

Key to the Gymnosperms of the Southeastern U.S.
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1. Leaves are broad, either simple or compound.
 2. Leaves are simple and fan-shaped. *Ginkgo biloba*
 2. Leaves are pinnately compound, with many narrow leaflets spreading from a central axis.
 3. Leaflets are strongly revolute (curved downward along the edges), and end in a spine-like tip. *Cycas revoluta*
 3. Leaflets are flat, or slightly revolute, and lack a spine-like tip. *Zamia integrifolia*
1. Leaves are needle-like or scale-like, and simple.
 4. Leaves are all needle-like (either evenly narrow or broader near the base and tapering to the tip).
 5. Needles are attached in clusters of 10 or more at the end of short shoots (stubby side branches); needles on long shoots are attached singly.
 6. Needles on short shoots are 2.5–5.0 cm. (1 – 2 in.) long and are stiff; all needles are evergreen. *Cedrus deodara*
 6. Needles on short shoots are 1.0–3.5 cm. (3/8 – 1 3/8 in.) long and are soft; all needles are deciduous. [Key to Larix](#)
 5. Needles are attached to twigs in fascicles (bundles) of 2–5; some may be attached singly. [Key to Pinus](#)
 5. Needles are all attached to twigs singly.
 7. Needles are *not* two-sided, but are three-sided, four-sided, or more or less oval in cross section (with, or without, ridges or keels).
 8. Needles are awl-shaped (broader at the base and tapering to a point), with a decurrent petiole (a wide leaf stalk that appears to be a continuation of the needle) *Cryptomeria japonica*
 8. Needles are more or less linear (with parallel sides), and are attached to twigs by sterigmata (distinct peg-like bases that remain on the twig after the needle falls) [Key to Picea](#)
 7. Needles are two-sided, with distinct upper and lower surfaces, which may be flat, concave or convex (with, or without, a midridge or keel).
 9. Apices (tips) of needles are rounded or blunt, some with a notch.
 10. Needles are attached on short petioles (stalks) that are pressed forward along the twig. [Key to Tsuga](#)
 10. Needles are sessile (attached directly to the twig), with nearly circular leaf bases. [Key to Abies](#)
 9. Apices (tips) of needles are pointed.
 11. Needles are arranged on the stem opposite each other (or appearing so), or are in whorls of 3.
 12. Upper surface of needles is concave; needles are 2–15 mm. (1/16 – 5/8 in.) long. [Key to Juniperus](#)
 12. Upper surface of needles is flat or slightly convex; needles are 15–40 mm. (5/8 – 1 5/8 in.) long. *Torreya taxifolia*
 11. Needles are arranged on the stem alternately.
 13. Needles are less than 1 mm. (0.04 in.) wide, 3–19 mm. (1/8 – 3/4 in.) long, and are deciduous. [Key to Taxodium](#)
 13. Needles are 1 mm. (0.04 in.) or more wide, 10–80 mm. (3/8 – 3 1/8) long, and are evergreen.

- 14. Needles are 1–3 cm. (3/8 – 1 1/8 in.) long and are flexible; tip is soft to the touch.....Key to *Taxus*
- 14. Needles are 3–8 cm. (1 1/8 – 3 1/8 in.) long and are stiff; tip is sharp to the touch.....*Cunninghamia lanceolata*
- 4. Leaves are scale-like, or both needle-like and scale-like on the same plant.
 - 15. Leaves are arranged on the stem alternately or spirally.
 - 16. Needle-like leaves are two-sided, with distinct upper and lower surfaces. Key to *Taxodium*
 - 16. Needle-like leaves are three-sided, four-sided, or more or less oval in cross section.....*Cryptomeria japonica*
 - 15. Leaves are arranged on the stem opposite each other or in whorls of 3.
 - 17. Scale-like leaves are arranged in whorls of 3, and are long and narrow, the sides mostly parallel, with a small pointed tip at the end. *Callitris columellaris*
 - 17. Scale-like leaves are arranged opposite, and are relatively broad, the sides overlapping at various angles, and tapering to a point.
 - 18. Branchlets spread in several directions (are not flattened); cones are round and look like berries. Key to *Juniperus*
 - 18. Many of the branchlets appear flattened; cones are not berry-like, but consist of some form of visible scales.
 - 19. Outer surface of scale-like leaves has distinct vertical grooves; leaves do not bear protruding glands. *Platycladus orientalis*
 - 19. Outer surface of scale-like leaves is not grooved; some leaves bear a protruding, oval gland.
 - 20. Mid-portion of outer-most branchlets is about 1 mm. (0.04 in.) wide; tips of scale-like leaves are sharp-pointed. *Chamaecyparis thyoides*
 - 20. Mid-portion of outer-most branchlets is about 1.5 mm. (0.06 in.) wide; tips of scale-like leaves are mostly blunt-pointed. *Thuja occidentalis*

