



Oxytropis nana Nutt., a Wyoming endemic collected by Thomas Nuttall on his journey across Wyoming in 1814

WYOMING NATIVE PLANT SOCIETY

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Treasurer's Report - Balance as of May 8, 1989: \$274.82; deposits: dues \$132.50, T-shirts \$50.00, scholarship fund \$47.00; disbursements: newsletter printing \$13.83, stamps \$25.00, T-shirts \$50.00; new balance as of October 20, 1989: \$415.49. RD

Annual Meeting - The annual meeting was called to order by Vice-President Ernie Nelson at 8:30 AM on June 24, 1989, in the valley of Clark's Fork of the Yellowstone. Fourteen people were present including seven voting members, just enough for a quorum. Ballots were distributed to those members who had not voted by mail and these were added to the mail ballots for counting. The following were elected: George Jones, President; Neil Snow, Vice-President; Robert Dorn, Secretary-Treasurer; Hollis Marriott, 2 year Board Member; and Ernie Nelson, 1 year Board Member. The possibility of changing the bylaws regarding a quorum was discussed. Election of officers can be handled with a mail vote so a quorum is only necessary for other business, which can also be done by mail vote if necessary, or by the Board in most cases. It was decided not to propose any changes regarding a quorum. It was agreed to have the next annual meeting in the Big Horn Mountains probably around July 15 or 20, 1990. Erwin Evert moved to adjourn the meeting, seconded by Mary Neighbours. The vote was unanimous in favor. RD

Aquatic Flowering Plants - Aquatics include several general groups of plants which are usually categorized as emergent, floating, or submerged. Emergents include cattails and bulrushes which have their roots in the water, at least in the spring, and the stems and leaves largely out of the water. Floating aquatics include duckweeds and water lilies. Duckweeds do not root into the pond or lake bottom whereas water lilies do. Submerged aquatics are best characterized by the genus *Potamogeton*, the pondweeds. These normally root into the bottom but often are broken free by wave action.

Aquatics, especially the submerged, tend to be rather cosmopolitan, that is, they have very broad distributions. The same species often occurs on several (or even most) continents. There are two major reasons for this. First, the seeds tend to be dispersed on the muddy feet of migratory water birds, true long-distance dispersal. Second, the aquatic habitat is a tempered habitat, normally staying above freezing and seldom reaching what we would consider hot.

No fewer than 21 families are represented in Wyoming's floating and submerged aquatics. As a rule, the submerged aquatics have inconspicuous flowers. On the other hand, the floating aquatics may have rather showy flowers like the yellow water lily or the pink water smartweed. RD

Floristic Studies in the Southwestern Absarokas - As part of the requirements for my masters thesis (Dept. of Botany, University of Wyoming, under the direction of Dr. Ronald Hartman), I spent the summers of 1987 and 1988 in the southwestern Absarokas inventorying the vascular flora of this poorly collected region. Prior to this study only 1000 or so collection numbers had been taken from this 1500 square mile area. With field help from Ron Hartman and Ernie Nelson, over 5600 new collections were made.

The "Southwestern Absarokas" are not geologically distinct, but rather a term of convenience. The Absarokas themselves are of volcanic origin, and are unique in this regard within Wyoming. The topographic relief - the ridges and valleys - is probably due to differential erosion of an ancient volcanic plateau formed during the Eocene.

At lower elevations west of the Continental Divide, the vegetation is dominated mostly by *Pinus contorta* (lodgepole pine). At higher elevations *Picea engelmannii* (Engelmann spruce) and *Abies lasiocarpa* (subalpine fir) frequently co-dominate, but *Pinus albicaulis* (whitebark pine) can be found as an admixture or in relatively pure stands. East of the Divide, *Pinus flexilis* (limber pine) becomes much more frequent, as is true of *Pseudotsuga menziesii* (Douglas-fir), although the latter also occurs sporadically in well-drained sites west of the Divide.

