

7. *Carya glabra* (Mill.) Sweet

Pignut

REFERENCES: Sullivant 1840:23 (*Carya porcina* Nutt.); Craig 1890:101 (*Carya porcina*, there is a specimen along 15th Ave.); Selby & Craig 1890:15 (*Carya porcina* Nutt.); Kellerman & Werner 1893:226 (*Carya porcina* Nutt., the tree referred to is *Carya amara* Nutt.).

HERBARIUM RECORDS: 17 Jun 1986—Highbanks Metro Park (Delaware Co.), dry woods, *Kosko*; 1 Jul 1986—Highbanks Metro Park (Delaware Co.), dry woods, *Kosko* 19 (OWU); Jul 1988—Highbanks Metro Park (Delaware Co.), dry ridges to wet lowlands, *Kosko* 80 (OS, OWU).

NOTE: No specimens seen from Franklin Co. Not mapped for Franklin Co. by Braun 1961:101 (illus. p. 100). Werner (1893) considered these references to pignut erroneous and the plants referred to are really *Carya cordiformis*.

FAGACEAE, Beech Family

Trees and shrubs with alternate simple pinnately-veined leaves with early-deciduous stipules; monoecious; flowers monosporangiate, without petals; staminate flowers in aments or in capitate clusters; carpellate flowers epigynous, each flower or each small cluster of flowers surrounded by an involucre of bracts; carpels united, locules, styles, and stigmas as many; fruit a nut.

- a Staminate flowers in peduncled spherical clusters; pith not 5-angled; bark smooth. **1. FAGUS**
- a' Staminate flowers in slender aments; pith 5-angled.
 - b Carpellate flowers several in a globose long-prickly involucre that in fruit becomes a bur; staminate aments erect, flowers white. **2. CASTANEA**
 - b' Each carpellate flower in a cup of many bracts that in fruit becomes the acorn cup; staminate aments pendulous, flowers greenish. **3. QUERCUS**

1. FAGUS L. Beech

Trees; blades ovate, margins dentate, lateral veins straight and parallel, each ending in a tooth, as many teeth as veins; winter buds fusiform, long-pointed; flower-clusters in axils of leaves of the season; staminate flowers in small heads, perianth with several lobes, stamens several to many; carpellate flowers usually in 2's on a short peduncle, calyx 6-lobed, locules 3, 2 ovules in each locule, the 2 flowers and later the fruits enclosed in a 4-valved involucre; nut 3-angled.

Among the cultivated plants found on the OSU Campus are the European Beech (*Fagus sylvatica* L.) and the Fernleaf European Beech (*F. sylvatica* var. *asplenifolia* Sweet; OSU Campus Trees, Chadwick Arbor.).

1. *Fagus grandifolia* Ehrh.

Beech, American Beech

Tree, large; bark gray, smooth; winter-buds lustrous, long slender; leaves ovate, margins dentate, lateral veins straight and parallel, each ending in a tooth; fruit involucre 4-valved, soft-prickly; nuts 3-angled, edible.

REFERENCES: Riddell 1834:119 (*Fagus ferruginea*); Craig 1890:102 (*Fagus ferruginea* Aiton; very abundant in the woods, 8 May 1882, 6 May 1888); Selby & Craig 1890:15 (*Fagus ferruginea* Aiton); Braun 1961:113 (illus. p. 114).

HERBARIUM RECORDS: 8 May 1882—Cols., *W. Green*; 1897—OSU woods, *Ruppersberg* 42; 1898—Cols., *J. H. Schaffner*, October 1898—Cols., *J. H. Schaffner*, 7 May 1901—Cols., *Mead*; 11 Oct 1901—OSU woods, Cols., *Hartford*; 12 May 1941—Worthington, *C. Jones*; [ca. 1982]—Blendon Woods, common, *Owens*; 1 Jul 1986—Highbanks Metro Park (Delaware Co.), woodlands, *Kosko*; 1 Jun 1993—Camp Mary Orton, W of Rt. 23, N of Worthington, Sharon Twp., *Lowden* 5065.

