Stretching the Boundaries: A Range Extension for *Buella wheeleri* R.C. Harris

JAMES C. LENDEMERN
Cryptogamic Herbarium, Institute of Systematic Botany, The New York Botanical Garden, Bronx, NY, 10458-5126, U.S.A.; e-mail: jlendemer@nybg.org

BRENDAN P. HODKINSON
Department of Biology, Duke University, Durham, NC, 27708, U.S.A.; e-mail: bph8@duke.edu

Abstract. - *Buella wheeleri* is newly reported from a number of locations throughout the southeastern Coastal Plain of North America (e.g., Alabama, Arkansas, Georgia, Tennessee, Virginia, and the Delmarva Peninsula of Maryland). This distinctive species was previously known in North America only from a handful of collections in Florida and North Carolina.

Recently, the second author spent nearly a week at The New York Botanical Garden (NY) working on the identification of problem specimens collected during his fieldwork (Hodkinson et al. 2009; Hodkinson in press). Among these specimens was a sterile sorediate crustose lichen on oak bark, collected in eastern Virginia. Initially, we were unable to identify the specimen, but the first author recognized it as the same taxon he had collected on the Delmarva Peninsula in Maryland several years earlier and bore a resemblance to *Biatora pontica* Printzen (Lendemer & Knapp 2007). The two collections were highly distinctive because of their C+ and KC+ yellow-orange spot tests and punctiform soralia with intense yellow soredia.

The week prior to the second author’s visit to NY, we had both attended the Tuckerman Workshop which was held in southern Florida. During the meeting, we made several collections of *Buella wheeleri* R.C. Harris (treated in the monotypic genus *Ciposia* Marbach as *C. wheeleri* (R.C. Harris) Marbach by Marbach (2000)), a sorediate crustose species that is frequently sterile. While processing these collections upon our return home, we realized that our specimens from Maryland and Virginia represented *B. wheeleri*.

*Buella wheeleri* was originally described by Harris (1988) from Polk County, Florida, and was subsequently found to be common on the bark of oaks throughout the central and northern portions of the state (Harris 1995). It was soon reported from southern Illinois, though at the time this would have seemed to be a rather anomalous report for a potential Florida endemic (Wilson and Methven 1997); unfortunately, a voucher for this report could not be located. Lendemer and Yahr (2004) later reported it
(again on the bark of oak trees) from coastal North Carolina. In light of these reports, one would expect *B. wheeleri* to have a wider distribution in the southern coastal plain of southeastern North America, comparable to other species that occur on substrates (e.g., *Taxodium*) or in habitats (e.g., oak-scrub) that are common throughout this phytogeographic province. Species that display this type of distribution are typically common in central-northern Florida and become rarer, eventually disappearing, as one moves further north along the Atlantic coast (see discussion in Lendemer & Knapp (2007) and Lendemer (2006)). Unfortunately, our knowledge of the distributions of many taxa in this region, especially asexually reproducing crustose lichens, is hindered by a lack of reliable reports and adequate modern collections.

A distribution map for *Buellia wheeleri* is presented here (Fig. 1) with a list of selected specimens examined. In addition to the records mentioned above, the herbarium of The New York Botanical Garden (NY) also contains material of *B. wheeleri* from the far reaches of the coastal plain in Arkansas and Tennessee. The species has also recently been collected in Georgia. While the majority of collections occur on *Quercus*, there are also specimens from *Acer*, *Sabal*, and *Taxodium*.

As noted above, *Buellia wheeleri* is a frequently sterile sorediate crustose lichen that typically occurs on the rough bark of the trunks of oaks (*Quercus*) in oak-scrub habitats. The thallus is dark green and comprised of thin continuous to dispersed areoles, although in some populations these areoles are poorly developed or even absent (see Figs. 2a & 2b). Since there are few sorediate species of *Buellia*, the combination of soredia and large, strongly ornamented ascospores (16-19 x 9-11.5 µm *fide* Harris (1995); see illustrations in Harris (1988)) serve to distinguish *B. wheeleri* from any other North American species currently recognized in the genus. Apothecia and ascospores are often immature or entirely absent, and so spores are a poor diagnostic character for the majority of specimens. However, specimens can be recognized in the field, even when sterile, because of their substrate preference, small punctiform to diffuse, confluent soralia, and soredia that are intensely yellow due to the presence of the pigment secalonic acid (K-, C+, KC+ yellow-orange). Without spot test data, specimens representing this taxon are most likely to be confused with sterile species of *Caloplaca* (K+ purple) or *Candelariella* (C-, KC-). In eastern North America, only *Biatora pontica* might be confused with *Buellia wheeleri*; however, that species occurs in the Appalachian Mountains, not the coastal plain, and owes its color to the presence of a xanthone instead of secalonic acid. The present note represents the first attempt to characterize the distribution of *Buellia wheeleri* in North America since its description in 1988, and we anticipate that future collections will fill in the distribution of this distinctive southeastern Coastal Plain species.

Selected Specimens Examined. (all on *Quercus* unless otherwise indicated). - U.S.A. ALABAMA. BALDWIN CO.: Shelby’s, 8.iv.1895, on palmetto, A.W. Evans 429 (NY). ARKANSAS. JEFFERSON CO.: Pine Bluff Arsenal, W of N end of Yellow Lake, 2.xii.1999, on

**ACKNOWLEDGMENTS**

Many thanks to Andrew Methven (EIU) for help locating specimens associated with this and other related projects. Also thanks to Robert Lücking (F) and the National Science Foundation for providing funding that allowed both authors to attend the 2009 Tuckerman Workshop (NSF Award #: DEB-0715660). We are grateful to Sean Beeching for sharing his observations and unpublished reports of *B. wheeleri* in Georgia, and to Richard C. Harris for reviewing this manuscript. Finally, we thank Donald and Beverly Ziegler for providing field assistance and access to their Wilderness Area in Henrico, Virginia.

**LITERATURE CITED**


---

**Figure 1.** Geographic distribution of *Buellia wheeleri* as presently known (based on specimens from DUKE, NY, and hb. Beeching). The shaded area approximates the extent of the coastal plain in North America.
Figures 2a-b, both from Buck 54360 (NY). Thallus and apothecia of *Buellia wheeleri* (left, x3). Young punctiform soralia (right, x7).