Because the study area is almost completely roadless, some inherent logistical problems had to be overcome to permit complete collecting of the region. Bridger-Teton Forest personnel packed in pressing materials and

allowed me to spend eleven days in the Hawk's Rest patrol cabin, which greatly facilitated my collecting the most remote parts of the region. To minimize the chances of encountering any of the numerous bears, I constantly had a large cowbell attached to the frame of my backpack. Its noisy clattering must have been effective, since I never actually saw a bear. Narrowly escaping the tornado in 1987 and coping with the fires in 1988 substituted for bear encounters.

A total of 891 taxa were recorded for this region, representing 74 families and 300 genera. The families most frequently represented were the Asteraceae (161 taxa), Poaceae (110 taxa), Brassicaceae (58 taxa), Scrophulariaceae (45 taxa), Cyperaceae (43 taxa), and Ranunculaceae and Rosaceae (each with 37 taxa). It is interesting to note that 50 percent of the genera (150 total) were represented by only one species. Alien or introduced taxa represent approximately 7.5 percent of the flora. Unfortunately, the extensive fire lines that were made during the 1988 forest fires will probably promote the spread of invasive taxa deep within the study area.

My research resulted in several additions to the flora of Yellowstone National Park and over 50 first collections for Teton County. No state records or undescribed taxa were encountered. There were, however, several range extensions within Wyoming of over 75 miles.

I would like to gratefully acknowledge the scholarship support given to me in 1987 and 1988 by the Wyoming Native Plant Society. This type of support definitely makes a difference to graduate students doing this type of intensive field work. NS

New State Record - *Chloris verticillata* was collected in September at old Fort Laramie in Goshen County. This introduced grass is native to Colorado and states to the east and south. NS

Wyoming Endemics

Thelesperma pubescens Dorn Hairy Greenthread

This member of the sunflower family was first collected by Ann Aldrich on July 30, 1979, on Sage Creek Mountain near Lonetree in Uinta County. Robert Dorn collected it on nearby Hickey Mountain on July 8 and August 20, 1982, and described the species in 1983. The plants average about 6 inches high with several stems arising from a basal cluster of divided, hairy leaves with narrow segments. Each stem bears one, or rarely two, flowering heads about 3/8 inch high. All the flowers are disk flowers and are yellow. The plants grow on cobbly rims of Sage Creek, Hickey, and Cedar mountains along the Uinta-Sweetwater county line.

Arabis pusilla Rollins Little Rock Cress

This member of the mustard family was first collected by Reed and Kathryn Rollins of Harvard University on June 20, 1981, near South Pass in Fremont County. Reed Rollins described it in 1982. The plants average about 4 inches high. Most of the leaves are near the base, are narrow, and about 1/2 inch long. The petals are lavender and about 3/16 inch long. The plants grow in crevices of granitic boulders and on granitic gravel in the foothills of the Wind River Mountains. So far they are known from a single location. RD

Rare Plants of Colorado - The Colorado Native Plant Society has put out a booklet titled Rare Plants of Colorado. This 75 page booklet includes attractive color photographs and drawings of 92 rare and endangered species. It can be obtained from Rocky Mountain Nature Association, Rocky Mountain National Park, Estes Park, CO 80517 [303-586-2371]. Cost is \$7.95. RD

Colorado Native Plant Society Annual Meeting - The theme is "Saving Colorado's Native Flora on Public Lands" and will include a number of speakers including Michele Gerard, Ecologist on the Bighorn National Forest. Date is October 28, 1989, in Golden at the Colorado School of Mines, Petroleum Hall, Green Center (off Washington Street between 15th and 16th streets) beginning at 8:30 AM. RD

The Lost Plant of the Wyeth Expedition by James H. Locklear

[Jim is Director of the Dyck Arboretum of the Plains in Hesston, Kansas and a member of WNPS]

Rare plants are rarely uninteresting. Often these species have features or attributes that are out-of-the-ordinary for their kind. Sometimes they provide unique opportunities for biological research. In almost all cases, the question of why they only occur where they do presents a compelling challenge for any inquiring mind.

