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Portulacaceae through Caryophyllaceae of New York State

RICHARD S. MITCHELL
New York State Museum

Contributions to a Flora of New York State XI
Richard S. Mitchell, Editor

1993

BULLETIN NO. 486

NEW YORK STATE MUSEUM

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Albany, New York 12230

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PREFACE

OUR GOAL in producing this series is to present a useful and authoritative account of the plants of New York State. These contributions are intended to reflect the knowledge and taxonomic opinions of specialists who prepare the manuscripts while following a generalized format for consistency. Inclusion of ecological, distributional, medical and economic information on each species is also one of our major aims. Habitat references, flowering times, pertinent synonymy, etc., often apply specifically to New York plants rather than to the entire species. Illustration of all species should facilitate identification of specimens for those who are not formally trained in botany. Descriptions are original, ordered and as complete as possible to provide sequential cross-referencing.

Distribution maps accompany species of seed plants, ferns, mosses, lichens and some groups of fungi. These are plotted by counties to avoid pinpointing endangered habitats, while offering an accurate visual picture of past collecting. Maps are based on the master file at the New York State Museum, Albany, and supplemented by available data (specimens examined by the authors) from herbaria housing significant New York collections. Data or literature citations for any map may be obtained, on approval, from the Museum. We hope that these bulletins will serve individuals with interest in the flora, as well as to provide information for State and Federal agencies, conservation organizations, industry and the scientific community. With these works go our hopes for preservation and wise use of a precious and lifegiving resource--our State's plant life.

The New York State Flora Committee

The steering council of the New York State Flora Committee met for the first time on January 19, 1976, and established as its goals the promotion of study of the State's plant resources and the publication of this series of museum bulletins. These contributions will be continually updated after publication for possible incorporation into larger volumes at a later date.

Members of the council at the time of this publication are:

Richard S. Mitchell, Chairman, State Botanist, N. Y. State Museum, Albany (Vascular Plants)
Charles J. Sheviak, Curator of Botany, N. Y. State Museum, Albany (Vascular Plants)
Norton G. Miller, Chief Scientist, N. Y. State Museum, Albany (Bryophytes)
Clark T. Rogerson, The New York Botanical Garden, Bronx (Fungi)
George J. Schumacher, Biology Dept. SUNY, Binghamton (Algae)
Gordon C. Tucker, N. Y. State Museum, Albany (Vascular Plants)

CONTENTS

	Page
Preface	iii
The New York State Flora Committee	iii
Acknowledgments	v
Important Note	v
Legend	vi
Portulacaceae	1
<i>Portulaca</i>	2
<i>Claytonia</i>	4
Molluginaceae	8
<i>Mollugo</i>	8
Caryophyllaceae	10
<i>Paronychia</i>	12
<i>Herniaria</i>	15
<i>Spergularia</i>	15
<i>Spergula</i>	21
<i>Scleranthus</i>	22
<i>Honckenya</i>	23
<i>Holosteum</i>	25
<i>Sagina</i>	26
<i>Minuartia</i>	30
<i>Cerastium</i>	35
<i>Moehringia</i>	43
<i>Arenaria</i>	45
<i>Myosoton</i>	46
<i>Stellaria</i>	47
<i>Petrorhagia</i>	57
<i>Dianthus</i>	58
<i>Agrostemma</i>	65
<i>Gypsophila</i>	66
<i>Vaccaria</i>	70
<i>Saponaria</i>	71
<i>Lychnis</i>	73
<i>Silene</i>	77
Appendix (Associated Fungi)	92
Bibliography	93
Index	122

ACKNOWLEDGMENTS

The illustrations in this treatment are by Bobbi Angell, whose botanical knowledge and extensive use of fresh plant materials for the illustrations have added immensely to the value of the work. My special thanks go to Richard K. Rabeler who generously shared his bibliographic and botanical knowledge of the Caryophyllaceae, contributing significantly to the quality of this volume. He also added distribution records from specimens observed at the Hoysradt Herbarium, Hartwick College, NY (HHH), and the University of Michigan (MICH). I would like to express my appreciation to the staffs and curators of the following institutions for helpful cooperation and hospitality when I visited their collections: The New York Botanical Garden (NY), Cornell University (CU, BH), Syracuse University (SYRF), Harvard University (GH, NEBC), and The Buffalo Museum of Science (BUF). Thanks to the staff of the Brooklyn Botanic Garden (BKL) for a loan of their Caryophyllaceae from New York State. Data from the above collections were entered into computers for later use in the GIS system and to update the master map-files of plant distribution at the New York State Museum (NYS). The classification system employed here is that of Arthur Cronquist (1981).

IMPORTANT NOTE

All economic uses, folklore, medical and pharmaceutical notes, uses as foodstuffs, etc., are compiled from the literature and do not represent an endorsement by the authors or the New York State Museum. Some of the uses may, indeed, be dangerous if incorrectly employed. Some are not effective and are presented for historical interest only.

**FOR ALL MAPS IN THE PUBLICATION
THE FOLLOWING SYMBOLS APPLY**

Solid dot---specimen seen by author: data on file at the State Herbarium (NYS)

Circle---field or herbarium observation not seen by author, with location data and observer's name or literature citation on file (NYS)

Portulacaceae (Purslane Family)

The Portulacaceae: a family of almost cosmopolitan distribution with about 20 genera and over 450 species. By far, the largest numbers of species belong to four genera: *Talinum* (ca. 50), well represented in western North America, with a few species in the midwestern and southeastern states; *Anacampseros* of Africa, with about 60 species; *Portulaca*, with over 100 species, some of which have horticultural significance; and *Calandrinia*, the largest genus, with 150 species or more. Diversity within the family is greatest in western North America and southern South America. In New York State, two native *Claytonia* species occur, and two portulacas are found as naturalized garden escapes.

FAMILY DESCRIPTION

Annual or perennial herbs or suffrutescent shrubs; stems sometimes succulent. Perennial species proliferate by stolons, rhizomes, bulblets or corms. Leaves are opposite, alternate, crowded at the bases of flowers (or clusters) or in basal rosettes, almost always simple and entire and often somewhat fleshy. Stipules are dry or setiform (absent in *Claytonia*). Flowers are bisexual (rarely unisexual), borne in racemes, cymes, panicles or loose heads, usually regular, the perianth of two series; tepals are free or slightly connate at base, the inner series often called petals, though they are interpreted morphologically as tepals subtended by involucral bracts. The petals (inner tepals) are 2-6 (-20), deciduous or persistent, white or variously colored; sepals (outer tepals or bracteoles) are 2 (-9), green or suffused with color. The stamens are borne opposite the petals, equal in number (or 2-4 times the number, by splitting). The anthers dehisce by longitudinal slits; filaments are free or basally adnate to a short tube, often associated with nectaries or a nectary ring. The gynoecium is free or slightly adnate to the perianth, a compound ovary with 2-3 (-9) carpels and free styles (or a single lobed style). The developing ovary becomes unilocular with free central placentation, ripening into a circumscissile capsule or loculicidal capsule with lateral (or apical) valves, or it is rarely an indehiscent nut. Ovules are 2 to many (rarely 1), bitegmic and variously disposed but often basal; seeds are frequently lenticular, shiny or tubercled, bearing a large embryo peripherally, curved around a copious, starchy perisperm.

KEY TO GENERA

1. Capsule dehiscent by a lid; flowers closely subtended by leaves, whether borne singly or in small clusters; annuals with weak root systems 1. *Portulaca*
1. Capsule dehiscent by vertical valves; flowers borne in slender, naked racemes or cymes (occasionally a single flower on a peduncle); perennials with corms or runners (2)
 2. Cauline leaves almost always borne in a single pair; stems arising from a deep corm, 1-many, ascending or prostrate at ground level, but not laterally branched upward or spreading by stolons 2. *Claytonia*
 2. Cauline leaves commonly more than 2; stems branching upward, proliferating by slender stolons at their bases [*Montia*]¹

¹*Montia chamissoi* (Esch. ex Ledeb. in Spreng.) Dur. & Jacks. is reported from two sites in Pennsylvania, where it occurs on the banks of the Delaware River, only yards from the New York State border. Suitable habitats have not been found in searches on the New York side, but the plants may eventually be discovered there. *Montia chamissoi* is primarily a western species, distributed from Alaska to California, Iowa and Minnesota. Pennsylvania populations are likely relics of eastward postglacial migrations, though their native status has been questioned. Two other species of *Montia* have been reported as introduced in the eastern United States; however, the pattern of distribution of *M. chamissoi* is reminiscent of those of other western taxa, like *Adoxa moschatellina* L. and *Juncus ensifolius* Wikst., disjunct from northern-central states to southeastern upstate New York.

1. PORTULACA

Common Names: Purslane, Portulaca

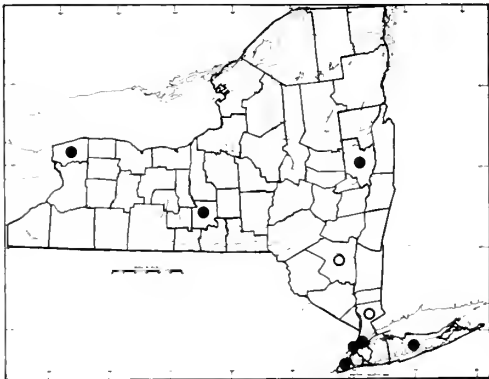
Authority: Linnaeus, Species Pl. I, p. 445, 1753

A genus of 100-130 species worldwide, distributed mostly in the drier regions of the subtropics and tropics as well as in Mediterranean and Austral climates. Several species are cultivated and popular in rock gardens.

Description: Plants with bisexual flowers; stigmas at the style branches, often deeply cleft; ovary 1, often partially inferior, with many campylotropous ovules borne on a basal placenta; fruit a circumscissile capsule; seeds numerous with curved embryos and a starchy perisperm; stamens 5-many; filaments slender; anthers often globose; perianth of 2 whorls; petals (tepals) free or coherent into a short tube, 5-many; sepals (bracteoles) usually 2, free, accrescent, green or suffused with color; pedicels sometimes present; peduncle present or flowers sessile; bracts often present in the inflorescence; inflorescences of various types of clusters or flowers solitary; leaves opposite, alternated or whorled, particularly subtending flowers or flower clusters, often semisucculent, broad to linear and terete; petioles well defined to lacking; stipules scarious, often minute; stems usually glabrous, dry to succulent, creeping to erect; root systems often shallow.

KEY TO SPECIES

1. Leaves mostly linear, quite succulent, broadly oval to terete in cross-section; stamens 20-40 or more; flowers showy, ca. 2-4 cm broad, red, pink, yellow, orange, purple or white 1. *P. grandiflora*
 1. Leaves obovate to spatulate, succulent but flattened; stamens 7-12; flowers ca. 1 cm broad, yellow
 2. *P. oleracea*



1. *Portulaca grandiflora* Hook.

Common Names: Moss-rose, Rose-moss, Common or Garden Purslane, Sun-plant, Eleven-o'clock, Portulaca

Type Description: Hooker, Bot. Mag., vol. 56, pl. 2885, 1829

Origin: A native of South America

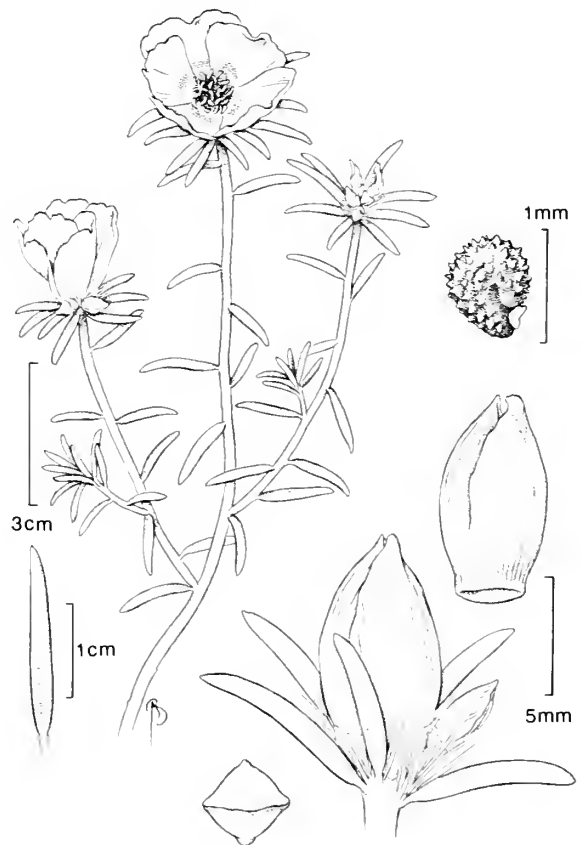
Habitats: A garden escape on dry, gravelly or rocky soils, lake shore sands, cultivated ground and other disturbed areas

Habit: Annual, creeping and ascending herbs

Flowering: (May) June-September

Fruiting: June-November

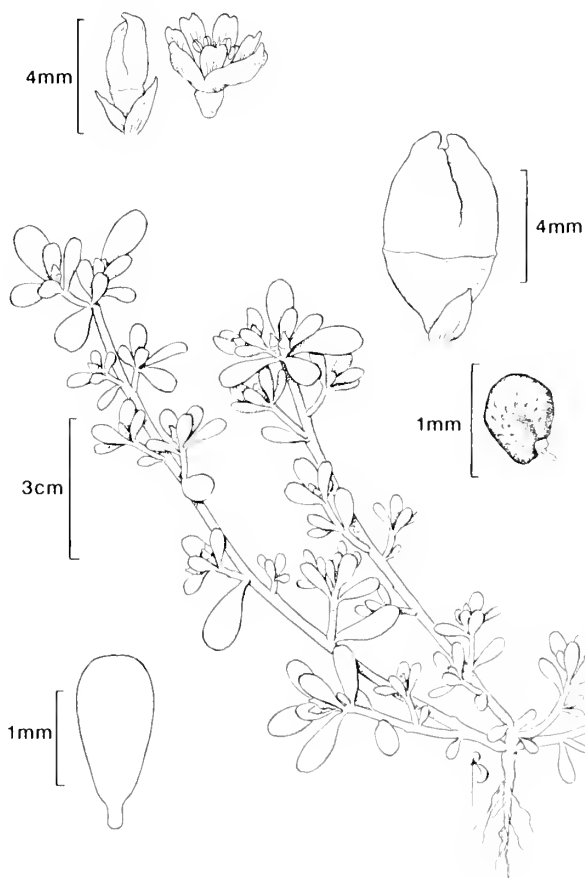
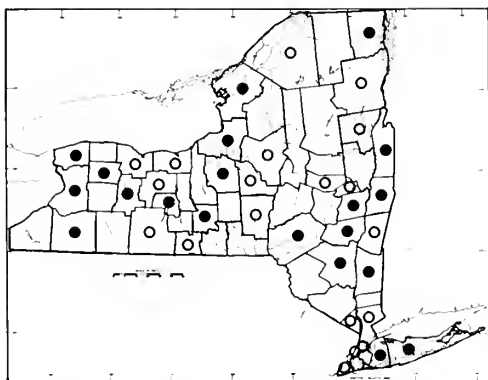
General Distribution: Commonly escaping from cultivation south of our area, but rare from New Jersey northward



Description: Plants with **bisexual** flowers; **stigmas** 5-10, often 8, diverging lobes, spatulate or lacerate, 1.5-2.2 mm long, ca. 0.5 mm broad; **style** 1, tubular, 0.6-2.3 cm long, reddish-brown or the same color as the perianth; **ovary** ovate, ca. 2 mm long, often surrounded by a shallow, perigynous perianth cup; **fruit** a circumscissile capsule with a corky suture at its circumference, spheroid, 4-7 mm long and broad, the common style base persistent as a nipple at the apex, capsule surface glossy, greenish-tan to burnished or golden-brown; **seeds** many, ca. 0.7 mm long, 0.5 mm broad, comma shaped, the surfaces prominently tuberculate, dark brown with an opalescent sheen; **stamens** numerous, 5-7 (9) mm long; **anthers** minute, golden or colored like the flower; **filaments** thread-like, arched, adnate to the petal bases dark rose to pale; **perianth** of two whorls (sometimes interpreted as tepals and bracteoles); **petals** 4-6 (multiple in most cultivars), red, rose-purple, white or yellow, often striped, 1.3-3.5 (4) cm long, 0.4-2.8 cm broad at tips, obovate to obspatulate or truncate-emarginate, the tips lobed, wavy or lacerate, bases cuneate, free or fused into a short cup, subtended by a dense tuft of woolly to villous hairs; **sepals** 4-12, similar to the leaves but less succulent and flatter with distinct lower midribs, greenish with hyaline margins, linear with blunt tips, 4-13 mm long, 0.7-1.2 mm broad, subtended by tufted, villous hairs; **flowers** sessile, borne singly, usually on upwardly arching lateral branches; **leaves** alternate, succulent, linear-lanceolate, broadly oval to subterete in cross-section, with blunt to acute tips, 5-25 (32) mm long, 1-4 (6) mm broad, rich green with paler bases, the surfaces translucent-muricate; **petioles** ca. 1 mm long with minute, hyaline wings; **stems** semisucculent to coarsely fibrous near the base, creeping or suberect, with upwardly arching lateral branches to 25 (31) cm tall; **root system** a shallow, annual taproot with coarsely fibrous lateral roots (2n = 10, 18; artificial polyploids are known in cultivation).

Intraspecific Variation: The moss-rose is extremely variable in flower size and color, sometimes even bearing striped or multicolored flowers. Dwarf mutants are known, and these variants may also have very broad leaves.

Importance: The moss-rose is widely cultivated in sunny, tropical and temperate climates; it thrives in areas with Mediterranean dry summers and moist winters. Used as a rock garden or beachfront plant, it can provide a variety of brilliant colors to otherwise sandy or rocky, barren spots in full sun.



2. *Portulaca oleracea* L.

Common Names: Garden or Kitchen Purslane

Type Description: Linnaeus, Species Pl. I, p. 445, 1753

Origin: Eurasian, its native range unknown

Habitats: A common weed in gardens, less commonly naturalized in fields, land fills and other disturbed areas, and occasionally found in calcareous, open habitats with native flora

Habit: Annual, sprawling, prostrate to weakly ascending, succulent herbs forming mats

Flowering: July-October

Fruiting: Aug.-November

General Distribution: Naturalized and weedy across the United States, southern Canada and elsewhere around the world, including Eurasia, where it is also native

Description: Plants with **bisexual** flowers, ephemeral, usually opening only on sunny mornings; **stigmas** as many as the style branches; **style** 1, deeply (3) 4-6 cleft; **ovary** fusiform, unilocular, minute; **fruit** a smooth, circumscissile capsule, 5-7 mm long, 3-4 mm broad, ovoid, acute at the tip, the valve prominent, dehiscent along the circumference just below the middle of the capsule, the base remaining, cup-like, with a prominent tuft of funiculae at its center after seed-scatter; **seeds** 8-12 or more, ca. 0.7 mm long, 0.5 broad, dark brown, shiny with muriculate to bluntly-tubercled surfaces and a small, pale caruncle; **stamens** 7-12; **anthers** golden, minute; **filaments** linear; **perianth** of two whorls, appearing epigynous from capsule suture in fruit; **petals** 4-5, yellowish, their limbs ovate, sometimes lobed or fimbriate at tips, 2-5 mm long and broad (or up to 1 cm in some cultivars); **sepals** 2, ca. 3 cm long and broad, greenish, persistent, enclosing the capsule lid in fruit and forming a keel-like projection beyond its tip; **peduncles** very short, virtually absent; **inflorescences** small clusters of subsessile flowers or flowers solitary; **bracts** subtending the flowers and clusters variable in size and shape ranging from leaf-like cordate-cuspidate bracts ca. 1 mm in diameter to minute, linear structures, with tufts of a few thick hairs in their axils; **leaves** semisucculent, alternate, subopposite or whorled at the branch tips below the flower clusters, spatulate to truncate or emarginate-tipped, cuneate toward the base, ranging from minute and bract-like up to 2-3 cm long, 1.5 cm broad, sometimes with tufts of hairs in their axils, (leaves) sessile or **petioles** poorly defined, up to 6 mm long; **stipules** lanceolate, 1-2 mm long; **stems** somewhat succulent, often much-branched, with many short, lateral shoots, prostrate to weakly ascending at the tips, the **nodes** sometimes enlarged, red, **internodes** short near the branch tips, up to 8 cm long near the plant base, greenish to red, stems spreading and mat-forming, up to 50 cm long; **root system** fibrous, shallow, adventitious at the lower nodes with damage. ($2n = 28, 54$)

Infraspecific Variation: The cultivar, sometimes called ssp. *sativa* (Haw.) Celak., is robust, more succulent than its wild-growing counterpart, and the branches are ascending to erect, sometimes reaching 50 cm in height. Such plants known as garden escapes in Greene County, New York. Another cultivar (var. *gigantes* Bailey) has double flowers up to 2.5 cm in diameter. Flower colors other than yellow are known in cultivation, but, so far, these have not been reported as escapes within our range.

Importance: The 'Gigantes' cultivar of this species, with flowers up to an inch broad, is grown as an ornamental, while the more erect, succulent *P. oleracea* cv. *Sativa*, is well known as a cultivated salad and pot herb, variously called kitchen purslane (purslane), garden purslane or pusley. It is eaten raw, boiled or fried in grease, or pickled and stored for winter use. The weedy form of the plant is occasionally eaten as a salad herb, but rarely cultivated for that purpose. Purslane is known to be mildly diuretic, and the plants have been reported to concentrate dangerous levels of oxalate crystals. They are cited as a cause of oxalic acid poisoning when eaten in large quantities by sheep and other livestock. In folk medicine and kitchen lore, the plants are reputed to cure excessive thirst, dry throat and loose teeth. Purslane has been used in Europe and Asia in external medicinal applications, such as poultices for reduction of fever, soothing inflamed eyes, and as a packing for wounds. It contains significant amounts of Vitamin C, and there are reports of its use on 16th century sailing vessels to treat and prevent scurvy. *Portulaca oleracea* is also a carrier of the tomato spotted-wilt virus.

2. CLAYTONIA

Common Name: Spring Beauty

Authority: Linnaeus, Species Pl. 1, p. 204, 1753

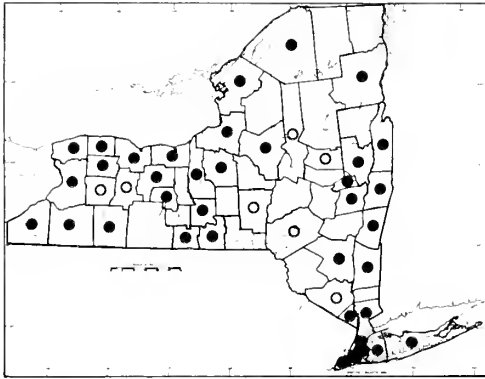
A genus of 15-20 species with its center of greatest diversity in western North America, but with species distributed from eastern North America to South America, Asia, Australia and New Zealand. Our two closely-related species are spring ephemerals of little horticultural value, but they are sometimes transplanted from the wild into gardens as a curiosity.

Description: Plants with **bisexual** flowers; **stigmas** 3, on the lobes of the style; **style** 1, 3-lobed at apex; **ovary** 1, superior, becoming unilocular, with 6 **ovules** borne on a central placenta; **fruit** a capsule, dehiscent by the inrolling of the margins of its 3 valves; **seeds** 1-6; **embryo** peripheral to a starchy **perisperm** (true endosperm lacking); **stamens** 5; **filaments** adhering to the petal claws; **anthers** elongate; **perianth** of two whorls; **petals** 5, free, clawed at base, oval to elliptic, spreading; **sepals** 2, accrescent; **pedicels** slender, bracteose, often lax

or recurved in fruit; **peduncles** slender to somewhat fleshy; **bracts** scarious or herbaceous; **leaves** usually one to several at the plant base, cauline leaves commonly borne as a single, opposite pair, linear to oval, rhombic or oblanceolate; **petioles** indistinct to well-developed; **stipules** absent; **stems** slender, 1-many, arising from a corm buried an inch or more beneath the soil surface; **root system** delicate to fibrous and wiry.

KEY TO SPECIES

- 1. Cauline leaves linear to narrowly oblanceolate, more than seven times longer than broad; petioles absent or poorly defined; capsule ovate, usually bearing 3 or more seeds; the lowermost inflorescence bract often greenish, herbaceous, succulent when fresh 1. *C. virginica*
- 1. Cauline leaves ovate to rhombic or broadly oblanceolate, fewer than seven times longer than broad, their petioles \pm distinct; capsule cylindric-ovate, usually bearing a single seed; lowest inflorescence bract scarious 2. *C. caroliniana*



1. *Claytonia virginica* L.

Common Names: Spring Beauty, Mayflower, Grassflower, Rose Elf, Good-morning-spring, Wild Potato, Fairy-spuds

Type Description: Linnaeus, Species Pl. I, p. 204. 1753

Synonyms: *Claytonia media* (DC.) Link, not Small, *C. multicaulis* var. *robusta* Somes, *C. robusta* Rydb., *C. simsii* Sweet, *C. virginica* var. *acutiflora* DC., *C. virginica* var. *simsii* (Sweet) R. Davis

Origin: Native to eastern North America

Habitats: Moist woodlands thickets and stream banks often in litter, relatively sun-tolerant, persisting in fields after clearing

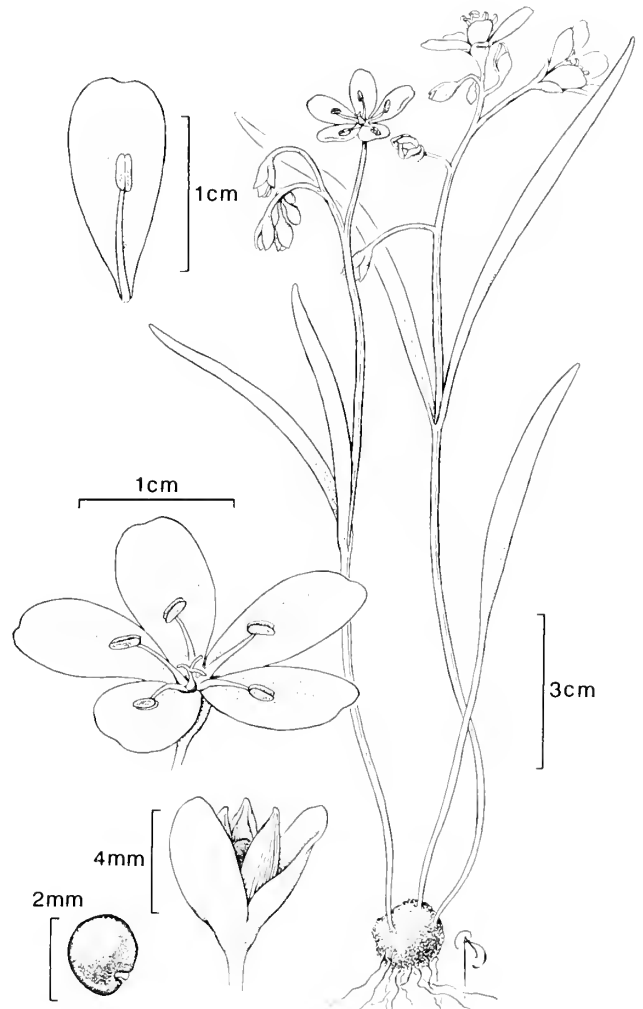
Habit: Perennial, ephemeral herbs with slender, decumbent to erect, semi-succulent stems arising from a corm

Flowering: (March further south) April-May

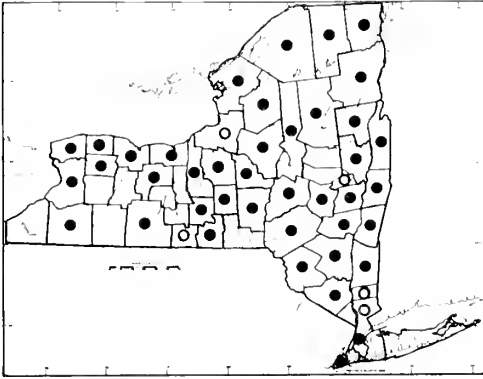
Fruiting: May-June (early July)

General Distribution: Southwestern Quebec and New England west to Minnesota and south to eastern Texas and Georgia

Description: Plants with **bisexual flowers**; **stigmas** 3, receptive at the tips and along the adaxial surfaces of short style branches; **style** 1, very slender, 4-7 (9) mm long, with 3 recurved, stigma-bearing branches 0.8-1.4 mm long at the tip; **ovary** ovoid, ca. 1.5 mm long and broad; **fruit** a tan capsule, ovoid to broadly cylindric with



an obtuse to acuminate tip, 3.5-5.5 mm long, 3.4-4.6 mm broad, enclosed in the persistent calyx, dehiscing by 3 vertical sutures and valves; **seeds** 3 (4-6), ovoid, ca. 2.5 mm long, 2 mm broad, slightly ribbed, the surface shiny, deep red-brown; **stamens** 5, opposite the petals; **anthers** 1.8-2.3 mm long, ca. 0.7 mm wide, golden to deep pink; **filaments** linear, pale, 2-4 mm long, adnate to petal claws at base; **perianth** of two series; **petals** (tepals) 5, slightly clawed at base, the linear-oblong to broadly ovate or obovate limbs spreading above the calyx, (3) 5-15 (23) mm long, 2-9 (11) mm broad, white or pink tinged to deep rose, the margins entire or erose at petal tips; **sepals** 2, accrescent, 3-15 (25) mm long, 3-19 mm broad, oval, cucullate, tips rounded to broadly acute (often appearing acute on pressing), glabrous, greenish, somewhat fleshy; **pedicels** glabrous, very slender, (0.2) 1-2 (3.2) cm long, elongating during flowering, drooping or reflexing in fruit; **peduncle** erect or ascending, glabrous, 2-35 (40) mm long, bearing a single raceme, or **inflorescence** branched into 2-4 raceme axes, up to 10 cm long with (2) 3-12 (20) flowers per plant; **bracts** present at the bases of some of the lower pedicels, the lowermost lance-ovate, 2-5 (10) mm long, 0.5-3.5 mm broad, often remaining green and herbaceous into the fruiting period; **cauline leaves** borne in a single, opposite pair (rarely terminal to a short, lateral shoot) strap-like, linear to lanceolate or oblanceolate, generally 7 times longer than broad or more, (2) 5-12 (16) cm long, (0.1) 0.2-1.3 (2.5) cm broad, glabrous with a rimmed, entire margin (rarely a small dentation), tips acute to quite blunt; **basal leaves** 0-2 (4), similar to cauline leaves when present; **petioles** obscure, poorly differentiated, grading imperceptibly into the leaf blade; **stems** (1) 2-25 (40), unbranched, slender and pale beneath the soil, erect-ascending from a corm to ground level where they may become decumbent, ascending or remain erect, greenish and somewhat succulent above-ground, 2-18 cm long, measured from the corm to the base of the peduncle at the node of the cauline leaves; **corm** 1-4 (10) cm long and broad, spheroid to oval or pear-shaped, dark and scaly, richly white-starchy within; **roots** tough and knotted, branching profusely from the surface of the corm (chromosome numbers range from $2n = 12$ to over 190; aneuploid series are well documented within populations, and somatic numbers may vary between different tissues of the same plant). **Infraspecific Variation:** A number of local and regional races are known, some of which correlate with cytological differences. The sizes of plants and their parts are quite variable, the following examples being noteworthy; a large form with leaves up to 2.5 cm broad and 15+ cm long has been called forma *robusta* (Somes) Palmer. In some plants of this type from Central New York State, the inflorescence attaches below the cauline leaf-pair, which is terminal to a short-shoot up to a centimeter long. Delicate plants with grass-like, linear leaves are also frequent from New York to the Midwest. Plants with reduced perianths and petals that are sometimes shorter than the stamens, have been called forma *micropetala* Fern. Flower color varies within and between populations, ranging from greenish-white to pure white, the petals often reddish tinged or veined, with extreme variants ranging into deep, rose-purple (rarely orange-yellow) hues. **Importance:** These plants are sometimes grown from seed or brought from the wild into gardens and yards to provide ephemeral spring wildflower beds or borders. The corms were eaten by Native Americans and European settlers in eastern North America, used as a starchy food supplement. They are still eaten by wild plant enthusiasts, and are said to have a flavor similar to chestnuts or potatoes when boiled in salt water or added to stews. They are difficult to dig, however, and large populations are necessary to provide any significant nutrition. This species has proved to be of special scientific interest cytologically, due to chromosome number instability, including age-induced abnormalities (Lewis, 1970).



2. *Claytonia caroliniana* Michx.

Common Names: Spring Beauty, Carolina or White Spring Beauty, Carolina Mayflower, Wild Potato, Fairy-spuds, Tangle-gut

Type Description: Michaux, Fl. Bor. Am. vol. 1, p. 160, 1803

Synonyms: *C. latifolia* Sheldon, not Suksdorf

Origin: Native to eastern North America

Habitats: Woodland slopes clearings, mixed conifer hardwood forests, thickets and bottomlands, often in rich soils and partial shade

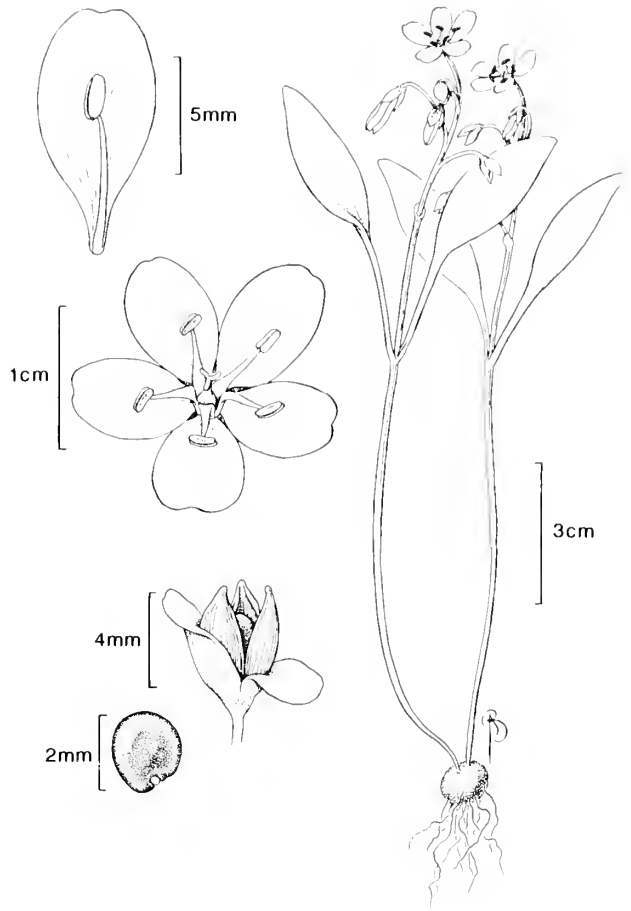
Habit: Perennial, ephemeral herbs with slender, decumbent to erect, semi-succulent stems arising from a corm

Flowering: Mid April-May (March further south)

Fruiting: May-June (early July)

General Distribution: Newfoundland to Saskatchewan south to Illinois, and, in the east, down the Appalachians to North Carolina and Tennessee

Description: Plants with **bisexual flowers**; **stigmas** 3, receptive at the tips and along the adaxial surfaces of short style branches; **style** 1, very slender, 1.2-3.6 mm long, with 3 recurving, stigma-bearing branches 0.7-1.2 mm long at the tip; **ovary** ovoid, ca. 1.5 mm long; **fruit** a tan, ovoid-cylindric capsule with an acute to acuminate tip, 4.0-4.5 mm long, ca. 2.5 mm broad, enclosed in a persistent calyx, dehiscent by 3 vertical sutures, and narrow inrolling valves; **seeds** (in ours) 1-2, ovoid-lenticular, 1.8-2.2 mm long and broad, the surface very lustrous, deep reddish-brown to ebony; **stamens** 5, opposite the petals; **anthers** 1.3-1.9 mm long, ca. 0.4 mm wide, pink to golden; **filaments** linear, pale, mm long, adnate to petal claws at base; **perianth** of two series; **petals** (tepals) 5, slightly clawed at base, the linear-oblong to broadly ovate or obovate limbs spreading above the calyx, (3) 5-12 mm long, 2-7 (9) mm broad, white or pink tinged, the margins entire or erose at petal tips; **sepals** 2, accrescent, 3-7 (11) mm long, 2-6 mm broad, oval, the tips obtuse to acute, glabrous, greenish, somewhat fleshy; **pedicels** glabrous, very slender, (0.2) 1-2.3 cm long, elongating during flowering, drooping or reflexing in fruit; **peduncle** erect or ascending, glabrous, 3-35 mm long, bearing a single raceme, or **inflorescence** branched into 2-4 raceme axes, up to 8 cm long with (1) 3-13 (28) flowers per plant; **bracts** present at the bases of some pedicels, the upper ones linear, minute, scarious, the lowermost lance-ovate, 1-6 mm long, 0.5-3.5 mm broad, often scarious or hyaline, sometimes totally withered by the time of fruiting; **cauline leaves** borne in a single, opposite pair, ovate to ovate-lanceolate, rhombic, broadly oblanceolate or spatulate, generally 3-5 times longer than broad, the blade 1.2-6.2 cm long (0.3) 0.5-2.5 cm broad, glabrous with a rimmed, entire margin (rarely one or more very shallow dentations), pale green, often glossy, the tip usually obtuse; **basal leaves** 0-5 (9), similar to cauline leaves but often shorter with longer petioles; **petioles** usually well differentiated, (0.1) 0.5-2.5 (3) cm long on cauline leaves, up to 7 cm on basal leaves; **stems** (1) 2-20 (30), unbranched, slender and pale beneath the soil, erect-ascending from a corm to ground level where



they may become decumbent, ascending or remain erect, greenish and somewhat succulent above-ground, 3-14 cm long (measured from the corm to the base of the peduncle at the node of the cauline leaves); **corm** 1.0-2.8 (3.5) cm long and broad, spheroid to oval or pear-shaped, dark and scaly, richly white-starchy within; **roots** tough, twisted and knotted, branching profusely from the corm surface ($2n = 16, 24$).

Infraspecific Variation: Plants native to northeastern North America usually bear a single seed per capsule, whereas those of other geographic regions are said in the literature to have three or more. Cauline leaves are usually petioled, but occasionally the petiole is obscure. Although sepals of this species are reported to be acute in the manuals, this is rarely the case, although the margins may be obscurely attenuate before terminating in an obtuse to blunt tip; the acute appearance is likely to be an artifact of pressing and drying specimens.

Importance: These plants may be grown from seed, and the corms are propagated easily, so they are sometimes planted in gardens for a brief show of spring color. The corms are also edible, known as a food source since pre-Columbian times. They may be boiled or added to other dishes as a supplementary starch source; they are said to have a taste similar to chestnut or potato, but their small size (mostly under 1 inch in diameter) and brief blooming period make them of minor interest as an economic food source.

Molluginaceae (Carpetweed Family)

The Molluginaceae: a family of 13 genera and 70-100 species, centered in Africa, but found in both the New World and the Asiatic tropics and subtropics. Members of the family have formerly been treated under both Aizoaceae and Caryophyllaceae.

FAMILY DESCRIPTION

Annuals or perennials with herbaceous (to woody) stems, sometimes semisucculent. The leaves are whorled (in ours), opposite, basal or alternate, simple, entire; stipules may be present or absent. The flowers are usually perfect, hypogynous, often inconspicuous, borne in panicles or cymes, terminally or in verticils at the nodes. The ovary is of 2-5 (or more) fused carpels, often incompletely multilocular toward the base, bearing numerous ovules. Stamens are 3-10, free, sometimes with a nectary ring. Sepals (4) 5, often persistent in fruit; petaloid staminodes 0-20. Petals are lacking. The fruit is a valvate capsule (loculicidal in ours) or indehiscent. The curved embryo is borne within starchy perisperm.

1. MOLLUGO

Common Names: Carpetweed, Indian Chickweed

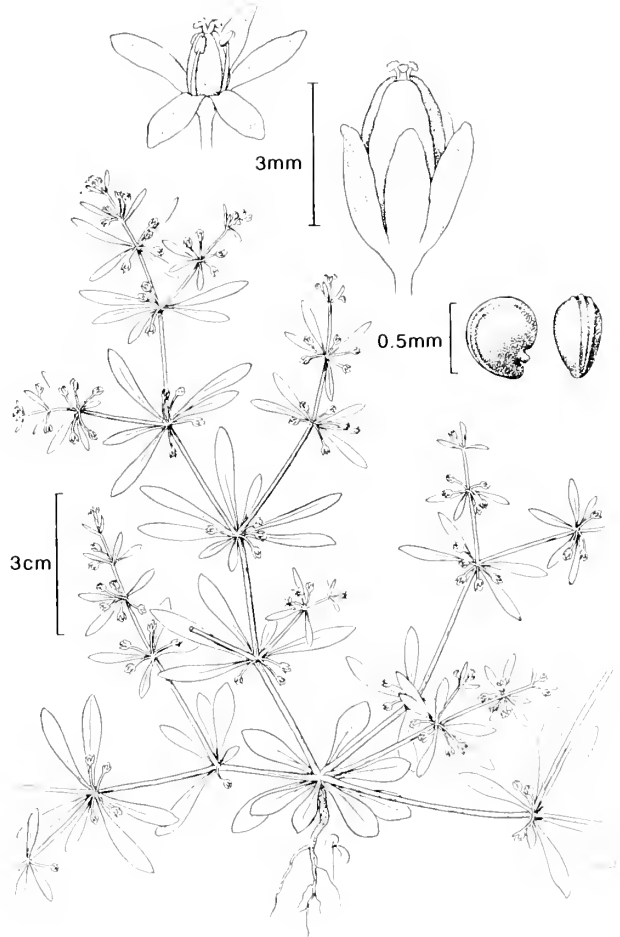
Authority: Linnaeus, Species Pl. I, p. 89, 1753

A genus of 12-15 species of the tropics and subtropics. Our common carpetweed, *Mollugo verticillata* L. has spread widely from its original natural range further south in the Americas, and another species, *M. cerviana* (L.) Sér. is a waif and rare introduction in the southern part of New York State. This species is widespread in western states, where some have suggested that it is native.