Key to *Abies*

- 1. Bands on the lower surface of needles consisting of 4–8 stomatal (leaf pore) rows; bracts of seed cones hidden by the scales, or protruding slightly and not turned down..... *Abies balsamea*
- 1. Bands on the lower surface of needles consisting of 8–12 stomatal (leaf pore) rows; bracts of seed cones protruding beyond scales and turned downward. *Abies fraseri*

Key to *Juniperus*

- 1. Leaves are all needle-like, 3–15 mm (1/8 – 5/8 in.) long, and are in whorls of 3. *Juniperus communis* ssp. *depressa*
- 1. Leaves are mostly scale-like, 1–3 mm (1/32 – 1/8 in.) long, and are in opposite pairs (young trees, and some lower branches of larger trees, with whorled, needle-like leaves).
 - 2. Scale-like leaves do not overlap or overlap to ¼ their length or less, glands on backs of leaves are circular (restricted to Ark., Mo., Okla., Tex., and Mexico). *Juniperus ashei*
 - 2. Scale-like leaves overlap by more than ¼ their length, glands on backs of leaves are elongated (throughout most of the eastern U.S.). *Juniperus virginiana*

Key to *Larix*

- 1. Needles on short shoots are in clusters of 12–30, are keeled below and rounded on upper surface; seed cones are 1–2 cm. (3/8 – 3/4 in.) long, with 10–30 scales.....*Larix laricina*
- 1. Needles on short shoots are in clusters of 30–40, are keeled below and flat on upper surface; seed cones are 2–4 cm. (3/4 – 1 5/8 in.) long, with 30–50 scales.....*Larix decidua*

Key to *Picea*

- 1. Twigs are glabrous (without hairs).
 - 2. Needles are relatively blunt-tipped; seed cones are mostly longer than 12 cm. (4 3/4 in.).....*Picea abies*
 - 2. Needles are sharp-pointed; seed cones are shorter than 12 cm. (4 3/4 in.).
 - 3. Needles on the upper side of stems point forward; seed cones are 2.5–8 cm. (1 – 3 1/8 in.) long (most 6 cm. or less). *Picea glauca*
 - 3. All needles are more or less radially arranged at right angles to the stem; seed cones are 5–12 cm. (2 – 4 3/4 in.) long (most 6 cm. or longer).*Picea pungens*
- 1. Twigs are somewhat pubescent (with hairs).
 - 4. Seed cones are 10–16 cm. (4 – 6 1/4 in.) long.*Picea abies*
 - 4. Seed cones are 1.5–5 cm. (5/8 – 2 in.) long.
 - 5. Needles are glaucous (with a waxy, whitish coating), blue-green to gray-green, and mostly blunt-tipped; seed cones are 1.5–3.5 cm. (5/8 – 1 3/8 in.) long (most 2.5 cm. or less).*Picea mariana*
 - 5. Needles are not glaucous, are yellow-green to dark green and glossy, and mostly acute to sharp-pointed; seed cones are 2.3–5 cm. (7/8 – 2 in.) long. *Picea rubens*

