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SYNONYMS

Ragwort, tansy, stinking Willy, *Senecio jacobaea* L.

CLASSIFICATION

RANKING	SCIENTIFIC NAME	COMMON NAME
Kingdom	Plantae	Plants
Subkingdom	Tracheobionta	Vascular plants
Superdivision	Spermatophyta	Seed plants
Division	Magnoliophyta	Flowering plants
Class	Magnoliopsida	Dicotyledons
Subclass	Asteridae	
Order	Asterales	
Family	Asteraceae	Sunflower family
Genus	<i>Jacobaea</i>	
Species	<i>Jacobaea vulgaris</i> Gaertn.	Tansy ragwort

HISTORY AND DISTRIBUTION

Tansy ragwort is native to Europe, Siberia, and Asia. It was likely introduced to North America in contaminated ship's ballast. It was first recorded in North America in Nova Scotia, Canada in the 1850s and in Pennsylvania, USA in 1876. By the early 1900s, tansy ragwort had invaded port regions

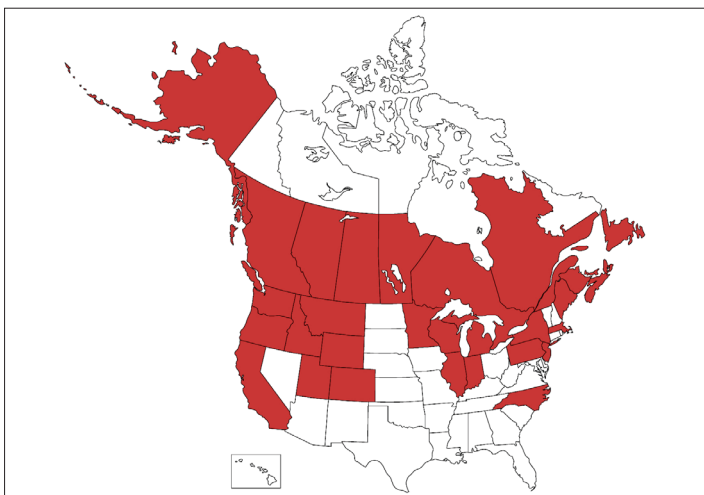


Figure 1. Tansy ragwort reported distribution in North America (Credit: EDDMapS, www.eddmaps.org; USDA PLANTS Database, plants.usda.gov [both accessed 11 August 2021])

along the western coast. Though it has been reported in 20 states and 10 Canadian provinces (**Fig. 1**), tansy ragwort is most problematic in western North America.

IMPACT

Tansy ragwort displaces native species in natural areas and reduces range and pasture production. All parts of the plant contain pyrrolizidine alkaloids that are responsible for livestock fatalities, contaminating milk production, and the tainting of honey made from tansy ragwort nectar. Many people are also allergic to this weed.

IDENTIFICATION

AT A GLANCE

Tansy ragwort (**Fig. 2**) is an herbaceous biennial (sometimes a winter annual or short-lived perennial) typically growing 1–3 ft (30–90 cm) tall. The root system consists of one to several soft, fleshy roots. Leaves are deeply lobed to pinnately toothed, alternate, and 3–8 in (7½–20 cm) long. Stems arise singly or in clumps and branch near the top with multiple flower heads. Flowering occurs from July to September. Flower heads consist of yellow disc (center) and ray (outer) florets. Ray florets (usually 13) resemble petals and grow ⅓–¾ in 8–20 mm long. Seeds are topped by a fine pappus.



Figure 2. Tansy ragwort plant (Jennifer Andreas, Washington State University Extension)

Roots

Roots of young tansy ragwort plants may resemble taproots at first, though within two months, these typically give way to a fibrous system consisting of up to 100 roots/crown. Each root is soft, fleshy, white, and approximately 1–2 mm in diameter (**Fig. 3a**). Roots may extend 1 ft (30 cm) deep with very fine and short root branches occurring at wide intervals.

