

BRIEF NOTE

A GUIDE TO THE IDENTIFICATION OF THE HICKORIES OF SOUTHEASTERN OHIO¹BRIAN C. MCCARTHY², Department of Botany, Ohio University, Athens, OH 45701-2979

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Species of hickory (*Carya*) are often difficult to identify because morphological features vary tremendously and overlap greatly. A number of authors have provided morphological information useful for the identification of the hickories of northeastern North America. These include Boisen and Newlin (1910), Braun (1961), Fernald (1950), Gleason (1952), Gleason and Cronquist (1963), Harlow et al. (1979), Little (1969), Manning (1950, 1969, 1973), and Sargent (1918, 1933). However, few of the above provide sufficient information on both vegetative and reproductive characters to be useful in the field in all seasons.

This guide originated as part of a study investigating vegetation-aspect relationships and the interspecific ecological variation among several species of hickory indigenous to unglaciated southeastern Ohio (McCarthy et al. 1984). The study was conducted principally in an oak-hickory forest at the Waterloo Wildlife Experiment Station, Athens County, Ohio. Additional morphological observations were made in several other forests in Athens and adjacent Hocking counties.

Due to the large number of characters often required to make a positive identification, a dichotomous key relying on diagnostic features is inappropriate. Thus a tabular format has been adopted. Table 1 provides a summary of the characters the author believes to be most useful in the identification of the hickories in south-

eastern Ohio. The principal contributions of the guide are the inclusion of staminate catkin lengths and a more detailed description of bark characters than previously available, both of which greatly aid in the identification of dominant and co-dominant canopy trees where detailed foliar characters and mature fruit may not be readily available.

Manning (1950) indicated that "the two pignuts, *Carya glabra* and *C. ovalis*, are the most difficult of all species in the northeast to separate" and can only be separated on the basis of "mature fruit collected in November." The length of the staminate catkins (pers. obs., Krochmal and Krochmal 1982) appears to be an additional character to aid in and extend the period of identification of these two particularly enigmatic species. Oddly, floral characters are of little use in differentiation and identification of the remaining species.

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LITERATURE CITED

- Boisen, A. T. and J. A. Newlin 1910 The commercial hickories. U.S. Dept. Agr., For. Serv. Bull. 80. 64 p.
- Braun, E. L. 1961 The woody plants of Ohio. Ohio State Univ., Columbus. 362 p.
- Fernald, M. L. 1950 Gray's manual of botany. 8th ed. American Book Co., NY. 1632 p.
- Gleason, H. A. 1952 The new Britton and Brown illustrated flora of the northeastern United States and adjacent Canada. Vol. 2. New York Bot. Gard., NY. 655 p.

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TABLE I

Summary of characters useful for identification of the hickories (*Carya* spp.) of southeastern Ohio. Nomenclature follows Gray's manual (Fernald 1950).

Section	Species	Flowers/Fruit	Bark	Leaves	Buds/Twigs
<i>Apocarya</i>	<i>C. cordiformis</i> (bitternut, swamp hickory)	catkins 7-10 cm long; fruit sharply pointed; husk thin, 4-winged to middle; kernel bitter	close with shallow interlacing ridges	9(7-11) lfls.; lvs. 15-25 cm long	term. bud yellow, lanceolate valvate scales, 1.6-2.0 cm long; twigs slender, gray-br.
<i>Eucarya</i>	<i>C. ovata</i> (shagbark, shellbark)	catkins 10-20 cm long; fruit depressed at apex; husk thick, readily dehiscent to base; nut 4-ribbed; kernel sweet	light gray; separating into long, broad, thin slightly recurved plates	5(7) lfls.; lvs. 20-50 cm long; 3 terminal lfls. noticeably larger than 2 laterals; dense tufts of hairs on lfl. margin	term. bud acute, stout, 1.5-2.5 cm long; twigs gray to reddish-brown
	<i>C. laciniosa</i> (shellbark, kingnut, bigleaf shagbark)	catkins 12-20 cm long; fruit depressed at apex; husk thick, readily dehiscent to base; nut 4-6 ribbed; kernel sweet	light gray; separating into long, thin, straight plates (or only slightly curved)	7(5) lfls.; lvs. 30-60 cm long; no dense tufts of hairs on margins of lfls.	term. bud blunt 2.0-3.5 cm long; twigs stout, orange-tan
	<i>C. tomentosa</i> (mockernut, white hickory)	catkins 10-20 cm long; fruit depressed at apex; husk thick, 4-channeled, splits to middle or beyond; nut 4-ribbed; kernel sweet	dark gray; becoming deeply furrowed, ridges flat, often with distinct edges	7(5) lfls.; lvs. 20-35 cm long; lfls. & rachis glandular-resinous, densely pubescent on lower side	term. bud acute 1.4-2.0 cm long; outer scales readily deciduous; twigs reddish-brown
	<i>C. glabra</i> (pignut)	catkins 5-8 cm long; fruit smooth and shining, pyriform; husk thin, splits to center by 1(0-2) suture; nut rounded; kernel bitter	light/med. gray; close, can become deeply furrowed, ridges often rounded	5 (occasionally 7 on same tree) lfls.; lvs. 20-30 cm long; lfls. & rachis generally glabrous, lower surf. may be pubes.	term. bud acuminate, 0.6-1.2 cm long; twigs reddish-brown
	<i>C. ovalis</i> (sweet pignut, oval pignut, red hickory, false shagbark)	catkins 8-17 cm long; fruit dull, often warty; husk thin, splits to base by 4 sutures; nut distinctly 4-ridged to center; kernel sweet	med. gray; close with shallow ridges when young, often becomes platy later (plates shorter and narrower than <i>C. ovata</i>)	7(5) lfls.; lvs. 20-30 cm long; lfls. same as above	term. buds and twigs same as above

- Gleason, H. A. and A. Cronquist 1963 Manual of vascular plants of northeastern United States and adjacent Canada. Willard Grant Press, Boston, MA 810 p.
- Harlow, W. M., E. S. Harrar and F. M. White 1979 Textbook of dendrology. 6th ed. McGraw-Hill, Inc. 510 p.
- Krochmal, A. and C. Krochmal 1982 Uncultivated nuts of the United States. U.S. Dept. Agr., Agr. Info. Bull. 450, Washington, DC. 89 p.
- Little, E. L., Jr. 1969 Two varietal transfers in *Carya* (hickory). *Phytol.* 19: 186-190.
- Manning, W. E. 1950 A key to the hickories north of Virginia with notes on the two pignuts, *Carya glabra* and *C. ovalis*. *Rhodora* 52: 188-199.
- 1969 The big shellbark hickory in central Pennsylvania. *Proc. Pa. Acad. Sci.* 43: 88-89.
- 1973 The northern limits of the distribution of hickories in New England. *Rhodora* 75: 34-51.
- McCarthy, B. C., T. L. Vierheller and W. A. Wistendahl 1984 Species ordination of upper slope oak-hickory stands of southeastern Ohio. *Bull. Torrey Bot. Club* 111: 56-60.
- Sargent, C. S. 1918 Notes on North American trees. II. *Carya*. *Bot. Gaz.* 66: 229-258.
- 1933 Manual of the trees of North America. 2nd ed. Houghton Mifflin Co., Boston, MA. 910 p.