Two “Under the Radar” Uinta Basin Penstemons

By Tony Frates, March 2010

Penstemon duchesnensis Kipp Lee

Penstemon flowersii James Spencer

Presented at the Utah Rare Plant Conference on March 9, 2010, Salt Lake City, Utah

A large number of endemic (and many of those also rare) taxa occur in the Uinta Basin and surrounding areas. The genus *Penstemon* is particularly well-represented by a full suite of species that occur in small, restricted and typically isolated habitats from one end of the basin to the other.

A suite of endemic Penstemons occurring within, on the periphery of, or which include the Uinta Basin/Mtns in their ranges:

P. angustifolius var. *vernalensis* (also CO)
P. cleburnei (*P. eriantherus* var. *cleburnei*) (also WY)
P. duchesnensis (*P. dolius* var. *duchesnensis*)
P. carnosus
P. fremontii (mainly UT but also CO and WY)
P. flowersii
P. gibbensii (main dist is in WY)
P. goodrichii
P. grahamii (mainly UT but also CO)
P. moffattii (mainly UT but also CO)
P. pachyphyllus var. mucronatus (also WY and CO)
P. pachyphyllus var. *pachyphyllus*
P. platyphyllus (barely enters range – Wasatch endemic)
P. scariosus var. *albifluvis* (mainly UT but also CO)
P. scariosus var. *cyanomontanus* (mainly UT but also CO)
P. scariosus var. *garrettii*
P. subglaber
P. uintahensis

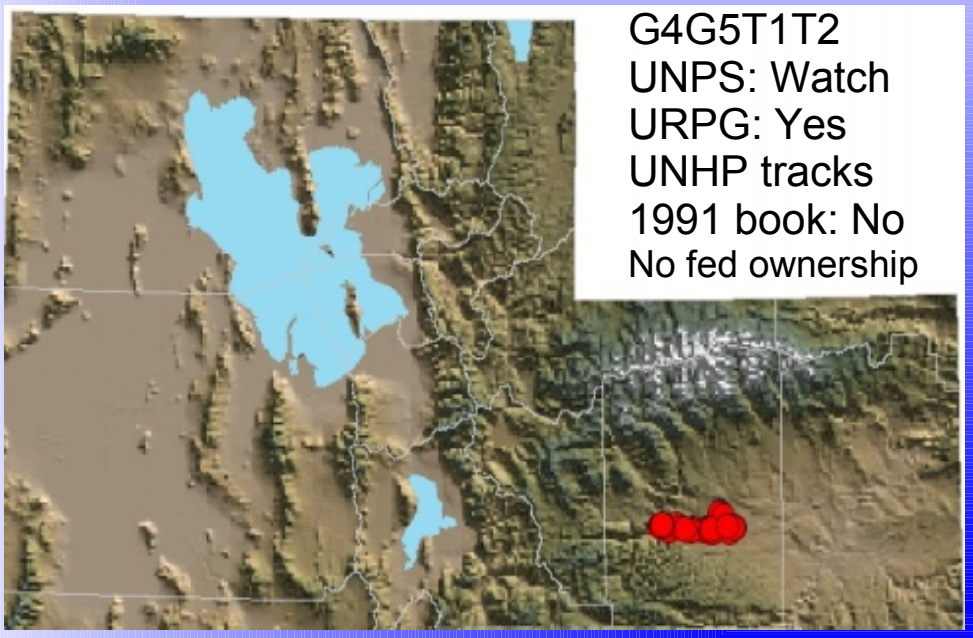
18 taxa!

Some basic characteristics:

Name	Height (cm)	Herbage	Basal leaves	Stems	Flower color	Elev (ft)	Habitat
P. duchesnensis	2.5-10(12)	Densely cinereus puberulent	Broadly elliptic	Few to several	Blue to blue purple	5400-6600	Gravel slopes, silty sand or clay semibarrens, PJ
P. flowersii	8-25 (32)	Glabrous, glaucous; thick leaves	Lacking or poorly developed	Few to several	Pink	4900-5400	Gravel-clay semibarrens on slopes and benches, Uinta Formation
P. carnosus	12-35 cm	Glabrous, glaucous; fleshy leaves	Well-developed basal rosette	1 or few	Lavender pink to blue violet,	5000-8000	Desert shrub, PJ, often sandy soils
P. fremontii	(8) 15-40 usu > 15	Densely cinereus-puberulent	Elliptic to obovate basal leaves	1 or few	Deep purple	5000-8000	Clay to sandy gravels on arid benches and slopes, sagebrush, shadscale, PJ
P. goodrichii	12-40 cm	Glabrous below, becoming glandular-pubescent above; entire leaves but can be obscurely toothed	Linear basal leaves	Several to many	Light blue to blue lavender	5600-6200	Red to gray clay and sandy clays of the Duchesne River Formation, shadscale, sagebrush, juniper

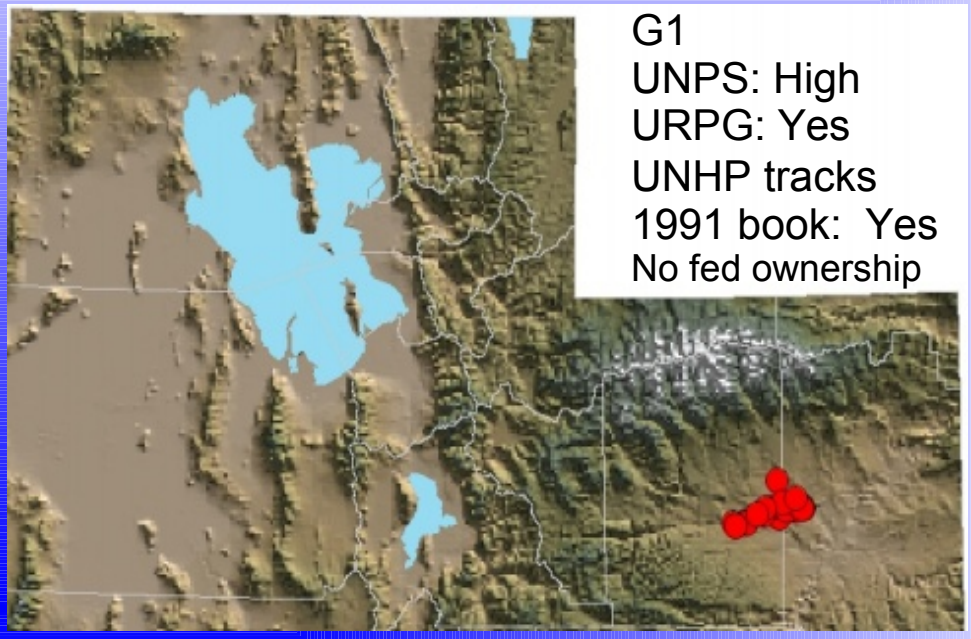
Based on *Uinta Basin Flora* (1986), *Intermountain Flora* (1984) vol. 4, and *A Utah Flora*, 4th ed. (2008).

Penstemon duchesnensis



"Little information is available to indicate the status of most populations, private property inaccessibility being the major hindrance. A 2001 effort by the Utah Natural Heritage Program to revisit previously known sites resulted in the documentation of a population on Blue Bench with estimates in the thousands. However, all other relocated sites combined barely exceeded a counted/estimated 2000 plants. Over time, the greatest threat to the persistence of this plant will likely be loss of suitable habitat because of property development. "

Penstemon flowersii



"There is no documentation of population size estimates and habitat condition throughout its limited range. Past losses of habitat through agricultural development, continued livestock grazing and recreational activity are the greatest threats to this plant's persistence. Private property inaccessibility is a hindrance to understanding this plant's status."