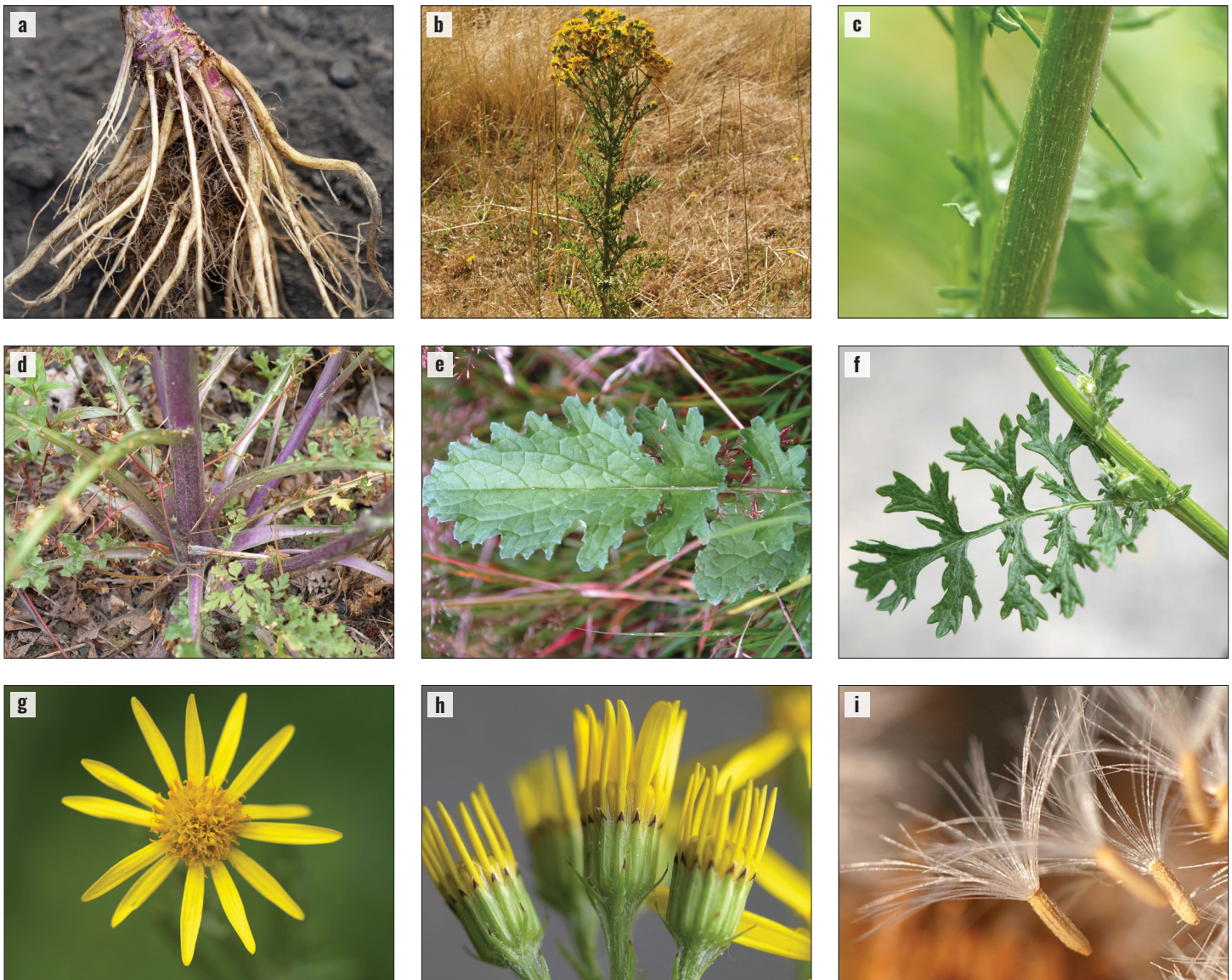


Figure 3. Tansy ragwort (a) has fleshy, fibrous roots. Stems are (b) typically only branched in their upper halves, (c) rigid, furrowed and sometimes very slightly hairy, (d) and may be reddish-tinged near the base. Rosette leaves (e) have very ruffled margins. Stem leaves (f) are alternate, deeply lobed with toothed segments, and clasp the stem further up the plant. Flower heads (g) consist of ~13 ray florets around the perimeter and 50–60 disc florets in the center. Flower head bracts (h) are tipped in black. Seeds (i) are cylindrical, brown, ribbed, and topped by a tuft of fine hairs. (a,c,d,f–i: Travis McMahon, MIA Consulting; b,e: Marianna Szűcs, Michigan State University)

