

KEY TO THE FRUITS OF THE GENERA OF TREES OF THE NORTHERN UNITED STATES.

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The complete fruit at maturity, including the peduncle, is required for determination.

1. Fruit a cone, a cone-like catkin, a compact aggregate, or an ordinary catkin. 2.
1. Fruit simple, consisting of a single carpel or set of united carpels, not cone-like or catkin-like, but often clustered. 22.
2. Fruit dry at maturity. 3.
2. Fruit fleshy. 16.
3. Fruit a globular aggregate of flowers on a long slender peduncle. 4.
3. Fruit not globular, except in some true cones, but ovoid or cylindrical, peduncle short or if rather long then thick and rigid. 5.
4. Fruit an aggregate of dehiscent spiny-pointed capsules with several seeds **Liquidambar.**
4. Fruit an aggregate of 1-seeded nutlets, not spiny-pointed. **Platanus.**
5. Fruit a true cone with naked seeds, or an aggregate of closed carpels showing stamen, petal and sepal scars on the peduncle. 6.
5. Fruit a catkin or a cone-like catkin. 19.
6. Seeds in closed carpels, the cone-like fruit showing stamen, petal, and sepal scars at the base on the peduncle. 7.
6. Fruit a true cone with naked seeds, not showing stamen, petal, and sepal scars on the peduncle. 8.
7. Carpels of the fruit forming dehiscent follicles at maturity; the fleshy seeds suspended from the pink or rose tissues of the fruit by slender threads. **Magnolia.**
7. Carpels samara-like, dry and indehiscent. **Liriodendron.**
8. Cones with numerous ovuliferous scales, more than 15. 9.
8. Cones with 3-12 ovuliferous scales. 12.
9. Cones erect, their scales deciduous from the persistent axis; ovuliferous scales orbicular or broad, obtuse. **Abies.**
9. Cones pendulous or projecting from the branch, the scales persistent. 10.
10. Cone scales woody and thickened at the outer end, elongated, often with a rigid point, spine, or prickle. **Pinus.**
10. Cone scales sub-orbicular or oval, sometimes with erose or emarginate tips. 11.
11. Cone with subulate leaf-scales at the base. **Larix.**
11. Cone without subulate leaf-scales at the base, short and ovoid, usually less than 1½ in. long. **Tsuga.**

- 11. Cone without subulate leaf-scales at the base, cylindric or long ovoid, usually 1-6 in. long, scales often with erose or emarginate tips. **Picea.**
 - 12. Carpels spirally arranged. 13.
 - 12. Carpels opposite. 14.
 - 13. Cone globose, the scales closely compressed on the outside, seeds not winged. **Taxodium.**
 - 13. Cone ovoid, with subulate leaf-scales at the base, the carpellate scales loose and open; seeds somewhat winged. **Larix.**
 - 14. Cone oblong or ovoid; the scales not peltate, each with 2, winged seeds. **Thuja.**
 - 14. Cone globular or spherical, the scales peltate. 15.
 - 15. Carpellate scales with many narrowly-winged seeds. **Cupressus.**
 - 15. Carpellate scales with 2-3 more or less winged seeds. **Chamaecyparis.**
 - 16. Fruit globose, over 2 in. in diameter. 17.
 - 16. Fruit elongated, ovoid or cylindrical. 18.
 - 17. Fruit green or yellowish-green, 3-5 in. in diameter. **Toxylon.**
 - 17. Fruit an aggregate of red drupes projecting beyond the persistent perianths. **Broussonetia.**
 - 18. Fruit very juicy, consisting of a catkin-like aggregate of small fleshy flowers. **Morus.**
 - 18. Fruit an aggregate of carpels, the ripe follicles dehiscent, and the seeds pendant from slender threads. **Magnolia.**
 - 18. Fruit a small blue berry-like cone. **Juniperus.**
 - 19. Catkin composed of capsules with numerous seeds having tufts of cottony hairs. 20.
 - 19. Catkin containing 1-seeded nutlets, achenes, or samara-like nutlets. 21.
 - 20. Capsule with a little cup at the base. **Populus.**
 - 20. No cup at the base of the capsule but 1 or 2 little glands may be present. **Salix.**
 - 21. Fruiting catkin with leaf-like bracts; nutlets with ridges, somewhat compressed. **Carpinus.**
 - 21. Fruiting catkin hop-like, with bladder-like bracts; nutlets somewhat compressed, ridges inconspicuous. **Ostrya.**
 - 21. Fruiting catkin woody and cone-like, nutlets small compressed, winged or wingless. **Alnus.**
 - 21. Fruiting catkin compact with rather thin scale-like bracts, cone-like; nutlets compressed, membranous-winged; samara-like. **Betula.**
- 22—
- 22. Fruit a dry or nearly dry samara, nut, achene, bean, or capsule, or a dry drupe. 23.
 - 22. Fruit fleshy, indehiscent. 55.