2. CASTANEA Mill. Chestnut

Trees or shrubs; leaf margins toothed, lateral veins straight and parallel, each ending in a tooth, as many teeth as veins; calyx 6-lobed or -parted; flowers appearing after leaves, the staminate in elongate erect or spreading aments in the upper axils, stamens several to many; carpellate flowers usually in clusters of 3, each cluster in a 2- to 4-valved long-prickly involucre at base of some staminate aments or axillary, locules usually 6; 1-3 fruits within the involucre.

Planted on the OSU Campus are the European Chestnut (*Castanea sativa* L.) and the Chinese Chestnut (*C. mollissima* Blume).

1. †*Castanea dentata* (Marshall) Borkh.

Chestnut, American Chestnut

A detailed botanical line drawing of *Carpinus ovalis*. The illustration features a woody branch with several pinnately compound leaves. Each leaf consists of multiple leaflets that are ovate-lanceolate in shape with serrated margins. A single, small, oval-shaped nutlet is shown separately at the bottom right, with a magnification scale of $\times \frac{1}{2}$ indicated next to it. The text "Car. ovalis" is printed below the main branch.

Car. glabra

 $x\frac{1}{2}$

Car. ovalis

 $\times \frac{1}{2}$

F. grandifolia

 $X^{1/2}$

Q. alba

Cas. dentata

x1

 $x\frac{1}{2}$

XV

x1

X8

x5

Q. stellata

 $x^{1/2}$

X5

Once a large tree, now only occasional sprouts; leaves green and glabrous beneath, simple, margin coarsely toothed, lateral veins straight and parallel, each ending in a tooth; nut edible, surrounded by an involucre-bur, covered on the outside by shape branched bristles and lined with silky hairs.

REFERENCES: Riddell 1834:119 (*Castanea vesca*); Braun 1961:115 (illus. p. 114).

HERBARIUM RECORD: 19 Oct 1903—Gahanna, Jennings.

NOTE: Sullivant 1840:21 (*Castanea vesca* var. *americana* Michx.) and Selby & Craig 1890:15 (*Castanea sativa* Mill. var. *americana* Michx.) reported on plants collected in adjacent counties.

3. QUERCUS L. Oak

Trees; leaves stipuled, usually lobed; staminate flowers in pendulous slender aments, ament-bracts soon deciduous or absent, calyx-lobes and stamens few to several; carpellate flowers epigynous; solitary, in clusters of usually 2, or in spikes, in axils of leaves of current season, each flower surrounded at base by an involucre of many small bracts; perianth usually 6-lobed, locules 3, each with 2 ovules; nut enclosed at base in cup or cupule formed from accrescent bracts. Species may be separated into 2 groups: (1) White Oaks, acorns maturing the first season, leaf-blades lobed or toothed, lobes or teeth not bristle-pointed; and (2) Red Oaks and Black Oaks, acorns maturing the second season, leaf blades either lobed, lobes bristle-pointed, or entire, midvein usually extending as a bristle.

Cultivated oaks found on the OSU Campus (OSU Campus Trees, Chadwick Arbor.) are the Sawtooth Oak (*Quercus acutissima* Carruth.), Oriental Oak (*Q. variabilis* Bl.), Willow Oak (*Q. phellos* L.) and English Oak (*Q. robur* L.). The last two species are included in the key below.

