THE JUGLANDACEAE OF IOWA, PP.1-10; BETULACEAE OF IOWA, PP. 1-8; THE FAGACEAE OF IOWA, PP. 1-20; FROM THE PROCEEDINGS OF THE IOWA ACADEMY OF SCIENCES, VOL. VIII

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The Juglandaceae of Iowa

Juglandaceae **Lindl. Nat. Syst. Ed. 2, 180, 1836**

WALNUT FAMILY

Betulaceae of Iowa

Betulaceae **Agardh, Aphor. 208, 1825**

THE BIRCH FAMILY

The Fagaceae of Iowa

Fagaceae **Drude, Phan., 409, 1879**

OAK OR BEACH FAMILY

Thomas Jefferson
By T. J. and M. F. L. Fitzpatrick.

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THE JUGLANDACEAE OF IOWA.

BY T. J. AND M. F. L. FITZPATRICK

Juglandaceae Lindl. Nat. Syst. Ed. 2, 180, 1836

WALNUT FAMILY.

The walnut family comprises six genera and about 35 species. Only two genera occur in Iowa, namely, Juglans (Walnut) and Hicoria (Hickory), and these two genera are represented by two and five species respectively. From an economic point of view the species are valuable and consequently have been largely utilized until but few specimens of the older forest remain. The younger growth is hardy and will, if spared, eventually yield fair returns.

In general terms the walnut family includes trees with alternate pinnate exstipulate (sometimes stipulate in the bud) leaves and monoecious bracteolate flowers. The staminate flowers are in long-drooping aments with an irregular calyx adnate to the bract and three to many stamens. Pistillate flowers are solitary or clustered with a regular 3–5-lobed calyx adherent to the partially 2–4-celled 1-ovuled ovary; styles 2; fruit a drupe with a fibrous or woody husk and a large 2–4-lobed seed.

JUGLANS. Husk indehiscent; nut furrowed.
HICORIA. Husk 4-valved, dehiscent; nut smooth or angled.

Juglans nigra L. Sp. Pl. 997. 1753. Black Walnut. A tree, 50–100 feet or more high, with furrowed strong-scented brown bark, wood purplish brown, pith in transverse plates, young twigs and petioles puberulent, becoming glabrous with age, and odd-pinnate leaves. Leaflets nearly sessile, serrate, 11–23, ovate-lanceolate, acuminate, mostly glabrous above, pubescent beneath, base sub-cordate or unequal; fruit spherical, 4-celled at the base.

This species occurs in rich woods, flowering in April and May and the fruit ripening in October or November. It is common throughout the state. The wood is heavy, hard, strong, coarse-grained, liable to check in seasoning, and takes a beautiful polish. The wood has been much used in cabinet making, interior finish, for gun stocks, picture frames, etc. For many years walnut logs were a common shipment until the supply was practically exhausted. Oak has now taken the place of the walnut in cabinet making. The corrugated nut is frequently gathered and kept for sale. A decoction of the bark is a frequent domestic dye.

Our specimens are from Johnson, Jefferson, Decatur, and Pottawattamie counties. We have observed the species in Winneshiek, Allamakee, Clayton, Dubuque, Jackson, Scott, Lee, Van Buren, Appanoose, Ringgold, Union, Page, Taylor, Fremont, and Montgomery counties. The State University herbarium has specimens from Story, Calhoun, and Delaware counties. Prof. Pammel reports the species from Woodbury, Hamilton, Boone, and Hardin counties; Mr. Reppert, from Muscatine county; Prof. Bessey, from Fayette and Des Moines counties; Prof. Macbride, from Dubuque, Humboldt, and Dickinson counties; Mr. Gow, from Adair county; Mr. J. P. Anderson, by note, from Lucas county; and Mr. Mills, by letter, from Henry county. In general the black walnut is common throughout the state and represented mostly by the second growth trees.

Parry, in Owen's Geol. Sur. Wisconsin, Iowa, and Minnesota, p. 618; White, Geol. Sur. of Iowa, Vol. 1, p. 138. Bessey, Contr. to the Flora of Iowa in Fourth Report Iowa Agr. Col., p. 118; Arthur, Contr. to the Flora of Iowa, p. 29; Nagel and Haupt, Proc. Davenport Acad. of Natural Sciences, Vol. 1, p. 163; Hitchcock, Trans. St. Louis Acad. of Science, Vol. 5, p. 157; Pammel, Proc. Iowa Acad. of Sciences, Vol. 3, p. 132; Iowa Geol. Sur., Vol. 10, p. 312; Fink, Proc. Iowa Acad. of Sciences, Vol. 4, p. 101; Fitzpatrick, Proc. Iowa Acad. of Sciences, Vol. 5. p. 127 and p. 163; Vol. 6, p. 196; Iowa Geol. Sur., Vol. 8, p. 313; Cameron, Iowa Geol. Sur., Vol. 8, p. 198; Macbride, Iowa Geol. Sur., Vol. 4, p. 119; Vol. 7, p. 107; Vol. 10, p. 237 and p.

