mountain. There were large populations of *Elymus macrourus*, *Erigeron acris* ssp. *politus*, and *Carex bigelowii* along this road. Further up the road was not explored due to 'erratic target practice'. Further up the road should be scouted for more SOS populations to collect as the road crosses favorable SOS species habitat and reaches the mountain top.

bars along the West Fork of Dennison Creek were scouted and significant populations of *Carex utriculata* and *Erigeron acris* ssp. *politus* were found on streambanks but not collected due to other populations already located for collection. Similarly, populations of *Deschampsia cespitosa*, *Poa glauca*, and *Rorippa barbareifolia* were not large enough to make SOS collections from.

There are numerous large pullouts with gravel for transportation fill between Dennison Creek Campground and Chicken. These pullouts were usually surrounded by *Alnus viridis* and usually only contained *Hordeum jubatum*. Very few SOS type species were found at these sites or in large enough populations, most likely due to continual earth movement from construction. Some sites had productive populations of *Festuca rubra* and *Arabis holboellii* var.

The Mosquito Fork site was a prolific wet tussock meadow surrounded by open black spruce forest where seven SOS collections were made (Table 1). Collections were made in the general area along the river bank and roadside of this site including the meadow itself. Collections of *Carex canescens*, *Carex diandra*, *Carex aquatilis*, and *Geum macrophyllum* var. *perincisum* would be excellent grow-out species for restoration of the regional riparian habitats. *Gentiana barbata* (S3Q, BLM Sensitive) was found in a heavily disturbed roadside pullout of the Mosquito Fork; this population was originally recorded in 1981. Despite this being a rare species, a SOS collection was made for *ex situ* conservation as the site had evidence of recent off-road vehicle use with trampled plants, trash accumulation, and significant encroachment and competition of *Salix* spp., *Alnus viridus*, *Trifolium hybridum*, and *Hordeum jubatum*. Given the disturbance, invasive species competition, and competition with canopy-producing shrubs, the population may not persist in the future.



Figure 6. *Phacelia mollis* (S3, BLM Sensitive) at Chicken airstrip.

Chicken airstrip provided extra wetland species and a significant collection of *Castilleja caudata*. *Eleocharis palustris* has not been collected before for Alaska SOS but the species would be worthwhile to experiment for wetland reclamation purposes, especially in sites with shallow standing water. A population of *Phacelia mollis* (S3, BLM Sensitive) was observed in the parking area of the airstrip (Figure 6). Collections of species appropriate for dry rocky steep slopes or dry uplands were made at the MP 76 of the Taylor Highway (Figure 5; Table 1). One of these species was collected at this site in 2011 but the population was still large and persisting for SOS collecting and within SOS guidelines. *Phacelia mollis* was found at this site and in similar open rocky crops along the Taylor Highway toward the BLM Chicken Camp.

Jack Wade Creek

Seed collections from the Jack Wade Creek were collected downstream of the Jack Wade Collection site at the confluence of Jack Wade Creek and Walker Fork, near the Walker Fork Campground (Figure 7. SOS 2015 Jack Wade Creek collections.). Some collections were made in this area in 2014 (Figure 8) to compliment the reclamation site. *Carex saxatilis* (AK 930-693) was a repeat collection from the same population. Repeat collections in successive years are generally not advised for SOS protocols, however this population is abundant and prolific but future collections should wait several years. The gravel floodplain at the confluence of the two rivers (Jack Wade 4) was not as prolific and diverse in SOS species as anticipated. Future scouting along the Walker Fork upstream of the confluence is recommended for more riparian species and populations. This can be accessed by hiking on the west side of Walker Fork (west side of the bridge) as the water is not safe to cross on foot.