Description: Plants with **bisexual** flowers; **stigmas** 3-5; **styles** 3-5; **ovary** 1, superior, 3-5 loculed; **ovules** numerous; **fruit** a 3-5 valved, thin-walled, loculicidal capsule; **seeds** many, lacking an aril or strophiole, comma-shaped, often ribbed, with a curved **embryo** surrounded by starchy perisperm; **stamens** 3-10; **filaments** slender; **anthers** small, ovoid; **perianth** of one or two whorls; **petals** and **staminodes** absent; **sepals** 5, free, greenish to white, persistent in fruit; **pedicels** slender; **inflorescences** cymose, or flowers verticillate at the nodes; **bracts** leaf-like or absent; **leaves** whorled at the nodes; **petioles** obscure; **stipules** absent; **stems** slender, forking, creeping to erect-spreading; **root system** a taproot.

KEY TO SPECIES

1. Plants with spatulate to narrowly oblanceolate cauline leaves; flowers in verticils at the nodes and in small clusters at the leafy branch tips, lacking axillary peduncles 1. *M. verticillata*
1. Plants with linear cauline leaves, often with a conspicuous basal rosette of broader leaves; flowers borne in terminal and peduncled, axillary racemes (also in verticils at the nodes) [*M. cerviana*, a wail]



1. *Mollugo verticillata* L.

Common Names: Carpetweed, Indian Chickweed, Devil's-grip

Type Description: Linnaeus, Species Pl., p. 89, 1753

Synonym: *M. berteriana* Sér.

Origin: Native to tropical America

Habitats: A sun-loving weed of sandy roadways, fields, beaches, riverbanks and gardens

Habit: Prostrate, mat-forming annuals with branch tips sometimes ascending

Flowering: June-November

Fruiting: June-December

General Distribution: Weedy throughout temperate North America from Quebec to British Columbia and southward to Central and South America, where it is partially native as well

Description: Plants with bisexual flowers; stigmas 3, pale papillate; styles 3, pale, closely associated but free, flexed outward at tips; ovary 1, superior, ovoid, 3-carpelled, ca. 0.5 mm long; fruit a loculicidal capsule, ovoid, 2.3-3.4 cm long, ca. 2 mm broad, glossy greenish to tan at maturity, somewhat transparent, appearing stretched by the dark, ribbed seeds when dry, the dorsal sutures evident as grooves before dehiscence; seeds many, comma-shaped, lustrous golden brown with prominent, dark brown ridges mostly on the dorsal surface, aril lacking; stamens 3 (4), hypogynous; anthers golden, ovate; filaments slender, pale, ca. 3 mm long, running directly up the grooves of the 3 sutures of the capsule as it develops; perianth of a single whorl; petals and petaloid staminodes absent; sepals 5, free to base, ovoid, cucullate, (1) 1.3-2.5 mm long, upper surface glossy, whitish, the lower surface greenish, often with 3 prominent, green veins and paler margins, glabrous, tips obtuse to broadly acute; peduncles slender, (1) 3-9 (16) mm long, glabrous, whorled at the nodes; inflorescence diffuse, consisting of terminal racemes, usually of 3-10 flowers, and axillary clusters of 2-5 (8) flowers borne with the leaf whorls at the nodes; bracts usually found in the terminal inflorescences only, greenish, linear, 0.3-1.6 mm long; leaves obovate to spatulate, oblanceolate (to nearly linear in some individuals), whorled, commonly 3-5 per node, 0.4-3.5 (4) cm long, up to 1 cm broad; glabrous, entire, obtuse to acute (apiculate)

at tips, tapering to a poorly differentiated **petiole**; **stems** very slender, glabrous, sometimes grooved, much-forked, decumbent to procumbent, up to 40 cm long; **root system** a slender, long, annual taproot ($2n = 64$). **Intraspecific Variation:** Leaf shape is quite variable, approaching the linear-leaved condition of *M. cerviana* in some plants. These have been called *M. verticillata* var. *linearis* Fenzl. **Importance:** In sandy areas this can be a common weed of vegetable gardens and horticultural plantings. Carpetweed has been used as a pot herb, but its small size and stringy texture make it generally undesirable.

Caryophyllaceae (Pink Family)

The Caryophyllaceae: a family of some 80 genera and over 2,000 species worldwide, with about 60 species native or naturalized in New York State. The group has been subject to many interpretations historically, being variously subdivided into Illecebraceae, Alsinaceae, Corrigiolaceae, etc. Palynological evidence has also been offered in support of segregating the Paronychioideae as a separate family. Current morphological and chemical evidence, however, stands in favor of the recognition of a single, large family of anthocyanin-producing plants with free-central placentation and distinctive plastid ultrastructure. This concept may be revised with the advent of further studies *Paronychia* and related genera. Members of Caryophyllaceae are segregated from the Molluginaceae, thought to be more closely allied with the Aizoaceae. The center of diversity for the Caryophyllaceae is in the Mediterranean Region, but caryophylls have adapted to a broad variety of habitats around the world, often in sunny habitats, ranging from arctic-alpine to desert and Austral-montane regions. Many species are weedy adventives within and outside their native lands, and a few are noxious crop-followers. Some caryophylls are cooked as pot-greens, especially in Eurasia, while others have been used in folk medicine. Several genera are widely cultivated for their floral beauty or usefulness as accents in flower arrangements. Some of the more popular of these in horticulture are: *Dianthus* (*Caryophyllus*), the carnations, sweet-williams and bachelor's buttons, *Gypsophila*, baby's-breath, *Cerastium*, snow-in-summer, and showy-flowered *Lychnis* species such as the Maltese-cross.

FAMILY DESCRIPTION

Annual, winter-annual, biennial or perennial herbs (sometimes woody; rarely shrubby) with unilacunar, often swollen, nodes. The simple, decussate, opposite or fascicled leaves (rarely alternate) are often narrow and entire, lacking petioles; leaf bases are connate, usually clasping the node and connected by a nodal line; stipules are absent in most genera, but these may be present as unfused appendages or even form a tubular sheath. Flowers are borne in a variety of mostly dichasial inflorescence configurations (occasionally singly), including panicles, spikes and cymes. The perianth is of two distinct series (or petals may be lacking/caducous), with parts in 4s, 5s or their multiples. The calyx may be chorisepalous or gamosepalous forming a tube that is accrescent and encloses the ripening fruit (inflated in some genera). In some genera there is an epicalyx of whorled bracts subtending the flower. The corolla is actinomorphic and choripetalous, although it may simulate a salverform condition when petal limbs diverge abruptly from claws tightly invested by the mouth of the calyx tube. Petals are clawed in some genera; the claw sometimes bears lateral auricles and/or petaloid to tubular appendages (coronal scales) at the apex of the claw, where it joins with the petal limb. Petal limbs may be entire, crose, dentate, emarginate, shallowly cleft, or deeply bifid, making the petal number appear double in some species. Stamens are (1-4) 5 or (8) 10, in one or two series (or lacking in female flowers of dioecious species), the filaments free or adnate to either petals, an androgynophore or a nectary disk. The dorsifixed anthers open by longitudinal slits. Flowers are usually bisexual, but certain species are characteristically dioecious. The gynoecium is of a single, superior ovary (perigynous in *Scleranthus*) of (1) 2-5 carpels, sometimes partially or wholly septate, but usually with free-central placentation. The ovary may be borne on a \pm conspicuous androgynophore or sessile. Ovules are borne variously (even singly), usually numerous, campylotropous with perisperm or nuclear endosperm. The styles are often free, numbering as many as the carpels or fewer, or there may be a basal fusion. The fruit is usually a capsule that dehisces by as many valves (or twice as many valves or teeth) as the styles; it is rarely a circumscissile capsule or a utricle. The fruit may be borne on a carpophore or not. Seeds are usually small, often ornamented and borne in large numbers.

The dicotyledonous embryo is weakly to strongly curved (almost straight in *Dianthus*), sometimes forming a ring around the starchy perisperm.

Note: The generic key requires both flowers and mature fruit, but most Caryophylls set fruit quickly and continue to bear both flowers and capsules through a significant part of the growing season.

KEY TO GENERA

1. Stipules present, conspicuous to minute, but distinct from the sheathing leaf bases (or petioles) (2)
1. Stipules absent (4)
 2. Fruit a dehiscent capsule with several to many seeds; styles 3-5 (3)
 2. Fruit indehiscent, 1-seeded; styles 2 1. *Paronychia*
3. Styles 3; stipules united into a shallow, tubular sheath at the node 2. *Spergularia*
3. Styles 5; stipules free 3. *Spergula*
 4. Fruit indehiscent, 1-seeded; calyx lobes borne on the rim of a small, leathery perigynous cup that fuses with the ovary and persists in fruit like an exocarp 4. *Scleranthus*
 4. Fruit a dehiscent capsule with several to many seeds; calyx hypogenous, not becoming fused with the fruit wall (5)
5. Stamens and petals attached to a conspicuous, lobed disk in the mouth of the flower; plants with broad, leathery, succulent leaves (sea beach habitats) 5. *Honckenya*
5. Stamens and petals not attached to a conspicuous disk; plants without, broad, leathery, strongly succulent leaves (6)
 6. Sepals fused, at least near their bases, into a distinct tube or cup; petal tips expanded into limbs from narrower basal claws; capsule often borne on a stipe (carpophore) (17)
 6. Sepals free or minutely fused at base, but not forming a cup or tube; petals not noticeably clawed or constricted below; capsule never borne on a carpophore (7)
7. Flowers (fruits) borne in a terminal umbel on a long, naked peduncle 6. *Holosteum*
7. Flowers (fruits) borne in cymes, panicles, corymbs, spikes or singly, but not in a long-peduncled umbel (8)
 8. Petals absent (14)
 8. Petals present (9)
9. Petals deeply 2-lobed or cleft 3/8-7/8 their length (15)
9. Petal tips rounded, emarginate or very shallowly cleft (10)
 10. Capsule valves shallowly to very deeply cleft into teeth; teeth more numerous than styles, often twice as many (12)
 10. Capsule valves uncleft upon dehiscence, thus, the lobes as many as the styles (11)
11. Styles 5 (rarely 4); petals inconspicuous, barely longer than the sepals 7. *Sagina*
11. Styles 3 (rarely 4); petals well-developed, significantly surpassing the sepals 8. *Minuartia*
 12. Capsule dehiscent by 10 short teeth surrounding a terminal pore 9. *Cerastium*
 12. Capsule dehiscent by 6 valves or teeth (13)
13. Sepals obtuse to acute, shorter than the petals; seeds often with a pale, spongy strophiole; perennial plants from delicate rhizomes 10. *Moehringia*
13. Sepals acuminate, longer than the petals; seeds totally lacking spongy strophioles; annuals with slender taproots 11. *Arenaria*
 14. Capsule valves 5, blunt or round-tipped, not even shallowly cleft; (leaves needle-like) 7. *Sagina*
 14. Capsule valves 5 and shallowly bifid, or deeply cleft into 6-10 teeth; (leaves various) (15)
15. Dehiscent capsule with 5 valves, each shallowly bifid into 2 narrow teeth; styles 5 12. *Myosoton*
15. Dehiscent capsule with 6-10 subequal or irregular teeth (sutures between them may not always split); styles 3-5 (16)
 16. Capsule dehiscent by an apical or subapical aperture, ringed with 10 (rarely 8) teeth, the fruit apex often asymmetrical; styles usually 5 9. *Cerastium*
 16. Capsule dehiscent to about the middle or nearly to the base by 6 valve-like teeth (rarely 8-10), the fruit apex not contorted; styles usually 3 (rarely 4-5) 13. *Stellaria*

- 17. Calyx without basal bracts (an epicalyx); seeds plump (19)
- 17. Calyx with an epicalyx of 1-3 pairs of bracts immediately subtending the tube; seeds laterally compressed (18)
 - 18. Calyx tube with 5 (to 15) veins (1-3 per lobe); commissures (veinless, scarious areas) present between the calyx veins; bracts scarious 14. *Petrorhagia*
 - 18. Calyx tube with 30 or more veins (5 or more per lobe), lacking commissures; bracts herbaceous 15. *Dianthus*
- 19. Calyx lobes 2-3 cm long, lanceolate, conspicuously longer than the well-developed petals 16. *Agrostemma*
- 19. Calyx lobes less than 1 cm long, not greatly exceeding the petals (20)
 - 20. Styles 2 or 2-branched (rarely a flower with 3) (21)
 - 20. Styles regularly 3 or 5 (rarely 4) (23)
- 21. Flowers 4-9 (-12) mm long, borne in diffuse panicles; calyx tube 2-8 mm long, campanulate or turbinate. 17. *Gypsophila*
- 21. Flowers more than 12 mm long, borne in dense to open cymes; calyx tube, 12-25 mm long, cylindric to inflated (22)
 - 22. Fruiting calyx strongly inflated with 5 prominent, ribbed angles; petals lacking appendages at the corolla throat; an annual plant from a taproot 18. *Vaccaria*
 - 22. Fruiting calyx cylindric to somewhat ovoid, not strongly inflated or angled; petals fringed with appendages at the corolla throat; a rhizomatous perennial 19. *Saponaria*
- 23. Capsule dehiscent by 5 acute or bifid valves; styles equaling the capsule valves in number (5, rarely 4). 20. *Lychnis*
- 23. Capsule dehiscent by 6 (8 or 10) teeth; styles half the number of capsule teeth (3, 4 or 5) . . . 21. *Silene*

1. PARONYCHIA

Common Names: Whitlow-wort, Silverwort

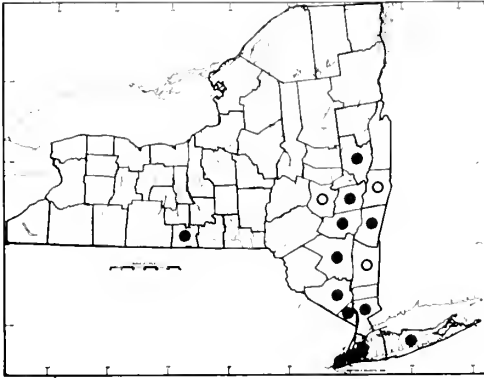
Authority: Hill, in Scott, Suppl. Chambers Cyclop. 2, 1753 (not Miller, Gard. Dict., Abr. ed., p. 4, 1754)

A genus of up to 100 or more species of mostly slender herbs, distributed widely in the warm, sandy regions of the world.

Description: Plants with **bisexual** flowers; **stigmas** 2, sessile, or bifid on a single **style**; **ovary** 1, superior or slightly adherent to the calyx tube, bearing a single fertile **ovule**; **fruit** a utricle (achene) with a tough pericarp; **seed** 1, **embryo** curved; **perisperm** present; **stamens** 2-5; **perianth** a single whorl, or the inner whorl much reduced; **petals** absent or represented by setae or minute scales; **sepals** 5, often cucullate and awned, united near the bases, investing all or most of the mature fruit; **pedicels** numerous, borne in the leaf axils; **bracts** scarious, often silvery, conspicuous and concealing the flowers; **inflorescences** dense heads to loose cymes, usually axillary; **leaves** elliptic to linear, opposite (rarely appearing alternate on the same stem); **petioles** absent; **stipules** present, usually conspicuous and scarious; **stems** capillary to wiry, often much-branched, erect or ascending (in ours); **root system** an annual taproot (in ours) or fibrous and perennial.

KEY TO SPECIES

- 1. Stems pubescent; the upper branches often densely congested or tufted; most sepals strongly 3-ribbed, bearing a distinct mucro (awn) subterminally 1. *P. fastigiata*
- 1. Stems glabrous; upper branches not conspicuously congested or tufted; sepals weakly ribbed, mucros lacking or vestigial and inconspicuous 2. *P. canadensis*



1. *Paronychia fastigiata* (Raf.) Fern.

Common Names: Forked Chickweed

Type Description: Rafinesque, Atl. Jour. 16, 1832

Synonyms: *Anychia divaricata* Raf., *A. polygonoides* Raf.

Origin: A native of eastern North America

Habitats: Dry, rocky, often shale habitats, sunny hilltops and fields, open oak woodlands, ditches, creek beds quarries and roadsides

Habit: Erect annual herbs, densely branching

Flowering: July-September

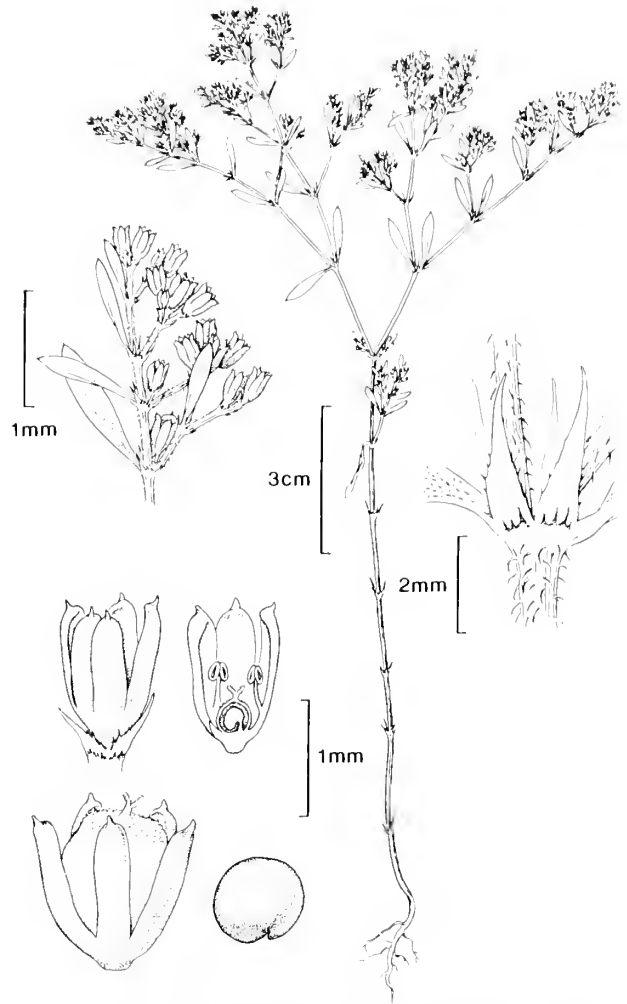
Fruiting: July-November

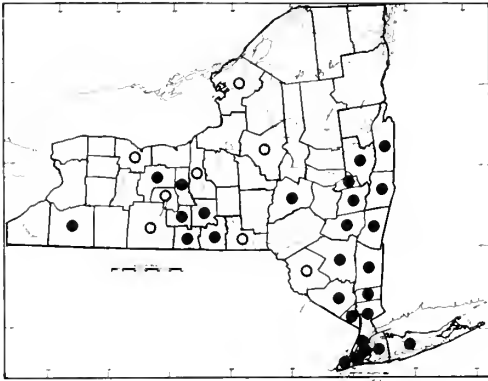
General Distribution: Massachusetts to Minnesota & Illinois south to Mexico, Texas and Georgia

Description: Plants with **bisexual flowers**; **stigmas** 2, minute capping the style branches; **style** bifid for about half its length, persistent in fruit, ca. 0.2 mm long; **ovary** ovoid, less than 1 mm long; **fruit** an

obovoid, thin-walled utricle, 0.8-1.4 mm long and broad, brownish, the surface minutely papillose, shattering to reveal the single seed; **seed** 0.7-1.0 mm long and broad, plump, glossy brown; **stamens** 5, ca. 0.4 mm long; **anthers** globose, golden; **filaments** slender, free; **perianth** consisting of a calyx whorl and a fringe of bristles; **petals** absent, represented by a minute staminodial fringe, usually of 5 bristles; **sepals** 5 or 6, fused only at the base of the ovary, greenish to brown, persistent in fruit, partially or wholly enclosing the fruit, usually prominently 3-ribbed, 0.9-1.6 mm long, ca. 0.5 mm broad, cucullate, the adaxial surface sometimes puberulent, almost always with a distinct subterminal awn or hyaline mucro; **pedicels** absent or present, up to 0.3 mm long; **peduncles** up to 2 mm long, bracteate, sometimes with short, curved hairs; **inflorescence** diffuse, a sparsely tufted to massive fastigiata aggregate of flower clusters borne almost entirely in the crowded upper branch and leaf axils; **bracts** of the inflorescence hyaline, lanceolate with caudate tips, 0.3-1.8 mm long, subtending and sometimes exceeding the sepals in length; **leaves** opposite, narrowly elliptic to lance-obovate, much reduced and crowded on upper branches, well-developed on the main stem axis, up to 2.3 cm long, 0.6 mm broad, but usually much smaller, margins entire or with a few minute teeth and mucros at or near the acute to obtuse tips, bases tapering to a poorly defined **petiole**; **stipules** present, borne opposite the leaves, hyaline 2-3 (4) mm long, ca. 1 mm broad; **stems** much-branched above the main axis, erect-ascending with (a few) up to hundreds of spreading, branched and tufted axes, 3-35 cm tall, the crown of the herb sometimes very dense, shallowly convex or flat-topped; **root system** a slender to thick, tough, annual taproot ($2n = 32, 36$).

Infraspecific Variation: A number of intergrading varieties have been named, but their recognition is not recommended here. Some populations ranging from Pennsylvania southward in the Appalachians have a somewhat prostrate growth habit and short cauline leaves [var. *pumila* (Wood) Fern.]. Other taxa have been based on bract length and length of the mucro of the sepal, both of which show a great deal of variation between and within populations.





2. *Paronychia canadensis* (L.) Wood

Common Names: Forked Chickweed, Whitlow-wort, Nailwort

Type Description: Linnaeus, Species Pl. I, p. 90, 1753

Synonyms: *Achyranthes dichotoma* L., *Anychia canadensis* (L.) BSP., *A. dichotoma* Michx., not (L.), *P. dichotoma* (Michx.) A. Nels., *Queria canadensis* L.

Origin: A native of eastern North America

Habitats: Oak woodlands, clearings and rocky slopes, cliffs, shores, and other disturbed, gravelly places

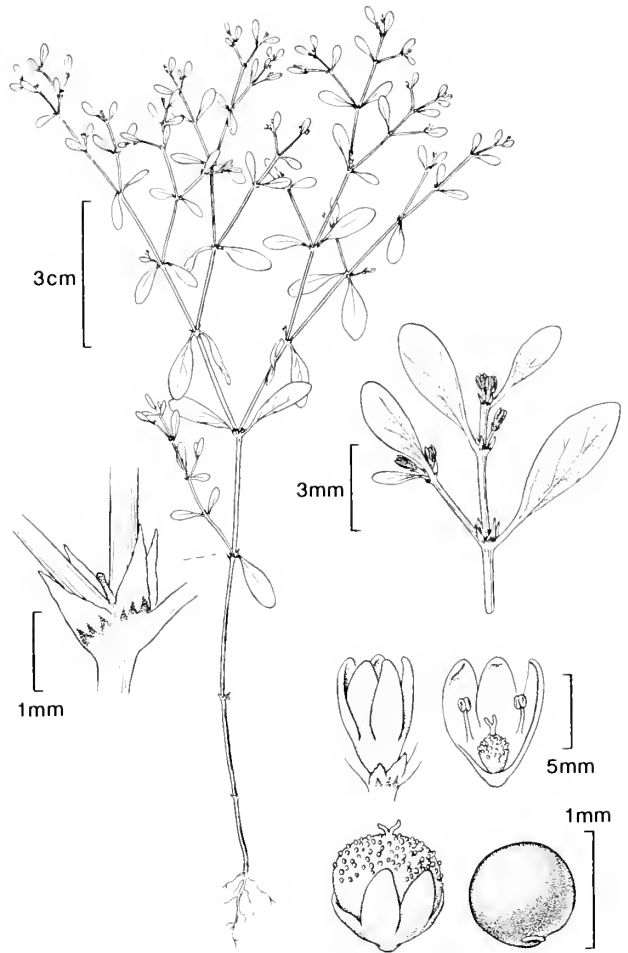
Habit: Erect, much-branched annuals

Flowering: (June) July-October

Fruiting: July-November

General Distribution: New Hampshire to Minnesota and Kansas, south to Arkansas

Description: Plants with **bisexual** flowers; **stigmas** 2, minute capping the style branches; **style** bifid for ca. 2/3 its length, or occasionally 2 separate styles, persistent in fruit, ca. 0.2 mm long; **ovary** ovoid, less than 1 mm long; **fruit** a spheroid, thin-walled utricle, 0.8-1.1 mm long and broad, glistening red-brown, the surface minutely papillose, glandular, shattering to reveal a single seed; **seed** 0.7-0.9 mm long and broad, plump, glossy brown; **stamens** 2-5, ca. 0.4 mm long; **anthers** globose, golden; **filaments** free; **perianth** 1-2 whorls with true petals lacking; **petals** absent or represented by a minute staminodial fringe of 3-5 flattened bristles; **sepals** 5 (6), fused into a shallow cup at base, greenish to brown or hyaline-margined, persistent in fruit, partially enclosing, but usually not exceeding the fruit, flat to prominently cucullate (never strongly 3-veined), 0.5-0.9 mm long, ca. 0.3 mm broad, the adaxial surface glabrous, glandular-punctate, sometimes with a subterminal bulge, but lacking a distinct mucro; **pedicels** present or absent, up to 2 mm long; **peduncles** 3-8 (12) mm long, usually glabrous; **inflorescence** diffuse, the small flower clusters borne mostly in the upper branch and leaf axils; **bracts** of the inflorescence hyaline, lanceolate with acute to caudate tips, 0.3-0.6 mm long, subtending the sepals; **leaves** opposite (occasionally alternate or one leaf of the pair reduced), glandular, particularly beneath, lance-elliptic to obovate, much reduced in size on upper branches, well-developed on the main stem axis, up to 1.8 cm long, 0.8 mm broad, but usually less than 1 cm long, margins entire, tips acute to obtuse, sometimes with a mucro, bases tapering to a poorly defined **petioles** 1-2 (4) mm long; **stipules** present, often opposite the leaves (or several stipule-like organs borne at a node) hyaline 1-2 mm long, ca. 0.4 mm broad; **stems** slender, much-branched above, forking and spreading toward the tips, with up to hundreds of branching axes, the crown of the herb shallowly convex or flat-topped, the main axis erect-ascending, 2-30 (40) cm tall, tough, with minute, vertical, corky striations; **root system** a straight to gnarled, woody, annual taproot.



Note: Ephemeral occurrences of two species of the closely related genus, *Herniaria*, have been recorded in the vicinity of New York City: *H. cinerea* DC. was collected once near a Yonkers wool mill, and *H. glabra* L. was found once in the Bronx. *Herniaria*, a genus of up to 50 species native to the Mediterranean Region, is doubtfully taxonomically distinct from *Paronychia*. The minute flowers may be consistently 4-merous or both 4- and 5-merous on the same plant, depending upon the species. Plants of both species reported from New York State have bunchy, procumbent growth habits.

2. SPERGULARIA

Common Names: Sand-spurrey, Spurry

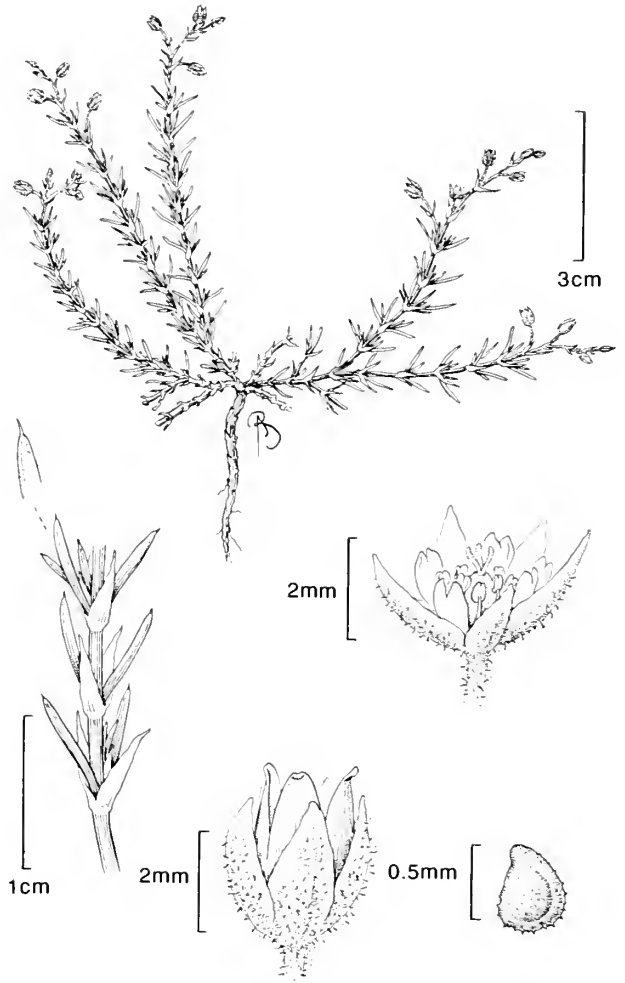
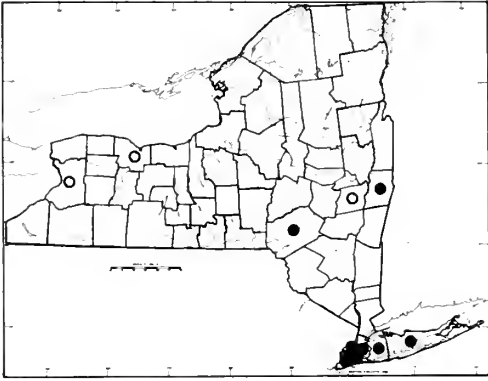
Authority: J. & C. Presl, Fl. Cech. 94, 1819

A genus of about 50 species, distributed around the world in maritime and inland, saline areas, mostly in Mediterranean, boreal and temperate climates.

Description: Plants with **bisexual** flowers; **stigmas** and **styles** 3 (rarely 4-5); **ovary** 1, superior; **ovules** numerous on a free central placenta; **fruit** a capsule with 3 (-5) valves; **seeds** many, sculptured or papillate, winged or unwinged; **embryo** curved, but not forming a complete ring; **stamens** (1) 2-10; **filaments** free; **anthers** globose; **perianth** of 2 distinct whorls; **petals** 5, entire; **sepals** 5, divided to near the base, persistent in fruit, partially to wholly enclosing the capsule; **pedicels** and **peduncles** slender and wiry to short and succulent; **inflorescence** loosely cymose, the flowers borne in the upper leaf and stem axils; **bracts** often leaf-like; **leaves** linear, opposite or fasciated on short-shoots, sometimes succulent; **petioles** obscure or absent; **stipules** present, scarious, united at their bases into a shallow sheath; **stems** wiry to semi-succulent, often much-branched, erect or widely spreading from a central annual stem axis or short, perennial caudex; **roots** ranging from annual taproots to woody, perennial stocks.

KEY TO SPECIES

1. Most leaves with strongly mucronate or aristate tips; very short shoots with tufted leaves borne at many nodes; stipules lanceolate (to narrowly triangular); seeds 0.4-0.6 mm long, never winged, the surfaces tuberculate, not merely minutely papillate 1. *S. rubra*
1. Most leaves short-mucronate or blunt-tipped, not strongly tufted at the nodes; stipules triangular to deltoid or broadly obtuse; seeds winged or unwinged, (0.6) 0.7-1.4 mm broad, the surfaces not tuberculate (sometimes with stalked or minute papillae) (2)
 2. Stamens 8-10 (rarely 6); capsules mostly 6-8 mm long at maturity; (plants occurring mostly inland near salt mines and on salted roadsides in New York) 2. *S. media*
 2. Stamens 2-5; capsules mostly 3-5 mm long; (plants found mostly in coastal salt marshes in New York, rarely inland along salted, gravelly roadways) (3)
3. Sheaths of the middle and upper nodes miter-like, the basal cup bearing pair of triangular, stipular lobes that are acute to acuminate (the tips sometimes lacerate, toothed or bifid); seeds mostly 0.6-0.8 mm long 3. *S. salina*
3. Sheaths of the middle and upper nodes cup-like, shallowly tubular, the stipular lobes short, broadly deltoid to rounded with obtuse to truncate tips (sometimes lacerate or apiculate); seeds mostly 1.0-1.2 mm long 4. *S. canadensis*



1. *Spergularia rubra* (L.) J. & C. Presl

Common Names: Common or Purple Sand-spurry, Sandwort

Type Description: Linnaeus, Species Pl. I, p. 423, 1753

Synonyms: *Alsine rubra* (L.) Crantz, *Arenaria rubra* L., *Buda rubra* (L.) Dumort., *Lepigonum rubrum* (L.) Fries., *S. campestris* (L.) Aschers., *Tissa rubra* (L.) Britt.

Origin: A native of Europe

Habitats: Dry, sandy fields, sunny waste places and cultivated ground as an introduced weed

Habit: Wiry, spreading or decumbent annuals or short-lived perennial herbs

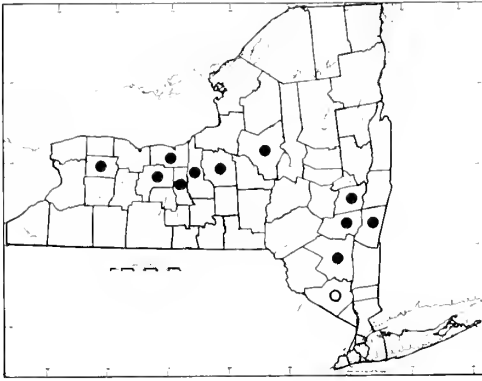
Flowering: May-September

Fruiting: May-November

General Distribution: Newfoundland to British Columbia, south to New Jersey, with reports as far south as Virginia and Alabama (weedy in South America and in its native Europe)

Description: Plants with bisexual flowers; stigmas 3; styles 3, free, minute, linear, not persisting in fruit; ovary 1, superior ovoid to pyriform, ca. 1 mm long; fruit a 3-valved, smooth, tan capsule, ovoid, 3.1-4.8 mm long, 2.9-4.1 mm broad, about equaling the persistent calyx; seeds many, dark brown, unwinged, 0.4-0.6 mm long, comma-shaped with a dorsal ridge, the surfaces prominently tuberculate with knob-tipped protrusions; stamens 6-10; anthers golden, globose, minute; filaments pale, broader at base, ca. 1 mm long; perianth of two distinct whorls of 5; petals 2.2-3.4 mm long, ca. 1 mm broad, cucullate, pale to bright pink, persistent in fruit; sepals ovate to lanceolate, cucullate, 2.6-4.7 mm long, 1.2-3.0 mm broad, green with hyaline margins, densely glandular on the abaxial surfaces, persistent and partially enclosing the fruit; pedicels filiform, densely glandular, 2-10 (13) mm long; inflorescence diffuse, a leafy cyme with most flowers borne singly at the upper nodes; bracts linear, green, mucronate, glandular mostly 1-4 mm long; leaves 3-17 (30) mm long, linear and needle-like, not succulent, glabrous or with a few glandular hairs, paired at the nodes and commonly fascicled on axillary short-shoots giving the plants a somewhat tufted appearance; petioles not evident; stipules lustrous, whitish to silvery, scarious, linear to broadly lanceolate, sometimes lacerate or with two or more aristate tips, varying considerably in size up to 5 mm long and 2 mm broad at base; stems wiry, puberulent below, increasingly covered with glandular hairs upward, often much-branched, erect, ascending or decumbent, 5-20 (40) cm long, from a short caudex when perennial; root system a strong, sometimes woody, annual taproot or short-lived, perennial root with wiry lateral branches ($2n = 18, 36, 54$).

Intraspecific Variation: The plants vary mostly in stature, branching density and robustness, all of which seem to be strongly influenced by longevity of the individual.



2. *Spergularia media* (L.) C. Presl ex Griseb.

Common Names: Sand-spurry

Type Description: Linnaeus, Species Pl. ed. 2, p. 606, 1762

Synonyms: *Alsine marginata* (DC. ex Lam. & DC.) Reichenb., *A. media* (L.) Druce, *Arenaria marginata* DC. ex Lam. & DC., *A. maritima* Steud., *A. media* L., *Buda media* (L.) Dumort., *Lepigonum medium* (L.) Fries., *S. alata* Wieg., *S. marginata* (DC. ex Lam. & DC.) Kittel

Origin: Native to coastal Europe

Habitats: Saline, inland sites, fields and waste places, formerly only around salt mines, but now spreading along some roadsides where highways are heavily salted in winter

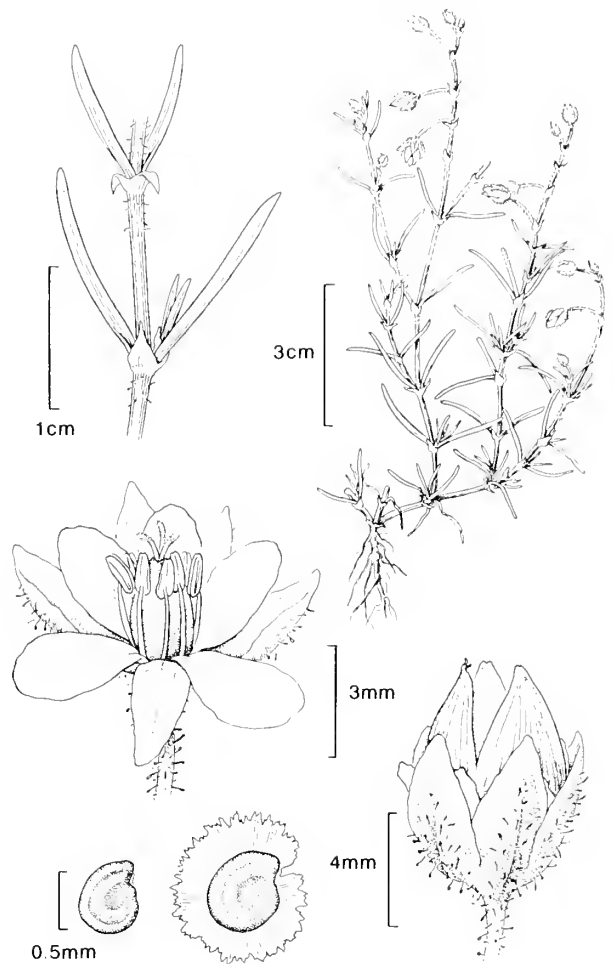
Habit: Coarse, erect, spreading (rarely decumbent) biennial or perennial herbs

Flowering: June-September

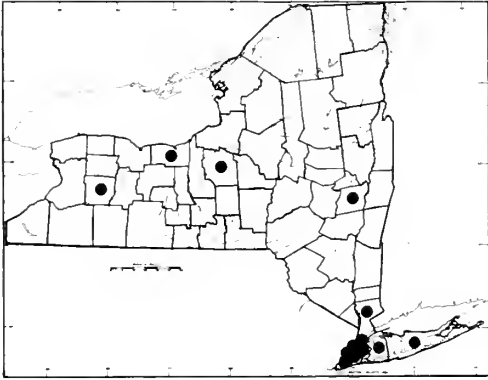
Fruiting: Late June-November

General Distribution: A sporadic, European adventive of saline places: upstate New York, Pennsylvania, Ohio, Michigan, Illinois, Indiana, California and Oregon; also naturalized in Chile, Argentina and Uruguay

Description: Plants with bisexual flowers; **stigmas** 3; **styles** 3, minute, linear, free; **ovary** 1, superior, ovoid-cylindric, ca. 1.5 mm long; **fruit** a 3-valved, smooth, tan capsule, semi-transparent, elliptic, 5.8-9.2 mm long, 3-5 mm broad, exerted from the calyx; **seeds** many, brown, lusterless, 0.6-0.8 mm long (excluding wing), comma-shaped with a poorly defined dorsal ridge, usually alate, the wing 0.2-0.3 mm broad, completely encircling the seed, hyaline, pleated, with an entire to shallowly fimbriate margin; **stamens** (6) 8-10; **anthers** globose, golden; **filaments** pale, expanded toward the base, ca. 1 mm long; **perianth** of two distinct, free whorls of 5; **petals** white or pink with whitish margins and bases, narrowly lanceolate to lance-ovate, 2.2-4.5 mm long, 0.4-0.8 mm broad, with cucullate tips, persistent in fruit; **sepals** 3-7 (8) mm long 1-4 mm broad, narrowly to broadly ovate with acute to bluntly cucullate tips, green or pink-tinged with hyaline margins, densely hirsute-glandular on the abaxial surface or sometimes glabrous, persistent, partially enclosing the exerted fruit; **pedicels** 2-22 mm long, slender, with glandular hairs or glabrous; **inflorescence** diffuse, leafy, cyme-like, the flowers borne mostly in the upper leaf axils; **bracts** like the leaves but shorter and often sparsely to densely glandular pubescent; **leaves** 1-4 (5) cm long, linear, needle-like, the tips blunt to acute or weakly mucronate, glabrous (or with very few glandular hairs); **petioles** absent; **stipules** broadly to narrowly triangular, hyaline, glaucous, 2.3-6.2 mm long, tips acute to acuminate (rarely obtuse), sometimes toothed or bifid; **stems** 3-30 (40) cm tall, often spreading, sparsely to profusely branched from a short, tough caudex, the nodes somewhat swollen, internodes glabrous to densely glandular-pubescent in the upper nodes of the inflorescence; **root system** a tough, annual or perennial taproot with fibrous lateral branches ($2n = 36$).



Intraspecific Variation: Unwinged seeds are occasionally found in the same capsule with winged ones. The upper stems, pedicels and sepals are usually glandular-pubescent, but glabrous plants occur in both Europe and North America, and these tend to be diminutive in stature. Although this species is thought to be a European introduction, our plants do not conform completely with the species description in *Flora Europaea* (Monnier & Ratter *In: Tutin et al.*, 1964). Therefore, only those plants growing in northeastern North America are treated in the preceding description. Characteristics listed here for the American plants are largely in agreement with the treatment of Rossbach (1940). Ours have petals much like those of *S. salina* ("*S. marina*"), shorter than the sepals and sometimes pinkish rather than white. The stipules are mostly acute or acuminate, and, while the European treatment (*ibid.*) specifically states: "not acuminate," this does not hold true consistently, even for their native plants. The predominantly winged seeds, larger capsule size and greater stamen number of *S. media* are useful characters in distinguishing it from *S. salina* in North America, if not elsewhere; further comparison of the taxa worldwide would almost certainly be enlightening.



3. *Spergularia salina* J. & C. Presl

Common Names: Saltmarsh Sand-spurry

Type Description: J. & C. Presl, *Fl. Cech.*, p. 95, 1819

Synonyms: *Alsine maritima* Pall., *Arenaria rubra* β *marina* L., *A. marina* Allioni, *Buda marina* (L.) Dumort., *Lepigonum caninum* Leffler, *L. marinum* (L.) Kindb., *Spergula salina* (J. & C. Presl) Dietr., *Spergularia canina* (Leffler) Leffler, *S. leiosperma* (Kindb.) F. Schmidt, *S. marina* (L.) Griseb., *S. tenue* Greene, *Tissa marina* (L.) Britt.

Note: This species appears in most North American literature as *S. marina* (L.) Griseb., a name based on a transfer of the infraspecific taxon, β *marina* L. I have chosen to recognize the first-published epithet at the species level.

