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NEW TAXA IN MISCELLANEOUS FAMILIES FROM UTAH

Stanley L. Welsh¹

ABSTRACT.—Named are the following: *Astragalus limnocharis* Barneby var. *tabulaeus* Welsh var. nov., from the pass between Boulder Mountain and the Table Cliff Plateau, Garfield County, Utah; *A. eremiticus* Sheldon var. *ampularioides* Welsh var. nov. from Washington County, Utah; *Lupinus argenteus* Pursh var. *moabensis* Welsh var. nov., from southeastern Utah, validated by inclusion of a Latin diagnosis; *Erigeron zothecinus* Welsh sp. nov. described from moist alcoves along Lake Powell, eastern Kane County, Utah; *Cleomella pabnerana* Jones var. *goodrichii* Welsh var. nov. described from Uintah County, Utah; *Arabis vivariensis* Welsh sp. nov. named from northeastern Uintah County, Utah; *Draba kassii* Welsh sp. nov. described from material taken in the Deep Creek Mountains, western Tooele County, Utah.

A curious, small-flowered *Astragalus* was discovered by Sheryl Goodrich and me immediately north of the pass between Boulder Mountain and Table Cliff Plateau 20 June 1981. The material was first taken to be an extension of the similar *A. montii* Welsh from much farther north on the Wasatch Plateau, primarily on the basis of the pink-purple flowers. However, the wing tips are not white, and the flowers average smaller than in that taxon. Placement with the geographically nearer and morphologically more similar *A. limnocharis* Barneby became evident with additional study. The flower size, shape of petals, and pod size and conformation fit well within the range for *A. limnocharis*. The strongly soboliferous habit and pink-purple flowers are notably different, however. The soboliferous habit is an adaptation that allows occupation of the steep slopes where the plants grow, a habitat not usually occupied by *A. limnocharis* proper. The presence of sobols might represent merely an ecological response to the creeping mantle on the slopes, but it is readily apparent both in the field and in herbarium specimens.

The plants from adjacent to the Table Cliff Plateau are named as follows:

Astragalus limnocharis Barneby var. *tabulaeus* Welsh var. nov. Planta persimilis *Astragalus limnocharis* Barneby in floribus et fructus sed in caudicibus soboliferis et floribus purpureis differt.

TYPE: USA: Utah, Garfield Co., T34S, R1W, SE/SW S22, ca 2,930 m in a *Pinus longaeva*

community, on the White Limestone Member of the Wasatch Formation, on a 60%–70% south-facing slope, 20 June 1981, S. L. Welsh 20666 (Holotype BRY); 2 isotypes distributed previously as *A. montii*).

ADDITIONAL SPECIMENS: Utah, Garfield Co., same approximate locality and date as the holotype, S. L. Welsh 20667, 20667a, and S. Goodrich 15662, 15669 (all BRY).

Growing on the Chinle Formation west of the Gunlock intersection at Shem, Washington County, Utah, is a second more or less distinctive phase of *Astragalus eremiticus* Sheldon. The plants simulate *A. ampullarius* in having subterranean caudices and short, broad, long-stipitate pods. The pods are smaller than in *A. ampullarius*, but the stems recline as in that species. The elongate many-flowered racemes are similar to those of typical *A. eremiticus*, which occurs elsewhere in the county, but the flowers are more numerous (up to 45), the peduncles more elongate (up to 21 cm), the raceme very lax in fruit (up to 25 cm), and the pods are tumid and truncate to obtuse basally and 8–15 (18) mm long and 6–12 mm wide. Pods of some plants from elsewhere in Washington County are tumid but not as abruptly broadened or as broad as in the Shivwits plants. And, when the pods are tumid, the other features are as in typical *E. eremiticus*. The habitat consists of barren silty clays of the Chinle Formation, a stratum supporting *A. ampullarius* in all its known localities. Because of the similarities to *A. ampullarius*, this distinctive phase is designated as follows:

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Astragalus eremiticus Sheldon var. *ampullarioides* Welsh var. nov. Planta similis *A. eremitico* var. *eremitico* in racemis et floribus sed in leguminibus brevioribus et latoribus et caudicibus subterraneis differt, et similis *A. ampullario* in leguminibus formis et caudicibus subterraneis sed in racemis elongatis et floribus plus numerosis et coloris flavis differt.