The Jack Wade 1 site was an excellent SOS collecting site where 12 collections were made. The site is an open gravel pit with mine tailings, optimal conditions for early-seral plant species, and adjacent to Jack Wade Creek and potential future reclamation location (BLM 2015). The Jack Wade 2 site was next to a pond and species were collected on mine tailings. The Jack Wade 3 site

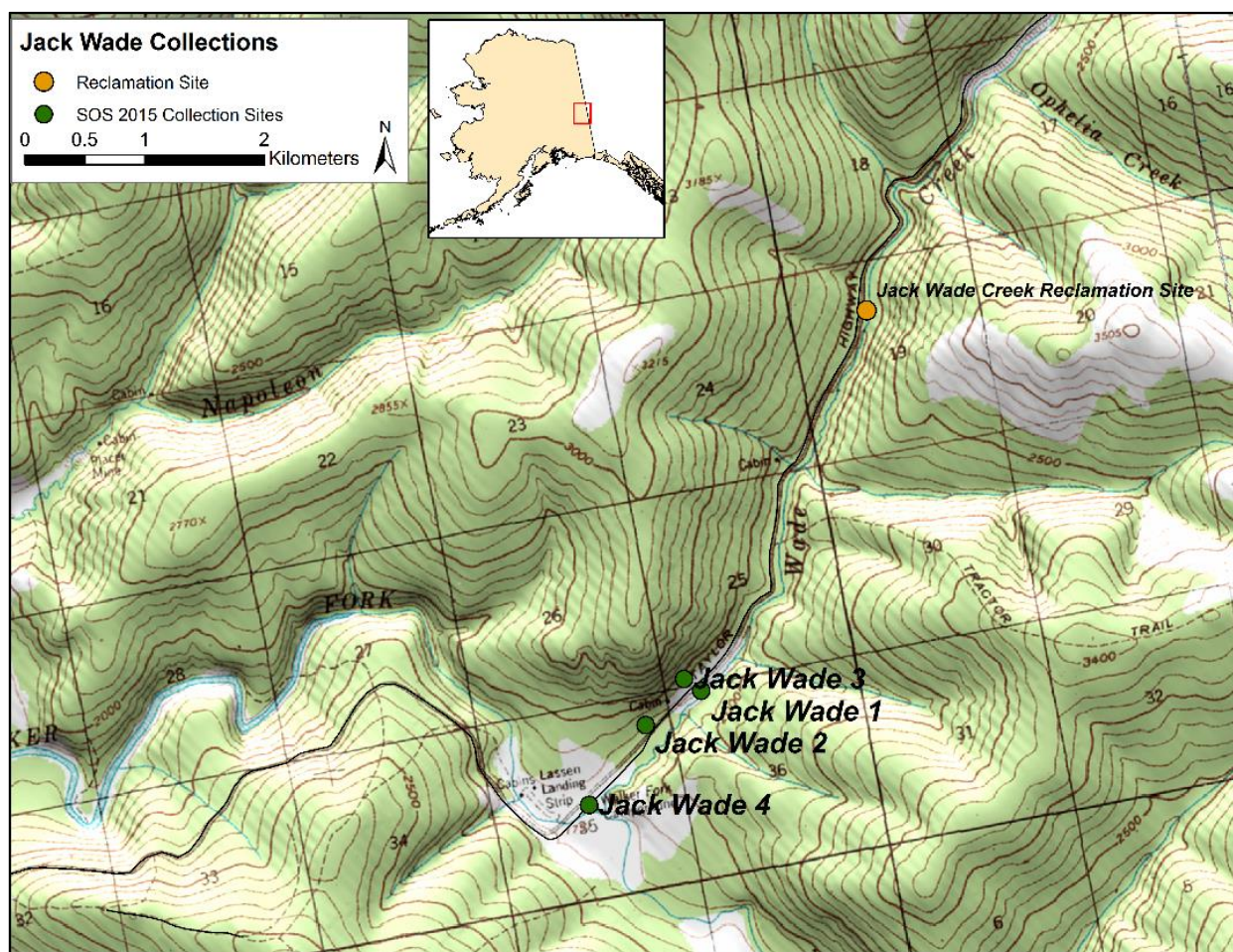


Figure 7. SOS 2015 Jack Wade Creek collections.

was a steppe bluff with an abundant population of *Calamagrostis purpurascens*. The collections made at these three sites were a mix of grasses, rushes, and forbs that are highly recommended to be increased for seed production.

There have been 96 collections made for the SOS program for this region (Figure 8; Appendix D.). Collections for this region are summarized in Appendix D. There are 99 collections from the region, but four were not assigned SOS collection numbers, due to insufficient seed count or fewer than 50 plants collected from.