Franklin, B. 2005. Plant Information . . . Progress Report. DWR, Utah Natural Heritage Program. 341 pp.

Both taxa have been referred to by their authors at one time or another as “locally common” or “locally abundant.” These or similar references are often misunderstood. Land management agencies have sometimes rejected species from consideration that have been referred to as such.

“Locally abundant” does not mean “not rare” nor does it mean that the species is “secure.” It further can relate to year to year fluctuations that were based on anecdotal observations in a bygone era. References to abundance in floras often are qualitative judgments (Goodrich, 1986).

Further, use of terms such as “locally common” with respect to *P. duchesnensis* and *P. flowersii* were based on occasional observations from the late 1970's and early 1980's. Similar observations over the last decade suggests that these taxa may in fact be having fewer years of “local abundance,” if any.

Local abundance may also relate to recent speciation of a narrowly restricted endemic species (Lesica, 2006) which may very well be case with these two penstemons and may be a factor that is consistent with, rather than contradicting, their status as rare plants.

Goodrich, S. and Neese, E. 1986. Uinta Basin flora. USDA Forest Service-Intermountain Region. 320 pp. (see p. ii).

Lesica, P., Yurkewycz, R. & Crone, E. 2006. Rare plants are common where you find them. American Journal of Botany, 93, 454–459.

As a result of increasing concern about habitat loss and energy related impacts, a Uinta Basin Task Force group coordinated by the Utah Field Office of The Nature Conservancy was established in late 2005. In early meetings, decisions had to be made as to which species to focus on, and, necessarily, the focus had to be on species with the most obvious and direct potential energy development impacts. Two species excluded therefore, that were otherwise identified as of high concern, were *Penstemon duchesnensis* and *P. flowersii*. The Utah Native Plant Society (UNPS) was charged with taking some independent actions on behalf of these species at the inaugural Nov. 18, 2005 task force meeting.

James R. Spencer, a wildlife biologist with the USDA-NRCS in Roosevelt had been informally observing a few P. flowersii populations since 2002. UNPS had been in touch with him starting in late August, 2005.

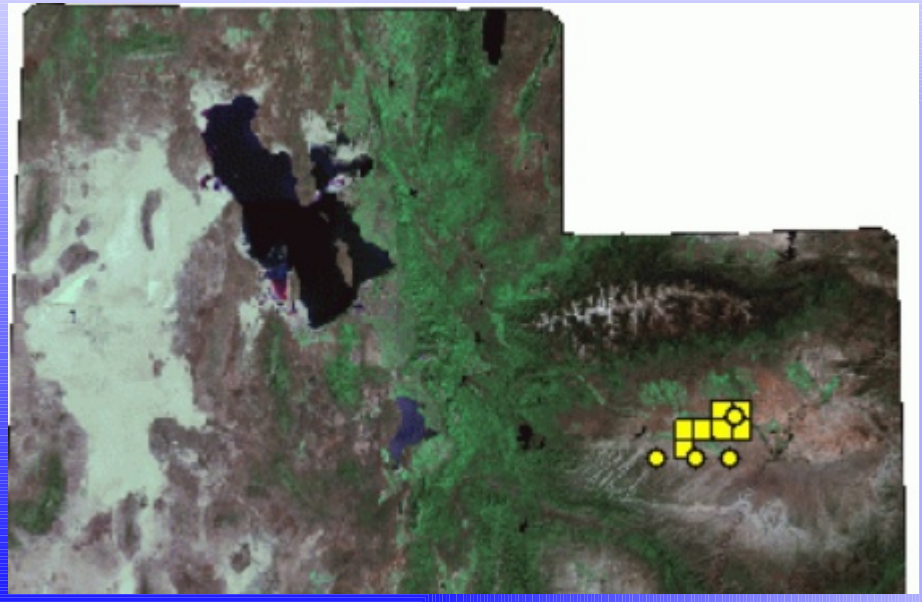
Jim's initial observations included: “It seems to be in a narrow band stretching form the Midview Reservoir eastward toward Randlett, UT. I have not seen it on either side of the Myton Benches (North or South), just in the valley between the benches.” (8/29/2005 e-mail)

UNPS also started to make some informal observations with respect to *P. duchesnensis*.

In early 2009, we learned (thanks again to Jim Spencer) that a *P. flowersii* site near the Midview reservoir had been disturbed which inspired a further intense look at its status and in the process of investigating the background of two of the earliest *P. flowersii* collections (at the Intermountain Herbarium, Utah State University), some historical and range distribution information was uncovered.

Meanwhile, WildEarth Guardians filed a lawsuit (not endorsed nor encouraged by UNPS and was completely coincidental to our efforts), the US Fish & Wildlife Service agreed in August of 2009 to review several species for possible listing, one of which is *P. flowersii* (other plants in the Uinta Basin region include *P. gibbensii* and *Astraglus hamiltonii*) Cumulative information we have obtained to date re: *P. flowersii* will hopefully be of some assistance to FWS when they conduct that review.

Digital Atlas of the Vascular Plants of Utah
Penstemon flowersii



Thank you Google Earth!

Lake Boreham – 3/23/06 James Spencer

Lake Boreham – 3/23/06 James Spencer

Lake Boreham, northeast corner, 5/2/09, Tony Frates with Kipp Lee
Also known as Midview Reservoir and Lake “Borem” by locals
(confusingly named in honor of Charles Borham, a CCC worker who died during construction, CCC marker built in Sept of 1937)
Land disturbing activities occurred earlier in 2009.

Lake Boreham parking area 5/2/09 Tony Frates with Kipp Lee
Some *P. flowersii* plants were noted on this flattened pad

Like this one that was somewhat flattened
Lake Boreham parking area 5/2/09

Lake Boreham parking area fringe 5/2/09

Lake Boreham 5/2/09 Tony Frates
Water exceptionally high in 2009 – note the lack of a “beach”
P. flowersii growing on slope in rubble

P. flowersii growing on slope in rubble/gravel near reservoir
5/2/09 T. Frates with Kipp Lee

Locations of plants from 5/2/09 visit – note the presence of a beach. Would appear that the reservoir construction (1930's) likely did eliminate at least some amount of habitat, as well as road construction

P. flowersii

5/1/2006 James Spencer – Lake Boreham

5/1/2006 James Spencer – Lake Boreham area

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

Upper left/center – presumably *Thelesperma subnudum* var. *subnudum*

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

5/15/2006 James Spencer – Lake Boreham

As result of Jim Spencer's 2006 *P. flowersii* pictures, some initial pollinator information was obtained. (See below, probably none of the bees photographed were bumblebees despite appearing bumblebee-ish).

February 21, 2007 – Vince Tepedino e-mail

Hi Tony. I've been out since Friday but am here today.