STEMS AND LEAVES

Plants may reach 6 ft (1.8 m) in height, though 1–3 ft (30–90 cm) is typical. Stems grow singly or in clumps from a semi-woody crown and are often branched only in their upper halves (Fig. 3b). Stems are rigid, furrowed, and may be either hairless or lightly cottony (Fig. 3c). Stems may occasionally be reddish-tinged, especially near the base (Fig. 3d). Rosette leaves are 3–8 in (7–20 cm) long and up to 2½ in (6 cm) wide, stalked, and have very ruffled margins (Fig. 3e). They often die back as the plant bolts and flowers. Stem leaves are deeply lobed with toothed but somewhat rounded segments. They are alternate, decrease in size further up the stem, and eventually clasp the stem (Fig. 3f).

FLOWERS

Tansy ragwort flower heads occur in clusters of 20–300 at the end of branch tips. Each head is ½–1 in (1–2½ cm) in diameter and consists of yellow ray and disc florets (Fig. 3g). There may be 12–15 (but usually 13) ray florets around the periphery; each resembles a petal up to ¾ in (2 cm) long. Unopened ray florets are rolled and extend straight up from the receptacle (Fig. 3h). In the center of the flower head are 50–60 disc florets that are tiny, yellow, and tube-like. The topmost bracts at the base of the flower head are tipped in black (Fig. 3h).

FRUITS AND SEEDS

Both types of florets each produce a single seed. Seeds are cylindrical, brown, ribbed, 2 mm long, and topped by a tuft of



Figure 4. Tansy ragwort is established in a variety of habitats but is frequently found in (a) grazed pastures; (b) abandoned land; (c) open forest clearings; (d) roadsides; (e) open rangeland; (f) disturbed, rocky slopes (a: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org CC BY-3.0 US; b: Tom Heutte, USDA Forest Service, Bugwood.org CC BY-3.0 US; c: Jeffrey Littlefield, Montana State University; d: Travis McMahon, MIA Consulting; e: Marianna Szűcs, Michigan State University; f: Runcator, iNaturalist.org CC BY 4.0)

fine hairs (pappus) that is 2–3 times as long as the seed (Fig. 3i). Seed production varies depending on environmental conditions, but one plant is capable of producing 3,500–150,000 seeds annually.

ECOLOGY

The life history of tansy ragwort varies depending on climate, and two life cycles are predominant in western North America. Where winters are mild, the plant typically acts as a winter annual or biennial. Rosettes develop and put on considerable growth during the winter, then bolt early the following spring. Flowering may occasionally occur the first year but is usually delayed until the second. Flowering in mild-winter regions occurs from July to September, after which time plants typically die. At locations with harsh winters and shorter growing seasons, the plant may behave as a biennial or short-lived perennial. Seed germination typically begins in spring. Seedlings increase in size throughout the summer, and only those with at least 4–5 rosette leaves successfully overwinter. Plants may remain as rosettes for an additional year, or they may bolt early the following summer and flower from July to October, then die back after seed release. Cutting or mowing the plant in either climate may cause it to grow as a perennial. Regardless of the climate, tansy ragwort spreads only by seed. These are dispersed short distances by wind and longer distances by humans, other animals, and water and may remain viable in the soil for up to 16 years.

HABITAT

Tansy ragwort grows under a variety of conditions but is most commonly found in pastures, sparse forests, rangeland, roadsides, burned areas, and other disturbed places (Fig. 4) between sea level to 5,000 ft (1,500 m) in elevation. It is present on all slopes and aspects, though it prefers southern exposure, and it grows most aggressively in lighter, well-drained soil. Some of the largest infestations are found in climates with cool, wet weather; dry summers limit the weed's establishment.