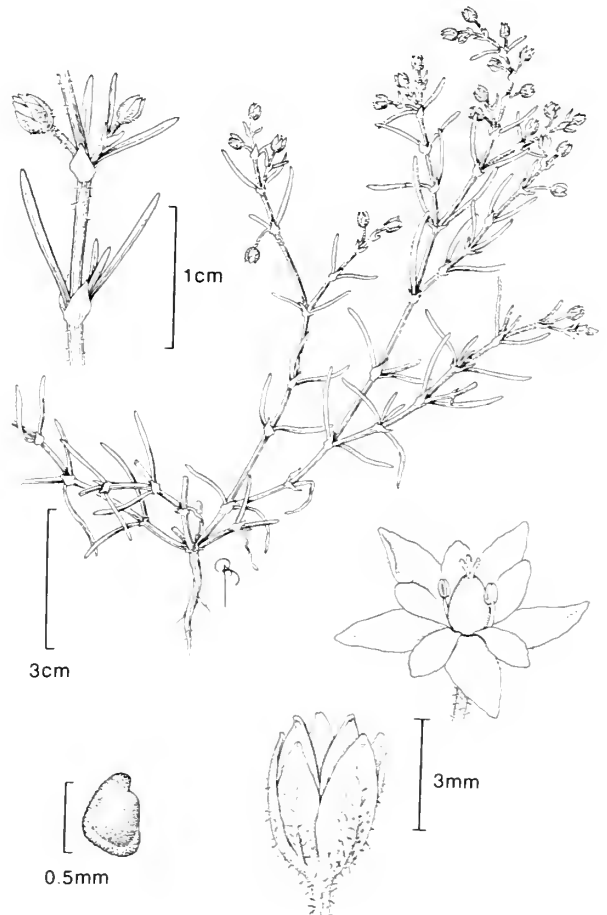
Origin: Native to coastal Europe

Habitats: Saline, mostly coastal habitats often along shores, beach margins, and in salt marshes, with a dwarf race that rarely spreads inland along gravelly, salted roadways.

Habit: Spreading annual herbs with taproots

Flowering: Late May-October

Fruiting: June-November

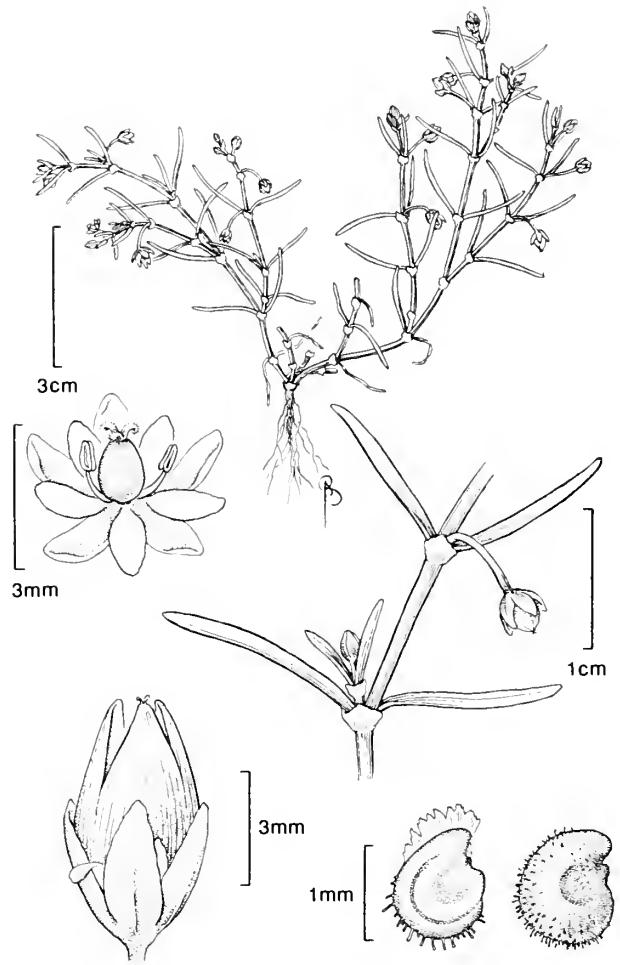
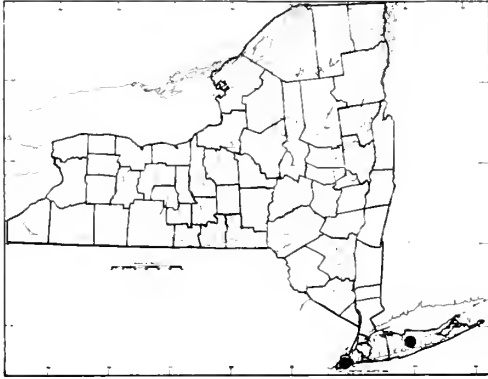


General Distribution: Introduced throughout much of North America in saline coastal areas, widely scattered inland in waste and alkaline places, Quebec to British Columbia south to Mexico and the Caribbean Islands (also Brazil and Uruguay)

Description: Plants with bisexual flowers; stigmas 3; styles 3, minute, linear, free; ovary 1, superior, cylindrical-ovoid, ca. 1 mm long; fruit a 3-valved, smooth, pale tan capsule, elliptic to ovoid, (2) 3-5 (6.4) mm long, 1.8-4.2 mm broad, exerted from the calyx 1-2 mm; seeds many, medium to dark reddish-brown, smooth or with stalked papillae, most often along the dorsal ridge, 0.6-0.8 mm long (excluding wing), comma-shaped, usually not alate, the wings (when present) 0.1-0.2 mm broad, hyaline, pleated, with an entire to shallowly fimbriate margin, friable (sometimes reduced to a partial wing or a few rib-like fragments); stamens (1) 2-3 (-5); anthers globose, golden; filaments pale, expanded toward the base, ca. 0.8 mm long; perianth of two distinct, free whorls of 5; petals totally pink or with whitish margins and bases, narrowly lanceolate to lance-ovate, (1) 1.4-3.8 (4.1) mm long, 0.2-0.8 (1.1) mm broad, with blunt to acute tips, persistent in fruit; sepals 1.8-3.8 (4.2) mm long, 1-3 mm broad, narrowly to broadly ovate with acute to blunt-cucullate tips, green or pink-tinged with hyaline margins, densely hirsute-glandular on the abaxial surfaces, or sometimes glabrous, persistent, partially enclosing the exerted fruit; pedicels 1-23 mm long, slender, covered with glandular hairs (rarely glabrous); inflorescence diffuse, leafy, cyme-like, the flowers borne mostly in the upper leaf axils; bracts like the leaves but shorter and often sparsely to densely glandular pubescent; leaves (0.3) 1-3 (4) cm long, linear, needle-like, the tips blunt to acute or very weakly mucronate, glandular-pubescent or glabrous; petioles absent; stipules triangular to broadly deltoid, hyaline, whitish, 2,3-6.2 mm long, tips acute to acuminate (rarely obtuse), sometimes toothed or bifid; stems 1-25 (34) cm tall, often spreading, sparsely to profusely branched, the nodes somewhat swollen, internodes glabrous to densely glandular-pubescent in the upper nodes of the inflorescence; root system an annual taproot ($2n = 36$).

Infraspecific Variation: The seeds of *S. salina* may be wholly or partially winged or wingless, with smooth or papillate surfaces. In Europe unwinged seeds have been attributed partially to adaptation of populations to disturbed habitats (Sterk, 1969d), but wing variations may vary greatly between the seeds produced within a single capsule. *Spergularia tenue* Greene is based on California plants distinguished morphologically by their much-branched inflorescences with very small sepals, petals and capsules. They are said to occur with populations of more typical plants of the species, but to flower and fruit earlier. Rossbach (1940) treated this group as *S. marina* var. *tenue* (Greene) Rossbach. Diminutive plants recently found in New York State are possibly referable to this taxon, as discussed under the following heading.

Taxonomic Note: *Spergularia tangerina* P. Monnier, described from the Iberian Peninsula of Spain in 1964, was based on very similar characteristics to those of *S. tenue* Greene. If these taxa are determined to be equivalent, Greene's name, *S. tenue*, based on American plants, would, ironically, take precedence. Biosystematic studies by Monnier (1975b) indicated that "*S. tangerina*" is possibly ancestral to widespread *S. salina*. Thus, certain North American populations of *S. salina* may be exhibiting atavism under strong selective pressure. Plants recently found on salty roadsides in New York State and elsewhere in the northeast have similar (even smaller) flower parts than *S. tangerina*, along with very slender stems, but they lack profusely-branched inflorescences. Rare New York specimens of these tiny annuals have flowers with 2-3 stamens, petals 0.9-1.3 mm long, sepals 1.9-3.5 mm long, and a mature capsule 2.0-3.4 mm long, equaling or barely exceeding the calyx. The seeds are pale brown, unwinged and 0.5-0.8 mm long, with scattered, stalked papillae. Such plants do not match descriptions of any European taxa yet seen in the literature. In the light of studies on reduction series within *S. salina* as a whole (Sterk, 1968-1972), these variants are probably best treated as members of a diminutive race or phenotypic modification series within a single polymorphic species. Their gravelly roadside habitats are sustained by severe and continued disturbance, including summer grading and winter salting, with nutrients undoubtedly in poor supply.



4. *Spergularia canadensis* (Pers.) D. Don

Common Name: Northern Sand-spurry, Bed Sandwort

Type Description: Persoon, Syn. vol. 1, p. 504, 1805

Synonyms: *Alsine canadensis* (Pers.) House; *Arenaria canadensis* Pers., *Buda borealis* S. Wats., *Spergularia canadensis* (Pers.) Dietr., *Tissa canadensis* (Pers.) Britton

Origin: A native of coastal North America

Habitats: Cold, windy coastlines in saline, often acidic, muck or sand

Habit: Decumbent, fleshy, annual herbs with slender taproots

Flowering: June-October

Fruiting: June-November

General Distribution: Mostly boreal and arctic coastlines in northeastern and northwestern North America: Newfoundland south to Connecticut (formerly New York), coastal Alaska and British Columbia south to California

Rarity Status: Probably extirpated from the two known sites in New York State. Ranked by the New York Natural Heritage Program as G5 (globally secure), SX (State extirpated), with no current protection under State law. One site was known on Long Island and one on Staten Island (1880s).

Description: Plants with bisexual flowers; stigmas 3; styles 3, minute, linear, free; ovary 1, superior, ovoid-cylindric, ca. 1.5 mm long; fruit a 3-valved, smooth, pale tan capsule, elliptic to ovoid, 3.3-5.4 mm long, 1.8-3.8 mm broad, exserted from the calyx up to 2.6 mm; seeds many, medium to dark brown, smooth, slightly crested or with stalked papillae that are most abundant along the plump, dorsal ridge, (0.8) 1.0-1.3 (1.4) mm long (excluding wing), comma-shaped, unwinged or with wings 0.1-0.3 mm broad, hyaline, pleated, with an entire to shallowly toothed or wavy margin, friable (sometimes reduced to a partial wing or a few rib-like fragments); stamens 2-5; anthers globose, golden; filaments pale, expanded toward the base, ca. 0.7 mm long; perianth of two distinct, free whorls of 5; petals white or pink, narrowly lanceolate to lance-ovate, (0.8) 1.4-2.6 mm long, 0.2-0.8 (1.1) mm broad, with blunt to acute tips, persistent in fruit; sepals 1.8-3.2 mm long, 1-2 mm broad, narrowly to broadly ovate with acute to blunt, cucullate tips, green or pink-tinged with hyaline margins, glabrous, persistent, only partially enclosing the strongly exserted fruit; pedicels 4-16 mm long, often reflexed in fruit, glabrous (rarely sparsely glandular); inflorescence diffuse to dense, leafy, cyme-like, the flowers borne mostly in upper leaf axils; bracts like the leaves but shorter; leaves 0.6-4.7 cm long, linear, fleshy, glabrous, the tips blunt; petioles absent; stipules broadly deltoid to obtusely rounded or almost completely fused, comprising only the cup of the sheath, hyaline, less than 1 mm long, tips very obtusely pointed or rounded, (sometimes apiculate, bifid or with tiny teeth); stems decumbent, 2-35 cm long, sparsely to profusely branched, the nodes somewhat swollen, internodes glabrous; root system an annual taproot (2n = 36).

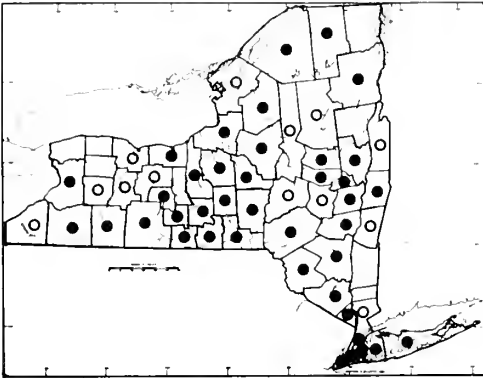
Intraspecific Variation: Variety *occidentalis* Rossbach, ranges from California to British Columbia; it differs from the typical variety in having a more ascending habit, larger stipules, a less exerted capsule and some glandular pubescence.

3. SPERGULA

Common Name: Spurrey

Authority: Linnaeus, Species Pl., p. 440, 1753

A genus of about 5 species, native to the Old World. *Spergula arvensis* L. is an aggressive weed of cultivated fields that has become a common naturalized weed in New York State and around the world. Two other spurreys, *S. pentandra* L. and *S. morrisonii* Bor., are naturalized in eastern North America as far north as southern New Jersey.



1. *Spergula arvensis* L.

Common Names: Corn-spurry or Spurrey, Poverty-weed, Pine-cheat, Cow-quake, Pick-purse, Yarr
Type Description: Linnaeus, Species Pl. I, p. 440, 1753

Synonyms: *S. arvensis* var. *sativa* (Bönn.) Mert. & Koch, not Reichenb., *S. linicola* Boreau, *S. maxima* Weihe, *S. sativa* Bönn., *S. vulgaris* Bönn.

Origin: A native of Europe

Habitats: Sandy and gravelly soils, especially as a weed of cultivated ground, waste places, roadsides and railroad tracks

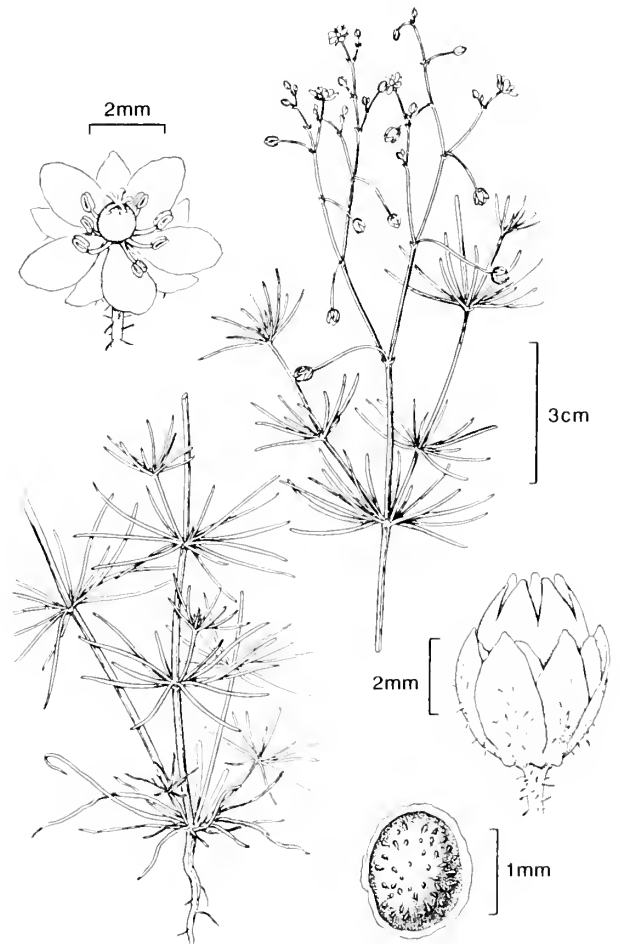
Habit: Slender, ascending annuals from taproots

Flowering: June-September

Fruiting: June-November

General Distribution: Native to Europe, a weed in North America from Newfoundland to Alaska, south to California, Louisiana and Florida

Description: Plants with bisexual flowers; stigmas 5, papillate; styles 5, minute, free to near the base, persistent until dehiscence; ovary ovoid, ca. 1 mm long; fruit a 5-valved capsule, 3.8-5.4 mm long, 3.5-4.4 mm broad, spheroid to elliptic or ovoid, only slightly exerted from the perianth, glossy tan, the valves opposite the sepals; seeds several to many, frequently polyembryonic, 0.9-1.6 mm broad, ca. 0.7 mm broad, lenticular, with a very narrow, circumferential, pale tan wing, seed surface dull, rough, dark brown to ebony, often with scattered, pale, glandular papillae; stamens 5-10; anthers minute, golden; filaments pale, 1-2 mm long; perianth of 2 distinct whorls; petals 5, free, white, narrowly to broadly ovate, 1.5-3.6 (5) mm long, 1-3 mm broad, with acute to obtuse tips, persistent; sepals 5, free, ovoid, 2.6-4.6 (5.2) mm long, 2-3 mm broad, with acute to obtuse tips,



green with narrow hyaline margins, sparsely to copiously glandular-pubescent on the adaxial surfaces, persistent, almost completely enclosing the capsule at maturity; **pedicels** slender, mostly 1.0-2.5 cm long, glandular pubescent to glabrescent, often reflexed in fruit; **peduncles** much like the pedicels; **inflorescence** a diffuse, often dichotomously branched, panicle, terminal, or with a few small axillary branches, totaling up to 1/2 the plants height; **bracts** scarious, lance-ovate to cordate with acute tips, ca. 1 mm long; **leaves** whorled, appearing fascicled or tufted on the short shoots at the nodes, linear, the lower ones grooved near the base, 1-5 (6) cm long, 0.5-1.3 mm broad, sometimes viscid-glandular, usually glabrous, dull to bright green; **petioles** absent; **stipules** ovate-cordate to triangular-acute, 1-2 mm long, hyaline; **stems** simple to much-branched, erect-ascending, slender, grooved, glabrescent to moderately glandular-pubescent, 5-45 (70) cm tall; **root system** a slender to relatively stout, annual taproot with bunchy lateral branches [$2n = 18$ (36)].

Infraspecific Variation: Plants sometimes segregated as *S. arvensis* var. *sativa* (Bönn.) Reichenb. are descended from escaped cultivars. They are dull green and viscid and lack glandular papillae on the seeds. Characters once considered to be of taxonomic significance, such as stem pubescence and seed coat papillae have been shown to vary clinally (New, 1958).

Importance: These plants get the name corn-spurry from their aggressive, weedy invasion of grain fields, in this case referring to wheat, the "corn" of pre-Columbian Europe. Although the plants contain bitter and poisonous saponins, they have been grown successfully for centuries as fodder for farm animals. An 18th century report claims that spurry was eaten by humans in times of famine in northern Europe, dried, ground and baked into wheat bread in small quantities as an adulterant.

Note: *Spergula morrisonii* Boreau was reported once as a waif in the vicinity of Rochester early in the 20th century.

4. SCLERANTHUS

Common Names: Knawel, German Knotgrass

Authority: Linnaeus, Species Pl. I, p. 406, 1753

A genus of 3-12 species, depending on the degree of taxonomic splitting employed when treating the *S. perennis* and *S. annuus* complexes. The plants are native to Eurasia and are commonly weedy in temperate climates around the world.

1. *Scleranthus annuus* L.

Common Names: Knawel, German Knotgrass,
Parsley-piert, Gravel Chickweed,

Type Description: Linnaeus, Species Pl. I, p. 406,
1753

Origin: A native of Europe

Synonyms: *S. annuus* ssp. *ruscinonensis* (Gillot &
Coste) P. Sell, *S. uncinatus* Schur

Habitats: Open areas, gravelly roadsides, paths,
railways, and also more natural areas such as
limy forest clearings and sand plains

Habit: Spreading, with tufted, much-forked stems;
annuals from taproots

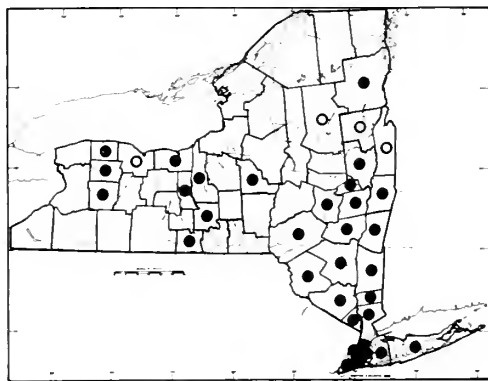
Flowering: (March) May-October

Fruiting: May-December

General Distribution: Northern Newfoundland to
Minnesota, south to Indiana and along the
Coastal Plain to Florida

Flowering: (March) May-October

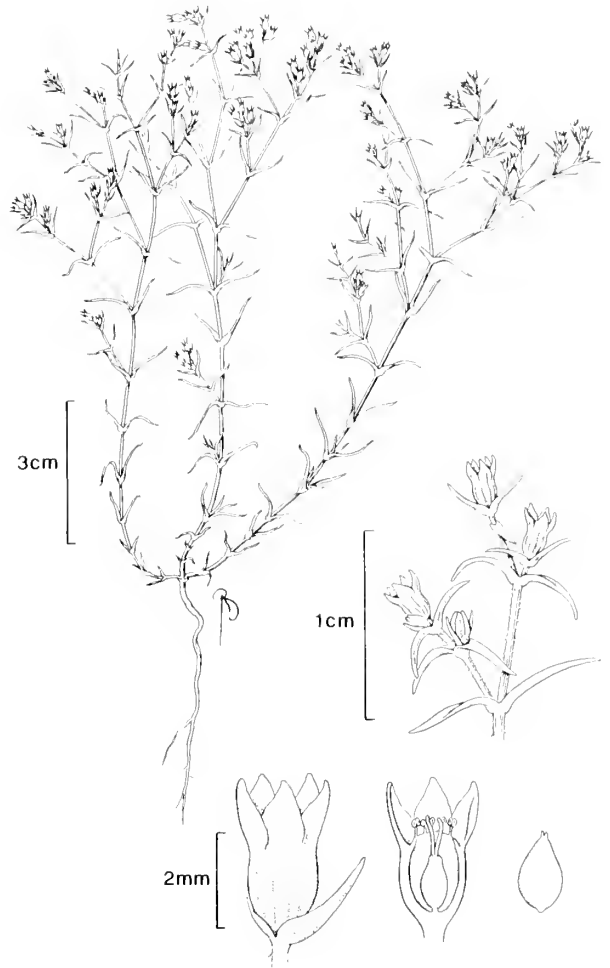
Fruiting: May-December



General Distribution: Northern Newfoundland to Minnesota, south to Indiana and along the Coastal Plain to Florida

Description: Plants with **bisexual** flowers; **stigmas** 2, terminal, papillose; **styles** 2, filiform, 0.7-0.9 mm long, hyaline; **ovary** 1, bearing a single **ovule** on a basal placenta (rarely 2), the ovary partially inferior, fused to a **hypanthium**; **fruit** 1.2-1.7 mm long, ca. 1.3 mm broad, a **utricle** (nut), remaining within the persistent **hypanthium**, bearing 1 (rarely 2) seeds; **seed** 1 (very rarely 2), spheroid to lenticular, beaked, tan, ca. 0.8 mm long; **stamens** 4-10, minute, adnate to a ring-like septum at the junction of the fruit and **hypanthium**; **anthers** globose, golden; **filaments** linear, straight or inwardly curved; **perianth** a perigynous cup, fused to the **gynoecium** for 2/3 or more of its length, bearing a whorl of free perianth lobes; **petals** absent; **sepals** (perianth lobes) 5, perigynous, 1.0-2.3 (3) mm long, 0.3-0.9 mm broad at base, lanceolate with acute often abruptly cucullate tips, green with very narrow (ca. 0.1 mm) scarious margins, mostly glabrous, but with a few septate hairs at the **hypanthial** base; **pedicels** very short, often less than 1 mm, ensheathed in the base of a floral bract, or flowers sessile; **peduncles** up to 1.5 cm long, pilose, with septate hairs that are somewhat retrorse and borne mostly along one side of the peduncle; **inflorescence** diffuse throughout the plant, with axillary and terminal clusters of 2-4 flowers; **inflorescence** bracts much like the leaves, often exceeding the flowers, even in the short-bracted, terminal clusters; **leaves** opposite, linear, 3-8 (13) mm long, groovy, green, acute to obtuse tipped, the margins gradually broader, scarious and ciliate toward the base where they are flared and connate, clasping the nodes; **petioles** and **stipules** absent; **stems** terete, glabrescent to densely retrorse-pilose, branched from near the base, ascending, 2-12 (26) cm long; **root system** an annual (biennial) taproot with matted lateral roots ($2n = 22, 44$).

Infraspecific Variation: Our plants are do not conform well with any described European subspecies. They have very small fruits like *ssp. ruscinonensis* (Gillot & Coste) P. Sell, but the sepals are usually spreading and only occasionally connivent, as in the typical subspecies. In many flowers of some individuals, the boat-like (cucullate) apices of the sepal tips are curved abruptly inward and hook-like, the only character used to distinguish *S. uncinatus* Schur in Europe. In North America, the plants seem to comprise a single, slightly polymorphic species lacking in consistent characters useful in segregating taxa, even at the infraspecific level. **Importance:** A weed of grain fields, particularly wheat, oats and barley; probably introduced a number of times through European seed sources.



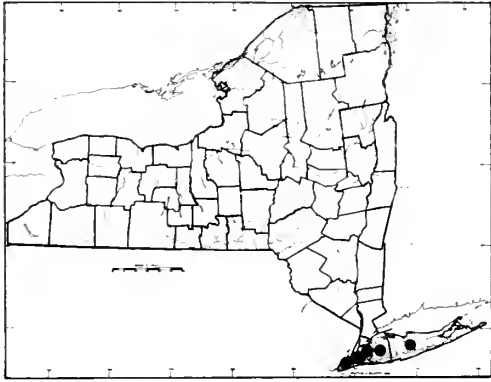
5. HONCKENYA¹

Common Name: Seabeach Sandwort

Authority: Ehrhart, Neues Mag. Aerzte 5, p. 193, 1783

¹**Note:** The common use of a spelling variation, *Honkenya*, in the literature was based on Ehrh., Beitr. vol. 2 (1788), incorrectly assumed to be the earliest citation for the generic name.

A single, polymorphic species, historically included in *Arenaria*. *Honckenya* is a conspicuous, succulent, seaside plant, mostly of boreal and arctic shores, with a range that encircles the Northern Hemisphere.



1. *Honckenya peploides* (L.) Ehrh.
 ssp. *robusta* (Fern.) Hultén

Common Names: Seabeach Sandwort, Sea Chickweed, Sea Purslane, Beach-parsley

Type Description: Linnaeus, Species Pl., p. 423, 1753

Synonyms: *Ammodenia peploides* (L.) Rupr., *A. maritima* (Raf.) Bickn., *A. peploides* var. *maritima* (Raf.) Stone, *Arenaria peploides* L., *A. peploides* var. *robusta* Fern., (*Honckenya*)

Origin: A native of arctic seashores; ssp. *robusta* is eastern North American

Habitats: Maritime sands: dunes, beaches, saltmarshes, inlets and pond shores

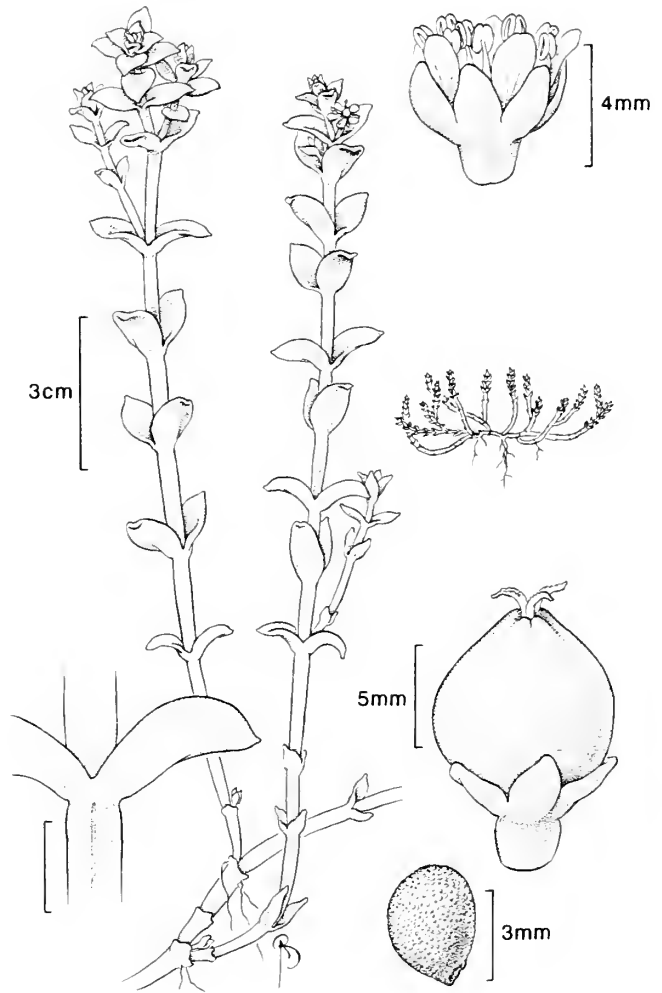
Habit: Procumbent to decumbent, perennial, mat-forming herbs

Flowering: May-September

Fruiting: June-October

General Distribution: The species range is arctic-circumboreal; ssp. *robusta* occurs from Belle Isle, Newfoundland, southward along the Atlantic Coast to Maryland and Virginia

Description: Plants with flowers that appear perfect, but are often functionally unisexual; **stigmas** 3 (-6); **styles** 3 (-6), distinct, columnar, succulent, ca. 1 mm long, sometimes persisting in fruit; **ovary** 1, pyriform, glabrous, 3-4 mm long and equally broad at base, 3-5 bilobed, fused carpels; **fruit** a tough, leathery, brownish capsule, 5-9 mm long, (5) 5-10 (12) mm broad, subglobose to ovoid, unilocular, dehiscent by 3-5 valves; **seeds** usually 8 or fewer, 4-5 mm long, ca. 3.5 mm broad, pyriform or obovate to comma-shaped, often somewhat compressed and distorted, moderately glossy, reddish-brown with minutely muricate surfaces; **stamens** usually 10 (8-11), 3-4 mm long; **anthers** golden (brown if non-functional), ovate, ca. 1 mm broad; **filaments** fleshy, greenish, thicker toward the base, ca. 3 mm long, arching upward, with golden nectaries at their bases, where they are inserted on a fleshy disk; **perianth** of 2 distinct whorls; **petals** 5 (6), free, spatulate, 3.9-6.2 (7.2) mm long, 2.8-3.6 (4.5) mm broad above the claw, creamy to yellowish, somewhat translucent; **sepals** 5, free, tough, semisucculent 2.9-5.2 (6) mm long, ca. 3-5 mm broad, ovate to broadly lanceolate and incurved, with obtuse (to acute), strongly cucullate tips, glabrous, lustrous green with hyaline margins; **peduncles** stout, 1-3 mm long; **flowers** borne singly (rarely a pair), mostly in the axils of the upper leaves and branches; **leaves** opposite, decussate, sessile, succulent, glabrous and glossy, lustrous pale green to jade, (0.4) 0.6-3.5 (4.5) cm long, 0.3-2.7 (3.5) cm broad, entire, ovate or elliptic or oblong (to broadly lanceolate) with mucronate to apiculate tips, the bases clasping the node, often confluent with those of the leaf opposite; **petioles** and **stipules** absent; **nodes** slightly swollen, with 2 hair-line grooves extending down the **internodes** from the junctures of the opposite leaf bases; **stems** succulent, mat-forming, creeping, procumbent to suberect at tips, 10-20 (-50) cm tall, with



lateral branches near the apex, 4-8 mm broad, yellow-green to creamy, pink at the plant base and brownish when buried under sand or soil, the subterranean, much-branched **rhizomes** and drift-buried stems ascending at their tips, tough, mostly 2-6 mm broad with scale-like leaves and **adventitious roots** at the nodes; **root system** fibrous ($2n = 48, 66, 68, 70$).

Infraspecific Variation: Typical *H. peploides* ssp. *peploides* (of arctic-circumboreal distribution) bears its flowers in more or less distinct cymes, whereas ssp. *robusta* of our range has primarily solitary flowers. Plants of more northerly regions also have relatively flaccid stems, 1-2 mm thick, while the more southern subspecies has turgid, fleshy stems 2-6 mm thick. Another taxon, ssp. *major* (Hook.) Hultén, occurs north of our range, and is distinguished from the typical subspecies by its smooth seeds and larger, translucent capsules.

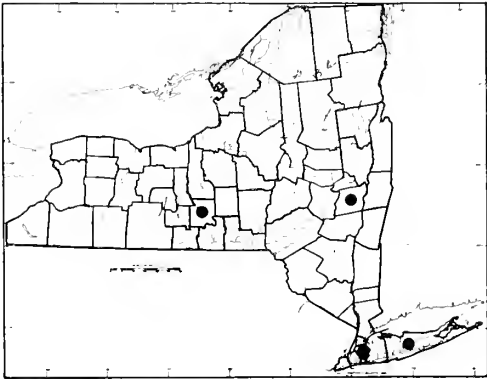
Importance: *Honckenya* is sometimes planted in sandy gardens and propagated or encouraged along seashores, where it provides a mat-forming ground cover. The leaves and young stems are eaten raw and used in salads, to which they are said to lend a flavor similar to cabbage. In Eurasia the greens are fermented in various ways, used in pickling and made into sour sauces and relishes. In Iceland they are steeped in whey before fermentation; the resulting liquor is strained off for use as a drink or an oily salad dressing.

6. HOLOSTEUM

Common Names: Jagged Chickweed

Authority: Linnaeus, Species Pl, I, p. 88, 1753

A genus of fewer than 5 species, native to Eurasia.



1. *Holosteum umbellatum* L.

Common Names: Jagged Chickweed

Type Description: Linnaeus, Species Pl., I., p. 88, 1753

Synonyms: *H. glutinosum* (Bieb.) Fischer & Meyer,
H. umbellatum ssp. *glutinosum* (Bieb.) Nyman

Origin: Native to Eurasia

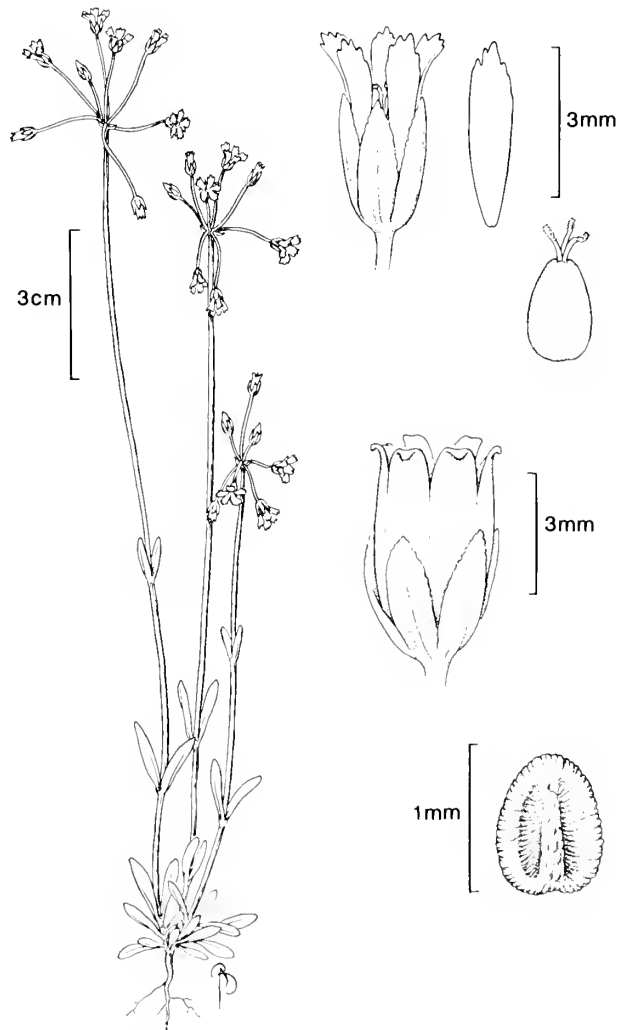
Habitats: Sandy soils, escaped on beaches and roadsides, in lawns, fields, waste places

Habit: Erect, annual (winter annual) herbs

Flowering: (March) April-May (June)

Fruiting: April-August

General Distribution: A Eurasian adventive in North America, it occurs at scattered locations, mostly along the Coastal Plain from Massachusetts to Georgia, inland to Illinois, Nebraska and Oklahoma, and British Columbia to Oregon; it is probably not as rare in New York State as the distribution map would indicate



Description: Plants with **bisexual** flowers; **stigmas** 3 (4), terminal, minutely papillose, **styles** 3 (4), linear, 0.4-0.9 mm long; **ovary** 1, superior, ovate-elliptic, ca. 1 mm long; **fruit** a glossy, tan, striate, thin-walled capsule, 3.6-6.4 mm long, 2.8-3.3 mm broad, cylindric-ovoid strongly exerted from the perianth, especially after dehiscence, the 6 valves with tips reflexed outward; **seeds** many, tan to reddish-brown, asymmetrical, roughly reniform, 0.4-0.8 mm long and broad, grooved, surfaces both tuberculate and minutely papillose; **stamens** 3-5 (rarely 8-10); **anthers** reniform, golden; **filaments** linear, ca. 1 mm long; **perianth** of 2 free whorls; **petals** 1.6-4.7 mm long, 1-3 mm broad, lance-elliptic, white or pale pink, tapering to ragged or cut (entire) tips; **sepals** 1.4-3.6 mm long, elliptic-ovate, green with hyaline margins and obtuse (to acute) tips, entire, glabrous, persistent and enclosing the lower half of the capsule; **pedicels** 0.8-2.3 (3) cm long, slender, glabrous, reflexed in fruit; **peduncle** (1) 3-9 (15) cm long, solitary, terminal, glabrous to densely glandular pubescent and viscid below; **inflorescence** a simple umbel of (2) 3-12 (15+) flowers; **bracts** hyaline, clasping, obtuse, less than 1 mm long; **cauline leaves** paired, connate at base, clasping the nodes, 3-20 mm long, 2-8 mm broad, ovate-elliptic, acute, entire, the margins sometimes ciliate; **basal leaves** 5-28 mm long, 2-9 (13) mm broad, elliptic-obovate to linear-spatulate, the surfaces glabrous, somewhat glaucous, bases slightly clasping or narrowed to a poorly delineated **petiolar zone**; **stipules** absent; **stems** slender, terete, sometimes grooved, glabrous (below) to glandular-viscid above or throughout, simple to much-branched near the base, erect or ascending, up to 20 (35) cm long; **root system** a slender, annual taproot with delicate lateral branching ($2n = 20$).

Infraspecific Variation: In Europe, ssp. *glutinsum* is recognized on the basis of greater overall viscosity and 8-10 stamens rather than 3-5, as in typical plants.

7. SAGINA

Common Names: Pearlwort

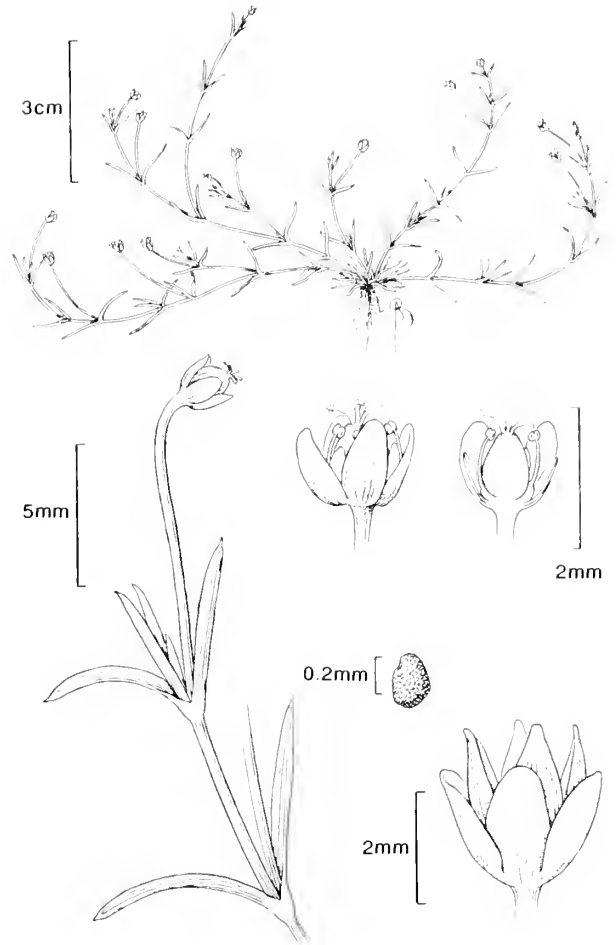
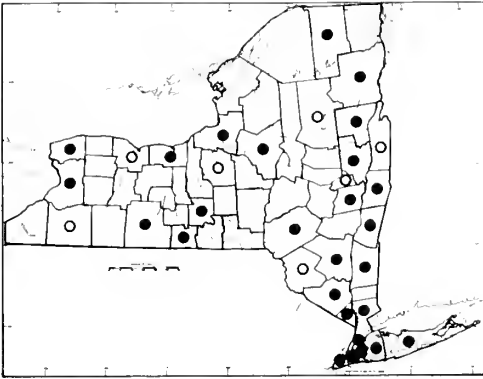
Authority: Linnaeus, Species Pl. I, p. 128, 1753

A genus of about 15 species distributed mostly in cool-temperate and boreal regions of the Northern Hemisphere. They often inhabit sunny, sandy or rocky sites, and sometimes become weedy, even within their native ranges, following human disturbance.

