

Bedstraws of the Chicago Region

(Rubiaceae: *Galium*)

Inflorescences All Terminal

Smooth fruits

Bristly fruits

Only one species in our region has both terminal inflorescences and yellow flowers: Yellow Bedstraw from Europe.

Galium flower front and side views

White Bedstraw (*Galium album*) is from Europe, and is found in weedy areas. Stem leaves are in whorls of 8, or in 6s on the branches. Leaves and stems smooth. Four-petaled flowers.

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Smooth stems

Notice the dense panicles on Yellow Bedstraw (*Galium verum*). Leaf undersides have very fine hairs.

Retorse leaf hairs

Rough Bedstraw (*Galium asprellum*) Much-branched, strongly scabrous with retrorse hairs on broadly-oblong leaves. C=10.

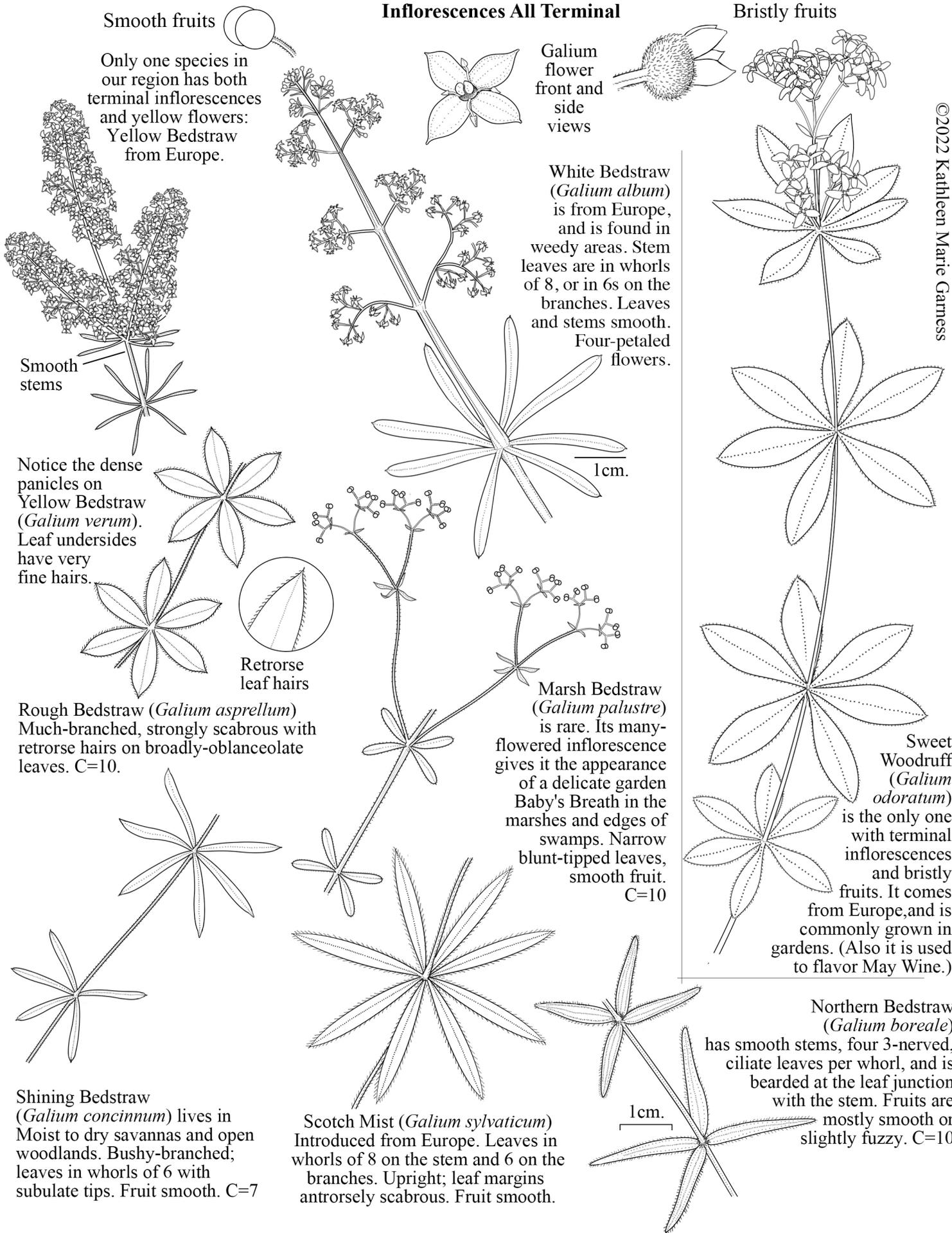
Marsh Bedstraw (*Galium palustre*) is rare. Its many-flowered inflorescence gives it the appearance of a delicate garden Baby's Breath in the marshes and edges of swamps. Narrow blunt-tipped leaves, smooth fruit. C=10

