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PLANT PORTRAIT

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1166. *Helianthus occidentalis* Riddell

Compositae

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Summary

Helianthus occidentalis Riddell (Compositae: Heliantheae: Helianthinae) is described and illustrated. The species' placement in the genus is commented on, as are the differences in infrageneric placement of the other species Heiser originally grouped *H. occidentalis* with. Notes are provided for the species' cultivation, propagation, likely pests and diseases, and availability. A full synonymy is given, along with type citations and known presence of type material, together with relevant notes. Selected illustrations of the species are cited, and statements of the species' distribution, habitat and ecology, phenology, etymology, conservation status and vernacular names provided. A very brief biographical note of John Leonard Riddell, the collector and author of the species, is offered. Discussions include observations on the inclusion of *H. dowelliannus* M.A. Curtis in synonymy, aspects of publication of Riddell's name, and one nomenclatural irregularity that has appeared in the literature. The chocolate aroma of the flowering capitula is commented on (especially as it is also found in other species of *Helianthus*), as are other smell-types within the tribe Heliantheae.

INTRODUCTION

The subject of this plate is *Helianthus occidentalis* Riddell (Compositae: Heliantheae: Helianthinae) (Western Sunflower) (Plate 1166), a tall, somewhat delicate few-headed, perennial herb, with chocolate-scented, yellow-rayed capitula. Its basal rosettiform leaves, rhizomatous rootstock, and few, few-leaved flowering stems set it apart from other species in the genus.

The Heliantheae, the Sunflower tribe, is one of the largest tribes in the Compositae (Hind, 2007, 2023 [2024]), and certainly the most well represented in the North American

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Plains. With some 40 species recommended for prairie-style planting (Hind, 2023 [2024] – Appendix 1), these amounting to well over 10% of the prairies' flora, and over 27% for potential prairie plantings. Hind (2023)[2024] listed some 10 species of the genus *Helianthus* L., one of the more recognisable, and variable, genera amongst prairie taxa. *Helianthus*, the type of the subtribe Helianthinae, is a medium-sized genus of about 50 spp. (Heiser et al., 1969; Schilling, 2006; Panero, 2006).

Helianthus occidentalis was placed by Heiser et al. (1969) in his informal '*Helianthus* sect. *Divaricati* ser. *Divaricati*'. A summary of Heiser et al.'s classification of the genus was provided by Schilling & Heiser (1981: 395, Fig. 1), and *H. occidentalis*, along with *H. mollis* Lam. (Downy Sunflower) (see Hind, 2025a, b [2026]), the well-known *H. tuberosus* L. (Jerusalem Artichoke), *H. divaricatus* L. (Woodland Sunflower), *H. decapetalus* L. (another Western Sunflower) and *H. strumosus* L. (Pale-leaved Sunflower) were placed in the same series. With the exception of *H. tuberosus*, all are considered prairie plants – see Hind (2023)[2024]. In formalizing Heiser et al.'s scheme, *H. occidentalis* was placed by Schilling & Heiser (1981: 401) in *Helianthus* L. sect. *Divaricati* E.E. Schill. & Heiser ser. *Atrorubentes* (Torr. & A. Gray) E.E. Schill. & Heiser, along with *H. atrorubens* L. (Purple Disc Sunflower), *H. rigidus* (Cass.) Desf. (= *H. pauciflorus* Nutt. – Stiff Sunflower) and *H. silphioides* Nutt. (Rosinweed Sunflower). The remaining species in Heiser et al.'s informal scheme's series are now placed in sect. *Divaricati* ser. *Corona-solis* (Torr. & A. Gray) E.E. Schill. & Heiser.