Terry Griswold and I just looked at the CD you sent. Guess what? It's unlikely that any of those bees are bumblebees! All the bees pictured are either Apids or Megachilids. Here are our (mostly Terry's) best guesses:

5150018-23, 27, 32: *Anthophora*, probably *affabilis*
5150024-25: the bee in 25 and the upper bee in 24 are probably a species of *Osmia*, either *longula* or *integra*; the lower bee in 24 is *A. affabilis*

5150028-31: *Anthophora bomboides,* thought to be a bumblebee mimic

4140139: this likely is an *Anthophora affabilis* male (outside chance it's a species of *Eucera*)

Vincent J. Tepedino (Pensionato)
USDA ARS Bee Biology & Systematics Lab
Department of Biology & The Ecology Center
Utah State University
Logan UT 84322-5310

The Neese connection

Penstemon duchesnensis (N. Holmgren) Neese (1986)

Syn: *P. dolius* Jones ex Pennell var. *duchesnensis* N. Holmgren (1979)

(still recognized as a variety under *P. dolius* by Holmgren et al

Penstemon flowersii Neese & Welsh (1983)

No known taxonomic issues

In memory of Dr. Elizabeth J. Neese (1934-2008)

Elizabeth Neese 1978

From Duane Atwood's 3/4/2008 "UNPS: The Beginning" rare plant conference presentation

Note the fine floral details of Dr. Neese's blouse: the true uniform of a botanist.

Botanists in their native habitat

From this picture, we can learn much about about how botanists survived in the field during the long lost 1970's.

For example, here we learn that Triscuits and Nestle's Hot Cocoa mix were important to the diet of botanists of that era. And that plastic bowls had been invented and were in use.

Undoubtedly few plant species were discovered on an empty stomach.

Tony,

The only time I saw (and collected) *Penstemon flowersii* was in 1978, in a pasture along the highway between Myton and Roosevelt. It was doing real well at that time, as it caught my eye speeding down the highway. It was obvious to us (Rupert Barneby was with Pat and me at the time) that the cows were leaving it alone. Liz Neese also found it at about the same time somewhere in the Basin and asked me what I thought about it. Because of her interest in it, I let her deal with it. I think it is a good species, probably most closely related to *P. carnosus*.

Noel

Dr. Noel Holmgren e-mail of May 12, 2009 – *P. flowersii* taxonomic history

William Gray

Penstemon flowersii
James Spencer 5/15/2006

Penstemon carnosus (left and center), a Central UT endemic, although known from Willow Creek drainage in the Uinta Basin, compared to *P. flowersii*.

Penstemon carnosus (left) courtesy of Dr. William Gray from the San Rafael Swell compared to *P. flowersii* (right - Spencer).

A NEW SPECIES OF *PENSTEMON* (SCROPHULARIACEAE) FROM THE UINTA BASIN, UTAH

Elizabeth Neese[1] and Stanley L. Welsh[1]

ABSTRACT.— Described as a new species is *Penstemon flowersii* Neese & Welsh from Utah. An illustration is provided. The species is named in honor of the late Seville Flowers, professor of botany at the University of Utah.

The genus *Penstemon* is large and complex within the state of Utah. The flowers of plants of this genus are among the most beautiful within the state. Several taxa have been described as new from the intermountain region during recent years. It is not surprising that another such novelty should occur in the region. The species was discovered during investigations of the rare plants in the Uinta Basin, a region noted for its narrowly distributed endemics.

***Penstemon flowersii* Neese & Welsh, sp. nov.**

Species haec ab *P. immanifesto* N. Holmgren in staminodiorum barbis multo breviore, et ab *P. carnoso* Pennell in floribus roseo non violaceo-caeruleis, ab uterque foliis basalibus nullis differt.

Perennial glabrous glaucous herbs, with simple ascending stems arising from a branching woody caudex, 8–25 (32) cm tall, the basal rosette lacking; cauline leaves all entire, fleshy-thickened, (1.5) 2–5.5 cm long, (4) 10–25 mm broad, the lower shortly petiolate, spatulate, the middle ones larger, sessile, lanceolate or elliptic, obtuse, the upper reduced, broadly ovate, acute; thyrsus cylindric (not secund), with 4–9 verticils, the cymes many flowered; calyx glabrous, 5–6.5 mm long, the lobes broadly lanceolate, acuminate, the margin scarious, suffused with rose; corolla 15–18 mm long, rose within, the striae dark rose-pink, the limb ampliate, 10–12 mm in diameter; staminode equaling the tube, not exserted, the apex shortly barbellate (to 0.1 mm long); stamens included, the anthers glabrous, dehiscent throughout and in the connective, not explanate, the sacs opposite, 1–1.2 mm long; capsules 7–10 mm long.

TYPE: USA. Utah: Uintah Co., T3S R1E S9–10, 5.6 km W of Randlett, 12 May 1980, Neese & White 8609 (Holotype: BRY; Isotypes: NY, US, RM, CAS, UTC, MINN).

PARATYPES: Utah. Uintah Co., T3S R1E S10, 4.8 km W of Randlett, 12 May 1898, Neese & White 8600 (BRY, UT, NY, MO); do T3S R1W S3, 5.8 km S of U.S. Hwy 40, 14 km W of Randlett, 12 May 1980, Neese & White 8606 (BRY, NY, CAS); do T3S R1E S10, 4.8 km W of Randlett, 16 May 1979, E. Neese & B. Welsh 7212 (BRY, NY, GH, MO). Duchesne Co., T3S R2W S21, 3.2 km WNW of Myton, 16 May 1979, Neese & B. Welsh 7218 (BRY, NY); do T3S R2W S12, 4 km due N of Myton, 15 May 1980, Neese & White 8662 (BRY, NY, UC).

The Flowers beardtongue grows in shad scale communities on pale-colored clay slopes and benches between 1,500 and 1,600 m, where old terraces of the Uinta Formation in the Duchesne River drainage are mantled with Pliocene or Pleistocene pedimental gravels. It is common on such habitat in an area of about 8 × 25 km between Randlett and Myton. The species is remarkable in its uniformity in regard to both morphology and habitat. The plants, with their dusty pink flowers and pale gray-green foliage are inconspicuous against the gray clay on which they grow. The near congener, *P. immanifestus*, of central eastern Nevada and western Utah possesses a more prominently bearded staminode. *Penstemon carnosus* Pennell is similar in diagnostic characteristics, but the Flowers beardtongue is quite distinctive in its smaller stature, tufted, usually numerous

[1]Life Science Museum and Department of Botany and Range Science, Brigham Young University, Provo, Utah 84602.

stems, absence of a basal rosette, and pink (not lavender-blue) flowers. *Penstemon carnosus* is a species of the western Colorado Plateau, from the San Rafael Swell and the Henry Mountains westward to Aquarius Plateau (Holmgren 1978).

The plant is named to honor the memory of Dr. Seville Flowers, late professor of botany at the University of Utah. Dr. Flowers was a student of lichens, mosses, and higher plants, and his untimely passing has left a void in the understanding of the plants of Utah and the West.

ACKNOWLEDGMENTS

We express thanks to Noel H. Holmgren for his examination of the type materials, and for his comments regarding relationships of this taxon. Kaye Thorne provided the illustrations, and for this we are grateful.

LITERATURE CITED

HOLMGREN, N. H. 1978. An overlooked new species of *Penstemon* (Scrophulariaceae) from the Great Basin. Brittonia 30:334–339.

