

RANGE EXTENSIONS OF THREE CONIFERS AND A DWARF MISTLETOE IN THE PANAMINT MOUNTAINS, DEATH VALLEY NATIONAL MONUMENT.—The ranges of three conifers, *Pinus aristata* Engelm. (syn. *P. longaeva* D. K. Bailey) (Johnson 73311-1, IFGP), *P. flexilis* James (Johnson 73311-3, IFGP), and *Juniperus occidentalis* Hook. (Johnson 73311-5, IFGP), extend farther south in the Panamint Mountains than heretofore reported by Griffin and Critchfield (*The distribution of forest trees in California*, USDA Forest Serv. Res. Pap. PSW-82, 1972). On 7 Nov 1973, I climbed Sentinel Peak (2937 m) by way of Panamint Pass. I was investigating a report that *P. jeffreyi* Grev. & Balf. grew on the southwest slope of the peak in the Panamint Range on the western border of Death Valley National Monument. I did not find *P. jeffreyi* but extended the range for the three conifers to Sentinel Peak, which is 8.2 km south of the well-known bristlecone pine stand on Telescope Peak (3368 m). Sentinel Peak's climbing register shows that the mountain has often been climbed. And yet the occurrence of bristlecone pine—an easily recognized and highly publicized species—has until now gone unreported for this desert peak. While on a second expedition to the Panamint Range in April 1975, I found a further extension of *P. flexilis* (Johnson 75116-1, IFGP) to Porter Peak (2774 m), 5.5 km south of Sentinel Peak.

Death Valley and vicinity have been repeatedly "botanized". The earliest comprehensive botanical reconnaissance of this area was the U. S. Department of Agriculture's Division of Botany biological survey in 1891 (Coville, Contr. U.S. Natl. Herb. 4:1-363, 1893; Merriam, North American Fauna 7:285-343, 1893). The expedition collected bristlecone pine on Telescope and White Mountain Peaks in California and on Charleston Peak, Nevada. In February 1891, Coville (op. cit.) and Funston crossed the Panamint Mountains in a "terrific snowstorm". They were within sight of the Sentinel Peak bristlecone pine stand but were apparently more concerned with their own survival than with observing plants. They crossed Panamint Pass in late February 1891, but a heavy snowpack may have prevented their scouting the area south of the pass. In March 1891, a reconnaissance party of the expedition made a base camp in Johnson Canyon just east of Sentinel Peak and "... excursions were made to various adjacent points". Even though they were camping in the shadow of Sentinel Peak, they did not detect the bristlecone pine stand.

The published distribution of bristlecone pine in the Death Valley area is confusing. Sudworth (*Forest trees of the Pacific slope*, 1908) reported bristlecone pine in the Panamint Range and later (*Geographic distribution of North American trees, Part I, pines*, 1913) mapped the Telescope Peak stand as the only grove on the mountains surrounding Death Valley. Subsequently, Sudworth (*The pine trees of the Rocky Mountain region*, 1917) added locations in the Cottonwood, Grapevine and Funeral Mountains. His original worksheet map (on file at the Pacific Southwest Forest and Range Experiment Station, Berkeley, California) shows that these range extensions are based on "Information furnished by District No. 5 [of the U. S. Forest Service]". According to Peter G. Sanchez, resource management specialist, Death Valley National Monument (pers. comm., June 1975), bristlecone pine has not been collected or found in the Cottonwood, Grapevine, or Funeral Mountains. Therefore, the information furnished by District No. 5 has never been corroborated.

Munns (*The distribution of important forest trees of the United States*, 1938) repeated the errors in his map book. Munz (*A California flora*, 1959, and *A flora of southern California*, 1974) perpetuated the report of bristlecone pine growing in the Grapevine and Funeral Mountains. Miller (*Ecology* 27:54-60, 1946) climbed Grapevine (2663 m) and Wahguyhe (2630 m) Peaks in the Grapevine Mountains, Nevada, and surveyed the surrounding area. He reported *Pinus flexilis* and *P. monophylla* Torr. & Frem. growing on these peaks. Miller thus confirmed the findings of Coville (op. cit.), who reported discovering *P. flexilis* on Grapevine Peak in 1891.

On Sentinel Peak, bristlecone pine grows in association with *Pinus flexilis*, *P. monophylla*, *Juniperus occidentalis*, and *J. osteosperma* (Torr.) Little, mainly above 2800 m.