The collector and describer of our species was John Leonard Riddell (Leyden, Massachusetts, 20th February 1807 – New Orleans, Louisiana, 7th October1865). Evidently a polymath, a botanist by training, he was also a chemist, geologist (surveying the geology of Ohio and Louisiana, and later Texas – see Riess, 1977 and Skinner & Riess, 1985) and palaeontologist, medic, numismatist, physicist, politician, author, educator (he lectured widely on a variety of subjects, offering the lectures on subscription), and was credited by Bailey (1883) as having 'invented the binocular microscope' (see also Riess, 1977, at length) as well as doing much work on infectious diseases using a compound microscope. It is also clear that Riddell was no mean inventor (see Riess, 1977), and had provided early views on atomic theory and the constitution of matter, long before such concepts became mainstream. Lowden (1997) considered him, and William Starling Sullivant (1803–1873), pioneers of frontier botany, and both well-published on the botany of Ohio. Riess's rather detailed biography (Riess, 1977) also emphasized Riddell's ability to 'participate in local cultural, business, and social activities', clearly enjoying a good measure of financial success, unlike many modern scientists, let alone Riddell's contemporaries. Riess also provided glimpses of Riddell's personal life at length, to the point that he considered Riddell an 'eccentric scientist', but one who clearly cared a great deal for his family.

CULTIVATION

As a garden subject *Helianthus occidentalis* has a number of things going for it, from its chocolate-scented capitula, a life expectancy of c. 20+ years (Diboll & Cox, 2023), its drought resistance, being fully hardy in the UK and the United States, doubtless an attractant for butterflies and bees, and its achenes an excellent food source for a wide range of birds and other small mammals. Are there any drawbacks?

The species is apparently absent from several gardening encyclopaedias over a long period (e.g. Loudon et al., 1850; Nicholson, 1884–88; Bailey, 1939; Brickell, 2016), suggesting that the species has never really been in favour, although Jeffrey (1992), Brown (2000) and Sutton (2001) listed the species, and more recently Diboll & Cox (2023) included it as a suitable prairie plant in their guide. Antonio & Masi (2001: 145) considered *Helianthus occidentalis* 'the most delicate appearing of all the Sunflowers', something that doubtless most growers might concur



PLATE 1166 *Helianthus occidentalis* CHRISTABEL KING

with and, unless in a wind-free area, the often-leggy plants might need some staking, especially if planted in more open borders (where it can be allowed to establish small stands).

Helianthus occidentalis is a plant for full sun, and is easily grown in dry to medium sandy or loamy soils. Listed by Brown (2000: 655) as H2, suggesting it is hardy almost everywhere in the UK (down to −20°C), and Jeffrey (1992: 524) listed it as Z4. In the States it is usually listed as fully hardy, down to −35°C, and is recorded from USDA Hardiness Zones 3–9.

Because of the relatively tall delicate nature of our species, combination planting, even if of other Compositae, will have to be thought through carefully. If *Helianthus occidentalis* is kept to an open prairie-style planting at the front of a border, any larger elements can be used as a backdrop. Contrasting plants might include *Eupatorium maculatum* L. (see Hind & Langhorne, 2025 [2026]), *Eurybia spectabilis* (Aiton) G.L. Nesom (see Hind & Lambkin, 2023a [2024a]), *Symphyotrichum laeve* (L.) G.L. Nesom (see Hind & Lambkin, 2023c [2024c]) or *S. oolentangiense* (Riddell) G.L. Nesom (see Hind & Lambkin, 2025a [2026a]), *Vernonia missurica* Raf. (see Hind & Langhorne, 2023 [2024]), or the echinaceas, *Echinacea purpurea* (L.) Moench (see Hind et al., 2025[2026]) or *E. angustifolia* DC. (see Hind & Lambkin, 2025b [2026b]). Lower-growing, but still contrasting plants, could include *Echinacea tennesseensis* (Beadle) Small (see Hind, 2018a), *Parthenium integrifolium* L. (see Hind & King, 2023 [2024]), *Ratibida columnifera* (Nutt.) Wooton & Standley var. *pulcherrima* (DC.) D.J.N. Hind (see Hind, 2006). Similar specimen plantings with a different architecture could include *Arnoglossum plantagineum* Raf. (see Hemsley, 1905 – as *Cacalia tuberosa* Nutt.), *Liatris aspera* Michx. (see Hind & Lambkin, 2023e [2024e]), *L. scariosa* (L.) Willd. (see Sims, 1815), or *L. spicata* (L.) Willd. (see Sims, 1811), or *Rudbeckia maxima* (see Hind, 2018b). All-yellow plantings for different heights might also include *Coreopsis lanceolata* L. (see Hind et al., 2023 [2024]), *Helianthus salicifolius* A. Dietr. (as a rather spectacular backdrop, see Hind & Smith, 2018), *Heterotheca camporum* var. *camporum* (see Hind & King, 2025 [2026]), *Rudbeckia hirta* L. (albeit with its dark cone – see Hind & Lambkin, 2023d [2024d]), or *Solidago nemoralis* Aiton (see Hind & Lambkin, 2023b [2024b]). There are clearly many more options, some of which are included by Hind (2023 [2024] – Appendix 1), that will make same-family combinations much more interesting, depending upon the season and continuity of flowering and corolla colour.