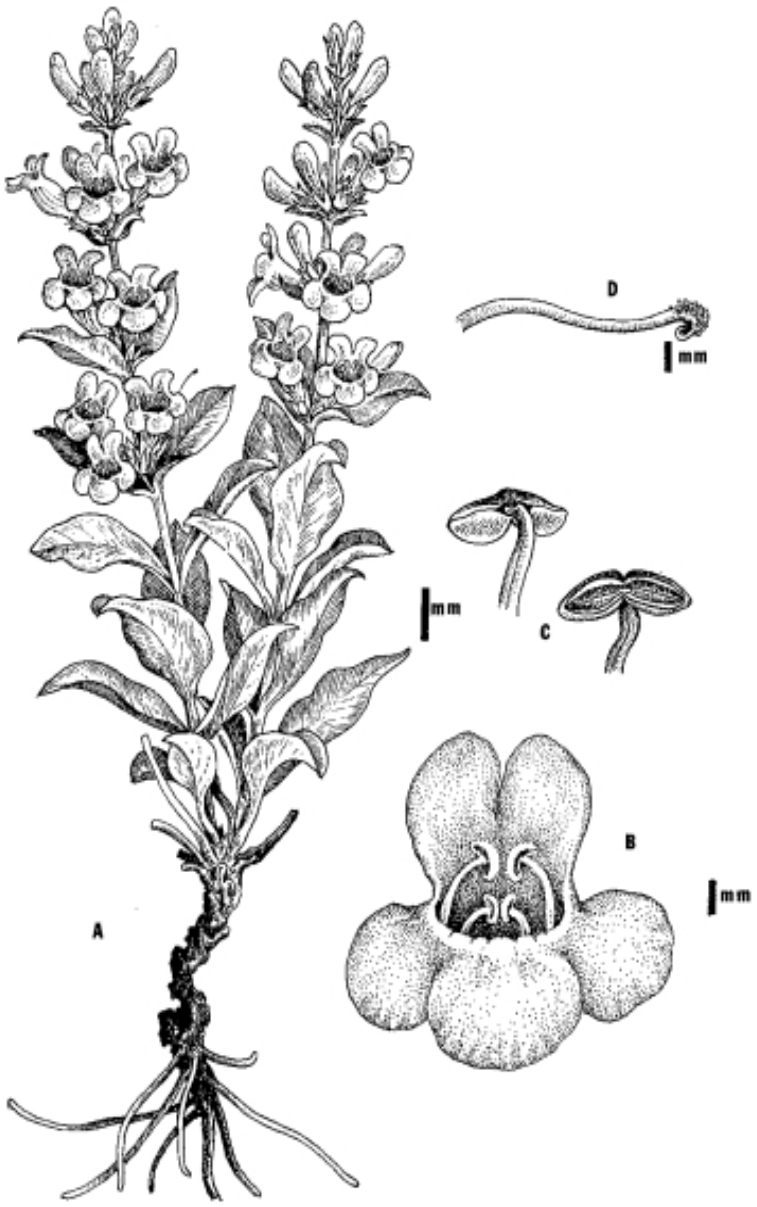


Fig. 1. *Penstemon flowersii* Noese & Welsh: A, Habit. B, Flower. C, Anther-sacs. D, Staminode.

NYBG Isotype

P. flowersii

Note flower color

Uintah Co., Utah, USA 211825

Penstemon

7

T3S, R1E, Sec. 9 and 10, on line, 3.5 mi
W of Randlett, 5010 ft elev

Salt desert shrub comm, silty clay,
cobble mantle, river terrace alluvium

E Neese, S White
8609 12 May 1980

HERBARIUM OF BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH

While appropriately named in so many ways and for an individual who brought three universities together and made huge contributions to Utah botany and beyond, the general public will likely always be confused as to why a plant with flowers has the name of flowers in its specific epithet.

Fig. 1. Seville Flowers (ca 1967) in his laboratory preparing illustrations for his monograph on the mosses of Utah and the West.

mosses:

Utah and the West

by Seville Flowers Edited by Arthur Holmgren

Seville Flowers, 1900-1968

From *Mosses: Utah and the West*

Hybrid of *Viola beckwithii* and *V. purpurea,* SLC habitat lost

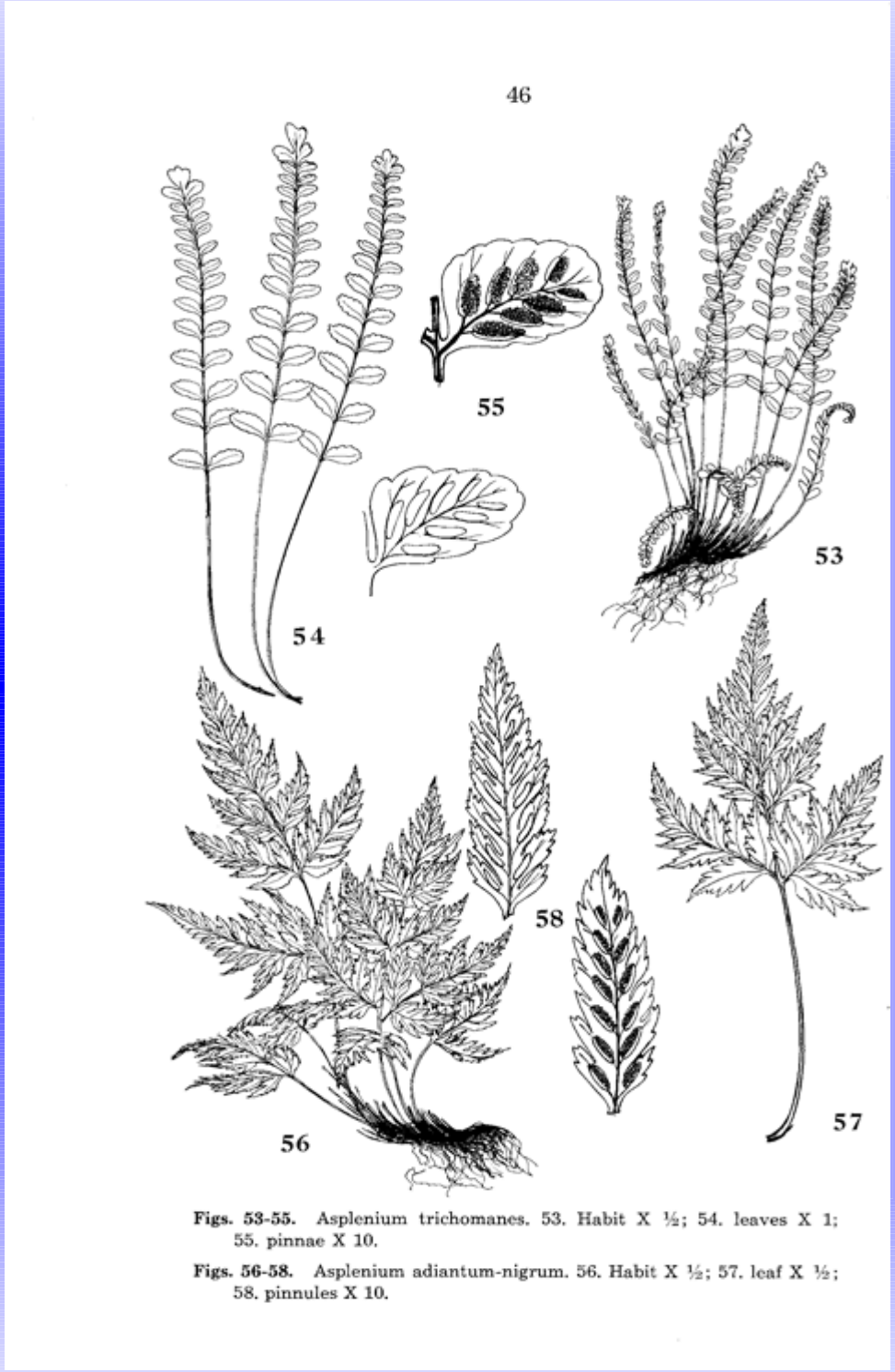
On April 15,1925 as he was nearing graduation from the U of U (and had not yet taken A.O. Garrett's summer class of that year that led to his lifelong interest in bryophytes), Seville collected *Viola beckwithii* in “most soil” at “Bonneville terrace, Mt. Olympus” in Holladay at an elevation of 4800 ft. and is typical of his many important contributions to our knowledge of vascular plants.