Description: Plants with **bisexual** flowers (rarely gynodioecious); **stigmas** 4-5, papillate along the inner surface of the styles; **styles** 4-5, alternating with the sepals, recurved at anthesis; **ovary** 1, 4-5 carpelled, often globose; **ovules** many (to 130+), campylotropous, on a free central placenta; **fruit** a 4-5 valved capsule, dehiscing near the apex or splitting to base; **seeds** many, less than 1 mm long, globose to triangular, tuberculate, papillate or smooth, sometimes ridged; **stamens** 4-10, borne in 1-2 whorls of 4 or 5, or the inner whorl missing in some species, the outer whorl with nectaries at the base; **anthers** minute, ovoid; **filaments** slender, incurving with age; **perianth** of two whorls; **petals** (1) 4-5 (or absent), free, unclenched, often short-clawed and reduced, early-deciduous or concealed by the calyx in self-pollinating species; **sepals** 4-5, free, green or with hyaline or colored margins, sometimes forming a splash-cup that aids in seed dispersal during rain; **pedicels** slender to somewhat thickened; **bracts** of the inflorescence leafy; **cauline leaves** opposite, linear or subulate, connate, sheathing at base; **basal leaves** of perennial species in rosettes; **petioles** absent; **stipules** absent; **stems** decumbent, procumbent or ascending, filiform to thickened and tough at base in perennials; **root systems** annual taproots or tufted, fibrous, perennial roots, sometimes root-sprouting.

KEY TO SPECIES

1. Flower parts primarily in 5's (rarely 4's on the same plant); annuals with erect-ascending (or decumbent) often capillary stems and slender taproots, not strongly tufted or spreading by offshoots (2)
1. Perianth parts in 4's (rarely 5's on the same plant); matted, wiry perennials, spreading by offshoots 1. *S. procumbens*
2. Seeds pale brown, triangular with a dorsal groove; capsules longer than broad; pedicels usually glabrous; leaves not succulent 2. *S. decumbens*
2. Seeds dark brown to almost black, plump, lacking a dorsal groove; capsules globose; pedicels glandular pubescent; leaves succulent 3. *S. japonica*



1. *Sagina procumbens* L.

Common Names: Pearlwort, Perennial or Spreading Pearlwort

Type Description: Linnaeus, Species Pl. I, p. 128, 1753

Synonyms: *Alsine procumbens* (L.) Crantz, *S. apetala* of some NY reports, not Ard., *S. corsica* Jord., *S. muscosa* Jord., *S. procumbens* var. *muscosa* Jord.

Origin: A native of Eurasia

Habitats: River banks, pond and lake shores, rocky, sandy and gravelly areas, gardens, pathways and waste places

Habit: Procumbent (or ascending), tufted perennials, spreading by offshoots, frequently with well-developed rosettes of leaves

Flowering: May-September

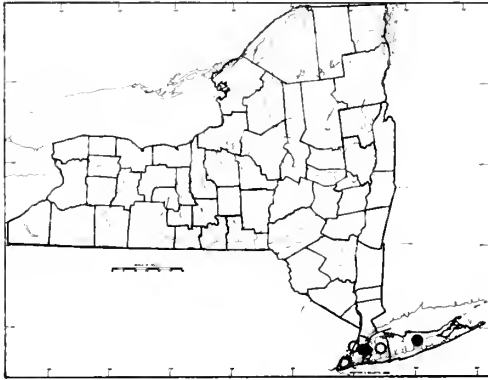
Fruiting: May-October

General Distribution: A native of Eurasia, escaped widely in northeastern North America and the Pacific Northwest, with other scattered occurrences to the Great Lakes States, south to Mexico, Tierra del Fuego and even the Antarctic. Some floras have treated it as a native North American species, but this is very doubtful, considering its history of aggressive, weedy spread from port towns worldwide

Description: Plants with bisexual flowers; **stigmas** 4 (5), papillose receptive areas on the upper styles; **styles** 4 (5), minute, linear, persisting until dehiscence; **ovary** 1, superior, ovoid, ca. 1 mm long; **fruit** a 4-valved capsule, tan, 1.6-3.0 mm long, 1.2-1.7 (2.0) mm broad, dehiscing explosively, the valve tips extended, tongue-like, the spent, exerted capsule up to 3.3 mm long; **seeds** many, brown, minutely tuberculate, 0.2-0.4 mm broad, plumply triangular; **stamens** 4 (8), free; **anthers** minute, yellowish; **filaments** pale, slender, ca. 1.3 mm long, incurved at anthesis; **perianth** of 2 free whorls; **petals** 4 (rarely some flowers on the same plant with 5), ovate-elliptic, 0.7-1.5 mm long and broad, white, caducous; **sepals** 4 (rarely 5) greenish with hyaline margins, 1.1-2.5 mm long and broad, cucullate, with obtuse tips, persisting and divergent after capsule dehiscence, sometimes minutely glandular at base; **pedicels** slender, glabrous, often recurved in fruit; **inflorescence** reduced: **flowers** solitary, terminal, or 2, (with 1 at the penultimate node); **bracts** leaf-like, linear; **cauline leaves** linear, reduced upward on the stem, 2-6 mm long, borne in pairs with hyaline connate bases and apiculate tips; **basal leaves** similar to cauline ones, but larger, 6-16 mm long, often tufted in distinct rosettes; **petioles** absent; **stipules** absent; **stems** procumbent (rarely ascending) glabrous, greenish, 1-8 cm long, spreading by offshoots; **root system** fibrous, perennial, sometimes root-sprouting ($2n = 22$).

Intraspecific Variation: Depauperate plants from severe, northern shorelines have been called var. *compacta* Lange, but their condition is apparently environmentally induced and clinal, with intermediate individuals bridging a transition to more typical plants nearby.

Importance: These plants are sometimes grown as a ground cover in sandy areas, but this practice is not encouraged, due to the weedy nature of the species.



2. *Sagina decumbens* (Ell.) Torr. & Gray

Common Names: Pearlwort, Annual Pearlwort

Type Description: Elliott, Sketch. Bot. S.C. & Ga. I, p. 523, 1821

Synonyms: *Sagina apetala* of some NY reports, not Ard., *S. subulata* var. *smithii* Gray, *S. decumbens* var. *smithii* (Gray) Watson, *Spergula decumbens* Ell.

Origin: A native of North America

Habitats: Sandy soils in partial to full sunlight, pine-scrub, open fields and meadows; a native weed southward on roadsides, lawns, sidewalks and in waste places

Habit: Erect-ascending to decumbent, delicate annuals with slender taproots

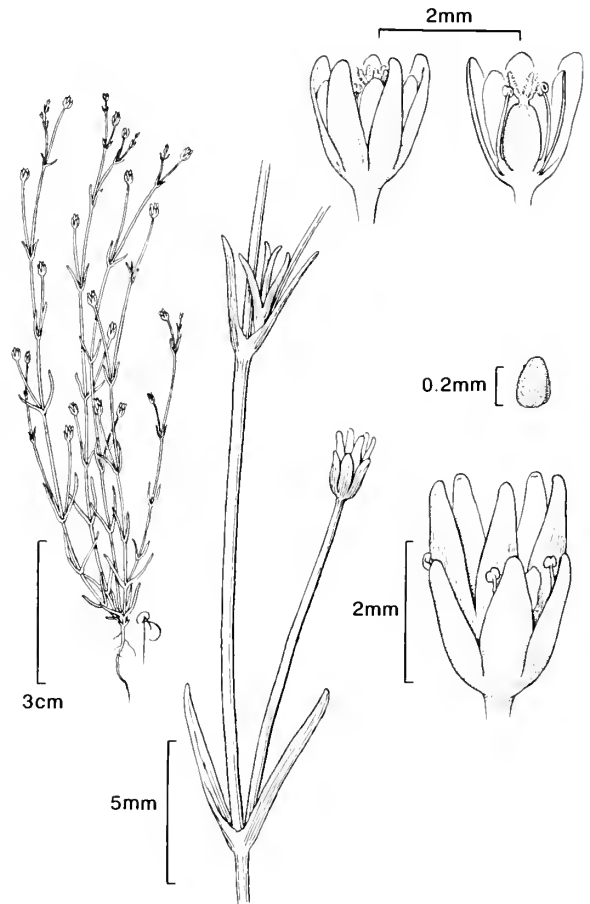
Flowering: (April) May-June

Fruiting: May-September

General Distribution: Mainly distributed from New England to Kansas and southward to Texas and Florida; widely disjunct to New Brunswick, Alberta, Saskatchewan and Arizona

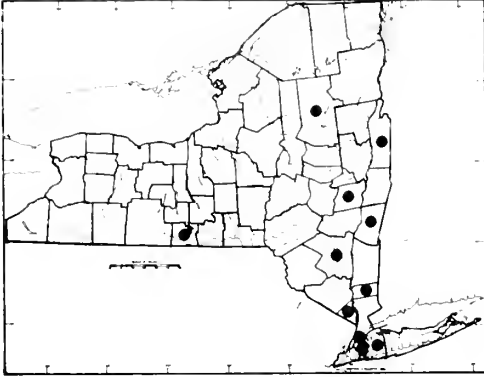
Rarity Status: These plants are near the northern edge of their contiguous range in New York State, where they were rediscovered on Long Island in 1991. The Natural Heritage rank is G5 (globally secure) S1 (5 extant sites or fewer), and E (endangered) under State law.

Description: Plants with bisexual flowers; **stigmas** (4) 5, papillose receptive areas on the upper style surfaces; **styles** (4) 5, minute, linear, persisting until dehiscence; **ovary** 1, superior, ovoid, ca. 1 mm long; **fruit** a (4-) 5-valved capsule, tan, 1.5-3.1 mm long, 1.0-1.5 (2.1) mm broad, dehiscent explosively, the valve tips then exerted from the perianth, appearing tongue-like, making the spent capsule up to 3.7 mm long; **seeds** 10-many, pale tan, with a dorsal groove, weakly tuberculate to smooth, 0.2-0.7 (1.1) mm broad, plumply triangular; **stamens** 6-10, free; **anthers** minute; yellowish; **filaments** pale, slender, ca. 1.3 mm long, incurving at anthesis; **perianth** of 2 free whorls; **petals** 5 (rarely 4 or absent) ovate-elliptic, 1.2-2.5 mm long and broad, white; **sepals** 5 (rarely 4) greenish with hyaline margins, 0.8-2.2 mm long and broad, cucullate, with purplish, obtuse tips, persisting and appressed after capsule dehiscence, sometimes minutely glandular at base; **pedicels** slender, glabrous or minutely glandular; **flowers** borne singly, terminally or in upper leaf (bract) axils, the diffuse **inflorescence** vaguely cymose; **bracts** and leaves equivalent in the inflorescence; **cauline leaves** linear, 2-13 (22) mm long, borne in pairs, with hyaline connate bases and apiculate tips, greenish, sometimes purple-tinged near the base; **basal leaves** similar to cauline ones, early-withering, not in distinct rosettes; **petioles** and **stipules** absent; **stems**



capillary, glabrous or minutely glandular, greenish to purple-tinged, erect-ascending or decumbent, 2-12 (16) cm long; **root system** a delicate, thread-like taproot ($2n = 36$).

Infraspecific Variation: Pubescence is quite variable in this species, especially regarding glandular hairs whose presence or absence varies within populations and even individuals. The tuberculate seed character is also variable within populations, being obscured in some individuals. Slender plants, that are nearly apetalous, often 4-merous and set few seeds, have been called var. *smithii* (Gray) Watson, but Crow (1978) treats such plants as extreme manifestations of a broad range of variability and recommends that no formal taxonomic status be assigned to them. Western North American populations, designated ssp. *occidentalis*, are distinguished by more orbicular sepals, globose capsules and seeds that lack both reticulate ridges and tuberculate surfaces.



3. *Sagina japonica* (Sw.) Ohwi

Common Names: Pearlwort, Japanese Pearlwort

Type Description: Swartz, Gesel. Nat. Freunde (Berlin), Neue Schrift, vol. 3, p. 164, 1801

Synonyms: *S. echinosperma* Hayata, *S. sinensis* Hance, *S. taquetii* Lév.

Origin: A native of eastern Asia

Habitats: Sandy, gravelly places: urban streets, driveways and building foundations; shores of the estuarine Hudson River

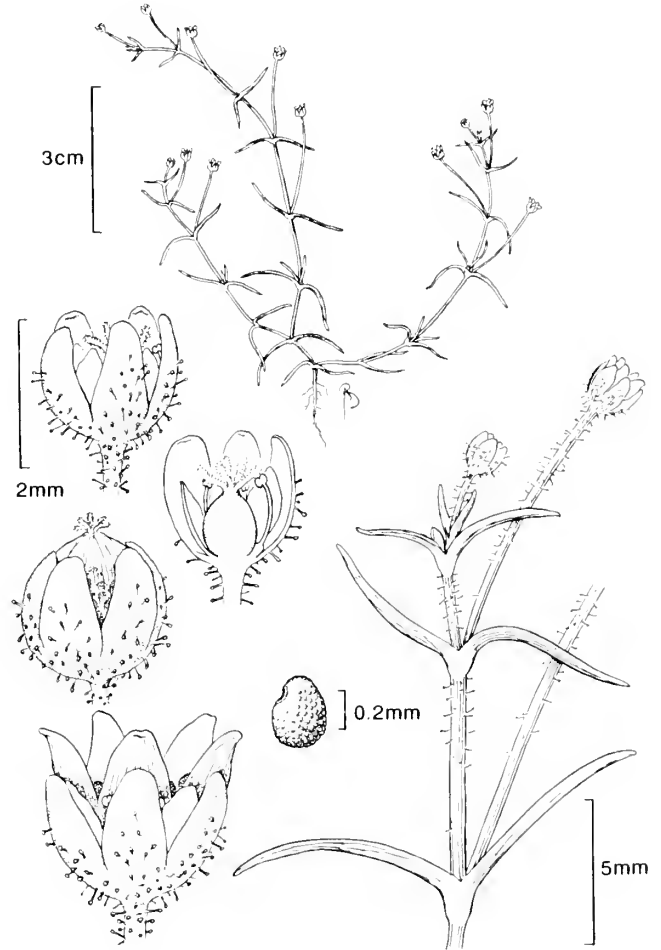
Habit: An ascending (rarely decumbent), semisucculent annuals from taproots

Flowering: June-August

Fruiting: June-October

General Distribution: An Asiatic weed, overlooked on the east coast of North America until the 1990s: Massachusetts, Connecticut, New York, Ontario, British Columbia and Oregon

Description: Plants with bisexual flowers; **stigmas** 4-5, minutely pubescent; **styles** 4-5, ca. 0.3 mm long, persistent until dehiscence; **ovary** globose, ca. 1 mm broad; **fruit** a globose, 5-valved capsule 1.6-2.2 mm in diameter, valves dehiscing only about 1/4 their lengths, apparently not explosively, walls somewhat translucent showing outlines of the dark seeds within; **seeds** many, 0.2-0.3 mm long, plump, dark brown to ebony, lacking a dorsal groove, the surfaces moderately to densely and prominently tuberculate; **stamens** 5, about equaling the perianth; **anthers** minute, globose, golden; **filaments** pale, slender, 0.9-1.4 mm long; **perianth** of two distinct, free whorls, both often persistent in fruit; **petals** white, ovate with obtuse tips, 1.1-1.6 mm long, 0.7-1.0 mm broad; **sepals** broadly ovate-orbicular with acute to obtuse tips, 0.9-1.8 mm long, 0.7-1.3 mm broad, green with hyaline margins, glandular pubescent on the adaxial surfaces, especially below; **pedicels** slender, 0.3-2.7 cm long, glandular pubescent over the upper half to 2/3 of their length; **bracts** leaf-like, narrowly lanceolate; **inflorescence** reduced to a single terminal flower, or more often 2 flowers, one terminal and the other at the penultimate node; **cauline leaves** paired,



linear, glabrous, 0.5-1.8 cm long, ca. 0.6 mm broad, somewhat succulent, the tips apiculate, bases conspicuously connate, sheathing, hyaline; **basal leaves** similar, persistent, sometimes congested, but not in tufted rosettes; **petioles** absent; **stipules** absent; **stems** capillary, ascending or procumbent, glabrous to glandular-puberulent; **root system** a slender or somewhat thickened, annual taproot with copious, fibrous, lateral branches ($2n = 42, 44, 46, 64$).

Infraspecific Variation: Measurements of flower parts, capsules and seeds from plants occurring in the eastern United States run somewhat smaller than those reported by Crow (1978) for plants escaping on the West Coast. In addition, most of the East Coast plants have seed walls that are not as densely or prominently tuberculate as those described from the west except for a couple of individuals. Whether these plants have been introduced more than once in Eastern North America is not clear.

Importance: A weed that has turned out to be far more common than expected in the Hudson Estuary; it was first collected in the New York State in the 1940s, but not correctly identified until 1990.

8. MINUARTIA

Common Names: Sandwort, Arenaria

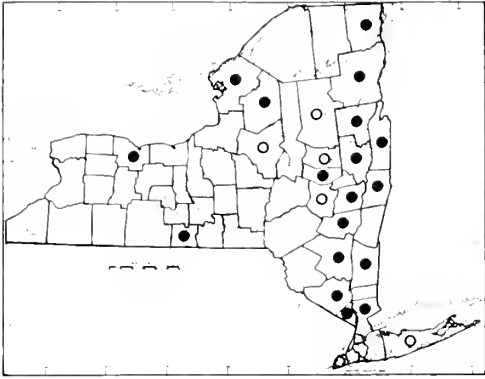
Authority: Linnaeus, *Species*, Pl. I, p. 89, 1753

A genus of 100 or more species, native to Eurasia. They have often been included in the genus *Arenaria* in North American treatments, but their fewer, uncleft capsule valves, xeromorphic leaf structure and habit seem sufficient to warrant the recognition of a separate genus, as has been done in Europe for some time.

Description: Plants with **bisexual** flowers; **stigmas** as many as the styles, often 3; **styles** (2-) 3 (-5), free; **ovary** 1, bearing few to many **ovules**; **fruit** a (2-) 3 (-5) valved capsule; **seeds** numerous, small, indented or cleft, some tuberculate or fimbriate; **embryo** arched around a starchy **perisperm**; **stamens** (6-8) 10; **filaments** slender; **anthers** globose; **perianth** of 2 distinct, free whorls; **petals** 5, not deeply cleft; **sepals** 5, greenish, 1-5-veined; **pedicels** and **peduncles** slender; **bracts** often paired, sometimes unequal; **leaves** linear to linear-lanceolate, setaceous or subulate, paired and connate at base; **petioles** obscure; **stipules** lacking; **stems** often wiry, branched throughout or only near the base; **root systems** annual or perennial.

KEY TO SPECIES

1. Sepals with acute or acuminate tips, strongly ribbed throughout their lengths 1. *M. michauxii*
1. Sepals with obtuse to rounded tips; not strongly ribbed over their entire lengths (though sometimes ribbed at base) (2)
 2. Leaves stiff, squarrose, broader toward the base, borne on tough, semi-woody branches from a thick caudex and rootstock; capsule strongly exerted from the calyx; petals not notched or indented at the tips 2. *M. caroliniana*
 2. Leaves delicate, linear, not strongly broadened at the base, borne on delicate stems from weak to capillary taproots; capsule not strongly exerted; petals usually retuse (3)
3. Flowering stems weakly ascending, usually less than 5 cm tall; vegetative stem bases matted, profusely branched and densely cespitose; pedicels mostly 1.5 cm or less 3. *M. groenlandica*
3. Flowering stems erect or strongly ascending, 5-20 (28) cm tall; vegetative bases ranging from single stems to weakly cespitose, but not profusely branched and matted; pedicels ranging up to 3 cm, sometimes longer 4. *M. glabra*



1. *Minuartia michauxii* (Fenzl) Farw.

Common Name: Rock Sandwort

Type Description: Fenzl, Verbr. Alsin., p. 18, 1833

Synonyms: *Alsine michauxii* Fenzl, *Arenaria macra* Nels. & Macbr., *A. michauxii* (Fenzl) Hook.f., *A. stricta* Michx., *Sabulina stricta* (Michx.) Small

Origin: A native of eastern North America

Habitats: Rocky and gravelly places, limestone flatrock, less frequently on sandy soils and granitic ledges

Habit: Erect-ascending, wiry, annual or perennial herbs, sometimes matted at base, often tufted with short-shoots in the leaf axils

Flowering: May-July

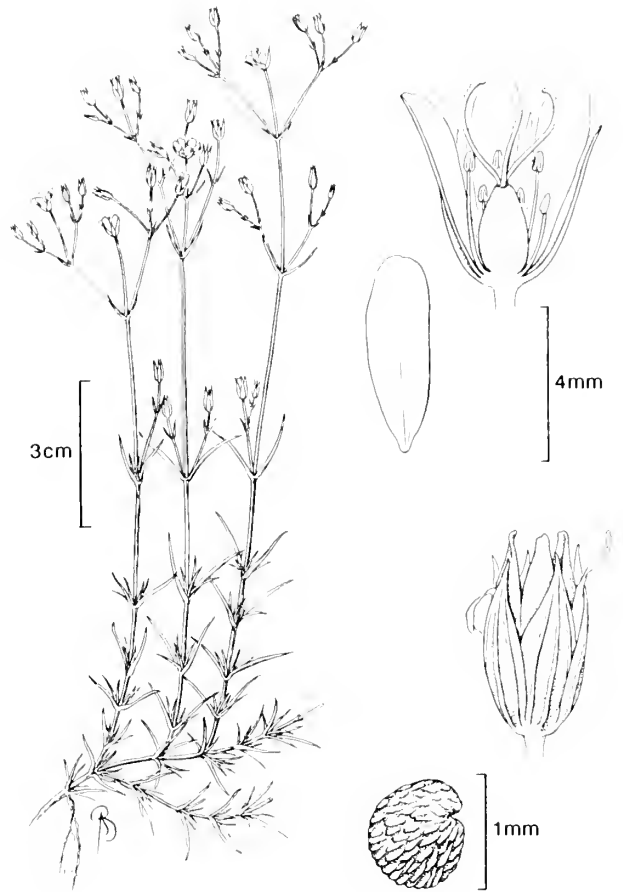
Fruiting: June-September

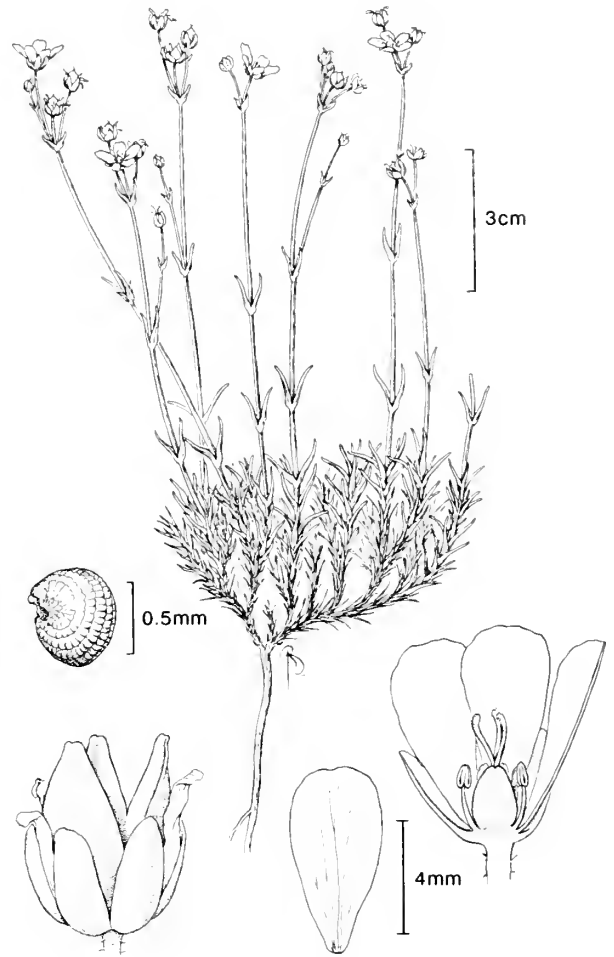
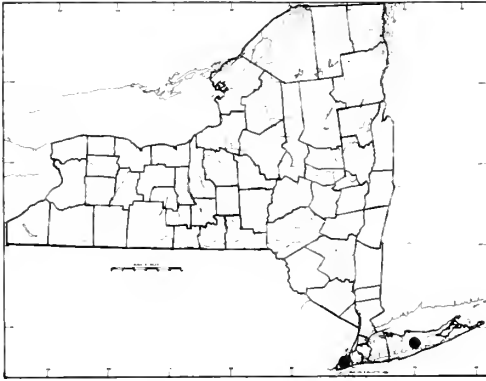
General Distribution: New Hampshire to western Ontario (*sensu lato* to the Yukon) south to Texas and Arkansas

Description: Plants with bisexual flowers; **stigmas** 3; **styles** 3, filiform, free to base, translucent, 1.4-2.1 mm long; **ovary** 1, superior, ovoid; **fruit** an ovoid capsule, 4-5 mm long, ca. 2.5 broad, included or only slightly exserted from the persistent calyx, shiny, tan, dehiscent by 3 entire valves to below the middle; **seeds** many, 0.8-1.2 (1.5) mm long, somewhat compressed, reniform, the dark brown surface rugose; **stamens** 8-10; **anthers** ovoid, golden, minute; **filaments** slender, pale, 3-4 (5) mm long;

perianth of 2 distinct, free whorls; **petals** white, ovoid to obovate with entire margins, 5-8 mm long, 3-5 mm broad; **sepals** 3.8-4.9 mm long, 2-3 mm broad, ovate to broadly lanceolate with acute to acuminate tips, strongly 3 (4) ribbed on the abaxial surface, the margins entire, borders somewhat membranaceous; **pedicels** 0.6-2.0 (3.9) cm long, slender, glabrous; **inflorescences** cymose-paniculate, both terminal and lateral in the upper axils; **bracts** often paired, narrowly deltoid, acuminate, with a prominent midrib and hyaline margins; **leaves** paired and borne in axillary tufts on short-shoots, linear-setiform, 0.5-1.5 (2.9) cm long, ca. 0.2 mm wide, spreading to squarrose, ribbed and grooved, glabrous and glossy green, the bases expanded to clasp the node as a shallow, hyaline cup; **petioles** absent; **stipules** absent; **stems** wiry, branching at the base, producing tufted short-shoots in the upper axils, glabrous, olive-green to reddish-tan, leafy with nodes crowded toward the base, flowering stems diffuse, erect and spreading, up to 30 cm tall; **root system** sometimes annual, but often persisting to become a branched, semi-woody, perennial stock ($2n = 30$).

Infraspecific Variation: A member of a variable complex, with taxa sometimes treated conspecifically under *M. michauxii* and sometimes split. *Minuartia dawsonensis* (Britt.) House, ranging north and west of our range, is segregated on the basis of shorter petals, marcescent basal shoots and a lack of tufted short-shoots on the upper stems. To the southwest, *M. michauxii* var. *texana* (Robbins.) Mattf. is recognized by its revolute, lanceolate sepals and stiff, densely-branched flowering stems.





2. *Minuartia caroliniana* (Walt.) Mattf.

Common Names: Pine-barren Sandwort, Longroot, Squarrose Sandwort

Type Description: Walter, Fl. Car., p. 141, 1788

Synonyms: *Arenaria caroliniana* Walt., *A. squarrosa* Michx., *Sabulina caroliniana* (Walt.) Small

Origin: A native of coastal eastern North America

Habitats: Sandy, open, coastal areas, beaches, dunes, thickets and oak-pine scrub

Habit: Tufted to caespitose perennials from stout rootstocks; flowering stems strongly ascending

Flowering: (May) June-September

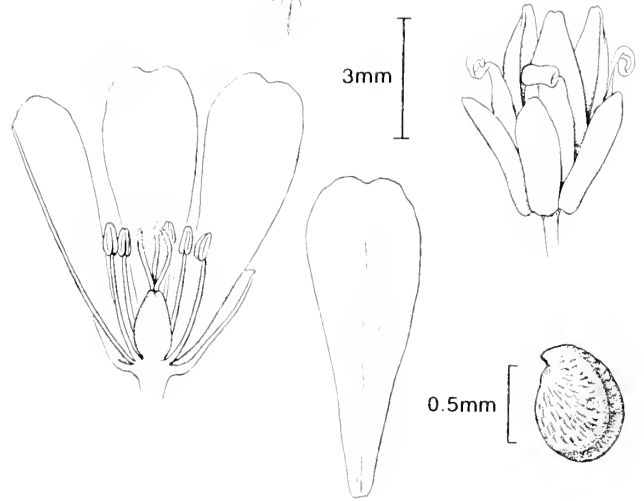
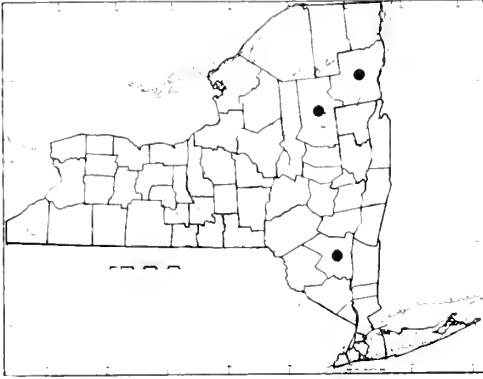
Fruiting: June-November

General Distribution: Formerly southern Rhode Island; currently eastern Long Island, New York, scattered along the coast to New Jersey, Virginia, the Carolinas, Georgia and North Florida

Rarity Status: This species is protected under New York State law, listed R (rare), with a New York Natural Heritage rating of G5 S3.

Description: Plants with bisexual flowers; stigmas 3-4, minutely capitate; styles 3-4, filiform, free to base, 0.8-2.8 mm long; ovary 1, superior, ovoid; fruit an ovoid capsule, variable in size at dehiscence, 5.2-9.8 mm long, 2-5 mm broad, exerted from the persistent calyx, shiny, tan, dehiscing by 3-4 entire valves to below the middle; seeds many, 0.7-1.0 mm long, somewhat compressed, surface brown, rugose (seeds often abortive in ours); stamens 6-10; anthers ovoid, golden, minute; filaments slender, reddish, 4-5 mm long; perianth of 2 distinct, free whorls; petals white, obovate with entire margins, 5-9 mm long, 4-6 mm broad; sepals 3.3-5.3 mm long, 1-3 mm broad, ovate with rounded tips, not strongly ribbed, the margins entire, green, the borders somewhat membranaceous; pedicels 0.5-2.4 cm long, glandular-hispidulous; inflorescences mostly terminal and subterminal cymes; bracts often paired, lance-acuminate with hyaline margins; leaves paired and crowded near the stem base on short vegetative shoots, linear to lance-subulate, 0.3-1.1 cm long, 0.3-0.9 mm broad, sometimes expanded to over 1 mm at the clasping base, squarrose, often with a prominent midrib, sometimes grooved, glabrous and glossy green; petioles absent; stipules absent; stems densely matted at base, moderately creeping, producing erect, stiff vegetative shoots, glabrous, green to brown, erect flowering stems 5-17 cm tall, with few nodes; root system a stout, erect, somewhat woody, perennial stock.

Importance: These plants help to stabilize sandy soils and dunes in the few places where they occur.



3. *Minuartia groenlandica* (Retz.) Ostenf.

Common Names: Mountain Sandwort, Mountain Starwort, Mountain Daisy

Type Description: Retzius, Fl. Scand. ed. 2, p. 107, 1795

Synonyms: *Arenaria groenlandica* (Retz.) Spreng., *Sabulina groenlandica* (Retz.) Small, *Stellaria groenlandica* Retz.

Origin: A native of arctic and boreal North America (montane Brazil)

Habitats: Rocky, gravelly, open places in montane and coastal, arctic and boreal climates: alpine summits, ledges and other acidic, exposed sites in shallow soil and full sunlight

Habit: Plants with densely-branched mat-forming stems, rosettes of needle-leaves and short, slender flowering branches; winter annuals

Flowering: (May) June-August

Fruiting: June-September

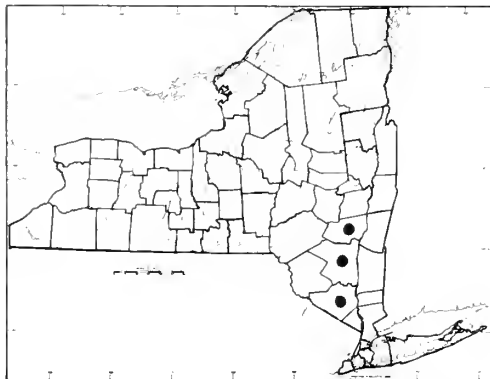
General Distribution: Greenland to Nova Scotia, northern Quebec and the Gaspé Peninsula, to Maine, Vermont and New York, with outliers south Virginia and the Carolinas; incorrectly reported from Illinois; there is also a confirmed report from montane, southeastern Brazil

Description: Plants with bisexual flowers; **stigmas** (2) 3, minutely capitate; **styles** (2) 3, free slender, hyaline, ca. 1.5 mm long; **ovary** 1, fusiform, pale green; **fruit** a capsule, 4.0-5.4 mm long, 1.6-2.3 mm broad, fusiform, 3-valved, dehiscent to near the base, tan, smooth, a remnant of the style base persistent and slightly notched at the apex; **seeds** many, rich reddish-brown, minutely rugulose, 0.6-0.9 mm broad, comma-shaped, indented on both sides and between 2 dorsal ridges; **stamens** 8 (10); **anthers** globose, pale, minute; **filaments** thread-like, hyaline, 3.8-4.7 mm long, somewhat coherent at the bases; **perianth** of 2 series; **petals** 5, alternating with the sepals, 5.7-8.4 (10) mm long, 2.8-3.9 mm at broadest point, spatulate-retuse, the V-shaped notch ca. 0.5 mm deep, petals white, with veins that are somewhat greenish; **sepals** pale green with hyaline margins, 2.6-3.8 mm long, 1.0-1.5 mm broad, ovate to ovate-lanceolate with acute to obtuse tips, the bases yellow-green, scarcely connate, but fusing with the shallow cup of the expanded receptacle; **pedicels** (0.4) 0.6-1.6 (2.2) cm long, wiry, glabrous, pale green, often browning in fruit; **inflorescence** a cyme-like panicle of laterally and terminally borne single flowers, usually numbering 4-7 per flowering stem; **inflorescence bracts** paired (equal in size, or one may be minute), linear, 0.4-3.5 mm long, subterete, flat or grooved, usually somewhat smaller than cauline leaves, usually distinguishable only by the associated axillary pedicels; **cauline leaves** subterete, linear, (1) 2-8 mm long, glabrous, green, browning early, sometimes with a minute, lateral shoot in the axil of one leaf of the pair; **basal leaves** 3-15 (23) mm long, linear to linear-oblongate, opposite, crowded into dense mats at the bases of flowering stems and on short, lateral vegetative shoots; **petioles** absent, the leaf bases flattened and clasping; **fruiting stems** erect, 1-8 (15) cm tall, slender, glabrous, green to red-brown, with

2-3 vegetative internodes of 0.8-1.5 cm each above the basal rosette before branching to form the inflorescence; vegetative stems copious, less than 1 cm tall, with very short internodes, shiny, pale brown with crowded needle-like leaves; root system fibrous, densely spreading from a slender taproot ($2n = 20$).

Infraspecific Variation: A number of similar taxa have been segregated from this species, particularly south of its contiguous range in eastern North America where they are often found in isolated, specialized habitats. The following species, *M. glabra* (Michx.) Mattf., is one of those taxa (see discussion below).

Importance: This species is one of the early colonizers and soil builders on rocky ledges and alpine summits, along with mosses lichens and *Potentilla tridentata* Soland. ex Ait.



4. *Minuartia glabra* (Michx.) Mattf.

Common Names: Appalachian Sandwort, Mountain Sandwort, Mountain Starwort, Mountain Daisy

Type Description: Michaux, Fl. Bor. Amer. I, p. 274, 1803

Synonyms: *Alsinopsis glabra* (Michx.) Small, *Arenaria glabra* Michx., *A. groenlandica* var. *glabra* (Michx.) Fern., *M. groenlandica* ssp. *glabra* (Michx.) Löve & Löve, *Sabulina glabra* (Michx.) Small

Origin: A native of the Appalachian Shield of North America

Habitats: Acid soils of ledges or in shallow, vernal moist depressions over sandstone conglomerate, usually in full sunlight; cliffs in severe, lichen and moss-dominated habitats where there is little competition

Habit: Winter annuals with tufted rosettes and slender, erect, flowering stems

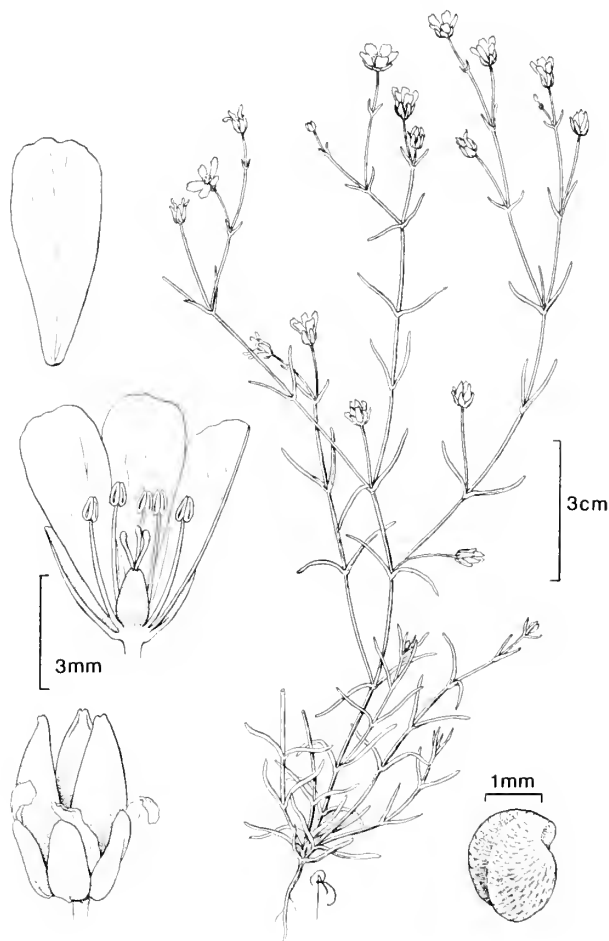
Flowering: (May) June-September

Fruiting: July-October

General Distribution: Sporadic in montane Maine, New Hampshire, New York and northeastern Pennsylvania

Rarity Status: This species is protected under New York State law considered T (threatened), with a Natural Heritage Program rank of G4G5Q S2.

Description: Plants with bisexual flowers; **stigmas** (2-) 3, minutely capitate; **styles** (2-) 3, free slender, hyaline, ca. 1.5 mm long; **ovary** 1, fusiform, pale green, 1.2-1.8 mm long, 0.8-1.1 mm broad; **fruit** 4.2-5.1 mm long, 1.9-2.2 mm broad, fusiform, 3-valved, tan, smooth, a remnant of the style base persistent and slightly notched at the apex; **seeds** many, rich reddish-brown, minutely rugulose, 0.6-0.8 mm broad, comma-shaped, indented on the sides and between the 2 dorsal ridges; **stamens** 8 (-10); **anthers** globose, pale to bright yellow, minute; **filaments** thread-like, hyaline, 3.4-4.1 mm long, cohering slightly at the disc-like receptacle; **perianth** of 2 series; **petals** 5, alternating with the sepals, 5.0-6.4 (-8) mm long, 2.2-3.1 mm at broadest point, spatulate-retuse, the V-shaped notch ca. 0.5 mm deep, petals white, with 4-6 large, often greenish veins; **sepals** pale



green with hyaline margins, 2.9-3.4 mm long, ca. 1.5 mm broad, ovate with acute to obtuse tips, the bases yellow green, scarcely connate, but fusing with the shallow cup of the expanded receptacle; **pedicels** (0.4) 1.0-2.4 cm long, very slender and wiry, glabrous, pale green, often browning in fruit; **inflorescence** a cyme-like panicle of, solitary flowers, usually numbering 9-12 (16) per plant; **inflorescence bracts** paired (equal in size, or one may be minute), linear, 1-6 mm long, subterete, flat or grooved along the upper margin, usually somewhat smaller than cauline leaves, or only distinguishable by the associated axillary pedicels; **cauline leaves** subterete, linear, sessile, (1) 4-12 (15) mm long, glabrous, green, browning early, often with a minute, green, lateral shoot in the axil of one leaf of the pair; **basal leaves** 4-22 (26) mm long, opposite, crowded into dense rosettes at the bases of flowering stems and also on short, lateral vegetative shoots; **petioles** absent, the leaf bases flattened and slightly clasping; **fruiting stems** erect, 9-14 (22) cm tall, slender, glabrous, green to red-brown, with 2-3 vegetative internodes of 1-2 cm each above a basal rosette, branching above to form the inflorescence; **vegetative stems** few, mostly less than 1 cm tall, branching upward from a larger, arched main stem with a shiny, pale brown surface, each short shoot crowned by a dense rosette of needle-like leaves; **root system** fibrous, densely spreading.

Infraspecific Variation and Hybridization: *Minuartia glabra* is frequently listed as a variety of *M. groenlandica*, but it may be distinguished vegetatively by its erect to spreading, rather than mat-forming, habit. The taller flowering stems bear 8-15 flowers that are consistently smaller, on the average, than those of mat-forming *M. groenlandica*, though some overlap in size does occur. A closely related species, *M. uniflora* (Walt.) Mattf. [*M. alabamensis* McCormick *et al.*], is largely restricted to granitic outcrops in the southern Appalachians. *Minuartia glabra* has been reported to occur sympatrically with *M. uniflora* in areas where populations of that species are apparently obligate self-pollinators, and hybrids between the two are not known (Wyatt, 1990).

Importance: This species is one of the early colonizers and soil builders in bare, rocky habitats, establishing soon after lichens and mosses gain a foothold.

9. CERASTIUM

Common Names: Mouse-ear Chickweed

Authority: Linnaeus, Species Pl. I, p 437, 1753

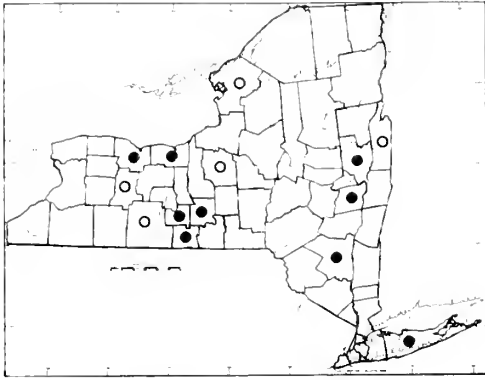
A genus of 100 species or more, distributed widely, mostly in the North Temperate Zone. There are more species in Europe (ca. 60) than in North America, and the genus is also well-represented in Asia. A number of *Cerastium* species, both native and introduced, are weeds of lawns, gardens and streets. The field chickweed (*C. arvense* L.) and two species called snow-in-summer may have showy flowers, and are cultivated in gardens, from which they sometimes escape.

