



NOTEWORTHY COLLECTION

Author(s): Hamid Razifard, Phil Tonne and Bonnie Heidel

Source: *Madroño*, Vol. 63, No. 1 (JANUARY—MARCH 2016), pp. 3-7

Published by: California Botanical Society

Stable URL: <https://www.jstor.org/stable/44577574>

Accessed: 16-02-2022 15:32 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

California Botanical Society is collaborating with JSTOR to digitize, preserve and extend access to *Madroño*

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, emerged, 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 sessile 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).

NOTEWORTHY COLLECTION

NEW MEXICO

CYPERUS GLOMERATUS L. (CYPERACEAE). — Bernalillo County, City of Albuquerque, Rio Grande river terrace, numerous individuals, Albuquerque Overbank Project Site, 35.04314°N, 106.667542°W (WGS84), 1506 m, 30 September 2003, *Y. Chauvin 03AP001-G6* (UNM 113614); 34.975173°N, 106.689314°W (WGS84), 1504 m, 17 September 2004, *J. Cartron s.n.* (UNM106137); 35.135345°N, 106.691267°W (WGS84), 1520 m, 25 August 2010, *J. McGrath 1009* (UNM130756); 35.135345°N, 106.691267°W (WGS84), 1520 m, 30 September 2010, *J. McGrath 1019* (UNM130759); Harrison Site, 35.016233°N, 106.672762°W (WGS84), 1503 m, 12 September 2012, *P. Tonne 463*, with *E. Detweiler-Robinson & K. Robinson* (EIU, UNM); 35.016233°N, 106.672762°W (WGS84), 1503 m, 12 September 2012, *P. Tonne 465*, with *E. Detweiler-Robinson & K. Robinson* (EIU, UNM); State Land Office Site, 34.97091°N, 106.6861°W (WGS84), 1506 m, 13 September 2014, *P. Tonne 527*, with *A. Fretz and M. Bacigalupa* (AZ, ASU, BRIT, CO, K, MO, NMC, NY, TEX, UC, UNM, US); Valencia County, City of Belen, Rio Grande river Site, 34.97091°N, 106.6861N, 106.742543°W (WGS84), 1466 m, 2 October 2008, *E. Milford 08MC001-G8* (UNM 128309); 34.638017°N, 106.742543°W (WGS84), 1466 m, 11 September 2009, *P. Tonne s.n.* (UNM).

Previous knowledge. *Cyperus glomeratus* is widespread in Asia and Europe (Dai et al. 2010), though its historic distribution appears to be poorly documented (Kavak 2014). It is listed as a non-native component of the Italian Flora (Celesti-Grapow et al. 2009).

Significance. This is the first report for the New World. How this species made its way to North America is a mystery. *Cyperus glomeratus* has been observed in mechanically created and established wetlands in the middle Rio Grande of New Mexico. It is most abundant on river margins and in sandy areas subject to overbank flooding.

It first came to our attention in 2003, when it was collected along the Rio Grande River in New Mexico, growing in a mechanically altered riparian site. The U.S. Bureau of Reclamation (BOR) impacted this site by lowering the riverbank of the Rio Grande in order to allow overbank flooding as part of the Albuquerque Overbank Project (Muldavin 2015). It appeared in two other BOR river restoration sites, the Crawford site in Belen, and the Harrison Middle

School site in Albuquerque. Most recently, this species rapidly colonized a newly created New Mexico State Land Office (SLO) excavated wetland in the south valley of Albuquerque. All of the BOR sites have a connection to the river, but the SLO site has no connectivity to existing channels. *Cyperus glomeratus* propagules may have been in the seed mix for the site, brought in on the heavy equipment, or introduced by an animal vector.

In two of the areas (Crawford and Harrison) where it was documented in habitat altered to allow overbank flooding, it was present in high abundance each fall for the first two years after the wetland was created but then disappeared, possibly due to a change in inundation of the area. We have seen it rapidly colonize three areas (Crawford, Harrison, and SLO) from seed, but its persistence within created and established wetlands warrants further investigation. It disappeared at the Crawford and Harrison sites. At the Crawford site it reappeared in very low abundance after 8 years of absence. At the Harrison site it has not been encountered in the past three years of surveys.