P.S. We are still trying to re-locate the 1925 Holladay location.

Flowers #462, Garrett Herbarium, UT 11091

Seville Flowers illustration contained in W.P. Cottam's 1939 article entitled *A New Violet from Utah* published by the University of Utah, Salt Lake City

From *Ferns of Utah* by Seville Flowers published in 1944, University of Utah



Figs. 53-55. Asplenium trichomanes. 53. Habit X ½; 54. leaves X 1; 55. pinnae X 10.

Figs. 56-58. Asplenium adiantum-nigrum. 56. Habit X ½; 57. leaf X ½; 58. pinnules X 10.

While Dr. Flowers did undertake various botanical assignments in the Uinta Basin (e.g. Flaming Gorge dam work circa 1960), it is unlikely that he ever saw the species that was later named for him.

Investigation of the Reynolds specimens

Earliest collections determined to be *Penstemon flowersii* (both at UTC)

	A	B	C	D	E	F	G	H	I	J
1	Manual taxon	Acronym	Accession	State	County	Locality	Habitat	Comments	Collector	Col_Date
2	Penstemon flowersii	UTC	99012	Utah	Duchesne	Hill E of Lake Borem 500 feet from the NE corner of the Monument	Sandy dry and rocky soil; infrequent; assoc. with Atriplex		J Redmond	13-May-61
3	Penstemon flowersii	UTC	114095	Utah	Duchesne	North of Roosevelt.			Jean Redmond	

A puzzle: the species was otherwise not known from north of Roosevelt. And there was no date on the second specimen. Why?

Taxonomic history – Reynolds specimens*

Originally identified as Penstemon fremontii by Art Holmgren (see note 1)

In 1970, F.C. Crosswhite annotated it as Penstemon lentus subsp. trichomatus, a name that was never published (see note 2).

In 1977, Noel Holmgren noted that it appeared to be related to Penstemon “affinis” (see note 3, presumably the name carnosus followed affinis)

Identified as P. flowersii by Liz Neese in 1983 (name had been published in July of 1983)

Note 1: the second Reynolds specimen may not have been re-analyzed by A. Holmgren. He no doubt asked Jean to get a second specimen and noted that it was short for *P. fremontii*.

Note 2: *P. lentus* and *P. carnosus* are phylogenetically similar
Note 3: *P. flowersii* name was not published until after the publication of IF Vol. 4 in which Holmgren indicates under *P. carnosus* that a new species for the UB plants would be named.

*The assistance of Mary Barkworth and Michael Piep of the Intermountan Herbarium is gratefully acknowledged.

Astragalus equisolensis (center, upper left) bio-blitz 5/2/09 – near *Penstemon fremontii* (see next)

Penstemon fremontii – 5/2/09 bio-blitz

Penstemon fremontii – 5/2/09 bio-blitz

UVU herbarium collection of *Penstemon fremontii* by Eli Angus on 5/7/2005 in Uintah Co., UT

Jean Reynolds Musselman

Other names/abbreviations:

J. Redmond, Jean Redmond, Jean Musselman, JR Musselman

Student of Art Holmgren

Completed her masters thesis at USU in 1966

Moved to Montana in the early 1980's

Did not know until last year when I contacted her that the *Penstemon* she collected in an area where she grew up in the Roosevelt-Bridgeland area was later determined to be something other than *P. fremontii*.

Raised in Roosevelt, family moved to the Bridgeland/Lake 'Borem' area when she was in junior high school.

When pressed for further details concerning the second specimen:

"I'm sure the specimen of *Penstemon flowersii* that was in seed that that my mother sent to me in the fall of 1961 was collected on that hill [i.e. the same hill as UTC #999012]. This specimen should also be in the USU herbarium as I gave it to Art Holmgren, I wonder if it is the one identified as collected north of Roosevelt. " Jean Musselman, 7/4/2009

July 2009 e-mail – from Jean Musselman
Hi Tony

The following is the complete information from the label of my specimen:

No. 52
Penstemon sp. hookeri **[Tony comment – not sure where this name came from]**
Collected on hill east of Lake Borem about 500 ft from northeast corner of monument
Duchesne County
Associated plants: Brush, compositae and cruciferae Infrequent
Soil conditions: dry, rocky, sandy soil May 13, 1961 Jean Redmond