Propagation. As with most perennial Sunflowers there are typically three propagation methods. The most certain, and easiest (provided not too many of the fertile achenes are eaten), is by seed/achene, followed by division, or rhizome cuttings, and perhaps the most difficult is from cuttings of the newest vegetative growth.

Cold moist stratification. Ripe achenes require 4–6 weeks treatment to break their dormancy and improve germination; this method effectively mimics overwintered achenes under a layer of soil or snow. The achenes should be sown (in the autumn or early winter) onto the surface of a damp (but not soaking wet) proprietary seed compost mix in pots or trays and covered with a thin layer of grit or vermiculite. The containers should then be bagged and placed in a fridge or other cold location for between four and six weeks. If the achenes begin to germinate, remove the containers, bag-free, to a bright warm place. When the seedlings are large enough to handle, they can be potted on, keeping them moist all the time. Alternatively, the achenes can be sown in the spring, provided they have been stratified. The achenes can be mixed with moist sand and stored in the fridge for about 60 days before sowing. The achene/sand mix can be spread into the plants' final growing positions as some species suffer from root disturbance.

Dry stratification. In general, ripe achenes can be pre-treated by subjecting them to cold (of c. 0°C) for a month or more (typically between 30 and 60 days). Dry achenes can be stored in sealable plastic bags in a fridge, or in a rodent-proof container (typically a storage

tin) in an unheated building (outhouse, shed, etc.) over winter depending upon the species. The achenes can then be sown directly into prepared ground in their final growing position/s or, for those species that don't mind disturbance, the achene/sand mix can be sown in pots or trays and seedlings pricked out when they're large enough to handle.

Cuttings & Division. Other options for vegetative propagation include rhizome cuttings (of 15 cm sections) in addition to division. Reasonably long segments of the rhizome (ideally with a terminal bud) can be planted horizontally and covered with soil or horticultural grit (c. 2.5 cm deep) in their final position (not forgetting to mark where they are to avoid unwarranted disturbance before they start growing in the spring), or in pots to be planted out later when established. Extra protection of autumn-divided rhizomatous plants, with a good mulch, may be advisable in areas prone to very cold winters. Once the rhizomatous rootstock has well-established there is scope for dividing the plants by splitting the rhizomes, with pieces possessing actively growing shoots likely to provide the best material. Rhizomatous species can be divided at almost any time during the year.

One of the more difficult options for vegetative propagation is the use of stem cuttings, and most should be taken from early- to mid- season growth; the use of rooting hormone powder is optional, but may provide higher success rates. On the whole it is far better to use relatively nutrient poor composts to root prairie plant cuttings in, and a proprietary seed compost will suffice, ideally not peat-based. One word of caution, cuttings taken in the summer, or from new growth, have a low success rate, compared with those taken from early- to mid- season growth. Leafy stems wilt very rapidly, so the aim should be to take cuttings early in the morning, and keep them in the shade, or enclosed in plastic bag or propagator.

Pests & Diseases. The paucity of information available for this species in the UK might suggest that it is relatively free from pests and diseases, something that at first sight may be true in the States. However, Hilty (2024), in a detailed entry for the species in the wild, might suggest otherwise. Whilst Hilty's listing is somewhat generic, and would apply to several species of *Helianthus*, there are broad categories of insect pests (e.g. aphids, weevils, leaf beetles, and thrips) that might be expected as potential pests in the UK, albeit different species. In the wild there are also several butterflies and moths that rely upon *Helianthus* spp. as food plants; it is unlikely that this will translate into an issue in the UK. The coarse, scabrid leaves are relatively unpalatable to deer, and they have not yet been an issue at Wakehurst. In North America Plains Pocket Gophers (*Geomys bursarius* (Shaw, 1800)) have been recorded as feeding on the rhizomes and young foliage – in Europe they might be replaced by voles. Diseases are likely to be minimal in the UK, and if plants are grown in a dry prairie-like environment, mildews are highly unlikely.