Description: Plants with **bisexual** flowers; **stigmas** (3-4) 5; **styles** (3-4) 5; **ovary** 1, superior, unilocular; **ovules** many, borne on a free central placenta; **fruit** a membranous capsule, often contorted toward the apex, dehiscent by (6-8) 10 hygroscopic teeth surrounding an apical or subapical aperture; **seeds** numerous, usually grooved, papillate or rugulose; **embryo** curved; **stamens** 5-10, free; **filaments** slender; **anthers** globose to oval; **perianth** of 1 or 2 free whorls of 5; **petals** 5 or fewer (sometimes lacking), usually white, emarginate to bifid (rarely entire); **sepals** 5 (rarely 4), free, persistent; **pedicels** usually slender; **bracts** herbaceous or scarious; **inflorescences** often cymose (or flowers solitary in leaf axils); **leaves** opposite, usually entire, clasping at base, ovate to linear; **petioles** absent or obscure; **stipules** absent; **stems** cespitose, usually pubescent, creeping, ascending or erect; **root systems** annual or perennial.

KEY TO SPECIES

1. Surfaces of the sepals, leaves and stems matted with a dense, woolly tomentum, giving the plant a gray to silvery appearance throughout; flowers often showy, up to 2.5 cm broad (2)
1. Surfaces of the sepals variously pubescent, sometimes densely so (to glabrescent), but not matted with a dense, silver wool or tomentum; plants appearing pale to dark green; flowers showy or not (3)
 2. Terminal internode (subtending the inflorescence) about twice the length of the one below it, commonly 8-12 cm long; leaves broadly lanceolate to lance-elliptic, not revolute; capsule teeth flat, not revolute or spreading [*C. biebersteinii*]¹
 2. Terminal internode not significantly longer than the one just below it, usually less than 6 cm long; leaves linear to narrowly lanceolate, at least slightly revolute; capsule teeth revolute, often spreading 1. *C. tomentosum*
3. Uppermost inflorescence bracts (those directly subtending the pedicels of the flowers) with scarious margins, at least toward the apex, often resembling the sepals (5)
3. Uppermost inflorescence bracts herbaceous, leaf-like, the tips and margins not scarious (4)
 4. Cauline leaves and bracts broadly elliptic to obovate, mostly less than 4 times as long as broad; calyx with glandular-hispid pubescence, up to 1 mm long; inflorescences densely congested, especially when in flower, but often glomerate, even in fruit 2. *C. glomeratum*
 4. Cauline leaves lanceolate, narrowly elliptic to oblanceolate; bracts lanceolate; leaves and bracts mostly 5-8 times as long as broad (or more); calyx pubescence short glandular-villous; inflorescences congested only when young, the axes elongate at maturity 3. *C. nutans*
5. Petals showy, exceeding the sepals by 1-2 lengths; leaves mostly linear-lanceolate 4. *C. arvense*
5. Petals not showy, shorter, equal or very slightly longer than the sepals; leaves mostly oval to elliptic-lanceolate (6)
 6. Fruiting calyces mostly 3-4 mm long; stamens usually 5; the best developed cauline leaves rarely reaching 1 cm in length; annual plants with taproots 5. *C. semidecandrum*
 6. Fruiting calyces mostly 5-6 mm long; stamens usually 10; well developed cauline leaves often 1-2 cm or longer; perennials with rhizomes and basal shoots 6. *C. fontanum*

¹*Cerastium biebersteinii* DC. is a rare garden escape, closely related to *C. tomentosum* L., that is confused with it in both the nursery trade and northeastern floras. At NYS, there is a specimen collected from a garden on Long Island, not far from where an escaped population was found a few years later. The species is planted as a garden novelty and perennial ground-cover in sandy and rocky, open places. Its low-growing, silvery foliage adds a pleasant touch to garden borders.



1. *Cerastium tomentosum* L.

Common Names: Snow-in-summer

Type Description: Linnaeus, Species Pl. I, p. 440, 1753

Synonym: *C. columnae* Tenore

Origin: Native to Mediterranean Europe

Habitats: Roadsides, sandy gullies and rocky shores as a garden escape

Habit: Spreading, matted, perennial herbs with ascending, flowering stem-tips

Flowering: May-July

Fruiting: July-August

General Distribution: A native of Italy; escaping cultivation in relatively frequently in Eurasia, but infrequent as a garden escape in temperate North America

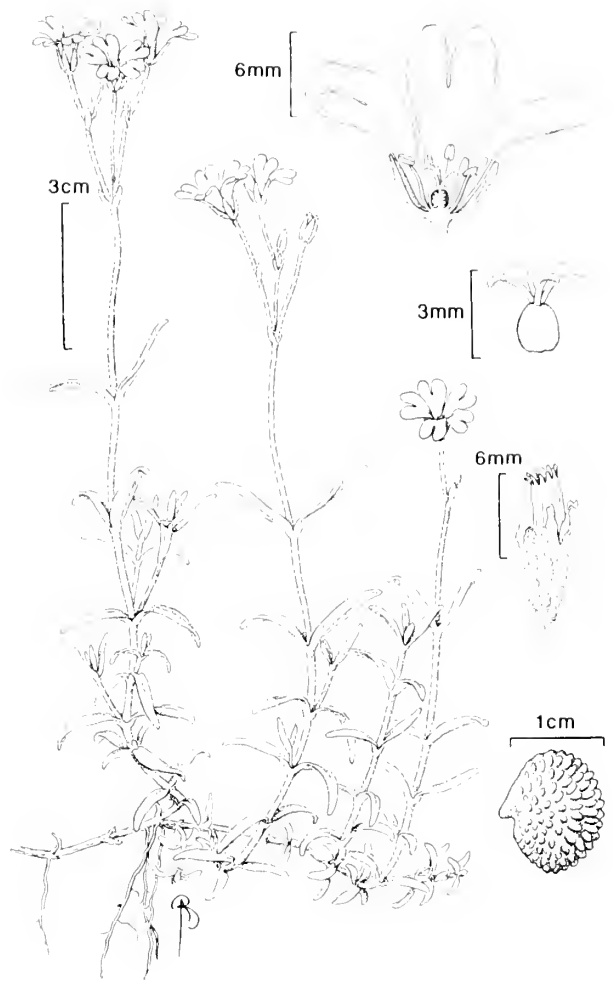
Description: Plants with bisexual flowers; stigmas

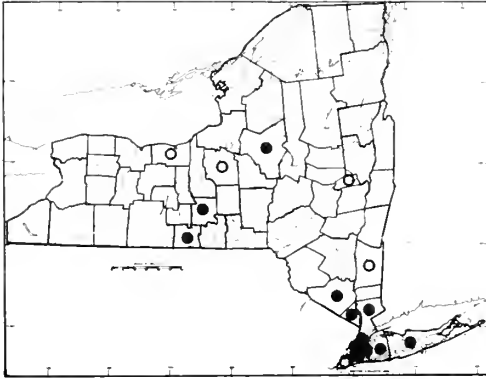
5; styles 5, filamentous, 3-4 mm long; ovary 1, free, ovoid; fruit a cylindric capsule, glossy, greenish-tan, 9-10 mm long, ca. 3 mm broad, not strongly contorted, dehiscent by 10 unequal, erect to spreading teeth with revolute margins; seeds few, comma-shaped, 2.3-2.7 mm long, 1.5-1.8 mm broad, red-brown, strongly tuberculate, the lateral tuberculae elongate; stamens 6-10, free; anthers narrow, ca. 1 mm long; filaments linear, 4-6 mm long; perianth of 2 free whorls of 5; petals white, 8-14 mm long, up to 7 mm broad, entire, notched or bilobed up to 1/3 their length, the petal (lobe) tips entire or minutely erose; sepals ovate, 5-8 mm long 3-5 mm broad with obtuse tips and broad hyaline margins, the abaxial surfaces otherwise densely matted with a woolly tomentum; pedicels 4-20 mm long, usually densely woolly; inflorescences open, few-flowered terminal cymes; bracts paired, much like the sepals, 3-8 mm long, 2-4 mm broad, ovate, obtuse, with a heavy tomentum and hyaline margins; leaves linear to lanceolate or oblanceolate with acute to obtuse tips, 1-3 (4) cm long, 1-4 (5) mm broad, margins strongly to weakly revolute, entire, surfaces moderately to densely woolly-tomentose; petioles and stipules absent; buds plump, woolly, up to 2 mm long in the lower leaf axils; stems yellow-green with a moderate to dense white to silver-gray woolly tomentum, prostrate, branching with ascending tips, up to 35 cm long, from tough, wiry rhizomes; terminal internode (subtending the flower) similar in length to the one below, usually less than 6 cm long; root system perennial, fibrous, largely adventitious ($2n = 36, 72, 90, 108$).

Intraspecific Variation: Notching and lobing of the petals is variable.

Note: Some plants reported as *C. tomentosum* in northeastern floras are referable to *C. Biebersteinii* DC. (see above), but the definitive fruit character is often unavailable for study on herbarium specimens, since they are commonly collected in the showy, early stages of flowering.

Importance: This species is grown as a rock garden plant worldwide. It escapes cultivation primarily in temperate, Mediterranean and Austral climates, very rarely in New York.





2. *Cerastium glomeratum* Thuill.

Common Names: Mouse-car Chickweed

Type Description: Thuillier, Fl. Paris, ed. 2, p. 226, 1824

Synonyms: *C. apetalum* Dumort., *C. glomeratum* var. *apetalum* (Dumort.) Fenzl, *C. viscosum* of authors, not L.

Origin: A native of Eurasia

Habitats: Pastures, lawns, open woods, cultivated ground and urban clutter as a weed

Habit: Sprawling to erect-ascending, annual herbs

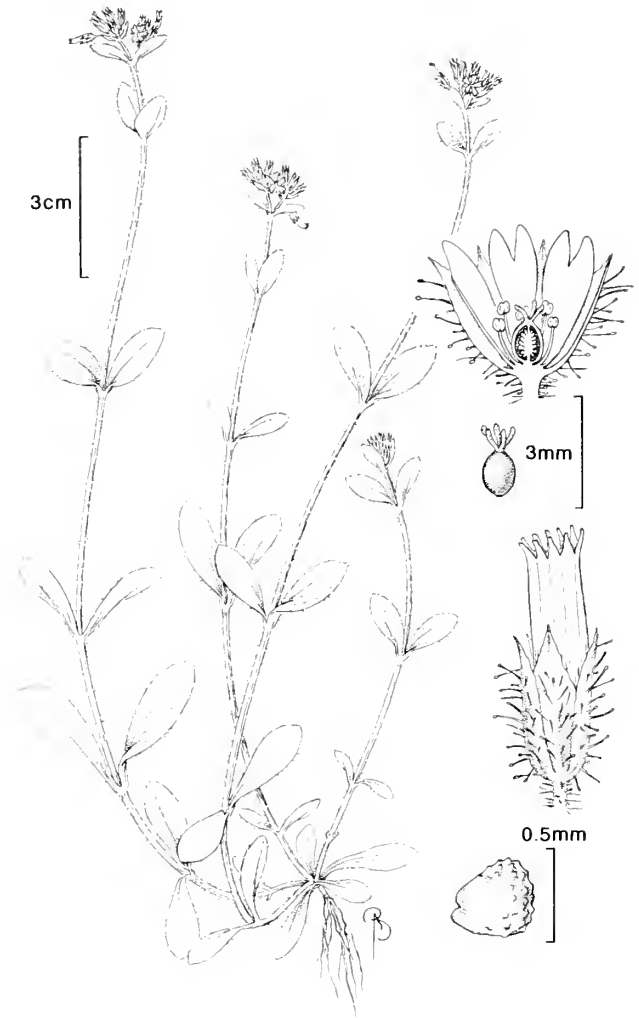
Flowering: (March) May-July

Fruiting: June-September

General Distribution: Southern Newfoundland, New York, Connecticut south to Florida, west to Kansas, Texas; British Columbia to California

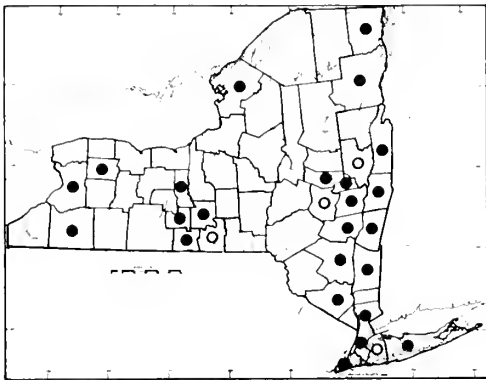
Description: Plants with bisexual flowers; stigmas 5, papillose; styles 5, linear to moderately clavate, 0.8-1.0 mm long; ovary 1, cylindric-ovoid, ca. 2 mm long; fruit a slender, cylindric capsule, golden, 4-9 (10) mm long, 1.2-1.8 mm broad, straight to slightly contorted, dehiscent by 7-10 irregular teeth at apex; seeds many, pale brown, sparsely papillose, 0.4-0.6 mm long, triangular (pyramidal); stamens 7-10, free; anthers minute, golden; filaments linear, 1-2 mm long; perianth of 2 free whorls of 5; petals 5 (sometimes fewer or lacking), white, bifid into two slender lobes, 3.1-5.5 mm long, almost equal to slightly exceeding the sepals; sepals 5, elliptic-lanceolate, 3.6-5.8 mm long, 0.7-1.4 mm broad, green below with the margins increasingly scarious toward the sharply acute to acuminate tips, adaxial surfaces glandular hispid, with hairs up to 1 mm long; pedicels 0.3-4.6 (12) mm long, viscid; inflorescences loose, glomerate heads, or expanding into clusters of dense cymes through elongation of the peduncles by the time of fruiting; bracts herbaceous, broadly oval to ovate-lanceolate with obtuse (acute) tips, 2-12 mm long 1-10 mm broad, the lower ones paired, resembling reduced leaves, margins not scarious, even toward the tips, though the tip may be slightly paler (rarely with a pale mucro), surfaces sparsely to densely glandular-hispid; leaves ovate to elliptic, 0.4-3.2 (4) cm long, 0.3-1.5 (2) cm broad, reduced upward, the tips obtusely angled to rounded (or apiculate), the bases obtuse to attenuate, surfaces and entire margins moderately to densely hispid or sericeous; petioles absent, indistinct or up to 1.5 cm long with clasping bases, often hispid like the blade; stipules absent; stems lax to strongly ascending, often densely hispid, up to 60 cm long, sometimes (in ours) congested at base, showing a tendency to proliferate by lateral shoots; root system annual, a taproot or diffuse and finely branched ($2n = 72$).

Intraspecific Variation: In some plants collected in North America there is a tendency to sprout at the base and produce marcescent shoots late in the season. Such variants are clearly like other *C. glomeratum* specimens morphologically, but with an aspect that has caused them to be mistaken for perennial *C. fontanum* Baumg.



Occasionally inflorescences have a few elongate axes, especially in plants from the western part of the distribution range of the species, but ours consistently have glomerate inflorescences. Some populations have flowers with fewer than 5 petals, and in some places it is not uncommon to find plants in which most flowers lack petals; these were once recognized taxonomically as *C. glomeratum* var. *apetalum* (Dumort.) Fenzl.

Importance: Noxious lawn weeds, especially in the southern states.



3. *Cerastium nutans* Raf.

Common Names: Nodding Chickweed, Powderhorn

Type Description: Rafinesque, Prec. Decouvr., p. 36, 1814

Synonyms: *C. glutinosum* Nutt., *C. longipedunculatum* Muhl. a nomen nudum, *C. tenellum* Fenzl

Origin: A widespread native of North America

Habitats: Cliffs, seeps and rocky woodlands

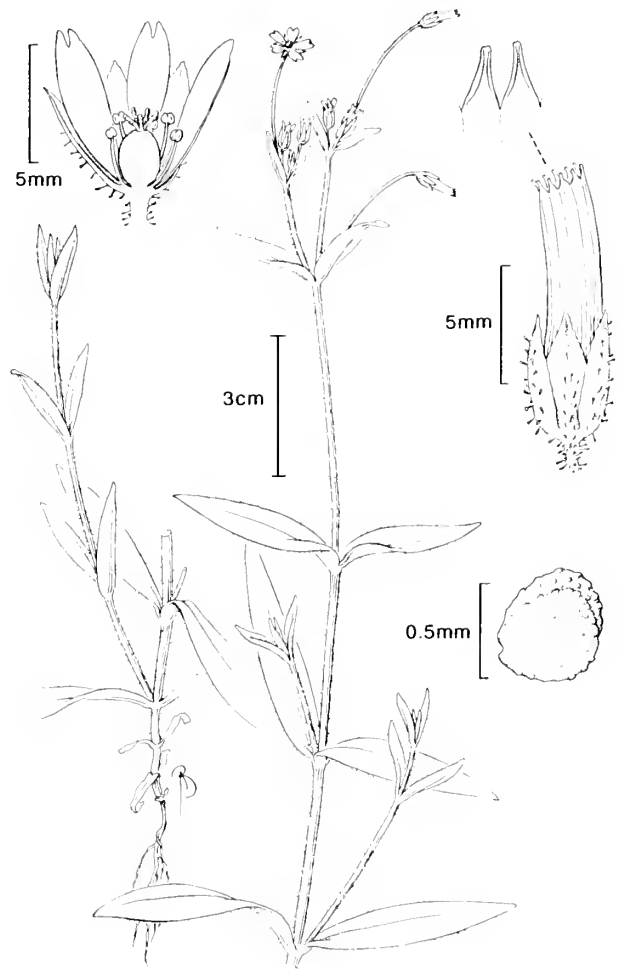
Habit: Lax to ascending, sparsely-branched, annual herbs

Flowering: (March) April-July

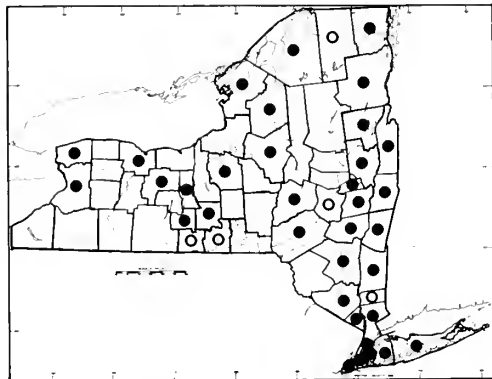
Fruiting: May-September

General Distribution: (Nova Scotia) New Brunswick south to Georgia, Texas and Guatemala; on the West Coast: Mackenzie and British Columbia south to Arizona

Description: Plants with bisexual flowers; **stigmas** 5, papillose; **styles** 5, linear, 0.3-0.4 mm long; **ovary** 1, ovoid-cylindric; **fruit** a glossy, tan, somewhat translucent, cylindric capsule, often curved or contorted near the middle, when bearing mature seeds 8.5-12.0 (15) mm long, 2.3-3.4 mm broad at the widest point near the base, dehiscent by 10 subequal teeth with revolute margins, **seeds** many, (0.5) 0.7-0.8 mm long at maturity, comma-shaped, with a flat, dorsal ridge, light reddish-brown, the surfaces boldly tuberculate; **stamens** 6-10, free; **anthers** spheroid, golden, minute; **filaments** linear, ca. 2 mm long; **perianth** of 2 free series; **petals** 5 (or lacking) white, lanceolate to obovate, cleft or uncleft, 1-5 (8) mm long, often approximately equaling the sepals; **sepals** ovate to ovate-lanceolate, 3.5-5.7 mm long, 1.5-2.6 mm broad, green with hyaline margins, especially toward the tips, the adaxial surfaces and margins moderately to densely short glandular-villous, tips acute to bluntly cucullate, the bases rounded; **pedicels** 0.4-3.5 (5.5) mm long, slender, often reflexed just below the calyx in fruit; **inflorescences** of terminal cymes, sometimes dichotomously branched, often few-flowered or flowers in pairs, glomerate only when very young, the pedicels and peduncles elongated and recurved (hooked) in mature flower and fruit; **bracts** herbaceous, ovate to narrowly lanceolate, 2-14 mm long, 0.4-2.7 mm broad, sparsely to moderately glandular-hispid, especially on the margins; **leaves** (0.4) 1-5 (8.3) cm long, 0.2-2.3 cm broad, elliptic to lanceolate or broadly oblanceolate, with acute to obtuse (sometimes apiculate) tips, and oblique bases, entire, the margins and surfaces usually covered with soft, glandular pubescence;



petioles absent or indistinct; **stipules** absent; **stems** slender to somewhat stiff and stout, the larger ones often ridged and grooved, glandular pilose or hispid, 3-40 (60) cm long; **root system** slender, annual ($2n = 34, 36$). **Note:** Plants with shorter, unreflexed pedicels, obtuse leaf tips and mostly small seeds (0.5-0.7 mm) occur to the south and west, where they are recognized as *C. brachypodum* (Engelm. ex Gray) Robins.



4. *Cerastium arvense* L.

Common Names: Field Chickweed, Meadow Chickweed, Barren Chickweed

Type Description: Linnaeus, Species Pl. I., p. 438, 1753

Synonyms: *C. arvense* var. *oblongifolium* (Torr.) Hollick & Britt., *C. campestre* Greene, *C. oblongifolium* Torr., *C. occidentale* Greene, *C. pennsylvanicum* Hornem. ex DC., *C. pubescens* Goldie, *C. tenuifolium* Pursh, *C. velutinum* Raf., *C. villosum* Muhl.

Origin: Circumboreal in range (possibly both native and introduced in New York State)

Habitats: Ledges, rocky woods, meadows, fields and other disturbed ground

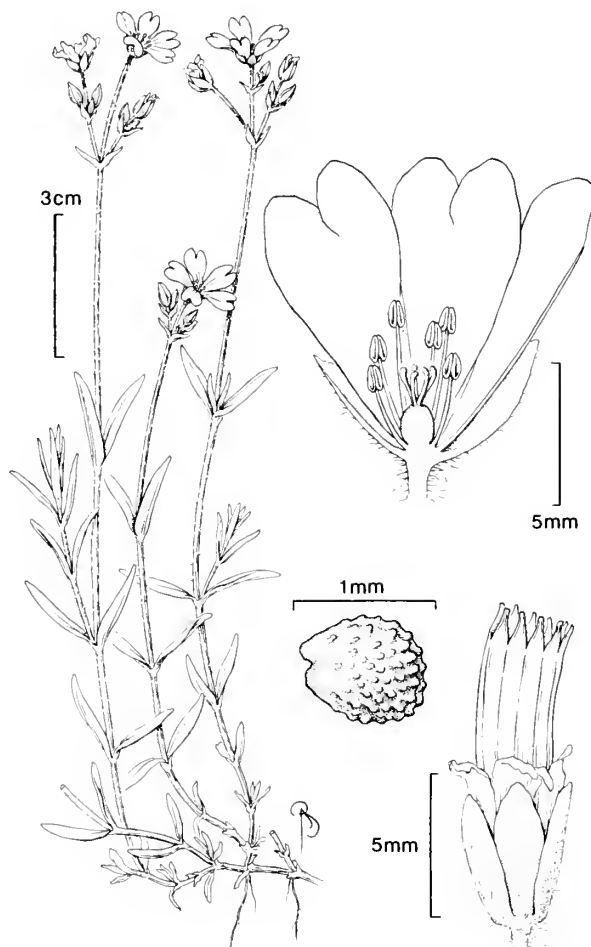
Habit: Loosely matted to tufted or cespitose, perennial herbs with lax to strongly erect branch tips

Flowering: April-August

Fruiting: May-September

General Distribution: In North America from Greenland to Alaska, south to California and Tennessee (Georgia); also native across Eurasia.

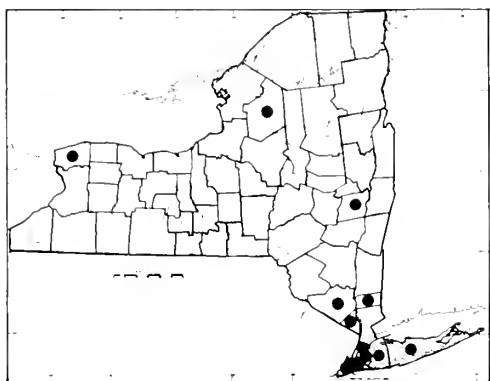
Description: Plants with **bisexual** flowers; **stigmas** 5, slightly swollen at the tips of the styles; **styles** 5, free, 1.8-2.6 mm long; **ovary** 1, superior, ovoid; **fruit** a capsule, 6-11 mm long, 2-3 mm broad, tan, glossy, dehiscent by 8-10 terminal teeth with revolute margins; **seeds** (0.4) 0.6-0.9 (1.1) mm long, comma-shaped with 2 prominent dorsal ridges, red-brown with moderately to prominently tuberculate surfaces; **stamens** 8-10, free; **anthers** golden, oblong, ca. 0.9 mm long; **filaments** slender, 3-7 mm long; **perianth** of 2 free whorls of 5; **petals** white, 6-10 (16) mm long, 3-9 mm broad, the tips obtuse, entire (or fimbriate), emarginate or bilobed, cleft up to 1/4 their length; **sepals** 4.5-8.9 mm long, 1-2 mm broad, elliptic, with acute to obtuse (notched) tips, green with scarious margins and tips, the adaxial surface glandular-pilose to moderately velutinous; **pedicels** 0.3-3.0 (4.2) cm long, glabrescent to pilose (or velutinous); **inflorescences** of terminal cymes with some single and paired flowers in the upper axils; **bracts** greenish with narrow to broad scarious margins toward the tips, 2-4 mm long, ca. 1 mm broad, hispid; **leaves** linear-acicular to elliptic-lanceolate, cauline leaves mostly 1-3 (7) cm long, 1-4 (9) mm broad, acute to acuminate (or blunted at tips), margins hispid, the surfaces glabrescent to hispid or pilose (rarely glandular); **petioles** and **stipules** absent; **stems** wiry, sparsely to densely retrorse-hispid or pilose (sometimes glandular), branched, matted and congested at the bases to lax and sprawling, the flowering branch



tips lax to strongly ascending; **short shoots** commonly borne in the leaf axils, densely tufted with needle-like leaves; marcescent **vegetative shoots** commonly clustered at the stem bases; **root system** perennial, largely adventitious from wiry stolons ($2n = 36, 72, 90, 108$).

Infraspecific Variation: This species is polymorphic, both in Eurasia and in North America, and cultivars have also been artificially bred for horticulture. Flower size, petal lobing, leaf shape, pubescence, capsule length and habit of the plant provide characters that have been historically used to delimit taxa within the complex. Further study has tended to proliferate the number of infraspecific taxa and contribute little to knowledge of the worldwide pattern of variation. Until a global study of the group is carried out, the use of polynomial designations is discouraged, except for convenience, where horticultural races are concerned.

Importance: Field Chickweed is grown as a rock garden plant around the world, and its many morphological variants occur widely as weeds as well as in their native habitats.



5. *Cerastium semidecandrum* L.

Common Names: Small Mouse-ear Chickweed,
Spring Chickweed

Type Description: Linnaeus, Species Pl. I., p. 438,
1753

Synonyms: *C. vulgatum* var. *semidecandrum* (L.)
Gray

Origin: A native of Eurasia

Habitats: Sandy, open places, especially on shores
on the Coastal Plain and Lake Plains

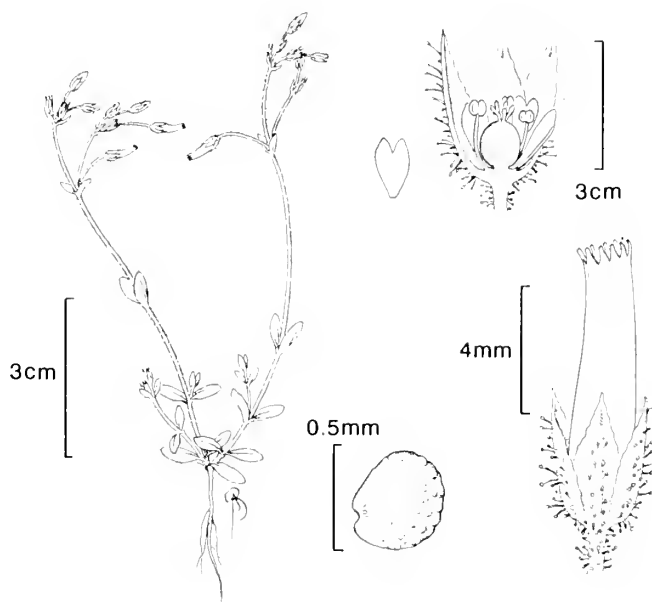
Habit: Decumbent to ascending, annual herbs,
often diminutive and much branched at the
base

Flowering: Late March-June

Fruiting: April-August

General Distribution: Eurasia; Massachusetts, New York and southern Ontario to the Great Lakes and
Midwest, south to the Carolinas and Gulf Coast of Louisiana as an adventive

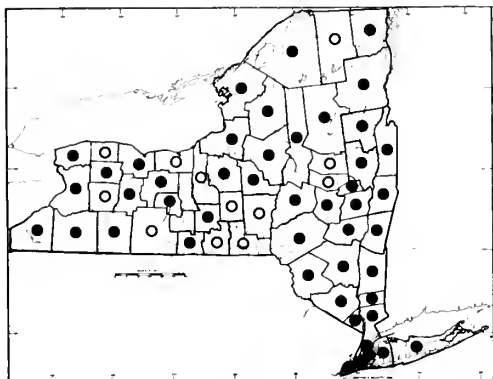
Description: Plants with bisexual flowers; **stigmas** 5, papillose up to 3/4 the style length; **styles** 5, free, filamentous, ca. 0.8 mm long; **ovary** 1, superior, ovoid; **fruit** a greenish-tan, glossy, semi-opaque, cylindrical capsule, straight or curved, 4.4-7.2 mm long, 1.1-1.5 mm broad, dehiscent by (9) 10 teeth with revolute margins; **seeds** many, comma-shaped, plump, 0.4-0.5 mm long, pale brown with a few prominent tubercles, or very weakly tubercled; **stamens** 5 (9-10), free; **anthers** minute, golden, **filaments** pale, linear, 2-3 mm long; **perianth** of 2 free whorls of 5; **petals** white, elliptic to lanceolate with obtuse or acute tips (or slightly notched), 2.1-3.2 mm long; **sepals** elliptic to ovate-lanceolate, 2.8-4.3 mm long, ca. 1 mm broad, green with broad, scarios margins toward the tips, sometimes tinged with purple, glandular to short-hispid on the adaxial surfaces; **pedicels** 1-9 mm long, erect or deflexed after anthesis, often densely glandular, short-hispid; **inflorescences** relatively dense terminal cymes, with a few flower pairs and clusters in leaf axils of robust individuals; **bracts** directly subtending the flowers, ovate to elliptic, 2-3 mm long, with scarios margins and tips (to almost entirely scarios), glandular-hispid, the lower bracts of the inflorescence more leaf-like and paired; **leaves** oval



to elliptic-obovate or somewhat spatulate with obtuse tips, 2-8 (13) mm long, 2-7 mm broad, moderately to densely hispid to glandular; **petioles** and **stipules** absent; **stems** simple to much-branched from near the base, glabrescent to densely glandular-hispid, slender, ascending or decumbent, up to 25 cm long; **root system** an annual taproot with delicate lateral branches ($2n = 36$).

Intraspecific Variation: Glabrous individuals are known in Europe, but none have been collected in our range. The stamens are usually five, but occasionally there are 9 or 10, the usual condition for plants of this genus.

Taxonomic Note: *Cerastium pumilum* Curtis is a very similar European introduction that has been reported from Kings, Chemung and Steuben Counties. These plants have tetraploid ($2n = 72$) chromosome numbers (or higher), and differ from *C. semidecandrum* in having more erect pedicels in fruit; the scarious bract tips and margins are less conspicuous, and the petals barely exceed the sepals.



**6. *Cerastium fontanum* Baumg. emend. Jalas
ssp. *vulgare* (Hartm.) Greuter & Burdet**

Common Names: Mouse-ear, Common Chickweed

Type Description: Baumgarten, Enum. Stirp. Trans. vol. 1, p. 425, 1816, *emend.* Jalas, Arch. Soc. Zool.-Bot. Fenn. Uanamo, vol. 18, p. 62, 1963

Synonyms: *C. caespitosum* Gilib., *C. fontanum* ssp. *triviale* of NY authors, not (Link) Jalas, *C. holostoides* Fries, *C. glomeratum* of authors, not Thuill., *C. vulgatum* of authors, in part.

Origin: A native of Europe

Habitats: Disturbed open sites: roadsides, lawns, meadows and fields to open woods and swamps

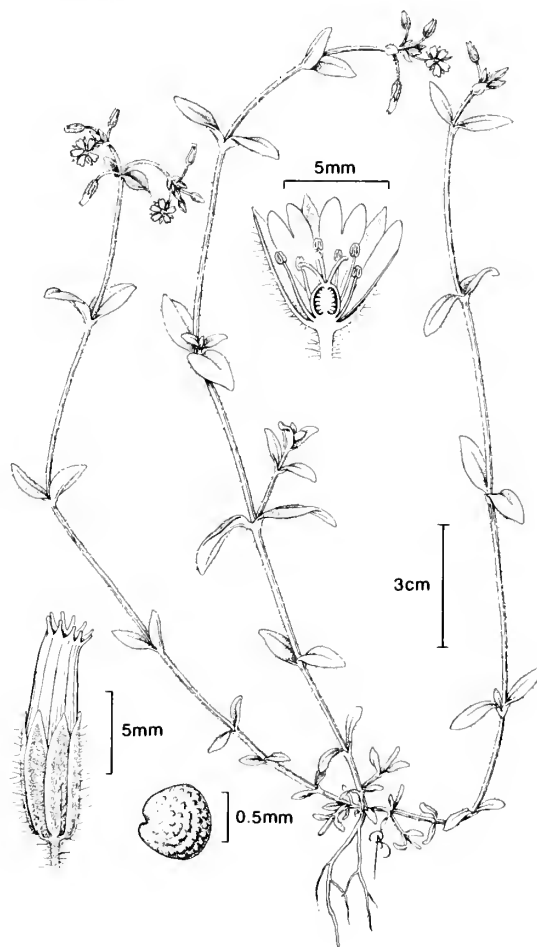
Habit: Spreading, matted, perennial herbs with ascending flowering shoots and short, marcescent vegetative shoots from basal rhizomes

Flowering: April-July (September-November)

Fruiting: May-August (October-December)

General Distribution: Newfoundland to Alaska south to Mexico, Texas and Florida

Description: Plants with bisexual flowers; **stigmas** 5, papillose over 3/4 the style length; **styles** 5, free, capillary, 0.8-1.7 mm long; **ovary** 1, superior, ovoid; **fruit** a tan, glossy, somewhat translucent capsule, cylindric, usually curved, 6-10 (12) mm long, 1-3 mm broad, dehiscent by 8-10 teeth with revolute margins; **seeds** plump, trapezoidal to pyramidal, 0.4-0.7 (1.2) mm long, red-brown, with tubercles less than twice as wide as tall; **stamens** 5 (rarely 8-10), free; **anthers** golden, ovoid; **filaments** linear, 3-5 (8) mm long; **perianth** of 2 free whorls of 5 (or petals absent); **petals** white, 4-6 mm long, 1-3 mm broad, emarginate to bilobed, cleft up to 1/3 of their length; **sepals** ovate-lanceolate, 5.2-8.3 (9) mm long, 1-3 mm broad, with acute to blunted tips, green or reddish-tinged with hyaline margins and tips, the midvein prominent at the sepal base; **pedicels** 1-9 (13) mm long, reflexed just below the calyx in fruit, densely hirsute (glandular); **inflorescences** glomerate at first, usually elongating to become open, terminal cymes; **bracts** at the inflorescence base paired, leaf-like, the floral bracts above ovate, 1-3 mm long with scarious margins toward the tips, hispidulous with ciliate margins;



leaves lance-ovate, strap-like, elliptic, obovate or spatulate, 3 times longer than wide (or more), the tips usually obtuse (mucronate or acute), with entire margins, 2-35 (41) mm long, 1-12 (15) mm broad, hirsute (to glandular) on both surfaces and margins; **petioles and stipules absent**; **stems** decumbent or ascending up to 70 cm, hirsute to glandular with marcescent vegetative shoots at base and matted stolons and rhizomes; **root system** largely adventitious ($2n = 72, 144, 162$).

Infraspecific Variation: This is an extremely variable species in Europe, where it is native and widespread as a weed. In New York State, plants similar to ssp. *fontanum* in sepal size occur, but these often have smaller seeds. They have recently been treated as ssp. *triviale* (Link) Jalas., even though ssp. *triviale* is said to differ from its nearest relatives in Europe by having a combination of short sepals and small seeds, with prominent, symmetrical tubercles. The trend in European infraspecific classification has been to recognize plants like those found in eastern North America as ssp. *vulgare* (Hartman) Greuter & Burdet. Three of four subspecies in the European flora are reported to have the same high chromosome number ($2n = 144$), so introgression may well have occurred. Varieties of so-called *C. vulgatum* L. treated in North American manuals were based on variable pubescence and leaf shape not consistent enough to warrant recognition.

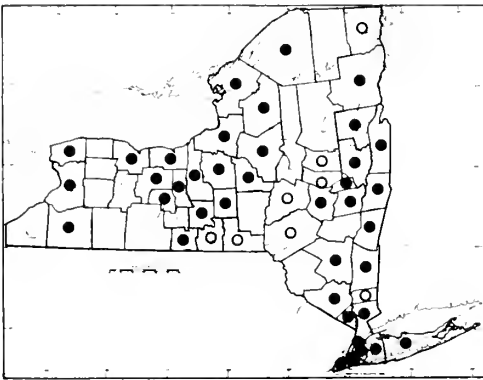
Importance: A noxious weed, very persistent in lawns and gardens, and resistant to most herbicides.

10. MOEHRINGIA

Common Name: Sandwort

Authority: Linnaeus, Species Pl. 1, p. 359, 1753

A circumboreal, but primarily Eurasian genus of 30 species, two of which occur as natives in North America.



1. *Moehringia lateriflora* (L.) Fenzl

Common Names: Grove Sandwort, Blunt-leaf Sandwort

Type Description: Linnaeus, Species Pl. I., p. 423, 1753

Synonyms: *Arenaria angustifolia* Regel, *A. lateriflora* L., *Stellaria biflora* Pursh

Origin: Circumboreal

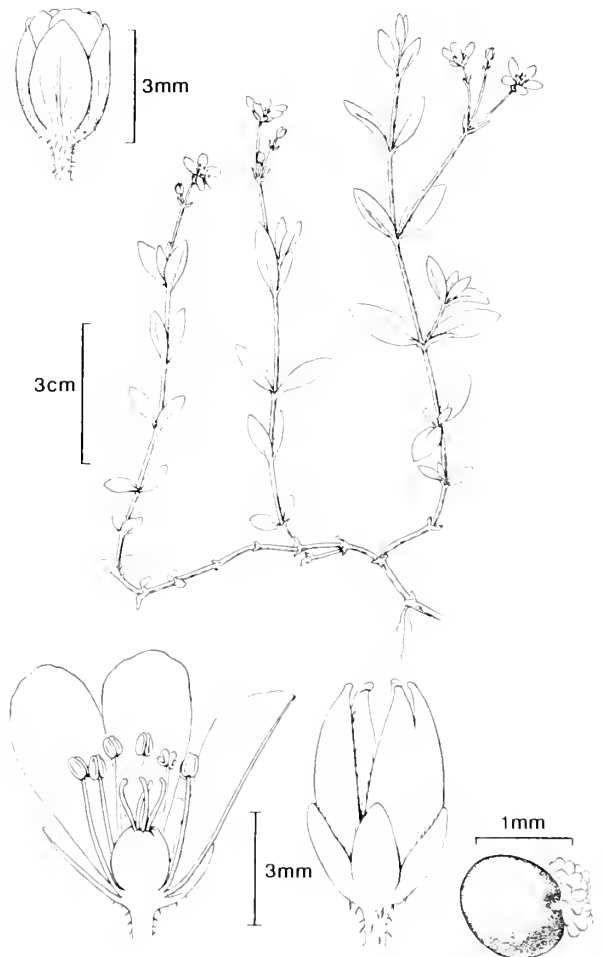
Habitats: Woodland borders, swamps, meadows, thickets and shores, in moist, mucky or gravelly soils

Habit: Rhizomatous, perennial herbs with spreading branches

Flowering: May-August

Fruiting: June-October

General Distribution: Circumboreal in temperate areas; North America from Newfoundland to Alaska, south to New Mexico and Maryland



Description: Plants with **bisexual** flowers (plants sometimes functionally dioecious); **stigmas** 3-4 (5), slightly expanded at style tips; **styles** 3-4 (5), borne at the tips of the ovary lobes, sometimes 2 (3) styles from a single lobe, united below; **ovary** 1, superior, 3-5 (6) lobed above, the lobes sometimes appearing like distinct carpels (the extreme ones clavate-tipped), ovary apex elongating and expanding between the lobes during fruit development; **fruit** a tan, lustrous capsule, ovate-lanceolate to conic, 3-7 mm long, 1-4 mm broad, with acute, lobed tips, dehiscent to become (5) 6 toothed, often more deeply 2-cleft to near the base along opposite sutures, the teeth erect to somewhat spreading; **seeds** several, red-brown to almost black, coarsely rugulose, ovoid, 0.9-1.3 mm long, often with a pale, spongy strophiole at maturity; **stamens** (8-) 10 (11), free; **anthers** globose, ca. 0.2 mm; **filaments** linear, 2-4 mm long; **perianth** of 2 distinct, free whorls; **petals** 5, white to pinkish, ovate-obovoid, 3.4-7.0 (8.3) mm long, 2.0-6.7 mm broad; **sepals** 5, elliptic to obovate, 2.1-3.1 mm long, 0.8-1.6 mm broad, entire with obtuse to acute tips, weakly to strongly 3-nerved the central nerve often lined with short, bristle-like hairs, surfaces pale green with hyaline margins; **pedicels** slender, 0.4-1.7 (2.3) cm long, yellow-green, with few to many minute, retrorsely hooked hairs; **bracts** subtending the pedicels and peduncles paired, 1-2 mm long, linear to broadly lanceolate, puberulent; **peduncles** like the pedicels, up to 4 cm long; flowers often borne in terminal pairs (or singly), sometimes overtopped by a flower from an inflorescence axil, or **inflorescence** a 3-4 (6-) flowered cyme; **leaves** paired, elliptic-ovate to narrowly oblong, (0.3) 1-3 (3.7) cm long, (0.2) 0.6-2.5 cm broad, entire with obtuse bases and obtuse to subacute tips, obscurely clasping at base, the surfaces glandular-punctate, puberulent to short-villous on the margins and adaxial veins; **petioles** lacking; **stipules** lacking; **stems** slender, greenish to pinkish-tan, glabrous to retrorsely puberulent or densely short-villous, especially at the nodes, laterally branching, the main axis somewhat weak and sprawling, mostly 10-20 (up to 40) cm long; **rhizome** slender and often extensive, with scale-like leaves at the nodes; **root system** fibrous, adventitious ($2n = 24, 48$).