Conclusion

In total, SOS AK930 made 66 collections for the 2015 field season. A majority of the collections were made within mining locations, providing a diverse amount of seed for future reclamation. Supplemental collections targeted early seral and open habitats. Seed was delivered to the Palmer Plant Materials Center and should be finished processing by early spring of 2016. Herbarium voucher specimens have been dispersed to appropriate herbaria and those held at UAAH are available online at www.pnwherbaria.org. The UAA Herbarium moved from its downtown Anchorage location to the UAA main campus at the Beatrice McDonald Hall, 3211 Providence Dr. in November 2014. During this move, two voucher specimens from 2007, AK 930-046 and AK 930-047, were found lost in an unsorted box. Neither the Smithsonian (US) nor UAAH had a copy of these voucher specimens. Labels were made and mailed the Smithsonian with the 2015

SOS vouchers. Invasive species presence and absence data were uploaded to AKEPIC. Rare plant species data observed were recorded in the AKNHP Rare Plant Database. Plant populations will be identified for future seed collection efforts along the Dalton Highway and AKNHP staff are working on plans for the 2016 field collecting season in this region.

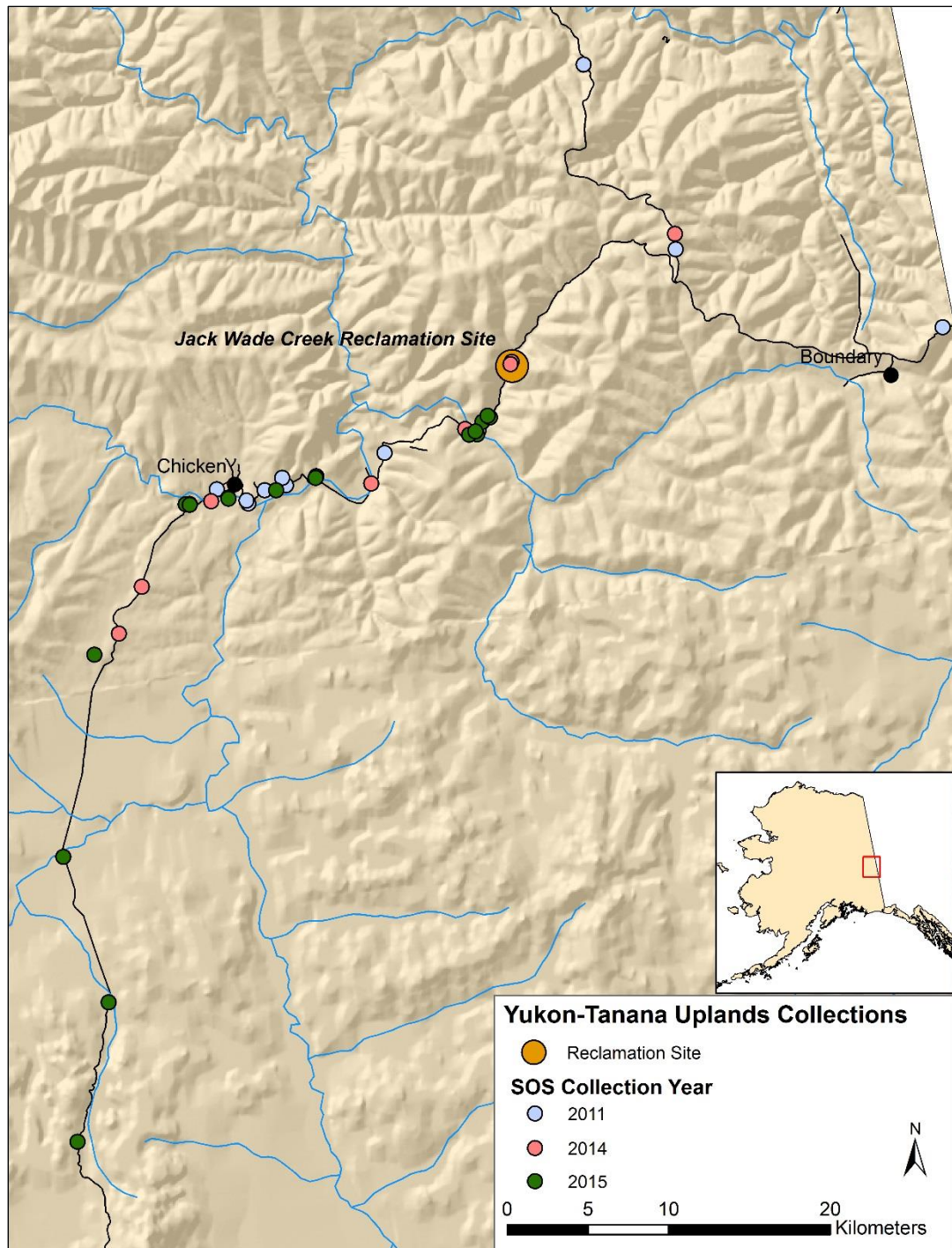


Figure 8. All SOS collections of the Chicken-Jack Wade region. Associated data are summarized in Appendix D.

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Table 1. Summary of SOS Collection in 2015. All collections originated from the Interior Seed Zone.

SOS Coll. Number	Species Name	Family	Site Location
AK930-643	<i>Carex canescens</i>	Cyperaceae	Mosquito Fork
AK930-654	<i>Trisetum spicatum</i>	Poaceae	MP 36.8 Taylor Highway
AK930-655	<i>Antennaria rosea</i> ssp. <i>confinis</i>	Asteraceae	MP 36.8 Taylor Highway
AK930-656	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	Poaceae	MP 36.8 Taylor Highway
AK930-657	<i>Chamerion angustifolium</i>	Onagraceae	MP 36.8 Taylor Highway
AK930-658	<i>Calamagrostis canadensis</i>	Poaceae	Logging Cabin Creek