Key to *Pinus*

- 1. Needles are in fascicles (bundles) of 5. *Pinus strobus*
- 1. Needles are in fascicles (bundles) of 2 or 3 (rarely 4 or 5).
 - 2. Needles are mostly in fascicles (bundles) of 2.
 - 3. Most needles are shorter than 12 cm. (4 3/4 in.).
 - 4. Seed cones are noticeably asymmetric.
 - 5. Larger cone scales have prominent, stout, upwardly curving prickles, 3–8 mm. (1/8 – 5/16 in.) long.*Pinus pungens*
 - 5. Larger cone scales lack prickles, or have small, slender prickles, less than 3 mm. (1/8 in.) long.
 - 6. Needles are 2–5 cm. (3/4 – 2 in.) long, 1–2 mm. (0.04 – 0.08 in.) wide; seed cone scales are unarmed or have small, reflexed tips.*Pinus banksiana*
 - 6. Needles are 3–10 cm. (1 1/8 – 4 in.) long, 1 mm. (0.04 in.) or less wide; seed cone scales are mostly armed with small, slender prickles.....*Pinus clausa*
 - 4. Seed cones appear symmetric or nearly symmetric.
 - 7. Bark of 2-4-year-old twigs is covered with strongly exfoliating scales.
 - 8. Fresh needles are brittle, breaking when bent, and are about 1 mm. (0.04 in.) wide or less.*Pinus resinosa*
 - 8. Fresh needles are flexible, not breaking cleanly when bent, and are mostly over 1 mm. (0.04 in.) wide.
 - 9. Buds are gray-brown and resinous; seed cones scales are often black beneath. *Pinus nigra*

- 9. Buds are light gray and not resinous; seed cone scales are brown or dark brown beneath. *Pinus thunbergiana*
- 7. Bark of 2-4-year-old twigs is not covered with strongly exfoliating scales.
 - 10. Needles are strongly twisted, and are 2–8 cm. (3/4 – 3 1/8 in.) long.
 - 11. Seed cone scales bear prickles, inner surface of scales has a contrasting purple-red or purple-brown border; needles are 1.5 mm. (0.06 in.) or less wide. *Pinus virginiana*
 - 11. Seed cones scales do not bear prickles, inner surface of scales lacks a contrasting border; needles are 1.5–2 mm. (0.06 – 0.08 in.) wide. *Pinus sylvestris*
 - 10. Needles are not twisted, or only slightly twisted, and are 3–13 cm. (1 1/8 – 5 1/8 in.) long.
 - 12. Twigs are roughened or cracking below the leafy portion; needles are 5–13 cm. (2 – 5 1/8 in.) long, sometimes in bundles of 2 and 3 on the same tree; bark plates have small resin pockets. *Pinus echinata*
 - 12. Twigs are relatively smooth below the leafy portion; needles are 3–10 cm. (1 1/8 – 4 in.) long, in bundles of 2 only; bark plates lack resin pockets.
 - 13. Bark on upper sections of trunk is reddish to red-brown, and in plates; seed cones persist on branches, are often long serotinous, and are usually armed with a small prickle. *Pinus clausa*
 - 13. Bark on upper sections of trunk is gray, and more or less smooth, appearing slick; seed cones tend to fall after maturity, are not serotinous, and are unarmed or bear a minute, deciduous prickle. *Pinus glabra*
- 3. Most needles are longer than 12 cm. (4 3/4 in.).
 - 14. Fresh needles are brittle, breaking when bent, and are about 1 mm. (0.04 in.) wide or less. *Pinus resinosa*
 - 14. Fresh needles are flexible, not breaking cleanly when bent, and are mostly over 1 mm. (0.04 in.) wide.
 - 15. Seed cones are stalked, and are 7–20 cm. (2 3/4 – 7 7/8 in.) long. *Pinus elliottii* var. *densa*
 - 15. Seed cones are sessile, or nearly sessile, and are 4–12 cm. (1 5/8 – 4 3/4 in.) long.
 - 16. Needles are in fascicles of 2 only; seed cones are 4–8 cm. (1 5/8 – 3 1/8 in.) long, and glossy, scales are often black beneath. *Pinus nigra*
 - 16. At least some needles are in fascicles of 3; seed cones are 6–15 cm. (1/4 – 5 7/8 in.) long, and dull, scales are brown or dark brown beneath. *Pinus taeda*
- 2. Needles are mostly in fascicles (bundles) of 3.
 - 17. Most needles are longer than 25 cm. (9 7/8 in.). *Pinus palustris*
 - 17. Most needles are shorter than 25 cm. (9 7/8 in.).
 - 18. Most needles are shorter than 12 cm. (4 3/4 in.).
 - 19. Needles are about 1 mm (0.04 in.) wide, not twisted, or only slightly twisted, and flexible. *Pinus echinata*
 - 19. Needles are 1–2 mm (0.04 – 0.08 in.) wide, often twisted, and stiff. *Pinus rigida*
 - 18. Most needles are longer than 12 cm. (4 3/4 in.).
 - 20. Seed cones are 5–8 cm. (2 – 3 1/8 in.) long, and broadly ovoid to nearly globose when open; scales bear a short weak prickle or none. *Pinus serotina*
 - 20. Seed cones are 6–20 cm. (2 3/8 – 7 7/8 in.) long, and narrowly ovoid to ovoid when open; scales bear a stout prickle.
 - 21. Seed cones are stalked, and are 7–20 cm. (2 3/4 – 7 7/8 in.) long; the outer portion of the cone scales is lustrous (as if varnished). .. *Pinus elliottii* var. *elliottii*
 - 21. Seed cones are sessile (without a stalk), or nearly sessile, and are 6–15 cm. (2 3/8 – 5 7/8 in.) long; the outer portion of the cone scales is dull. *Pinus taeda*