Sweet Woodruff (*Galium odoratum*) is the only one with terminal inflorescences and bristly fruits. It comes from Europe, and is commonly grown in gardens. (Also it is used to flavor May Wine.)

Shining Bedstraw (*Galium concinnum*) lives in Moist to dry savannas and open woodlands. Bushy-branched; leaves in whorls of 6 with subulate tips. Fruit smooth. C=7

Scotch Mist (*Galium sylvaticum*) Introduced from Europe. Leaves in whorls of 8 on the stem and 6 on the branches. Upright; leaf margins antrossely scabrous. Fruit smooth.

Northern Bedstraw (*Galium boreale*) has smooth stems, four 3-nerved, ciliate leaves per whorl, and is bearded at the leaf junction with the stem. Fruits are mostly smooth or slightly fuzzy. C=10



Bedstraws of the Chicago Region

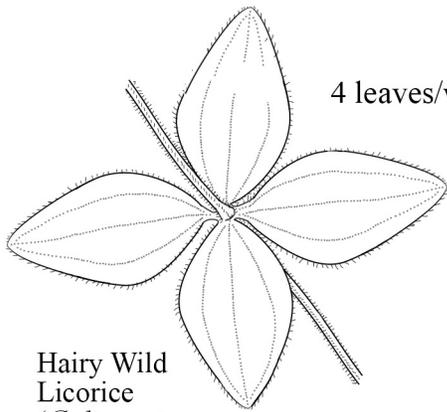
(*Galium*)

4 leaves/whorl:

Inflorescences All Axillary

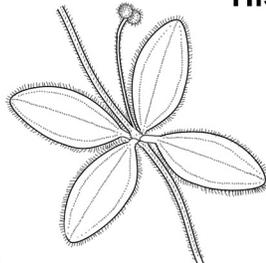
More than 4 leaves/whorl:

Hispid Fruits

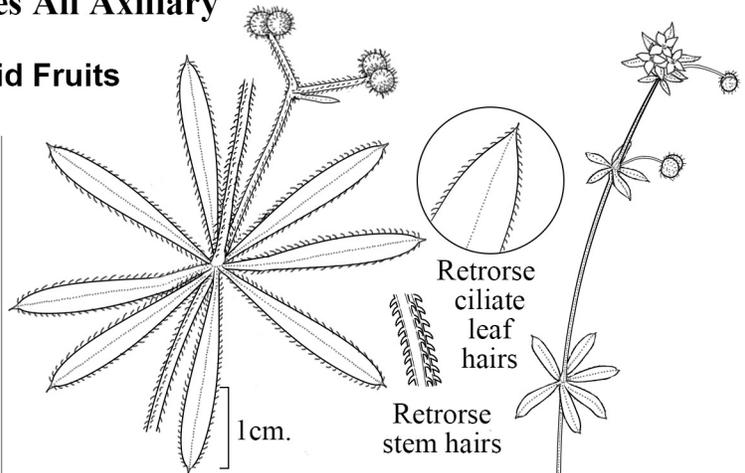


Hairy Wild Licorice
(*Galium circaezans* var. *hypomalacum*) lives up to its name. Found in open oak woods. C=5

(If there are no hairs on the stems it is Smooth Wild Licorice (*Galium circaezans*). Found in beech forests. C=10)

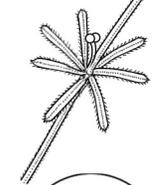


Hairy Bedstraw
(*Galium pilosum*) may be found in sandy Black Oak savannas. C=9



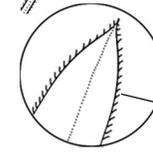
Wild Velcro (*Galium aparine*) has retrorse (backward facing) hairs that cling tightly to fur or anything nearby. C=0

Paris Bedstraw:

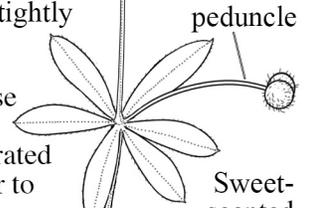


Paris Bedstraw
(*Galium parisiense*) Non-native; only one record in our region. Notice the forward-facing (antorse) hairs on the leaf margins.