SIMILAR SPECIES

The species perhaps most frequently confused with tansy ragwort is common tansy (*Tanacetum vulgare*; Fig. 5a). Both are exotic weeds in North America, sometimes occurring side by side. Both species have dissected leaves, flower heads consisting of yellow florets, and both can form dense infestations (Fig. 5b). Unlike tansy ragwort, common tansy has leaves more finely divided with pointier teeth (Fig. 5c), only disc florets (no showy ray florets; Fig. 5d) with a maximum head diameter of $\frac{1}{2}$ inch (1 cm), a creeping root system, and foliage that is very aromatic when crushed.

Because the sunflower family (Asteraceae) is one of the largest in the world, there are numerous related species in North America that have many features similar to tansy ragwort. Species most closely related to and most closely resembling tansy ragwort include other species of *Jacobaeae* as well as plants in the *Packera* and *Senecio* genera. Over 100 of these are

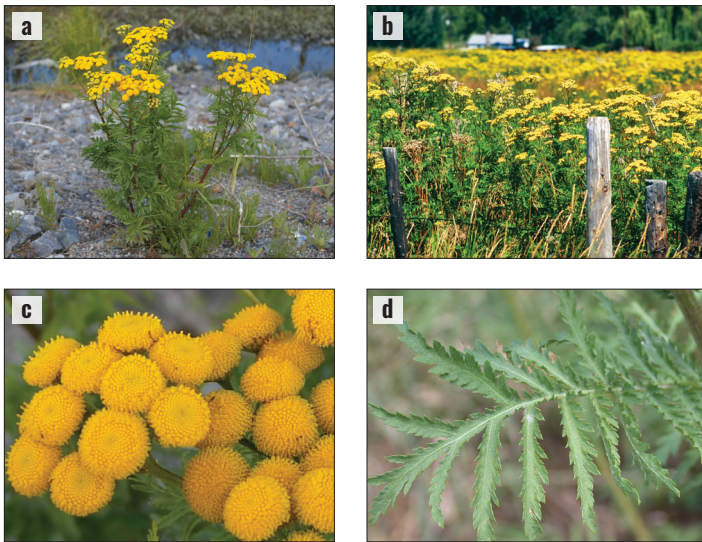


Figure 5. Common tansy plants (a) are similar in appearance and also create (b) similar dense infestations. Common tansy flower heads (c) have only disc florets, and their leaves (d) are more finely divided with pointier teeth. (a,c: Travis McMahon, MIA Consulting; b: Steve Dewey, Utah State University, Bugwood.org CC BY-3.0 US; d: (Mary Ellen Harte, Bugwood.org CC BY-3.0 US)

present in North America, though most do not have lobed or toothed leaves like tansy ragwort, or they grow much smaller with significantly smaller features. The few exotic *Jacobaeae* species established in North America to date do not closely resemble tansy ragwort. The *Packera* and *Senecio* species (both native and introduced) most closely resembling tansy ragwort and that also occur in western North America (where tansy ragwort is most problematic) are described in **Table 1**, along with key characteristics useful for differentiation.

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SUGGESTED CITATION

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Table 1. Key traits for differentiating similar related *Packera* and *Senecio* species (all Asteraceae) established in northern and western North America from tansy ragwort, *Jacobaea vulgaris*.