TYPE: USA: Utah. Washington Co., T41S, R17W, N of Highway 91 at Shivwits, 1050 m elev., 21 Apr. 1982, S. L. Welsh and N. D. Atwood 21049 (Holotype BRY; an isotype distributed previously as *A. eremiticus* Sheld.).

ADDITIONAL SPECIMENS: Utah. Washington Co., *ibid.*, 4 May 1976, N. D. Atwood 6586 (BRY); *ibid.*, 9 June 1983, L. C. Higgins and N. D. Atwood 13683 (BRY); *ibid.*, May 1985, S. L. Welsh 23456 (BRY).

The plants are evidently relished by livestock, and in most years the inflorescences are eaten. The extent of the population is unknown.

The presumption was made by Welsh (1978, p. 326) that a name proposed by Dunn and Harmon for the large flowered phase of *Lupinus argenteus* in southeastern Utah had been or was about to be effectively and validly published. That name, it turns out, was never published by Dunn and Harmon and was effectively but not validly published as a nomen nudum by Welsh. To correct that imperfection the name is here published with a Latin diagnosis:

Lupinus argenteus var. *moabensis* Welsh var. nov. [*L. argenteus* var. *moabensis* Welsh, nom. nud.; *L. argenteus* ssp. *moabensis* Dunn & Harmon ex Welsh, nom. nud.]. A var. *argenteo* caeteris persimili floribus maximis, alis 12-14 (nec 8-12) mm longis differt.

TYPE: USA: Utah. Grand Co.: Professor Valley Ranch, T24S, R23E, S27, 1,342 m elev., sandy soil, 28 April 1977, S. L. Welsh and K. Taylor (Mastin) 14632 (Holotype BRY; Isotype NY, and 8 others distributed previously).

ADDITIONAL SPECIMENS: Utah. Grand Co., 5 km W of Deadhorse Point, 26 May 1950, W. P. Cottam 12107; *ibid.*, 2 km S of Landscape Arch, 19 May 1949, B. F. Harrison 11414; *ibid.*, 3 June 1963, S. L. Welsh & G. Moore 2028; *ibid.*, Between Moab and Castleton on the Colorado River, 13 May 1933, W. P. Cot-

tam 5620; *ibid.*, T25S, R24E, S29, Castle Valley, 18 May 1982, S. L. & E. R. Welsh 21154; *ibid.*, T24S, R23E, S26, Professor Valley Ranch, S. L. Welsh & K. Taylor (Mastin) 14631; *ibid.*, T25S, R23E, S9, ca 1 km east of Castle Rock, 28 Apr. 1984, S. L. Welsh & D. Trotter 22719. Emery Co., T22S, R8E, S6, ca 15 km E of Emery, 13 May 1981, S. L. Welsh 20462; *ibid.*, T24S, R9E, S18, San Rafael Swell, 22 May 1980, J. G. Harris 731; *ibid.*, Rock Springs Bench, NE of Cathedral Valley Jet., 10 June 1973, H. K. Harrison 1026. San Juan Co., Road to Upheaval Dome, Island in the Sky, 9 July 1964, G. Moore 200, 213; *ibid.*, Island in the Sky, 16 May 1965, G. Moore 392 (all BRY).

This is the early flowering, large flowered phase of *L. argenteus* that occurs at low elevations, mainly along sandy washes in mixed and warm desert shrub communities.

During a study of hanging gardens in the Glen Canyon National Recreation Area, a curious daisy was discovered in a moist alcove near the confluence of Glen Canyon and Escalante Canyon. The seepy alcove faces to the south and extends along a horizontal bedding plane for several hundred feet, forming a series of minor alcoves. Traditional hanging garden plants, such as *Primula specuicola*, are present in the garden community. The daisy occurred within the hanging garden assemblage mainly at the base of the face wall, where some detritus has accumulated. Only a few species of the enormous genus *Erigeron* occur in this habitat in Utah. This one seems to be specialized for growth in the moist, evidently saline substrate that is constantly renewed by addition of sand from the alcove face. It is similar in size of flower heads and general aspect with *Erigeron abajoensis* Cronq., a species of montane sites in southern Utah. The alcove daisy differs from its montane counterpart in having linear to narrowly oblanceolate basal and cauline leaves, fewer pappus bristles, and glands in addition to strigose to spreading stiff hairs on the involucre bracts. The species is named and described as follows.

