

APPENDIX III

KEYS TO SPECIES OF SOME GENERA OF DECIDUOUS WOODY PLANTS IN WINTER CONDITION

ACER

- a Buds white-pubescent, scales few; twigs glabrous, usually glaucous, green or tinged with red or purple; leaf-scars meeting in a sharp upward-pointing angle. *A. negundo*
- a' Buds and twigs not as above.
 - b Outer bud-scales 2, valvate; buds shorter than 8 mm, stalked; shrubs or small trees, twigs pubescent; bark not white-striped. *A. spicatum*
 - b' Bud-scales imbricate, more than 2 exposed; buds sessile or nearly so.
 - c Buds acute, conical, brown to almost black, about 4-8 pairs of scales visible. *A. saccharum* & *A. nigrum*
 - c' Buds ovoid to globose, obtuse or bluntly acute or, if acute, then differing from the above in color or in number of scales.
 - d Terminal bud usually 6 mm long or more.
 - e Bud-scales red, or red and green. *A. platanoides*
 - e' Bud-scales green, or the lower ones somewhat brownish. *A. pseudoplatanus*
 - d' Terminal bud (or lateral buds, if terminal is missing) less than 6 mm long.
 - f Buds red, often collateral; reproductive buds globose; scales with conspicuous light or brownish cilia; twigs brown to red; terminal bud present; trees.
 - g Twigs with strong, rather unpleasant, odor when broken. *A. saccharinum*
 - g' Twigs without such odor. *A. rubrum*
 - f' Buds not collateral, sometimes reddish but not wholly red unless with a collar; flowers from mixed buds; terminal bud sometimes absent; small trees or shrubs.
 - h Buds with asymmetric pale collar, the terminal usually absent. *A. palmatum*
 - h' Buds without a collar; terminal bud may be absent from some twigs.
 - i Leaf-scars usually meeting around twig; twig dull, grayish-brown, -red, or -green, usually somewhat pubescent; buds usually pubescent. *A. campestre*
 - i' Leaf-scars not meeting, connected by a line; bud-scales glabrous or ciliate.
 - j Buds 2-3 mm long; twigs very slender, glabrous. *A. ginnala*
 - j' Buds a little longer; twigs slender, often slightly hairy. *A. tataricum*

CARYA

- a Bud-scales valvate.
 - b Buds yellow, densely gland-dotted; outer scales leaflike. *C. cordiformis*
 - b' Outer bud-scales brown, gland-dotted, deciduous; inner scales pale-pubescent. *C. illinoensis*
- a' Bud-scales imbricate.
 - c Outer scales of terminal bud persistent; bark of trunk shaggy, light gray, separating in long strips; husk of nut 4-10 mm thick; inner bud-scales enlarging greatly in spring as bud opens.
 - d Terminal bud 1.3-2 cm long; twigs brown or green-, red-, or gray-brown, dark; fruit 3.5-5 cm long.
C. ovata
 - d' Terminal bud 2-3 cm long; twigs orange or gray; fruit 4-7 cm long; leaf-rachises and petioles usually persistent. *C. laciniosa*
 - c' Outer scales of terminal bud deciduous in autumn or early winter; bark not shaggy.
 - e Terminal bud 1.5-2 cm long; inner scales silky, accrescent in spring; twigs red-brown; fruit 3.5-5 cm long, husk usually more than 3 mm thick; bark deeply furrowed. *C. tomentosa*
 - e' Terminal bud usually not more than 1 cm long; inner bud-scales slightly accrescent in spring; fruit about 3.5 cm long, the husk usually not more than 3 mm thick.
 - f Husk of nut splitting to base along 3-4 sutures; bark sometimes separating. *C. ovalis*
 - f' Husk of nut not splitting to base or, if so, along only 1 suture. *C. glabra*

FRAXINUS

- a Twigs 4-angled, mostly glabrous; buds gray- or tawny-pubescent. *F. quadrangulata*
- a' Twigs terete, densely pubescent; buds brownish. *F. americana* var. *biltmoreana* & *F. pennsylvanica* var. *pennsylvanica* (See a".)
- a" Twigs terete, glabrous or nearly so; buds glabrous or nearly so but often rough.
 - b Buds brown.
 - c Leaf-scar crescent-shaped or at least upper margin concave. *F. americana* var. *americana*
 - c' Leaf-scar circular or semicircular, upper margin straight or notched below bud. *F. pennsylvanica* var. *subintegerrima*
 - b' Buds dark brown to blackish; lateral buds appressed, rounded at tip, the terminal sharp-pointed at tip; leaf-scar circular or longer than wide, sometimes notched below bud; twigs yellow-gray; fruit oblong. *F. nigra*