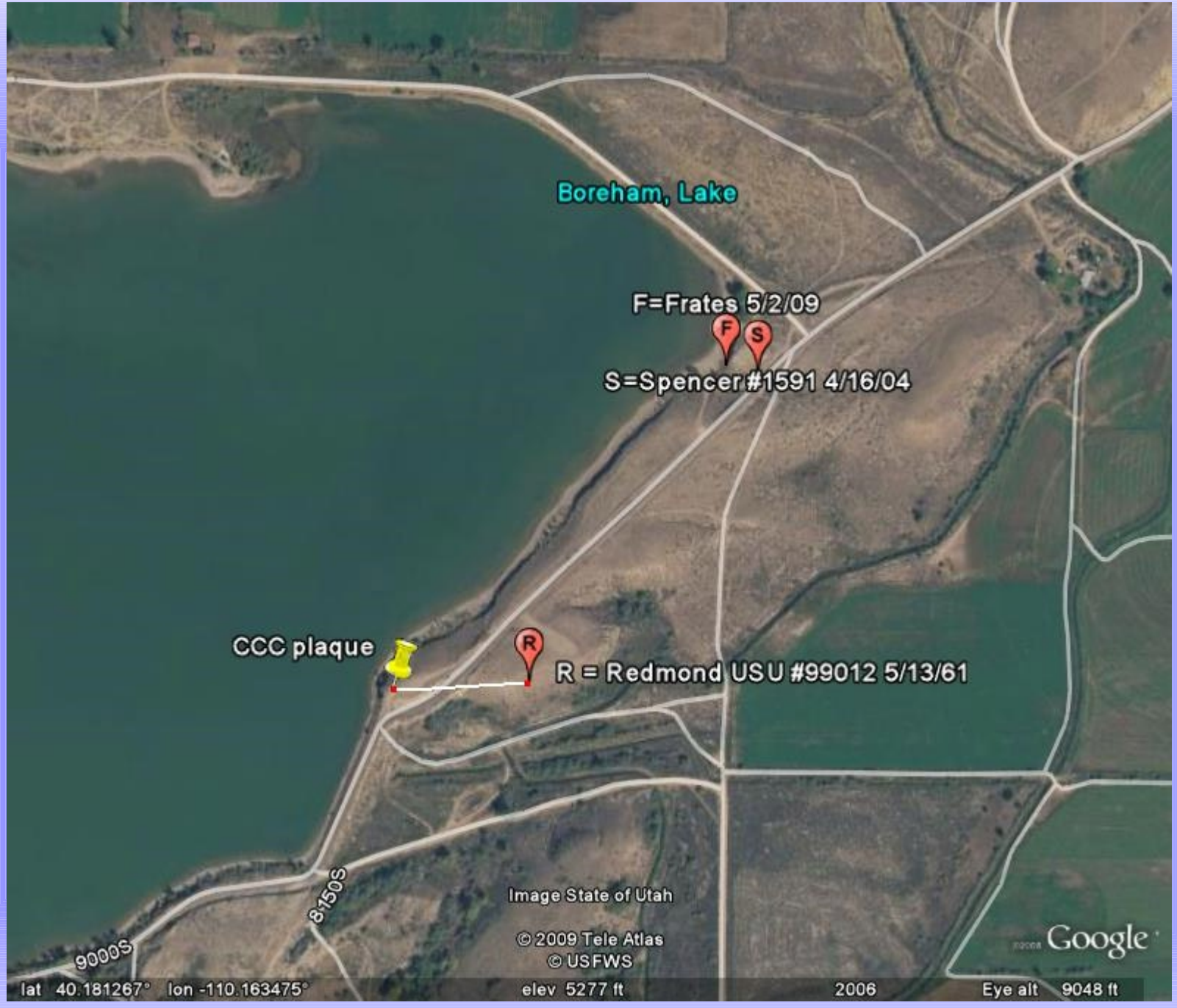
The following plants are in my collection: (All were collected on the same hill in different locations)
East side of road on hill east of Lake Borem
Thelosperma subnudum (Frequent) These specimens range from 5 to 7 inches tall, the specimens in the herbarium at USU were 18 to 24 inches tall. Art Holmgren explained the difference in height as due to the difference in moisture from the places the plants were collected.
[Tony comment presumably not: *Theleseperma subnudum* var. *maliterrimum* ????]
Enceliopsis nutans (Frequent)
Onethera palida (Common)
Lepidium fremontii (Frequent)
Streptanthus longerostis (Common)
Atriplex nuttalli (Abundant)
Atriplex confertifolia (Abundant)
300 ft north of marker
Erigeron ovalifolium (Frequent)
Hillside north of spillway
Phacelia coregata (Locally abundant)
West rim of hill east of Lake Borem
Allium textile (Common)
East side od road south of main beach
Abronia salas (Frequent)
Sphaeralcea coccinea (Common)
Phlox diffusa (Frequent)
West side of road
Aleopecrus sequalis (Abundant)

Attached are digital photos of my specimen of Penstemon flowersii

P. flowersii specimen from the private herbarium of Jean Musselman - digitized Jul 2009

P. flowersii specimen from the private herbarium of Jean Musselman - digitized Jul 2009

P. flowersii specimen from the private herbarium of Jean Musselman - digitized Jul 2009



When asked Jean indicated that she does not recall the penstemon as being abundant (but occurring in sufficient numbers to warrant/allow collection). Her label indicates: infrequent.

	A	B	C	D	E	F	G	H	I	J
1	Manual taxon	Acronym	Accession	State	County	Locality	Habitat	Comments	Collector	Col_Date
2	Penstemon flowersii	UTC	99012	Utah	Duchesne	Hill E of Lake Borem 500 feet from the NE corner of the Monument	Sandy dry and rocky soil; infrequent; assoc. with Atriplex		J Redmond	13-May-61
3	Penstemon flowersii	UTC	114095	Utah	Duchesne	Same hill/area as above ~~North of Roosevelt~~.			Urania Reynolds ~~Jean Redmond~~	Jul/Aug 1961

Obituary: Urania N. Redmond

Deseret News (Salt Lake City), Apr 16, 2003

"Devoted Mother"

"Loving Friend"

SALT LAKE- BRIDGELAND ; Urania Nelson Redmond, age 87, died April 14, 2003 in Salt Lake City.

She was born February 23, 1916 in Thatcher, Box Elder County, to Asa Cutler and Mary Lucilla Layton Nelson. She married Walt M. Redmond October 19, 1941 in Malad, ID and they were later solemnized in the Provo LDS Temple. He died Aug. 19, 1988.

She was an avid gardener, quilter, cook and active in the LDS church..

She is survived by six children, Jean (Jerry) Musselman, Billings, MO; Nancy (Lloyd) Miles, Mt. Home, UT; Dan (Vangie) Redmond, N. Salt Lake; Pat (Ron) Fresco, Anaheim, CA; Max (Pamela) Redmond, Bridgeland; Beth Redmond, San Jose, CA; 16 grandchildren, 26 great grandchildren; brother, sisters, Clint (Ramelda) Nelson, Vernal; Emma (Edward) Fox, Salt Lake; Gwen Burton, Tremonton.

She was preceded in death by a grandson, great grandson and six brothers and sisters.

Funeral service held Thursday, April 17, 2003 at 11:00 a.m. at the Bridgeland LDS Church, near Duchesne.

Friends may call at the Hullinger Mortuary,

Urania Nelson Redmond, born Feb 23, 1916, died April 14, 2003
Botanical collector of the second oldest *P. flowersii* collection!

Why Mothers Are Botanically Significant

They gave birth to you (while your father was out botanizing or doing something else).

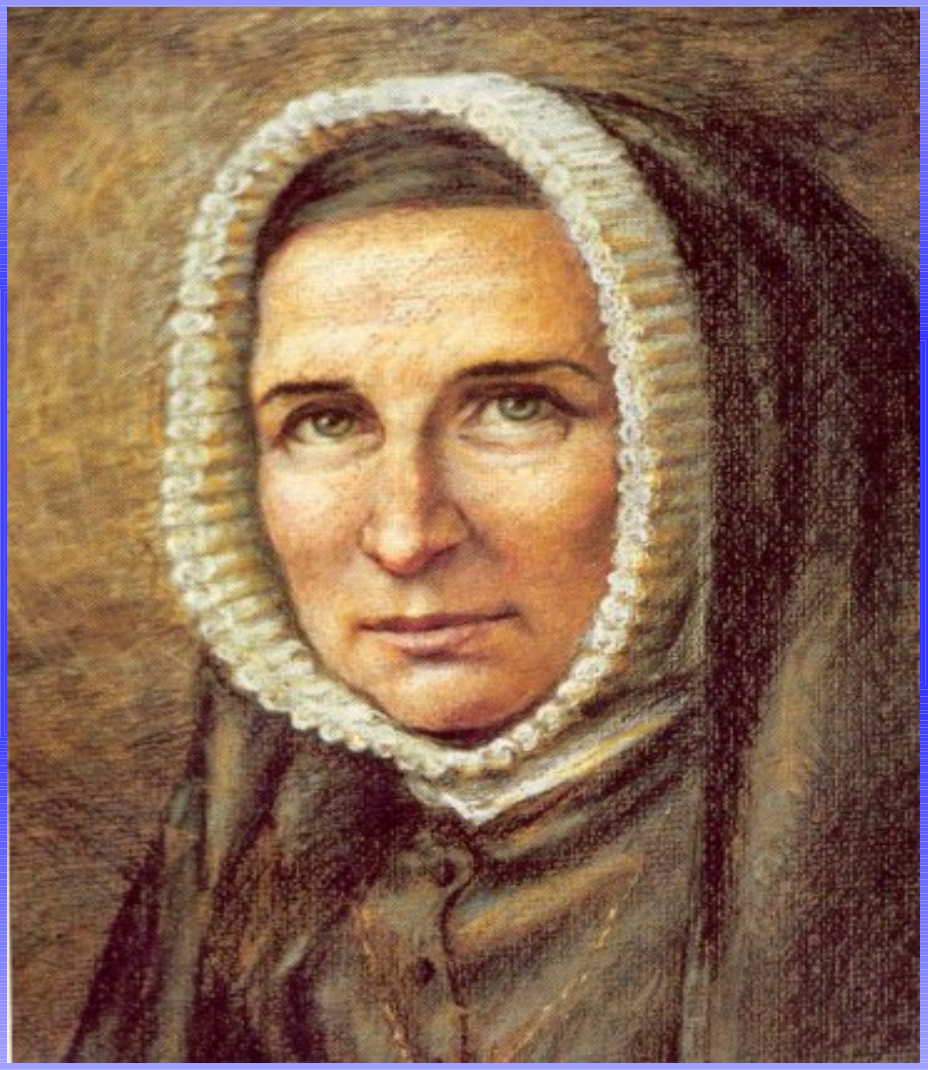
Sometimes they will collect stuff for you and help with your botany assignments.

