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ABSTRACT

Castanea ozarkensis Ashe, the Ozark chinquapin of the vascular plant family Fagaceae, is distributed widely throughout the Interior Highlands of Arkansas and the adjacent states of Missouri and Oklahoma. Examination of material from throughout the range of **C. ozarkensis** indicates demonstrable morphological intergradation with **C. pumila** (L.) Miller **sensu lato**, the chinquapin of wide distribution in much of the eastern United States. It is proposed that **C. ozarkensis** be reduced to **C. pumila** var. **ozarkensis** (Ashe) Tucker, comb. nov.

Castanea ozarkensis Ashe, the Ozark chinquapin, was described by W. W. Ashe (1923). The range of the species has been interpreted in several different ways. Fernald (1950) included Louisiana and Mississippi in its range, whereas Vines (1960) attributed it to "northeastern Louisiana" but did not mention Mississippi. Elias (1971) agreed with Fernald and gave the range as Mississippi, Louisiana, Arkansas, Oklahoma and Missouri. Steyermark (1963) stated, however, that specimens examined from Louisiana and Mississippi were *C. pumila* (L.) Miller. The writer has examined several of the specimens also examined by Steyermark and agrees with his determination; *ozarkensis* has been confused in those states with the entity recognized by many as *C. pumila* var. *ashei* Sudw. As indicated in Figure 1, the Ozark chinquapin is almost wholly restricted to the Interior Highlands of Oklahoma, Arkansas and southern Missouri.

Ashe (1923) designated no type specimen in his original description of *C. ozarkensis*. Neither did he indicate a type locality, although he indicated the range of the species as "common north of the Arkansas River from Center Ridge, Arkansas, northward to southwestern Missouri and westward to the valley of the White River." Several of Ashe's collections were examined at NCU in 1966 and again in 1975, but no specimen designated as a type was seen among them. Ashe (1923) described a second Ozarkian species of chinquapin, *C. arkansana*, and attributed it to Benton, Carroll, Franklin, Madison and Washington Counties; no type specimen was designated for *arkansana*, although the type locality was given as "near War Eagle Creek, Madison County." The indefatigable Ashe (1924) later decided that *arkansana* was not worthy of recognition at the species level and reduced it to *C. ozarkensis* var. *arkansana* (Ashe) Ashe. Ashe indicated that *arkansana* was characterized by glabrous sun leaves (glaucescent on the lower surface), whereas *ozarkensis* in the sun was characterized by leaves with yellowish pubescence on the lower surface. He indicated that *arkansana* totally replaced *ozarkensis* in northwest Arkansas. This is not so, however, as both the glabrous and pubescent-leaved forms have been observed throughout the northwestern section of the state; intergradation of pubescence between the two forms is complete. Little (1953) reduced *arkansana* to synonymy with *ozarkensis*, and the writer agrees with his disposition of it.

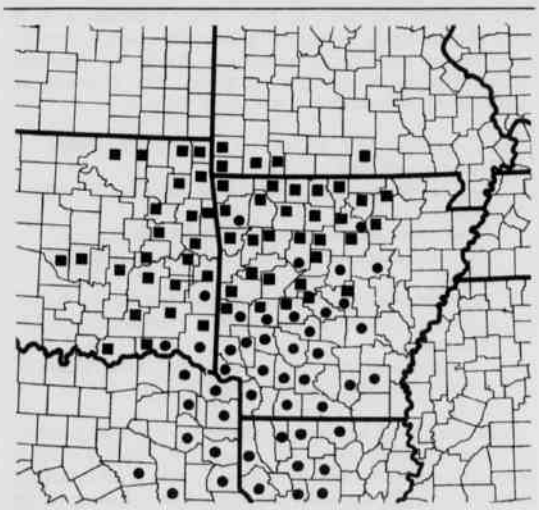

Figure 1. Distribution of *Castanea pumila* var. *ozarkensis* and *C. pumila* var. *pumila* in Arkansas and surrounding states (Oklahoma records based on Williams, 1972; records of other states based on specimens examined). Squares = *C. pumila* var. *ozarkensis*. Circles = *C. pumila* var. *pumila*.

Numerous authors have noted the close relationship between *ozarkensis* and *pumila* (L.) Miller *sensu lato*. The *pumila* complex as it exists in most of the eastern United States is an extremely difficult group in much need of modern experimental study. Numerous taxa have been described (Ashe alone proposed 15 new names in *Castanea*) and some no doubt are worthy of recognition; several of the described taxa, however, are poorly marked and typified by extreme intergradation with others and probably are not worthy of nomenclatural distinction. Moore (1941) and Demaree (1943) both accepted *C. pumila* var. *ashei* Sudw. and *C. pumila* var. *margaretta* Ashe as members of the Arkansas flora. Arkansas specimens referable to *C. pumila* var. *pumila* were examined in this study, although that name has not appeared on the state checklists. These three entities intergrade so freely, however, that the writer is unable to distinguish them consistently and is unconvinced of the efficacy of their recognition (as in Correll and Johnston, 1970). The writer prefers to treat the Coastal Plain populations in Arkansas as a complex of intergrading taxa with synonymy as follows:

C. pumila (L.) Miller var. *pumila*

Incl. *C. alnifolia* Nutt.; *C. alnifolia* var. *floridana* Sarg.; *C. ashei* Sudw.; *C. floridana* (Sarg.) Ashe; *C. margaretta* Ashe; *C. pumila* var. *ashei* Sudw.; *C. pumila* var. *margaretta* Ashe.

