

# Plant Diversity Website

## ***Galium asprellum*** Michx.

**Common Names:** Rough bedstraw, kidney-vine, cleavers, clivers (1,7,12).

**Etymology:** *Gala*, the Greek word from which *Galium* is derived, means “milk”. Some species of *Galium* were used to curdle milk, thus giving the genus this name. The specific epithet, *asprellum*, means “slightly rough”, referring to the roughness of the leaves and stems (5,9).

**Botanical synonyms:** None found.

**FAMILY:** Rubiaceae, the Madder and Coffee Family

**Quick Notable Features** (4,6,9):

- Herbaceous plant with small hooked prickles that catch on clothing or fur
- Most leaves in whorls of 6
- Axillary and terminal panicles of small white flowers
- Paired, smooth, round capsules

**Plant Height:** Typically 0.5-2.13 m long (5,9,10).

**Subspecies/variety recognized** (7):

- G. asprellum* var. *dahuricum* (Turcz. ex Ledeb.) Maxim.
- G. asprellum* var. *fructohispidum* Maxim.
- G. asprellum* var. *lasiocarpum* Makino
- G. asprellum* var. *tokyoense* (Makino) Nakai
- G. asprellum* var. *typicum* (Michx.) Maxim.

**Most Likely Confused with:** Other species of *Galium* (especially *Galium aparine* and *G. verrucosum*), *Sherardia arvensis*, and *Mollugo verticillata*.

**Habitat Preference:** Rough bedstraw prefers wet to moist habitats and it is considered an obligate wetland species. The species is found in swamps, wet thickets, calcareous fens, riparian zones, marshes, wet meadows, bogs, and wet disturbed habitats (1,3,6,10).

**Geographic Distribution in Michigan:** *G. asprellum* is widespread in Michigan, reported in every county in the Upper Peninsula, and most counties in the Lower Peninsula (1).

**Known Elevational Distribution:** The species grows between 0 and 300 m above sea level. The highest elevation reported was in Alger Co., MI (7).



**Complete Geographic Distribution:** Native to eastern North America. In the United States, *G. asprellum* is found in every state east of Minnesota and north of North Carolina (except KY), and it was recently reported in Louisiana. In Canada, it is found in NB, NF, NS, ON, PE, and QC (3,13).



**Vegetative Plant Description:** *G. asprellum* is a perennial herbaceous plant growing from creeping rhizomes and producing 4-angled branched stems. The plant stems are erect, prostrate, or leaning on adjacent vegetation, often forming mats. The stems, the margins of leaves, stipules, and the abaxial side of the midribs are covered in retrorse (backward pointing) prickles or bristles. There are 2 opposite leaves and 2-4 leaf-like stipules that form a whorl of 4 to 6 apparent leaves: 6 on the main branches and stem, and sometimes 4 or 5 on branchlets. The leaves and stipules are elliptic to oblanceolate, apically cuspidate, basally attenuate, sessile, entire, 0.5-2.5 cm long, and 0.2-0.5 cm broad (5,6,8,9,17).

**Climbing Mechanism:** *G. asprellum* climbs by leaning on adjacent vegetation with the aid of its recurved bristles (9,14).

**Flower Description:** The small perfect flowers of *G. asprellum* (~ 0.3 cm broad) are borne in axillary and terminal panicles or cymes up to 1.9 cm broad that branch 1-3 times. The inflorescence is longer than the subtending leafy bracts, and the flowers are pedicellate. The calyx is unlobed and fused to corolla and filament bases as a hypanthium. The corolla is 4-parted, white, rotate, each lobe cuspidate and longer than wide. The 4 stamens have short filaments and exerted anthers. The bi-carpellate ovary bears 2 short styles with one capitate stigma each; the carpels bear one ovule each (2,5,6,8,9).

**Flowering Time:** May-September in northeastern U.S. and adjacent Canada (5,6,9).

**Pollinator:** *Galium* spp. are pollinated by small bees and flies, attracted by the nectariferous disk on the hypanthium, a shared trait among many members of the Rubiaceae (15,18).

**Fruit Type and Description:** The fruits of rough bedstraw are paired dry capsules. They are round, indehiscent, smooth (rarely appressed pubescent), black at maturity, and 1-2 mm long and 2-2.5 mm broad. Each capsule bears one seed (1,2,6,8,9).