23. Fruit or the peduncle prominently winged. 24.
23. Fruit and peduncle not with wings. 30.
24. Peduncle of the fruit cluster with a large wing; fruit a dry drupe. **Tilia.**
24. Peduncle not winged; fruit a true samara, or with 1 or more prominent wings. 25.
25. Fruit with a prominent spine-like beak at the tip and with 2 or 4 wings, large. **Mohrodendron.**
25. Fruit not with a prominent spine-like point. 26.
26. Fruit double with 2 cavities and 2 large wings. **Acer.**
26. Samara with a wing all around or with a single wing at the end. 27.
27. Samara circular, oval, or broader than long. 28.
27. Samara elongated. 29.
28. Wing extending around the fruit, very veiny, glabrous; long-peduncled, calyx not present or very inconspicuous; cavities 2, 1 usually empty. **Ptelea.**
28. Wing notched at the apex, usually veiny; fruit long-peduncled, calyx present; cavity 1 with 1 seed. **Ulmus.**
28. Wing on the two sides of the fruit, with 2 stigmas at the apex; fruit sessile, small. **Betula.**
29. Wing extending as far below the central seed as beyond it. **Ailanthus.**
29. Wing terminal or extending along the sides of the seed but not beneath it. **Fraxinus.**
30. Fruit a dehiscent bean, follicle, or capsule, usually with several seeds. 31.
30. Fruit an indehiscent nut, achene, or dry drupe with 1 cavity and 1 seed; often partly or completely enclosed in a cup or husk. 47.
31. Fruit a bean or legume with 1 cavity and 2 sutures; seeds not winged. 32.
31. Fruit a capsule; if bean-like then with 2 cavities. 35.
32. Bean an inch or more broad, mostly with pulp. 33.
32. Bean about $\frac{1}{2}$ in. broad, without pulp. 34.
33. Bean very hard and thick, seed $\frac{3}{4}$ in. long. **Gymnocladus.**
33. Bean not very woody, thin, seed less than $\frac{1}{2}$ in. long. **Gleditsia.**
34. Bean with a prominent ridge on each side of one suture, apex long-acute. **Cercis.**
34. Bean with the 2 sutures nearly alike, apex mucronate, or with a slender point, sometimes bristly. **Robinia.**
34. Bean usually irregular and somewhat constricted into joints, apex abruptly acute, calyx containing long filaments. **Cladrastis.**
35. Seed with wings or a tuft of cottony hairs. 36.