The non-native False Cleavers (*Galium spurium* - not illustrated here) is very similar to Wild Velcro except the leaves are seldom more than 2cm. long and it has yellow-green flowers.

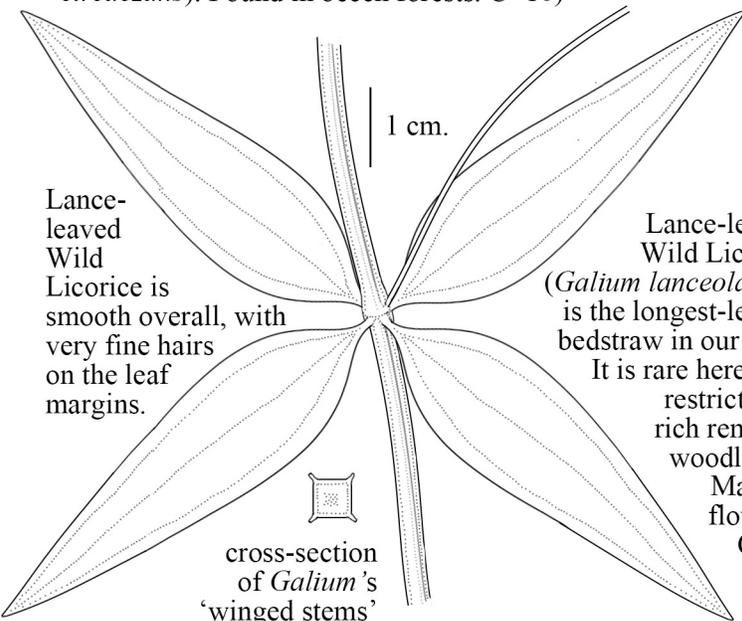


Antorse leaf hairs



Sweet-scented Bedstraw
(*Galium triflorum*) is a common woodland species.

It has smooth stems and smooth or finely scabrous leaf margins. Whorls held parallel to the ground. C=5



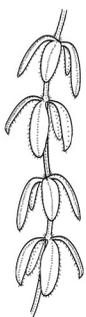
Lance-leaved Wild Licorice is smooth overall, with very fine hairs on the leaf margins.

Lance-leaved Wild Licorice
(*Galium lanceolatum*) is the longest-leaved bedstraw in our area. It is rare here, and restricted to rich remnant woodlands. Maroon flowers. C=10

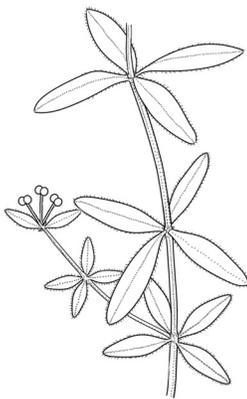
cross-section of *Galium*'s 'winged stems'

Smooth Fruits and Blunt Leaves

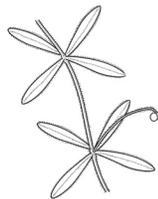
Four leaves/whorl:



Bog Bedstraw
(*Galium labradoricum*) flowers have four petals. The reflexed leaves are characteristic. Midrib under leaf is smooth. C=10

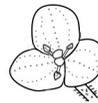


Wild Madder
(*Galium obtusum*) Smooth stems; (rarely has five leaves on main stem). Leaves all in a flat plane held parallel to the ground. Bristly midrib on underside of leaf. C=5

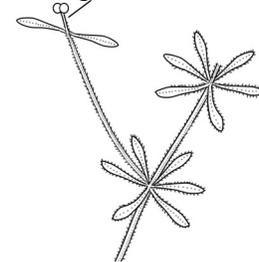


Small Bedstraw
(*Galium trifidum*) has long, rough peduncles with retrorse hairs. Four leaves per whorl. C=9

The flowers of *Galium brevipes*, *G. trifidum*, and *G. tinctorium* have three petals.

