H. abramsiana (C.B. Wolf) Bartel SANTA CRUZ CYPRUS Tree 6–10(15) m. ST: bark fibrous, thin, broken in thick vertical strips or plates, gray-brown; ultimate branches 0.9–1.2 mm diam., cylindrical. LF: light bright to deep green. POLLEN CONE: 3–4 mm, 2 mm diam., ± spheric, 4–18-sided, scales 10–16; pollen sacs 4–6 per scale. SEED CONE: 16–30(35) mm, spheric to widely elliptic, brown; scales 8–10. SEED: 3–5 mm, glaucous or not, gen dull brown to iridescent black, rough; attachment scar conspicuous. [Cupressus a. C.B. Wolf] var. abramsiana SEED CONE: (14)16–25 mm, 14–22 mm diam. Yellow-pine, closed-cone/cypress/forests; 370–760 m. SnFrB (Santa Cruz Mtns, Santa Cruz Co.). ★

H. bakeri (Jeps.) Bartel (p. 141) BAKER CYPRESS, SIKIYU CYPRESS Tree 7–30(40) m. ST: bark peeling in irregular plates, ± red or cherry-brown, aging gray-brown; ultimate branches 0.7–1 mm diam., cylindrical. LF: dark to gray-green, resin not copious. POLLEN CONE: 2–3 mm, gen spheric; scales 6–10; pollen sacs 3–5 per scale. SEED CONE: 10–18(25) mm, spheric; surface warty, silvery to dull brown; scales 4–8. SEED: (2.4)–3.4 mm, gen glaucous, tan to dull red-brown, gen with many wart-like pockets; attachment scar conspicuous. Mixed-evergreen forest, open slopes, flats, often on serpentine; 100–1000 m. KO, CaRF, n SNH, MP, sw OR. [Cupressus b. Jeps.; Callitris b. (Jeps.) D.P. Little] ★

H. forbesii (Jeps.) Bartel (p. 141) TECATE CYPRESS Shrub to 10 m. ST: bark multi-trunked, gen without dominant terminal shoot. ST: bark peeling in thin plates, smooth, polished, cherry-red or mahogany-brown; ultimate branches 0.9–1.1 mm diam., cylindrical. LF: light green to dull green. POLLEN CONE: 3–4 mm, ± 2 mm diam., ± 4-sided; scales 12–14; pollen sacs 3–5 per scale. SEED CONE: (17)20–32(35) mm, spheric, dull brown or gray; scales 6–10. SEED: 3–6 mm, dark to dull red-brown, gen with many wart-like pockets; attachment scar conspicuous. 2m=22(23). Chaparral; 450–1500 m. w PR, planted outside native range in SW mtns; nw Baja CA. [Cupressus f. Jeps.; C. guadalupensis S. Watson var. f. (Jeps.) Little; Callitris f. (Jeps.) D.P. Little] ★

H. goveniana (Gordon) Bartel (p. 141) GOWEN CYPRESS Tree 5–7 m, without long, whip-like terminal shoot. ST: bark fibrous, peeling in linear strips or irregular-shaped plates, smooth, aging rough, brown to gray; ultimate branches 0.8–1.1 mm diam., cylindrical. LF: of 1 kind, bright to yellow-green, yellow-brown, ± 20 mm, ± spheric, brown to gray-brown, often green beneath surface; scales 6–10. SEED: 2.4–4.5 mm, glaucous or not, dark brown to ± black; attachment scar inconspicuous. Closed-cone/cypress/forests, mixed-evergreen forest, maritime chaparral, coastal terraces; 50–160 m. CCo (Monterey Peninsula). [Cupressus g. Gordon; Callitris g. (Gordon) D.P. Little] ★

H. macabana (A. Murray) bel Bartel (p. 141) MCNAB CYPRESS Large shrub 3–10 m (multi-trunked tree 10–18 m). ST: bark fibrous, gray-brown; ultimate branches 0.8–1.1 mm diam., ± 4-sided, ultimate 2 orders of shoots in 1 plane. LF: blue- to dull gray-green to gray; resin copious, sticky when fresh. POLLEN CONE: 2–3 mm, 2 mm diam.; scales gen 8; pollen sacs 3–5 per scale. SEED CONE: 15–21(25) mm, gen longer than wide, gray to red-brown; scales gen 6, projection conic, pointing upward to incurved. SEED: 3–5 mm, ± glaucous, dull brown; attachment scar conspicuous. Dry slopes, flats, chaparral, pine/oak woodland, often on serpentine; 300–1460 m. NCoR, CaRF, n SNF; reported from sw OR. [Cupressus m. A. Murray bis; Callitris m. (A. Murray) bis D.P. Little] ★