645; Gow, Proc. Iowa Acad. of Sciences, Vol. 6, p. 62; Rigg, Notes on the Flora of Calhoun County, p. 25; Barnes, Reppert, and Miller, Proc. Davenport Acad. of Natural Sciences, Vol. 8, p. 255; Reppert, Iowa Geol. Sur., Vol. 9, p. 386; Arthur, Flora of Floyd county in History of Floyd County, p. 300; Bot. Gaz., Vol. 7, p. 127.

Juglans cinerea L. Sp. Pl. Ed. 2, 1415, 1763. Butternut. White Walnut. A tree, smaller than the black walnut, bark gray, twigs and petioles viscid-pubescent; leaflets 11–19, oblong-lanceolate, acuminate, base obtuse, rounded or truncate; fruit oblong, pointed, clammy, 2-celled at the base.

The wood of this species has many characters in common with the black walnut and is used in cabinet work, interior finish, etc. The wood differs from the black walnut in being light, soft, of less strength, and of a light brown color. Trees rarely exceed 80 or 90 feet in height and are usually less than two feet in diameter.

Our specimens are from Fayette and Johnson counties. We have observed the species in Jefferson, Allamakee, Winneshiek, Clayton, and Dubuque counties. The state university herbarium contains specimens from Lee, Winnebago, Des Moines, Cerro Gordo, Delaware, Pottawattamie, and Fremont counties. Mr. Reppert reports the species from Muscatine county; Messrs. Nagel and Haupt from Scott county; Professor Bessey from Story county; Professor Macbride from Humboldt county; Mr. Gow from Madison county; and Professor Pammel from Boone and Hardin counties. In general the butternut is frequent all along the eastern border of Iowa and passes through the central portion west to the Missouri river. It appears to be absent in our strictly southern counties. A decoction of the bark is frequently employed in domestic dyeing.

White, Geol. Sur. of Iowa, Vol. 1, p. 138; Bessey, Contr. to the Flora of Iowa in Fourth Report of Iowa Agr. Col., p. 118; Arthur, Contr. to the Flora of Iowa, p. 29; Nagel and Haupt, Proc. Davenport Acad. of Nat. Sciences, Vol. 1, p. 163; Hitchcock, Trans. St. Louis Acad. of Science, Vol. 5, p. 517; Pammel, Iowa Geol. Sur., Vol. 9, p. 243; Vol. 10,

p. 312; Fink, Proc. Iowa Acad. of Sciences, Vol. 4, p. 101: Fitzpatrick, Proc. Iowa Acad. of Sciences, Vol. 5, p. 127 and p. 163; Cameron, Iowa Geol. Sur., Vol. 8, p. 198; Macbride, Iowa Geol. Sur., Vol. 4, p. 119; Vol. 7, p. 107; Vol. 10, p. 645; Sargent, Forest Trees of N. A., p. 130; Barnes, Reppert, and Miller, Proc. Davenport Acad. of Nat. Sciences, Vol. 8, p. 255; Reppert, Iowa Geol. Sur., Vol. 9, p. 386; Arthur, Flora of Floyd county in History of Floyd county, p. 300; Bot. Gazette, Vol. 7, p. 127; Gow, Proc. Iowa Acad. of Sciences, Vol. 6, p. 60.

Hicoria pecan (Marsh.) Britton. Usually a slender tree, 60–100 feet or more high, bark somewhat rough, at length shaggy; leaflets 11–13, oblong-lanceolate, short-stalked, acuminate; staminate aments fascicled; middle lobe of the staminate calyx linear, longer than the oblong lateral lobes; fruit oblong-cylindrical; husk thin, 4-valved; nut oblong-cylindrical, smooth, thin-shelled, 2-celled below; seed edible. *Juglans pecan* Marsh. Arb. Am. 69, 1785; *Carya olivaeformis* Nutt. Gen. 2: 221, 1818; *Hicoria pecan* Britton, Bul. Torr. Bot. club, 15: 282, 1888.

This hickory, commonly known as the pecan, occurs on river bottoms and is infrequent or rare within our limits. The wood of this species is heavy, hard, rather brittle, close-grained, compact, and is reckoned of little value in comparison with the wood of our other species. The nuts, however, are sweet and edible and are an important article of commerce, but Iowa affords very little, if any, of the supply. Dr. White reported the species as belonging to the flora of Iowa.

Professor Pammel reported the species from Woodbury county on the authority of Professor Hitchcock, also from Muscatine and Scott counties; the latter locality on the authority of Mr. Fluke. The State University herbarium has specimens from Muscatine and Louisa counties. Outside of the above four mentioned counties the species is not known to occur within our limits.

White, Geol. Sur. of Iowa, Vol. 1, p. 138; Bessey, Contr. to the Flora of Iowa, p. 119; Arthur, Contr. to the Flora of Iowa, p. 29; Pammel, Proc. Iowa Academy of Sciences,

Vol. 1, pt. 2, 1890–1891, p. 91; Vol. 3, p. 132; Gray's Manual, Ed. 6, p. 468; Britton and Brown, Illus. Flora, Vol. 1, p. 484; Sargent, Forest Trees of N. A., p. 132; Barnes, Reppert, and Miller, Proc. Davenport Acad, of Nat. Sciences, Vol. 8, p. 255; Reppert, Iowa Geol. Sur., Vol. 9, p. 386; Trelease, Seventh Rep. Mo. Bot. Gar., p. 32.

