

Helianthus L. SUNFLOWER

Helianthus annuus L., COMMON SUNFLOWER. Annual, robust, taprooted, 1–several-stemmed at base, typically with ascending to spreading branches throughout most of plant (escaped cultivated forms often unbranched), erect, (28–)80–200+ cm tall; shoots with only cauline leaves, scabrous, pubescent and with scattered, coarse, bulbous-based hairs, becoming glabrate, with spheric, colorless glandular-hairs on leaves, \pm viscid, when fresh strongly scented. **Stems:** low-ridged becoming \pm cylindrical, 8–20+ mm diameter, with ridge descending from each leaf, sometimes aging reddish approaching inflorescence; pith white. **Leaves:** helically alternate (opposite on the first nodes of a seedling), simple, long-petiolate, without stipules; petiole channeled, length = 50–100% blade length, flaring at base, scabrous; blade broadly ovate to deltate (lanceolate), typically (35–)50–240 \times (20–)30–180 mm (to 400 \times 400 mm in escaped cultivars), broadly tapered to truncate or subcordate to cordate at base, coarsely to shallowly serrate on margins, acute to acuminate at tip, pinnately veined with 3 major veins at base and principal veins slightly raised on upper surface and conspicuously raised on lower surface, scabrous from persistent bulbous bases of nonglandular hairs, upper surface with ultimate veinlets sunken, appearing cobblestonelike and gland-dotted, lower surface scabrous to hirsute on veins.

Inflorescence: heads, terminal and either solitary or in cymelike arrays with several heads, head radiate, typically 60–100 mm across (wider in escaped cultivars), with 15–21 ray flowers (more for gigantic hybrids) and 150+ disc flowers, bracteate, with nonglandular and glandular hairs; bract subtending peduncle = cauline leaf; peduncle stemlike, (20–)50–350 mm long, tough, scabrous, hirsute approaching involucre, glandular and viscid \pm midway between base of peduncle and head, often with 1 or 2 bracts along axis, the bracts leaflike with petiole 5–10 mm long and lanceolate blade 30–60 \times 10–20 mm; **involucre** dish-shaped, mostly 18–70 mm wide (much wider in escaped cultivars), phyllaries many in 3–4 series, the outermost phyllaries obovate to ovate or broadly lanceolate to elliptic, 15–32 \times 3–6(–10) mm, inner phyllaries $>$ disc flowers, green, stiff-ciliate on margins with hairs to 1 mm long, abruptly long-acuminate to tail-like (caudate) at tip, \pm parallel-veined with midvein \pm raised above midpoint, exposed surfaces hirsute, of the innermost series reduced, oblanceolate, $>$ 6.5 \times 2 mm; receptacle slightly domed, with bractlets (paleae), palea partially enclosing flower, conspicuously 3-toothed, (9–)12–15 mm long, strongly keeled, translucent below midpoint with conspicuous, white parallel veins, purplish below teeth, pubescent on keel above midpoint, the central tooth 4–5 mm long, initially deep purple or purple-brown aging orange, pubescent, the lateral teeth 0.3–1.3 mm long, typically purplish. **Ray flower:** neuter, bilateral, to 22 mm across; **calyx (pappus)** of 3(–5) unequal scales, narrowly lanceolate or the shortest ones acute, 0.5–5 mm long, translucent-white, flat to folded, minutely jagged on margins, glabrous; **corolla** acute or minutely 2-toothed or 3-toothed, 35–50 mm long; tube many-ribbed, 2–3.5 mm long, orangey yellow, short-pubescent; throat funnel-shaped; limb elliptic, 16–40 \times 7–22 mm, golden to brilliant yellow with darker parallel veins, glabrous but with a tuft of hairs inside throat and the lower surface pubescent at base; **stamens** absent or 1–3, fused to throat, = vestigial filaments; **pistil** 1; ovary inferior, typically sharply 3-angled, 3–3.5 mm long, glabrous or sparsely hairy on inward-facing ridge; style abortive. **Disc flower:** bisexual, radial, 2(–3.5) mm across; **calyx (pappus)** of 2(–3) unequal scales, erect,

lanceolate, 2.5–4.2 mm long, typically differing by 0.3–0.7 mm in length, translucent-white but tinged purplish above midpoint, short-serrate on margins, acuminate at tip, ± keeled, short-strigose along keel; **corolla** 5-lobed, (5–)7.5–9 mm long; tube ± cylindrical, 1–1.5(–2) mm long, yellowish, glabrous at base but mostly short-pubescent with swollen-based hairs, constricted in middle; lower throat bulbous, 1–1.5 mm long and wide and ± oblique at top, orangey yellow, densely short-strigose on bulbous region, upper throat narrowly vase-shaped, 3.5–4.5 mm long, yellowish green, tube and lower throat inconspicuously 10-ribbed, upper throat and lobes short-pubescent and glandular-hairy; lobes ascending to spreading, acute, 1–2 mm long, upper surface dull orange to greenish yellow or greenish orange or sometimes just tinged purplish red below tip and purplish red on margins, lower surface greenish to yellowish orange or tinged purplish red; **stamens** 5, fused to corolla throat, exerted 3–4 mm; filaments 4–4.5 mm long, light transparent yellow, flat with conspicuous opaque vein; anthers fused into cylinder surrounding style, basifixed, dithecal, 4.5–5 mm long, either deep purple or purplish but paler along connective and on fused margins, appendaged, strongly 5-ribbed to appendages, with colorless glandular hairs on sterile appendages at acute tip, longitudinally dehiscent; pollen yellow-orange; **pistil** 1; ovary inferior, weakly 4-sided and obovoid compressed side-to-side, 2–3.5 mm long, white, densely short-strigose, of upward-pointing hairs and sometimes hairs above midpoint pale purplish; **nectary** at base of style cuplike, 0.3 mm long, colorless; style exerted 1.5–2.5 mm beyond anthers, 8–11.5 mm long, 2-branched, below fork = corolla length, white to light yellow or light yellowish green, glabrous, the branches erect later spreading to recurved, very narrowly elliptic, 2.5–4.5 mm long, deep purple, narrowly acute to acuminate at tip, pebbly on upper face approaching tip and smooth on other faces, with dense purple stiff hairs on side and shorter hairs at tip. **Fruits:** cypselae, monomorphic, obovoid compressed side-to-side, (3–)4–6 × 2.3–2.7 mm (larger in escaped cultivated forms), dull gray-brown often somewhat mottled, short-strigose and strigose (glabrate at maturity in cultivated forms); pappus scales deciduous, unequal, lanceolate, 2.5–4.2 mm long, scarious, convex to keeled on back, typically short-strigose along keel, loosely attached and easily dislodged. January–December.

Native and naturalized. Annual occurring throughout the range in waste and disturbed sites and grassy fields. Typically the native individuals of *Helianthus annuus* are branched with numerous showy heads, but also in range one can find naturalized plants of cultivated forms, e.g., from seed dropped from bird feeders. Individuals of cultivars instead have an erect, single-axis shoot often with an exceptionally large and wide terminal head, accompanied with thick stems and very large leaves, as well as larger fruits than the native phenotypes. At the other extreme are short, depauperate individuals (< 50 cm tall), many of which are also the 1-headed cultivated forms. This appears to be the only annual species of the genus in range, and it flowers profusely from late spring into fall, but flowering individuals can be found somewhere within range any week of the year.

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