

Distribution of the Horned Pondweed, *Zannichellia palustris* L. (Zannichelliaceae), in Tennessee and Kentucky

DAVID H. WEBB

Tennessee Valley Authority, Muscle Shoals, Alabama 35660

AND

EDWARD W. CHESTER

Austin Peay State University, Clarksville, Tennessee 37044

ABSTRACT

The distribution and habitat of the horned pondweed, *Zannichellia palustris* L., are reported for Tennessee and Kentucky. Collections cited herein document the species to be an element of the Kentucky flora and to be more widespread in Tennessee than indicated by previous literature reports. Horned pondweed occurs in a wide variety of aquatic habitats, including rivers, streams, reservoirs, lakes, and spring-fed ponds.

INTRODUCTION

The monocotyledenous family Zannichelliaceae includes a small group of mostly annual, monoecious, aquatic herbs that grow entirely submerged in fresh or brackish waters nearly throughout the world. As pointed out by Haynes and Holm-Nielsen (1), the family historically has been combined with and placed under the families Zosteraceae, Najadaceae, and Potamogetonaceae. However, more recent treatments (1, 2) consider the family distinct from these related groups and to include 4 genera and 10-12 species. Only *Zannichellia*, a nearly cosmopolitan genus of 4-5 species occurs in North America where it is represented by a single species, *Z. palustris* L., the horned pondweed.

Gleason and Cronquist (3) gave the distribution of *Z. palustris* as "almost throughout North America and widespread in the Old World." Hotchkiss (4) reported it from Alaska to Newfoundland and from California to Florida while Muenscher (5) mapped it from most of the United States. It is generally distributed over much of the southeast (6, 7, 8), but is either not well known or poorly collected in most states. For example, Haynes (9) mapped it from only 4 Alabama counties.

In Tennessee, the species has been rarely reported and the distribution is not well known. Likewise, no voucher specimens verify previous reports of *Z. palustris* from Kentucky (10). It is the purpose of this paper to provide

distributional and habitat data for *Z. palustris* in these 2 midsouth states.

METHODS

The Tennessee and Kentucky distribution and habitat of *Z. palustris* were determined from herbarium collections at the University of Tennessee (TENN), Austin Peay State University (APSC), Vanderbilt University (VDB), and personal observation and collections of the authors. Several literature sources relating to aquatic and wetland plants of Kentucky and Tennessee also were consulted.

RESULTS AND DISCUSSION

Tennessee Distribution.—Gattinger (11) reported *Z. palustris* "in ponds and springs over the state" but later studies have not verified that report. Sharp et al. (12) noted its presence only in Montgomery County, while Robinson and Shanks (13), in their checklist of vascular aquatic plants from the state, listed Montgomery County and cited literature records from Lake and Obion counties (Reelfoot Lake). Several other studies (14, 15, 16, 17, 18) also cite its presence in Reelfoot Lake.

The distribution of *Z. palustris* in Tennessee and Kentucky is shown in Figure 1 and plotted from cited voucher specimens.

TENNESSEE. Anderson Co.: shallow water along the Clinch River at CRM 66.4, just upstream from bridge of TN 61, ca. 1 mile SE

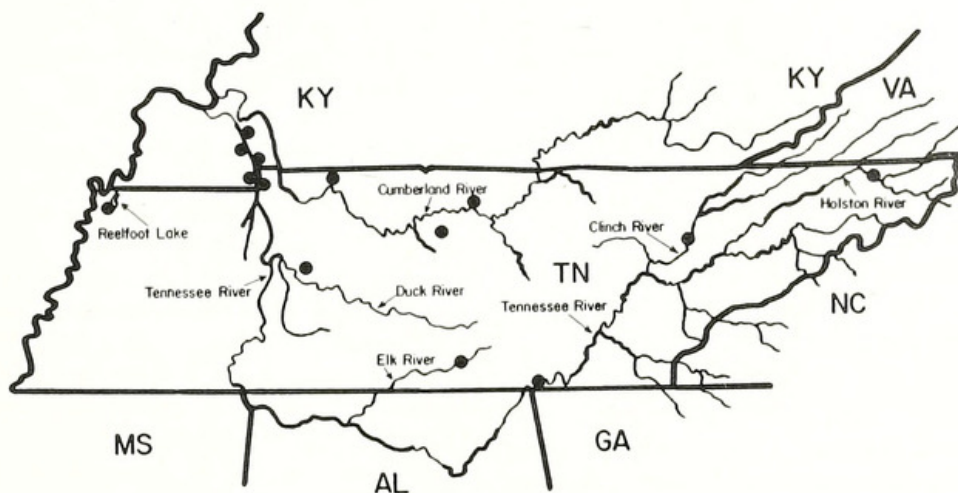


FIG. 1. Documented distribution of *Zannichellia palustris* in Tennessee and Kentucky.