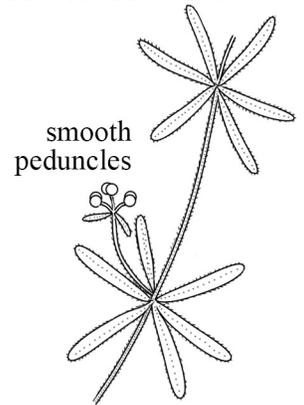


very short peduncles



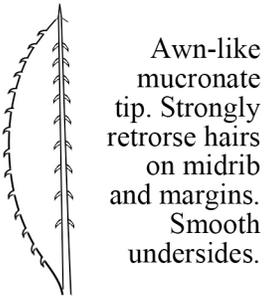
Short-stalked Bedstraw
(*Galium brevipes*) has leaves shorter than Small Bedstraw's. C=5

More than four leaves/whorl:



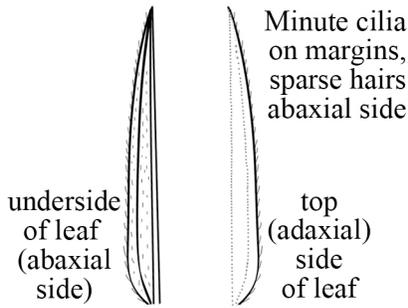
Stiff Bedstraw
(*Galium tinctorium*) has more than 4 leaves per whorl. Scabrous on the angles. C=8

Galiums (+ Cruciata) of the Chicago Region - Leaf Details Study Page (note: leaves not to scale)



Awn-like mucronate tip. Strongly retrorse hairs on midrib and margins. Smooth undersides.

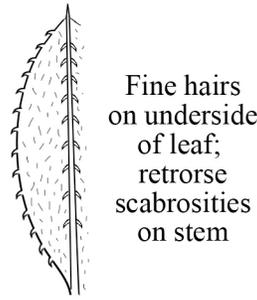
Galium asprellum



underside of leaf (abaxial side)

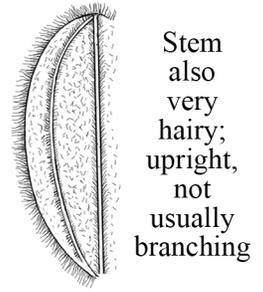
Minute cilia on margins, sparse hairs abaxial side
top (adaxial) side of leaf

Galium boreale



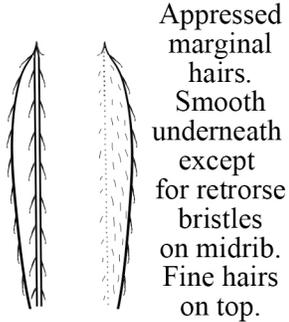
Fine hairs on underside of leaf; retrorse scabrosities on stem

Galium parisiense



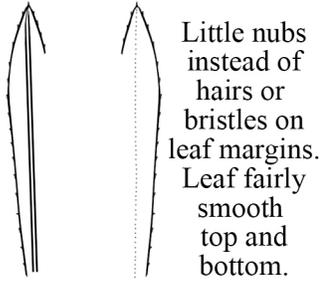
Stem also very hairy; upright, not usually branching

Galium pilosum



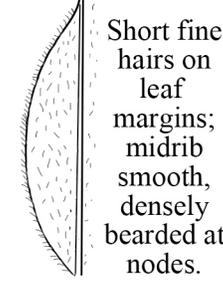
Appressed marginal hairs. Smooth underneath except for retrorse bristles on midrib. Fine hairs on top.

Galium aparine



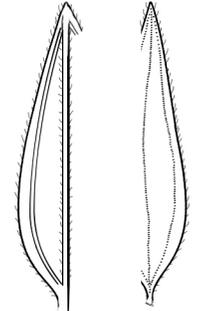
Little nubs instead of hairs or bristles on leaf margins. Leaf fairly smooth top and bottom.

Galium concinnum

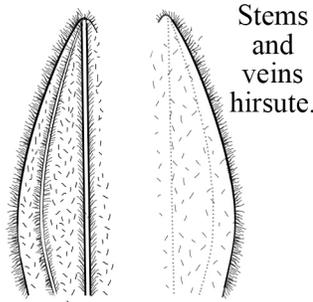


Short fine hairs on leaf margins; midrib smooth, densely bearded at nodes.

Galium labradoricum

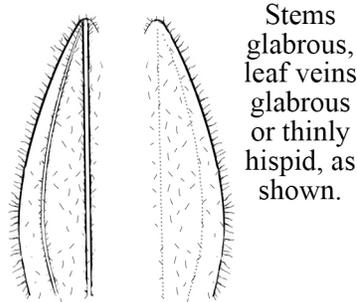


Galium lanceolatum



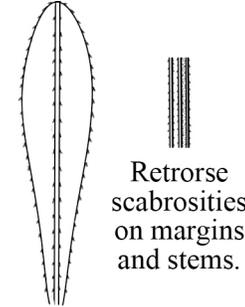
Stems and veins hirsute.