Key to *Taxodium*

- 1. Leaves are awl-shaped, spirally arranged, ascending or appressed to branchlets (spreading laterally and featherlike only on juvenile trees), and mostly 3–10 mm. (1/8 – 3/8 in.) long.....
.....*Taxodium distichum* var. *imbricarium*
- 1. Leaves are linear and flat, spirally arranged but spreading laterally and featherlike, (sometimes appressed on drooping branches of the crown), and mostly 8–20 mm (5/16 – 3/4 in.) long.
.....*Taxodium distichum* var. *distichum*

Key to *Taxus*

- 1. Plant is a low bush without a distinct trunk, and is monoecious (with separate male and female cones on the same plant).....*Taxus canadensis*
- 1. Plant is a tree or shrub with a distinct trunk, and is dioecious (with plants bearing either male or female cones, but not both).
 - 2. Needles are mostly 1–2 mm (0.04 – 0.08 in.) wide, midrib usually is not prominently raised; a rare native tree or shrub naturally occurring only in northwest Florida.*Taxus floridana*
 - 2. Needles are 2–3 mm (0.08 – 0.12 in.) wide, midrib usually is prominently raised; nonnative trees or shrubs planted widely in the eastern U.S.
 - 3. Needles are 1–3 cm (3/8 – 1 3/16 in.) long and 2–2.5 mm (0.08 – 0.10 in.) wide, on typical horizontal branchlets spreading laterally to form a more or less flat spray; bud scales are blunt and not keeled.....*Taxus baccata*
 - 3. Needles are 1.2–2.5 cm (15/32 – 1 in.) long and 2–3 mm (0.08 – 0.12 in.) wide, and are more or less ascending, forming a V-shaped trough when branchlets are viewed endwise; bud scales are acute and keeled.*Taxus cuspidata*

Key to *Tsuga*

- 1. Seed cones are 1.2–2.5 cm. (15/32 – 1 in.) long; needles mostly appear two-ranked, margins are minutely dentate, especially toward the apex.....*Tsuga canadensis*
- 1. Seed cones are 2.0–4.0 cm. (3/4 – 1 5/8 in.) long; needles mostly spread in all directions from the twigs, margins are entire (rarely dentate toward the apex).....*Tsuga caroliniana*