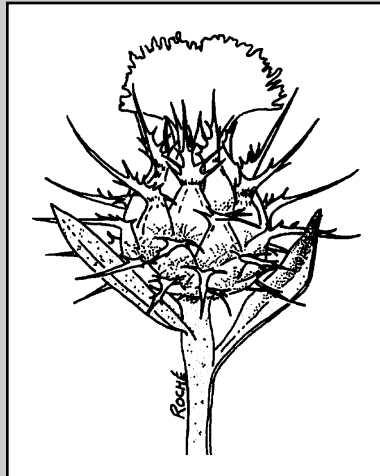
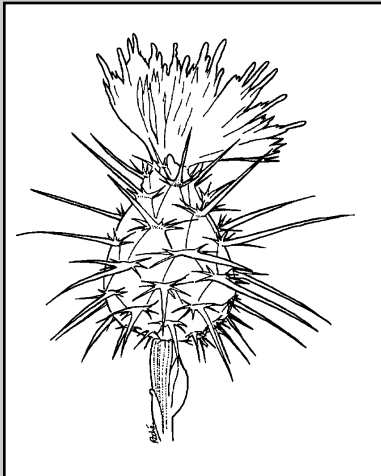


IDENTIFICATION

of Knapweeds and Starthistles in the Pacific Northwest



By Cindy Talbott Roché, M.S., former Washington State University Cooperative Extension coordinator, and Ben F. Roché, Jr., Ph.D., WSU Cooperative Extension range management specialist, deceased.

Illustrated by Cindy Roché.

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INTRODUCTION

Identification of Knapweeds and Starthistles

Knapweed and starthistle identification can be a daunting task to individuals not familiar with this group of invaders from the Old World. Except for Russian knapweed, all of the knapweeds and starthistles in this bulletin bear the genus name *Centaurea*. *Centaurea* is a large, complex genus, which has about 1,350 species names validly published in the botanical literature. To add to the confusion, some species hybridize: 232 hybrids are recognized with a published name. So far, fewer than 20 species have naturalized in western North America. This number includes several of the 25 or so species of *Centaurea* in cultivation as ornamental flowers. One self-perpetuating hybrid, meadow knapweed, is well established in the Pacific Northwest.

The single most important characteristic in identifying *Centaurea* species is the appearance of the bracts that surround the head of flowers. Bracts are composed of two parts, a center part and an appendage. Appendages come in various shapes and may appear fringed, papery or translucent, raggedly torn, and spiny.

You should also note characteristics of seeds, leaves, roots, and branching habit to differentiate species. Flower color is normally important only in separating the yellow-flowered group from the group with white and rose to purple flowers. Most species with pink to purple flowers may have white flowers. Among our species, only the cultivated sweet sultan (*Amberboa moschata*, formerly *Centaurea moschata*) has as wide a color range as cornflower (*Centaurea cyanus*). Sweet sultan flowers may be yellow, white, pink, rose, or purple. Cornflower flowers may be blue, white, pink, rose, lavender, or purple. All flowers are tubular disk flowers, although in some species the outer ring flowers in each head are enlarged, or radiate. These radiate flowers are often sterile.

The following key assumes that you are trying to identify a flowering plant. Vegetative specimens can be extremely difficult to identify. If flowers are not available, look for the distinctive bracts on buds and especially on the weathered seed heads from the previous year's flowers. Do not assume that the name you arrive at in the key is correct. Check your specimen against the illustrated descriptions following the key. For information on biology, habitat and management alternatives, refer to the extension bulletins referenced for each species. For chemical control recommendations and a list of available biological control insects, refer to the *Pacific Northwest Weed Control Handbook*. Sources for bulletins appear on the inside front cover.

Key to the Knapweed and Starthistle Species (naturalized in the western United States)

Descriptions and measurements of bracts refer to the middle rows on the head.

1a. Bracts that surround the flower head are spine tipped _____ 2

2a. Stem leaves form wings down stems, flowers yellow, plants annual _____ 3

3a. Spine at tip of bract round in cross section; yellow or straw-colored, with two pair of lateral spinules at base of terminal spine; annual

yellow starthistle (*C. solstitialis*)

3b. Spine flattened or grooved on top, brown or purple tinged, especially near the base _____ 4

4a. Spine $1/4$ to $3/8$ inch long, with lateral spines near the top and the base; heads up to $1/2$ inch in diameter

Malta starthistle (*C. melitensis*)

4b. Spine $1/2$ to $3/4$ inch long, dark purple, with 3 to 4 slender lateral spines on each side of the base of the main spine; heads larger, 1 inch in height; seeds shiny dark brown with bristly black pappus; plant annual

Sicilian starthistle (*C. sulphurea*)

2b. Stems not winged, flowers variously colored but not yellow; life span variable _____ 5

5a. Spine at tip of bract $3/8$ to 1 inch long, often brown or purple tinged near base, obviously grooved on top; flowers purple annual or biennial _____ 6

6a. Seed with pappus

Iberian starthistle (*C. iberica*)

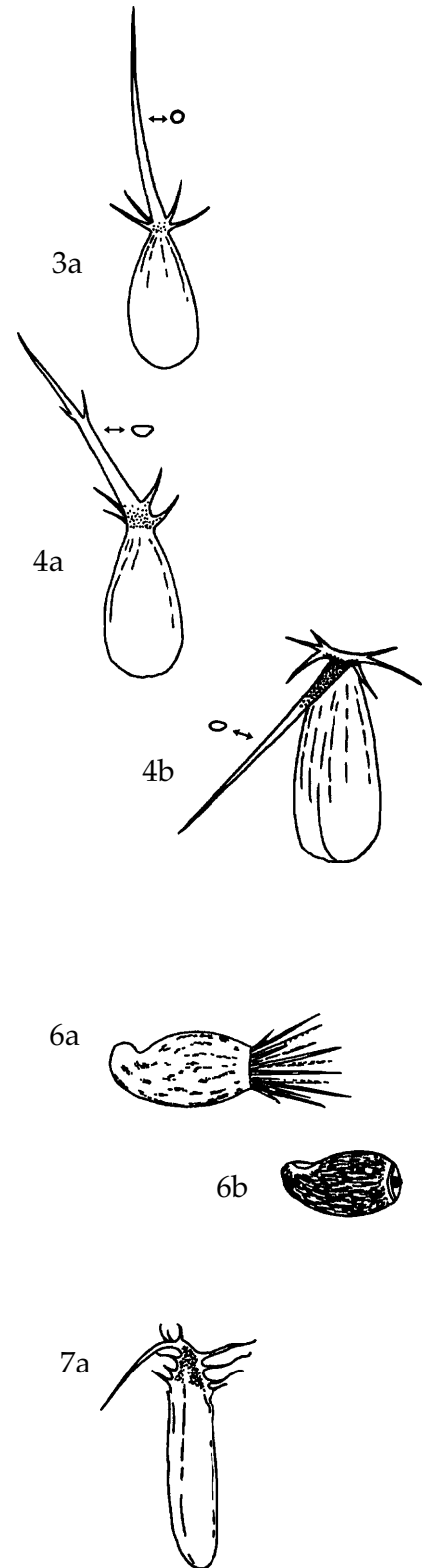
6b. Seed without pappus

purple starthistle (*C. calcitrapa*)

5b. Spine at tip of bract about $1/8$ inch long, spreading or curved backward, longer than spines on sides of bract _____ 7

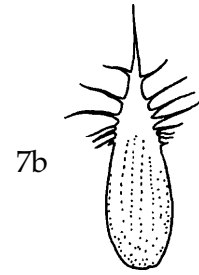
7a. Spine at tip of bract strongly curved backwards; flowers rose-purple; entire head falls off at maturity; plant taprooted perennial with many persistent flower stalks

squarrose knapweed (*C. virgata* ssp. *squarrosa*)



7b. Spine at tip of bract spreading; flowers white, cream, pale lavender, or purple; plant normally biennial (sometimes annual or perennial), taprooted; bushy stalks break off at base to tumble with seed heads intact

diffuse knapweed (*C. diffusa*)



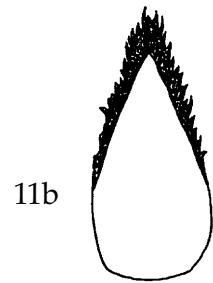
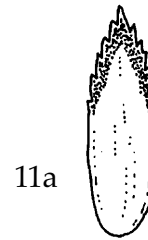
1b. Bracts not spine tipped _____ 8

8a. Bract appendage is a comblike fringe or raggedly torn, but without a wide papery translucent margin _____ 9

9a. Appendages of adjacent bracts do not overlap obviously _____ 10

10a. Edges of bracts awl-shaped or appear raggedly torn, not drawn out and needlelike; center part of bract has vertical veins, margins often brown _____ 11

11a. Leaf bases not winged, leaves mostly entire or lower ones lobed; flowers blue, purple, white, or rose; upright annual
cornflower (*C. cyanus*)



11b. Leaf base winged, leaves entire or toothed; flower heads have outside ring blue and inner flowers violet; perennial, has creeping rootstalks
mountain bluet (*C. montana*)



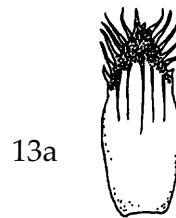
10b. Bract appendage has needlelike or comblike fringe _____ 12

12a. Comblike appendages on bracts equally spaced on each side, tip of bract recurved back over the base; flowers pink or purple; perennial
featherhead knapweed (*C. trichocephala*)

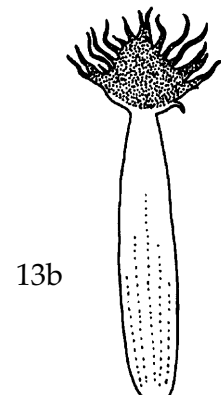


12b. Bracts with brown triangular tip _____ 13

13a. Leaves, except those on the uppermost stem, divided into narrow segments, lower leaves stalked; seeds normally plumed; perennial
spotted knapweed (*C. maculosa*)

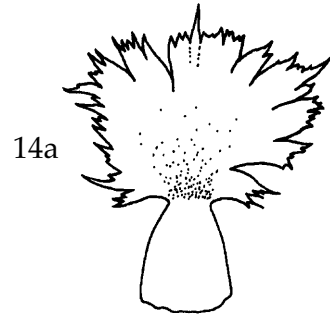


13b. Leaves entire or lobed on margins but not narrowly divided, stalkless; seed plumeless; perennial
short-fringed knapweed (*C. nigrescens*)