They will often cheerfully clean up after your plant adventure messes and mishaps.

Nurture is their nature, and plant appreciation is to them second nature.

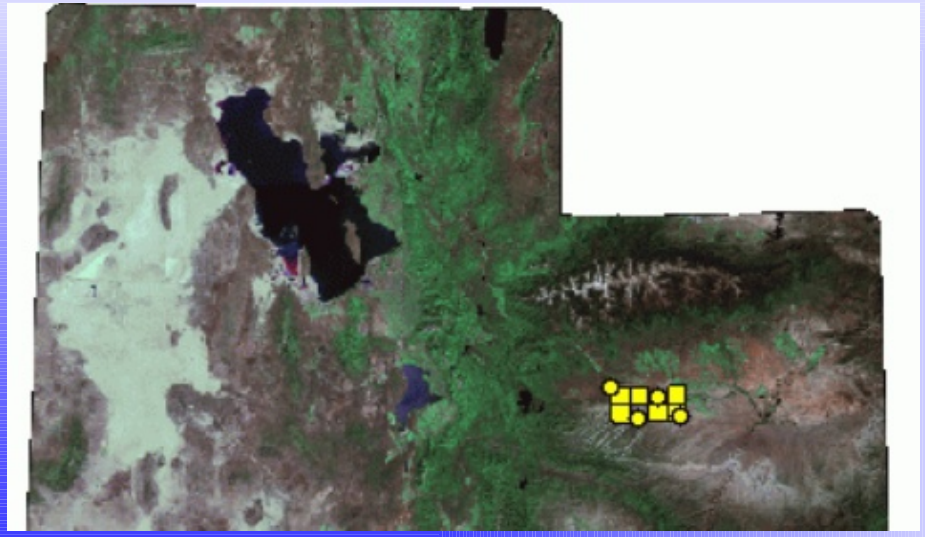
They inspire and encourage their daughters and sons to study plants (e.g. as Lavinia Jones encouraged Marcus), and to learn about the natural world.

Speaking of Mothers . . . . .



St. Rose-Philippine Duchesne (1769-1852)
(aka Mother Duchesne)

Digital Atlas of the Vascular Plants of Utah
Penstemon duchesnensis



Google Earth image 3/5/2006 accessed 3/7/2009

NYBG HOLOTYPE

P. dolius var. *duchesnensis*

Collected 5/25/1978
N. Holmgren, P. Holmgren and
R. Barneby

Penstemon duchesnensis - Kipp Lee

Penstemon duchesnensis habitat – Kipp Lee

Penstemon duchesnensis - Tony Frates 5/6/2006

Penstemon duchesnensis - Tony Frates 5/6/2006

Penstemon duchesnensis - Tony Frates 5/6/2006

Penstemon duchesnensis habitat Tony Frates 5/6/2006

Penstemon duchesnensis habitat - Tony Frates 5/6/2006

Penstemon duchesnensis - Tony Frates 5/2/2009

Penstemon duchesnensis, unlike *P. flowersii*, has caught the horticultural attention of gardeners and Penstemaniacs. Its low stature and proclivity for rocky environments make it a natural choice for rock gardeners combined with its relative ease of access and the fact that its western distribution comes into contact with a popular boating/fishing/recreation destination. *P. flowersii* remains much more obscurely known (so putting it on the radar does come perhaps with some risks).

Duchesne penstemon appears to be easy to grow outside of its limited range. Is its seed production limited? Could seed collecting therefore be a threat?

Horticultural activities with respect to *P. flowersii* is unknown as well as any real knowledge of its life cycle, seed production, etc.

Granite Gardens Rare Plants

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Plant Key Codes

= Xeric or Very Low Water Use (No water to water every other week for us)

Home

Recommended Plants for Sierra Foothills Rock Gardens

The following is a list of plants that we have successfully grown in our gardens. To browse through our database of recommended plants, click on the letter corresponding to the Genus. Use the Pager at the bottom of the page to move through all plants that begin with that letter.

914	Penstemon duchesnensis		5X5	4	A very dwarf species with tufts of gray-green leaves. Short stems of blue flowers white throats. A jewel from the Uintah Basin of Utah, perfect for the trough. We have not trialed it in the open garden yet. WN DR

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Granite Gardens Rare Plants

P.O. Box 4050
Sonora CA 95370
Contact Us

Specializing in waterwise rock garden plants from the Western US and Beyond

Home

Penstemon duchesnensis

November 23, 2008 by *rlance*

Plant ID: 914

Penstemon duchesnensis

Height: 5
Width: 5

Zone: 4

A very dwarf species with tufts of gray-green leaves. Short stems of blue flowers white throats. A jewel from the Uintah Basin of Utah, perfect for the trough. We have not trialed it in the open garden yet.

WN
DR

Penstemon duchesnensis

Image by:
Bob Skowron

Date of image:
May 1999

Location:
Northeastern Utah

RMRP Home Page

Penstemon duchesnensis
ID: 2356
Categories:

Penstemon duchesnensis in situ near Duchesne, Utah.
Created: Sat 30 of Jan., 2010
User: Stireman
(720x653) (114309 Bytes) [73 Hits]

Penstemon duchesnensis
ID: 2430
Categories:

Penstemon duchesnensis in a trough in Sandy, Utah.
Created: Sun 31 of Jan., 2010
User: Stireman
(720x584) (78596 Bytes) [79 Hits]

Conservation concerns

Highly restricted habitats (both)

Vulnerability (esp. *P. flowersii*) – low lying areas, susceptible to sprawl

Lack of federal ownership and inaccessbility to private lands

Historic fragmentation of habitat (both species, but esp. *P. flowersii*)

Trampling by grazing animals *P. flowersii,* rec/dev activities both species

Road construction/widening/ease of access to habitats

Growth in Duchesne County (indirect energy impact) esp. *P. flowersii* but also recreation/dev threats to P. duchesnensis

Boom/bust phenology – both may be prone to, but esp. *P. flowersii* (?)