AK930-659	<i>Carex saxatilis</i>	Cyperaceae	Logging Cabin Creek
AK930-660	<i>Beckmannia syzigachne</i>	Poaceae	Logging Cabin Creek
AK930-661	<i>Astragalus alpinus</i>	Fabaceae	Logging Cabin Creek
AK930-662	<i>Wilhelmsia physodes</i>	Caryophyllaceae	Logging Cabin Creek
AK930-663	<i>Oxytropis campestris</i> ssp. <i>gracilis</i>	Fabaceae	Dennison Creek Campground
AK930-664	<i>Elymus macrourus</i>	Poaceae	Y' Dirt Road
AK930-665	<i>Erigeron acris</i> ssp. <i>politus</i>	Asteraceae	Y' Dirt Road
AK930-666	<i>Carex bigelowii</i>	Cyperaceae	Y' Dirt Road
AK930-667	<i>Parnassia palustris</i>	Saxifragaceae	Jack Wade 2
AK930-668	<i>Dasiphora fruticosa</i>	Rosaceae	Jack Wade 2
AK930-669	<i>Oxytropis campestris</i> ssp. <i>gracilis</i>	Fabaceae	Jack Wade 2
AK930-670	<i>Luzula multiflora</i>	Juncaceae	Jack Wade 2
AK930-671	<i>Castilleja caudata</i>	Scrophulariaceae	Jack Wade 2
AK930-672	<i>Agrostis scabra</i>	Poaceae	Jack Wade 1
AK930-673	<i>Carex aquatilis</i>	Cyperaceae	Jack Wade 1
AK930-674	<i>Juncus castaneus</i>	Juncaceae	Jack Wade 1
AK930-675	<i>Beckmannia syzigachne</i>	Poaceae	Jack Wade 1
AK930-676	<i>Rorippa barbareifolia</i>	Brassicaceae	Jack Wade 1
AK930-677	<i>Chamerion latifolium</i>	Onagraceae	Jack Wade 1
AK930-678	<i>Juncus arcticus</i>	Juncaceae	Jack Wade 1
AK930-679	<i>Achillea millefolium</i> ssp. <i>borealis</i>	Asteraceae	Jack Wade 1
AK930-680	<i>Calamagrostis canadensis</i>	Poaceae	Jack Wade 1
AK930-681	<i>Deschampsia cespitosa</i> ssp. <i>cepitosa</i>	Poaceae	Jack Wade 1
AK930-682	<i>Saxifraga tricuspidata</i>	Saxifragaceae	Jack Wade 1
AK930-683	<i>Polygonum alpinum</i>	Polygonaceae	Jack Wade 1
AK930-684	<i>Calamagrostis purpurascens</i>	Poaceae	Jack Wade 3
AK930-685	<i>Gentianella propinqua</i>	Gentianaceae	Jack Wade 4
AK930-686	<i>Carex capillaris</i>	Cyperaceae	Jack Wade 4
AK930-687	<i>Elymus macrourus</i>	Poaceae	Jack Wade 4
AK930-688	<i>Luzula multiflora</i>	Juncaceae	Jack Wade 4
AK930-689	<i>Poa glauca</i>	Poaceae	Jack Wade 4
AK930-690	<i>Artemisia tilesii</i>	Asteraceae	Jack Wade 4