H. macrocarpa (Hartw.) Bartel (p. 141) MONTEREY CYPRUS Tree 18–25 m; crown asymmetric, often open, flat-topped to widely conic in age. ST: bark fibrous, rich brown aging ash-gray; ultimate branches 0.9–1.2 mm diam., cylindrical. LF: bright to dark green, not glaucous. SEED CONE: 20–32(38) mm, spheric to elliptic, brown; scales 8–12, shiny when fresh; ± opening at maturity. SEED: 2.5–5 mm, not glaucous, dull red-brown to black; attachment scar ± white, conspicuous. Closed-cone/cypress/forests; < 50 m in native range. NCo, CCo, SCO (native to Monterey Peninsula, Point Lobos), widely planted, naturalized outside native range. [Cupressus m. Hartw.; Callitris m. (Hartw.) D.P. Little] ★

H. nevadensis (Abrams) Bartel (p. 141) PIUTE CYPRUS Tree 5–12(25) m. ST: bark fibrous, not peeling, gray to red-brown to cherry-red; ultimate branches 1–1.2 mm diam., cylindrical. LF: dull to gray-green; resin covering glands, conspicuous. SEED CONE: 20–30(35) mm, ovoid, often silver-gray in age; scales 6–8, projection less visible in age. SEED: 3–6 mm, gen glaucous, light to red-brown, attachment scar ± inconspicuous. 2m=22(23). Pinyon/juniper or oak/pine woodland, chaparral, closed-cone/cypress forests; 750–1800 m. n SN (Kern, Tulare cos.). [Cupressus nevadensis A. Murray var. n. Abrams; Callitris n. (Abrams) D.P. Little; Cupressus arizonica Greene subsp. n. (Abrams) A.E. Murray] ★

H. pygmaea (LeMonn.) Bartel PYGMY CYPRESS Shrub or tree, 1–2 m on sterile soil, 10–20(50) m on rich soil; with long-whip-like ultimate shoot. ST: bark fibrous, gray-brown; ultimate branches 0.9–1.1 mm diam., cylindrical. LF: gen dark dull green, resin 0. SEED CONE: 12–27(35) mm, spheric to gen wide elliptic, tan aging gray; scales 6–10. SEED: 2.5–4.7(5.5) mm, not glaucous, dark red-brown to black, shiny or not; attachment scar inconspicuous. Closed-cone/cypress/forests, mixed-evergreen forest, coastal terraces; 50–200(300) m. s NCo (Mendocino, Sonoma cos.); reported from sw OR. [Cupressus nevadensis Gordon var. p. LeMonn; Callitris p. (LeMonn) D.P. Little; Cupressus nevadensis subsp. p. (LeMonn) A. Camus; Cupressus nevadensis subsp. pygmaea, orth. var. ★

H. sargentii (Jeps.) Bartel (p. 141) SARGENT CYPRESS Tree 6–20 m. ST: bark fibrous, thick, gray or dark brown; ultimate branches 0.9–1.2 mm diam., cylindrical to 4-sided. LF: dull, glaucous or not, dusty- to gray-green. SEED CONE: 15–25(30) mm, spheric, rough-surfaced, dull brown to gray, scales 6–10. SEED: 3–5.3 mm, ± glaucous, dark brown; attachment scar gen conspicuous. Closed-cone/cypress, yellow-pine forests, chaparral, on serpentine; 60–1370 m. NCoR, SnFrB, SCoR; reported from sw OR. [Cupressus s. Jeps.; Callitris s. (Jeps.) D.P. Little] ★