Low seed production? - may be an issue particularly with *P. duchesnensis*

Related horticulture concern – *P. duchesnensis*

Less than favorable perception of rare biological resources by Utah federal and state legislators, and by local county government agencies, lack of state laws or consideration for anything that is not federally listed

Duchesne County General Plan
Spring 1997 (Amended Winter 1998 and Winter 2005)

It is the position of Duchesne County that:

a. No threatened and endangered species shall be proposed for listing in Duchesne County until verifiable scientific data has been available to the public that there is a need for the designation, that protections cannot be provided by other methods, and the area in question is truly unique compared to other area lands.

b. Buffer zones for the protection of threatened and endangered species or other special designations are not acceptable.

c. The County does not believe that it is the intention of the Act to restore all original habitats once occupied by a specific species, but only the amount needed to protect the species from extinction.

d. These designations or reintroduction often grow beyond the stated boundaries and scope and result in detrimental effects on the area economy, life style, culture and heritage. The Fish and Wildlife Service shall exclude areas from critical habitat designation if the economic damage is considered too great.

e. Designation or reintroduction plans, guidelines, and protocols must not be developed or implemented without full County involvement and public disclosure.

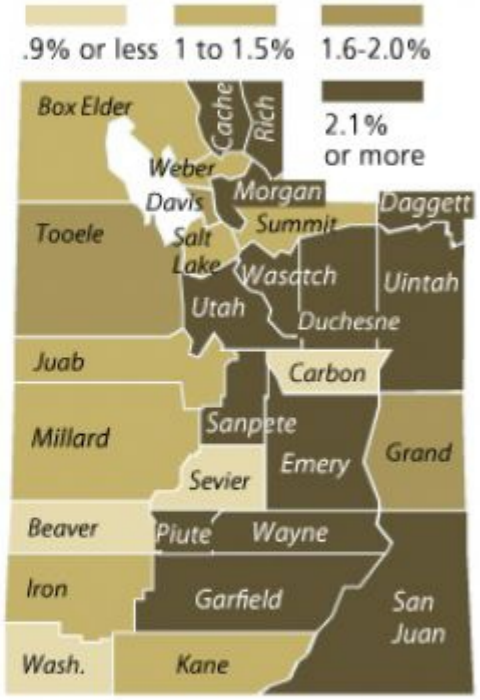
f. Any analysis of proposed designations or reintroductions must be inclusive and analyze needed actions associated with the proposal to prevent growth beyond the scope and boundaries.

g. Recovery plans must provide for indicators to track the effectiveness of the plan and identify at the point recovery has been accomplished.

Duchesne, Morgan counties grow fastest

Duchesne and Morgan counties grew by more than 3 percent from July 1, 2008 to July 1 this year, according to new population estimates. Salt Lake County had a net gain of 11,606 for a growth rate of 1.1 percent.

County	July 1 2008	July 1 2009	Growth Rate
Beaver	6,523	6,576	0.8%
Box Elder	48,712	49,421	1.5%
Cache	111,841	114,276	2.2%
Carbon	19,841	19,768	-0.4%
Daggett	964	988	2.5%
Davis	301,915	307,656	1.9%
Duchesne	16,765	17,368	3.6%
Emery	10,610	10,848	2.2%
Garfield	5,044	5,149	2.1%
Grand	9,326	9,493	1.8%
Iron	46,341	46,825	1.0%
Juab	10,039	10,191	1.5%
Kane	6,663	6,740	1.2%
Millard	13,550	13,702	1.1%
Morgan	9,645	9,947	3.1%
Piute	1,447	1,479	2.2%
Rich	2,278	2,329	2.2%
Salt Lake	1,030,519	1,042,125	1.1%
San Juan	15,206	15,643	2.9%
Sanpete	26,960	27,646	2.5%
Sevier	20,619	20,773	0.7%
Summit	39,951	40,451	1.3%
Tooele	58,214	59,117	1.6%
Uintah	30,446	31,291	2.8%
Utah	519,632	531,442	2.3%
Wasatch	22,845	23,428	2.6%
Washington	144,710	145,466	0.5%
Wayne	2,637	2,692	2.1%
Weber	224,536	227,259	1.2%



Statewide growth 2008 2.76 million; 2009 2.80 million

Source: Utah Population Estimates Committee

The Salt Lake Tribune

Salt Lake Tribune Dec 3, 2009

OTHER POPULATION DYNAMICS

Roosevelt
Per a call to the city's finance department on May 7, 2009, the 2000 population was in the 3900 to 4000 range and the current population is about 5,100. This represents roughly a 3% annual growth rate.

There is also a considerable amount of sprawl given this otherwise smallish population size. There is little question that Roosevelt's growth is a result of jobs related to energy development not the least of which has been oil and gas exploration and drilling. In this respect, energy development in the Uinta Basin is a potential threat to any rare plant species that is restricted to areas where subdivisions might be developed.

Randlett
Randlett as of May 2009 had a population of 518 with 196 rural housing units.

If the mortgage data census is accurate, the population of Randlett has doubled in less than two years (between 2007 to 2009). Despite the tribal ownership, this means that private lands and other areas will come under increasing pressure and impacts to *P. flowersii* habitat is inevitable.

Red balloon markers denote (some) *P. flowersii* locations

By late 2009, *P. flowersii* had been officially added to the Uinta Basin Task Force species list. Meanwhile evidence so far suggests that these species are at risk, and that *P. flowersii* is particularly at potential risk of extinction given the continued lack of knowledge about the extent of its occurrences, its boom and bust cycles, the fact it has no protected populations and that there is no federal ownership, its small restricted range that has been bifurcated by roads, and its habitat is limited to low lying valley level badlands in an area that is experiencing population growth as an indirect result of regional energy development and related activities, and is highly prone to suburban sprawl. If sufficient information can be obtained, candidate status for *P. flowersii* could play an important role in its conservation.

In a discussion about wilderness and public land issues on the May 14, 2009 edition of the public radio's Diane Rehm show, Dr. David R. Foster (Director, Harvard Forest and Department of Organismic and Evolutionary Biology at Harvard University) indicated that private lands in the United States are in the greatest jeopardy as they are converted to other uses.

Both penstemons fall into this category.

HOW TO GET THESE SPECIES ON THE RADAR?

Help us to look for these species and be familiar with what they look like

Encourage research!

Report highway/pipeline/other project impacts that might impact habitat for either species to Utah Natural Heritage Program along with GPS data; or e-mail unps@unps.org.

Participation in the Uinta Basin Rare Plant Forum group

Get species on UDOT's radar (we've tried, no luck so far)

Bio-blitzes needed to determine extent of habitat and get a better feel for nature and size of populations and to accumulate data

Get involvement from locally interested individuals

Education – government officials/landowners/others – voluntary action and simple awareness could help ensure their survival

There are many folks I wish to thank for their assistance to date including:

Ben Franklin, Utah Natural Heritage Program

James R. Spencer

Vince Tepedino and Terry Griswold

Mary Barkworth and Michael Piep, Intermountain Herbarium

Jean Reynolds Musselman

Brett Prevedel

Kipp Lee

Bill Gray

and others . . .

And we are indeed indebted to the taxonomists who have studied these plants.