- a Leaf-blades entire, oblong or lanceolate; acorn not more than 1.5 cm high and wide, cup shallow.
 - b Blades linear-oblong, glabrous beneath. *Q. phellos* L., Willow Oak
 - b' Blades wider, pubescent beneath. 7. *Q. imbricaria*
- a' Blades toothed or crenate. (See a".)
 - c Blades usually densely white-pubescent beneath but sometimes greenish and less pubescent; peduncles in fruit longer than petioles. 4. *Q. bicolor*
 - c' Blades not densely white-pubescent beneath; fruits or fruit-clusters sessile or short-peduncled; lateral veins straight and parallel.
 - d Blades obovate, decidedly widest above middle, sparsely pubescent beneath; teeth rounded; petioles glabrous; bark darker, furrowed. 5. *Q. prinus*
 - d' Blades elliptic to obovate, often widest at middle or just above, teeth pointed and somewhat curved forward. 6. *Q. muehlenbergii*
- a" Blades definitely lobed.
 - e Lobes of blades rounded, not bristle-tipped.
 - f Blades essentially glabrous beneath when mature.
 - g Blades usually whitened beneath, not auricled at base; acorn sessile. 1. *Q. alba*
 - g' Blades blue-green beneath, auricled at base; peduncles usually several cm long. *Q. robur* L., English Oak
 - f' Blades pubescent beneath when mature.
 - h Blades densely white-pubescent beneath or sometimes greenish and more sparsely pubescent; lobes shallow or irregular; peduncles usually 3 cm long or more. 4. *Q. bicolor*
 - h' Lobes of blade deeper, at least some of the sinuses extending halfway to midvein; acorns sessile or nearly so.
 - i Two upper lateral lobes extending at right angle to midvein forming a cross with terminal lobe, their ends truncate or emarginate. 2. *Q. stellata*
 - i' Upper half of blade rounded, fan-shaped, usually shallowly-lobed, separated from narrower lower half by a deep sinus on each side; half or more of acorn covered by deep cup with fringed edge. 3. *Q. macrocarpa*
 - e' Lobes of blades bristle-tipped.
 - j Blades with sinuses extending halfway, more or less, to midvein, often lustrous above, pubescent or glabrous beneath; winter buds 5-angled, yellow- or gray-pubescent, 6-10 mm long; cup of acorn rounded below, cuplike, covering half the nut; inner bark orange; petioles often yellow. 8. *Q. velutina*

- j' Without the above combination of characters; blades glabrous beneath at maturity except for tufts of hairs sometimes present in vein-axils.
- k Sinuses usually extending no more than halfway to midvein; lobes somewhat ascending; blades dull above; acorn cups either shallow, saucer-shaped, or deeper, cuplike. 9. *Q. rubra*
- k' Sinuses extending more than halfway to midvein; blades lustrous above.
- l Cup of acorn shallow, saucer-shaped, truncate below, covering at most 1/3 of nut; axillary tufts of hair conspicuous.
- m Winter buds light brown, tips puberulent; acorn 1.5 cm wide or less, about as long.
10. *Q. palustris*
- m' Winter buds gray, glabrous; acorns 2-3 cm wide, somewhat longer than wide. 11. *Q. shumardii*
- l' Cup of acorn cuplike or top-shaped, brown, becoming lustrous, covering 1/3-1/2 of nut; nut ovoid, usually with one or more rings around apex; winter buds somewhat pubescent or scales ciliate; inner bark red. 12. *Q. coccinea*

1. *Quercus alba* L.

White Oak

Tree, large; leaf blades deeply lobed, lobes rounded; blades bright green above, paler beneath, glabrous beneath when mature; acorn sessile.

REFERENCES: Riddell 1834:119; Sullivant 1840:21; Craig 1890:102 (rather common in the woods and near the river, 5 May 1883, 29 Apr 1889); Selby & Craig 1890:15; Braun 1961:118 (illus. p. 119).

HERBARIUM RECORDS: [date?]-Franklin Co., Selby; 24 Sep 1892-Georgesville, Werner; Oct 1900-Cols., J. H. Schaffner; Oct 1901-Cols., J. H. Schaffner; Summer 1942-OSU, Cols., H. Reed; [ca. 1982]-Blendon Woods, common, Owens; Jul 1987-Highbanks Metro Park (Delaware Co.), dry upland soils or rich slopes, Kosko; Jul 1988-Highbanks Metro Park (Delaware Co.), dry upland soils or rich slopes, Kosko; 23 Jun 1991-E bank of Scioto R., James J. Thomas Park, from Lane Rd. to Lane Ave., Perry Twp., Lowden 4718.