Availability. Although both seed and potted material is available in the United States, the species is apparently not listed by any of the seed suppliers and nurseries in the UK. Whilst listed by Brown (2000: 653, 655) and Jeffrey (1992: 524), it is equally strange that the species is not listed in the more recent major horticultural encyclopaedias, nor in the *RHS Plant Finder* (Cubey et al., 2023; 2024).

NOMENCLATURE & DESCRIPTION

Helianthus occidentalis Riddell, W. J. Med. Phys. Sci. 9 (35): 577 (1836a). Type: 'Helianthus occidentalis, mihi. I give this specific name provisionally, being uncertain whether the plant may not have been vaguely described already. … Dry barrens, Dover, Tuscarawas co. Flowers in August, flowers yellow, an inch in diameter.' Neotype (selected by Heiser et al., 1969: 104): [U.S.A.:] 'Ohio,

Franklin Co., Georgesville, *Wm. C. Werner*, 29 Aug. 1892, OSU! dupls. at IND, NY)', OS(0000185 – s.n.); isoneotypes: IND, NY(02343721). Note: Tuscarawas County covers an extensive area, including Tuscarawas, New Philadelphia and Dover (where the species was collected).

Helianthus occidentalis Riddell var. *plantagineus* Torr. & A. Gray, Fl. N. Amer. (Torrey & A. Gray) 2 (part 2): 323 (April 1842). Type: 'Texas, *Drummond*! July–Sept. …'. Syntypes: GH(0000435614 – 'S. Felipe de Austin: Texas', the material sent by Hooker in 1835, from the J. Gay herbarium material he had recently purchased, mounted on a sheet with a *Charles Wright* s.n. collection; 00589935), K(001092042 – ex Herb. Hookerianum; 002499543 – ex Herb. Benthamianum), NY. Note: It is probable that K(002499544 – unnumbered Texas II *Drummond* collection, ex Herb. Hookerianum, determined by Torrey & Gray) is simply a further duplicate of the *Drummond* 99 originally in the sole red-edged folder under this name. In K, other than an unnecessarily remounted sheet with a determination label by Torrey & Gray, there is a second sheet with a pre-printed label 'Texas … Drummond 1835' which is numbered '99', in agreement with the remounted material – a collection from Drummond's second Texas expedition, numbered as 'Texas II N. 99/ Drumm[d].' Torrey & Gray's comments in their preface to the *Flora* (Torrey & Gray, 1838: vii) indicated that they had seen W. J. Hooker's collections on two visits, and had also seen a near-complete set of Drummond's collections courtesy of B. D. Greene of Boston. At the very least all collections of Drummond's Texas II 99 should be considered as syntypes. Heiser et al. (1969: 107) merely cited 'T.: Texas, *Drummond*, NY!'. Although Heiser et al. (1969: 22) stated that 'In the systematic treatment the word "type" or "T.", unless otherwise indicated, refers to the holotype; this is considered first-step lectotypification since Torrey & Gray never specified where the holotype material was located, the collections cited above all possessing det. slips by Torrey & Gray. Note E(00600645 – '130', purports to be a syntype), and PA(00026047 – 'Texas/ II. 130', mounted with a *Lapham* s.n. collection) may be additional material, but neither were annotated by Torrey & Gray, and no other Texas collections by Drummond numbered '130' have been seen that would support them being other syntypes.

Helianthus dowellianus M.A. Curtis, Amer. J. Sci. Arts 44 (1): 82 (?Jan. 1843). Type: [U.S.A.: North Carolina] 'Around Franklin, Macon County, N. C. Flowers Aug.-Sept.' (see Discussions below for reasons behind inclusion of this entity.]

Helianthus occidentalis Riddell var. *dowellianus* (M.A. Curtis) Torr. & A. Gray, Fl. N. America (Torrey & A. Gray) 2 (part 3): 504 (Feb. 1843).