Recent field studies and examination of herbarium materials

indicate the necessity of reducing *C. ozarkensis* Ashe to a variety of *C. pumila* (L.) Miller. As mentioned, the Ozark chinquapin is almost wholly restricted to the Interior Highlands region, whereas the second entity is primarily restricted to the Coastal Plain. Specimens from the regions of sympatry at relatively low elevations in Stone, Independence, White, Pope, Saline and Jefferson Counties are problematic; intergradation in both vegetative and reproductive characters occurs at these localities.

In the mountainous counties *ozarkensis* is typically distinct and easily recognized on the basis of its large, coarsely toothed leaves (Fig. 2) and large involucres with numerous closely set spines. The spines of *ozarkensis* are 1 cm or more long at maturity, whereas those of *pumila* are less than 1 cm long; Elias (1971) erroneously described the spines of the involucres of *pumila* as "much longer than in *C. ozarkensis*." The branchlets of *ozarkensis* are typically glabrous at maturity. Typically the leaves of the Ozark chinquapin are rather heavily beset with indumentum on the lower surface; some forms of the species, however, have glabrous or nearly glabrous leaf surfaces (sterile specimens of the glabrous forms have been confused with *C. dentata* by some workers).

In the counties near and along the fall-line between mountains and Coastal Plain, *ozarkensis* intergrades with *pumila*, a chinquapin having smaller involucres, smaller leaves with slight serrations (Fig. 2) and markedly pubescent branchlets. Specimens (all at UARK) from Jefferson (Locke 791), Saline (Aingworth s.n., Moore 480507 and Tucker 10096) and Pope (Moore 55-566) Counties are particularly notable intermediates between *pumila* and *ozarkensis*. Tucker 10096, taken from a tree of about 8 m having a single trunk, has coarsely serrate leaves up to 17 cm long (as in *ozarkensis*) and distinctly pubescent branchlets (as in *pumila*). Involucres on the specimens from the tree, collected on 15 July 1972, are approximately 2.5 cm in diameter (at full maturity would be larger, as in *ozarkensis*) and have moderately remote spine clusters (as in *pumila*). The other specimens cited are similarly intermediate; all are marked by the large leaves, some coarsely toothed and others less so, and markedly pubescent branchlets.

The following key will distinguish most specimens of *ozarkensis* from other Arkansas members of the *pumila* complex.

1. Leaves relatively small, 6-16 cm long, teeth shallow and bristle-tipped or sometimes barely visible; mature fruiting involucres less than 2.5 cm in diameter (including spines)...1. *C. pumila* var. *pumila*

2. Leaves relatively large, 10-25 cm long, with coarsely serrate teeth; mature fruiting involucres more than 2.5 cm in diameter (including spines). .....2. *C. pumila* var. *ozarkensis*

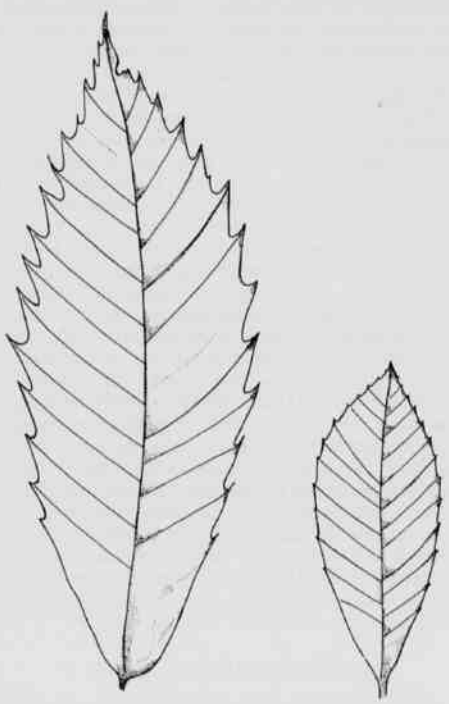

Figure 2. Leaves of *C. pumila* var. *ozarkensis* and *C. pumila* var. *pumila*. Left: *C. pumila* var. *ozarkensis* (the larger leaf). Right: *C. pumila* var. *pumila* (the smaller leaf). Both leaves ½ actual size.

In view of the complexities of the *pumila* complex, the writer is somewhat reluctant to offer yet another nomenclatural combination. The material examined in this study, however, is convincing that *ozarkensis* is not the well-defined endemic species visualized by many authors but is instead an intergrading geographic segregate of the more widely distributed *pumila*.

Several woody plant groups are under investigation in conjunction with the Vascular Flora of the Southeastern United States project. The writer proposes a new combination in the hope of stimulating someone to subject the group to intensive experimental work in an attempt to clarify the taxonomic relationships of the taxa in the genus. The proposed new combination, with pertinent synonymy, follows.

C. pumila (L.) Miller var. *ozarkensis* (Ashe) Tucker, comb. nov.

C. ozarkensis Ashe. Bull. Torr. Bot. Club 50:360. 1923.

Type: none designated in original description.

C. arkansana Ashe. Bull. Torr. Bot. Club 50:361. 1923.

Type: none designated in original description, but type locality near War Eagle Creek, Madison County, Arkansas.

C. ozarkensis var. *arkansana* (Ashe) Ashe. Elisha Mitchell Sci. Soc. J. 40:45. 1924.

Ashe designated neither type specimens nor type locality in his original description of *C. ozarkensis*. From among the specimens studied by Ashe before publication of his description in November 1923, the writer has selected the following to serve as a lectotype: W. W. Ashe s.n., herbarium accession number 64311 (NCU). The lectotype specimen is one of a suite of several specimens collected by Ashe in Searcy County, Arkansas, on 17 September 1923; Ashe did not assign collection numbers to the Searcy County specimens.

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