SOS Coll. Number	Species Name	Family	Site Location
AK930-691	<i>Hedysarum alpinum</i>	Fabaceae	Jack Wade 4
AK930-692	<i>Carex utriculata</i>	Cyperaceae	Jack Wade 4
AK930-693	<i>Carex saxatilis</i>	Cyperaceae	Jack Wade 4
AK930-694	<i>Papaver nudicaule</i> ssp. <i>americanum</i>	Papveraceae	MP 70.2 Taylor Highway
AK930-695	<i>Calamagrostis purpurascens</i>	Poaceae	MP 70.2 Taylor Highway
AK930-696	<i>Trisetum spicatum</i>	Poaceae	MP 70.2 Taylor Highway
AK930-697	<i>Arabis holboellii</i> var. <i>retrofracta</i>	Brassicaceae	MP 70.2 Taylor Highway
AK930-698	<i>Eriophorum scheuchzeri</i>	Cyperaceae	Little Chicken Hill
AK930-699	<i>Carex aquatilis</i>	Cyperaceae	Mosquito Fork
AK930-700	<i>Carex diandra</i>	Cyperaceae	Mosquito Fork
AK930-701	<i>Geum macrophyllum</i> var. <i>perincisum</i>	Rosaceae	Mosquito Fork
AK930-702	<i>Carex bigelowii</i>	Cyperaceae	Mosquito Fork
AK930-703	<i>Carex utriculata</i>	Cyperaceae	Mosquito Fork
AK930-704	<i>Gentiana barbata</i>	Gentianaceae	Mosquito Fork
AK930-705	<i>Castilleja caudata</i>	Scrophulariaceae	Chicken airstrip
AK930-706	<i>Geum macrophyllum</i> var. <i>perincisum</i>	Rosaceae	Chicken airstrip
AK930-707	<i>Comarum palustre</i>	Rosaceae	Chicken airstrip
AK930-708	<i>Eleocharis palustris</i>	Cyperaceae	Chicken airstrip

Appendix A. Photos

Located on USB Device

Appendix B. Scanned Data Sheets

Located on USB Device

Appendix C. Scouting Locations

Scouting notes by CBG Intern Charlotte Crowder on the Richardson Highway on 17 and 18 June 2015. Bold plant names are desirable SOS collections.