Helianthus illinoensis Gleason, Ohio Naturalist 5 (1): 214 (1904). Type: [U.S.A.:] 'On the sand dunes along the Illinois river near Havana, where it is common in the black-jack oak woods, especially along the edges and in the more open and sunny places. Material was collected in 1903 and 1904, and the type collected on August 17, 1904, is in the herbarium of the Missouri Botanical Garden.' Holotype: MO(714111); isotype: OS(0000183).

Helianthus occidentalis Riddell var. *illinoensis* (Gleason) F.C. Gates, Bull. Torrey Bot. Club 37 (2): 81 (1910).

Helianthus plantagineus (Torr. & A. Gray) E. Watson, Pap. Michigan Acad. Sci. 9: 367 (1929).

Helianthus occidentalis Riddell var. *occidentalis* Cronquist, Rhodora 47 (No. 564): 399 (1945), nom. illeg., not validly published.

Helianthus occidentalis Riddell subsp. *plantagineus* (Torr. & A. Gray) Heiser, Mem. Torrey Bot. Club 22 (3): 107 (1969). [Note: see under Discussions concerning authorship issues.]

ILLUSTRATIONS (selected). Britton & Brown, Ill. Fl. N. US & Canada 3: 424, Fig. 3904 (1898); Britton & Brown, Ill. Fl. N US & Canada, Ed. 2, 3: 480, Fig. 4468 (1913) (b&w); Heiser et al. (1969: 1095, Fig. 22) (b&w, hab); Fisher, Dicot. Ohio 2(3 – Asteraceae): 144 (1988) (b&w); Antonio & Masi (2001: 144–145) (col); Mohlenbrock, Ill. Fl. Illinois, Asteraceae, Pt. 2: 148, Fig. 66 (2019) (b&w); Chadde, Wisconsin Fl.: 160 (2019) (b&w); Diboll & Cox (2023: 117) (col).

Rhizomatous, and sometimes stoloniferous (stolons giving rise to late-summer leaf rosettes), *perennial herb*, 60–150 cm. *Stems* (often reddish or wine-coloured, often on one side) erect, pilose to appressed-hairy proximally. *Leaves* mostly basal and often in a loose rosette, opposite to subopposite, petiolate or pseudopetiolate, petioles 2.5–10 cm, lamina oblong-lanceolate or elliptic to ovate, 5–20(−31) × 1.5–7(−10) cm, bases cuneate, margins entire (in subsp. *occidentalis*) or serrate to serrulate (usually in subsp. *plantagineus*), abaxial faces scabrous to hispidulous (i.e. rough to touch, usually in subsp. *occidentalis*) or glabrous (lamina are often smooth to touch in subsp. *plantagineus*), gland-dotted (cauline usually smaller, rarely 2–4 pairs well developed), lamina slightly discolorous, and venation (midrib distinctly so, and primary veins less so) clearly yellowish-green beneath, midrib also pale above. *Inflorescences* terminal, scapiform (and essentially leafless above basal rosette) or a lax, relatively few- to several- headed (1–4(−12)), corymbose-raceme, inflorescence branching subopposite, with a pair of small, leaf-like bracts subtending, these markedly smaller with successive branching on side branches, peduncles 1–14 cm (although primary capitulum can have pedicels to 26 cm – albeit with one side capitulum about 4 cm below apex), fistulose towards apex and slightly expanded beneath involucre. *Capitula* heterogamous and radiate, homochromous, c. 5 cm diam., although rays rarely spreading, typically smelling of chocolate; *involucres* hemispherical (although sometimes oddly described as cylindrical, 5–6 mm tall × 9–4 mm diam.; *phyllaries* 20–25, lanceolate, 4.5–7(−11) × 1.5–2.5 mm, margins usually regularly and densely long-ciliate, cilia to c. 1 mm long, apices acute to short-acuminate, abaxial faces glabrate to sparsely pilose (hairs moniliform), not gland-dotted; *receptacle* convex, solid, glabrous, paleaceous, paleae 5–7 mm, distinctly and sharply keeled, sub-entire and laciniate to 3-toothed (shortly mucronate), usually wine-coloured (turning blackish with age) towards apex, and overtopping disc florets (at least when in bud). *Ray florets* 8–16, neuter, ray limbs 18–22 mm long × 5–6.5 mm, limbs at first erect in bud (and a dull greenish-yellow) and gradually elongating to full size, then spreading as outer disc florets anthers dehisce, abaxial faces moderately densely gland-dotted, abaxially sparsely stipitate-glandular, limb apices short-2-toothed or lobed. *Disc florets* hermaphrodite, fertile, 50+, corollas 4.0–5.5 mm long × 1 mm diam., with narrower basal tube c .1 mm long expanding into a bulbous base of corolla tube, corolla lobes 1.5 mm long × 0.7 mm wide, long-triangular, apices acute, erect at first and eventually spreading and slightly recurved, a duller yellow than ray limbs, Aureolin 3 to Lemon Yellow *60*4 (RHS, 1938); anthers largely exserted, dark brown or black, apical anther appendages yellow, anther bases rounded; pollen dark yellow; style cylindrical, glabrous, style base lacking basal node but on distinctive nectary, style arms long-papillose abaxially, papillae longest to midpoint and shortening towards attenuate apex. *Achenes* 3–4 (−5) mm, obpyramidal, sparsely setuliferous or glabrescent, setulae (when present) of moderately short 'twin-hairs', apical cells subequal, acute; *pappus* of 2 aristate scales 1.5–2.8 mm long plus 0–4 deltoid scales 0.4–1 mm. $2n = 34$ (subspecies unknown) (Figure 1).

