

## Vascular Plants of Burnet County

### *Solidago radula* – WESTERN ROUGH GOLDENROD [Asteraceae]

*Solidago radula* Nutt., WESTERN ROUGH GOLDENROD. Perennial herb, rhizomatous, fibrous-rooted, each shoot initially rosetted, 1–several-stemmed at base (per clone), shoot unbranched below terminal inflorescence or with several ascending branches in canopy, spreading to ascending, in range to 80 cm long; gynomonoecious; shoot with basal leaves and many cauline leaves, basal leaves absent on flowering shoot but present on emerging shoots from rhizome, cauline leaves largest at lower nodes gradually smaller approaching inflorescence, foliage and axes distinctly scabrous, conspicuously short hirsute (short-hispid) with stiff, jointed hairs; rhizome shallow, horizontal, creeping, old rhizome rootlike to 3 mm thick, young axis white and 1.5 mm diameter, with variable internodes, scales half-sheathing, to 2 mm long, white to pale rose, obtuse at tip; adventitious roots at rhizome nodes. **Stems:** ± cylindric, to 4 mm diameter, with 3 weakly defined ridged descending from each leaf, tough, with persistent leaf bases, stiff short-hairy with upward-bent hairs. **Leaves:** helically alternate, simple, short-petiolate (appearing long-petiolate = narrow long-tapered base of blade), without stipules; “petiole” crescent-shaped in  $\times$ -section, indistinct from blade; blade oblanceolate to obovate, of basal leaves to oblanceolate (spatulate), to 70  $\times$  17 mm, narrowly long-tapered at base, with several low teeth above wide point and entire below wide point, of cauline leaves oblanceolate to ovate, to 80  $\times$  23 mm (lower leaves) to elliptic to ovate-elliptic and 12  $\times$  6 mm (approaching inflorescence), tapered at base, entire to low-serrate above midblade with U-shaped sinuses, acute to obtuse at tip, appearing 1-veined at base with veins slightly raised on both surface (in lower blade having a pairing of fine lateral veins inconspicuously separate from principal vein), short hairy along veins, on basal leaves with several inconspicuous glandular hairs on “petiole” next to stem. **Inflorescence:** heads, in terminal, compact paniclelike array, ovoid, in range with relatively short lateral branches < 70 mm long, branching helically alternate with heads oriented to upper side, heads 4–5 mm across, of 4–7 pistillate ray flowers and 4–7 bisexual disc flowers, bracteate, green axes and bracts stiff short-hairy and scabrous, with scattered, minute glandular hairs; bract subtending peduncle ± obovate to oblong, 2–2.5 long, dark green, obtuse to rounded; peduncle conspicuously ridged, 3–5 mm long having a set of (1) to 6 helically alternate bracts, bracts approaching head rounded-obovate, ± 1 mm long, 3-veined, short-ciliate on margins, each subtending an axillary bud; **involucre** narrowly bell-shaped, 3–6  $\times$  2–2.2 mm, phyllaries ca. 21 in 3–4 series, unequal, outer phyllaries ovate and 1  $\times$  1 mm to inner phyllaries elliptic to oblong to 4  $\times$  1 mm, having light green midvein swollen but not reaching tip, short-ciliate above midpoint; receptacle lacking bractlets (paleae), slender, with a winglike crown separating ovaries of disc flowers 0.3 mm long, lacking hairs. **Ray flower:** bilateral, ca. 3.5 mm across; **calyx (pappus)** of ca. 30 capillary bristles in 2 series free to base, fine, subequal to unequal, (2.5–)3.5–5.5 mm long (= pistil), colorless, in range slender at tip; **corolla** minutely 1(–2)-notched; tube cylindric and slender gradually tapered base-to-top, initially ca. 3  $\times$  0.8 mm elongating to 4 mm long, colorless aging greenish, compressed front-to-back, lacking hairs; limb spreading to ascending, acute-elliptic to obovate in outline, in range to ca. 8  $\times$  2.5 mm, yellow, with fine parallel veins visible on lower surface, after pollination limb often ascending and twisted from flat and then coiling;

**stamens** absent; **pistil** 1; ovary inferior, inversely conic somewhat 3-sided, ca. 0.8 × 0.5 mm, translucent to pale green, low 10-ribbed, short-strigose with upward-pointing hairs along ribs, 1-chambered with 1 ovule; **nectary disc** at top of ovary surrounding style base, 0.15–0.2 mm, pale green; style to 4 mm long, 2-branched, colorless at base and yellowish below fork, the stigmatic branches ascending, slightly exserted, linear, ± 1.3 mm long, light yellow. **Disc flower:** radial, 2 mm across, to 6.5 mm long (anthers fully exserted), appearing short-stalked; **calyx (pappus)** of ca. 30 capillary bristles in 2 series free to base, fine, subequal to unequal, (2.5–)3.5–4.5 mm long, colorless, in range slender at tip; **corolla** 5-lobed, ca. 4 mm long; tube cylindric, ca. 0.7 × 0.3 mm, whitish, having several inconspicuous minute hairs at top of tube; throat narrowly funnel-shaped, ca. 0.6 mm diameter at orifice, colorless with 5 veins to sinuses; lobes spreading or aging somewhat reflexed, triangular, 0.8–1.4 mm long, bright yellow; **stamens** 5, attached to top of corolla tube; filaments ± 1.5 mm long, pale at base to light orangish yellow at top; anthers fused into cylinder surrounding style, fully exserted, basifixed, dithecal, 1.6–1.8 mm long increasing 2.5 mm long (incl. triangular appendages ca. 0.4 mm long), light orange-yellow, lacking tails, longitudinally and inwardly dehiscent; pollen light orange-yellow (golden); **pistil** 1; ovary inferior, inversely conic, ca. 0.4 × 0.3 mm, translucent, sparsely short-hairy with ascending white hairs, 1-chambered with 1 ovule; **nectary disc** at top of ovary surrounding style base, 0.1 mm, colorless, producing thin nectar; style in range elongating to 5 mm long, 2-branched, colorless at base to yellowish above, the stigmatic branches branched within anthers, yellow, flat on inner surface, papillate on outer (lower) side. **Fruits:** cypselae (achenes), of ray and disc flowers, monomorphic, inversely conic narrow tapered top-to-base, 1.5–2.5 mm long, brown, weakly ribbed, short-strigose with upward-pointing hairs along ribs; pappus capillary bristles ca. 30 in 2 series, in range mostly 3–4.5 mm long.

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