

Achillea millefolium L.

Standardized Common Name: Yarrow

Other Common Names: Milfoil, Soldiers' Woundwort, Thousandleaf

Family: Asteraceae (Compositae)

Taxonomy: *Achillea* includes something over 100 species of herbs, many of which are cultivated or used medicinally. The genus is native to Eurasia, with a few species spreading to northern Africa and North America. Its taxonomy is difficult, as species are variable and often hybridize. The *Achillea millefolium* species complex includes eight European species, microspecies or subspecies, whose boundaries and status are unclear. Of those, *A. collina* J. Becker ex Reichenb. and *A. pannonica* Scheele are most frequently treated as subspecies of *A. millefolium*, but some might prefer to treat the whole group as one species. The European *A. millefolium* as most narrowly defined, which is still quite variable, includes three subspecies, of which two are widely distributed. Hybridization among forms and variation in ploidy level are common.

The native North American yarrow is also usually placed within *A. millefolium* as subsp. *lanulosa* (Nutt.) Piper. It too was formerly divided into multiple species, including *A. lanulosa* Nutt., *A. nigrescens* (E. Mey.) Rydb., and *A. borealis* Bong., based on variations in ploidy and morphological features, but these divisions are not well supported. Hybridization and morphological overlap among the native and introduced European forms often obscure the origin of any particular population. Chemical variation exists both among and within species and subspecies. The European subsp. *alpestris* (Wimm. & Grab.) Greml. is chemically distinctive, with leaf flavonoid content high in rutin. This and subsp. *lanulosa* are said to be the only representatives of *A. millefolium* (in the narrow sense) to contain azulenes, but variation within subsp. *millefolium* is inadequately understood.

Description: Perennial herb. Stems erect, clustered, 8–60(–90) cm high, occasionally branched near apex, pubescent with long soft hairs. Leaves basal and alternate; basal leaves petiolate, 10–25(–40) cm long; stem leaves sessile to clasping, to 8 cm long, usually <2 cm wide. Leaves lanceolate to oblong, deeply and finely 2–3-pinnatisect or pinnatifid, usually pubescent at least beneath; stem leaves mostly with >15 pairs of primary segments; terminal lobes linear, crowded, usually extending above and below plane of leaf and overlapping. Inflorescence a terminal corymb, 2–30 cm broad, flat-topped to convex, dense, containing numerous heads, sometimes subtended by few linear bracts. Heads with 4–6 ray florets, about (3–)8–12(–20) disk florets. Involucre ovoid to cylindrical, 3–4.5(–6) mm long; receptacular bracts (phyllaries) in 2–3 whorls, oblong, obtuse, keeled, sparsely pubescent, dull pale green with scarious margins. Receptacle flat to slightly convex, elongating after flowering, bear-

ing bracts (paleae); paleae oblong, almost as long as disk florets, transparent. Ray florets female; corollas usually white, to pink or purple; ligules 1–2 mm long, broadly elliptical to almost circular, reflexed, 3-toothed. Disk florets perfect, ca. 4 mm long; corollas yellow or rarely white, tubular to narrowly campanulate above, 5-toothed; pappus absent. Achenes oblong, flattened, shiny, at maturity dark brown with narrow white wing around margin.

Parts in Commerce: Leaves and flowers

Identification:

Leaves

- Leaves 2–3-pinnately lobed or divided
- Largest leaves petiolate, from the basal rosette; stem leaves sessile or with very short petioles
- Leaves lanceolate, not ovate or elliptical; stem leaves <8 cm long, <2(–2.7) cm broad
- Primary lobes divided more than halfway to midrib of leaf, but not divided entirely to midrib in *A. millefolium* sensu stricto
- Most leaves with at least 15 pairs of primary lobes
- Ultimate lobes of leaves numerous, ovate to lanceolate or nearly linear, with minute-pointed apices
- Lobes usually extending above or below plane of leaf and curling when dried, giving a characteristic three-dimensional appearance
- Midrib of leaf in *A. millefolium* sensu stricto not over 1 mm broad, rarely toothed
- Leaves pale grayish green; usually bearing long soft white hairs on both surfaces and tiny round glands that may be visible especially on underside in less hairy material
- Odor aromatic, characteristic
- Taste bitter