Latitude	Longitude	Location	Notes	Plant Community
61.67369	-145.162015		suggestion by Justin	not observed
61.95432	-145.35633	klutna river rd out of copper center	probably not good collecting location. Many private land signs along the easement to Klutina Lake. Good if you want to go down the cliff-side, I suppose.	not observed
62.082747	-145.4323	cliff like	walk beyond scenic pull-out parking	Artemisia (>1000), Achillea millefolium , CHAN
62.087165	-145.556553	Picho Dr.	N/A: could not find	not observed
61.4214	-145.1465833	Tieka River gravel bar access	mi 60 pull-off. There is another at mi 55.2.	LUAR , Astragalus , Salix, CHLA , taraxacum, mertensia paniculata, sheppherdia, CHAN , Alnus, leather leaf, (occasional) Artemisia , CACA4
61.46175	-145.1143833	Tonsina controlled use area	wet meadow E or road	(many) Carex , Poa, Salix, CHAN , LEGR , Sphagnum, B EGL , ALVI , Potentilla palustris, CACA4 , EMNI , VAUL
61.47433333	-145.1559833	near Alyeska Pipeline Pump # 12	mi 64.9. A powerline trail going uphill.	Open B EGL meadow under power lines, which runs W upslope 0.5 mi to a T junction where lines run N/S. Young spruce-poplar mosaic forest. Burn/thinned lowland N of pwerline trailhead
61.50353333	-145.20425	Access to roadside powerline	E roadside	Salix, Alnus, (woodland spp.), Hedysarum , Rubus, Rhianthus borealis, CHAN , grams , Mertensia, Petasites
62.071314	-145.434739	Hillside N of Tazlina River bridge	mi 112	not observed
61.77525	-145.1771167	Mtn W of Willow Lake	mi 89. photos of SE face from Rock Creek bridge	not observed
63.01229	-145.49081	below Paxon	wet meadow	Carex , CACA4 , Festuca , Rumex , Artemisia , CHAN
62.455899	-145.414706		mi 140-141. Aspen on W roadside. Suggestion by Eric.	
61.95529	-145.32509		Looks productive--gravel pit	
61.98275	-145.35291		same as last year, mowed/powerline	

Appendix D. List of SOS species from Chicken-Jack Wade Region

There were 94 collections made by the SOS team for the Chicken-Jack Wade region since 2011. The table below summarized data displayed in Figure 8. An Excel spreadsheet of this data with detailed SOS collection data is located in Appendix B.

Family	Species Name	Site Location	Year Collected	SOS Collection Number
Asteraceae	<i>Achillea millefolium</i> ssp. <i>borealis</i>	Jack Wade 1	2015	AK930-679
Asteraceae	<i>Antennaria rosea</i> ssp. <i>confinis</i>	MP 36.8 Taylor Highway	2015	AK930-655
Asteraceae	<i>Artemisia tilesii</i>	Jack Wade 4	2015	AK930-690
Asteraceae	<i>Crepis elegans</i>	Chicken	2011	AK930-374
Asteraceae	<i>Erigeron acris</i>	Chicken	2011	AK930-380
Asteraceae	<i>Erigeron acris</i> ssp. <i>politus</i>	Y' Dirt Road	2015	AK930-665
Asteraceae	<i>Taraxacum officinale</i> ssp. <i>ceratophorum</i>	Chicken	2011	NO SOS # (MD11-020)
Brassicaceae	<i>Arabis holboellii</i>	Chicken	2011	AK930-375
Brassicaceae	<i>Arabis holboellii</i> var. <i>retrofracta</i>	MP 70.2 Taylor Highway	2015	AK930-697
Brassicaceae	<i>Boechera holboellii</i>	Taylor Highway Mi 58	2014	AK930-634
Brassicaceae	<i>Rorippa barbareaifolia</i>	Jack Wade 1	2015	AK930-676
Campanulaceae	<i>Campanula aurita</i>	Chicken	2011	AK930-378
Caryophyllaceae	<i>Silene taimyrensis</i>	Chicken	2011	AK930-346
Caryophyllaceae	<i>Wilhelmsia physodes</i>	Logging Cabin Creek	2015	AK930-662
Cyperaceae	<i>Carex aquatilis</i>	Jack Wade 1	2015	AK930-673
Cyperaceae	<i>Carex aquatilis</i>	Mosquito Fork	2015	AK930-699
Cyperaceae	<i>Carex bigelowii</i>	Y' Dirt Road	2015	AK930-666
Cyperaceae	<i>Carex bigelowii</i>	Mosquito Fork	2015	AK930-702
Cyperaceae	<i>Carex bonanzensis</i>	Walker Fork Campground	2014	AK930-628
Cyperaceae	<i>Carex canescens</i>	Mosquito Fork	2015	AK930-643
Cyperaceae	<i>Carex capillaris</i>	Jack Wade 4	2015	AK930-686
Cyperaceae	<i>Carex crawfordii</i>	South Fork Wayside	2014	AK930-631
Cyperaceae	<i>Carex diandra</i>	Mosquito Fork	2015	AK930-700
Cyperaceae	<i>Carex saxatilis</i>	Chicken	2011	AK930-368

