

Equisetum L. HORSETAIL

Equisetum hyemale L. subsp. *affine* (Engelm.) Calder & Roy L. Taylor, COMMON SCOURING RUSH. Perennial herb, clonal, evergreen with photosynthetic stems, rhizomatous, fibrous-rooted, many-stemmed at base, stems jointed, unbranched above base (year 1), sometimes with 1–5 ascending branches at particular nodes (older stems), erect to ascending, in range 100–275 cm tall; shoots without foliage, each green stem persisting for 2 or more years and potentially with a terminal, spore-producing cone (in range most shoots sterile), glabrous; rhizomes deep-seated, horizontal and ascending, ± 7 mm diameter, dull black, in \times -section oblong and hollow (internodes) with a ring of 20+ canals. **Stems:** with 22–44+ low ridges, 6–12 mm diameter at base, straight, tough, slightly constricted at nodes, each segment green to blue-green with a broad black band on lower internode underneath sheath of older stem segment, internodes typically 15–28 per shoot and 25–160 mm long, scabrous due to silica projections (transverse ridges) in cell walls, with 2 longitudinal lines of sunken stomates within each stem valley; internode hollow, mature wall 0.5–2 mm thick, in \times -section with a canal beneath each ridge; lateral branches whorled but not symmetrically so, ± 16 -ridged, ca. 3 mm diameter. **Leaves (microphylls):** as many as stem ridges, whorled and fused forming sheath around node with scalelike free portions; sheath cylindric, (7–)10–13(–17) mm long, diameter < length, initially pale yellow green above node, with a black band formed by upper sheath and lobes, in age forming a second black band near midpoint between base and tip separated by an ash-gray band; free portion of microphylls flat needle-shaped, 0.5–1 mm wide, soon dead and brownish, 1-veined, mostly abscised; free portions on microphylls of lateral branches 0.5 mm wide, black base to tip. **Cone (strobilus):** terminal, ovoid to ellipsoid with nipplelike cap at tip, (15–)25–35 \times 7–9 mm (much smaller on slender lateral branches), of whorled, stalked, umbrellalike (peltate) scales (sporangiophores); stalk of cone somewhat exerted from sheath, yellowish, with sterile, cuplike collar at the lowest node (annulus), the annulus 1.5 \times 5.5 mm, with many short teeth, internode to first whorl of sporangiophores short; whorls 10–12 typically with 13–15 sporangiophores per whorl; scale surface of sporangiophore polygonal and typically 6-sided, green with a black hexagonal platform, aging brown and black, each peltate scale bearing 8 inward-pointing sporangia on concealed surface. **Sporangia:** somewhat wedge-shaped, ± 1 mm long, greenish aging gray. **Spores:** spheric, light green, wrapped with 4 straplike, hygroscopic appendages with expanded ends (elaters). Sporulation late summer.

Native. Colonial herbaceous perennial occasionally found in shaded, wet margins along creeks in *Salix* riparian woodland, especially in the coastal canyons (SMM), e.g., Santa Ynez Canyon and Topanga Canyon; not reported yet from SH. *Equisetum hyemale* forms new shoots in early spring from rhizomes, and the stems are up to 275 centimeter long and live for several years, senescing after tips on all branches either abort or form terminal strobili. In this species the mature leaf sheath has two black bands separated by a wide ash-gray band. In range only a small percentage of shoots form strobili.

B. A. Prigge & A. C. Gibson