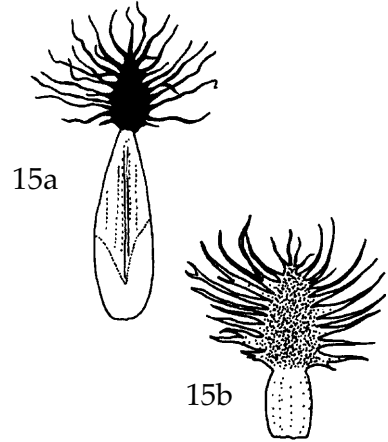
9b. Fringes of bracts overlap those of adjacent bracts _____ 14

14a. Stem swollen beneath head of yellow flowers; head 1 to 3 inches in diameter; bracts have thin and somewhat translucent fringed margin; lower bracts have a weak central spine; perennial
bighead knapweed (*C. macrocephala*)



14b. Flowers rose-purple to white, stems not obviously swollen beneath flower heads, heads multiple, less than 1 inch in diameter _____ 15

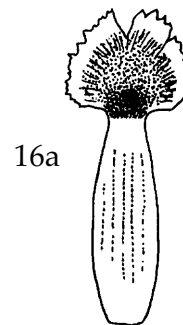
15a. Fringe of bract black, two or more times as long as the width of the center of the bract; outer ring of flowers in head are neither sterile nor enlarged; perennial
black knapweed (*C. nigra*)



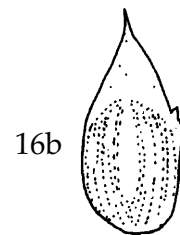
15b. Fringe of bract brown to tan, highly variable in length and number; perennial
meadow knapweed (*C. nigra* X *C. jacea*)

8b. Bracts without a comblike fringe, have a papery, translucent margin that may be split or somewhat raggedly torn _____ 16

16a. Bracts, especially central and lower ones, have widened papery margins that commonly appear more or less raggedly torn, color shades from dark brown center to a pale translucent fringe; perennial
brown knapweed (*C. jacea*)



16b. Bracts capped by a broad, thin, translucent tip, rounded or sharply pointed, green to straw colored; perennial, spreading by dark brown lateral roots
Russian knapweed (*Acroptilon repens*)



Persian cornflower (*Centaurea dealbata*) would key here as meadow knapweed, but is easily differentiated by its lobed leaves that have white undersurfaces.

Yellow starthistle, St. Barnaby's thistle

Centaurea solstitialis L.

Yellow starthistle, an annual, or more commonly a winter annual, grows a stiff upright branched stem from a vigorous taproot. Plants vary widely in size depending on growing conditions, but with normal moisture are usually 1 to 2 feet tall.

Lobed basal leaves form a rosette, commonly having the end lobe larger and rounder than side lobes. Stem leaves attach directly to the stem; an extension of the leaf runs down the stem as a wing. Stem leaves are linear or tapered at both ends, having the broadest part below the middle, up to 4 inches long and $\frac{1}{4}$ inch wide.

Broadly urn-shaped heads of yellow flowers, up to $\frac{3}{4}$ inch long, are solitary at the ends of the branches.

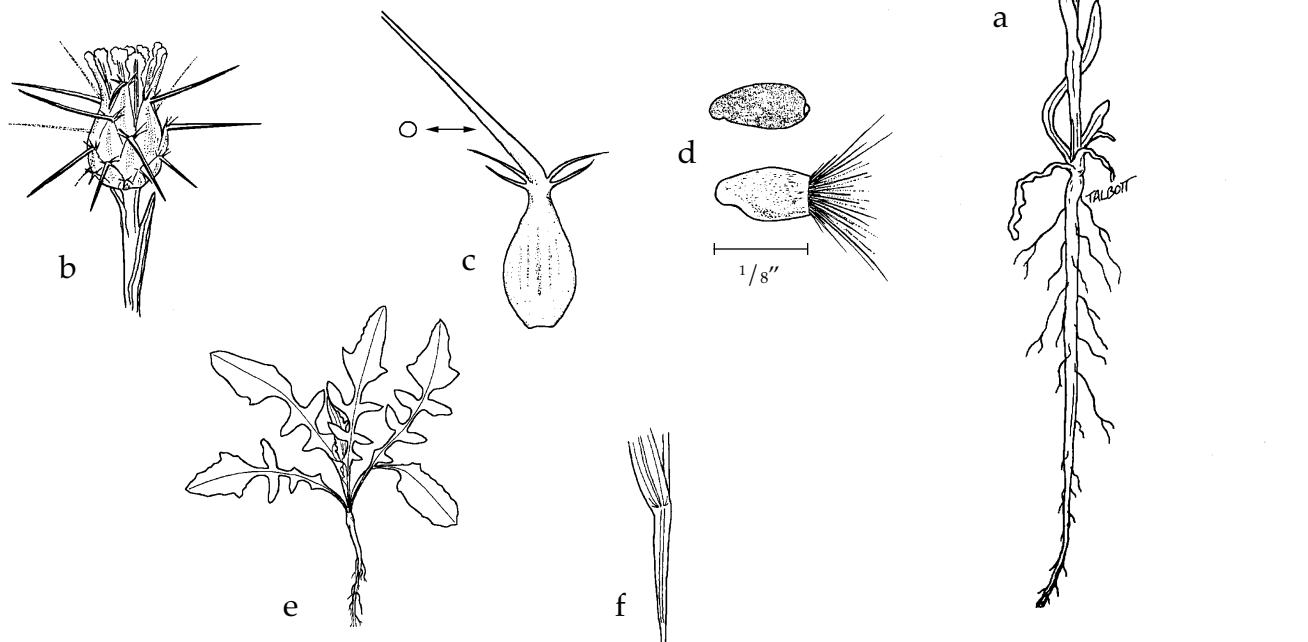
Spiny bracts surrounding the flower heads lack obvious veins. Lower bracts have short spines. Middle bracts end in a sharp, stiff, spreading spine up to an inch long. Round in cross section, the long spine has one or more pairs of short lateral spines at its base. Yellow starthistle flowers from June to August, occasionally later on moist sites. During the fall and winter the spiny bracts gradually fall from the heads, leaving white cottony balls at the tips of stiff stems that weather to a silvery gray.

Yellow starthistle produces two types of blackish brown or mottled seeds, about $\frac{1}{8}$ inch long. Flowers on the inner part of the head produce plumed seeds with a ring of fine, white, $\frac{1}{8}$ -inch long bristles. The outer ring flowers in the head produce seeds that lack a plume.

Yellow starthistle occurs in Idaho, Oregon, Washington, California, Colorado, and Utah.

For additional information, refer to CIS No. 634, *Yellow Starthistle, Biology and Management in Pasture and Rangeland*, available from Agricultural Communications at the University of Idaho.

Illustrations: a. plant, b. head, c. bract, d. seeds, e. rosette, f. winged stem leaf.



Malta starthistle
Napa thistle, Tocalote,
Maltese centaury

Centaurea melitensis L.

An annual with a simple taproot, Malta starthistle grows erect, grayish green stems 1 to 2 feet tall.

Rosette leaves are short stalked and divided into lobes on both sides of the center vein. Narrowly lance-shaped leaves attach directly to the stem, with an extension of the leaf blade forming a wing down the stem.

Heads of yellow flowers are solitary or clustered at the ends of the branches or on short side branches. Woolly hairs adorn the cluster of bracts that surrounds the broad base of the head, which is about 1/2 inch tall.

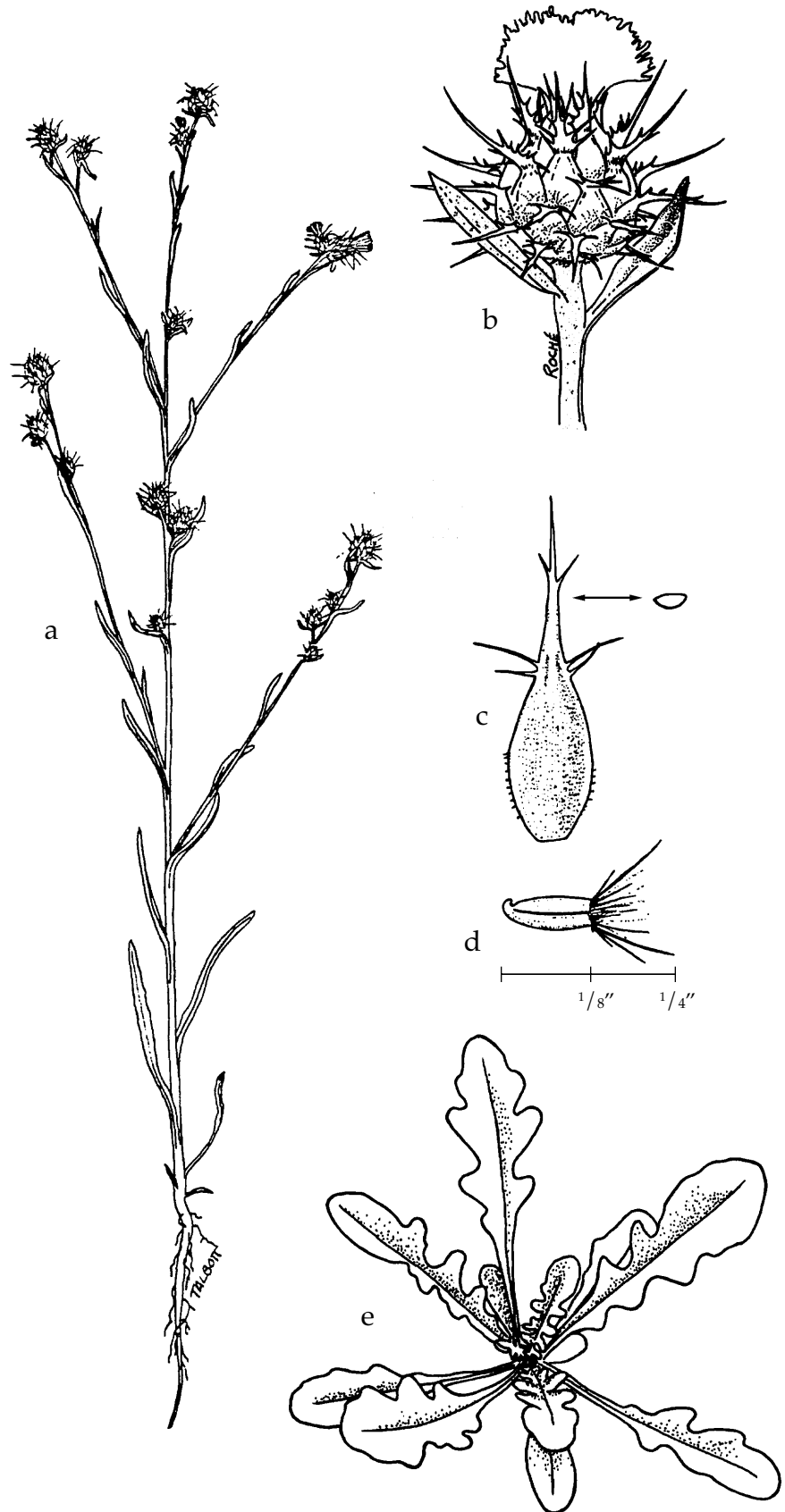
Bracts are tipped with slender spreading spines up to 3/8 inch long, tinged with purple or brown. The main spine has smaller spines branching from it both at the base and near the tip.