MAGNOLIA

- a Terminal bud about 1 cm long, slender, acute, green; twigs slender, green. *M. virginiana*
- a' Terminal bud and twigs not as above.
 - b Terminal bud glabrous, acuminate, 3-5 cm long; twigs stout. *M. tripetala*
 - b' Terminal bud pubescent, mostly shorter than 3 cm; twigs glabrous or slightly pubescent.
 - c Hairs of terminal bud pale; leaf-scar crescent-shaped, wider than lateral bud, encircling it about half; native tree. *M. acuminata*
 - c' Hairs of terminal bud gray; leaf-scar somewhat triangular, not crescent-shaped, not wider than lateral bud; planted as an ornamental. *M. soulangeana*

POPULUS

- a Trees columnar in form, branches erect; buds resinous, appressed. *P. nigra* var. *italica*
- a' Trees with spreading branches.
 - b Buds pubescent, not or only slightly resinous.
 - c Twigs glabrous or slightly pubescent; buds 5-10 mm long. *P. grandidentata*
 - c' Twigs densely white-tomentose; buds about 6 mm long, ovoid. *P. alba*
 - b' Buds not pubescent, or only slightly puberulent at base, sometimes resinous.
 - d Buds elongate, slender, 1.5 cm long or more, length twice width.
 - e Buds very resinous, fragrant, the largest about 2 cm long; twigs brown. *P. balsamifera* & *P. × jackii* Sarg.
 - e' Buds resinous or not resinous, usually shorter than 2 cm; twigs greenish-brown or greenish-yellow, often angled. *P. deltoides*
 - d' Buds mostly less than 1 cm long (if longer, then ovoid), not or only slightly resinous.
 - f Pith orange; twigs light in color; buds mostly less than 1 cm long or rarely to 1.5 cm, ovoid, slightly puberulent at base. *P. heterophylla*
 - f' Pith not orange; twigs brown and glabrous; buds ovoid or lance-ovoid, less than 1 cm long, the lateral appressed. *P. tremuloides*

QUERCUS

In some species of oak, dead leaves remain on the tree far into the winter; if leaves are present, use the key on p. 89. If immature fruits are found on the twigs in winter, the tree does not belong to any of the following species in the key, all of which are in the White Oak group: *Q. macrocarpa*, *Q. bicolor*, *Q. robur*, *Q. prinus*, *Q. stellata*, *Q. muehlenbergii* and *Q. alba*. Twig characters, upon which this key is based, are often not sufficient for correct identification of oaks; it is wise to use any additional characters available.

- a Buds 7-10 mm long, densely and finely pubescent, strongly angled, yellow-gray, ovoid; twigs glabrous. *Q. velutina*
- a' Buds smaller than above, or glabrous, or pubescent only in the upper part.
 - b Stipules persistent among the buds clustered at stem-tip.