Erigeron zothecinus Welsh sp. nov. Planta similis *Erigeronte abajoensi* Cronq. in capitulis et bracteis sed in foliis angustioribus, pappo paucioribus, et bracteis glandulosis differt.

TYPE: USA: Utah, Kane Co., T40S, R91/2E, S36, GCNRA, Lake Powell, N Escalante hanging gardens, ca 1,140 m elev., Navajo Sandstone, 29 May 1983, S. L. Welsh 22115 (Holotype BRY; 5 isotypes to be distributed).

ADDITIONAL SPECIMENS: Utah, Kane Co., same locations as the type, 29 May 1983, S. L. Welsh 22128; *ibid.*, 24 May 1984, S. L. Welsh 22860, both BRY.

In 1979 Sherel Goodrich discovered a population of *Cleomella palmerana* Jones north of Split Mountain in Uintah County, Utah. The material was routinely assigned to the species as it was understood in eastern Utah. However, the habit of growth and fruit characters differ from the body of the species. The raceme stands above the foliage, and the fruit is distinctly horned, resulting in fruit 8-9 mm wide, not 3-5 mm wide as in the material from south of the Uinta Basin. Because of these differences the plants are here designated as follows:

Cleomella palmerana Jones var. *goodrichii* Welsh var. nov. Ab. *Cleomella palmerana* var. *palmerana* in fructu latioribus et cornuto differt, et similis *Cleomella plocasperma* Wats. in fructu ambitu sed in foliis latioribus differt.

TYPE: USA: Uintah Co., T3S, R24E, S25, Rainbow Draw, 1,647 m elev, Morrison Formation, eroded slopes of heavy raw, vertisol-like clay, soil violently effervescent with 10% HCl, with *Machaeranthera venusta*, *Phacelia demissa*, *Astragalus flavus*, and *Atriplex coronata*, 26 May 1979, S. Goodrich 12312 (Holotype BRY; isotypes distributed previously).

On 8 May 1955, I collected a peculiar *Arabis* specimen in Little Rainbow Park, Uintah County, while doing field work for my first attempt at ecological and, as it turned out, taxonomic studies. The plant was sent to a specialist in the genus for determination prior to completion of the project in 1957. It was identified initially as *A. microphylla* Nutt. ex T. & G. Subsequently, in 1976, the plant was sent again to the specialist, and this time it was determined as *A. microphylla*, with some features of *A. fernaldiana* Rollins. In May 1979, plants of a similar nature were discovered in Jones Hole, east of the initial find. The plants have been compared to both *A. microphylla* and *A. fernaldiana*, of which abundant mate-

rial is now at hand for comparison. The similarity to *A. microphylla* is superficial indeed, but it is very much like the material of the type variety of *A. fernaldiana*. The specimens from Rainbow Park and Jones Hole differ from the Nevada material of the type variety in having smaller flowers and from the species in having narrower siliques and shorter styles. The plants in question are separated from *A. fernaldiana* geographically by the width of Utah. They are named as follows:

Arabis vivariensis Welsh sp. nov. Planta persimilis *Arabe fernaldiana* Rollins sensu lato, differt in stylis brevioribus (0.5 nec 1 mm), floribus parvioribus [prater var. *stylosam* (Wats.) Rollins], et siliquis angustioribus (1-1.5 nec 1.5-2 mm).