SPECIES	DIFFERENCES	PLANT	SPECIES	DIFFERENCES	PLANT
Brewer's ragwort <i>Packera breweri</i> Native biennial or perennial	Endemic to central California; stems always singular; stem leaves more deeply lobed—all the way to midrib; base of flower heads more globular; ray florets 8–10		Cutleaf groundsel <i>Senecio eremophilus</i> Native perennial	Typically grows at higher elevations; taprooted; leaves more jaggedly lobed; flower heads usually only with 8 ray florets	
Widehead groundsel <i>Packera eurycephala</i> Native perennial	Typically only growing $\leq 1\frac{1}{2}$ ft (45 cm) and in drier habitat; leaves gray-green, covered in hairs, more ruffled; base of flower heads more globular; flower head bracts not tipped in black		Dwarf mountain ragwort <i>Senecio fremontii</i> Native perennial	Typically more high alpine, rocky habitat (rockslides); lower growing ($\leq 1\frac{1}{2}$ ft or 45 cm); leaves stiffer, succulent-like; flower heads usually only with 8 ray florets	
Lobeleaf groundsel <i>Packera multilobata</i> Native annual or perennial	Lower growing ($\leq 1\frac{1}{2}$ ft or 45 cm); leaves longer, narrower, more deeply lobed with rounded teeth, gray-green with hairs; stem leaves more sparse; flower heads smaller; flower head bracts not tipped in black		Tall ragwort <i>Senecio serra</i> Native perennial	Capable of growing at triple the elevation; leaves much longer and thinner, only very fine teeth; flower heads with only 5–8 ray florets	
Balsam ragwort <i>Packera paupercula</i> Native perennial	Typically only growing $\leq 1\frac{1}{2}$ ft (45 cm); basal leaves more oval or lance-shaped with finer teeth; stem leaves narrower, lobed to midrib; flower heads smaller; flower head bracts usually not tipped in black		Arrowleaf ragwort <i>Senecio triangularis</i> Native perennial	Typically prefers more shade; leaves strongly triangular, widest portion near stem, margins more finely toothed; flower heads usually with 8 ray florets; blooms 2–3 weeks earlier in growing season	
Prairie groundsel <i>Packera plattensis</i> Native biennial or perennial	Typically only growing $\leq 1\frac{1}{2}$ ft (45 cm); rhizomatous; stems and leaves covered in cobwebby hairs; leaves narrower; stem leaves more sparse; flower heads smaller; ray florets wider		Sticky groundsel <i>Senecio viscosus</i> Exotic annual	Typically found only in disturbed and waste areas at low elevations; taproot; lower growing (≤ 2 ft or 60 cm); leaves covered in sticky, glandular hairs that often trap wind-blown particles of dust; leaves strong-smelling; flower heads smaller	
Rocky Mountain groundsel <i>Packera streptanthifolia</i> Native perennial	Lower growing ($\leq 1\frac{1}{2}$ ft or 45 cm); stems narrower; leaves with shallow rounded teeth on tips; basal leaves oval with slender petioles; stem leaves sparse; flower heads more rounded; ray florets often reflexed		Common groundsel <i>Senecio vulgaris</i> Exotic annual	Typically found only in disturbed and waste areas; taproot; lower growing (≤ 16 in or 40 cm); stems hollow; leaf margins curl downward; terminal leaf lobes often blunt; flower heads smaller with only disc florets	

Photos: *Packera breweri* (Stacie Wolny, iNaturalist.org CC BY-NC 4.0); *P. eurycephala* (Ken-ichi Ueda, iNaturalist.org CC BY-NC-ND 4.0); *P. multilobata* (Jackie Grant, iNaturalist.org CC BY-NC 4.0); *P. paupercula* (Dwayne Estes, iNaturalist.org CC BY-NC 4.0); *P. plattensis* (Bob O'Kennon, iNaturalist.org CC BY-NC 4.0); *P. streptanthifolia* (Rsealy, iNaturalist.org CC BY-NC-ND 4.0); *Senecio eremophilus* (Swedechariot, iNaturalist.org CC BY-NC 4.0); *S. fremontii* (Dgreenberge, iNaturalist.org CC BY-NC-ND 4.0); *S. serra* (Tim Shortell, iNaturalist.org CC BY-NC 4.0); *S. triangularis* (Andy Fyon, iNaturalist.org CC BY-NC 4.0); *S. viscosus* (Lara Maynard, iNaturalist.org CC BY-NC 4.0), *S. vulgaris* (Rebecca Cowser, iNaturalist.org CC BY-NC 4.0)



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