of Clinton, 20 Oct 1981, *Webb and Murphy* 4426 (NY, TENN, VDB); Franklin Co.: shallow water along the N side of the Elk River at ERM 125.6, ca. 11 miles W of Winchester, 7 Aug 1986, *Webb* 5239 (TENN, VDB); Hickman Co.: deep clear pool in Sugar Creek, ca. 1 mile W of Bucksport, 28 Jul 1981, *Kral* 67615 (VDB); Marion Co.: shallow water of Nickajack Reservoir near boat ramp on US 41 at TRM 440, 1 Aug 1985, *Webb* 5137 (TENN, VDB); Montgomery Co.: M. P. Brothers Farm on Spring Creek, 10 mi. NE of Clarksville, 11 Sep 1949, *Brown and Clebsch* 400 (APSC, TENN); Obion Co.: Reelfoot Lake near campground just E of spillway, 29 May 1977, *Webb, Wofford, Evans* 952 (TENN); Stewart Co.: Dry Fork Bay of Tennessee River at Blue Springs access point, 27 Aug 1985, *Chester* 85-731 (APSC); upper end of Panther Creek embayment of Kentucky Reservoir at TRM 60.3, ca. 11 miles W of Dover, 16 Oct 1985, *Upton and Starkey* s.n. (APSC, TENN); Sullivan Co.: along the South Fork of the Holston River, ca. 1 mile below South Holston Dam, 27 Sep 1979, *Webb and Dennis* 2416 (TENN, VDB); Trousdale Co.: near Hartsville, 21 Apr 1964, *Webster* s.n. (TENN); Wilson Co.: abundant in shallow, polluted stream, Lebanon, 24 May 1972, *Rogers* 8247 (TENN.).

Kentucky Distribution.—Beal and Thieret (10) summarized available information on the vascular aquatic plants of Kentucky, and pointed out that while both Muenscher (5) and Radford et al. (8) attributed *Z. palustris* to the state, no voucher specimens were located to

substantiate these reports. They further noted that the species is "possibly to be expected in Kentucky." The presence of the species in Kentucky is documented by the following collections.

KENTUCKY. Calloway Co.: shallow water in Snipe Creek embayment near Paradise Resort on Kentucky Reservoir at TRM 48.5, 25 May 1988, *Webb* 5359 (TENN, VDB); Lyon Co.: shallow water at upstream end of small embayment in Hillman's Ferry Campground on Kentucky Reservoir at TRM 30.2, Land Between the Lakes, 26 May 1988, *Webb* 5363 (TENN); Marshall Co.: shallow water in West Fork Bee Creek embayment near Cozy Cove Resort on Kentucky Reservoir at TRM 34.5, 25 May 1988, *Webb* 5349 (APSC, MUR, TENN, VDB); Trigg Co.: shallow upper end of Sugar Creek embayment near boat ramp on Kentucky Reservoir at TRM 35.7, Land Between the Lakes, 26 May 1988, *Webb* 5369 (MUR, TENN, VDB); Kentucky Reservoir, E side a few yards from the boat ramp at Sugar Bay, Land Between the Lakes, 10 Jun 1988, *Webb and Chester* 88-89 (APSC).

HABITAT

In Tennessee, *Z. palustris* occurs in a variety of habitats (i.e., streams, rivers, lakes, reservoirs, and spring-fed ponds). The earliest documented collections and reports of *Z. palustris* are from Reelfoot Lake in western Tennessee and a spring-fed pond in Montgomery County. Most of the recent collections are from reservoirs (Nickajack, Kentucky) and rivers (Elk,

South Fork of Holston, Clinch) of the Tennessee River system. The establishment of *Z. palustris* in Tennessee Valley Authority reservoirs appears to be rather recent and was not reported by Isely (19). The largest populations of *Z. palustris* seen by the authors are along the Elk River downstream of Tims Ford Dam where pure stands of the species are scattered over several kilometers.

The known distribution of *Z. palustris* in Kentucky is limited to Kentucky Reservoir in the western portion of the state. The collection of *Z. palustris* in Kentucky Reservoir coincides with a dramatic expansion in submersed aquatic vegetation where coverage has increased from about 128 ha in 1985 to more than 2,800 ha in 1987 (20). On Kentucky Reservoir horned pondweed occurs in association with *Najas guadalupensis*, *N. minor*, *Potamogeton pusillus*, and *Myriophyllum spicatum*. Additional populations of *Z. palustris* should be searched for on reservoirs of the Cumberland River, especially Barkley Reservoir where submersed aquatic species also are expanding. Since horned pondweed is adapted to both riverine and lacustrine habitats, it is probably more common and widespread than collections indicate.

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