The *Pinus flexilis* on Porter Peak is confined to the west, northwest, and north-east slopes, generally above 2560 m. A dwarf mistletoe was collected on *P. flexilis* on the northwest slope of Porter Peak and sent to Dr. Frank G. Hawksworth, U. S. Forest Service, Fort Collins, Colorado, for identification. Dr. Hawksworth (pers. comm., May 1975) identified the dwarf mistletoe as *Arceuthobium cyanocarpum* Coulter & Nelson (*Johnson* 75116-1, IFGP) and said this is the first recorded occurrence in the Panamint Range. The nearest previously recorded locality is 187 km northeast at Lake Sabrina, Inyo County, California, according to Dr. Hawksworth.

Juniperus occidentalis has been reported by Griffin and Critchfield (op. cit.) in the Panamint Range north of Panamint Pass. South of the pass I noted only a few large trees on the northeastern slope of Sentinel Peak.

The Sentinel Peak bristlecone pines warrant further study, including additional chemical analysis. One of the distinguishing characteristics used by Bailey (Ann. Missouri Bot. Gard. 57:210-249. 1970) in referring western stands of bristlecone pine to a separate species (*P. longaeva* D. K. Bailey) was the olfactory/chemical difference he noted. Zavarin and Snajberk (Biochem. Systematics 1:39-44. 1973) analyzed the wood turpentine of the eastern and western populations and found that the western stands they sampled had mainly α -pinene as the dominant monoterpene (85.3 to 98.2 percent) and 3-carene less than 2.5 percent. The eastern stands were characterized by 3-carene as the main component (62.7 to 92.1 percent) and α -pinene less than 5.3 percent. Chemical analysis of ten trees from Sentinel Peak by Zavarin (pers. comm., Oct. 1975) places this stand with the eastern populations; α -pinene ranged from 1.6 to 13.7 percent and 3-carene ranged from 76.1 to 90.9 percent. Thus, one important character distinguishing *P. longaeva* is not as clear cut as previously assumed. More detailed studies of the southern desert peak bristlecone pine stands (Telescope and Sentinel Peaks in California, the Spring Mountains, Nevada, and the San Francisco Mountains, Arizona) may reveal further evidence to clarify the taxonomic status of the western stands. Possibly treating the bristlecone pine complex as a single species with the western populations named as a subspecies would be more appropriate.—LEROY C. JOHNSON, Pacific Southwest Forest and Range Experiment Station, Forest Service, U. S. Department of Agriculture, Berkeley, California 94701

CHARLES WRIGHT'S "EL PASO" COLLECTIONS AND THE TYPE LOCALITY FOR PSATHYROTES SCAPOSA (COMPOSITAE).—Type localities for several taxa collected by Wright and first described by A. Gray in *Plantae Wrightianae* (Smithsonian Contr. Knowl. 3(5), 1852, and 5(6), 1853) are given variously as "Stony hills above El Paso", "Along the Rio Grande near El Paso", "Around El Paso", etc. Strother and Pilz (Madroño 23:24-40. 1975) indicated that the type locality for *Psathyrotes scaposa* A. Gray is "probably considerably southeast of El Paso, Texas, but it cannot be determined with certainty", although Gray's protologue (Pl. Wright. II:100.) gives "Stony hills above El Paso". A recent collection vindicates Gray/Wright: New Mexico, Doña Ana Co., Cerro de Los Muleros, west side of Rio Grande, near Mexico boundary, 24 May 1975, T. K. Todsén 55241, NMC, TEX, UC. (Note: Correct date for Wright's collection is May 1852, not 1851 as given by Strother and Pilz.)

Comparison of *Plantae Wrightianae* and a transcript of Wright's field notes (prepared and annotated by I. M. Johnston, 1940; original at GH, copy in Biology Library, Univ. California, Berkeley; cf. McKelvey, *Botanical exploration of the trans-Mississippi west, 1790-1850*. 1955, p. 1603 ff.) indicates that Gray frequently combined Wright's separate gatherings and that Gray frequently used "El Paso" not only for collections that Wright originally recorded under "El Paso" (or environs) but also for those recorded as "Frontera" (or environs), including "rocky hills near Frontera" and "rocky ridges across river from Frontera". The name Frontera was associated with T. Frank White's rancho, which was just north of the pass of the Rio Grande on the east side, about 9 km northwest of the plaza in



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