- 35. Seed without wings or hairs. 39.
- 36. Seed with a tuft of hairs, capsule small. 37.
- 36. Seed with wings, the wings sometimes with a fringe of long hairs. 38.
- 37. Capsule with a little cup at the base. **Populus.**
- 37. No cup at the base of the capsule but 1 or 2 little glands may be present. **Salix.**
- 38. Capsule very long, wings of seed with a fringe of hairs. **Catalpa.**
- 38. Capsule short, wing of seed without hairs. **Paulownia.**
- 39. Seeds very large, $\frac{1}{2}$ -2 in. in diameter. 40.
- 39. Seeds much less than $\frac{1}{2}$ in. in diameter. 41.
- 40. Seed smooth with a large light spot at one end, without ridges or angles. **Aesculus.**
- 40. Seed with two or more vertical ridges, without a special light spot—a nut in an enclosing husk which may be mistaken for a capsule. **Hicoria.**
- 41. Seeds with a fleshy, scarlet aril, capsule lobed. **Euonymus.**
- 41. Seeds without an aril. 42.
- 42. Seeds 1 or 2, capsule not bladderly. 43.
- 42. Seeds several to many. 44.
- 43. Capsules small without a cup at the base. **Xanthoxylum.**
- 43. Capsule woody, $\frac{1}{2}$ in. long, with a prominent cup at the base; seeds 2, oblong. **Hamamelis.**
- 44. Capsule triocular, large, bladderly. 45.
- 44. Capsule with 5—many cavities, small. 46.
- 45. Capsule 3-lobed at the tip, with 3 styles, usually widest at the middle or toward the outer end. **Staphylea.**
- 45. Capsule with a long, acute tip, with a single style, widest below the middle. **Koelreuteria.**
- 46. Capsules mostly woody, oblong, puberulent; in corymbose or umbellate clusters. **Rhododendron.**
- 46. Capsules depressed-globose, somewhat 5-lobed; in corymbose or umbellate clusters. **Kalmia.**
- 46. Capsules ovoid-pyramidal, 5-angled; in large paniced racemes. **Oxydendrum.**
- 47. Fruit a dry drupe, or drupe-like; exocarp softer than the bony endocarp. 48.
- 47. Fruit a nut or achene, the pericarp not in 2 layers; often partly or completely enclosed in a cup or husk. 49.
- 48. Fruit globose, $\frac{1}{4}$ in. or more in diameter, on winged peduncles **Tilia.**
- 48. Fruit obliquely ovoid, compressed, ridged on the back and covered with prominent soft processes. **Planera.**
- 48. Fruit subglobose, nearly symmetrical, $\frac{1}{8}$ in. long, pubescent or if not the stone striate. **Rhus.**

48. Fruit obliquely oblong or oval, compressed, gibbous, $\frac{1}{8}$ in. long, reticulate-veined. **Cotinus.**
49. Nut sharply 3-angled; usually 2 together in the 4-valved bur. **Fagus.**
49. Nut not 3-angled. 50.
50. Nut less than $\frac{1}{4}$ in. long, somewhat compressed. 51.
50. Nut large, more than $\frac{1}{2}$ in. long, or if not then circular in cross-section. 52.
51. Nut with ridges; fruiting bract 3-cleft and incised. **Carpinus.**
51. Ridges of the nutlet inconspicuous, fruiting bract bladder-like. **Ostrya.**
52. Nut with 2 or 3 prominent ridges, sometimes with rough wrinkles. 53.
52. Nut not with ridges. 54.
53. Nut rugose or sculptured; husk indehiscent. **Juglans.**
53. Nut smooth or angled, husk at length splitting into segments. **Hicoria.**
54. Nut ovoid-oblong or subglobose; cup with imbricated, more or less united bracts. **Quercus.**
54. Nut plano-convex or rounded; bur globose and very prickly. **Castanea.**
54. Seed, which may be mistaken for a nut, not showing a style, large and shining; capsule splitting into 3 valves. **Aesculus.**

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55. Fruit a pome, the carpels enclosed by an adnate, perigynous disk or hypanthium. 56.
55. Fruit a berry, or berry-like, with several seeds. 60.
55. Fruit a drupe, or drupe-like, with a stone or pit and with 1 or rarely 2 seeds. 66.
56. Ripe carpels of the pome papery or leathery. 57.
56. Ripe carpels bony. **Crataegus.**
57. Pome small and berry-like. 58.
57. Pome large, fleshy like the apple. 59.
58. Pome scarlet when ripe, cavities not more than 5. **Sorbus.**
58. Pome purplish-red to purplish-blue when ripe, cavities usually 10. **Amelanchier.**
59. Seeds not more than 3 in each cavity; pome tapering into the peduncle; flesh with grit-cells. **Pyrus.**
59. Seeds not more than 3 in each cavity; pome sunk in at both ends, its flesh without grit-cells. **Malus.**
59. Seeds many in each cavity, flesh of pome hard. **Cydonia.**
60. Berry large, very much elongated, green with yellow pulp and large brown seeds. **Asimina.**
60. Berry ovoid or globose. 61.