Flowers appear from June to September.

Seeds are buff brown with lengthwise stripes, about 1/8 inch long. The plume consists of three rows of white slender bristles unequal in length. The base of the seed has a hook at the point of its oblique attachment.

Malta starthistle occurs in Oregon and California.

Illustrations: a. plant, b. head, c. bract, d. seed, e. rosette.



Sicilian starthistle

Centaurea sulphurea L.

Sicilian starthistle grows as a taprooted annual, with 1- to 3-foot tall erect to spreading, branched stems. Rosette leaves usually have entire or somewhat wavy margins, but may have shallow, coarse lobes from the base to the middle with a broad rounded lobe at the tip. Stem leaves extend down the stems as narrow wings. Up to $\frac{1}{2}$ inch wide and $2\frac{1}{2}$ inches long, stem leaves are rough to the touch. Leaf margins are entire or shallowly toothed with widely spaced teeth tipped with tiny sharp prickles.

Urn-shaped, showy heads of lemon yellow flowers, about 1 inch tall, have a broad base and narrow top. Flower heads are surrounded by bracts topped with sharp spines about $\frac{3}{4}$ inch long. These dark brown to purplish black spines have three to four pair of smaller spines where the central spine attaches to the bract.

Shiny dark brown seeds are $\frac{3}{8}$ to $\frac{1}{2}$ inch long, including the bristly black plume.

Sicilian starthistle occurs in California.



Illustrations: a. stalk,
b. flower head, c. rosette.



Purple starthistle

Centaurea calcitrapa L.

Purple starthistle normally grows as a biennial from a stout taproot, but sometimes behaves as an annual or short-lived perennial. The 1- to 3-foot tall plants are bushy with dense rigid branches.

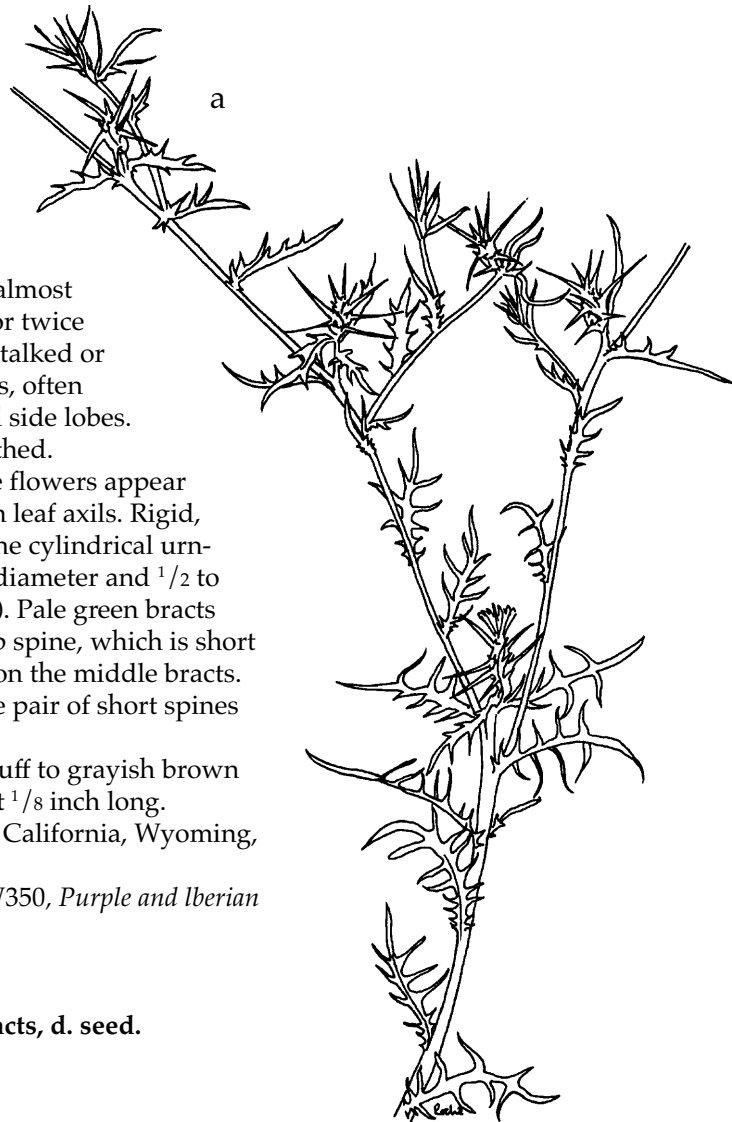
Purple starthistle leaves and stems bear a few long, soft, silky, straight hairs, but often shed most of the hairs to become almost smooth with age. Basal leaves divide once or twice into finely toothed segments. Stem leaves, stalked or stalkless, divide into linear oblong segments, often having a larger terminal lobe and two small side lobes. Upper leaves are stalkless and entire or toothed.

From July to September, heads of purple flowers appear at the tips of branches and along the stem in leaf axils. Rigid, straw-colored spines on the bracts protect the cylindrical urn-shaped heads, which are $\frac{3}{16}$ to $\frac{5}{16}$ inch in diameter and $\frac{1}{2}$ to $\frac{3}{4}$ inch long (excluding spines and flowers). Pale green bracts lacking obvious veins end with a stiff, sharp spine, which is short on the lower bracts and $\frac{3}{8}$ to $\frac{3}{4}$ inch long on the middle bracts. Spines are grooved on top with two or three pair of short spines near the base.

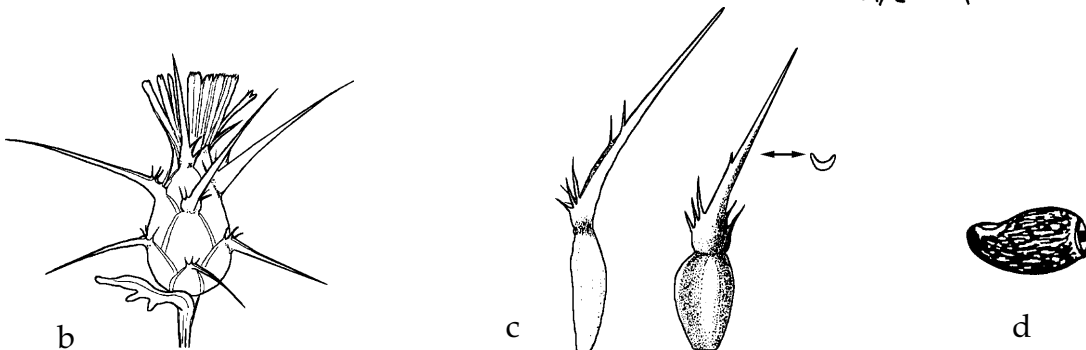
Purple starthistle seeds are plumeless, buff to grayish brown with faint darker lengthwise shading, about $\frac{1}{8}$ inch long.

Purple starthistle occurs in Washington, California, Wyoming, and Utah.

For additional information refer to PNW350, *Purple and Iberian Starthistle*.



Illustrations: a. stalk, b. flower head, c. bracts, d. seed.



Iberian starthistle

Centaurea iberica Trev. ex
Sprengel

Iberian starthistle, another taprooted biennial, closely resembles purple starthistle. The most definitive difference is in the seeds, so mature specimens are preferred for positive identification.

Iberian starthistle stems and leaves are scabrous with short, stiff pointed hairs. Lower surfaces of leaves are pitted with minute clear globules. Lower leaves are deeply lobed or divided. Upper leaves on the stems have a large middle lobe with two small lateral lobes. Leaf margins are entire or edged with small shallow teeth. The narrow, undivided uppermost leaves surround the flower heads.

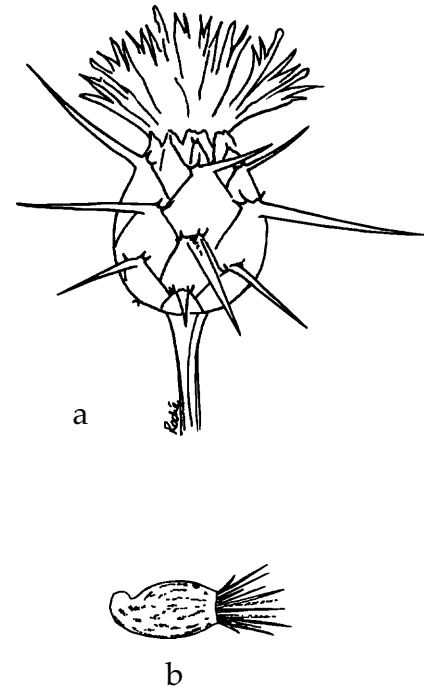
Broadly urn-shaped to globular heads are $\frac{3}{8}$ to $\frac{1}{2}$ inch in diameter and $\frac{1}{2}$ inch tall (excluding spines and flowers). The color, shape, and size of spines on the bracts are similar to those of purple starthistle. The flowers tend to be lighter purple on Iberian starthistle than on purple starthistle.

Seeds of Iberian starthistle have a plume of flattened bristles about half as long as the seed.

Iberian starthistle occurs in California.

For additional information, refer to PNW350, *Purple and Iberian Starthistle*.

Illustrations: a. flower head, b. seed.



Squarrose knapweed

Centaurea virgata Lam.
ssp. squarrosa Gugl.

