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## PULICARIA HISPANICA (COMPOSITAE: INULEAE), A WEED NEW TO CALIFORNIA

PETER H. RAVEN<sup>1</sup>

In July, 1959, Richard Ahlefeld, Senior Agricultural Inspector with the Orange County Department of Agriculture, discovered a strange weedy composite on the Ray Miller property in Santa Ana Canyon, Orange County. Independently, I found the same plant twice in the autumn of 1961 in the same general area. Although the plants superficially resembled *Chrysopsis* (Astereae), their tailed anthers and flat, blunt style branches clearly indicated that they were referable to the tribe Inuleae. Study of available herbarium specimens and floras suggested that they were closest to the west Mediterranean *Pulicaria hispanica* (Boiss.) Boiss., although that species is normally annual and the California plants often persist and become short-rhizomatous at the base. Mr. J. F. M. Cannon of the Department of Botany, British Museum (Natural History), kindly compared plants of my collections with material of *Pulicaria* at his institution and confirmed the identification, although remarking that the genus is clearly in need of revision.

This golden-flowered herb, flowering in the late summer and fall, grows in clumps along washes and beside irrigation canals. Although it has appeared sporadically in drier situations, it apparently has not persisted except near water. For example, it was collected in 1959 near the Carissa Plains School, San Luis Obispo County, but when Ernest Twisselmann searched this area in October, 1962, it could not be found. In addition to its occurrence along the Santa Ana River Canyon in Orange County, it has also appeared locally in weedy soil along the freeway system of this county away from the riverbed, according to Robert L. Pope, Botanist for the Orange County Department of Agriculture, but perhaps it will not persist there. In 1962, it was found well established in another streamside location, this time along Whitewater Canyon, Riverside County, by John C. Roos. Since it has been found in three well-separated areas within four years, it seems likely that it may continue to spread rapidly along many of the stream systems and irrigation ditches in southern California and perhaps the San Joaquin Valley as well. Hence, although it does not appear likely to become a weed of agricultural importance away from wet areas, it is of considerable interest to record its spread as accurately as possible.

In the treatment of the Compositae given by Ferris (in Abrams & Ferris, III. Fl. Pac. St. 4: 98-613. 1960), this species might key to Inuleae, if the scarios margin of the involucre bracts was thought to be wide enough, but it would then be compared with *Inula* and the possibility discounted since its heads are so much smaller. In Munz's recent State flora (Calif. Fl., p. 1073-1310. 1959) it would key easily to Inuleae in the "Key to the Tribes" (p. 1074), but due to the error in the artificial key (p. 1075; anthers of Inuleae said not to be tailed or sagittate at base), it would key to Group G and then to *Chrysopsis*. If placed in Inuleae, it would run out to *Inula*, with the same difficulties as Abrams and Ferris. The genus and species may be characterized as follows:

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Fig. 1. *Pulicaria hispanica*.—Habit,  $\times 1$ .—Disk achene, ray flower, disk flower, anthers, and stigma,  $\times 10$ .

## PULICARIA Gaertn.

Distinguished from *Inula* by the 2-ranked pappus, the outer row with short scales which are sometimes joined into a cup.

PULICARIA HISPANICA (Boiss.) Boiss., Fl. Or. 3: 205. 1875. (Fig. 1)

Annual, biennial, or short-lived perennial herb, becoming short-rhizomatous; stems to 1.2 m tall, ridged, well branched. Entire plant covered with short villous pubescence, leafy throughout. Leaves alternate, oblong or narrowly oblanceolate, clasping at base, 1-3(-8) cm long, 2-7(-13) mm wide, entire, the margins slightly revolute. Heads numerous, 7-10 mm in diameter; phyllaries linear, long-attenuate, 2.7-4.8 mm long, c. 0.3 mm wide, densely villous, with a green thick central midrib and scarious margins. Receptacle naked, convex, alveolate. Ray flowers pistillate, numerous, golden-yellow, the ligules 1.5-2 mm long, the tube 1.7-2 mm long. Disk flowers perfect, golden-yellow, the corollas 2.2-3 mm long. Achenes cylindrical, 1 mm long, pale brown, 5-ribbed, hairy; outer pappus a denticulate cup c. 0.2-0.4 mm long, the inner of c. 8-16 easily detached, barbellate bristles, about as long as the disk corollas.

*New World Specimens Examined.*—CALIFORNIA. San Luis Obispo County: Carissa Plains School, Simmler, 14 Sept. 1959, *Chalmers* (CSDA<sup>2</sup>). Orange County: Ray Miller Property, east of Fullerton, Santa Ana River Canyon, 15 July 1959, *Ablefeld* (CAS, CSDA), 14 Aug. 1959, *Pope* (CAS, CSDA, DS, JEPS); progeny of Pope collection, Sept. 1961, *Pope* (DS); dyke along road to Yorba Linda just north of U. S. Highway 91, Santa Ana River Canyon, with *Bidens laevis*, *Polygonum lapathifolium*, and *Paspalum distichum*, 15 Oct. 1961, *Raven 16857* (BM, RSA), 9 July 1960, *Pope* (DS); Santa Ana River bed at Anaheim Street crossing, Anaheim, with *Heterotheca grandiflora*, *Salix*, *Franseria acanthi-carpa*, 15 Oct. 1961, *Raven 16847* (BM, RSA). Riverside County: uncommon by roadside ditch in moist subsaline swamp, with *Baccharis emoryi*, *Muhlenbergia asperifolia*, *Haplopappus acradenius* subsp. *eremophilus*, *Salix*, Whitewater Canyon, 1800 ft., 19 Oct. 1962, *Roos* (RSA).

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<sup>2</sup>Abbreviations for herbaria those of Lanjouw and Stafleu, Reg. Veg. 15: 1-249. 1959. CSDA is used here for the herbarium of the California State Department of Agriculture, Sacramento, Calif.