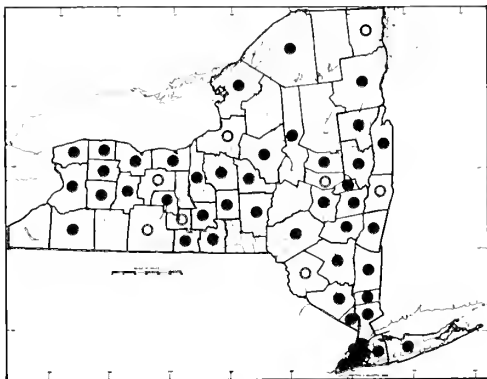
Infraspecific Variation: This species ranges to northern Eurasia, where most other species of the genus occur as endemic relicts. Its unusual variation in floral structure suggests that it is among the more primitive members of the family, possibly having evolved as far back as the Cretaceous. In early stages of development, the ovary may be swollen, with inconspicuous terminal lobes, or the lobes may be elongate and club-like, with appearance of separate carpels when viewed from above. The whole aspect of the flower is much like that of a saxifrage prior to fruit development. The somewhat erratic development of the ovary leads to some variation in size and morphology of the mature fruits, which range from small, primarily 2-valved structures bearing only a few ripe seeds through a series of larger capsules, the best developed of which dehisce by 5-6 teeth and split to near the fruit base. *Moehringia macrophylla* Hooker is a closely related, widespread species in North America, differing from ours in leaf, bract, sepal and capsule shapes. Its distribution range is primarily Western Cordilleran, but it occurs sporadically in the east, and as close to New York as Vermont.

11. ARENARIA

Common Names: Sandwort, Starwort

Authority: Linnaeus, Species Pl. I, p. 423, 1753

A genus of up to 300 species of primarily Old World plants, many of which are sun-loving and occur in sandy and rocky habitats. In this publication, *Minuartia* and *Moehringia* and *Honckenya*, often considered congeneric with *Arenaria* in earlier North American floras and manuals, are treated separately.



1. *Arenaria serpyllifolia* L.

Common Names: Thyme-leaf Sandwort

Type Description: Linnaeus, Species Pl., p. 423, 1753

Synonyms: *A. leptoclados* (Reich.) Guss., *A. serpyllifolia* ssp. *leptoclados* (Reich.) Nymer; *A. serpyllifolia* var. *tenuior* Mert. & Koch, *A. tenuior* (Mert. & Koch) Gürke

Origin: A native of Eurasia

Habitats: Dry, sunny, sandy or gravelly waste places, fields, roadsides, quarries and ledges

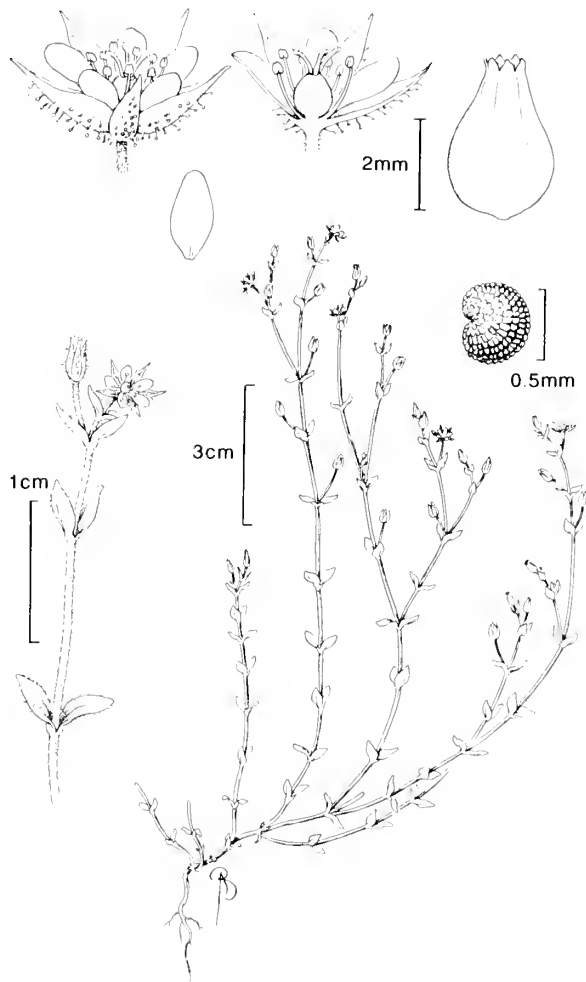
Habit: Annual herbs, often profusely branched with slender taproots

Flowering: April-September

Fruiting: May-November

General Distribution: A native of Europe and northern Asia, widespread as a weed virtually throughout the temperate world

Description: Plants with bisexual flowers; stigmas 3, papillose areas at the style tips; styles 3, filiform, spreading, ca. 0.7 mm long; ovary 1, superior, ovoid; fruit an olive-tan, glossy capsule, pyriform to cylindrical, 3-5 mm long, ca. 3 mm broad near base, dehiscent by 6 triangular, apical teeth; seeds many, golden to dark brown, semi-glossy, rugose, reniform, 0.5-0.7 mm long; stamens 6-8 (10), free; anthers minute, golden, globose; filaments thread-like, 0.5-1.2 mm long; perianth of 2 distinct, free whorls; petals 5, obovate, 1.3-2.4 mm long, entire or minutely notched at tip, white; sepals 5, ovate at base with lance-acuminate tips, 1.8-3.6 mm long, 0.4-1.0 mm broad at base, glandular-hispid on the adaxial surface, the central 1/2-2/3 of the structure a green band with 1-3 (3-5) major veins, the midrib usually prominent, margins hyaline; pedicels 1-14 mm long, minutely glandular-hispid, sometimes retrorsely; bracts minute, leaf-like up to 6 mm long and 3 mm broad; peduncles like the pedicels; inflorescence a diffuse dichasium with single flowers pairs and clusters borne terminally and in the axils throughout all but the lower portions of the plant; leaves oval to ovate-lanceolate, acute to acuminate or apiculate, with obtuse, minutely clasping bases, 1-6 (8) mm long, 0.6-5.4 mm broad, the surfaces glandular punctate or pustulose, scabrescent (to glandular-hispid), especially along the veins and entire leaf



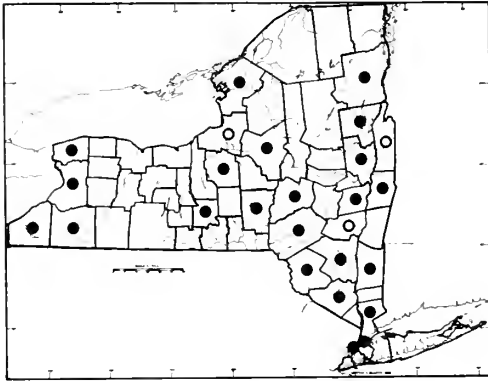
margins; **petioles** absent; **stipules** absent; **stems** wiry, usually much-branched from near the base, sparsely to densely, retrorse-scabrescent, 3-30 (36) cm, spreading; **root system** a slender, annual taproot ($2n = 20, 40$). **Infraspecific Variation:** Some authors have recognized up to four subspecies of *A. serpyllifolia*, including a taxon based on slightly shorter, more cylindrical capsules and a more delicate vegetative habit. These characters have been used to distinguish *A. leptoclados* from *A. serpyllifolia* L. Plants reported as *A. serpyllifolia* var. *macrocarpa* Lloyd (a *nomen illeg.*), from the Atlantic coast of Europe, also occur in New York State. These are distinctive in appearance in that the upper leaves and bracts are broad and often crowded beneath short-pedicelled flowers at the stem apices.

12. MYOSOTON

Common Names: Giant Chickweed, Water Mouse-ear

Authority: Moench, Meth., p. 225, 1794

A monotypic genus of the Old World, historically included in the genus *Stellaria*.



1. *Myosoton aquaticum* (L.) Moench

Common Names: Giant Chickweed, Water Mouse-ear (Chickweed)

Type Description: Linnaeus, Species Pl. I., p. 439, 1753

Synonyms: *Alsine aquatica* (L.) Britt., *Cerastium aquaticum* L., (*Malachia*) *Malachium aquaticum* (L.) Fries., *Stellaria aquatica* (L.) Scop.

Origin: A native of northern Europe

Habitats: Stream courses and shores, wet meadows, thickets, swamp clearings and moist waste places

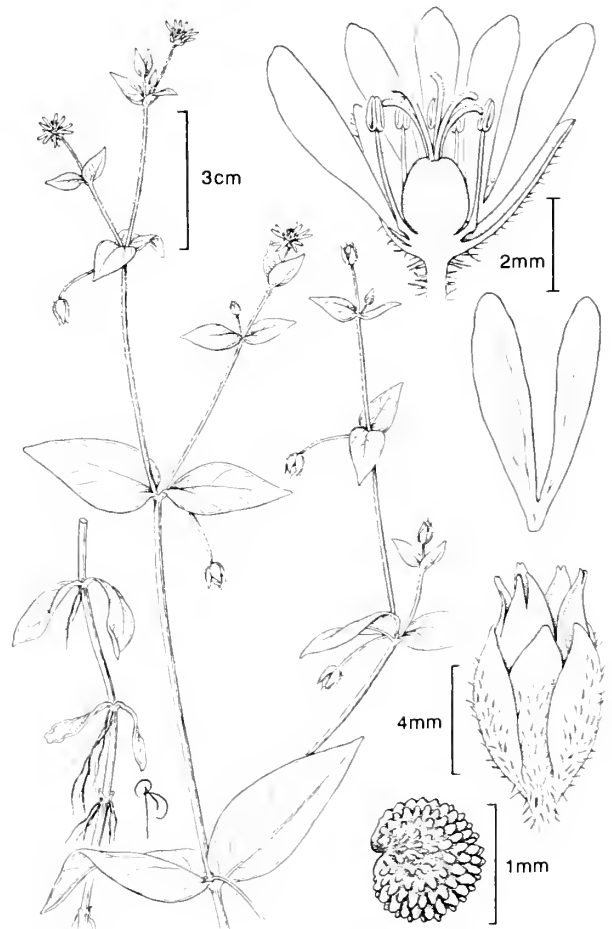
Habit: Sprawling to ascending, perennial herbs

Flowering: (May) June-October

Fruiting: June-November

General Distribution: A native of Europe, naturalized in North America from New England to Minnesota (also B.C.), sporadically southward to Missouri and the Carolinas (Louisiana)

Description: Plants with bisexual flowers; **stigmas** 5, papillose zones lateral to the styles and ca. 1/2 their length; **styles** 5, filamentous, 1.6-2.0 mm long, free, divergent to recurved; **ovary** 1, superior, ovoid, ca. 2.5 mm long; **fruit** an ovoid-cylindric to pyriform capsule, 5-9 (10) mm long, 3-6 mm broad, greenish to tan, smooth, dehiscent apically by 5 valves each bifid into 2 narrow teeth ca. 1 mm long; **seeds** numerous, 0.7-0.9 mm long, brown, orbicular to reniform and prominently tuberculate to papillate, especially on the dorsal surface; **stamens** (9) 10, free; **anthers** elliptical, up to 1 mm long; **filaments** linear, 2.1-3.8 mm long; **perianth** of 2 free



whorls of 5; **petals** white, obovate to narrowly spatulate, 5-11 mm long, 2-3 (4) mm broad; **sepals** ovate to lance-acuminate, greenish to somewhat hyaline, 4-9 (10) mm long, 2-4 mm broad, viscid, glandular- puberulent on the adaxial surfaces; **pedicels** mostly 1-2 (3)cm long, slender, viscid, glandular-pilose, often recurved in fruit; **inflorescences** few-flowered terminal cymes, or flowers borne singly and in pairs in the uppermost axils of leaves and leaf-like **bracts**; **leaves** with a strong central vein, largely glabrous but viscid- puberulent primarily along margins and lower veins; **upper cauline leaves** 1-5 (8) cm long, 0.5-3.0 (4.5) cm broad, sessile, ovate to broadly lanceolate with acute to acuminate tips, bases obtuse to somewhat cordate, one lobe sometimes larger, inconspicuously clasping, sometimes with winged **petioles** up to a cm long; **lower cauline leaves** up to 9 by 4 cm, often cordate, sometime with winged **petioles**; **stems** loosely branched, often sprawling, 5-50 (80+) cm long, somewhat ridged and angled, viscid, glandular-pilose to hispid or glabrous, especially those on lower stems in contact with water; **root system** perennial, adventitious at the lower nodes (2n = 20?, 28).

13. STELLARIA

Common Names: Chickweed, Stitchwort, Starwort

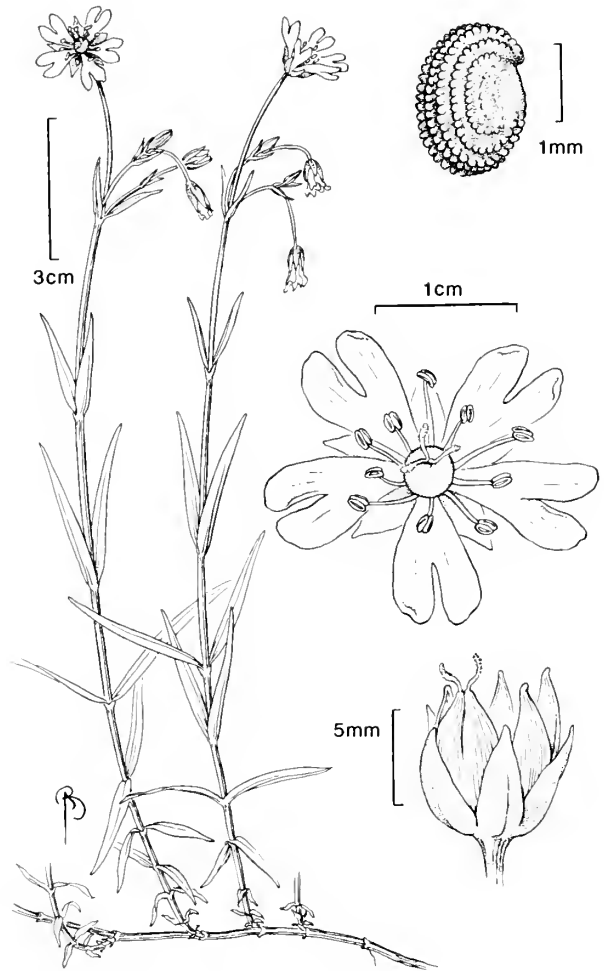
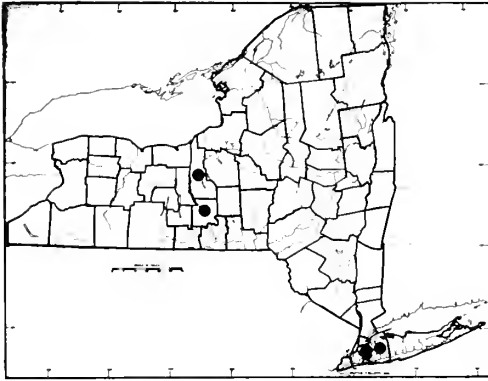
Authority: Linnaeus, Species Pl. 1, p. 421, 1753

A genus of 100+ species, widespread in open habitats, especially in temperate climates, but also occurring also as weeds almost throughout the world. They are of little value to man except for the widespread species *S. media* (L.) Vill., which is sometimes used in salads and folk medicine.

Description: Plants with **bisexual** flowers; **stigmas** (2) 3 (4-6); **styles** (2) 3 (4-6), free; **ovary** 1, superior; **ovules** many, borne on a free, central placenta; **fruit** a globose to ovoid-cylindric capsule, dehiscent by (4) 6 (8-10) teeth to the middle or near the base; **seeds** many, plump, tuberculate or smooth; **embryo** curved; **stamens** (2-8) 10; **filaments** slender, free; **anthers** globose; **perianth** of 2 free whorls, or the petals may be lacking; **petals** (0-4) 5, deeply bifid for 2/5 their length or more, often white; **sepals** (4) 5, greenish; **pedicels** slender; **bracts** scarious or herbaceous; **inflorescences** dichasial, cymose, or flowers borne singly and in pairs in axils or terminal to main stems and lateral branches; **leaves** paired, ovate to linear, connate-clasping at base; **petioles** lacking (or winged); **stipules** absent; **stems** decumbent, lax to robustly erect; **root system** annual or perennial.

KEY TO SPECIES

1. Flowers often 1 cm in diameter or more; sepals 6-8 (11) mm long (2)
1. Flowers inconspicuous, usually less than 1 cm broad; sepals mostly less than 6 mm long (3)
 2. Leaves strap-like, lance-elliptic to linear-lanceolate with acuminate to aristate tips 1. *S. holostea*
 2. Leaves broadly ovate to elliptic with obtuse to acuminate tips 2. *S. pubera*
3. Mature cauline leaves 6-30 times as long as broad, sessile (5)
3. Mature cauline leaves 2-4 (5) times as long as broad, the middle and lower ones often with winged petioles (4)
 4. Inflorescence bracts membranaceous, hyaline margined; bracts and sepals lanceolate. 3. *S. alsine*
 4. Inflorescence bracts herbaceous; bracts and sepals elliptic to ovate 4. *S. media*
5. Flowers borne singly in leaf axils and in few-flowered, terminal cymes; floral bracts herbaceous; petals absent or much-reduced, shorter than the sepals; mature capsules strongly exserted, up to 2-3 times the sepal length 5. *S. borealis*
5. Flowers borne in terminal or lateral, few to many-flowered cymes; floral bracts scarious; petals shorter to much longer than the sepals (rarely absent); mature capsules usually less than twice the sepal length (6)
 6. Mature capsule slightly to strongly exserted from the calyx, appearing dark, due to pigmented walls or brown seeds visible through the hyaline capsule wall; inflorescence bracts usually glabrous, entire (7)
 6. Mature capsule included or barely exserted from the calyx, pale tan and opaque; most inflorescence bracts with ciliate margins, at least toward the base 6. *S. graminea*
7. Leaf margins minutely papillose; mature inflorescences (and infructescences) broadly divaricately branched; dehisced capsule greenish-tan to brown, often hyaline, the dark seeds visible within 7. *S. longifolia*
7. Leaf margins very smooth, pale, not minutely papillose; mature inflorescence (and infructescence) branches ascending; dehisced capsule dark purple-brown to almost black 8. *S. longipes*



1. *Stellaria holostea* L.

Common Names: Greater Stitchwort, Easter-bell, Great Starwort, Snakegrass, Lady's-lint

Type Description: Linnaeus, Species Pl. I, p. 422, 1753

Synonym: *Alsine holostea* (L.) Britt.

Origin: Native to boreal Eurasia

Habitats: Sandy roadsides and limy woods (in New York)

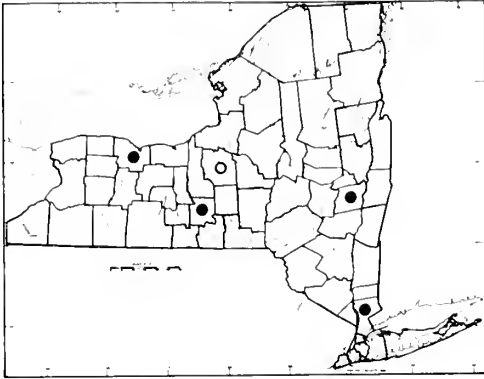
Habit: Ascending, perennial, rhizomatous herbs

Flowering: (late April) May-June

Fruiting: June-July

General Distribution: Escaping cultivation in eastern North America, persisting from New Brunswick to West Virginia; also moderately weedy in its native Europe, the Near East and North Africa

Description: Plants with **bisexual** flowers; **stigmas** 3, papillose, linear near the style tips; **styles** 3, linear, 2.5-3.2 mm long, free to base; **ovary** 1, superior, spheroid to oval; **fruit** a capsule, tan, lustrous, opening by 6 teeth, globose, ca. 5-6 mm long and broad; **seeds** many, brown, 1.8-2.3 mm broad, dolabriform to reniform, with 2 papillose, dorsal ridges; **stamens** 8-10, free; **anthers** golden, elliptic, 0.5-1.1 mm long; **filaments** 4-6 mm long, linear; **perianth** of 2 free whorls of 5; **petals** 8-12 (17) mm long, 3-5 (8) mm broad, showy, white, bifid from 2/5-3/5 their lengths into broadly rounded lobes; **sepals** elliptic-lanceolate with acute, acuminate (or apiculate) tips and rounded cup-like bases, 5-8 (9) mm long, glabrous, greenish with entire, hyaline margins; **pedicels** slender, somewhat angled, scabrescent, up to 2.8 cm long; **inflorescences** terminal and subterminal, few-flowered cymes; **bracts** herbaceous, 2-12 mm long, lanceolate, scabrous along lower margins; **leaves** (1) 2-5 (8) cm long, 2-8 mm broad linear to lanceolate (elliptic-lanceolate) with acuminate to aristate tips, not conspicuously clasping at the sessile bases, mostly glabrous on the surfaces, but rough-scabrous on the margins and lower midrib; **petioles** absent; **stipules** absent; **stems** weakly to strongly ascending, with scabrous ridges, 10-40 (80) cm long at the time of flowering; **rhizome** slender, jointed, with slightly swollen nodes, sometimes bearing minute, fusiform, pinkish buds; **root system** slender, largely adventitious at the rhizome nodes ($2n = 26$). **Importance:** This is one of the few chickweeds showy enough to be grown as a garden perennial. They are occasionally used as early-blooming rock garden plants, with flowers up to three centimeters broad.



2. *Stellaria pubera* Michx.

Common Names: Great Chickweed, Star Chickweed

Type Description: Michaux, Fl. Bor. Am., vol. 1, p. 273, 1803

Synonyms: *Alsine pubera* (Michx.) Britton (see additional synonymy under varieties)

Origin: Native to Appalachian North America

Habitats: Cool woodlands and open, disturbed places in New York, where it is a rare weed

Habit: Ascending perennials with relatively short flowering shoots in spring, followed by taller, primarily vegetative stems

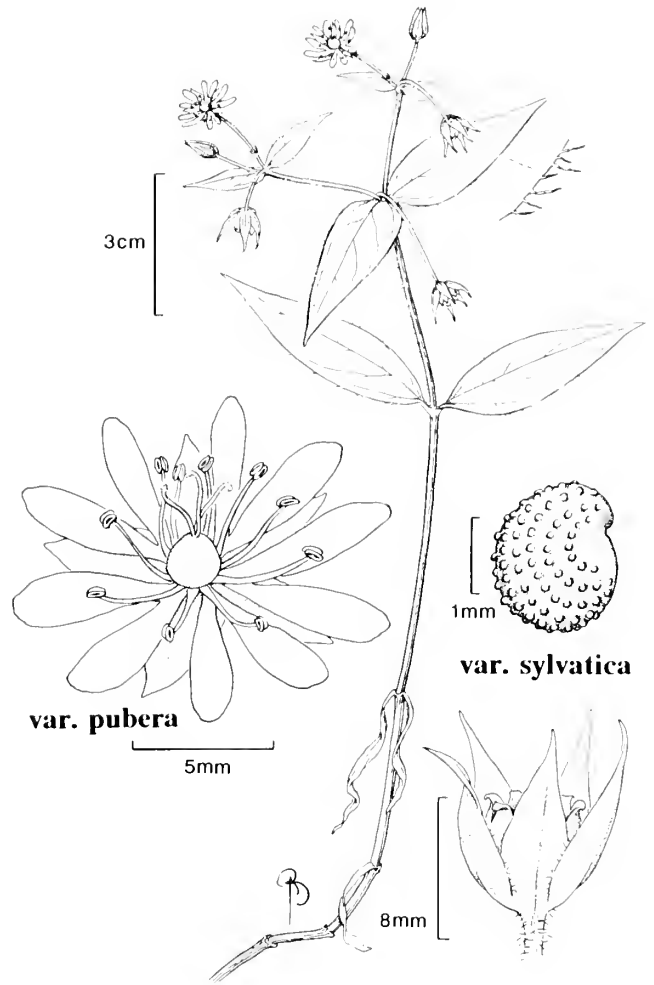
Flowering: (April) May-June

Fruiting: June-July

General Distribution: Connecticut and New York State as a rare adventive; **Native:** New York? (New Jersey) Pennsylvania, Illinois, south to Tennessee, Alabama, Georgia, North Florida

Description: Plants with bisexual flowers; stigmas 3, papillose the style tips; styles 3, linear, 2.5-3.3 mm long; ovary globose; fruit a tan, lustrous capsule, 3.2-5.5 mm in diameter, opening by 6 teeth that tend to recoil on dehiscence; seeds many, 1.6-1.9 mm broad, reniform, pale brown, papillose; stamens (8) 10, anthers elliptic, golden-brown, ca. 0.5 mm; filaments slender, pale, 3-4 mm long; perianth of 2 free whorls of 5; petals white, cleft 1/2 to 7/8 their length into 2 entire lobes, 5-12 mm long, 2-5 mm broad, shorter than, or exceeding the calyx; sepals 4-11 mm long, 1.0-2.8 mm broad, ovate to elliptic lanceolate with rounded bases and bluntly acute to strongly acuminate tips, greenish with hyaline margins, lustrous, reticulate veined at base, glabrous or villous at abaxial surface near the base and on the receptacle; pedicels mostly 1-2 cm long, slender, angled, totally villous or with 1-2 bands of villous pubescence; inflorescences terminal or subterminal, few-flowered cymes or flowers borne singly or in pairs in the upper axils of primarily vegetative shoots; bracts scarious to green, 1-4 mm long, lanceolate, the larger ones ciliate at base; leaves ovate to narrowly elliptic-oblong, mostly 1-8 (11) cm long, 0.8-2.5 (3.5) cm broad, pustulose, glabrous except villous on margins and lower midrib, sessile or with winged petioles up to 2 cm long; stipules absent; stems ascending, 5-30 cm tall, 4-angled with villous hairs, particularly on upper stems, flowering early, then producing more vigorous, primarily vegetative shoots up to 40 cm, from a tough, pale rhizome; root system fibrous, primarily adventitious from the nodes of the rhizomes.

Intraspecific Variation: Two ploidy levels are known, with features that have lead some students of the group to recognize two species. *Stellaria corei* Shinnery is the correct name at the species level for plants with conspicuously attenuate, glabrous sepals and a tendency for the leaves to be petiolate. Plants from near Rochester, New York, however, exhibit distinct petioles and shorter, acute to blunt sepals typical of *S. pubera*, while largely lacking adaxial pubescence. I choose to recognized these taxa at the varietal level.



KEY TO VARIETIES

1. Sepals mostly 4-6 mm long, acute to obtuse, often puberulent on the adaxial surface; petioles lacking (or only the 1-3 lowermost leaves with evident petioles) 2a. var. *pubera*
1. Sepals mostly 7-10 mm long, conspicuously acuminate, glabrous on the adaxial surface (sometimes puberulent at base); middle and lower leaves often petiolate 2b. var. *sylvatica*

2a. *Stellaria pubera* var. *pubera*

Synonyms: *Alsine pubera* var. *tennesseensis* Mohr., *A. tennesseensis* (Mohr.) Small

Origin: Native to the Appalachians of the southeastern United States

Habitats: This diploid variety ($2n = 30$) is known in New York State from a single specimen from a wooded area near Rochester, where its origin is questionable; although it is well north of its natural range, there is a possibility that it is native in New York State (as in the Chicago area)

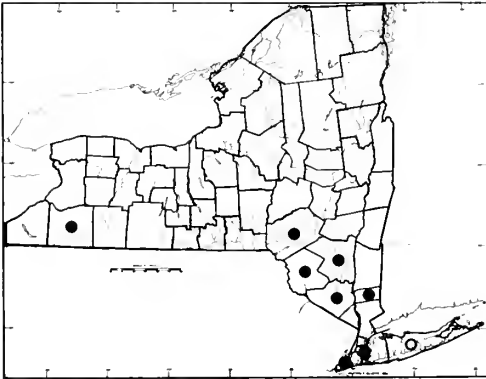
2b. *Stellaria pubera* var. *sylvatica* (Bég.) Weatherby

Synonyms: *S. corei* Shinnery, *S. sylvatica* (Bég.) Maguire

Origin: Native to the Appalachians and midwestern U. S.

Habitats: This tetraploid variety ($2n = 60$) has been found both escaped from cultivation and spreading in existing gardens in New York State

Importance: Both varieties of *Stellaria pubera* are occasionally cultivated, but usually south of our range. One specimen of *S. pubera* var. *sylvatica* was collected in an Albany County garden "spreading rapidly."



3. *Stellaria alsine* Grimm

Common Names: Marsh Chickweed, Bog Starwort, Stitchwort

Type Description: Grimm, Nova Acta Acad. Leop.-Carol., vol. 3, app: 313, 1767

Synonyms: *Alsine uliginosa* (Murr.) Britt., *S. uliginosa* Murr.

Origin: A native of northern Eurasia

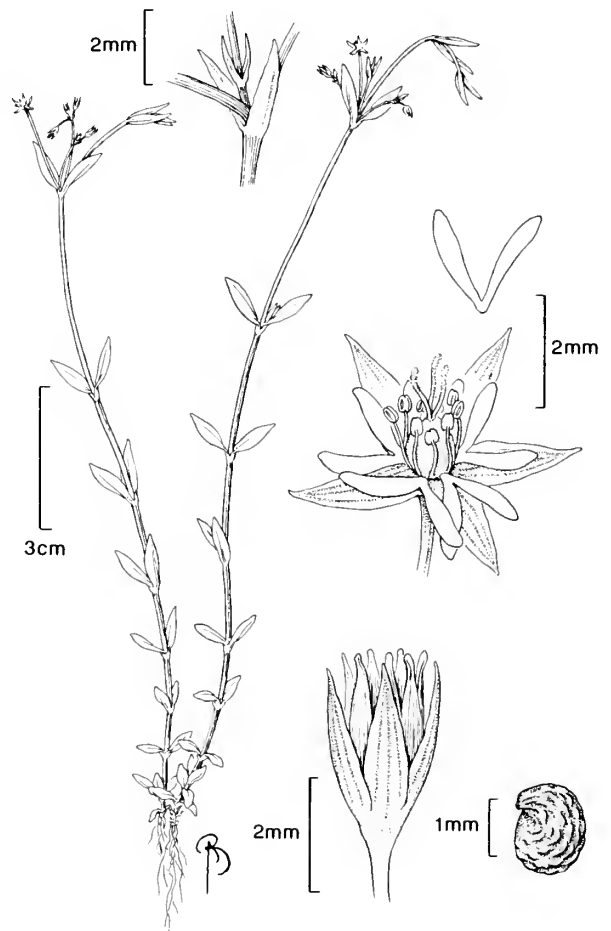
Habitats: Moist ledges, springs and streambeds as a weed

Habit: Lax, decumbent to ascending annuals or biennials, often sprawling with ascending leaves

Flowering: May-October

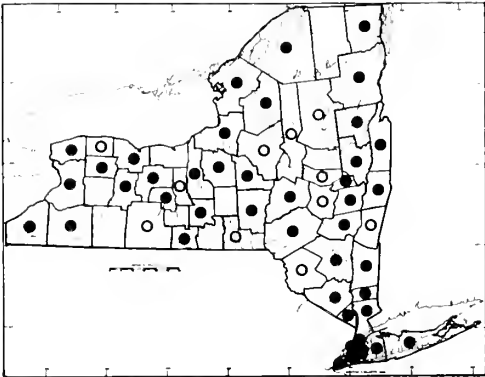
Fruiting: May-December

General Distribution: Native of Northern Eurasia that occurs sporadically as a weed from Newfoundland to Maryland (Tennessee), Minnesota, British Columbia and Washington State



Description: Plants with bisexual flowers; stigmas 3; styles 3, linear, ca. 0.5 mm long; ovary 1, superior, ovoid; fruit an ovoid, greenish to tan capsule 2.0-3.5 mm long, dehiscent by 6 narrow teeth; seeds several to many, brown, plump, 0.5-0.8 mm, rugulose with narrow ridge-like protuberances; stamens 10, free; anthers pale, globose, minute; filaments slender, ca. 1.5 cm long; perianth of 1 or 2 whorls of 5; petals lacking or white, less than 1.5 mm long, sometimes falcate or contorted; sepals 1.8-3.3 mm long, lanceolate, with acute to acuminate tips, entire, ciliate, pale greenish with three prominent green veins; pedicels mostly 3-5 mm long, slender, glabrous or with a few villous hairs; inflorescences primarily lateral, few-flowered cymes or pairs (flowers rarely solitary); bracts of the inflorescence lanceolate, 2-3 (4) mm long, scarious with a minute green midrib, entire or occasionally toothed or bifid; leaves elliptic to ovate-lanceolate, mature cauline leaves 6-16 (22) mm long, 2-12 mm broad, entire, glabrous or minutely ciliate on margins; petioles absent or winged, up to 6 mm long, sometimes with a few villous hairs at the margins; stipules absent; stems angled, up to 40 cm. long, lax, decumbent-sprawling to ascending; root system slender, much branched ($2n = 24, 26$).

Intraspecific Variation: These plants vary considerably in leaf size and shape, the more robust leaves of some individuals being strongly petioled.



4. *Stellaria media* (L.) Villars

Common Names: Common Chickweed, Satin-flower, Tongue-grass

Type Description: Linnaeus, Species Pl. I, p. 272, 1753

Synonyms: *Alsine media* L., *A. pallida* Dumort., in part, *S. apetala* Bernard., of some authors, not *Ucria*, *S. media* (L.) Cyrillo, of some authors, *S. media* var. *glaberrima* G. Beck, *S. media* var. *procera* Klett & Richt., *S. neglecta* Weihe in Bluff & Fingerhut, *S. pallida* (Dumort.) Jung., not Piré

Origin: A native of northern Eurasia

Habitats: Waste places, roadsides, cultivated ground, meadows, open woods, borders and lawns

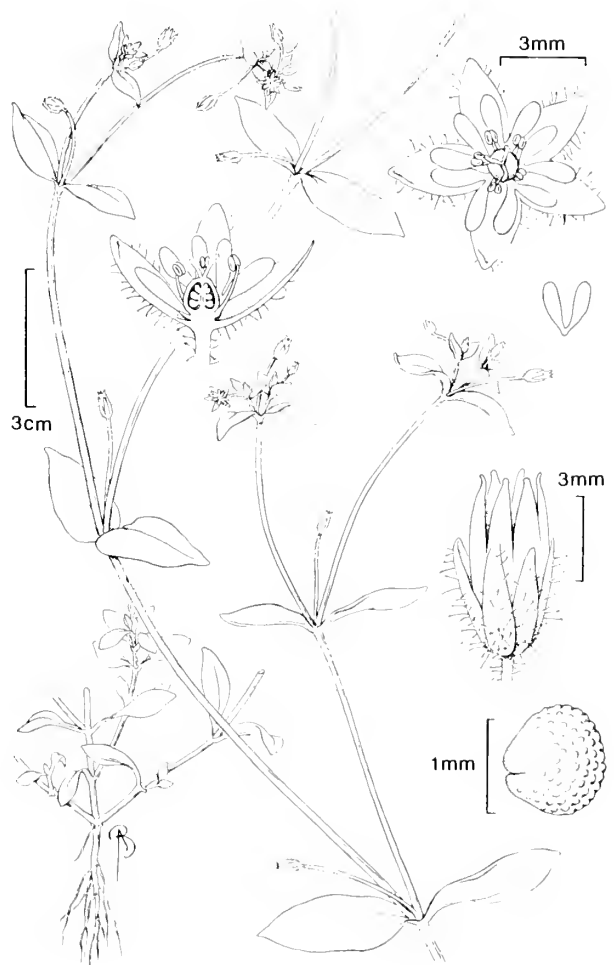
Habit: Matted, sprawling to ascending perennials (or annuals)

Flowering: (All year) April-December in NY

Fruiting: All year

General Distribution: A native of Eurasia and a cosmopolitan weed, especially of cultivated or otherwise disturbed ground

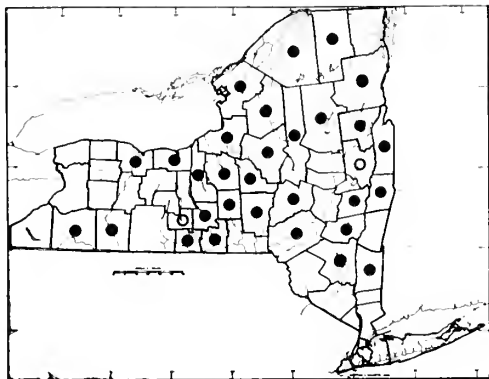
Description: Plants with bisexual flowers only or polygamous, with stamens lacking in some flowers; stigmas usually 3, papillose along much of the length of the styles; styles usually 3, pale, linear, arched outward, 0.5-0.8 mm long, free to base; ovary 1, superior, ovoid; fruit a somewhat translucent to greenish-tan capsule, 3.0-4.5 (5.5) mm long, 2-3 mm broad, ovate to cylindric, dehiscent by 6 narrow teeth; seeds several to many, brown,



0.9-1.5 mm long and broad, reniform, unevenly tuberculate, often prominently on the 2 dorsal ridges, rugulose along the sides; **stamens** free, 2-10 (or absent in some flowers); **anthers** minute; **filaments** slender, pale, 1-2 mm long; **perianth** of 1 or 2 free whorls; **petals** 1-5 (or absent), white, 1-2 (3) mm long, deeply bifid to near the base, the lobes linear to slightly broadened at tips, enclosed or barely surpassing the calyx; **sepals** 5, free, (1) 2-5 (7) mm long, 1-3 mm broad, ovate with obtuse to acute tips, greenish with hyaline margins, pustulose, the adaxial surfaces and margins sparsely to densely villous; **pedicels** 2-20 (27) mm long, villous, at least along one side; **inflorescences** cymose, terminal and lateral with flowers sometime single in the upper leaf axils; **bracts** leafy, similar to the leaves, but some as small as 2 mm long; **leaves** with blades 3-26 (35) mm long, 1-20 (30) mm broad, elliptic to broadly ovate-orbicular, entire with obtuse to acute or apiculate tips and attenuate to broadly rounded bases, upper leaves smaller, sometimes pubescent when young but usually glabrous and merely villous only along the lower margins; **petioles** absent to strongly developed on the larger cauline leaves, up to 2.5 cm, usually with villous margins; **stipules** absent; **stems** angled and grooved, with vertical lines of villous hairs alternating with glabrous channels or entirely villous or, less often glabrous, matted or sprawling up to 50 (90) cm, weakly ascending at tips, bases weak, horizontal or vertical, often persisting over winter in association with a pale, finely fibrous **root system** [$2n = 40, 42, 44 (18, 22)$].

Infraspecific Variation: This is a member of a polymorphic group that has been split into several species and subspecies in its native Eurasia on the basis of stem and leaf pubescence and sizes of sepals, petals and seeds. The two diploids ($2n = 22$) from which *Stellaria media* was possibly derived are recognized at the species level in Europe as *S. pallida* (Dumort.) Junger and *S. neglecta* Weihe or maintained as varieties of *S. media* (Behnke, 1976; Tutin *et al.*, 1964) This polymorphic species-complex has ploidy variants and a number of morphological combinations that do not consistently correlate with them, *eg.*, plants escaped in Mediterranean climates (as in California) may be relatively succulent with 1-3 petals and stamens.

Importance: Common chickweed is relatively well known as a pot herb. Although reported to have little flavor, it is sometimes boiled with spinach to add bulk. The greens are also steeped with dandelion stalks to produce a somewhat bitter mixture. In folk medicine, chickweed leaves (dried or fresh) have been added to poultices and ointments used for various curative purposes, particularly in treating discomforts of the skin and eyes. Decoctions have been used internally for a number of ailments, from coughs to constipation. There is no evidence of its effectiveness as an "old wives" remedy for obesity. The fourth most widespread species in the world, *S. media* is sometimes a noxious weed of lawns and gardens with a marked resistance to conventional herbicides. It has been widely studied in terms of ecology, embryology, cytology, genetics, ultrastructure and biochemistry, and there is a large and growing list of metabolic end products for the species.