Occasionally, there is an interesting human element to the story of a rare

species. Such is the case for Parthenium alpinum, a unique plant known from only a few locations in Wyoming and the western Great Plains. Not unlike the saga of a lost treasure, the tale of this plant inter-twines history, detective work, clever reasoning and simply being in the right place at the right time.

It was 1834, and Thomas Nuttall was making his way across the western United States as a part of the Wyeth Expedition, bound for Oregon. As a naturalist with the expedition, he hurriedly collected specimens of plants as the company pressed along a route that would later serve as the Oregon Trail. One day in June he left the trail and clambered to the top of a rocky, windswept ridge.

The effort required to cover this rugged ground probably seemed insignificant to Mr. Nuttall. Such barren ridges and hilltops, never before traversed by a trained botanist, had yielded many species of plants previously unknown to science. On this particular rise he encountered yet another.

Many of the plants occupying such harsh habitats were dwarf species with a matted or cushion-like pattern of growth. Nuttall's newest discovery was just such a plant. Growing as a ground-hugging mat, it was at most only an inch and a half tall. The leaves, which were narrow and somewhat spoon-shaped, had a gray-green cast to them. The most unusual feature of this plain-looking plant was its peculiar flowers. Practically buried in the foliage, they were round, greenish and tiny - about the size of small peas. Close observation revealed that they were actually composite flower heads, placing this plant in the sunflower family (Asteraceae). Nuttall collected specimens and descended the ridge to re-join the expedition.

Six years following the completion of the Wyeth Expedition, Nuttall published a description of his curious little plant and gave it the name Bolophyta alpina. The generic name, derived from bolus, meaning clod, was an allusion to the depressed and matted growth of the plant. Later, based on specimens collected by Nuttall, botanists John Torrey and Asa Gray decided that the plant was best considered a member of the genus Parthenium. They changed the name to Parthenium alpinum in their manual, A Flora of North America, published in 1842.

While changes in botanical nomenclature may not be the stuff of great mysteries, the rest of the story of P. alpinum is an interesting bit of botanical history, for following Thomas Nuttall's discovery of this unique species, it was not to be seen again in the wild for over 100 years. Indeed, it would come to be known as "the legendary and long-lost Parthenium alpinum."

On the first of June, 1946, Rupert C. Barneby and H. Dwight Ripley were botanizing in the hills along the upper Arkansas River west of Pueblo, Colorado. These two men, who had collected plants extensively throughout the western United States, were to become central figures in the search for Thomas Nuttall's lost plant.

Three years earlier, in 1943, an article entitled "The Story of Parthenium alpinum" had appeared in the botanical journal, Madrono. The author, George J. Goodman, drew attention to the fact that, although over one hundred years had passed since Nuttall discovered P. alpinum, no one had succeeded in re-locating it in the wild. Goodman's article no doubt piqued the interest of Barneby and Ripley, particularly since they were among the very few individuals who had first-hand experience with P. ligulatum, a very close relative of P. alpinum. This species, which had been discovered in northeastern Utah in 1908, was practically identical to Nuttall's plant except for some minor differences in the structure of the flower heads.

As pointed out by Goodman, the major obstacle in re-locating P. alpinum was the vague description which Nuttall gave of the location where he collected the plant. In his 1840 publication, Nuttall described the habitat as "In the Rocky Mountain range; latitude about 42° and seven thousand feet above the level of the sea. On shelving rocks, on the summit of a lofty hill, near the place called the 'Three Butes' by the Canadians, towards the sources of the Platte. Flowering in June."