Distribution. United States of America (Arkansas, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Maryland, Massachusetts, Michigan, Missouri, New Jersey, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, Wisconsin). If subsp. *plantagineus* is recognized this has a far more restricted distribution and is only found in Arkansas (see Marsh & Golden, 1996 for a more detailed commentary), Texas and just into Louisiana.

Habitat & Ecology. 'Riverside prairies and outcrops' (Weakley et al., 2012: 342), 'dry hammocks' (Wunderlin et al., 2020: 276), 'Black Oak savannas, sandy prairies (Antonio & Masi, 2001: 145), glades in woodland, dry open areas, fields and barrens; 10–600+ m and if subsp. *plantagineus* is recognized its altitudinal range is more restricted – 10–100+ m.

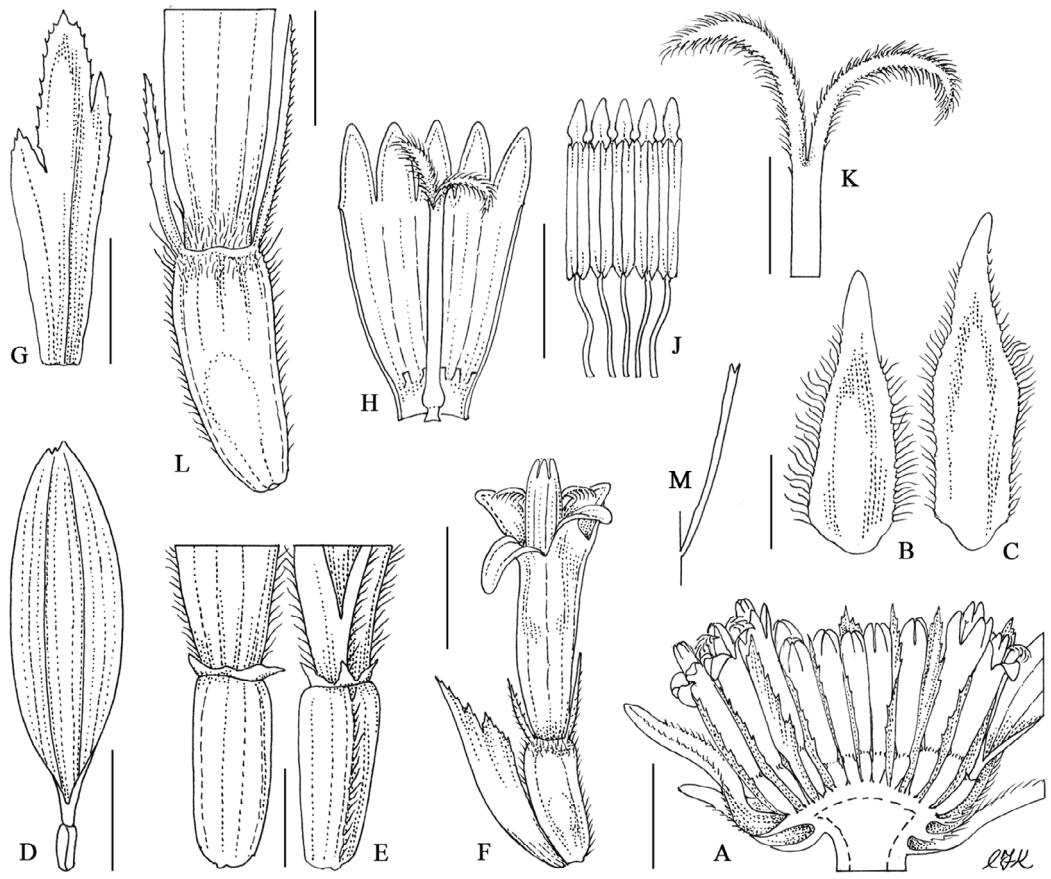


FIGURE 1 *Helianthus occidentalis*. A, l.s. flowering capitulum; B, outer phyllary; C, inner phyllary; D, ray floret; E, ray floret and base of ray limb – showing abaxial (l) and adaxial (r) view; F, disc floret and accompanying palea; G, palea; H, disc floret corolla opened out showing style and position of base of anther filament attachment points; J, anther cylinder opened out; K, disc floret style arms; L, achene, pappus and base of; M, detail of achene setula. Scale bars: E, L = 1 mm; B, C, F–K = 2 mm; A = 3 mm; D = 5 mm. Drawn by Christabel King from material (Accession No. 2020-1298*1) growing in the North American Prairie plantings at Royal Botanic Gardens, Kew at Wakehurst Place

PHENOLOGY. July – October, sometimes through into November.

ETYMOLOGY. The generic name is from the Greek ηλιος (helios) = sun, and ανθος (anthos) = flower, for the appearance of the capitulum. The specific epithet *occidentalis* = of the west, which in this case simply means 'west of Europe'.

