MADROÑO, Vol. 63, No. 1, pp. 3–4, 2016

NOTEWORTHY COLLECTION

CALIFORNIA

ELATINE AMERICANA (Pursh.) Arn. (ELATINACEAE). — Butte County, Gray Lodge Wildlife Area, west side of the dirt road, approximately 300 m NE of Parking Lot 10, 39.323000, −121.763083, small and medium-sized plants (≤ 5 cm in height), red, red-green, or green, prostrate or upright, emersed, growing on wet mud from ditch cleaning, uncommon, flowers and a few fruits present, 26 March 2015, *L. Ahart 19966* (CONN); from the proximity of the previous collection, 39.328611, −121.830000, 10 April 2002, *L. Ahart 9477* (CONN176566- 00108517; CHSC82226) (previously misidentified as *Elatine ambigua* Wight).

Previous knowledge. *Elatine americana* was thought to grow naturally in California (e.g., Rydberg 1906; Jepson 1925, 1936; Abrams 1951). However, Mason (1957) determined all Californian populations of that taxon as *E. rubella* Rydb. Tucker (1993) and Tucker and Grissom (2012) also excluded *E. americana* from the flora of California in the first (TJM1) and second editions of the Jepson Manual (TJM2). Having subsessile flowers (lead 2. in TJM1 and TJM2 keys), *E. americana* could be confused with *E. ambigua*. Also, by having seed surface pits that sometimes are as long as wide (lead 5' in TJM1 and TJM2 keys), *E. americana* could be confused with *E. rubella*. Due to the overlap in such morphological features, herbarium specimens involving these species often are misidentified. Although all other *Elatine* L. species previously reported for the flora of California were detected during field surveys conducted throughout California in 2013–2014, no populations of *E. americana* were encountered at that time. However, through molecular studies, we eventually verified the presence of *E. americana* in California (Butte Co.), based on analysis of the misidentified collection of *E. ambigua* (*Ahart 9477*) cited above. Subsequent herbarium searches also yielded a 1926 specimen identified as *E. americana* (*F. W. Peirson s.n.* [PASA430]), collected in Modoc Co. However, that specimen is not *Elatine* but appears to be *Callitriche* L. on morphological grounds.

Significance. This report confirms the presence of *E. americana* within the flora of California, which currently represents the most westward location of this endemic species in North America. *Elatine americana* also occurs in Arizona (the sites nearest to the California occurrences), Connecticut, Delaware, Georgia, Illinois, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, New Hampshire, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, and Virginia (herbarium records; USDA, NRCS 2015). *Elatine americana* is listed as endangered in Massachusetts, New York, and Pennsylvania; it is considered a plant of special concern in Rhode Island (USDA, NRCS 2015).

It is unclear whether the Californian populations of this species are native or naturalized occurrences. However, reports of this species in older literature (e.g., Rydberg 1906; Jepson 1925, 1936; Abrams 1951) indicate that *E. americana* might be native to California. Our preliminary molecular data (unpublished) indicate that *E. americana* is a hybrid species involving the native *E. rubella* and the nonnative *E. ambigua*. California is the only geographic area where the distributions of *E. ambigua* and *E. rubella* overlap. Also, the morphological intermediacy of *E. americana* relative to these two potential parental species (see *Previous knowledge*) strengthens the possibility of its hybrid origin. To evaluate this hypothesis, we recommend a thorough reexamination of *Elatine* populations in California and neighboring states, using molecular markers such as *matK*, nrITS, and *rbcL*, which have proven useful in our systematic studies of this genus.

—HAMID RAZIFARD, Department of Ecology & Evolutionary Biology, University of Connecticut, 75 North Eagleville Road, Storrs, CT 06269-3043. hamid.razifard@gmail.com; GORDON TUCKER, Department of Biological Sciences, Eastern Illinois University, 600 Lincoln Avenue, Charleston, IL 61920; LOWELL AHART, 9771 Ahart Road, Oroville, CA 95966-9690; and DONALD LES, Department of Ecology & Evolutionary Biology, University of Connecticut, 75 North Eagleville Road, Storrs, CT 06269-3043.

LITERATURE CITED

ABRAMS, L. R. 1951. An illustrated flora of the Pacific States: Washington, Oregon, and California, Geraniaceae to Scrophulariaceae, geraniums to figworts Vol. 3. Stanford University Press, Stanford, CA.

JEPSON, W. L. 1925. A manual of the flowering plants of California. Associated Students Store, University of California, Berkeley, CA.

———. 1936. Flora of California Vol. 2, Capparidaceae to Cornaceae. California School Book Depository, San Francisco, CA.

MASON, H. L. 1957. A flora of the marshes of California. University of California Press, Berkeley, CA.

RYDBERG, P. A. 1906. Flora of Colorado Vol. 100. Agricultural Experiment Station of the Colorado Agricultural College, Fort Collins, CO.

TUCKER, G. C. 1993. *Elatine* Pp. 542, 544 *in* J. C. Hickman (ed.), The Jepson Manual: higher plants of California. University of California Press, Berkeley, CA.

——— AND E. U. GRISSOM. 2012. *Elatinaceae* Pp. 684–685 *in* B. G. Baldwin, D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.), The Jepson Manual: vascular plants of California, 2nd ed. University of California Press, Berkeley, CA.

USDA, NRCS. 2015. The PLANTS database. National Plant Data Team, Greensboro, NC. Website http://plants.usda.gov (accessed 10 April 2015).