A deep, stout taproot supports the woody crown of squarrose knapweed, a perennial. Mature crowns support several rosettes of basal leaves and several profusely branched flowering stems, which grow 1 to 3 feet tall.

Rosette leaves are stalked, and deeply divided into lobes. Stem leaves attach directly to the stem and grow progressively smaller, with fewer lobes, the higher they appear on the stem. Uppermost leaves are bractlike.

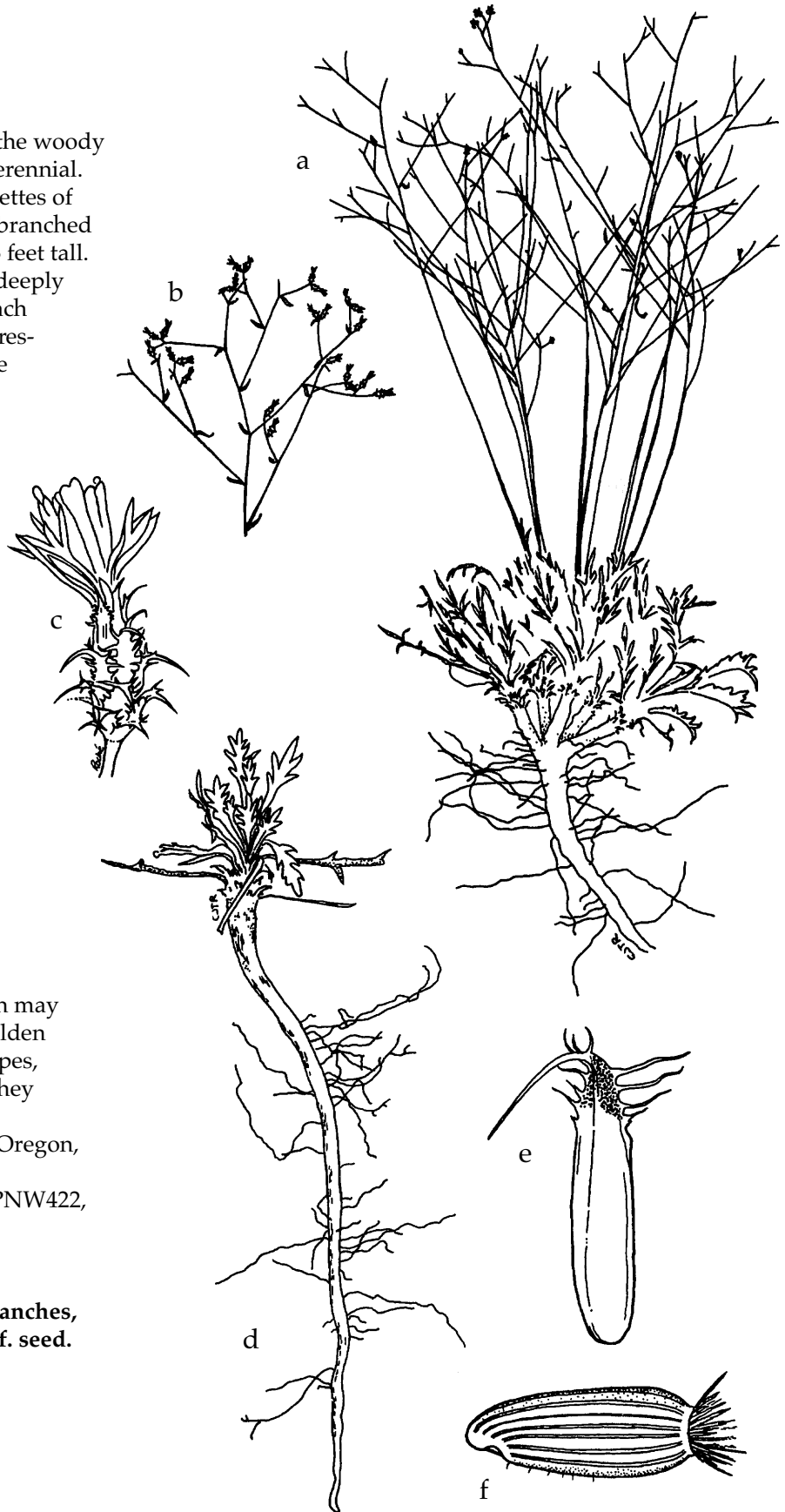
Heads of rose-purple to pink flowers are borne singly or in pairs at the tips of the branches. Heads are $\frac{1}{8}$ inch in diameter and $\frac{1}{4}$ to $\frac{3}{8}$ inch long, excluding spines and flowers. On the bracts that surround the slender, urn-shaped head, the central spine is longer and stouter than the four to six pair of lateral spines. The central spine usually spreads outward or curves backward toward the base. When the seeds mature, an abscission layer forms at the base of the head and heads fall from the plants. Bare branched stems, resembling twigs, persist on the plants after the seed heads drop off.

Seeds are $\frac{3}{16}$ to $\frac{1}{4}$ inch long, including the whitish plume, which may be up to $\frac{1}{3}$ as long as the body. Golden to dark brown with faint linear stripes, seeds have an oblique scar where they detach from the head.

Squarrose knapweed occurs in Oregon, California, and Utah.

For more information, refer to PNW422, *Squarrose Knapweed*.

Illustrations: a. plant, b. flower branches, c. flower head, d. rosette, e. bract, f. seed.



Diffuse knapweed, tumble knapweed

Centaurea diffusa Lam.

Diffuse knapweed is normally a biennial, but may live for several years as a rosette before flowering or may continue to grow after producing seed to flower again the next year. It grows 1 to 3 feet tall from a deep taproot. Upright stems have numerous spreading branches, which give the plant a ball-shaped appearance and tumbleweed mobility when broken off.

In the basal rosette, leaves are borne on short stalks and are deeply divided into lobes on both sides of the center vein. Stem leaves are stalkless, becoming smaller and less divided higher up the stem; smallest leaves on the upper stems appear bractlike.

Urn-shaped flower heads are $\frac{3}{16}$ to $\frac{1}{4}$ inch in diameter and $\frac{5}{16}$ to $\frac{7}{16}$ inch long, excluding spines and flowers. Heads are solitary or borne in clusters of two or three at the ends of the branches.

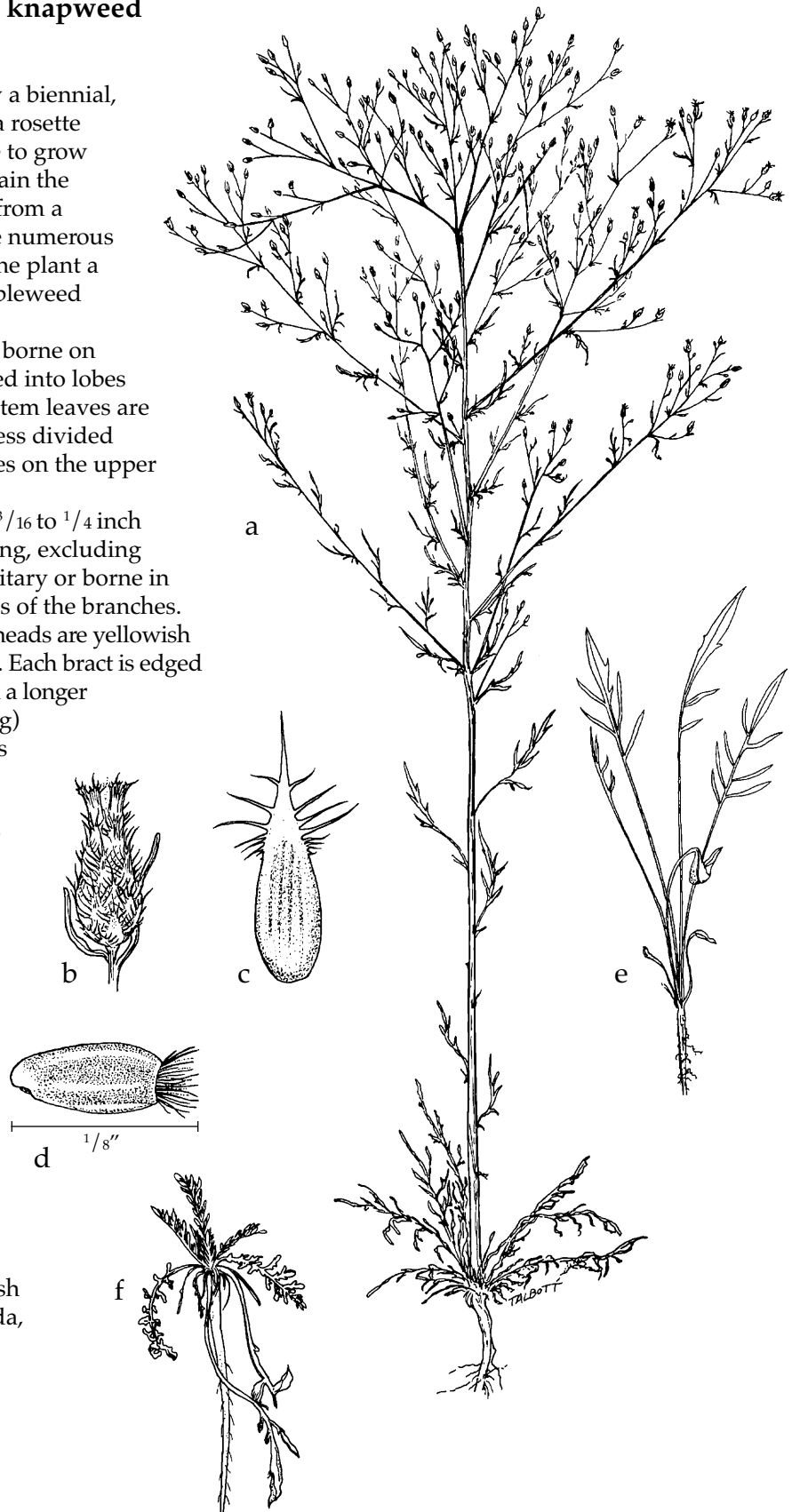
Bracts surrounding the flower heads are yellowish green with a buff or brown margin. Each bract is edged with a fringe of spines ending with a longer spreading spine (about $\frac{1}{8}$ inch long) at the tip. Some diffuse bracts are as "spotted" as spotted knapweed bracts, especially on heads with lavender or purple flowers, but the longer terminal spine is characteristic of diffuse knapweed.