CONSERVATION STATUS. A widespread species and LC (Least Concern). Should subspecies *plantagineus* be recognized, parts of its range (e.g. in Arkansas and Louisiana) suggest that it is more uncommon, but detailed fieldwork is clearly needed.

VERNACULAR NAMES. FEW-LEAVED SUNFLOWER (Britton & Brown, 1898: 424); FEWLEAF SUNFLOWER (Wunderlin et al., 2020: 276), WESTERN SUNFLOWER, NAKED SUNFLOWER, FEWLEAF SUNFLOWER (Diboll & Cox, 2023); GIRASOL DEL LESTE, GIRASOL DESNUDO (Hurrell et al., 2017); NAKED-STEMMED SUNFLOWER. Note: In some accounts, when subsp. *plantagineus* is recognized,

this has been called PLANTAIN SUNFLOWER (Marsh & Golden, 1996: 131) and SHINNER's SUNFLOWER (e.g. Schilling, 2006). Since Schilling (2006) was clearly referring the vernacular name to Lloyd Herbert Shinners (1918–1971), the vernacular name should at least be SHINNERS' SUNFLOWER. Regrettably, the mis-punctuated name is now frequently repeated on a number of web sites. Note: the frequently used vernacular name, WESTERN SUNFLOWER, is particularly misleading, especially since it is not a species native to the western States, but rather centred in the upper Midwest. This is the result of 'translating' the specific epithet, *occidentalis*, to mean western, whereas it simply means that the species comes from west of Europe.

DISCUSSIONS

Schilling (2006) included *Helianthus dowellianus* within the synonymy of the typical subspecies of *H. occidentalis*, reporting that Heiser et al. (1969) had suggested that it might well be a hybrid between *H. occidentalis* and *H. atrorubens* (a widespread, robust, heterochromous-headed species with its distinct reddish disc). Unfortunately, there is nothing in Curtis's protologue (Curtis, 1843: 82), nor in Heiser et al.'s subsequent commentary (Heiser et al., 1969: 106–107) to suggest heterochromous capitula, and any type material appears to have escaped being found for the time being.