- 61. Berry about 1 in. in diameter, reddish-yellow, with 4-12 large, flat, hard seeds and with the enlarged calyx at the base. **Diospyros.**
- 61. Berry not over $\frac{1}{2}$ in. in diameter. 62.
- 62. Fruit inferior, showing scars or parts of the perianth and stamens at the tip. 63.
- 62. Fruit superior, showing only the style at the tip, with scars or perianth parts if present at the base. 64.
- 63. Fruit scarlet, cavities 5. **Sorbus.**
- 63. Fruit purplish-red to purplish-blue, cavities usually 10. **Amelanchier.**
- 63. Fruit black, small, cavities 5. **Aralia.**
- 64. Fruit really a berry-like blue cone, showing the carpel tips on the sides, on close inspection. **Juniperus.**
- 64. Fruit not a modified cone, but a true berry. 65.
- 65. Berry-like drupe usually red or yellowish, with 4-8 bony or crustaceous nutlets. **Ilex.**
- 65. Berry-like drupe black, with 2-4 seed-like nutlets. **Rhamnus.**
- 65. Berry very saponaceous, dark; seeds 1-3, crustaceous, globose. **Sapindus.**
- 65. Berry black, with 1 erect, shining seed. **Bumelia.**
- 66. Fruit large, usually 2 in. or more in diameter; stone or nut deeply pitted, corrugated, or sculptured, usually $1\frac{1}{2}$ in. or more long. 67.
- 66. Stone not deeply pitted, corrugated, or sculptured, not more than $\frac{3}{4}$ in. long; if reticulated, then less than $\frac{1}{2}$ in. long. 68.
- 67. Flesh of fruit black or greenish, hard, with strong odor; seed in the nut much wrinkled. **Juglans.**
- 67. Drupe pubescent, its flesh sweet; seed in the stone smooth. **Amygdalus.**
- 68. Drupe white-waxy, less than $\frac{1}{4}$ in. in diameter, globose, tuberculate. **Myrica.**
- 68. Drupe not white-waxy, if somewhat resinous then much larger. 69.
- 69. Fruit superior, showing only a style or its scar at the tip but usually the remains of a calyx below. 70.
- 69. Fruit inferior, showing sepals, petals, and stamens or their remains or scars at the tip. 75.
- 70. Drupe small, with red acid hairs, or if gray then the stone striated. **Rhus.**
- 70. Drupe not with red acid hairs nor gray with striated stone. 71.
- 71. Drupe narrowly oblong, about 1 in. long. **Adelia.**
- 71. Drupe globose, oval, or globose-oblong. 72.
- 72. Stone ridged and reticulated, showing prominent teeth in cross-section. **Celtis.**

72. Stone, smooth, or if somewhat roughened then with a prominent suture all around. 73.
73. Fruiting pedicel much thickened below the prominent calyx base, red; drupe oblong-globose, blue. **Sassafras.**
73. Fruiting pedicel not thickened below the calyx or if so the fruit not blue. 74.
74. Fruit light greenish-yellow; flesh with a sickening-sweet odor and a sticky juice; embryo in a large kernel; a gymnospermous seed. **Ginkgo.**
74. Drupe often large and sweet, stone with a suture all around, often flattened. **Prunus.**
74. Drupe with a 4-6 lobed calyx; oblong-ovate, blue; endosperm large with a small embryo in the center. **Chionanthus.**
74. Fruit really a small black berry; seed shining, with the hilum at the base. **Bumelia.**
75. Stone with 2 cavities and 2 seeds, calyx 4-toothed; drupe with stylar beak, red, white, or blue. **Cornus.**
75. Stone with 1 cavity and 1 seed, grooved and somewhat compressed; drupe glabrous, blue or nearly black. **Nyssa.**
75. Fruit with prominent nerves and ridges, with 5 sepal-tips, oblong-ovate, pubescent, nearly dry, nut-like. **Symplocos.**
75. Stone 1-seeded, sometimes flattened; drupe with a prominent stylar beak, blue, black, or red. **Viburnum.**
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