Plants perennial, forming mats or carpets to 1 m wide or more, the caudex branches bearing marcescent leaf bases, the branches of several seasons evident back from the branch ends, horizontally spreading to decumbent, finally erect and bearing flowering stems of the season or terminating in leafy rosettes, the flowering stems mainly 8-32 cm tall, puberulent with minute dendritic trichomes or glabrous above; basal leaves and those of the innovations 0.7-3 cm long, 1.2-4 mm wide, oblanceolate to elliptic, the blade tapering to a long, slender petiole, green to gray, pubescent overall with minute dendritic hairs, acute; cauline leaves 3-13 mm long, 1-2.5 mm wide, oblong to lanceolate or lance-subulate, puberulent to glabrous, much reduced upward; pedicels ascending to erect, 5-15 mm long in fruit, glabrous or minutely puberulent; sepals 2.5-4.5 mm long, the outer pair gibbous at the base, the inner ones less so, commonly purplish, glabrous to puberulent; petals 7-9 mm long, tapering to a basal claw, purplish; siliques 3-7 cm long, 1-1.5 mm wide, glabrous, nerved at the base, erect-ascending, typically curved or contorted, the style to 0.5 mm long; seeds uniseriate, ca 1.2 mm long, narrowly winged apically.

TYPE: USA: Utah, Uintah Co., T3S, R25E, S1, Jones Hole, National Fish Hatchery, 1,830 m, sandy calcareous gravel, Morgan Formation, 16 May 1979, S. L. Welsh & E. C. Neese 18341 (Holotype BRY; 10 isotypes to be distributed).

ADDITIONAL SPECIMENS: Utah, Uintah County, Little Rainbow Park, Dinosaur Na-

tional Monument, Navajo Sandstone, sandy soil, juniper association, at 1,525 m, 8 May 1955, S. L. Welsh 152; same locality as the type, 20 June 1980, E. Neese & S. L. Welsh 8978; *ibid.*, 24 May 1982, N. D. Atwood 8822 (all BRY).

During the spring of 1981, a new *Draba* was discovered by Ronald J. Kass, growing in crevices of granite cliffs in Goshute Canyon, Deep Creek Mountains, Tooele County, Utah. The plants appear to be shade requiring mesophytes of north-facing outcrops. An extensive field search of other canyons did not yield evidence of other specimens of the species. It is easily separated from other scapose and subscapose perennial drabas by its slenderly petiolate leaves, definite caudices clothed with persistent, filiform leaf bases, and long persistent scapes. The species does not appear to have close allies among our numerous taxa, but does share certain morphological features with *D. asprella*. The strongly branched caudex, with persistent, marcescent leaf bases and narrowly oblanceolate to spatulate leaves is diagnostic from *D. asprella*. The species is named in honor of its discoverer, as follows:

Draba kassii Welsh sp. nov. Planta similis *Draba asprella* generalis sed in caudicibus vestitis petiolis marcescentibus valde, foliis angustioribus et glabris supra et interdum infra, et pilis simplicibus vel furcatis differt.

Perennial, caespitose, from a definite, branching, sublignous caudex, this clothed with persistent, filiform, threadlike, leaf bases; stems 2-13 cm tall, glabrous or sparingly hirsute with mixed simple and forked to dendritic hairs; leaves all basal, rarely with 1

cauline, 1.8-4.8 cm long, 2-6 mm wide, narrowly oblanceolate to spatulate, entire or obscurely and sparingly denticulate, green, the surfaces glabrous, sparingly ciliate with simple or forked hairs; racemes simple, 2- to 9-flowered, elongating in fruit; pedicels 2-10 (15) mm long, ascending, glabrous; sepals 1.5-2.4 mm long, greenish, sparingly hairy, with simple or forked hairs; petals 4.6-5.9 mm long, yellow, obovate-spatulate, rounded; siliques 3-10 (14) mm long, 0.8-2.5 mm wide, elliptic to oblong, glabrous; styles 1-2 mm long; seeds 2-14.

TYPE: USA: Utah, Tooele Co., T10S, R18W, SW1/4 S36, Deep Creek Mtns., Goshute Canyon, granite cliff, where soil accumulates in cracks, at 2,135 m elev., on north exposure, with *Juniperus osteosperma*, *Pinus monophylla*, *Lomatium grayii*, etc., 8 June 1981, R. J. Kass, with Herrick 330 (Holotype BRY; 5 isotypes to be distributed).

ADDITIONAL SPECIMENS: Utah, Tooele Co., *ibid.*, 20 May 1981, R. J. Kass 284 (BRY); *ibid.*, 23 April 1981, R. J. Kass, with Alan Tye 243 (BRY).

The plants begin to flower while snow is still on the ground in mid-April and continue to flower to early June. They occur on granite at 2,135 to 2,500 m elevation.

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