5. *Stellaria borealis* Bigelow

Common Names: Northern Starwort or Stitchwort

Type Description: Bigelow, Fl. Bost. ed. 2, p. 182, 1824

Synonyms: *Alsine borealis* (Bigel.) Britt., *Bigelowia montana* Raf., *S. calycantha* of NY reports, not (Ledeb.) Bong. (including Fernald's varieties)

Origin: Circumboreal and subarctic

Habitats: Mossy alpine talus, seeps and stream beds; cold, wet forests, marshes, sphagnum bogs, fens and shores

Habit: Creeping to strongly ascending, stoloniferous, perennial herbs (sometimes caespitose in Eurasia)

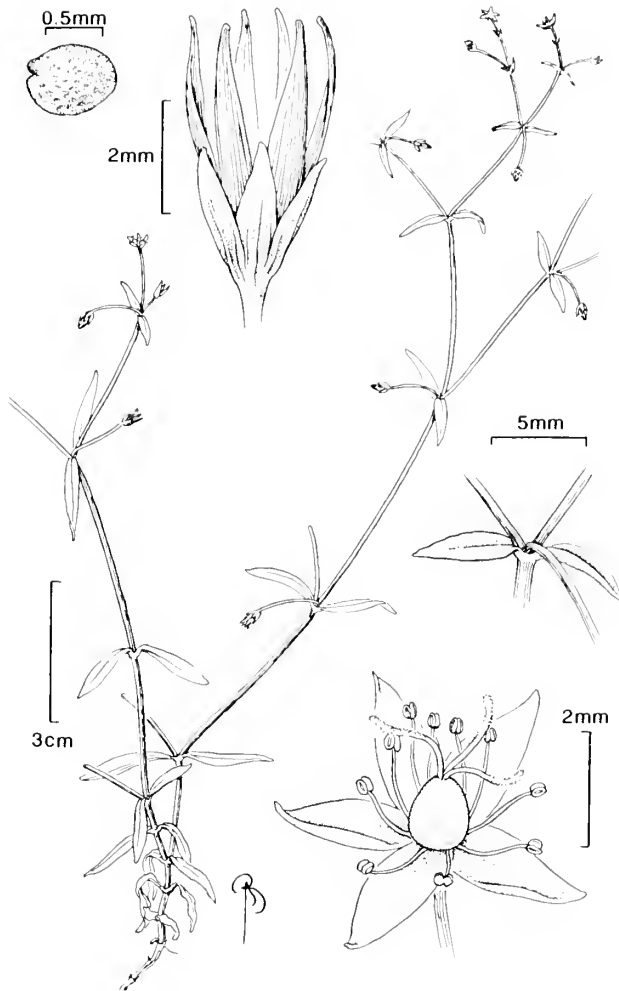
Flowering: June-August

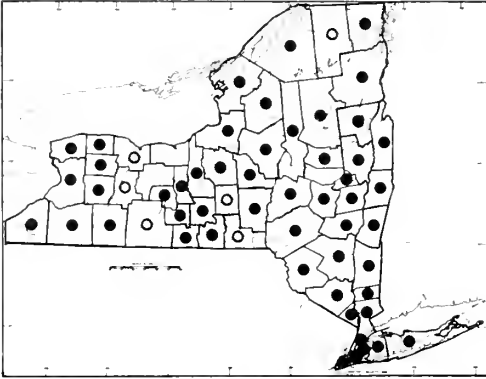
Fruiting: July-September

General Distribution: Greenland to Alaska (Eurasia) south to California, Utah, Pennsylvania and West Virginia

Description: Plants with bisexual flowers; **stigmas** 3 or 5 (4,6) papillose lines extending to near the style base from the tips, (which may be bifid); **styles** 3 or 5 (4,6), 1.0-1.4 mm long, filamentous, occasionally with a bifid tip up to 0.5 mm long; **ovary** 1, ovate; **fruit** an ovate to cylindric capsule, 3.1-5.4 (6) mm long, 1.5-3.2 mm broad, dehiscent by 6 narrow teeth 1/2-2/3 its length (or sutures not all equally splitting), surface glossy greenish-tan or purplish-tinted, somewhat hyaline at maturity, appearing darker due to the seeds inside; **seeds** many, plump lenticular, dark brown, minutely rugulose, 0.7-0.9 mm long; **stamens** 6-10, free; **anthers** minute, yellow to reddish, globose; **filaments** slender, 1-2 mm long; **perianth** of 1 or 2 whorls; **petals** absent or up to 5, bifid or only a single lobe, white to translucent, usually less than 1 mm long and not equaling the sepals; **sepals** 1.9-2.8 (4.6) mm long, 0.7-1.4 mm broad, lance-ovate with acute to obtuse tips, pale green with hyaline margins, usually entire; **pedicels** mostly 1-2 cm long, slender, inconspicuously angled and twisted, glabrous, borne singly in the lower leaf axils, and in pairs or small, cymose **inflorescences** at the branch tips; **bracts** leaf-like, herbaceous, as small as 1 mm long, lanceolate to lance-ovate, intergrading with the leaf pairs or with a more abrupt transition when cymose, the margins entire and glabrous or ciliate; **leaves** 0.8-5.5 (7) cm long, 4-8 (11) mm broad, linear to lance-ovate or elliptic with acute to acuminate tips, sheathing obscurely at base, with a strong midrib, surfaces glabrous, margins glabrous, scabrescent or sparsely villous, especially near the leaf bases; **petioles** and **stipules** absent; **stems** lax to strongly ascending, ribbed and channeled, glabrous, from stolons and slender rhizomes; **root system** perennial, primarily adventitious, delicate ($2n = 44, 48, 52$).

Intraspecific Variation: The plants may appear heterophyllous or homophyllous, depending upon the abruptness of transition between sizes of leaves associated with terminal cymes when they are present. Leaves, and flower parts are somewhat variable in size between individuals and populations. Five described varieties, based on such characters intergrade "insensibly" (Fernald, 1950), and do not deserve recognition.





6. *Stellaria graminea* L.

Common Names: Common Stitchwort, Lesser Stitchwort or Starwort

Type Description: Linnaeus, Species Pl. I, p. 422, 1753

Synonym: *Alsine graminea* (L.) Britt., *S. graminifolia* Salisb., *S. montana* Raf.

Origin: A native of Europe

Habitats: Grassy places, lawns, roadsides, meadows, pastures and streamsides, often in moist soil in full sunlight

Habit: Decumbent, perennial herbs with weakly trailing stems and ascending branch tips

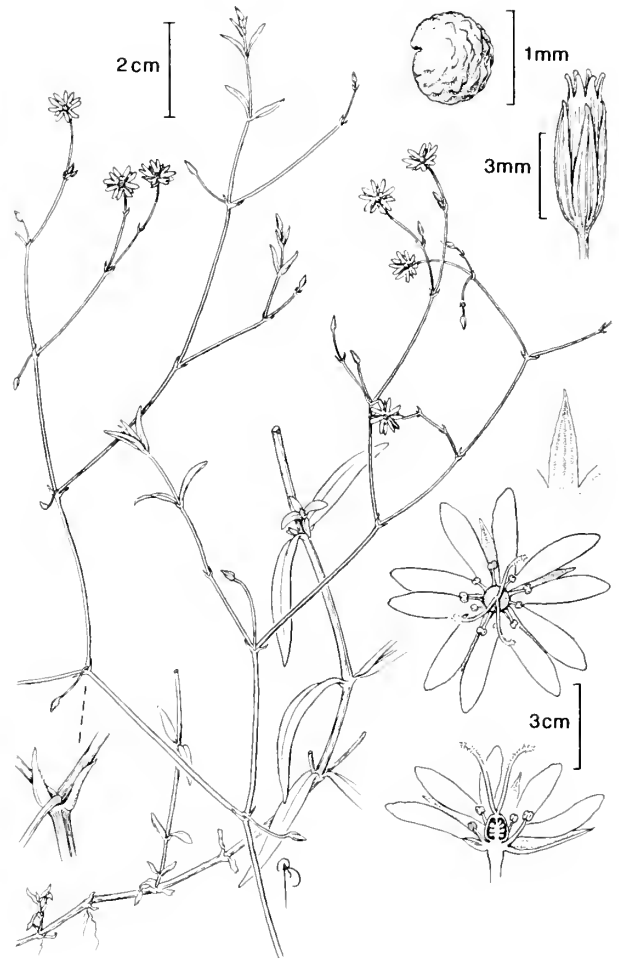
Flowering: May-October

Fruiting: June-December

General Distribution: Newfoundland to Manitoba, south to Missouri and South Carolina; also introduced in Washington, Idaho and California, but less common there; widespread and weedy in its native Europe as well

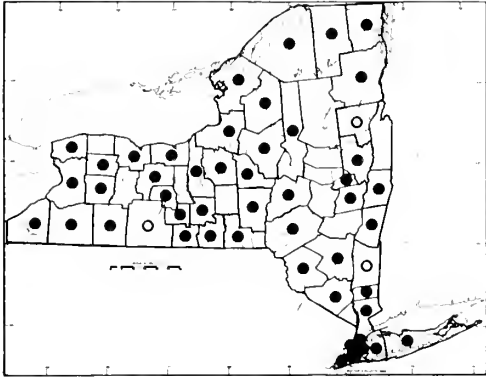
Description: Plants with bisexual flowers; stigmas 3, each a papillose line, extending ca. 1/3 the style length; styles 3, 1.9-2.6 mm long, filamentous; ovary 1, ovoid; fruit an ovoid to cylindric capsule 3.6-5.3 (6) mm long, 1-3 mm broad with opaque, tan walls, dehiscent apically to ca. 1/2 its length by 6 narrow, blunt-tipped teeth, the tip usually included in the persistent perianth; seeds many, 0.7-1.0 (1.2) mm long, plump-lenticular, some with a pronounced dorsal ridge, rugulose to regularly furrowed, red-brown; stamens 6-10, free; anthers globose, golden; filaments slender 4-7 mm long; perianth of 2 whorls of 5 (petals rarely absent); petals 5 (or fewer, rarely absent), white, usually deeply bifid, 2-6 mm long; sepals 5, elliptic-lanceolate to almost linear, with narrowly acute to attenuate (sometimes mucronate) tips, 4.4-7.6 mm long, 1.0-2.6 mm broad, surfaces shiny greenish, 3-nerved, occasionally puberulent below with hyaline margins that are usually ciliate, at least toward the base; pedicels slender, glabrous, 0.6-3.0 (4.3) cm long, divergent, often borne at right angles to the axis of the inflorescence at maturity; inflorescences primarily terminal, lax, often much-branched, cymes with up to 60 flowers each; bracts scarious, lanceolate, mostly 2-4 mm long, nearly always ciliate-margined, at least toward the base; leaves (linear to) lance-elliptic, mostly 1-5 (-7.6) cm long, 1-7 (-9) mm broad, midrib strong, surfaces glabrous, but margins usually ciliate, at least near the clasping bases; petioles absent; stipules absent; stems angled and grooved, lax and stoloniferous or sprawling below, somewhat ascending near the tips, usually glabrous, up to 70 (90) cm long; root system weak, fibrous, perennial (2n = 26, 39, 52).

Intraspecific Variation: Plants with broader, less grass-like leaves have been called *S. graminea* var. *latifolia* Peterm. in Europe. Young plants are often misidentified as *S. longifolia* Muhl. ex Willd. or *S. longipes* Goldie, but the sharper, star-like sepals, strongly ciliate bracts and more furrowed seeds of *S. graminea* usually allow



correct identification. Three ploidy levels (including sterile triploids) have been recorded in European populations.

Importance: These plants can be noxious weeds of lawns, and they are noticeably resistant to conventional herbicides.



7. *Stellaria longifolia* Muhl. ex Willd.

Common Names: Needle-leaf Starwort

Type Description: Muhlenberg ex Willdenow, Enum. Pl. Hort. Berol., p. 479, 1809

Synonyms: *Alsine longifolia* (Muhl. ex Willd.) Britt., *S. friesiana* Ser. ex DC., *S. longipes* var. *laeta* (Richardson) S. Wats., *S. tenella* Raf.

Origin: Circumboreal

Habitats: Seepage areas and moist soils of meadows, swamps, open forests, thickets; also vernal moist talus, pavement barrens and ditches

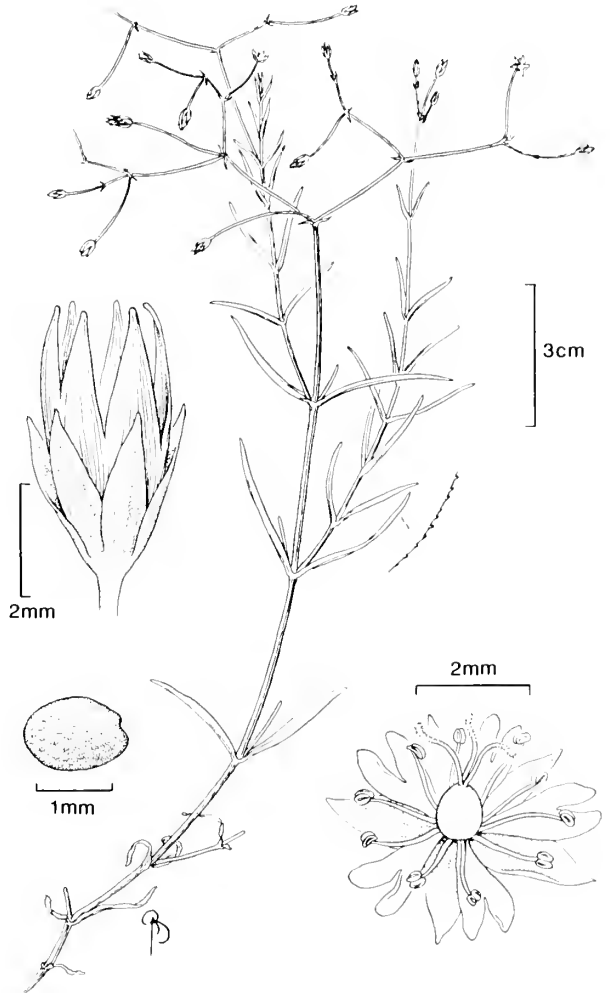
Habit: Lax to ascending perennials from a branching rhizome systems

Flowering: May-July

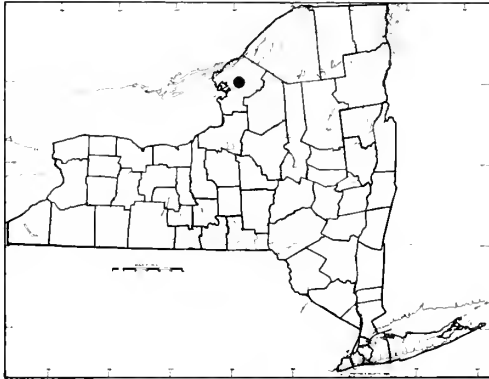
Fruiting: May-September

General Distribution: Circumboreal: in North America from Newfoundland to Alaska, south to New Mexico, Missouri and Tennessee

Description: Plants with bisexual flowers; stigmas 3, each a papillose line from the style tip to ca. 1/2 its length; styles 3, 1-2 mm long, linear, free; ovary 1, ovoid; fruit an ovoid to narrowly cylindrical capsule, 3.8-4.9 mm long, 1.5-2.7 mm broad, glossy greenish to tan (brown), often hyaline before dehiscence, the dark seeds visible through the fruit walls; seeds numerous, ca. 0.8 mm long, plump to lenticular with a dorsal ridge, red-brown, rugulose to almost smooth; stamens 6-10, free; anthers elliptic, golden, minute; filaments 2.9-4.1 mm long, extremely slender; perianth of 2 free whorls of 5; petals 5 (rarely fewer), bifid, white, 2.3-4.8 mm long, shorter to equaling or slightly longer than the sepals; sepals 2.6-4.2 mm long, elliptic, with acute to apiculate tips, not strongly veined, glabrous, glaucous green, with hyaline margins that may be ciliate, but usually are not; pedicels very slender, glabrous, elongating with age from a few mm (when the flower is in bud) up to 3 (4) cm in fruit; bracts lanceolate, usually with eciliate, entire or ragged margins, mostly 1-3 mm long, scarious, but sometimes with a greenish midrib; inflorescences lateral, appearing terminal to stems and lateral branches, cymes with their axes ascending at first, but becoming divaricately branched with age; leaves 0.7-5.0 (7) cm long, 1-7 (12) mm broad, stiff, ascending, linear to lanceolate (elliptic-lanceolate) with acute tips, or tips appearing acute but minutely blunted, bases clasping, midrib strong, the surfaces usually glaucous and pale green and glabrous, margins revolute, minutely papillose, glabrous or sparsely ciliate toward base; petioles absent; stipules absent; stems glabrous, glaucous, sharply angled and grooved, lax to ascending, up to 50 (80) cm long, 20 cm tall, from slender rhizomes; root system delicate, mostly adventitious ($2n = 26$).



Intraspecific Variation & Hybridization: Leaves and stems are sometimes dark green, lacking the typical pale, glaucous sheen; when this is true, however, the plants may be told from the following species by their minutely papillose leaf margins divaricate infructescences and less pigmented capsules. Sepals may be ciliate or not. Artificial triploid hybrids ($2n = 39$) have been produced through crosses with *S. longipes* (Chinnappa, 1985a), and natural hybrids (also $2n = 39$) are reported with *S. borealis* (Morton & Rabeler, 1984).



8. *Stellaria longipes* Goldie

Common Names: Starwort, Long-stalked Stitchwort

Type Description: Goldie, Edinb. Phil. Jour., vol. 6, p. 327, 1822

Synonyms: *Alsine longipes* (Goldie) Cov., *S. crassifolia* S. Wats., not Ehrh.

Origin: Circumboreal

Habitats: Limestone cliffs, ledges, shallow soil over flatrock and calcareous arbor-vitae swamp margins; alvar, grassy slopes and meadows in New York State (elsewhere: clearings in rocky, boreal forests and tundra)

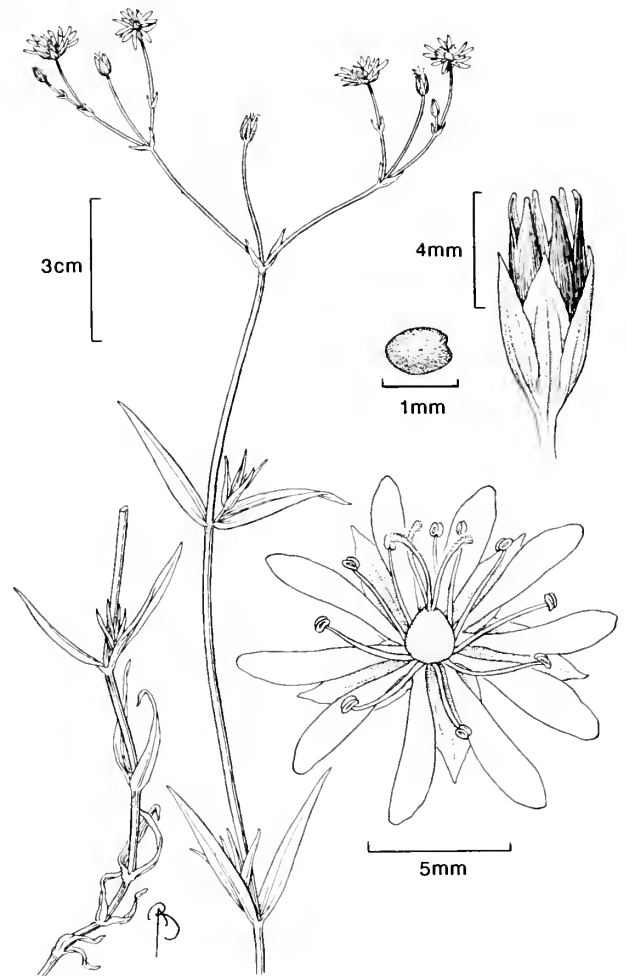
Habit: Sprawling perennial herbs with ascending branch tips

Flowering: May-July

Fruiting: June-August

General Distribution: Circumboreal; Greenland and Quebec to Alaska south to California, Colorado, Michigan and northwestern New York; also native in boreal Eurasia

Description: Plants with bisexual flowers; stigmas 3, each a papillose line on the upper 2/3 of the style; styles 3, slender, free, 2-3 mm long; ovary 1, ovoid; fruit an ovoid to narrowly cylindrical capsule, 5.1-7.6 mm long, 1-4 mm broad, opaque, dark purple-brown to almost black at maturity, strongly exserted, dehiscent by six slender valves, the sutures splitting about 1/2 the length of the capsule (or some adhering) seeds many, 0.8-1.2 mm long, plump, oval, without a pronounced dorsal ridge, pale red-brown, delicately sculptured; stamens 6-10, free; anthers oval, golden, minute; filaments slender, ca. 3 mm long, pale; perianth of 2 free whorls of 5; petals 5 (rarely fewer), white, bifid, 2.3-5.8 (6.5) mm long, equaling or exceeding the sepals; sepals 5, 2.8-5.6 (7) mm long, ovate with acute tips (rarely notched), pale, glossy green with hyaline margins, glabrous, entire; pedicels very slender, ascending, even in fruit somewhat grooved and twisted, glossy, glabrous, elongating from less than a mm in bud up to 4 cm in maturity; inflorescences few-flowered cymes, terminal and at the tips of upper lateral branches, the axes and pedicels ascending (not divaricate); bracts scarious, lanceolate, mostly 1-5 mm long; leaves leathery, 1-5 (9) cm long, 2-12 mm broad, lanceolate with acute to acuminate tips, the bases clasping, bluish green to dark green with a glossy sheen and glaucousness with a purplish tinge, margins very smooth often swollen into a rim, the cells often hyaline (never papillose); petioles absent; stipules absent; stems lax at base, trailing, then ascending at tips, glabrous, glaucous, grooved and channeled, up to 25 (40)



cm long, sometimes reddish toward the bases where they connect to a tough, branching rhizome system; root system fibrous, largely adventitious at nodes of the rhizomes ($2n = 52, 78, 104$).

Infraspecific Variation: This taxon has been subdivided into three species Europe. Plants with ciliate sepals and darker capsules have been called *S. ciliatisepala* Trautv., while short plants with more ovate-lanceolate leaves and dense vegetative shoots in the upper axils are called *S. crassipes* Hultén. New York materials sometimes show these characteristics, but they do not segregate in a way that warrants recognition of specific or even infraspecific taxa. Biosystematic studies of North American *S. longipes* (Chinnappa and Morton, 1991, for summary) show a highly polymorphic, phenotypically plastic species with one rare Canadian taxon [var. *arenicola* (Raup) Chinnappa & Morton] deserving recognition at the infraspecific level.

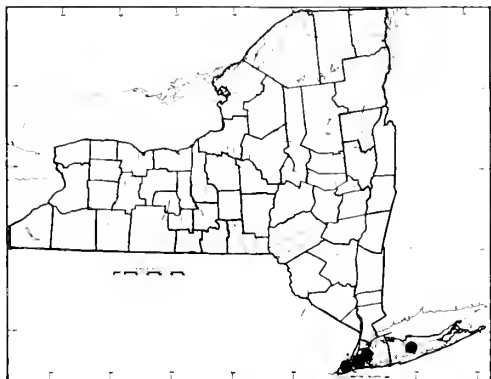
Importance: *Stellaria longipes* is reported to be a forage species for reindeer in Greenland.

14. PETRORHAGIA

Common Names: Childing-pink, Saxifrage-pink

Authority: (Ser. in DC.) Link, Handb. vol. 2, p. 235, 1831

A genus of 25-30 species of herbs with native distributions primarily in the eastern Mediterranean region. Most species have been treated in 20th century manuals under *Tunica* or *Dianthus*, and there has been dispute about the appropriateness of using the generic name *Kohlruschia* to represent all or part of the group. Some species are cultivated in gardens, and four have escaped and become naturalized in North America.



1. *Petrorhagia prolifera* (L.) Ball & Heyw.

Common Names: Childing Pink

Type Description: Linnaeus, Species Pl. I, p. 410, 1753

Synonyms: *Dianthus carolinianus*, sensu Torr. & Gray, not Walt., *D. diminutus* L., *D. prolifer* L., *Kohlruschia prolifera* (L.) Kunth, *Gypsophila prolifera* (L.) Arcang., *P. prolifer* of authors, *Tunica prolifera* (L.) Scop.

Origin: Native to central and southern Europe and northwestern Africa

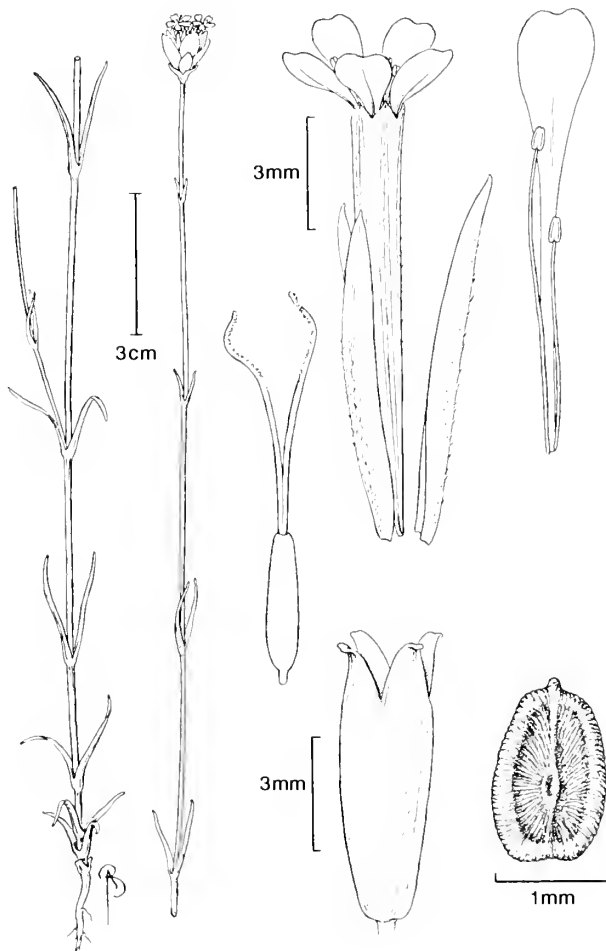
Habitats: Dry roadsides and sandy fields

Habit: Erect-ascending, annual herbs

Flowering: May-October

Fruiting: June-December

General Distribution: Scattered and locally adventive: southern New York, western Michigan, Pennsylvania westward to Kentucky and Oklahoma (California), south to North (South)



Carolina, northern Georgia and Alabama (Louisiana)

Description: Plants with **bisexual** flowers; **stigmas** 2, marginal; **styles** 2, linear, ca. 5 mm long; **ovary** 1, superior, ovoid ca. 1.5 mm long, 1 mm broad; **fruit** a slender, oblong to cylindrical capsule, tan, smooth, 4-8 mm long, 3-5 mm broad, dehiscent by 4 blunt (or slightly bifid) valves; **seeds** many, oval, 1.1-1.8 mm long, compressed dorsiventrally with an apical tooth and facial hilum, dark brown, the ventral surface papillate, with the appearance of snake skin, finely ridged and fluted dorsally; **stamens** 10; **anthers** elongate, pink or bluish; **filaments** linear, up to 15 mm long; **perianth** of 2 whorls, subtended by imbricate bracts (an epicalyx); **petals** 5, with 1 prominent concolorous central vein, deep or pale pink to bluish (or nearly white), claws 6-12 (14) mm long, limbs flared, 3-5 mm long, obovate to obdeltoid, broadly truncate or emarginate at tips, lacking dark basal coloration; **sepals** fused into a minutely pubescent tube, 6-10 (13) mm long with 5 short, acute calyx lobes, the slender tube greenish with scarious commissures between the veins; **pedicels** lacking; **inflorescence** a terminal, capitate, globose to ovoid head, bearing 2-7 (11) flowers (or flowers solitary); flowers often blooming one at a time, sessile within an **involucre** 4-14 mm long, up to 22 cm broad; flowers subtended by lanceolate **bracts** 4-7 mm long and 1-2 mm broad, the outer involucral bracts broadly to narrowly ovate or obovate, up to 13 mm long, 6 mm broad, the tips obtuse (or mucronate on the outermost bracts), greenish, becoming leathery, stramineous to brown with age; **peduncle** of the inflorescence 2-30 (50) mm long, flexuous, glabrous, ribbed; **leaves** paired, connate at base [sheath 1-2 (-4) mm long], linear to narrowly oblanceolate, 5-25 (40) mm long, 2-4 mm broad, usually 3-veined, the midrib sometimes puberulent, margins variously notched and scabrous; **petioles** absent; **stipules** absent; **stems** solitary, sparsely branched or much branched at base, erect, glabrous to scabrescent, up to 60 cm tall, from a fibrous, annual **root system**, often with a well-developed, erect taproot ($2n = 30$).

Infraspecific Variation: The plants vary in size, ranging from slender, dwarf individuals with small, few-flowered heads to robust plants 5-6 decimeters tall with 8-10 large basal branches and flowering heads up to 2 cm broad. Plants varying in leaf margin texture and pubescence have been named, but these do not seem to warrant taxonomic rank. Large and small-flowered variants are also questionably distinct (see: Rabeler, 1985; Thomas & Murray, 1981, Thomas 1983), and may represent morphological manifestations linked with the incompletely understood breeding system.

Importance: The larger-flowered race is occasionally cultivated. The flowers are sometimes used to make a tea in Europe, and the extract was used in folk medicine prior to the 17th Century, but the species was often dropped from later herbals.

Note: *Petrorhagia saxifraga* (L.) Ser. ex Link, the saxifrage-pink, is more frequently cultivated than the above species, but it has rarely been reported in New York State as a nonpersistent garden escape. It is a perennial herb that bears solitary flowers (or clusters of 2-3), as opposed to the capitate heads of *P. prolifera*.

15. DIANTHUS

Common Names: Pink, Childing Pink, Sweet-William

Authority: Linnaeus, Species Pl. 1, p. 409, 1753

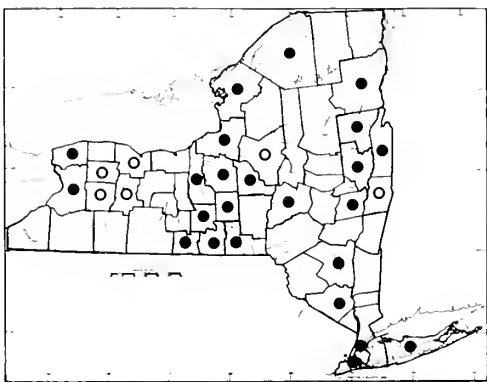
A genus of up to 300 species, depending upon interpretation of taxa at both the generic and specific levels. *Dianthus* species are widely distributed in Eurasia and North Africa, where they usually grow in sunny habitats. The single, native New World species is *D. repens* Willd. of Alaska. Certain species, especially those called "pinks" and "sweet-Williams," are popular in cultivation worldwide. A famous cultivar among *Dianthus* species is *D. caryophyllus* L., the carnation of horticulture. Large-flowered, multi-petaled variants of this plant abound in the commercial cut-flower and pot-plant trade. *Dianthus x allwoodii* Hort., is an equally well-known and widely cultivated hybrid of *D. caryophyllus* and *D. plumarius*. There are over 27,000 registered cultivars of *Dianthus* worldwide.

Description: Plants with **bisexual** flowers or **polygamous**, showing some male-sterility; **stigmas** 2; **styles** 2, free or united below; **ovary** 1, superior; **ovules** many, borne on a free-central placenta; **fruit** a unilocular capsule dehiscent by 4 (5) valves, often borne on a carpophore; **seeds** many, flattened or disk shaped; **embryo** scarcely curved; **perisperm** nuclear; **stamens** 10; **filaments** linear; **anthers** often colored like the perianth; **perianth** of 2 whorls subtended by bracts; **petals** 5 (to many in cultivars), clawed, the limb entire or dentate to fimbriate

or lacinate, but not deeply bifid, sometimes bicolored; **sepals** 5, united into a cylindric calyx tube with 30+ nerves, lacking scarious commissures; **bracts** directly subtending the calyx tube in 1-3 imbricate pairs (an epicalyx); **pedicels** slender to fleshy; **inflorescences** panicles or cymes, with flowers in fascicles, glomerate heads, or borne solitary at branch tips; **leaves** paired, entire connate at base, at the conspicuously to only slightly swollen nodes, linear to broad; **petioles** absent; **stipules** absent; **stems** herbaceous to woody, especially near the base; **root systems** perennial (rarely annual or biennial).

KEY TO SPECIES

1. Cauline leaves often more than 1 cm wide, broadly lanceolate; inflorescences dense, showy, corymb-like cymes at the branch tips 1. *D. barbatus*
1. Cauline leaves linear to narrowly lanceolate or oblanceolate, less than 1 cm wide; inflorescences of scattered fascicles, open cymes or panicles (or flowers solitary) (2)
 2. Flowers subsessile, clustered in dense fascicles; epicalyx bracts equalling the calyx tube (or nearly so); taproot present 2. *D. armeria*
 2. Flowers pedicelled, in open inflorescences or solitary; epicalyx bracts less than half the length of the calyx; roots largely adventitious on rhizomes or stolons (3)
3. Petal margins ragged-fimbriate, long-fringed; inflorescence few-flowered; stem often solitary from dense, basal tuft of linear-lanceolate, grass-like leaves 2-8 cm long 3. *D. plumarius*
3. Petal margins merely dentate; inflorescences often many-flowered and borne on multiple stems from much-branched, matted bases; basal leaves oblanceolate, mostly less than 1.5 cm long 4. *D. deltoides*



1. *Dianthus barbatus* L.

Common Names: Sweet William, Bunch-pink, Sweet-johns, Bloomy-pink, London-pride, French Pink, Snowflake

Type Description: Linnaeus, Species Pl. I., p. 409, 1753

Origin: A native of southern Europe

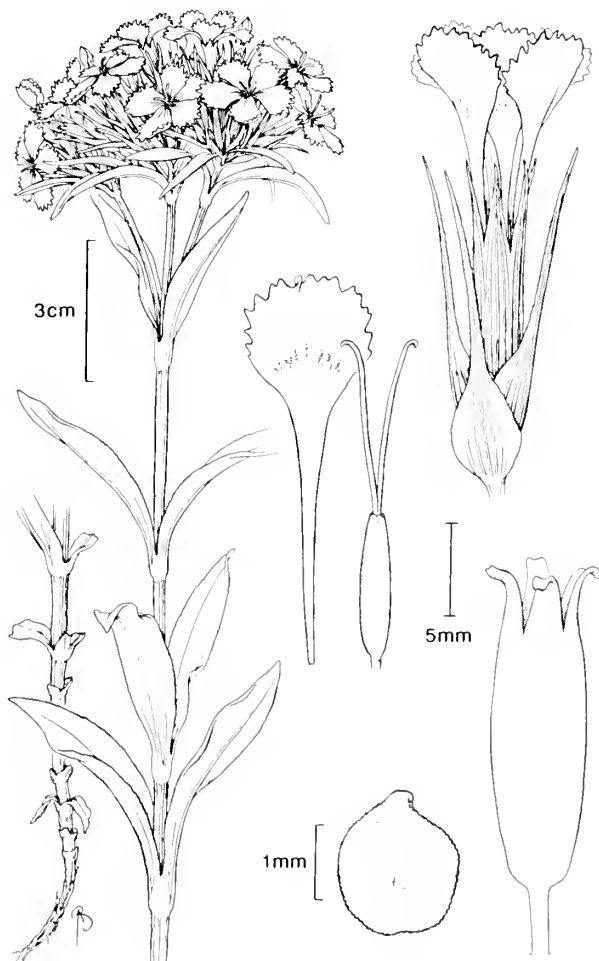
Habitats: Roadsides, cultivated ground, waste places, meadows, woodland clearings and fields, in full sun to partial shade

Habit: Tufted, erect, perennial herbs (sometimes annual or biennial in cultivation)

Flowering: June-September

Fruiting: July-October

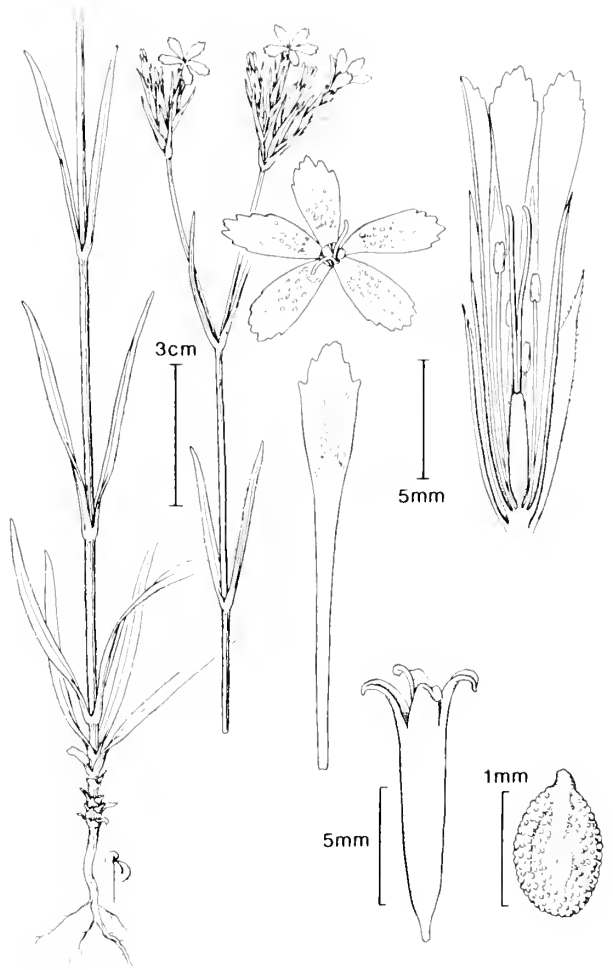
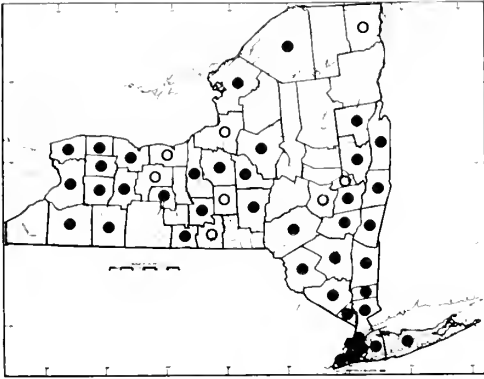
General Distribution: Widely escaped and naturalized in Eurasia, and in North America from Quebec to British Columbia south to California, the Carolinas, Louisiana and Texas



Description: Plants with **bisexual** flowers; **stigmas** marginal, linear, glandular lines extending to near the style bases; **styles** 2, filamentous, pale, 8-12 mm long; **ovary** elliptic, smooth, ca. 3 mm long, on a short gynophore; **fruit** a cylindric capsule, tan, glabrous, 9-12 (15) mm long, 4-5 mm broad, opening by 4 acute (but minutely blunt-tipped) valves, borne on a carpophore up to 4 mm long; **seeds** many, smooth, brown, 2-3 mm long, apiculate, ovoid-deltoid in outline and dorsally flattened; **stamens** 10; **anthers** ca. 1.5 mm long, slender, dorsifixed; **filaments** pale, filamentous, 9-16 mm, varying in length within the same flower; **perianth** of 2 whorls subtended by an epicalyx of imbricate bracts; **petals** distinctly divided into claw and limb, the claw within the calyx tube, pale, linear, 8-14 (17) mm long, ca. 0.5 mm broad, expanded abruptly at the mouth of the calyx into a showy limb, ovate-spatulate to reniform, 7-10 (17) mm broad, the outer margin shallowly and irregularly dentate (bearded), (limb) purple, roseate, pink, white or bicolored, the paler color either interior or exterior to the darker (giving the flower a bull's-eye appearance); **sepals** 5, the lobes pale greenish, sharply attenuate to aristate, 3-6 (9) mm long, united into a cylindric to slightly inflated tube below, 9-20 mm long, 3-8 mm broad, the tube glabrous, shiny, pale green with 30-40+ strong, parallel veins; **epicalyx** bracts up to 2 cm. long, ovate at base with long aristate tips, shorter than the flowers to equaling or slightly surpassing them, greenish or purplish with parallel veins and ciliate to scabrescent margins; **pedicels** 0-7 (11) mm long, ensheathed in the bases of epicalyx bracts; **peduncles** glabrous, bearing the inflorescence fascicles in close proximity; **inflorescence** a showy, corymb-like cyme of densely crowded fascicles of flowers; the primary **bracts** subtending the inflorescence linear-lanceolate, green, glabrous 2-5 cm long, 2-4 mm broad, sheathing at base with ciliate margins; **leaves** broadly lanceolate to oblanceolate, 2.5-7.5 (11) cm long, (0.5) 1-2 (2.4) cm broad, entire, tips acute, surfaces glabrous, scabrescent along the veins and margins, ciliate on the margins of the sheathing bases that may be acute to attenuated, simulating **petioles**; **stipules** absent; **stems** greenish, often somewhat glaucous, ribbed, glabrous, stout near the base (up to 1 cm thick), erect or ascending up to 50 (70) cm, the **nodes** only slightly swollen; plants tufted and spreading by **stolons** and **rhizomes**; **root system** fibrous, largely adventitious from the branching, perennial bases ($2n = 30, 90$).

Infraspecific Variation: European authors have recognized *D. barbatus* ssp. *compactus* (Kit.) Stoj., distinguishing it on the basis of a reddish epicalyx shorter than the flowers and highly attenuated leaf bases. In Europe, flower color is said to be purple, but, in our naturalized plants, flowers often are rosy or white. Other cultivars reported as escapes in New York State include dwarfs and bicolored variants. In the cultivar 'Auriculiflorus' the bases of the petal limbs are auricled.

Importance: A showy garden plant, cultivated around the world in boreal, cool-temperate and Mediterranean climates.



2. *Dianthus armeria* L.

Common Names: Deptford Pink, Grass-pink

Type Description: Linnaeus, Species Pl. I, p. 410, 1753

Synonyms: *D. armeriastrum* Wolfner, *D. epirotus* Halácsy

Origin: Native to temperate and Mediterranean Europe and North Africa

Habitats: Sandy banks, roadsides, fields, dunes and dry soils of waste places and urban environments

Habit: Slender, erect, branching, annual, biennial or weakly perennial herbs

Flowering: June-August

Fruiting: June-September

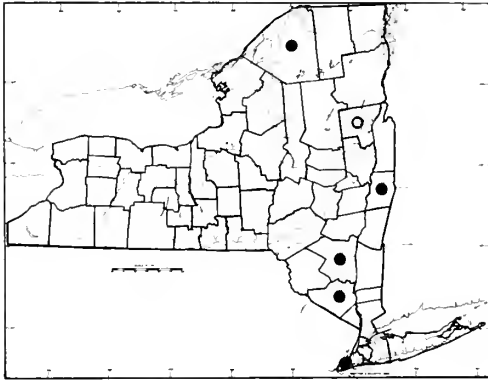
General Distribution: Widely naturalized: Quebec to British Columbia, south to California and southeast to Georgia

Description: Plants with bisexual flowers; stigmas marginal, glandular lines extending to near the style bases; styles 2, filamentous, 6-9 mm long, exserted from the perianth; ovary 1, cylindric, 4-5 mm long, borne on a short gynophore; fruit a cylindric capsule 11-16 mm long 2-3 mm broad, smooth, stramineous, opening by 4-5 narrow, terminal valves and borne on a carpophore 1-2 mm long; seeds many, 1.1-1.5 mm long, 0.7-0.9 mm broad, apiculate, elliptic, flattened on one side, dark brown, with muricate surfaces; stamens 10; anthers elongate, dorsifixed, golden or pinkish; filaments slender, 8-12 mm long; perianth of 2 whorls subtended by an epicalyx; petals 5, distinctly clawed, the claw within the calyx tube very slender, pale, 10-18 mm long, limb ca. 5 mm long, 3 mm broad, usually shallowly dentate with 2-5 teeth, deep rose to pale pink speckled with white (rarely all white); sepals 5, the limbs sharply attenuate with hyaline margins, 3-7 mm long, united below into a slightly inflated, cylindric tube 14-21 mm long, 3-4 mm broad, with 30+ strong ribs, greenish, rosy tinged and mottled, densely minutely villous to almost glabrous; epicalyx bracts greenish to red tinged, sometimes with hyaline margins, strongly ribbed, lanceolate to basally expanded and aristate, usually hispid, (5-) 15-21 mm long, sometimes equalling the calyx; pedicels 0-6 mm long, ensheathed in bract bases; inflorescences densely clustered obconic fascicles, borne terminally and on the upper lateral branches when present (flower rarely solitary with one epicalyx bract and 2-4 primary bracts); primary inflorescence bracts lanceolate, often equaling and sometimes surpassing the inflorescence length, up to 3.3 cm long, 4 mm broad at base, strongly veined, hispidulous, at least along the margins; leaves usually 4-6 pairs per stem, linear to narrowly lanceolate, 1-7 (9) cm long, 0.5-6.5 mm broad, glabrescent to densely short-scabrous, especially along the strong central vein and margins, clasping at base, tips acute to acuminate (or abruptly blunted); petioles

absent; **stipules** absent; **stems** erect, up to 90 cm tall, simple or branched upward, slender to stiff and somewhat stout at base, nearly glabrous to scabrescent at the swollen **nodes**; **root system** usually a biennial taproot with well-developed lateral roots or weakly annual under severe habitat conditions ($2n = 30$).