Galium circaezans var. *hypomalacum*



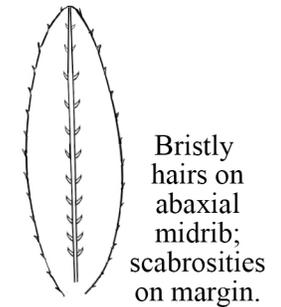
Stems glabrous, leaf veins glabrous or thinly hispid, as shown.

Galium circaezans



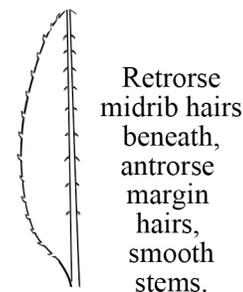
Retrorse scabrosities on margins and stems.

Galium palustre



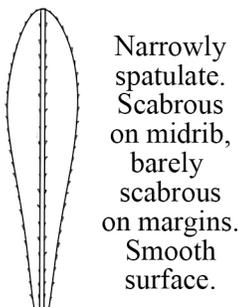
Bristly hairs on abaxial midrib; scabrosities on margin.

Galium odoratum



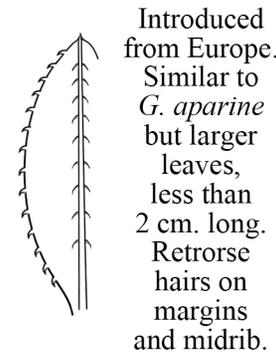
Retrorse midrib hairs beneath, antorse margin hairs, smooth stems.

Galium obtusum



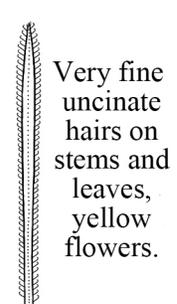
Narrowly spatulate. Scabrous on midrib, barely scabrous on margins. Smooth surface.

Galium trifidum



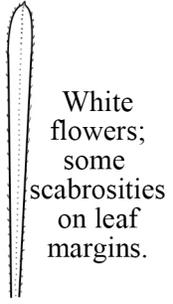
Introduced from Europe. Similar to *G. aparine* but larger leaves, less than 2 cm. long. Retrorse hairs on margins and midrib.

Galium spurium



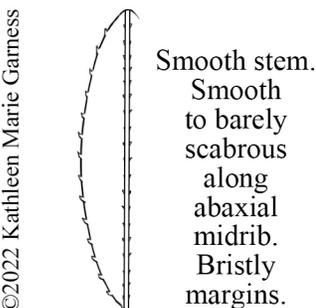
Very fine unciniate hairs on stems and leaves, yellow flowers.

Galium verum



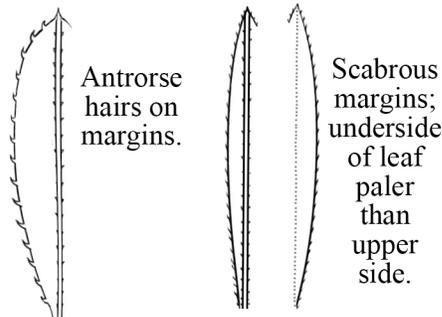
White flowers; some scabrosities on leaf margins.

Galium album



Smooth stem. Smooth to barely scabrous along abaxial midrib. Bristly margins.

Galium tinctorium

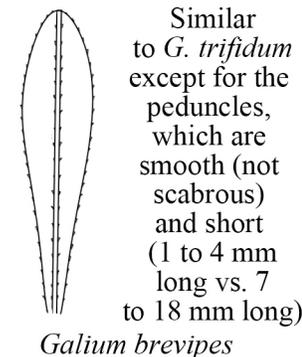


Antorse hairs on margins.

Scabrous margins; underside of leaf paler than upper side.

Galium triflorum

Galium sylvaticum



Similar to *G. trifidum* except for the peduncles, which are smooth (not scabrous) and short (1 to 4 mm long vs. 7 to 18 mm long)

Galium brevipes



Introduced from Europe. Tiny oval leaves with long hairs.