Most plants have white flowers, but rose-purple and lavender flowered plants are not uncommon. Flowering occurs from June to September, or later if moisture and mild temperatures permit.

Seeds are buff to dark brown, about $\frac{1}{8}$ inch long, having a plume of bristlelike hairs that varies from scalelike to $\frac{1}{8}$ the length of the seed.

Diffuse knapweed occurs in Idaho, Oregon, Washington, British Columbia, Montana, Utah, Nevada, Wyoming, and California.

Illustrations: a. plant, b. head, c. bract, d. seed, e. seedling, f. overwintered rosette.



Cornflower, bachelor's button

Centaurea cyanus L.

Cornflower, a taprooted annual or winter annual, has openly branched simple stems 1 to 2 feet tall, which lose their white woolly hairs as they mature.

The lower surfaces of the leaves are often woolly with matted white hairs. Stalkless stem leaves are linear with entire or toothed margins.

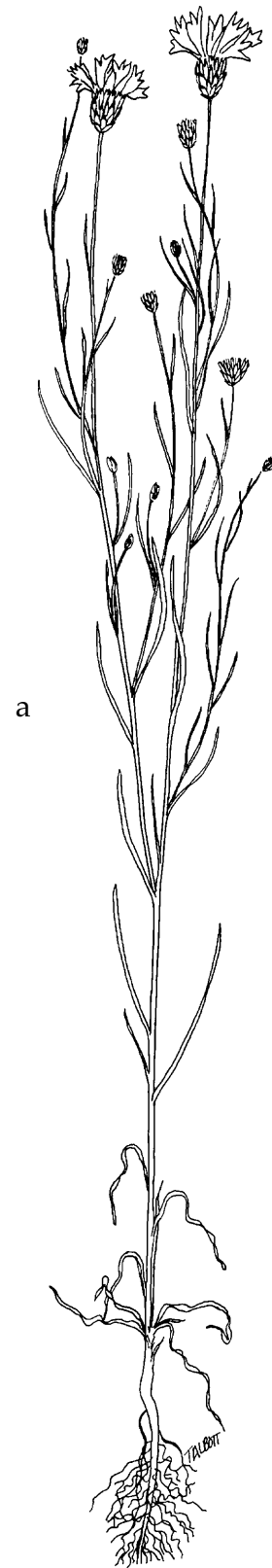
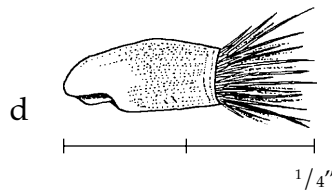
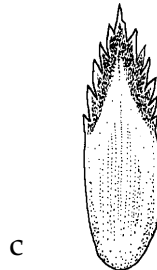
Heads of white, blue, pink, red, or purple flowers are solitary on the ends of the branches. Heads are $\frac{1}{2}$ to $\frac{3}{4}$ inch tall, surrounded by several rows of bracts at the base. Bracts have fine, vertical lines that vary in color depending on flower color, and a ragged comblike fringe at the tip.

Flowering peaks in May, and may be followed by additional plants flowering in September or October.

Seeds are brown to buff colored, $\frac{1}{8}$ to $\frac{3}{16}$ inch long, tipped with a ring of tapered brown bristles about the same length as the seed.

Cornflower occurs in Idaho, Oregon, Washington, and is cultivated widely.

Illustrations: a. plant, b. head, c. bract, d. seed.



**Mountain bluet, mountain cornflower,
perennial cornflower**

Centaurea montana L.

Mountain bluet is a perennial with sparingly branched stems from spreading lateral roots. Plants are normally less than 2 feet tall.

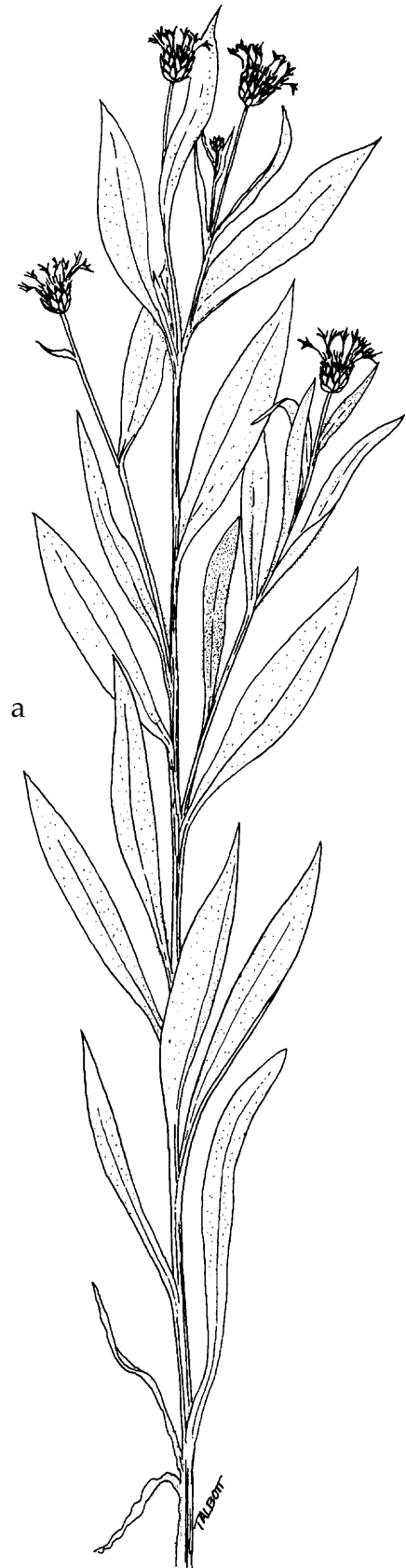
Soft, broadly lance-shaped leaves have entire or somewhat toothed margins. An extension of the leaf blade forms a wing down the stem. Young leaves, silvery white with tufted woolly hairs, become green and smooth with age.

Flower heads, 1 to 2 1/2 inches across (including flowers), are solitary on short stalks. The outside ring flowers on each head are blue and up to 1 inch long; central flowers on head are smaller and violet colored. Flowers are white in the cultivated variety 'alba.' Mountain bluet produces flowers from May to June, but continues until frost if flowers are removed and moisture is available.

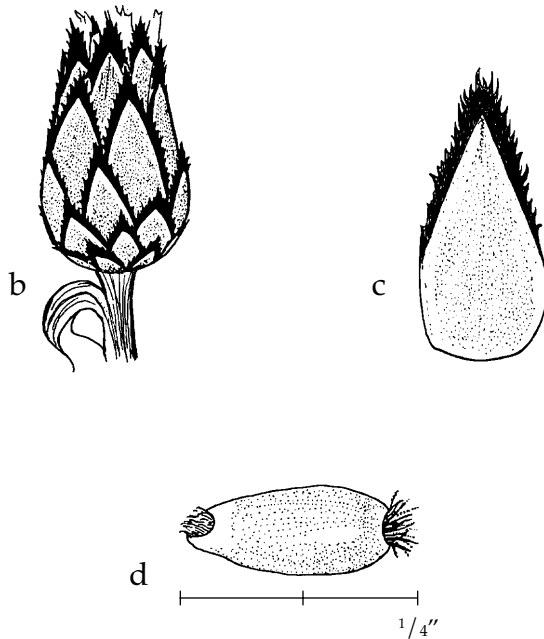
Bracts surrounding the flower heads are green with a brown fringe on the margin that appears raggedly torn.

Seeds are pale yellow to white, 3/16 to 1/4 inch long with a short plume up to 1/16 inch long.

Mountain bluet occurs in Idaho and Washington, and is widespread in cultivation.



Illustrations: a. plant stalk, b. head, c. bract, d. seed.



Featherhead knapweed

Centaurea trichocephala M Bieb

Featherhead knapweed is a creeping perennial from lateral roots. Its branched leafy stems grow to 2 feet tall.

Linear to lance-shaped leaves are rough to the touch. Margins of lower leaves are smooth, toothed, or more often lobed; upper leaves less lobed.

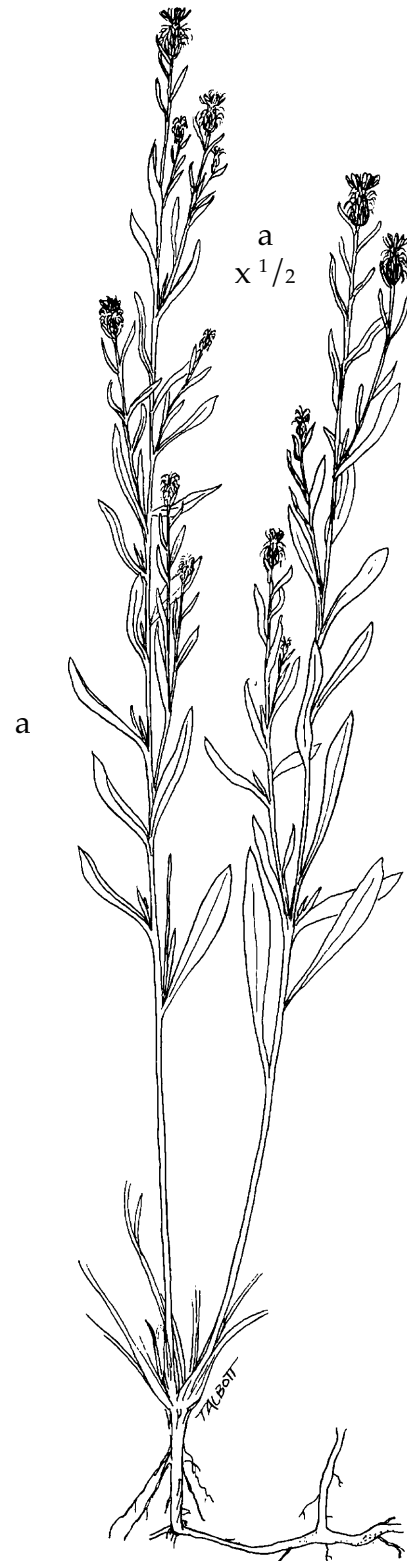
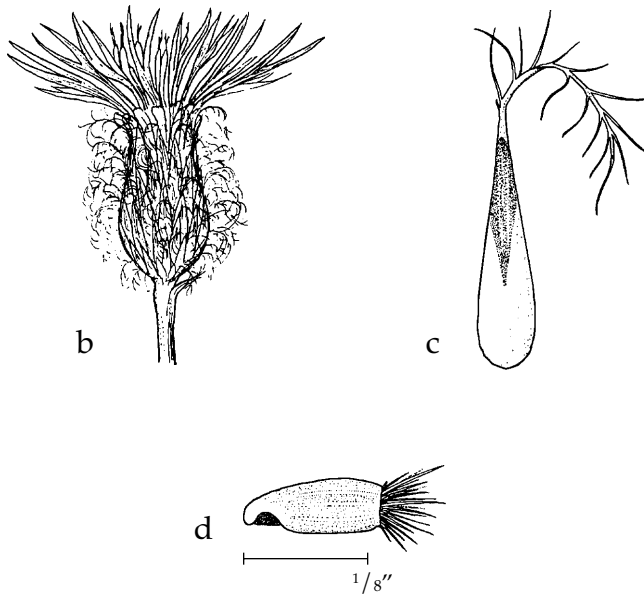
Heads of pink or purplish pink flowers have a whitish center and an outer ring of enlarged raylike flowers. Up to $\frac{3}{4}$ inch tall, heads are surrounded by rows of elaborately fringed bracts. The tip of each bract tapers to a $\frac{3}{8}$ -inch long brown feather that curves back over the bract.