- c Twigs light brown, glabrous; lateral buds glabrous, the terminal cluster sometimes hairy; bark peeling off in curling pieces from branches 2-4 cm in diameter. *Q. bicolor*
- c' Twigs gray, hairy or glabrous; buds gray, hairy; young stem often cork-ridged. *Q. macrocarpa*
- b' stipules not persistent among the buds clustered at stem-tip, or not noticeable.
- d Terminal bud mostly more than 5 mm long; twigs mostly glabrous.
 - e Buds obtuse, broadly ovoid, mostly glabrous, lateral about as large as terminal and spreading at wide angle; twigs brown, greenish, or reddish. *Q. robur*
 - e' Buds bluntly acute to blunt, ovoid, reddish-brown, with white or tawny hairs on upper half or more; acorn usually with concentric rings at tip. *Q. coccinea* (See e'')
 - e'' Buds acute; other characters not as in the two d's above.
 - f Buds ovoid, hairy at tip or glabrous, dark brown; twigs brown. *Q. rubra*
 - f' Buds ovoid, gray or yellow-brown, glabrous, scales with erose or split edges. *Q. shumardii* (See f'')
 - f'' Buds slender-conic, light brown, upper part hairy; bark deeply fissured. *Q. prinus*
- d' Terminal bud mostly 5 mm long or less.
 - g Twigs gray-pubescent; buds red-brown or brown, rounded or bluntly acute, sparsely pubescent, sometimes only on lower half. *Q. stellata*
 - g' Twigs glabrous or nearly so.
 - h Buds acute.
 - i Buds 2-3 mm long, glabrous; twigs very slender, glabrous. *Q. phellos*
 - i' Buds somewhat longer, glabrous or pubescent in upper part.
 - j Buds and twigs yellow- or gray-brown; bud-scales pale-edged. *Q. muehlenbergii*
 - j' Buds and twigs brown; dead leaves usually persistent in winter.
 - k Tree with many small divergent pinlike branches. *Q. palustris*
 - k' Tree without many small divergent pinlike branches. *Q. imbricaria*
 - h' Buds obtuse, ovoid to almost globose.
 - l Bark peeling off in curling pieces from branches 2-4 cm in diameter; stipules often present in terminal bud-cluster; twigs light brown. *Q. bicolor*
 - l' Bark not peeling off as above; stipules absent in terminal bud-cluster.
 - m Twigs gray, purplish, or red-brown, often glaucous; buds red or brown. *Q. alba*
 - m' Twigs and buds yellow- or gray-brown; bud-scales pale-edged. *Q. muehlenbergii*

RHUS & TOXICODENDRON

- a Leaf-scar circular, raised on persistent petiole-base which covers axillary bud; twigs pleasantly aromatic; small amentlike clusters of reproductive buds often present. *R. aromatica*
- a' Leaf-scar, petiole-base, and twigs not as above.
- b Terminal bud absent; lateral bud a globose hairy mass; leaf-scar ring-shaped, U-shaped, or somewhat shield-shaped, half to almost completely encircling lateral bud; fruits red.
 - c Lateral bud about half encircled by notch of leaf-scar; twigs puberulent. *R. copallinum*
 - c' Lateral bud almost completely encircled by leaf-scar.
 - d Twigs densely long-hairy. *R. typhina*
 - d' Twigs glabrous, glaucous. *R. glabra*
- b' Terminal bud present; leaf-scar shield-shaped or triangular, bud usually in notch at top; fruits white or drab; poisonous to touch. (*Toxicodendron*)
 - e Vines or spreading and bushy shrubs; aerial rootlets often present. *T. radicans*
 - e' Erect shrubs or small trees. *T. vernix*

VIBURNUM

- a Buds naked; buds and twigs stellate-scurfy.
 - b Leaf-scars half-circular, length at least half width. *V. alnifolium*
 - b' Leaf-scars shorter. *V. lantana*
- a' Buds with at least one scale.
 - c Outer bud-scales 2, valvate or separate near base, sometimes connate and appearing as one.

- d Bud-scales connate; buds plump, appressed. *V. opulus*
- d' Bud-scales separate; buds oblong or linear, or widened at middle or near base.
 - e Buds long and slender, often curved, the vegetative 1 cm long or more, those containing flower-clusters 1.5-3 cm long, widened near base and long-acuminate at tip, dark brown or red-brown, somewhat scurfy, becoming lead-color. *V. lentago*
 - e' Buds shorter than above, the vegetative less than 1 cm long, those containing flower-clusters about 1 cm long, widest at middle, about half as wide as long, brown-scurfy, becoming gray; twigs short, spreading at wide angle. *V. prunifolium*
- c' Outer bud-scales more than 2, usually 2 pairs.
 - f Bark light gray, on stems 2 years old and older the outer layer splitting and coming off, the brown under layer then exposed. *V. molle*
 - f' Bark not as above.
 - g Twigs usually pubescent or puberulent; bud-scales often hairy at tip, the outer pair pointed at apex, about 1/4 length of bud. *V. acerifolium*
 - g' Twigs glabrous or rarely pubescent; bud-scales ciliate, hairy at tip or glabrous, the outer pair 1/4 - 1/2 length of bud.
 - h Lower bud-scales acute at tip. *V. dentatum*
 - h' Lower bud-scales rounded or truncate, often short-mucronate. *V. rafinesquianum*