Cyperus glomeratus has not yet been documented outside of New Mexico, but it may already be spreading in the U.S. and Mexico. The Rio Grande connects with likely habitat in Texas and northern Mexico, downstream, and Colorado, upstream. Documentation of the range is needed, especially in these areas. In our opinion this is a weed that is here to stay; attempts to control it would likely be ineffective and more damaging than the presence of this plant in wetland habitat. Each plant has the potential to produce thousands of seeds from several inflorescences.

Cyperus glomeratus is the tallest *Cyperus* L. ([18] > 109 cm) with spikelets more densely arranged than any other *Cyperus* in New Mexico. We have three species of annual *Cyperus* with three stigmas and glomerulate heads (Tucker et al. 2003; Allred and Ivey 2012). *Cyperus glomeratus* has floral scales that are not keeled with obtuse apices; this separates it from *C. acuminatus* (2-keeled and acute, mucronate), *C. difformis* (not keeled, mucronate), and *C. squarrosus* (not keeled, cuspidate). Among native and naturalized *Cyperus* in The U.S. and Mexico, it would most likely be keyed to *C. ischnos* Schlecht. using Tucker (1994) or Tucker et al. (2002). *Cyperus ischnos*, however, is a perennial, montane species, with a whitish, capitate inflorescence.

—PHIL TONNE, UNM Herbarium, MSC03 2020, 1 University of New Mexico, Albuquerque, NM 87131. ptonne@unm.edu; and GORDON C. TUCKER, 2 Biological Sciences, Eastern Illinois University, 600 Lincoln Ave, Charleston, IL 61920.

LITERATURE CITED

- ALLRED, K. W., AND R. D. IVEY. 2012. *Flora Neomexicana III: an illustrated identification manual*. Lulu, Raleigh, NC.
- CELESTI-GRAPOW, L., A. ALESSANDRINI, P. V. ARRIGONI, E. BANFI, L. BERNARDO, M. BOVIO, G. BRUNDU, M. R. CAGIOTTI, I. CAMARDA, E. CARLI, F. CONTI, S. FASCETTI, G. GALASSO, L. GUBELLINI, V. LA VALVA, F. LUCCHESI, S. MARCHIORI, P. MAZZOLA, S. PECCENINI, L. POLDINI, F. PRETTO, F. PROSSER, C. SINISCALCO, M. C. VILLANI, L. VIEGI, T. WILHALM, AND C. BLASI. 2009. Inventory of the non-native flora of Italy. *Plant Biosystems* 143:386–430.
- DAI, L. K., G. C. TUCKER, AND D. A. SIMPSON. 2010. *Cyperus* Linnaeus (莎草属). Pp. 219–241 in W. Zhengyi, P. H. Raven, and H. Deyuan (eds.), *Flora of China* (中国植物志), Vol. 23: Acoraceae through Cyperaceae. Missouri Botanical Garden, St. Louis, MO.
- KAVAK, S. 2014. *Cyperus glomeratus*. The IUCN Red List of Threatened Species. Version 2014.3. Website www.iucnredlist.org (accessed 8 May 2015).
- MULDAVIN, E., E. MILFORD, N. UMBREIT, AND Y. CHAUVIN. 2015. Long-term outcomes of a natural-processes approach to riparian restoration in a large regulated river: the Rio Grande Albuquerque Overbank Project after 16 years, Final Report to the Bureau of Reclamation, Albuquerque, NM. Available from <https://nhnm.unm.edu/>.
- TUCKER, G. G. 1994. Revision of the Mexican species of *Cyperus* L. (Cyperaceae). *Systematic Botany Monographs* 43.
- TUCKER, G. C., B. G. MARCKS, AND J. R. CARTER. 2002. Cyperaceae, in *Flora of North America* Editorial Committee (eds.), *Flora of North America North of Mexico*, Vol. 23: Magnoliophyta: Comelinidae (in part): Cyperaceae. Oxford University Press, New York, NY.

NOTEWORTHY COLLECTION

WYOMING

The following state records are from National Park Service units.

ALLIARIA PETIOLATA (M. Bieberstein) Cavara & Grande (BRASSICACEAE).—Crook County, Devils Tower National Monument at base of tower, T53N R65W Sec. 7, 1350 m, 5 September 2014, *M. Chapman and J. Balmagia s.n.* (RM, MORU). Growing in Ponderosa pine forest; subject of eradication effort.

Previous knowledge. Non-native perennial that is widespread in North America, including Nebraska and Utah (Al-Shehbaz 2010), Colorado (Weber and Wittmann 2012), Montana (Lesica 2012), Idaho (INVADERS Database 2015), and South Dakota (Black Hills State University Herbarium Database 2015).