Flowers appear from July to September.

Seeds are slightly longer than $\frac{1}{8}$ inch, having a ring of short bristles opposite the point of oblique attachment.

Featherhead knapweed has been eradicated from Washington.

Illustrations: a. plant, b. head, c. bract, d. seed.



Spotted knapweed

Centaurea maculosa Lam.

Spotted knapweed is a perennial producing several branched upright stems from a stout taproot; usually 2 to 4 feet tall.

Deeply divided stalked basal leaves form a rosette. Stem leaves are divided into lobes, but become smaller up the stem and less lobed until the upper leaves are linear and entire.

Heads of pink to purple, sometimes white, flowers are borne at the ends of the branches. Urn-shaped heads are $\frac{1}{4}$ to $\frac{5}{16}$ inch in diameter and $\frac{1}{2}$ inch tall, excluding flowers.

Bracts surrounding the flower heads have obvious vertical veins below the black triangular spot on the tip. The tip and upper margin have a soft spinelike fringe, in which the center "spine" is shorter than the others. White flowered plants often lack the dark spot on the bract tip.

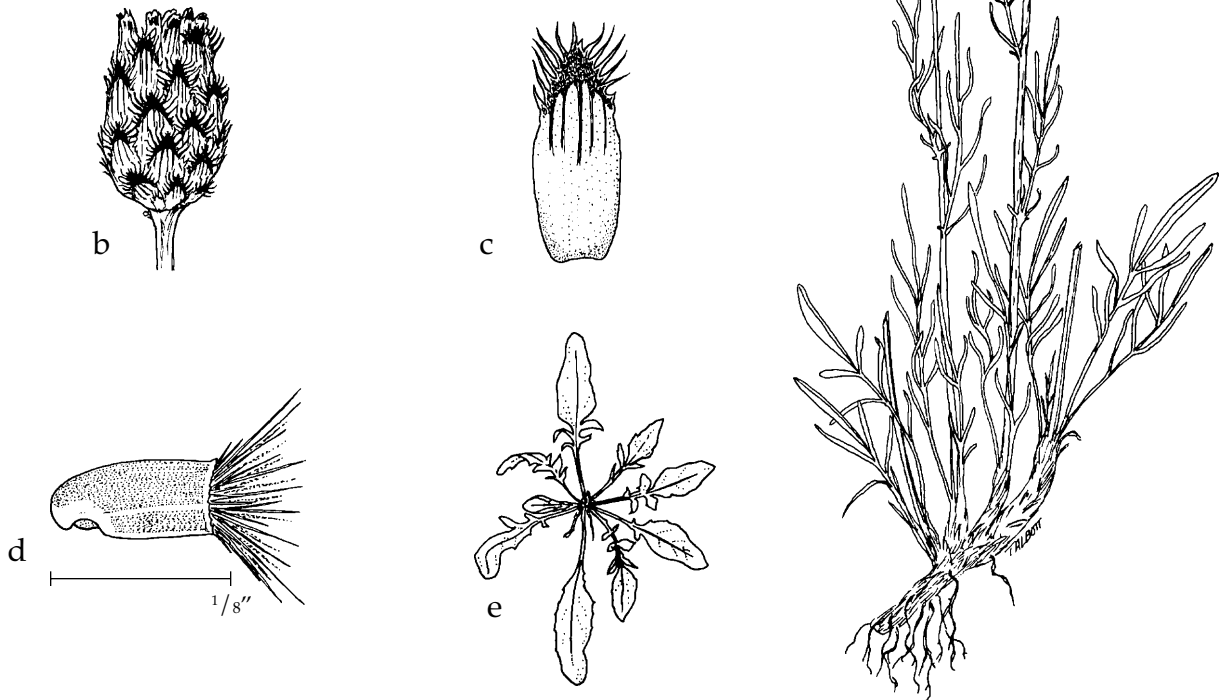
Spotted knapweed flowers from June to October, or as long as moisture and temperatures permit.

Seeds are medium to dark brown with pale lengthwise lines, $\frac{1}{8}$ inch long, and bear a plume of slender chaffy bristles up to half as long as the seed.

For additional information, refer to 2C0311, *Controlling Knapweed on Montana Rangeland*, from Montana State University.

Spotted knapweed occurs in Idaho, Oregon, Washington, California, British Columbia, Montana, Utah, Wyoming, North Dakota, and South Dakota.

Illustrations: a. plant, b. head, c. bract, d. seed, e. rosette.



Short-fringed knapweed, Vochin knapweed

Centaurea nigrescens Willd.,
C. dubia Suter

Short-fringed knapweed generally produces several upright branching stems from a perennial woody root crown. Plants may reach 4 feet in height.

Oblong lance-shaped basal leaves, up to 6 inches long, taper to stalks at the base. Leaf margins on lance-shaped stem leaves are entire or lobed. In lobed leaves, the rounded terminal lobe often grows much larger than the other lobes. Uppermost stem leaves are small and entire. Minute stiff hairs line leaf margins.

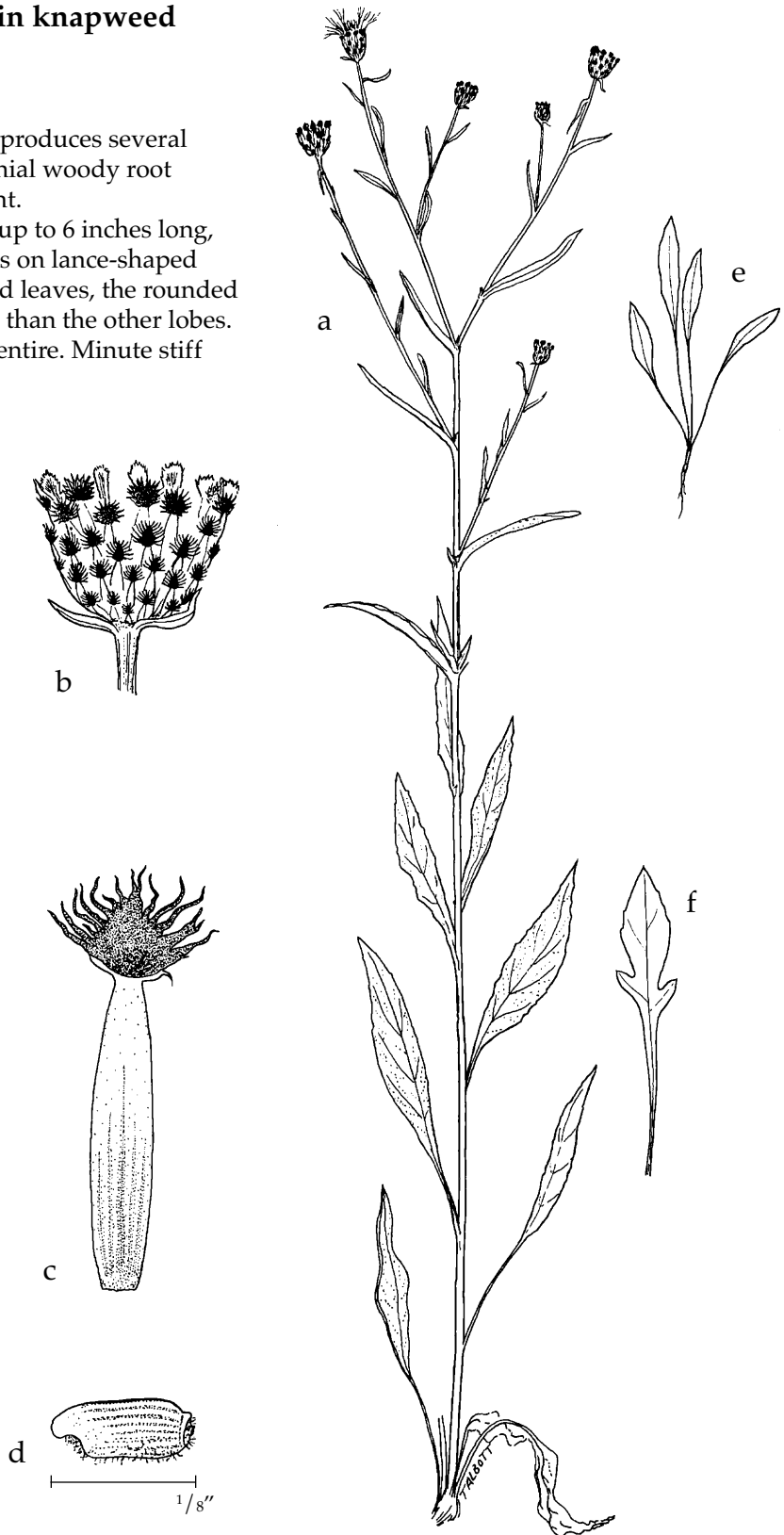
Heads of rose-purple flowers appear from July to September. About $\frac{1}{2}$ to $\frac{3}{4}$ inch tall, and solitary at the ends of the branches, flower heads usually have outer ring flowers larger than the central flowers in the head. The cluster of bracts at the base of the head is broadly oblong. Each bract is tipped with a small dark triangular fringe. The fringe ends abruptly, not tapering down the side of the long slender green base of the bract.