**Seed Description:** *Galium* seeds are convex dorsally, concave proximally and enclose a curved embryo (8).

**Dispersal Syndrome:** No diaspore dispersal information was found in the literature for the species. *Galium mollugo*, however, also has smooth fruits, which are commonly dispersed by birds,



water, or simply by gravity (16), *G. asprellum* is likely dispersed in a similar way, due the similarly smooth fruit and moist habitats. On the other hand, vegetative parts of *G. asprellum* are covered in recurved prickles that may attach to animal fur, which would carry the fruits along.

**Distinguished by:** *Galium aparine*, *G. odoratum*, *G. triflorum*, *G. circaezans*, *G. lanceolatum*, *G. boreale*, *G. kamtschaticum*, and *G. pilosum* all have bristly ovaries and fruits. The only climbing *Galium* species that grows in Michigan other than *G. asprellum* is *G. aparine*, which can be differentiated by the number of leaves and stipules per whorl (6-8) and their length (up to 8.9 cm long). *G. asprellum* has smooth ovaries and fruits, and there are usually 4-6 leaves/stipules per whorl, each up to 2.5 cm long. *G. verum*, *G. album*, and *G. sylvaticum* have smooth, mostly erect stems and 6-12 leaves/stipules per whorl while *G. asprellum* has stems covered in hooked prickles. *G. verrucosum* has fewer branches than *G. asprellum*, if branching at all, and its fruits are 3-4 mm long (only 1-2 mm long in *G. asprellum*). The remaining *Galium* ssp. in Michigan can be differentiated by the lack of a cuspidate apex on the leaves and stipules. *Sherardia arvensis* is herbaceous with whorled bristly leaves like *Galium*, however, its calyx is clearly lobed, and the corolla is blue or pink and funnellform. *G. asprellum* has an unlobed calyx, and the corolla is white and rotate. *Mollugo verticillata* is a creeping herb with whorled leaves but differs from *G. asprellum* by its spatulate basal leaves, flowers with a 5-parted calyx, no corolla, 3 or 5 stamens, and superior 3-carpellate ovary. *G. asprellum* does not have spatulate basal leaves, the unlobed calyx, 4 stamens, and 2-carpellate ovary are borne on a hypanthium, and the corolla is present and 4-parted (1,8).



**Other members of the family in Michigan (number species):** *Cephalanthus* (1), *Diodia* (1), *Galium* (19), *Houstonia* (4), *Mitchella* (1), *Sherardia* (1), *Stenaria* (1) (source 1).

**Ethnobotanical Uses:** The Choctaw use the whole plant as a diuretic, to treat measles, and to induce perspiration (11). Also known as “kidney-vine”, *G. asprellum* was used for kidney troubles by rural communities (12). During colonial times, the species was used to curdle milk to make English-style cheeses (15).

**Phylogenetic Information:** *Galium asprellum* is included in the Rubioideae subfamily of the Rubiaceae family, which is in the Gentianales order, a part of the Asterid I clade of Angiosperms. The Gentianales order includes 4 other families: Gentianaceae (closest to Rubiaceae), Loganiaceae, Gelsemiaceae, and Apocynaceae. Members of the Rubiaceae are mostly found in tropical climates, although the family is also represented in other climates and it is spread worldwide except for Polar Regions, and the Sahara and Gobi deserts (4).

**Interesting Quotation or Other Interesting Factoid not inserted above:** *G. asprellum* is a special concern species in Tennessee (3). Regarding leaves and stipules of *Galium*: “There is little doubt that in any whorl the two opposite ‘leaves’, one at any rate of which subtends an axillary shoot, are the true leaves, while the other members at the same node are stipules. Thus, in the case of a six-membered whorl there are two leaves, each of which is provided with two stipules. Where only five or four ‘leaves’ occur in a whorl, it is usually understood that in the first case one, and in the second case both, pairs of stipules have undergone a conrescence

[fusion]. If, however, more than six 'leaves' are present in a whorl, it is explained that one or more of the original four stipules have undergone chorisis [division during development], resulting in the production of supernumerary members" (17).

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