2. *Quercus stellata* Wangenh.

Post Oak

Blades with two upper lateral lobes extending at right angles to midvein, forming a cross with the terminal lobe.

REFERENCE: Braun 1961:120 (illus. p. 119).

HERBARIUM RECORD: [ca. 1982]-Blendon Woods, trail from Nature Center to Thoreau Lake, after track across E edge of succession area, near Refuge Fence, Owens.

3. *Quercus macrocarpa* Michx.

Bur Oak, Mossy-cup Oak

Tree, large; leaf lobed, pubescent beneath when mature; upper half of blade rounded, fan-shaped to lobed, separated from narrower lower half by a deep sinus on each side; cup of acorn deep with fringed edge.

REFERENCES: Riddell 1834:118 (bottomland; & *Quercus olivaeformis*); Sullivant 1840:21 (Over Cup White Oak); Craig 1890:102 (some large specimens in the woods and on the bank E of the island); Selby & Craig 1890:15; Braun 1961:120 (illus. p. 119).

HERBARIUM RECORDS: 1833-Worthington, J. Paddock Collection (ILL); 1840-Worthington, J. Paddock Collection (ILL); [ca. 1890]-Franklin Co., Selby; Aug 1890-Franklin Co., Selby; 23 Aug 1892-Scioto R., Cols., Bogue; 9 Sep 1899-Scioto R., Griggs; 15 May 1901-Worthington, Mead; 6 Oct 1902-Cols., Sanders; 7 Oct 1959-Schiller Park, 30 yards N of shelter house, D. Smith; 24 May 1967-OSU Oval, N center, Cols., Stuckey & Cooke; 23 Sep 1967-OSU Campus, cult. around the Oval, Cooke, Jr.; [ca. 1982]-Blendon Woods, along Ripple Rock trail, Owens; 8 Aug 1987-Highbanks Metro Park (Delaware Co.), open woods, Kosko.

NOTE: Riddell 1834:118 also cited *Quercus obtusiloba* from dry prairies. Based on Paddock's specimens labelled as such at the University of Illinois, this name most likely applies to *Quercus macrocarpa*.

4. *Quercus bicolor* Willd.

Swamp White Oak

Leaves green above with dense whitish pubescent beneath; blades crenate, lobes shallow and irregular; fruiting peduncles longer than petioles.

REFERENCES: Riddell 1834:118 (*Quercus discolor*); Sullivant 1840:21; Selby & Craig 1890:15; Braun 1961:121 (illus. p. 122).

HERBARIUM RECORDS: 1890-Cols., Selby; 29 Sep 189-Cols., W. Kellerman; 20 Sep 1892-Groveport, W. Kellerman; 9 Oct 1895-Cols., W. Kellerman; 21 Jul 1988-NE corner of Schiller Park, Cols., B. Weber; 13 Jun 1990-W side of Waggoner Rd., 1 mi. S of the Conrail & B&O RR tracks, Jefferson Twp., Lowden 4408.

5. *Quercus prinus* L.

Rock Chestnut Oak, Mountain Oak

Syn.: *Quercus montana* Willd.

REFERENCES: Riddell 1834:119 (*Quercus montana*); Selby & Craig 1890:15.

NOTE: No specimens seen from Franklin Co. Not mapped for Franklin Co. by Braun 1961:122 (illus. p. 122). Perhaps, based on misidentified specimens, the above references should be referred to *Quercus muehlenbergii*.

6. *Quercus muehlenbergii* Engelm.

Chinquapin Oak, Yellow Oak, Chestnut Oak

Leaves elliptic to obovate, widest at middle of just above, not pubescent beneath; teeth of blades pointed and somewhat curved forward. Syn.: *Q. prinoides* Willd. var. *acuminata* (Michx.) Gleason

REFERENCES: Sullivant 1840:2 (*Quercus castanea* Muhl.); Craig 1890:102 (*Quercus prinoides* Willd.; 2 or 3 specimens on the campus, one of which is near the station bldg.); Selby & Craig 1890:15; Kellerman & Werner 1893:226 (the tree near the station bldg. is *Quercus muhlenbergii*); Braun 1961:123 (illus. p. 122).