H. stephensoni (C.B. Wolf) Bartel (p. 141) CUYAMACA CYPRESS Tree 3(5)–10(16) m. ST: bark smooth, thin, peeling in thin strips or plates, red-brown to cherry-red; ultimate branches 1–1.3 mm diam., cylindrical. LF: of 1 kind, gray-green; glands gen inactive, conspicuous or not, resin 0. SEED CONE: 17–27(30) mm, spheric, dull gray to brown; scales 6–8(10), projection conspicuous and conic. SEED: 3.6–6(8) mm, glaucous or not, dark red-brown; attachment scar conspicuous. 2m=22(23,24). Chaparral; 910–1800 m. sw PR (Cuyamaca Mtns); nw Baja CA. [Cupressus arizonica subsp. a, misapl.] ★

**JUNIPERUS** JUNIPER

Robert P. Adams & Jim A. Bartel

Shrub, tree; gen dioecious. ST: bark thin, peeling in strips; young shoots 4-angled to cylindrical. LF: opposite (4-ranked) or whorled in 3s (6-ranked), scale-like to less often awl- or needle-like. POLLEN CONE: gen terminal; pollen sacs 2–6 per scale. SEED CONE: gen terminal, 5–18 mm, ± spheric, ± fleshy, berry-like, glaucous or not, dry or resinous, gen maturing 2nd yr, surrounded at base by minute scale-like bracts; scales 3–8, fused, opposite or whorled in 3s. SEED: 1–3 per cone, ± flat, unwinged, often not angled, gen animal-dispersed over 2 yrs; cotyledons 2–6. 67 spp., 28 var.: n hemisphere exc ne Afr. (Latin: juniper) [Adams & Nguyen 2007 Phytologia 89:43–57; Adams et al. 2006 Phytologia 88:299–309]
1. Lf awl- or needle-like, suberect to spreading but not appressed; pollen, seed cones axillary; shrub < 1 m (sect. Juniperus) J. communis var. depressa

2. Lf 10-20+ mm; glaucous stomatal band ± 1-1.5 x as wide as green lf margin

3. Mature seed cone elongate to ± spheric; glaucous stomatal band 3-4 x as wide as green lf margin var. jackii

4. Lf glabrous; densely appressed; pollen, seed cones terminal; tree, shrub > 1 m (sect. Sabina) J. grandis

5. Bark brown; lvs Whorled in 3s; gen dioecious; NCoR, SNH, SnGb, SnBr, SNE, DMtns var. occidentalis

6. Lf glabrous; trunks several at base; gen dioecious. J. osteosperma

J. californica Carrière (p. 141) CALIFORNIA JUNIPER Shrub, tree 1-4(10) m; gen dioecious. ST: trunks several at base; bark gray, thin, outer layers persistent. LF: gen whorled in 3s, 6-ranked; scale-like, closely appressed; gland obvious. POLLEN CONE: 2-3 mm, oblong. SEED CONE: 7-12 mm, spheric to ovoid, ± blue maturing red-brown, dry. SEED: 5-7 mm, pointed, angled, brown. Dry slopes, flats, pinyon/juniper woodland; 50-1500 m. NCoR, SNF, SCv (Sutter Buttes), SnBr, SCc, TR, NR, DMtns; s NV, n AZ, Baja CA (Cedros, Guadalupe islands).

J. communis L. COMMON JUNIPER Shrub < 1 m, gen ± prostrate; gen dioecious. ST: brown, peeling in papery sheets. LF: gen whorled in 3s, 6-ranked; suberect to spreading, awl- or needle-like, jointed, not decurrent. POLLEN CONE: axillary, 4-5 mm. SEED CONE: axillary, 5-9 mm, green maturing bright blue to black, glossy, resinous. SEED: 2-5 mm, ovoid, acute, gen 3-angled. 3 other vars. extend sp. range to incl. Eur, Asia. var. depressa Pursh DEPRESSED JUNIPER Low, oov spreading. LF: 10-20+ mm; glaucous stomatal band ± 1.5 x as wide as green lf margin. SEED CONE: 6-9 mm. SEED: 3 per cone. Rocky soil, slopes, summits; < 2800 m. SNH; ± to AK, ne N.Am.

var. jackii Rehder (p. 141) JACK’S JUNIPER Spreading, mat-like, oov erect. LF: 7-9(10) mm; glaucous stomatal band 3-4 x as wide as green lf margin. SEED CONE: mature elongate to ± spheric. SEED: 1(2) per cone. Rocky or wooded slopes, high-elevation forests, often on serpentine or lava; 1900-3400 m. KR, CaRH; OR. [J. c var. montana Aiton, in part]

