

western United States. This species has been reported from Wyoming (Dorn Vascular Plants of Wyoming, Mountain West, 1987), however, according to Argus (personal communication to W. A. Weber), the Wyoming plants are glaucous and do not represent the typical form of the species. The species occupies peat hummocks throughout the wetter portion of the fen. *Salix candida* Fluegge (Cooper 1677, COLO), also present, is otherwise known in Colorado only from the Laramie River drainage, 160 km to the north, and occurs on hummocks with *S. myrtillofolia*. *Packera* (*Senecio*) *pauciflora* (Pursh) A. Löve & D. Löve grows on peat hummocks throughout the fen (Weber and Cooper 18016, COLO). It is a North American species that has been reported previously in the Rocky Mountains as far south as northern Wyoming. *Carex scirpoidea* Michx. was rediscovered here (Weber and Cooper 18027, COLO). It was known previously from an historic specimen collected in South Park by John Wolf. It is very common at this site, dominating the more seasonally dry fen margins. It is noted also in the Lost Park fen and in peatlands along Sacramento Creek west of Fairplay, also in South Park. *Carex viridula* Michx. occurs scattered on hummocks throughout the fen (Weber and Cooper 18021, COLO). It is known previously in Colorado only from the San Juan Mountains. *Trichophorum pumilum* (Vahl) Schinz & Thellung (*Scirpus pumilus*) another very rare species is common on peat hummocks with *Kobresia simpliciuscula*.

The floating peat mats in East Lost Park are dominated by *Carex limosa* L. and *Eleocharis quinqueflora*. Growing in the mats is *Carex livida* (Wahlenberg) Willd., a boreal circumpolar species that has been reported previously in the Rocky Mountain region as far south as northern Montana and Idaho (Weber and Cooper 18034, COLO). This species has been found also in the Boston Peak wetland in the Laramie River drainage (Cooper 1680, COLO) and in the High Creek fen (Cooper 1685, COLO). Scattered populations of *Carex tenuiflora* Wahlenb. also occur in the floating mats at East Lost Park (Weber and Cooper 18036, COLO). This is a boreal circumpolar species that is new to the contiguous western U.S. and represents a range extension westward from Minnesota. *Eriophorum gracile* K. Koch forms large reddish colored lawns on the floating mats in East Lost Park (Weber and Cooper 18035, COLO). It was also found in the Sacramento Creek drainage (Weber and Cooper 18040, COLO) and in the Guanella Pass fen (Cooper 1691, COLO).

The occurrence of these taxa in Colorado underscores the long-term stability and importance of peatlands as critical habitat for small disjunct populations of plant species whose present distribution is largely boreal.

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STATUS AND DISTRIBUTION OF *CASTILLEJA MOLLIS* (SCROPHULARIACEAE).—Lawrence R. Heckard, Jepson Herbarium, University of California, Berkeley, CA 94720, Stephen W. Ingram, Herbarium, University of California, Santa Barbara, CA 93106; Tsan-Iang Chuang, Dept. of Biological Sciences, Illinois State University, Normal, IL 61761.

*Castilleja mollis* Pennell (Proceedings of the Academy of Natural Sciences, Philadelphia 99:185, 1947), a federal C2 candidate for listing under the Endangered Species Act, was described on the basis of a single collection from Santa Rosa Island of the Channel Islands of California. The epithet reflects the indument of branched hairs. The distribution of this species, considered by Pennell (in Abrams, Illustrated Flora of the Pacific States 3:836, 1951) to be a Santa Rosa Island endemic, was expanded by Munz (A California Flora, 1959, p. 669) and Bacigalupi (Leaflets in Western Botany



10:286–287, 1966) to include plants of coastal sand dunes of San Luis Obispo County with copious branched hairs. Heckard (Brittonia 20:212–226, 1968) presented chromosome data showing that the sand-dune plants presumed to be *C. mollis* were hexaploids ( $n=36$ ) and that this number as well as  $n=48$  was found in *C. affinis* var. *contentiosa* (J. F. Macbr.) Bacigalupi (Leaflets in Western Botany 10:286–287, 1966), a variety Bacigalupi interpreted as accommodating the coastal plants of *C. affinis* in San Luis Obispo and Santa Barbara counties with branched hairs. Bacigalupi suggested that the branched hairs were the result of hybridization with *C. mollis*. Questions have arisen subsequently as to the distinctness of *C. mollis* from *C. affinis* both on the mainland and on Santa Rosa Island. Unpublished studies by Chuang and Heckard confirm that all the coastal bluff and dune plants of *Castilleja* in San Luis Obispo and Santa Barbara counties are polyploid ( $n=36, 48$ ) and fit within the variation pattern of *C. affinis*, although they possess branched hairs in varying degrees. We consider them to be too variable to be considered a formal variety (*C. affinis* var. *contentiosa*).

Recent observations and collections of *Castilleja mollis* and *C. affinis* on Santa Rosa Island by Stephen W. Ingram supply new evidence on the differences between the two species and support the conclusion that *C. mollis* is endemic to Santa Rosa Island (and possibly San Miguel Island: Point Bennett, *F. H. Elmore* 341 in 1938, RSA, SBBG). Past introduction(s) of *C. mollis* to the mainland remains a likely source of the branched hairs and occasional features reminiscent of *C. mollis* in coastal *C. affinis*. Chromosome number differences of the two species on Santa Rosa Island indicate that a polyploid barrier is acting to limit gene exchange between the two species on the island. T. I. and F. M. Chuang (unpublished data) found *C. mollis* to be a diploid with  $n=12$  (Carrington Point in stabilized dunes, Ingram & Danielson 445, JEPS, UCSB) and *C. affinis* to be hexaploid with  $n=36$  (Verde Canyon, Ingram & Danielson 442, JEPS, UCSB; Windmill Canyon, Danielson cytological collection only—an earlier collection is available as a voucher from this locality: Blakely 3173, SBBG). The diploid count for *C. mollis* adds evidence that this species is not on the mainland at present, although its genes may well be incorporated into the polyploid makeup of coastal *C. affinis*. Occasional hybrids were observed (Ingram & Danielson 446, JEPS, UCSB). Branched hairs, which are found in most specimens of *C. affinis* on Santa Rosa Island, indicate that polyploid barriers to hybridization are incomplete as is usual in *Castilleja*. There is some evidence that habitat preferences may also be operating within the species to keep them apart; *C. mollis* is found only on sand-dunes while *C. affinis* is generally found in more rocky habitats although it also may grow in sandy areas.

The principal features that distinguish *C. mollis* from *C. affinis* besides its dense indument of branched hairs are: semi-prostrate habit; bracts and upper leaves that are grayish, fleshy, broad and rounded (obovate to ovate), and crowded at the apex; bract and calyx yellow to yellowish green above. These features are rare in *C. affinis*, and when present in coastal San Luis Obispo and Santa Barbara counties may be the result of introgression from *C. mollis*. The closest relative of *C. mollis* appears to be *C. latifolia* Benth., an endemic of coastal bluffs and dunes of the Monterey Peninsula and adjacent coast that is without branched hairs.

The only extant populations of *C. mollis* known on Santa Rosa Island are at Carrington Point and an unverified report at Jaw Gulch. Field study is needed of the plants cited above from San Miguel Island to ascertain their relationship to *C. mollis*. Protection of the species is critical and recommendations are proposed by Ingram in a study done through the Herbarium, University of California, Santa Barbara (A Report to The Nature Conservancy—Nipomo Dunes Preserve/Central Coast and Valley Office, San Luis Obispo, CA, 1990).

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