HERBARIUM RECORDS: [date?]-Big Darby, near Cols., Selby; 1890-Cols., Selby; [ca. 1890]-Lake Pond, S Cols., Selby; Sep 1890-Lake Park, Cols., Selby (CLM); 7 Sep 1890-Lake Park, Cols., Selby; 1891-Cols., Werner (CLM); Oct 1891-Lake Park, Cols., Selby; 1892-Cols., Werner; 21 May 1892-Scioto R., Cols., Selby; 5 Sep 1892-Cols., Werner (CLM); 24 Sep 1892-Georgesville, Selby; 24 Sep 1892-Georgesville, Werner; 30 Sep 1892-OSU, near Cols., E. M. Wilcox; Oct 1892-Scioto R., near Cols., Selby; 11 Sep 1898-Cols., W. Kellerman; 20 Aug 1899-Scioto R., Cols., Selby (OS, WOOS); 31 Aug. 7 & 17 Sep 1899-Scioto R., Griggs; Oct 1901-Cols., J. H. Schaffner; 7 Oct 1901-City Park, Cols., Hartford; 10 Oct 1902-Cols., Sanders; 11 Oct 1951-Flint Ravine, coll. ?; 23 Sep 1967-OSU Campus, Oval, cult., Cooke; Oct 1981-Sharon Woods, Spring Hollow (also at Blendon Woods), Owens; 24 Jul 1986-Highbanks Metro Park (Delaware Co.), Kasko; 23 Jun 1991-E bank of Scioto R., James J. Thomas Park, from Lane Rd. to Lane Ave., Perry Twp., Lowden 4736.

7. *Quercus imbricaria* Michx.

Shingle Oak

Leaves entire, oblong or lanceolate; blades pubescent beneath.

REFERENCES: Riddell 1834:118 (dry prairies); Sullivant 1840:21; Selby & Craig 1890:15; Braun 1961:129 (illus. p. 128).

HERBARIUM RECORDS: [date?]-Franklin Co., Selby; 5 Aug 1890-W. J. Green's, Cols., Selby; Oct 1890-Cols., Werner (CLM); Oct 1890-Neil Run, Cols., Werner; Sep 1895-Cols., Fischer (CINC); 23 Sep 1967-OSU Campus, Cols., cult., Cooke, Jr.; [ca. 1982]-Blendon Woods, uncommon, planted at edge of succession field on way to Thoreau Lake, Owens; 28 Apr & 26 May 1988-OSU campus, SE corner of Vivian Hall, Gerberick 17.

The following hybrid is recognized:

Quercus × *leana* Nutt. (*Q. imbricaria* × *Q. velutina*)

Lea's Oak

Leaves long petioled; blades oblong-oval, sinuate-pinnatifid, lobes acuminate and bristle-tipped.

REFERENCES: Wilcox 1895:138 (discovery by Fischer, SE part of Cols., on the Parson's property); Braun 1961:132 (illus. p. 130).

HERBARIUM RECORDS: Oct 1895-Cols., Fischer (OS, WOOS); Nov 1895-Cols., Fischer (CINC); 28 Apr 1896-Cols., Fischer; 19 Oct 1901-Parson's lot, Bryden Rd., Cols., W. Kellerman.

8. *Quercus velutina* Lam.

Black Oak

Leaves thick, lustrous above, glabrous or pubescent beneath; leaf-sinuses extending halfway, more or less, to midrib; lobes of blades bristle-tipped; acorn-cup with loosely imbricated pale scales.

REFERENCE: Braun 1961:125 (illus. p. 128).