J. grandis R.P. Adams (p. 141) SIERRA JUNIPER, GRAND JUNIPER Tree 8-20(30) m; gen dioecious. ST: dark brown. LF: gen whorled in 3s, 6-ranked; closely appressed, scale-like. SEED CONE: 5-9 mm, blue-green maturing blue-black, resinous. SEED: cotylodons 2-4, 2n=22. Exposed, dry, rocky slopes, flats, forest, pinyon/juniper woodland; 100-3100 m. NCoR, SNH, SnGb, SnBr, SNE, DMtns; w NV. [J. occidentalis var. australis (Vasek) A.H. Holmgren & N.H. Holmgren]

J. occidentalis Hook. WESTERN JUNIPER Tree 5-15(20) m; gen ± monoecious. ST: bark brown. LF: opposite, 4-ranked or whorled in 3s, 6-ranked. POLEN CONE: 2-3 mm, oblong. SEED CONE: 7-12 mm, blue-green maturing blue-black, resinous. SEED: cotylodons gen 2. 2n=22. Dry slopes, flats, sagebrush, juniper woodland; 700-2300 m. CaRh, MP; to WA, ID, w NV.

J. osteosperma (Torr.) Little (p. 141) UTAH JUNIPER Tree 1-8 m; monoecious. ST: trunk gen 1; bark thin, gray-brown aging ash-white. LF: gen opposite, 4-ranked; closely appressed, scale-like; gland obscure. POLLEN CONE: 2-3 mm, cylindrical. SEED CONE: 5-13 mm, spheric, brown maturing red-brown, dry. SEED: 1(2), 3-4 mm, ovoid, strongly angled. Pinyon/juniper woodland; 1300-2600 m. SnGb, SnBr, GB, DMtns; to MT, NM.

SEQUOIA REDWOOD
Steve Boyd & James R. Griffin

1 sp.: w N.Am. (Sequoia, Cherokee chief, 1776-1843)

S. sempervirens (D. Don) Endl. (p. 141) Tree, pl gen sprouting vigorously from base if cut, from entire crown if burned. ST: trunk < 110 m, to 9 m diam; old crown narrowly conic to ± cylindrical, gen unbranched in lower 1/2; bark < 30 cm thick near base, fibrous, ridged, red-brown; branches downspew to ± ascending; twigs persistent < 5 yrs. LF: alternate, green < 4 yrs, persistent < 4; of 2 kinds, those on sprouting, rapidly growing, or fertile tips appressed, not ranked, < 8 mm, awl-like, others spreading, ± 2-ranked, 5-25 mm, linear (to lance-linear), gen flat. POLLEN CONE: 2-5 mm, ± spheric to ovoid. SEED CONE: 13-35 mm, ± spheric, woody, maturing in 1 yr, persistent < 2; scales peltate, fused to bracts. SEED: 2-7 per scale, 3-6 mm, wings 2, narrow, lateral. n=33. Redwood forest: < 1100 m, w KR, NCoR, w NCoR, nC Co, SnFrB, n SCc, SnCRO, SW OR. Tallest trees in N.Am.

SEQUOIADENDRON GIANT SEQUOIA
Steve Boyd & James R. Griffin

1 sp.: CA. (Greek: sequoia tree)

S. giganteum (Lindl.) J. Buchholz (p. 141) Tree, gen not sprouting. ST: trunk < 90 m, to 11 m diam; old crown irregular, with large branches throughout; bark to ± 60 cm thick near base, fibrous, ridged, red-brown; branches spreading to downspew, ends upturned; twigs persistent < 20 yrs. LF: alternate, green < 4 yrs, persistent < 20; of 1 kind, appressed, ± 4-ranked, < 15 mm, awl-like. POLLEN CONE: 4-8 mm, ± spheric to ovoid. SEED CONE: 40-90 mm, oblong, woody, maturing in 2 yrs, persistent < 20; scales peltate, fused to bracts. SEED: 3-9 per scale, 3-6 mm, wings 2, unequal, lateral. n=11. Uncommon. Mixed-conifer forest, esp with favorable soil moisture; 825-2700 m. SNH. Most massive trunks in N.Am.