The problem with Nuttall's description was due in part to a conflict between the time when it appeared he collected the plant, "Flowering in June," and the stated locality, "near the place called the 'Three Butes'." The only landmark along Nuttall's route that was still known as Three Buttes was in southeastern Idaho near the town of Pocatello. However, the Wyeth Expedition did not reach that area until almost mid July. According to the journal of John K. Townsend, another naturalist on the expedition, the company was still in Wyoming on July 4th. If Nuttall had really collected P. alpinum in June, then it could not have been in Idaho. The key to resolving this conflict rested in the reliability of Nuttall's statement, "Flowering in June."

Goodman addressed this question by noting that Nuttall had given a detailed description of the structure of the flowers of P. alpinum and, therefore, he must have collected it in bloom. But had it really been in June? Citing the fact that P. ligulatum had been reported to flower in late May and early June,

Goodman thought it was likely that P. alpinum also bloomed about this time. The evidence seemed to point to Wyoming as the "hideout" of P. alpinum.

An intermingling of pinyon pine and one-seed juniper populated the bench-like hills above the Arkansas River where Barneby and Ripley were collecting plants. In open areas within this vegetation and at the brink of the ledges, they stepped over low-growing mats of plants which Barneby assumed to be Hymenoxys acaulis, a common species of such dry, rocky habitats. It was Ripley who finally noticed, hidden among the leaves, the tiny greenish flower heads.

It must have been an exhilarating moment of discovery. Yet, what Ripley and Barneby had found was not P. alpinum, nor even P. ligulatum, but another very similar plant which Barneby later named P. tetraeneuris.

At first it might seem that the question of the location of P. alpinum was now hopelessly confused. The discoveries of P. ligulatum and P. tetraeneuris were certainly significant, but these two species had been found outside of Wyoming, far from Nuttall's 1834 route. To make matters worse, they occurred on opposite sides of the Rocky Mountains from each other. Yet, with the discovery of P. tetraeneuris, the jumbled pieces of a century-old puzzle were beginning to come together in Barneby's mind.

Like P. ligulatum, the newly discovered P. tetraeneuris was found in bloom in early June. This gave even more credence to Goodman's prediction that Nuttall did collect P. alpinum in June and, thus, in Wyoming. However, the route followed by the Wyeth Expedition through Wyoming was over 400 miles long. Could a more precise location be derived from Nuttall's information?

Goodman, through a careful comparison of Nuttall's description of the collection locality with the journal kept by Townsend, had suggested central Wyoming as the likely area, predicting that P. alpinum had been collected 50 to 100 miles up or down the North Platte River from Casper, Wyoming. This area was a region of buttes and perhaps 'Three Buttes' was a name once known in the area that had since fallen into disuse. In addition, the "sources of the Platte" mentioned by Nuttall, presumably the Sweetwater River, joined with the North Platte River in an area of low mountains, hills and badlands west of Casper.

With the discovery of P. tetraeneuris, Barneby began to see a pattern emerging that led him also to suspect central Wyoming as the locality of P. alpinum. Part of his reasoning was founded in his familiarity with the genus Astragalus in the western United States. Astragalus detritalis was known to occur in association with P. ligulatum in Utah. Another closely related milkvetch, A. spathulatus, had been collected in Fremont County, Colorado, where P. tetraeneuris had been discovered. Astragalus spathulatus occurred in abundance in central Wyoming, particularly in the high basins that lay in the gap between the southern and middle Rocky Mountains. Perhaps P. alpinum also occurred in this area, linking P. ligulatum on the western side of the Rockies with P. tetraeneuris on the east side. (To Be Continued) JL

Contributors This Issue - RD = Robert Dorn, JL = Jim Locklear, NS = Neil Snow.

Wyoming Native Plant Society T-Shirts are still available for \$9.00 per shirt plus \$2.50 for shipping. Sizes are S(34-36), M(38-40), L(42-44), and XL(46-48). Color is blue and green on cream background. Make checks payable to Mary Neighbours and mail to her at Box 3165, University Station, Laramie, WY 82071.

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