HERBARIUM RECORDS: 1890-Franklin Co., Selby; Nov 1895-Cols., Fischer (CINC); Oct 1901-Cols., J. H. Schaffner; 14 Oct 1905-N Cols., Fischer; [ca. 1982]-Blendon Woods, fairly common, Owens; Jul 1988-Highbanks Metro Park (Delaware Co.), dry upland soils, Kasko 78 (OS, OWU).

9. *Quercus rubra* L.

Red Oak

Leaves somewhat thin, dull above, glabrous beneath, leaf lobes and teeth bristle-tipped, lobes ascending and slightly tapering; leaf-sinuses extending no more than halfway to midrib; cup shallow, saucer-shaped. Syn.: *Q. borealis* F. Michx.

REFERENCES: Sullivant 1840:21; Craig 1890:102 (in the woods where it attains a large size, some trees being over 2 feet in circumference 4 feet above the ground, 16 May 1885, 11 May 1888); Selby & Craig 1890:15; Braun 1961:125 (illus. p. 124).

HERBARIUM RECORDS: [date?]-Franklin Co., Selby; 9 Oct 1895-Cols., W. Kellerman; 13 Oct & Nov 1895-Cols., Fischer (CINC); 31 Aug 1899-Fishinger's Mill, Griggs; 21 Oct 1899-2 mi. N of Worthington, W of road, 1/8 mi. N of Flint Rd., W. Kellerman; 20 Oct 1901-Cols., J. H. Schaffner; 23 Sep 1967-OSU Campus, cult., Cooke, Jr.; [ca. 1982]-Blendon Woods, common, Owens; 11 Jul 1986-Highbanks Metro Park (Delaware Co.), dry woods, Kasko.

10. *Quercus palustris* Münchh.

Pin Oak

Leaves lobed, sinuses extending more than halfway to midvein; blades lustrous, lobes bristle-tipped.

REFERENCES: Riddell 1834:118; Sullivant 1840:21; Selby & Craig 1890:15; Braun 1961:127 (illus. p. 124).

HERBARIUM RECORDS: 14 Sep 1837-Scott's Plains, J. Paddock Collection (ILL); 1890-Franklin Co., Selby; 8 Aug 1890-Headley's Corners, in forest, near Cols., Selby; 24 Sep 1892-Georgesville, Werner (CLM); 29 Aug 1899-Arlington, Cols., Griggs; [ca. 1982]-Blendon Woods, common, Owens.

11. †*Quercus shumardii* Buckley

Shumard's Red Oak

Leaves lustrous above, conspicuous axillary tufts of hairs on the lower surface; leaf lobes and teeth bristle-tipped; leaf-sinuses extending more than halfway to midvein.