Seeds are about $\frac{1}{8}$ inch long, light brown or ivory with lengthwise lines. If present, the plume consists of a few short stiff hairs opposite the oblique scar where the seed was attached.

Short-fringed knapweed occurs in Oregon, Washington, and British Columbia.

For additional information, refer to extension bulletin PNW417, *Short-Fringed Knapweed*.

Illustrations: a. plant, b. head, c. bract, d. seed, e. seedling rosette, f. lobed leaf.



**Bighead knapweed, lemon fluff,
globe cornflower, globe centaury**
Centaurea macrocephala Puschk.

Bighead knapweed grows as a perennial, 2½ to 5 feet tall, having several upright unbranched leafy stems clustered on a woody crown.

Lance-shaped leaves have sharply pointed tips, shallowly toothed margins and rough surfaces. Blades of basal leaves are up to 10 inches long and 3 inches wide; blade plus stalk may exceed 15 inches. Stem leaves gradually change from a simple stalk to a winged stalk (leaf blade extension), to stalkless as they become smaller up the stem. The smallest leaves mingle with cobwebby hairs on the swollen stem just below the flower head.

Large globe-shaped heads of yellow flowers are solitary at the top of the stems. Size ranges from 1 to 3 inches in diameter. Eight to twelve rows of layered bracts surround the base of the flower head. These bracts have a fringed margin that is thin, papery, and somewhat translucent, golden brown to rust colored. The lower bracts have flat, weak spines as an extension of the central nerve.

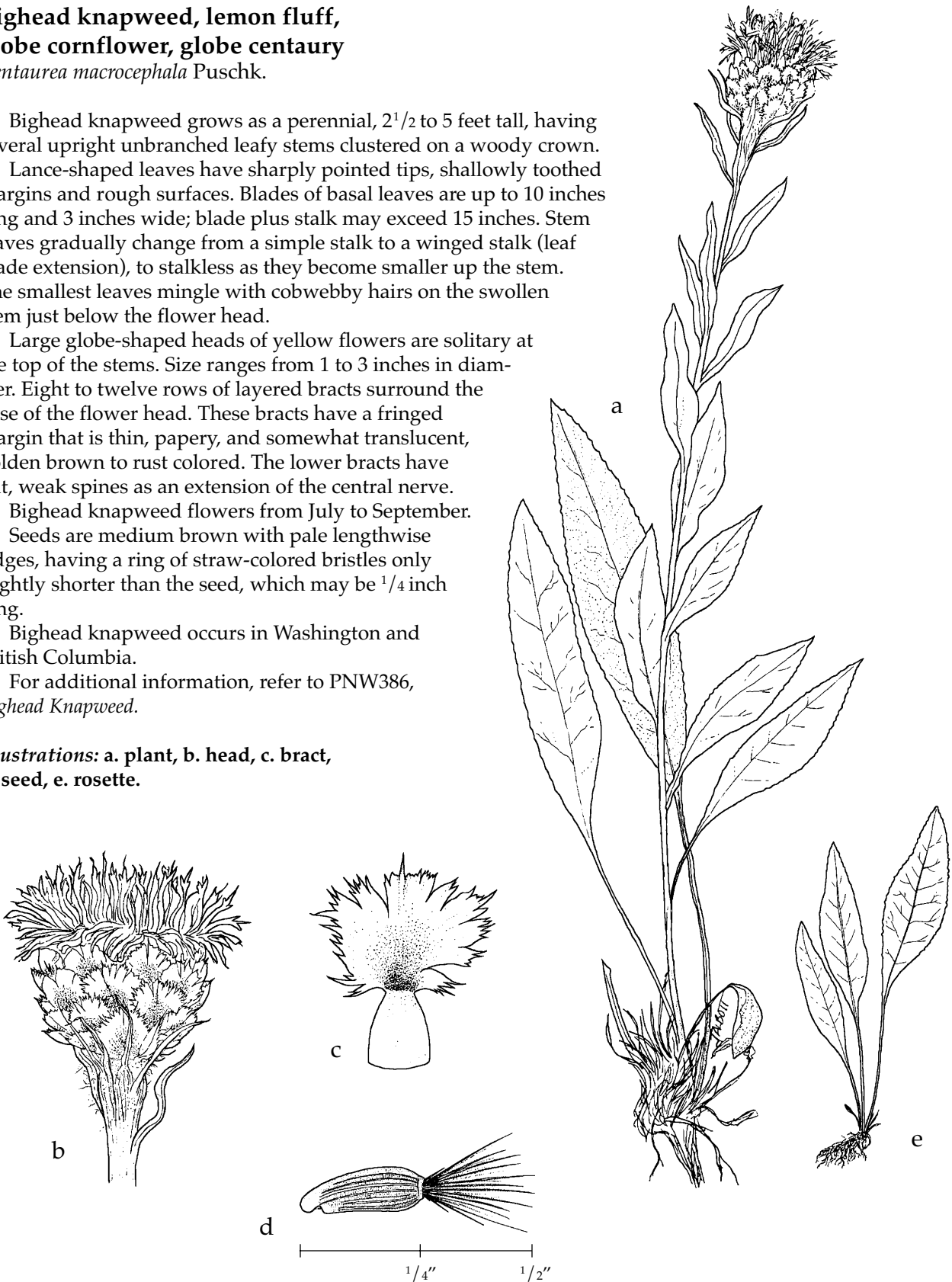
Bighead knapweed flowers from July to September.

Seeds are medium brown with pale lengthwise ridges, having a ring of straw-colored bristles only slightly shorter than the seed, which may be ¼ inch long.

Bighead knapweed occurs in Washington and British Columbia.

For additional information, refer to PNW386, *Bighead Knapweed*.

Illustrations: a. plant, b. head, c. bract, d. seed, e. rosette.



Black knapweed, lesser knapweed, hardheads

Centaurea nigra L.

Black knapweed grows a few to several erect stems, 8 to 32 inches tall, branching from about the middle of the stem. A perennial from a woody root crown, black knapweed will produce daughter plants from lateral roots. The bases of prostrate stems sometimes root at the nodes.

Broadly lance-shaped basal leaves grow on a stalk. Leaf margins are toothed, shallowly lobed or entire. Stem leaves become smaller and stalkless up the stem.

Flower heads, $\frac{1}{2}$ to $\frac{3}{4}$ inch tall, and up to 1 inch wide, appear solitary at the ends of the branches or on branchlets arising from where upper leaves attach to the stem.

Bracts surrounding the flower heads overlap each other with dark brown or black tips that resemble ticks. The dark comblike fringe is up to three times as long as the width of the central part of the bract.

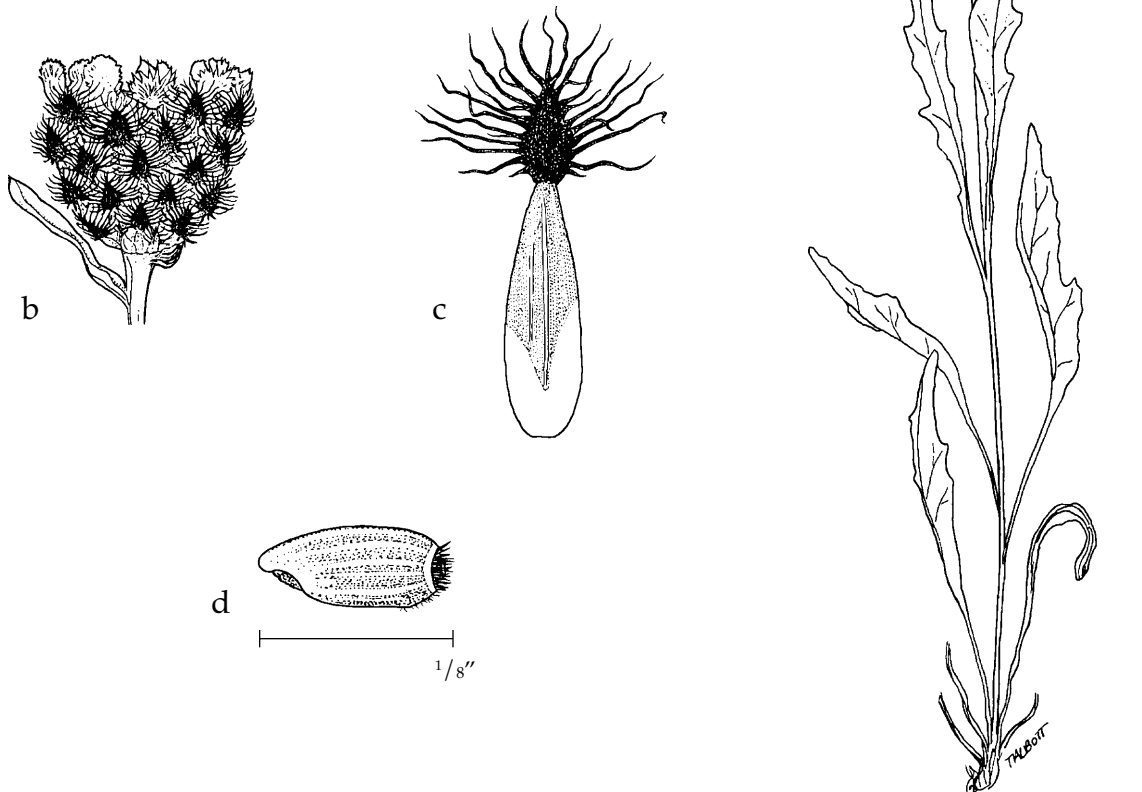
Heads of rose to lavender flowers appear from July to October.

Seeds, $\frac{1}{8}$ inch long, ivory white with lengthwise stripes, bear a ring of hairs, up to $\frac{1}{16}$ inch long, opposite the point of attachment.

Black knapweed occurs in Oregon, Washington, and British Columbia.

For additional information, refer to EB1524, *Meadow Knapweed*.

Illustrations: a. plant, b. head, c. bract, d. seed.



Meadow knapweed, Protean knapweed

Centaurea nigra L. X *C. jacea* L.

Centaurea pratensis Thuill.,

C. debeauxii Gren. & Godron

Because meadow knapweed is a hybrid between black knapweed and brown knapweed, its characteristics are highly variable.

Meadow knapweed grows as a perennial from a woody root crown that has a cluster of somewhat fleshy roots. Seedlings are taprooted. Upright stems are mostly 20 to 40 inches tall, branching from near the middle.