Hicoria minima (Marsh.) Britton. Bitter-nut. Swamp Hickory. A tree, commonly 20–60 feet high; bark close, rough; leaflets 7–9, lanceolate, or oblong-lanceolate, acuminate, sessile, the lateral somewhat falcate, puberulent at first, becoming nearly glabrous; fruit subglobose, narrowly 6-ridged; nut white, somewhat compressed, smooth, not angled, short-pointed, thin-shelled; seed very bitter; husk thin; valves connivent half-way. *Juglans alba minima* Marsh. Arb. Am. 68, 1785; *Juglans sulcata* Willd. Berl. Baumz. 154, 1796; *Carya amara* Nutt. Gen. 2: 222, 1818; *Hicoria minima* Britton, Bull. Torr. Bot. Club, 15: 284, 1888.

The wood of this species is heavy, very hard, strong, close-grained, but checking in drying. The wood is used for fuel, hoops, lumber, etc., The species is common and widely distributed in Iowa, though the greater number of trees are still young. The seed is inedible, being very bitter, sometimes used to adulterate other nuts of the same genus. Our specimens are from Johnson, Jefferson, Ringgold, Montgomery, Pottawattamie, and Shelby counties. We have observed the species in Winneshiek, Appanoose, Taylor, Page, and Fremont counties. The State University herbarium contains specimens from Delaware, Lee, Story, and Cerro Gordo counties. Professor Pammel reports the species from Woodbury, Boone, and Hardin counties; Mr. Reppert from Muscatine county; Professor Fink from Fayette county; Professor Macbride from Humboldt, Dickinson, and Dubuque counties; and Mr. J. P. Anderson, by note, from Lucas county. This species grows best on the lowlands, but frequently occurs on the uplands.

White, Geol. Sur. of Iowa, Vol. 1, p. 138; Bessey, Contr. to the Flora of Iowa in Fourth Report of Iowa Agr. Col., p. 119; Arthur, Contr. to the Flora of Iowa, p. 29; Hitch-

cock, Trans. St. Louis Acad. of Science, Vol. 5, p. 517; Shimek, Bul. Lab. Nat. Hist., S. U. I., Vol. 3, p. 210; Pammel, Proc. Iowa Acad. of Sciences, Vol. 1, pt. 2, 1890-1891, p. 91; Vol. 3, p. 132; Iowa Geol. Sur., Vol. 10, p. 312; Fitzpatrick, Proc. Iowa Acad. of Sciences, Vol. 5, p. 127 and p. 163; Vol. 6, p. 196; Iowa Geol. Sur., Vol. 8, p. 313; Cameron, Iowa Geol. Sur., Vol. 8, p. 198; Macbride, Iowa Geol. Sur., Vol. 7, p. 107; Vol. 10, p. 238 and p. 646; Barnes, Reppert, and Miller, Proc. Davenport Acad. of Nat. Sciences, Vol. 8, p. 256; Reppert, Iowa Geol. Sur., Vol. 9, p. 386.

Hicoria ovata (Mill.) Britton. Shag-bark, Shellbark Hickory. Tree 30-70 feet or more high; bark of the trunk shaggy in narrow plates, young twigs and leaves puberulent, at length glabrous; leaflets usually 5, oblong-lanceolate or obovate, acuminate, finely serrate, sessile, the two lower smaller; staminate aments in 3's, on slender peduncles, at the bases of shoots of the season; middle lobe of the staminate calyx linear, twice the length of the lateral lobes: fruit subglobose, valves of the husk distinct, thick, four; nut white, somewhat flattish, rather thin-shelled, 4-celled below, 2-celled above; seed edible, sweet. *Juglans ovata* Mill. Gard. Dict., Ed. 8, No. 6, 1768; *Carya alba* Nutt. Gen. 2: 221, 1818, not *Juglans alba* L.; *Hicoria ovata* Britton, Bull. Torr. Club, 15: 283, 1888.

This is one of our most important trees, and the wood is much used for wagons, carriages, handles, agricultural implements, etc. The wood is heavy, hard, strong, close-grained and flexible. The species grows in rich upland woods, and is common throughout the state. The nuts are extensively gathered and sold in the market. Fuel is also obtained from this species.

Parry, in Owen's Geol. Sur. Wis., Iowa, and Minn., p. 618; White, Geol. Sur. of Iowa, Vol. 1, p. 138; Bessey, Contr. to the Flora of Iowa in Fourth Report of Iowa Agr. Col., p. 119; Arthur, Contr. to the Flora of Iowa, p. 29; Nagel and Haupt, Proc. Davenport Acad. of Nat. Sciences, Vol. 1, p. 163; Hitchcock, Trans. St. Louis Acad. of Science, Vol. 5, p. 517; Pammel, Iowa Geol. Sur., Vol. 10, p. 312; Fitzpatrick, Proc. Iowa Acad. of Sciences, Vol. 5, p.