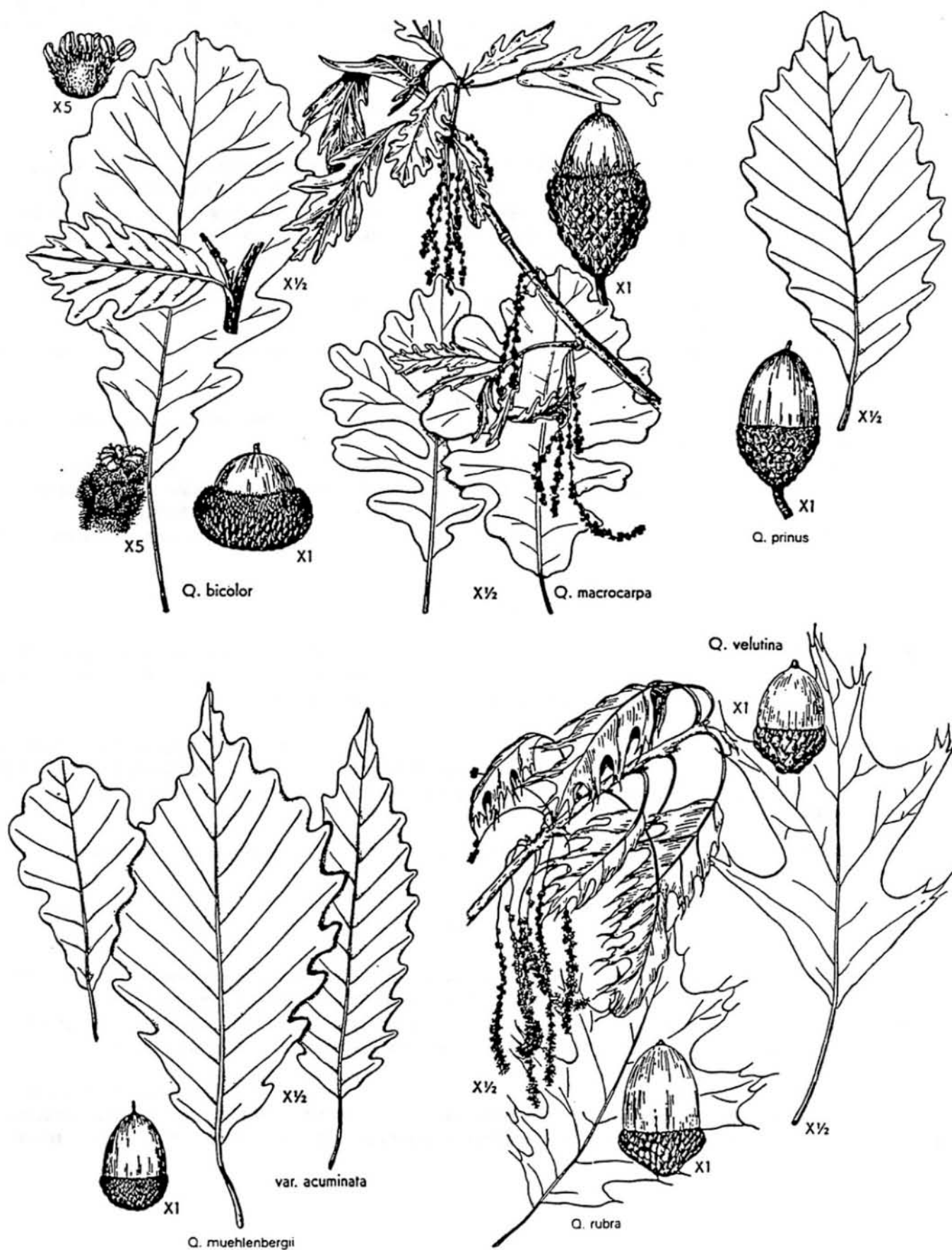
REFERENCES: Jones 1943:103 (var. *schnneckii* (Britton) Sarg., Schneck's Oak); Braun 1961:127 (illus. p. 126).

HERBARIUM RECORDS: 20 Jul & Oct (fruit) 1899-Richard's Woods N of Cols., W. Kellerman; 20 Aug 1899-Scioto R., Cols., Selby (OS, WOOS); 29 Aug 1899-Arlington, Griggs; 10 Oct 1899-Cols., coll. ?; 19__-Cols., J. H. Schaffner; 12 Oct 1901-Neil Run, A. Nichols; 25 Sep 1954-jct. of Snouffer Rd. & Smoky Row, Good; 28 Oct 1954-253 Acton Rd., Cols., E. Thomas; [ca. 1982]-Blendon Woods, main picnic area, planted in parking lot, Owens.

12. *Quercus coccinea* Münchh.

Scarlet Oak

QUERCUS



Leaves with deep and rounded sinuses, extending more than half-way to the midrib; lobes and teeth bristle tipped; acorn apex, marked with concentric rings or discontinuous arcs.

REFERENCES: Sullivant 1840:21; Selby & Craig 1890:15 (#753 & 754); Braun 1961:127 (illus. p. 126).

HERBARIUM RECORDS: [ca. 1890]—near Cols., Selby; 8 Aug 1890—Headley's Woods, Selby (OS, WOOS); 13 May 1901—Cols., W. Kellerman; 14 Oct 1905—N. Cols., Fischer; 21 Oct 1934—Cols., J. H. Schaffner; 23 Sep 1967—OSU Campus, cult. around the Oval, Cols., Cooke, Jr.; 26 May 1988—OSU, W of Coffey Rd., NE of College of Veterinary Medicine, Chinery 57.