Inflorescences

- Corymb of heads (capitula), variable in size
- Each head has involucre of 2–3 whorls of phyllaries; 4–6 ray florets; several disk florets
- Involucre ovoid-cylindrical, 3–4.5(–6) mm high; phyllaries in 2–3 whorls, keeled, with scarious margins, usually bearing some long soft hairs
- Receptacle of head bearing chaffy bracts (paleae)
- Ray florets with narrow tube and broad ligule; ligule reflexed, rounded, 1–2(–2.5) mm long (rarely to 4 mm in some North American material), the apex with 3 small rounded teeth

- Ligules usually white, rarely pink; usually pink to rose or purple in *A. millefolium* subsp. *alpestris* (likewise in four of the related European microspecies)
- Disk florets yellow or rarely white, perfect, ca. 4 mm long; corolla tubular, slightly widened above, usually slightly flattened and with a basal swelling; corolla teeth 5, acute
- Florets lack a pappus

Subspecies of *A. millefolium*: It may be desirable to distinguish among the three widely distributed subspecies of *A. millefolium* sensu stricto (although there remains considerable morphological as well as chemical variation within subspecies). The following characters are often, though not always, reliable:

	subsp. <i>millefolium</i>	subsp. <i>alpestris</i>	subsp. <i>lanulosa</i>
Geographic origin	Europe, naturalized in North America	Europe, possibly dispersed to North America	North America
Inflorescence	Corymb flat-topped to somewhat rounded	Corymb flat-topped to somewhat rounded	Top of corymb conspicuously rounded
Ligule color	White; rarely pink, especially in cultivation	Pink	Usually white
Margin of involucre bracts	Pale to medium brown	Dark brown to black	Usually pale, but sometimes dark brown in northern hexaploid material
Pubescence of vegetative parts (hairs always long, soft, white)	Hairy to nearly glabrous	Hairy to nearly glabrous	Very hairy

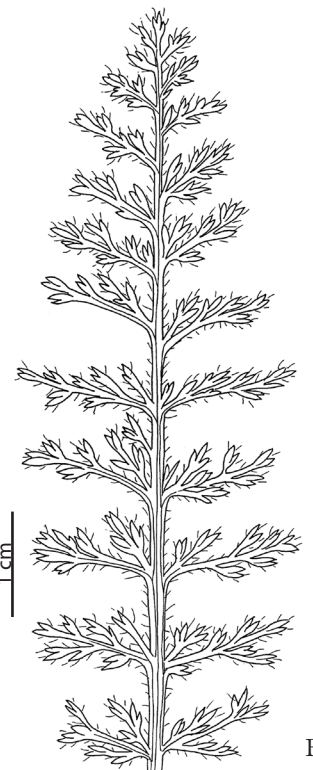
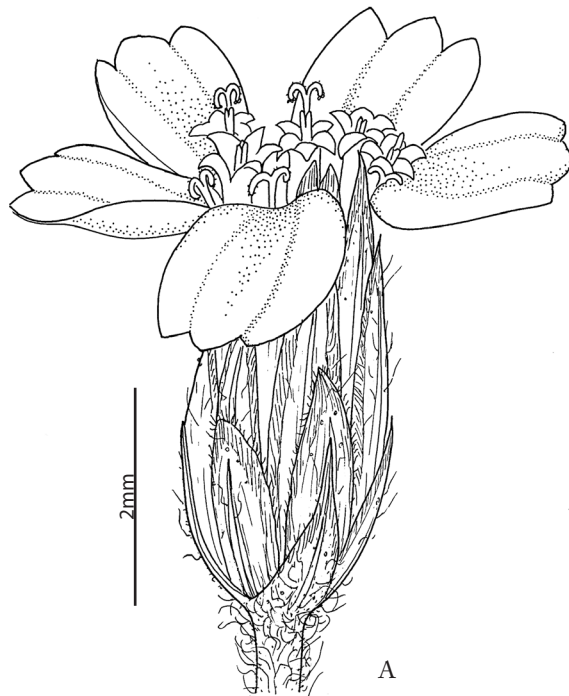


Figure 1: a–b, *Achillea millefolium* head and leaf.

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