A nomenclatural issue or two

Riddell published his second catalogue of the flora of Ohio in 1836 (Riddell, 1836b). Stafleu & Cowan (1983: 784) indicated that the publication date of the journal version of his 'Supplementary Catalogue ...' was in April 1836, but then cited the page range of the separate (as 'p. [1]-28'), not that of the paper in the *Western Journal of the Medical and Physical Sciences*; pagination in the journal was pp. 567–587 (but see additional note in References below). This suggests that the format of the reprint differed from that in the journal, but because of the date of reading the paper, and its publication in the journal, it was a later reprint, not a preprint, published after April 1836. Our plant was published on p. 13 of the reprint.

When describing our species, Riddell's statement (Riddell, 1836a: 577, cf. 1836b: 13) was explicit – "I give this specific name provisionally, being uncertain whether the plant may not have been vaguely described already. …'; Riddell's name was effectively published at this point. However, at first impression, the reader might consider the name 'provisional' (see Turland, 2018; Art. 33.1), however, it appears that Riddell most probably meant that 'I am accepting this name for the time being …' in which case the binomial is validly published.

Marsh & Golden (1996: 132) usefully pointed out a nomenclatural irregularity of the assigned author in the subspecies *plantagineus*, brought about by an erroneous citation in Kartesz's checklist (Kartesz, 1994: 104) – '(Torr. & A. Gray) Shinners'. Unfortunately, the latter work is merely a list of names and lacks supporting references; the authority has been picked up by at least one mainstream e-encyclopaedia and, in consequence, is proliferating this inaccuracy. The correct authority is given in the account above.

Scented, aromatic or odoriferous compositae from the tribe Heliantheae

A quick glance through Genders' (1978) *Encyclopaedia* shows that there are many 'scented, aromatic or odiferous' members of the Compositae. It is not the authors intention to either list or discuss them here, nor indicate the chemical origins of that smell, but a few examples from the tribe Heliantheae will suffice to show the diversity of both genera and smell type in just one tribe.

The subject of the present plate has a smell of chocolate, and it is interesting to note that this is not an uncommon smell produced by capitula. Within *Helianthus*, *H. salicifolius* A. Dietr. (Linear-leaved Sunflower, Willow-leaved Sunflower – see Hind & Smith, 2018, although no mention was made of the scent of the capitula, most probably because it flowered so late in the season) is recorded. Perhaps the author, and artist, should have realized that a couple of the cultivars were named for a reason – 'Bitter Chocolate' and 'Hot Chocolate'! *Helianthus maximiliani* Schrad. (rather unoriginally known as Maximilian Sunflower) also has a strong chocolate aroma. Other well-known aromatic taxa include *Berlandieria lyrata* Benth. (Chocolate Daisy, Chocolate Flower, Schokoladenblume) and *Cosmos atrosanguineus* (Hook.) Voss (Chocolate Cosmos – see Hind & Fay, 2003).

This contrasts markedly with some of the aromatic isostigmas (smelling of cloves – e.g. *Isostigma peucedanifolium* (Spreng.) Less. and *I. simplicifolium* Less.), from South America, and the apple aroma of a plant once grown in the long-gone planters in the Great Broadwalk Borders – *Helenium aromaticum* (Hook.) L.H. Bailey (Sneezeweed), a Chilean native. Its leaves and capitula smelling of apple when brushed against, crushed or is simply aromatic on a hot summer's day.

Within the genus of African and French Marigolds there appears to be a useful taxonomic character aiding field identification in annual species of *Tagetes* L. – whether the plants are odoriferous (i.e. foul-smelling, such as *T. erecta* L., or *T. iltisiana* H. Rob.) versus aromatic (anise-smelling, e.g. *T. filifolia* Lag., etc.). The aromatic oils in foul- or pungent- smelling species of *Porophyllum* Guett. (often referred to as the Poreleafs) (e.g. *P. bahiense* D.J.N. Hind and *P. angustissimum* Gardner, etc., see Hind, 2002) can also help to locate plants in the field when ordinarily they are very difficult to locate in bright sun because of the leaves' and stems' wax coating, or the presence of erect simple stems on sloping hillsides; the aroma disappears rapidly in herbarium material, so should be recorded as part of the label information captured at the point of collection. The widespread Central and South American *Porophyllum ruderale* (Jacq.) Cass. is often added to guacamole as a bitterleaf, where it substitutes for coriander (cilantro).

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