BETULACEAE, Birch Family

Shrubs and trees; leaves alternate, simple, stipuled; blades pinnately veined; monoecious; flowers monosporangiate; perianth absent or calyx present; staminate flowers in drooping aments, 1 (apparently) to 3 in axil of each ament-bract, stamens (except in *Alnus*) bifid, each part bearing 1 anther-locule; carpellate flowers epigynous or perianth none, in aments or in small budlike clusters, 2-3 flowers in axil of each ament-bract; 1 or more small bracts at base of each flower; carpel 2, united, stigmas 2, ovary 2-loculed below, 1-loculed above, ovules 4; seeds 1.

- a Leaves not 2-ranked; mature carpellate aments woody, conelike, persistent. **5. ALNUS**
- a' Leaves 2-ranked except sometimes in *Betula*; carpellate aments not woody and conelike.
 - b Carpellate flowers in small scaly buds; fruit 1 cm or more in diameter, covered and exceeded by 2 accrescent bracts. **1. CORYLUS**
 - b' Carpellate flowers in cylindric or oblong aments; fruit smaller.
 - c Three carpellate flowers in axil of each usually 3-lobed ament-bract; fruit winged, not enclosed in or subtended by an involucre. **4. BETULA**
 - c' Two carpellate flowers in axil of each ament-bract, the bracts soon deciduous; fruit not winged.
 - d Fruit subtended by and much exceeded by 3-lobed leaflike structure; staminate aments emerging in spring from scaly winter-buds; bark dark gray, smooth; trunk fluted. **3. CARPINUS**
 - d' Fruit enclosed in a bladderlike sac; staminate aments present in winter; bark scaly; trunk no fluted. **2. OSTRYA**

1. CORYLUS L. Hazelnut

Shrubs; leaves 2-ranked, doubly serrate or incised; staminate aments emerging in autumn, flowering in spring, perianth absent, stamens 4; carpellate flower-cluster a scaly bud, 2 flowers under each scale, only the red stigmas protruding beyond scales; calyx minute; fruit enclosed by involucre of accrescent bracts.

1. *Corylus americana* Walter

Hazel, Hazelnut, American Hazelnut

Shrub; leaves 2-ranked, broadly ovate, doubly serrate; twigs and petioles usually stipitate-glandular and pubescent; involucre of two broad leafy bracts hairy, margins lacinate, prolonged beyond nut; buds rounded at tip.

REFERENCES: Riddell 1834:119; Sullivant 1840:21; Craig 1890:101 (occurs sparingly along the river); Selby & Craig 1890:15; Braun 1961:103 (illus. p. 102).

HERBARIUM RECORDS: Nov 1890—Big Darby Creek, Cols., Selby; 24 Sep 1892—Georgesville, Werner; Aug 1896—Georgesville, W. & Mrs. Kellerman; 8 Oct 1930—OSU Campus, Cols., Hicks; Mar 1933—Jackson Twp., Chapman.

2. OSTRYA Scop. Hop Hornbeam

Small tree; bark finely furrowed; twigs often glandular-pubescent; blades acuminate, serrate or doubly serrate; staminate flowers without perianth, 1-3 aments from buds on stems of previous year; carpellate aments solitary, terminal on branches of current year, each flower in a closed sac, the sacs in pairs in axil of an early-deciduous ament-bract; calyx minute; nut enclosed in accrescent sac, whole ament like inflorescence of *Humulus*, Hops.

1. *Ostrya virginiana* (Mill.) K.Koch

Hop Hornbeam, Ironwood

Small tree; bark splitting into thin scaly plates; leaves elm- or birch-like; staminate aments slender, pendulous; fruiting ament resembles *Humulus* (Hop); nut smooth, enclosed in a bladder involucre, these overlapping in a terminal cluster.

QUERCUS

