

Salsola tragus L., RUSSIAN THISTLE, TUMBLEWEED. Annual, aging spinescent, taprooted, several-stemmed at base, intricately branched, with decumbent branches at base and ascending branches above, at maturity \pm hemispheric to spheric, 20–150 cm tall; shoots initially bluish green and glaucous, later developing hard, rigid, spinelike leaves and bractlets, eventually abscising as a unit from the root to form characteristic detached tumbleweed dispersal unit. **Stems:** ridged, conspicuously striped green aging reddish rose, with minute shaggy, \pm coiled or kinky hairs in axils, occasionally minutely pubescent to short-hirsute, the valleys green, glaucous, aging with tannish bark. **Leaves:** helically alternate, simple, sessile, without stipules; blade \pm half-cylindric and linear, (6–)10–40(–52) mm long, slightly fleshy and reflexed becoming rigid and straight, flared at base with erect, translucent wings, entire or coarsely short-ciliate on margins to midblade, long-acuminate and spine-tipped, midrib only conspicuous and greenish, halves of blade glaucous-blue. **Inflorescence:** flowers solitary, axillary, sessile, bracteate, with minute, delicate shaggy and \pm coiled or kinky hairs in axils; bractlet (bract) subtending flower leaflike but with an expanded base, $5.5\text{--}15 \times 0.8$ mm, ovate to rounded at base, winged on margins, the wing whitish and ± 0.5 mm wide becoming hard and wider in fruit (to 2.5 mm), abruptly constricted at tip into a whitish or light tan spine 0.7–1 mm long; bracteoles subtending flower 2, like bractlet, at anthesis similar to bractlet but shorter (3–3.5 mm long), tough becoming hard and increasing to 6 mm long in fruit, gradually becoming wider at base (to 2.2 mm), acute to acuminate and spine-tipped, olive green to gray green with light yellow-tan margin, midvein, and spine, sometimes midrib pinkish, the spine tip 0.8–1.7 mm long. **Flower:** bisexual, radial, minute, mostly concealed by subtending bractlet and bracteoles; **sepals** 5, oblong to \pm lanceolate, $1.4\text{--}2.5(–3) \times 0.7\text{--}1$ mm, white to pale yellowish, greenish and cupping ovary at base, membranous and above erect and appressed to style, narrowly oblong to acuminate at erect tip or rounded to truncate and often irregularly cut at tip, each eventually developing a wing primordium on outer face \pm level with top of ovary; **stamens** 5, free; filaments $1.4\text{--}2.3(–3)$ mm long, whitish (colorless and translucent) to pale yellowish but greenish at base; anthers exerted, basifixed, dithecal, oblong, $1.1\text{--}1.4 \times 0.3$ mm, light yellow, cordate at base, longitudinally dehiscent, commonly with a half-twist after dehiscing; pollen light yellow; **pistil** 1, 3–3.2 mm long; ovary superior, spheroid to ovoid, $0.6\text{--}1 \times 0.7\text{--}1$ mm, yellow-green, 1-chambered with 1 ovule; style 2.3–3 mm long, brownish, 2-branched, 0.5–1 mm below fork, the branches exerted, 1.8–2 mm long, ascending becoming recurved above midpoint, stigmatic. **Fruit:** utricle enclosed by ascending to erect winged sepals (diclesium), diclesium cup-shaped, 2.3–4 mm across (including wings appressed to bracteoles and bractlet), commonly persistent with subtending bractlet and 2 bracteoles; bractlet and bracteoles rigid, overlapping at base and cupping the fruit, free portion ascending to spreading; utricle broadly top-shaped (obturinate to obconic), $1.2\text{--}1.7 \times 1.6\text{--}1.9$ mm; sepals erect, scarious, basal portion cupping utricle and upper portion erect; wings scarious, unequal, of the 3 larger sepals with transverse ascending, \pm fan-shaped to lobed (commonly unequally lobed), $0.5\text{--}1.5 \times 0.8\text{--}3$ mm, \pm crenate or toothed on margins, with obscure to prominent radiating veins, the veins sometimes aging brown, generally forking near margin, of the 2 smaller sepals with conic to hornlike or oblong outgrowths, $0.15\text{--}1.3 \times 0.15\text{--}0.5$ mm and lacking veins. **Seed:** broadly top-shaped (obturinate), horizontal and conforming to

shape of utricle, seed coat thin and membranous, commonly adhering to utricle; embryo strongly coiled, green. Mid-summer–late December.

Naturalized. Annual reported from several inland, disturbed sites, but expected elsewhere. *Salsola tragus* is the widely distributed tumbleweed in the southwestern deserts. When covered with one-seeded fruits, the entire shoot abscises at the shoot-root junction, and the highly branched mass is blown around by strong wind, breaking and fragmenting, thus leaving seeds throughout the landscape. Fruits of tumbleweed tend to have shorter and more upright wings surrounding the fruit than *S. australis*. In our specimens the two small sepals have been observed to be more highly reduced than generally described for this species, and the wings are smaller than on *S. australis*.

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