Basal leaves may grow to 6 inches long and 1¹/₄ inches wide, having entire or small lobes or teeth along the margins. Lance-shaped stem leaves become small, almost bractlike in the upper part of the plant.

Oval or globe-shaped flower heads are solitary at the ends of branches. Heads, about ³/₄ inch in diameter, often reflect a golden sheen at flowering time.

Gold to dark brown bracts, rounded at the tip, support a torn, thin, papery margin or comblike fringed margin. Fringes vary considerably, but roughly equal the width of the central part of the bract.

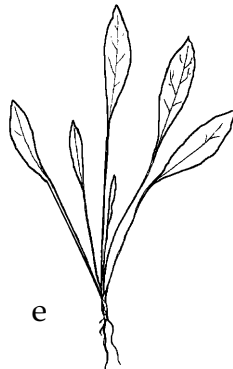
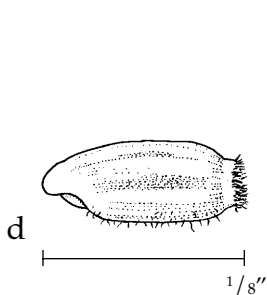
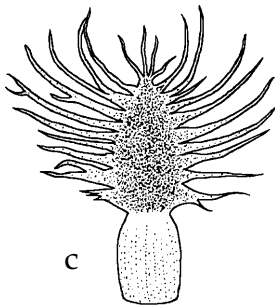
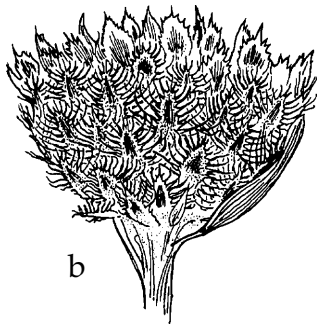
Heads of showy rose-purple flowers adorn meadow knapweed plants from July to September, continuing into November west of the Cascades. Occasional plants produce white flowers.

Seeds are ivory white to light brown, ¹/₈ inch long; plume is short or lacking altogether.

Meadow knapweed occurs in Idaho, Oregon, Washington, Montana, and British Columbia.

For additional information, refer to EB1524, *Meadow Knapweed*.

Illustrations: a. plant, b. head, c. bract, d. seed, e. seedling rosette.



Brown knapweed

Centaurea jacea L.

A perennial from a woody root crown, brown knapweed produces upright stems 2 to 4 feet tall, which branch in the upper part.

Broadly lance-shaped basal leaves grow on a long stalk. Not numerous, these leaves grow to 6 inches long and 1¹/₄ inches wide. Stem leaves, which become progressively smaller up the stem, are lance shaped to oblong with entire, finely toothed, or shallowly lobed margins.

Solitary heads of rose-purple or white flowers, about an inch in diameter, appear solitary at the ends of branches. A cluster of light to dark brown bracts surrounds the heads.

Bracts have broad, thin, papery margins that appear more or less irregularly torn. The wider tips of the bracts overlap adjacent bracts.

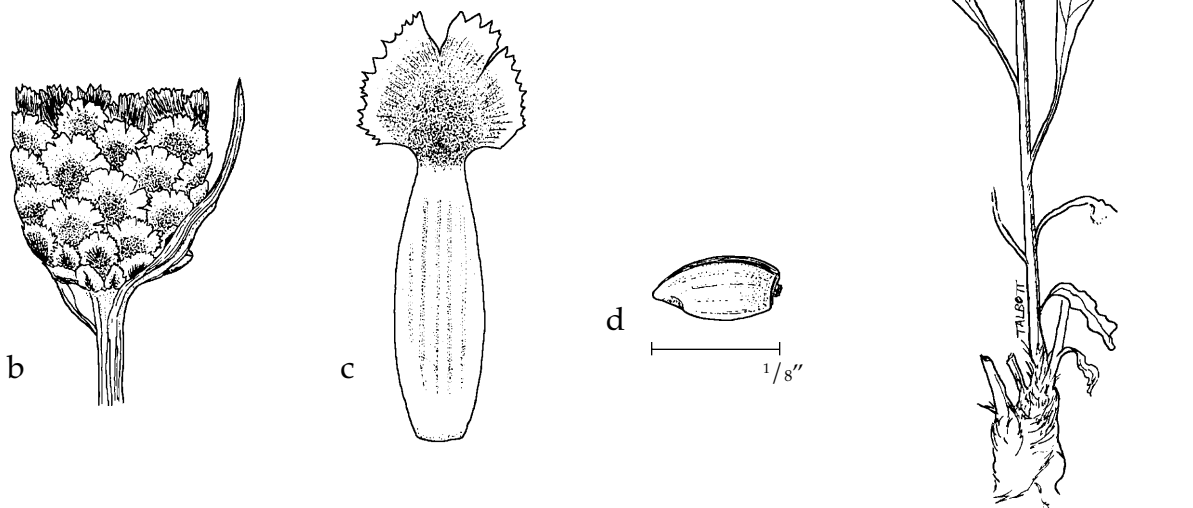
Brown knapweed flowers appear from July to October; peak flowering normally occurs in August.

Light brown seeds, about 1/8 inch long, have a few lengthwise ridges or lines, and have tiny scales in place of a plume.

Brown knapweed occurs in Oregon, Washington, British Columbia, and Montana.

For additional information, refer to EB1524, *Meadow Knapweed*.

Illustrations: a. plant, b. head, c. bract, d. seed.



Russian knapweed, Turkestan thistle

Acroptilon repens (L.) DC.
Centaurea repens L.,
C. picris Pall.

Russian knapweed, a long-lived perennial, often grows in dense patches of upright single stems from deep, black-brown, creeping roots. Stems generally grow 1 to 3 feet tall. Widely spaced plants may branch from the base and appear bushy. Plants in dense stands are sparingly branched, mostly in the upper part.

Stem leaves are divided into lobes or merely toothed along the margin, becoming smaller up the stem to the upper straplike leaves, which have entire margins and a tiny prickle at the tip.

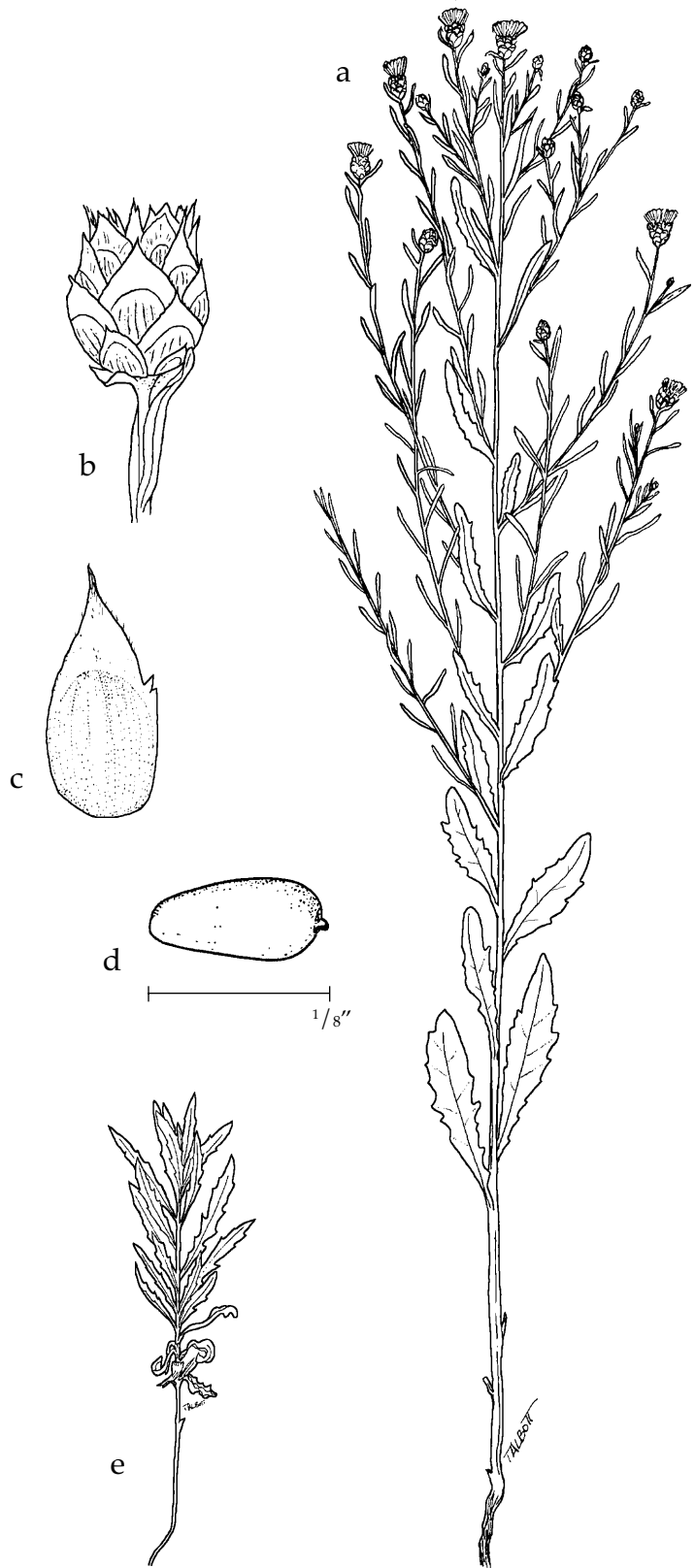
Small heads of lavender-blue to pink flowers appear at the ends of the branches. Greenish to straw-colored spineless bracts surround the base of the head, which may be up to $\frac{1}{2}$ inch tall. A broad, translucent, papery tip that is rounded or sharply pointed caps each bract. Middle bracts may bear a few soft hairs and a fringe of short hairs along the margin, while uppermost bracts are narrower and more hairy.

Russian knapweed flowers from June to September.

Ivory white seeds, $\frac{1}{8}$ inch long, are attached at the base, instead of obliquely as in the other knapweeds. The long (up to $\frac{3}{8}$ inch) dirty white plume falls off as the seeds mature.

Russian knapweed occurs in Idaho, Oregon, Washington, California, Montana, British Columbia, Alberta, Colorado, Wyoming, Utah, North Dakota, and South Dakota.

Illustrations: a. plant stalk, b. head, c. bract, d. seed, e. young shoot.



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