Family	Species Name	Site Location	Year Collected	SOS Collection Number
Cyperaceae	<i>Carex saxatilis</i>	Wade Creek	2014	AK930-622
Cyperaceae	<i>Carex saxatilis</i>	Walker Fork Entrance	2014	AK930-627
Cyperaceae	<i>Carex saxatilis</i>	Mosquito Fork	2014	AK930-638
Cyperaceae	<i>Carex saxatilis</i>	Logging Cabin Creek	2015	AK930-659
Cyperaceae	<i>Carex saxatilis</i>	Jack Wade 4	2015	AK930-693
Cyperaceae	<i>Carex utriculata</i>	Jack Wade 4	2015	AK930-692
Cyperaceae	<i>Carex utriculata</i>	Mosquito Fork	2015	AK930-703
Cyperaceae	<i>Eleocharis palustris</i>	Chicken airstrip	2015	AK930-708
Cyperaceae	<i>Eriophorum scheuchzeri</i>	Little Chicken Hill	2015	AK930-698
Fabaceae	<i>Astragalus alpinus</i>	Logging Cabin Creek	2015	AK930-661
Fabaceae	<i>Hedysarum alpinum</i>	Jack Wade 4	2015	AK930-691
Fabaceae	<i>Lupinus arcticus</i>	Chicken	2011	AK930-367
Fabaceae	<i>Oxytropis campestris</i> ssp. <i>gracilis</i>	Dennison Creek Campground	2015	AK930-663
Fabaceae	<i>Oxytropis campestris</i> ssp. <i>gracilis</i>	Jack Wade 2	2015	AK930-669
Gentianaceae	<i>Gentiana barbata</i>	Mosquito Fork	2015	AK930-704
Gentianaceae	<i>Gentianella propinqua</i>	Chicken	2011	AK930-373
Gentianaceae	<i>Gentianella propinqua</i>	Jack Wade 4	2015	AK930-685
Hydrophyllaceae	<i>Phacelia mollis</i>	Chicken	2011	AK930-461 (assigned in 2012)
Juncaceae	<i>Juncus arcticus</i>	Jack Wade 1	2015	AK930-678
Juncaceae	<i>Juncus arcticus</i> ssp. <i>alaskanus</i>	Walker Fork Campground	2014	AK930-629
Juncaceae	<i>Juncus castaneus</i>	Jack Wade 1	2015	AK930-674
Juncaceae	<i>Luzula multiflora</i>	Jack Wade 2	2015	AK930-670
Juncaceae	<i>Luzula multiflora</i>	Jack Wade 4	2015	AK930-688
Juncaceae	<i>Luzula parviflora</i>	Chicken	2011	AK930-369
Onagraceae	<i>Chamerion angustifolium</i>	Taylor Highway Mi 58	2014	AK930-635
Onagraceae	<i>Chamerion angustifolium</i>	MP 36.8 Taylor Highway	2015	AK930-657
Onagraceae	<i>Chamerion latifolium</i>	Taylor Highway Mi 60	2014	AK930-637
Onagraceae	<i>Chamerion latifolium</i>	Jack Wade 1	2015	AK930-677