Cruciata pedemontana

Galiums of the Chicago Region: a Summary

Etymology: from the Greek word 'gala,' milk; from its use to curdle milk. The stems are soft and used to stuff mattresses, hence the common name, bedstraw.

The fruits of *Galium* are paired ovaries, one of which is often aborted and becomes an eliasome, attractive to ants, which then take the seed to their nests. The ants eat the eliasome and discard the rest of the attached seed, which may then grow into a new plant. The ants also farm fungi, which often have a beneficial relationship with the plant by bringing nutrients to the seedlings.

Habitats:

Introduced (ruderal):

Galium album
Galium odoratum
Galium parisiense
Galium spurium
Galium sylvaticum
Galium verum
Cruciata pedemontana

Wetlands:

Galium asprellum (C=10)
Galium brevipes (C=5)
Galium labradoricum (C=10)
Galium obtusum (C=5)
Galium palustre (C=10)
Galium tinctorium (C=8)
Galium trifidum (C=9)

Some definitions of botanical words:

abaxial ~ the lower side of the leaf.
adaxial ~ the upper side of the leaf.
antrorse ~ directed forward or distally.
appressed ~ lying flat against a surface.
awn ~ a stiff bristle, at the tip of a leaf or flower segment.
basal ~ at the point of attachment
distal ~ away from the base or point of attachment
hirsute ~ beset with stiff or coarse, usually straight hairs.
hispid ~ bristly hairy.
margin ~ the edge of a planar organ, in this case, the leaf.
midrib ~ the central or principal vein of a leaf, bract, sepal or petal. Midnerve.
mucronate ~ with a short, abrupt tip.
node ~ the point along a stem that gives rise to leaves, branches, or flowers.
panicle ~ a loose branching cluster of flowers.
pedicel ~ the stalk of a single flower in a cluster.
peduncle ~ the second internode below a flower.
pilose ~ with long soft hairs.
retorse ~ directed backward or basally.
scabrous ~ rough; harsh to the touch.
subulate ~ narrowly-pointed; awl-shaped.
uncinate ~ hooked or bent at the tip.

Credits:

Many thanks to Gerould S. Wilhelm, Ph.D., co-author with Laura Rericha, of *Flora of the Chicago Region*, for ongoing and careful review of this genus treatment, and for encouraging the use of relevant glossary terms from their book. Also to Anton Reznicek, Ph.D., University of Michigan, for help with questions on *Galium palustre*. And also to Andrew Hipp, Ph.D., Marlene Hahn, and Lindsey Worcester, Morton Arboretum herbarium, for allowing me Scientific Affiliate access to their collections. This work would not have been possible without microscopic examination of each species rendered.

Savanna:

Galium aparine (C=0)
Galium circaezans var. *hypomalacum* (C=5)
Galium concinnum (C=7)
Galium pilosum (C=9)
Galium triflorum (C=5)

Mesic Forest:

Galium circaezans (C=10)
Galium concinnum (C=7)
Galium lanceolatum (C=10)
Galium triflorum (C=8)

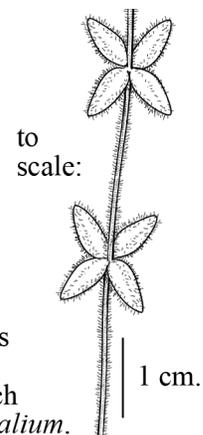
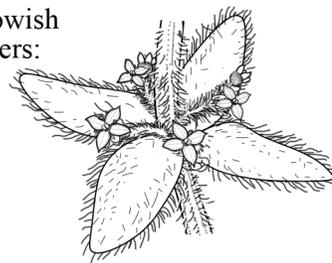
Prairie:

Galium boreale (C=10)

Note: (C-values noted indicate the degree of certainty, on a scale from 0 through 10, that the plant you are seeing is in a natural remnant area. Non-native species receive no C-values. (See Wilhelm's treatment on Floristic Quality Assessment for more info.)

Also included below for this treatment is *Cruciata pedemontana* (Foothill Bedstraw), introduced from Europe, which in earlier botanical treatments has been included in *Galium* but has since been assigned into the other genus because it has four peduncles per node, compared to *Galium*'s single one. It closely resembles *Veronica arvensis* (Corn Speedwell), a frequent weedy associate:

yellowish flowers:



Cruciata pedemontana (Foothill Bedstraw) is from Europe. There is a peduncle coming out of each of the four leaf axils of its stem, which places it in *Cruciata* rather than *Galium*.