Significance. First record for Wyoming, a range extension of about 70 km from Lawrence County, South Dakota.

CONYZA RAMOSISSIMA Cronquist (ASTERACEAE).—Crook County, Devils Tower National Monument, 0.4 miles southwest of entrance, T53N R65W Sec 18, 1183 m, 20 June 2012, *B. Heidel 3667* (RM, MORU). Growing in prairie dog town, with *Ambrosia psilostachya* DC., *Ceratocephala testiculata* (Crantz) Besser, *Conyza canadensis* (L.) Cronquist, *Verbena bracteata* Lag. & Rodr.

Previous knowledge. Native annual that is widespread in the Midwest and Great Plains, from North Dakota to Texas, east to Pennsylvania; sometimes a weed in lawns and open disturbed sites (Great Plains Flora Association 1986; Strother 2006).

Significance. First record for Wyoming (Heidel and Marriott 2014), a range extension of at least 50 km from Lawrence County, South Dakota.

PHYSARIA PACHYPHYLLA O'Kane & Grady (BRASSICACEAE).—Big Horn County, Big-horn Canyon National Recreation Area, Crooked Creek, T58N R95W Sec 35 NE of SE, 1152 m, 12 June 2001, *B. Heidel 1977* (RM), annotated by B. Grady. Growing on Chugwater outcrop with *Chrysothamnus nauseosus* (Pall. ex Pursh) Britton var. *graveolens* (Nutt.) H.M. Hall, *Wyethia scabra* Hook.

Previous knowledge. Native perennial, endemic to Pryor Mountain Desert of Montana near the Wyoming state line (Grady and O'Kane 2007; O'Kane 2010).

Significance. First record for Wyoming, a minor range extension and lower elevation limit at edge of Pryor Mountain Desert.

—BONNIE HEIDEL, Wyoming Natural Diversity Database, Dept. 3381, 1000 E., University Ave., Laramie, WY 82071-3381.

ACKNOWLEDGEMENTS

I thank Ronald Hartman and B. E. Nelson (Rocky Mountain Herbarium) for every measure of opportunity to collaborate on the state flora, Rene Ohms (Devils Tower National Monument) for communicating about *Alliaria* while encouraging its documentation and control, and the National Park Service for supporting botanical studies as conducted through the Wyoming Natural Diversity Database.

LITERATURE CITED

- AL-SHEHBAZ, I. A. 2010. *Alliaria*. Pp. 744–745 in Flora North America Editorial Committee (ed.), Flora of North America North of Mexico, Vol. 7. Magnoliophyta: Salicaceae to Brassicaceae. Oxford University Press, New York, NY.
- BLACK HILLS STATE UNIVERSITY HERBARIUM DATABASE. Website <http://herbarium.bhsu.edu/> (accessed 2 February 2015).
- GRADY, B. R. AND S. L. O'KANE. 2007. New species and combinations in *Physaria* (Brassicaceae) from western North America. *Novon* 17:182–192.
- GREAT PLAINS FLORA ASSOCIATION. 1986. Flora of the Great Plains. University Press of Kansas, Lawrence, KS.
- HEIDEL, B. AND H. MARRIOTT. 2014. Devils Tower National Monument Flora – field analysis, updating online resources and applications. Prepared for the National Park Service by the Wyoming Natural Diversity Database, University of Wyoming, Laramie, WY. Available at http://www.uwyo.edu/wyndd/_files/docs/reports/wynddreports/u14hei01wyus.pdf.
- INVADERS DATABASE. Website <http://invader.dbs.umt.edu/> (accessed 28 February 2015).
- LESICA, P. 2012. Manual of Montana vascular plants. Botanical Research Institute of Texas. Fort Worth, TX.
- O'KANE, S. L. 2010. *Physaria*. Pp 616–665 in Flora North America Editorial Committee (eds.) Flora of North America North of Mexico, Vol. 7. Magnoliophyta: Salicaceae to Brassicaceae. Oxford University Press, New York, NY.
- STROTHER, J. L. 2006. *Conyza*. Pp 348–350 in Flora North America Editorial Committee (eds.) Flora of North America North of Mexico, Vol. 20. Magnoliophyta: Asteridae (in part): Asteraceae part 2. Oxford University Press, New York, NY.
- WEBER, W. A. AND R. C. WITTMANN. 2012. Colorado Flora: Eastern Slope, 4th ed. University Press of Colorado, Boulder, CO.