Family	Species Name	Site Location	Year Collected	SOS Collection Number
Papaveraceae	<i>Papaver nudicaule</i> ssp. <i>americanum</i>	Chicken	2011	AK930-379
Papveraceae	<i>Papaver nudicaule</i> ssp. <i>americanum</i>	MP 70.2 Taylor Highway	2015	AK930-694
Poaceae	<i>Agrostis scabra</i>	Jack Wade 1	2015	AK930-672
Poaceae	<i>Beckmannia syzigachne</i>	Wade Creek	2014	AK930-621
Poaceae	<i>Beckmannia syzigachne</i>	South Fork Wayside	2014	AK930-632
Poaceae	<i>Beckmannia syzigachne</i>	Logging Cabin Creek	2015	AK930-660
Poaceae	<i>Beckmannia syzigachne</i>	Jack Wade 1	2015	AK930-675
Poaceae	<i>Calamagrostis canadensis</i>	Logging Cabin Creek	2015	AK930-658
Poaceae	<i>Calamagrostis canadensis</i>	Jack Wade 1	2015	AK930-680
Poaceae	<i>Calamagrostis canadensis</i> var. <i>canadensis</i>	Wade Creek	2014	AK930-625
Poaceae	<i>Calamagrostis purpurascens</i>	Wade Creek	2014	AK930-624
Poaceae	<i>Calamagrostis purpurascens</i>	Jack Wade 3	2015	AK930-684
Poaceae	<i>Calamagrostis purpurascens</i>	MP 70.2 Taylor Highway	2015	AK930-695
Poaceae	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	Wade Creek	2014	AK930-623
Poaceae	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	Mosquito Fork	2014	AK930-639
Poaceae	<i>Deschampsia cespitosa</i> ssp. <i>cepitosa</i>	Jack Wade 1	2015	AK930-681
Poaceae	<i>Elymus macrourus</i>	Y' Dirt Road	2015	AK930-664
Poaceae	<i>Elymus macrourus</i>	Jack Wade 4	2015	AK930-687
Poaceae	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	MP 36.8 Taylor Highway	2015	AK930-656
Poaceae	<i>Festuca altaica</i>	Jack Wade Junction	2014	AK930-626
Poaceae	<i>Festuca saximontana</i>	Taylor Highway Mi 58	2014	AK930-636
Poaceae	<i>Poa glauca</i>	Chicken	2011	AK930-376
Poaceae	<i>Poa glauca</i>	Jack Wade 4	2015	AK930-689
Poaceae	<i>Trisetum spicatum</i>	MP 36.8 Taylor Highway	2015	AK930-654
Poaceae	<i>Trisetum spicatum</i>	MP 70.2 Taylor Highway	2015	AK930-696
Polygonaceae	<i>Polygonum alpinum</i>	Chicken	2011	AK930-372
Polygonaceae	<i>Polygonum alpinum</i>	Jack Wade 1	2015	AK930-683
Primulaceae	<i>Androsace septentrionalis</i>	Chicken	2011	AK930-345

Family	Species Name	Site Location	Year Collected	SOS Collection Number
Ranunculaceae	<i>Anemone narcissiflora</i> var. <i>monantha</i>	Chicken	2011	AK930-366
Ranunculaceae	<i>Pulsatilla patens</i> ssp. <i>multifida</i>	Chicken	2011	AK930-348
Rosaceae	<i>Comarum palustre</i>	Chicken airstrip	2015	AK930-707
Rosaceae	<i>Dasiphora fruticosa</i>	Jack Wade 2	2015	AK930-668
Rosaceae	<i>Dasiphora fruticosa</i> ssp. <i>floribunda</i>	Chicken	2011	NO SOS # (MD11-112)
Rosaceae	<i>Dryas integrifolia</i>	Chicken	2011	AK930-347
Rosaceae	<i>Geum calthifolium</i>	South Fork Wayside	2014	AK930-630
Rosaceae	<i>Geum macrophyllum</i>	Mosquito Fork	2015	AK930-701
Rosaceae	<i>Geum macrophyllum</i> var. <i>perincisum</i>	Chicken	2011	NO SOS # (MD11-099)
Rosaceae	<i>Geum macrophyllum</i> var. <i>perincisum</i>	Chicken airstrip	2015	AK930-706
Rubiaceae	<i>Galium boreale</i>	Chicken	2011	AK930-377
Saxifragaceae	<i>Parnassia palustris</i>	Chicken	2011	AK930-381
Saxifragaceae	<i>Parnassia palustris</i>	South Fork Wayside	2014	AK930-633
Saxifragaceae	<i>Parnassia palustris</i>	Jack Wade 2	2015	AK930-667
Saxifragaceae	<i>Saxifraga hieracifolia</i>	Chicken	2011	AK930-382
Saxifragaceae	<i>Saxifraga tricuspidata</i>	Chicken	2011	AK930-370
Saxifragaceae	<i>Saxifraga tricuspidata</i>	Jack Wade 1	2015	AK930-682
Scrophulariaceae	<i>Castilleja caudata</i>	Jack Wade 2	2015	AK930-671
Scrophulariaceae	<i>Castilleja caudata</i>	Chicken airstrip	2015	AK930-705