Infraspecific Variation: Plants may be robust biennials, annuals or weak perennials, with apparent plasticity in response to soil and microclimatic conditions. The number of inflorescences and lateral branches can also vary strikingly within the same population. Flower color varies in intensity, and white-flowered plants are known in some wild populations.

Importance: These plants are prolific when cultivated in dry, sandy or rocky gardens, and they escape to similar habitats in eastern North America.



3. *Dianthus plumarius* L.

Common Names: Garden Pink, Grass-pink, Cottage Pink

Type Description: Linnaeus, Species Pl. I, p. 411, 1753

Synonyms: *D. blandus* (Reichenb.) Hayek, *D. hoppei* Portenschl., *D. hungaricus* Pers., *D. lumnitzeri* Weisb., *D. praecox* Kit. ex Willd.

Origin: A native of montane, eastern Europe

Habitats: Grassy banks, sandy roadsides, open, rocky woodlands and clearings (lime tolerant)

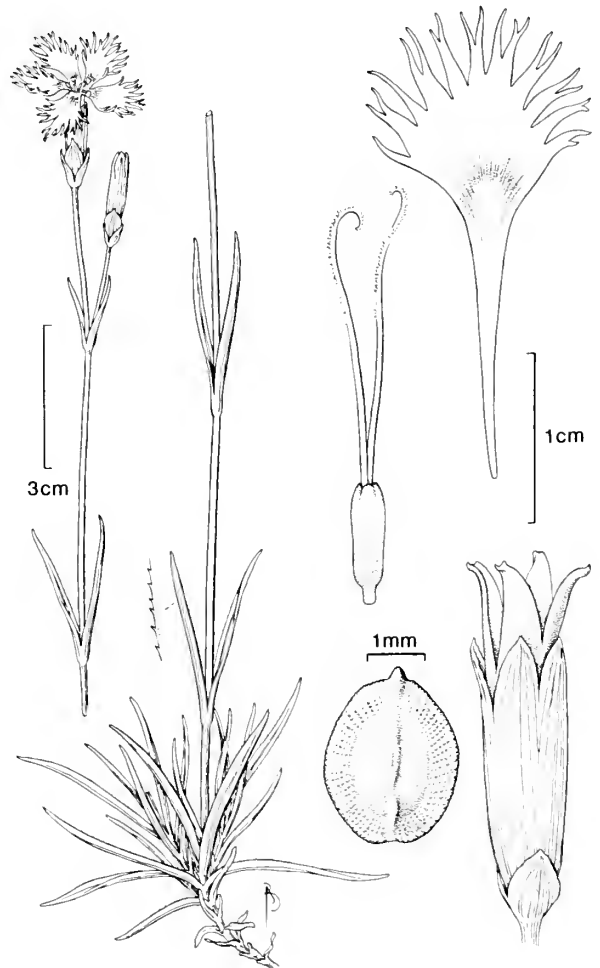
Habit: Tufted, rhizomatous perennials with erect flowering stems

Flowering: June-August

Fruiting: June-October

General Distribution: Scattered naturalized populations from occasional garden escapes: Nova Scotia; New England, New York, west to Michigan, Minnesota, Missouri, rarely south to Alabama (North Carolina)

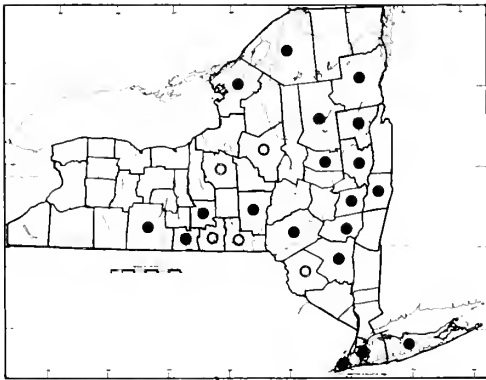
Description: Plants with **bisexual** flowers; **stigmas** marginal, glandular-puberulent lines; **style** 2, sometimes fused near base, linear, 13-21 mm long; **ovary** ovoid-cylindric, 6-8 mm long, borne on a **gynophore**; **fruit** a cylindric capsule equaling or exerted from the calyx, 1.6-2.6 (3.2) cm long, 4-7 mm broad, smooth, tan, opening by 4 broadly acute to obtuse (minutely blunt-tipped) teeth, borne on a **carpophore** up to 5 mm long; **seeds** many, ovate-elliptic, flat on one side, ca. 1.5 mm long brown, muricate; **stamens** 10; **anthers** oblong, dorsifixed; **filaments** linear, up to 22 (30) mm long; **perianth** of 2 whorls subtended by an **epicalyx**; **petals** distinctly clawed, the claws 12-23 (30) mm long, linear, petal limbs 11-18 mm long (including fringe), 6-13 mm broad, obdeltoid, the outer margin fimbriate-lacerate, the ragged fringe 1/3 to 1/2 the limb length, usually white, red-striated below or deep pink to reddish at the limb bases; **sepals** 5, lobes 3-7 mm long, 1-2 mm broad, obtuse-apiculate, smooth, greenish or pink-tinged with reddish or purplish fringed margins that may be somewhat membranaceous just below the slightly cucullate tip, calyx tube 12-22 (31) mm long, 3-5 mm



broad, glabrous, 40+ ribbed, greenish, often rosy to purplish-tinged; **epicalyx bracts** 2-6, in pairs that are slightly connate at base, 3-9 mm long, 2-6 mm broad, cucullate-ovate with apiculate tips, pale greenish, ribbed, with reddish (purplish), somewhat membranaceous margins; **pedicels** 3-40 mm long, grooved, smooth; **inflorescence** of 2-3 (5) flowers, borne in the upper leaf axils, or flower terminal, solitary; **cauline leaves** linear, (1) 2-6 (8) cm long, 1-2 mm broad, with a strong midrib and parallel veins, glabrous, greenish to glaucous, somewhat membranaceous near the ciliate to scabrescent margins, tips acute to acuminate, bases, scarious, connate; **basal leaves** densely tufted (grass-like), some pairs remaining short (4-9 mm long and bract-like within the tuft), but most basal leaves linear to linear-lanceolate, 2-8 (12) cm long, 1-2 (3) mm broad, usually with a strong midrib and pseudoparallel veins, margins scabrescent, tips acuminate to subacute, surfaces smooth, green to glaucous, scarious at the connate bases; **petioles** absent; **stipules** absent; **stems** usually solitary, unbranched, from basal tufts of leaves, fluted and ribbed above, 15-30 (45) cm tall; **rhizomes** wiry, dark brown with crowded nodes and scale-like disintegrating leaf bases, 2-4 mm broad, and may be short or up to 4-12 cm long between tufted green shoots, horizontal, but arched upward into a caudex just below the tuft; **root system** fibrous, adventitious ($2n = 30, 60, 90$).

Infraspecific Variation: A number of cultivated variants have received varietal or horticultural names. These include color forms ranging from rosy to purple and variously bicolored flowers; there are also double-flowered plants with dark green leaves, and a variant with attenuated calyces.

Importance: These plants occurs in the wild as sporadically naturalized escapes from cultivation; they are relatively popular garden plants, known to grow in dry, limy places.



4. *Dianthus deltoides* L.

Common Names: Maiden-pink, Meadow-pink

Type Description: Linnaeus, Species Pl. I, p. 411, 1753

Origin: Native to Northern Europe

Habitats: Dry open places, roadsides, sparse woodlands, vacant lots, meadows, stream banks (lime tolerant)

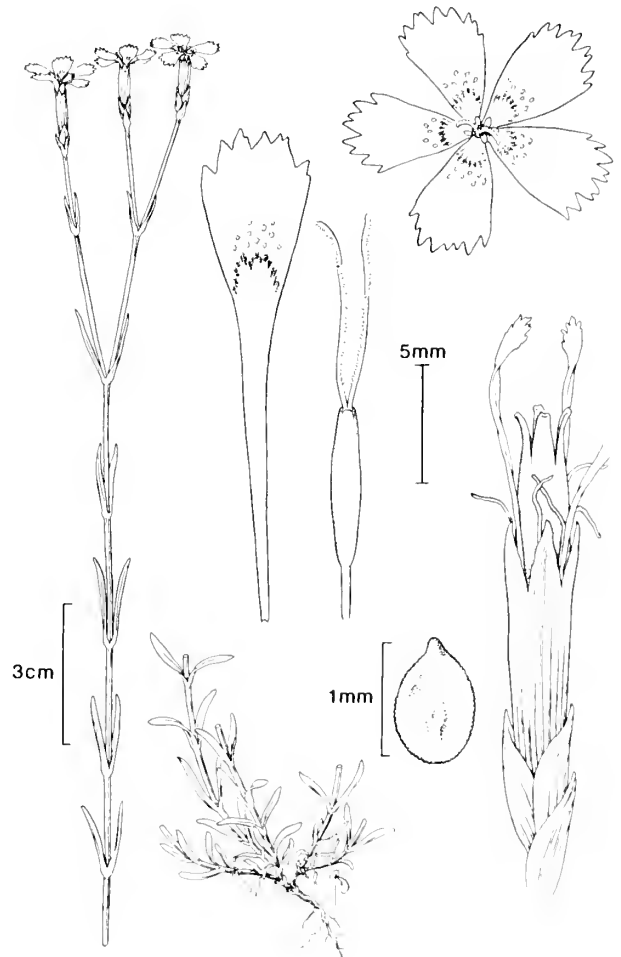
Habit: Spreading, sometimes matted, rhizomatous perennials with ascending to erect flowering shoots

Flowering: June-August

Fruiting: Late June-October

General Distribution: Naturalized from Quebec to Minnesota, Illinois, Virginia, North Carolina and Arkansas; also escaping in Montana and Washington state and probably in other north-temperate regions

Description: Plants with bisexual flowers; stigmas marginal glandular lines extending almost to the style bases; styles 2, filamentous, 5-7 mm long; ovary cylindrical, 4-5 mm long, borne on a short gynophore; fruit a cylindrical



capsule, 14-18 mm long, ca. 2 mm broad, glossy, greenish to tan, opening by 4 (5) narrow, blunt-tipped valves, borne on a carpophore ca. 3 mm long; **seeds** many oval, apiculate, flattened on one side, ca. 1.1 mm long, 0.8 mm broad the surfaces muricate, dark brown to black; **stamens** 10; **anthers** oblong, basifixed; **filaments** slender, 13-18 mm long; **perianth** of 2 whorls subtended by an **epicalyx**; **petals** 5, distinctly divided into claw and limb, the claw 10-19 mm long, pale, slender, but not linear, gradually broader (often more pigmented) toward the apex, the limb deltoid, 5-12 mm long, 4-9 mm broad, the margin shallowly to prominently dentate, usually with 4-7 teeth, deep rose to pink (white spotted) or white, flowers sometimes prominently bicolored with dark purple-rose or white centers and distinct rosy margins; **sepals** 5, the lobes 2-4 mm long, acute, puberulent with ciliate margins, the tube cylindric, 11-15 (18) mm long with 30+ moderately prominent ribs, greenish with pink or deep rosy tint, the surface puberulent; **epicalyx bracts** 2 (-4), pale, pink-tinged, ovate with sharply acuminate to slightly aristate tips, 5-7 mm long, 2-4 mm broad; **pedicels** (0.4) 1-3 (4.7) cm long, scabrescent; **inflorescence** an open, cyme-like panicle, often bearing many flowers on erect, fertile branches, the flowers single on distinct pedicels, but not fascicled; **bracts** at the pedicel bases leaf-like but more membranous, linear, ca. 1 cm long, puberulent; **leaves** dimorphic, those of the creeping vegetative shoots and bases of flowering shoots oblanceolate to spatulate, 2-13 (16) mm long, 0.5-3.2 mm broad, their margins scabrescent, tips obtuse to subacute, cauline leaves of flowering shoots in 4-10 pairs, linear to lanceolate, acute-tipped, 5-30 (38) mm long, 0.3-3.5 mm broad, the strong midrib and margins scabrescent, surfaces somewhat mealy-glaucous, bases shallowly clasping with hyaline, ciliate margins; **petioles** absent; **stipules** absent; **stems** dimorphic, the vegetative branches crowded, wiry, much-branched, creeping to low-bushy; flowering branches erect or ascending, up to 40 (60) cm tall, slender, rarely branched except in the inflorescence, internodes smooth to papillate or scabrescent, nodes not conspicuously swollen; **rhizomes** and **stolons** much-branched, forming wiry clumps; **root system** largely adventitious from the perennial bases ($2n = 30$).

Infraspecific Variation: Flower color is extremely variable in escaped cultivars, ranging from deep purple-rose to pink or white, often in bicolored combinations.

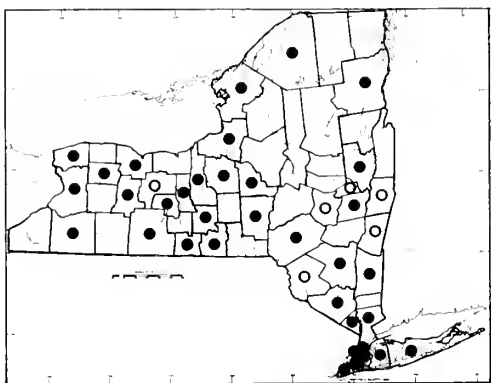
Importance: These plants are widely cultivated in gardens.

16. AGROSTEMMA

Common Name: Corn Cockle

Authority: Linnaeus, Species Pl. I, p. 435, 1753

A genus of 2-3 species (or monotypic with varieties and races), native to eastern Europe and Asia Minor. The plants are closely related to *Lychnis* but annual. The naturalized representative in North America, *A. githago* L., is a weed of corn and other grain fields, also widespread in Eurasia, where it is an agricultural pest as well. The seeds are poisonous.



1. *Agrostemma githago* L.

Common Names: Corn Cockle, Purple Cockle, Corn-rose, Corn Campion

Type Description: Linnaeus, Species Pl. I., p. 435, 1753

Synonyms: *Lychnis githago* (L.) Scop.

Origin: Native to Mediterranean Europe

Habitats: Corn and wheat fields and other cultivated ground, roadsides pastures and waste places

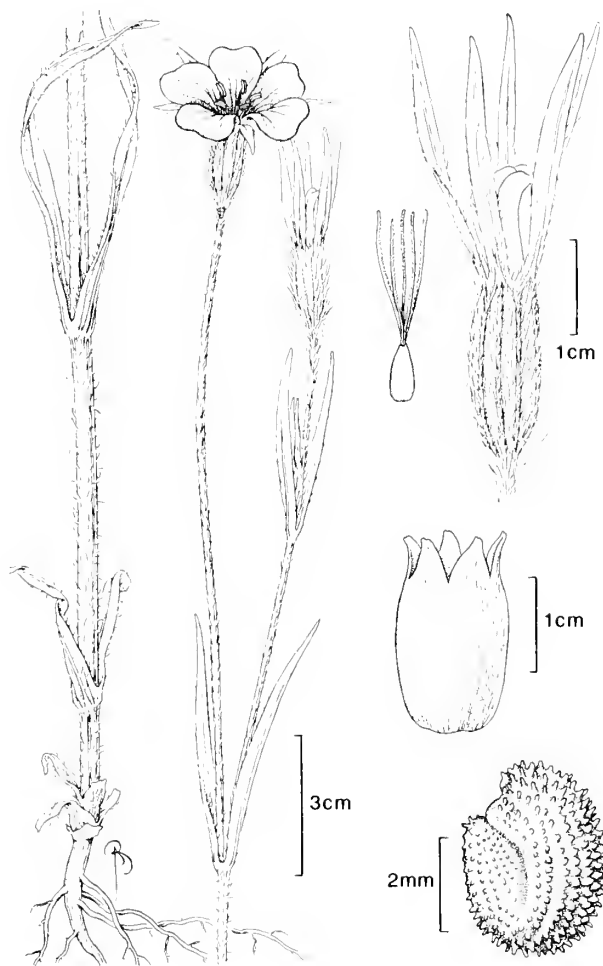
Habit: Stout, branching, erect or spreading annuals

Flowering: Late May-September

Fruiting: June-November

General Distribution: Newfoundland to Alaska, south to California, eastern Texas and northern Florida

Description: Plants with bisexual flowers; stigmas linear glandular lines to near the style bases; styles (4) 5, linear, 1.0-1.8 (2.1) cm long; ovary 1, ovoid, sessile; fruit a stout, ovoid capsule, becoming somewhat woody, smooth and golden on dehiscence by (4) 5 acute (minutely blunted) valves, (the capsule) 14-18 (21) mm long, 8-14 mm broad, sessile (carphophore absent), enclosed within, and slightly exerted from, the inflated calyx tube; seeds many, 2.9-3.4 mm long, ca. 2 mm broad, plump, roughly triangular with 2 flattened sides, dark brown to purple-black, surfaces with prominent, acute tubercles; stamens 10; anthers linear, basifixed; filaments slender, 9-20 mm long; perianth of 2 whorls; petals 5, showy, the claw creamy to pale pinkish or purplish, 10-14 mm long, 2-3 mm broad, limb bright rose-red to purple, paler toward the base (or white), 10-20 (26) mm long, 7-15 (18) mm broad, the margin retuse, sometimes shallowly dentate to almost entire, limb base without auricles or other appendages; sepals 5, the lobes strongly ascending and exceeding the petals, lanceolate, (11) 18-32 (41) mm long, 1.5-3.6 mm broad, with subacute to acuminate tips, strigose to silky-sericeous, the pale trichomes with swollen bases; calyx tube cylindric, somewhat inflated in flower, ovoid and strongly inflated in fruit, enclosing the capsule except at the slightly exerted tip, 11-17 (19) mm long, up to 15 mm broad, with 10 (9-12) broad, greenish veins with sunken, pale, scarious, herbaceous



commisures between, silky strigose to pale hispid throughout; **peduncles** 3-15 (26) cm, stout, flexuous, silky; **inflorescence** of singly borne flowers on long peduncles in the upper leaf axils; **leaves** opposite, entire, shallowly connate at base, linear to lanceolate, mostly 6-12 cm long, 2-5 mm broad, silky, appressed strigose to sericeous (or hispid) the trichomes with swollen bases; **petioles** absent; **stipules** absent; **stems** stiff, up to 1 cm in diameter, terete to grooved, erect-ascending up to 1 (1.2) m tall, long-strigose to sericeous; **root system** a tough, annual taproot up to 15 cm long with strong lateral branches and fibrous rootlets (2n = 48).

Infraspecific Variation: Flower color varies from purple to rose-pink and white. In the cultivar 'Milas' the flowers are rose-purple and up to 5 cm in diameter. Large- and small-seeded races are reported from Europe where selection has gone on in crop fields (see below).

Taxonomic Note: Plants known as *A. githago* L. are known exclusively as weeds of corn and wheat fields and waste places where they have spread around the world. It has been suggested that this species arose from *A. brachylobum* (Fenl) Hammer (*A. gracilis* Boiss.), a species with a more restricted range in Greece and Turkey. *Agrostemma brachylobum* differs from *A. githago* in having petals longer than the calyx lobes and black spots at the petal bases. Another closely related taxon, *A. linicola* Terechov, is a weed of flax fields, with an earlier blooming period, green-spotted petals and smaller seeds with less prominent tubercles. These weedy variants may be no more than varieties (Hammer *et al.*, 1982) or races selected under the influence of agricultural practices.

Importance: Corn cockle is found less often as an escape from garden cultivation than as a weed of corn, winter wheat, and rye fields. The seeds are poisonous, containing up to 7 per cent of the sapogenin githagenin. They are especially toxic when ground or chewed, causing gastroenteritis, vomiting, slow breathing, dizziness, diarrhea, stomach pain, lesions and possible death to humans and certain livestock, such as horses, cattle and poultry (less often pigs). The seeds were once found as severe grain crop contaminants that sometimes caused significant danger and profit losses. Modern screening and sorting methods have largely eliminated those risks, but corn cockle seeds may still be found in dangerous quantities in some ground corn and oat meals. The roots of the plant are also suspect in hog poisoning cases.

17. GYPSOPHILA

Common Names: Baby's-breath, Gypsophil

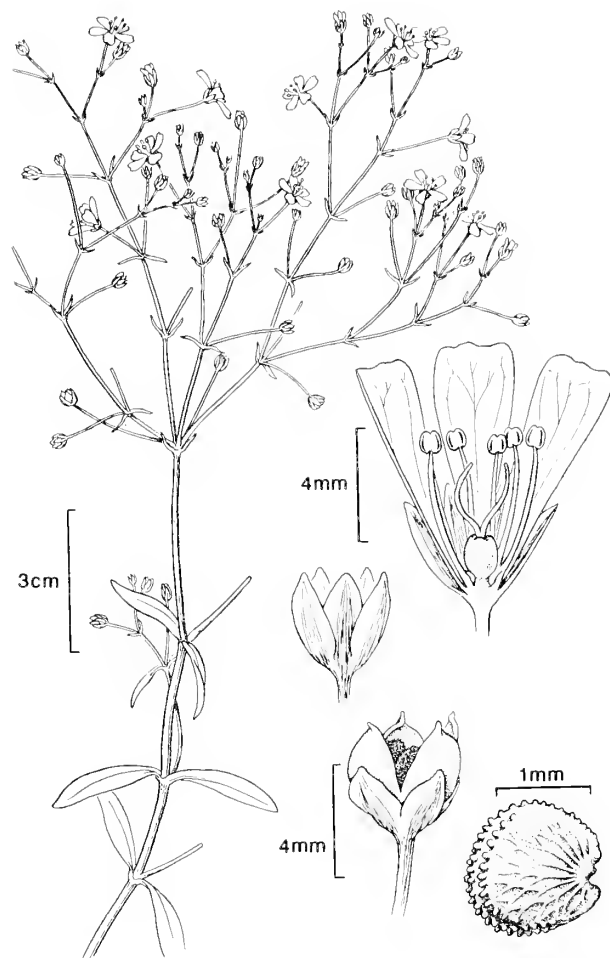
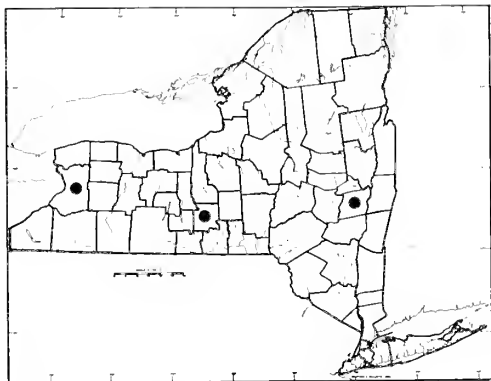
Authority: Linnaeus, Species Pl. I, p. 406, 1753

A genus of about 140 species native to Eurasia and North Africa; well represented in the Mediterranean Region. *Gypsophila paniculata* L. and *G. elegans* Bieb. are commonly cultivated under the name "baby's-breath," grown in gardens and greenhouses for use in floral arrangements. These and other *Gypsophila* species are also grown in rock gardens or planted as borders to produce a lacy fringe effect.

Description: Plants with bisexual flowers; **stigmas** 2 (3); **styles** 2 (3); **ovary** 1, superior, not stalked; **ovules** many, borne on a free, central placenta; **fruit** a sessile, 1-locular, 4-valved capsule; **seeds** many, subreniform, flattened, rugose to tuberculate; **embryo** peripheral with a prominent radicle; **perisperm** albuminous; **stamens** 10; **filaments** slender, free; **anthers** dorsifixed; **perianth** of 2 whorls, not subtended by an **epicalyx**; **petals** clawed and limbed, lacking coronal scales at the corolla mouth; **sepals** 5 with hyaline margins, united into a turbinate to campanulate calyx tube with veinless commisures; **pedicels** slender; **bracts** many, small; **inflorescence** paniculate, often ubiquitous, corymbiform; **leaves** paired, connate-clasping, entire, linear to broadly strap-like; **petioles** lacking; **stipules** lacking; **stems** often much-branched upward; **root system** woody, perennial, or an annual taproot.

KEY TO SPECIES

1. Petals showy, 7-12 mm long, often 3-5 times the length of the calyx tube 1. *G. elegans*
1. Petals usually 6 mm long or less, equaling to about twice the length of the calyx tube (2)
 2. Lower cauline leaves needle-like, usually 10 mm long, 1 mm broad or less; stem delicate, capillary, from a slender, annual taproot; capsules ovoid to elliptic 2. *G. muralis*
 2. Lower cauline leaves lanceolate, often up to 1 cm broad, 5- 8 cm long; stem slender to stout, from a tough, perennial base; capsules spheroid 3. *G. paniculata*



1. *Gypsophila elegans* Bieb.

Common Names: Baby's-breath, Tall Gypsophil,
Annual Baby's-breath

Type Description: Fl. Taur.-Cauc., vol. 1, p. 319,
1808

Synonyms: *G. carminea* Hort., *G. grandiflora* var.
alba Hort.

Origin: Native to the Caucasus and montane Asia
Minor

Habitats: Roadsides and waste places as an escape

Habit: Erect or ascending annuals with much-
branched inflorescences

Flowering: May-September

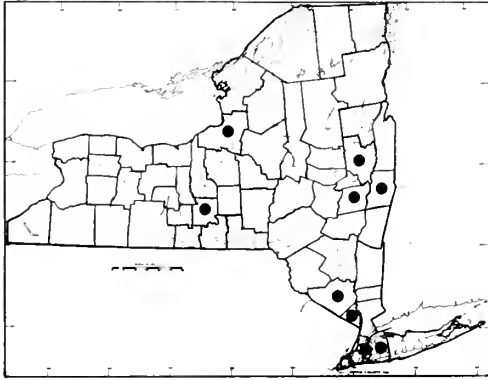
Fruiting: June-November

General Distribution: Occasionally escaping culti-
vation and becoming naturalized from southern
Labrador to Alberta, New York, western Penn-
sylvania, Virginia and North Carolina

Description: Plants with bisexual flowers; stigmas 2; styles 2, filamentous, ca. 2 mm long; ovary spheroid, ca. 1 mm broad; fruit a spheroid capsule, 3-4 mm in diameter, opening by 4 broad, obtuse to apiculate valves that split to near the base, surface glossy, tan; seeds several, comma-shaped, plump, 1.4-1.6 mm in diameter, dark brown, with a few blunt tubercles, but mostly ridged; stamens 10; anthers oblong, basifixed, ca. 0.5 mm long; filaments thread-like, 3-4 mm long; perianth of 2 whorls, lacking an epicalyx; petals spatulate, not strongly clawed, (6) 7-12 mm long, up to 6 mm broad, showy, white with purple to rosy veins, and entire margins, unappendaged; sepals 5, the lobes 1-3 mm long, obtuse, green in the center with broad scarious to whitish-margins, glabrous, calyx tube shallowly campanulate, 1-2 mm deep; pedicels 7-20 (35) mm long, slender, glabrous; inflorescence an intricately branched, diffuse, corymb-like panicle up to half the height of the plant; bracts paired, 1-10 mm long, linear, glabrous, with hyaline margins toward the base; cauline leaves lanceolate to narrowly elliptic with acute to obtuse tips and shallowly clasping bases, somewhat glaucous, entire, with narrow, hyaline margins; basal leaves obovate to spatulate; petioles absent; stipules absent; stems smooth, erect or ascending, slightly swollen at the nodes, up to 70 cm tall (including the inflorescence); root system an annual taproot, or persisting as a short-lived perennial with fibrous lateral roots ($2n = 26, 34$).

Infraspecific Variation: Flower color variants include the following cultivars: 'Grandiflora alba,' 'Rosea,' 'Carminea,' and 'Purpurea.'

Importance: This is a relatively popular species in the garden, grown for its show of many dozen of flowers on healthy individuals. It is also cultivated widely for the florist industry. The plants may be purchased in bundles, or, more frequently, they are seen in a variety of floral arrangements, where they provide accents or fringes. The lacy, airy appearance of the inflorescences makes them a favorite in corsages as well. This species may become more widespread in the future, due to inclusion of its seeds in canned wildflower mixes.



2. *Gypsophila muralis* L.

Common Names: Baby's-breath

Type Description: Linnaeus, Species Pl. I., p. 408, 1753

Synonyms: *G. stepposa* Klokov, *G. pilosa* of NY reports, not Huds., *G. porrigens* (L.) Boiss., of NY reports.

Origin: A native of Eurasia

Habitats: Dry roadsides and waste places

Habit: Much-branched, erect annuals

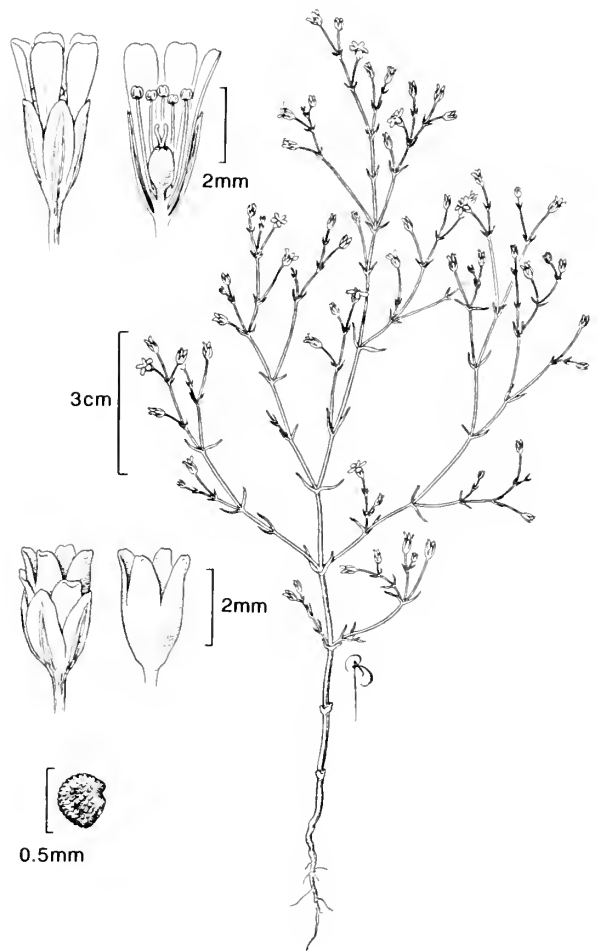
Flowering: July-October

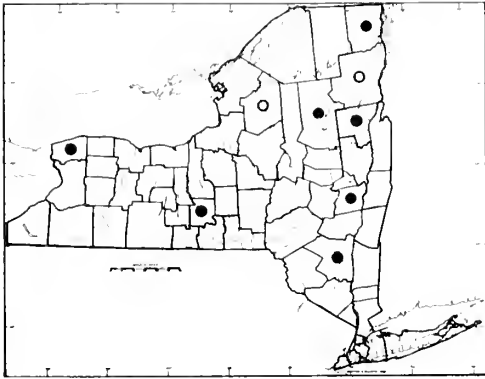
Fruiting: July-December

General Distribution: Occasionally escaped and naturalized: Quebec to Wisconsin (Minnesota), New Jersey and southeastern Pennsylvania

Description: Plants with **bisexual flowers**; **stigmas** 2; **styles** filamentous, ca. 0.5 mm long; **ovary** ovoid, ca. 1 mm long; **fruit** a capsule, tan, somewhat translucent, glossy, ovoid to narrowly elliptic, 2.9-3.4 mm long, 1.4-1.9 mm broad, opening by 4 acute (minutely blunt), valves that split to about 1/4 the length of the fruit; **seeds** many, plump, comma-shaped, 0.3-0.4 mm long, ebony, the surfaces minutely muricate and bluntly ridged; **stamens** 10; **anthers** minute, basifixed; **filaments** slender, 2-3 mm long; **perianth** of 2 whorls, not subtended by an epicalyx; **petals** 4.0-5.3 (6) mm long, ca. 2 mm broad, spatulate, not strongly clawed, emarginate, pink with darker pink veins (purplish or white); **sepals** 5, the lobes obtuse, 1 mm long or less with green centers and broad, hyaline, ciliate margins, surfaces glabrous, the calyx tube turbinate, 1.6-2.4 (3) mm long; **pedicels** filiform, glabrous or minutely glandular, 4-14 (18) mm long; **bracts** linear-filiform, up to 1 cm long; **inflorescence** a delicately branched, complex panicle, often comprising much of the aerial portion of the plant, bearing up to a hundred or more small, pedicellate flowers; **leaves** capillary to linear-oblongate, acute, 6-15 (23) mm long, mostly less than 1 mm broad, glabrous, mealy puberulent or ciliate along the entire margins, hyaline toward the connate bases; **petioles** absent; **stipules** absent; **stems** slender, wiry, much-branched above, often with only a couple of pairs of cauline leaves before branching into an inflorescence, plants 3-30 (40) cm tall; **root system** a slender, contorted, annual taproot with capillary lateral roots (2n = 34).

Importance: This species is cultivated as a decorative fringe, border plant and annual "filler" between perennials in rock gardens. Although not commercially important in the floral trade, it is sometimes used in bouquets.





3. *Gypsophila paniculata* L.

Common Names: Baby's-breath

Type Description: Linnaeus, Species Pl. I, p. 407, 1753

Synonyms: *G. bicolor* (Frey & Sint.) Grossh., *G. paniculata* L. ssp. *bicolor* Frey & Sint., *G. stevenii* of NY reports, not Fisch.

Origin: A native east-central Europe and central Asia

Habitats: Fields, waste places, meadows, ditches and roadsides

Habit: Erect or ascending, stout, herbaceous perennials

Flowering: June-August

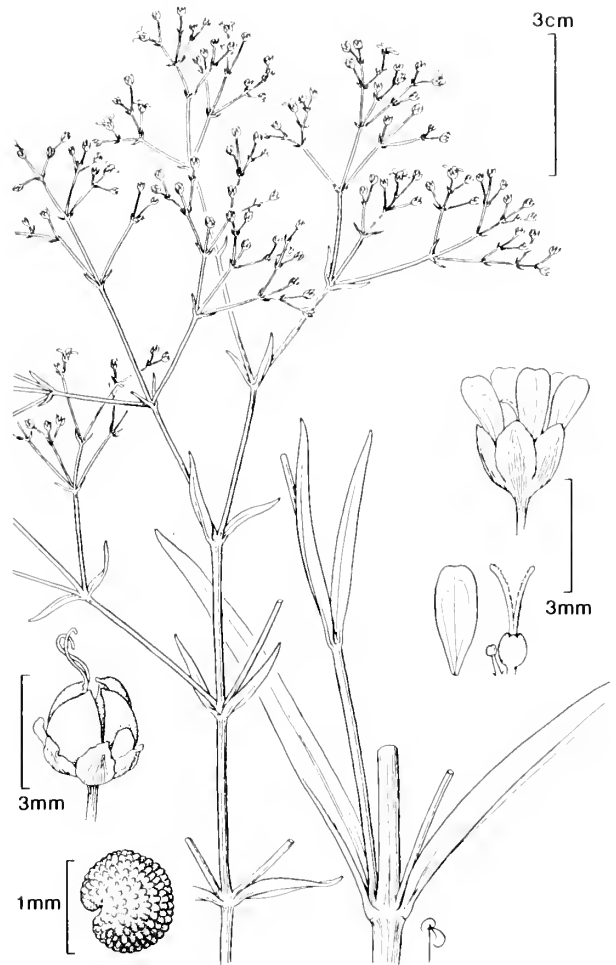
Fruiting: July-October

General Distribution: Occasionally naturalized from Quebec to British Columbia, Washington, Nebraska, Indiana, New England, New York and Pennsylvania (northern Florida)

Description: Plants with bisexual flowers; stigmas 2; styles 2, filiform, ca. 2 mm long, golden; ovary spheroid, ca. 1 mm in diameter; fruit a capsule, 1.4-2.1 mm in diameter, spheroid, tan, glossy, enclosed within the persistent calyx, opening by 5 obtuse valves; seeds several, plump, 0.6-1.1 mm long, dark brown with rounded tubercles and ridges; stamens 10; anthers minute, globose, golden, dorsifixed; filaments pale, filamentous, slightly exerted from the perianth, 3.0-3.5 mm long; perianth of 2 whorls, lacking an epicalyx; petals 5, 2.4-3.2 mm long, ca. 1.5 mm broad, white, to pinkish or rose, shallowly emarginate, not strongly clawed; sepals 5, dark green with broad, scarious, white margins, pale punctate on drying, the lobes 0.6-1.1 mm long, with obtuse tips, calyx tube campanulate, 0.7-1.8 mm deep; pedicels 1-9 (13) mm long, very slender, glabrous; bracts minute, linear-lanceolate with a green midrib and whitish margins; inflorescences multiple, at and near the branch tips, diffuse panicles of corymb-like clusters of minute flowers; leaves narrowly to broadly lanceolate, 1-7 (10) cm long, 1-8 (11) mm broad, tips acute (to acuminate) bases of leaf pairs very shallowly connate at the swollen nodes, margins entire, leaf surfaces usually glabrous, glaucous; petioles absent; stipules absent; stems up to a meter tall, greenish, glaucous above (rarely pubescent), pale tan with age, up to 1.3 cm broad, suffrutescent toward the base; rhizome tough, woody; root system adventitious from a perennial rhizome (2n = 34).

Intraspecific Variation: Flower color and size vary from white to pink or reddish between cultivars, and there is a multiple-petaled 'flore-pleno' form. Plants of so-called "ssp. *bicolor*" have larger flowers and broader leaves than is typical.

Importance: This is the common "baby's-breath" of the nursery and cut-flower trade, grown in great quantities and used in corsages and floral arrangements of many kinds. It is also grown in yard plantings, rock gardens and as a border plant where a lacy effect is desired.



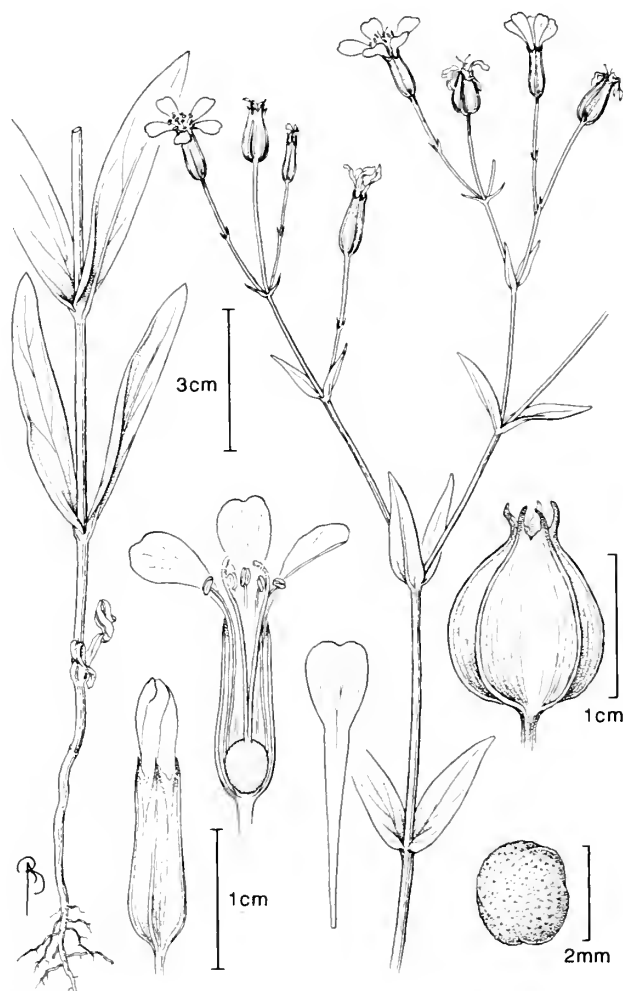
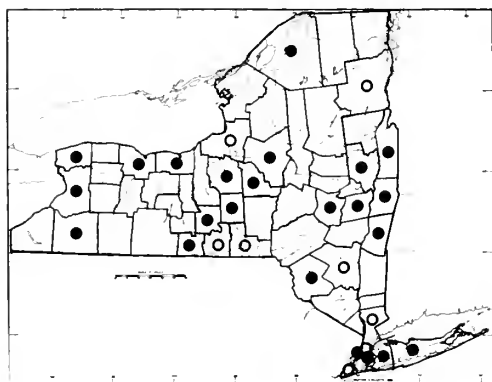
Note: A specimen corresponding closely with *Gypsophila arrostii* Guss., as treated in *Flora Europaea* (Tutin, et al., 1964) has been collected in Tompkins County near a plant nursery. It differs from specimens of closely related *G. paniculata* in having dark, glandular pubescence throughout the inflorescence, purple-pink petals, and even blunter, less prominent tubercles on the seeds.

18. VACCARIA

Common Names: Cow-herb, Cow-cockle

Authority: Medic., Phil. Bot. I, p. 96, 1789

A monotypic genus of annual herbs, sometimes included in *Saponaria*. Up to four species have been recognized in the past. Cow-herb is a widespread weed of cultivated fields.



1. *Vaccaria hispanica* (Mill.) Rausch.

Common Names: Cow-cockle, Cow-herb, Cow-basil

Type Description: Miller, Gard. Dict. ed. VIII., 1768

Synonyms: *Saponaria hispanica* Mill., *S. vaccaria* L., *V. pyramidata* Medic., *V. segetalis* (Neck.) Garcke ex Ashers., *V. vaccaria* (L.) Britton, *V. vulgaris* Host

Origin: A native of southern and central Europe

Habitats: Primarily in cultivated fields, but spreading to waste places, sidewalks and roadsides

Habit: Erect, often flat-topped, annual herbs

Flowering: June-September

Fruiting: July-November

General Distribution: Newfoundland to Alaska
California and Louisiana (Florida)

Description: Plants with bisexual flowers; stigmas 2; styles 2, filamentous, 8-11 mm long; ovary

ovoid, sessile; fruit an ovoid capsule, almost filling the persistent, inflated calyx, the capsule tan, smooth, 6-10 mm long, 4-8 mm broad, dehiscent part-way by 4 valves or tearing with age and separation of endocarp from exocarp; seeds few to many, red-brown to ebony, spheroid, 2.0-2.7 mm in diameter, the surfaces minutely tubercled; stamens 10; anthers elliptic, golden, ca. 1 mm long, dorsifixed; filaments slender, 8-19 mm long; perianth of 2 whorls, lacking a free epicalyx; petals 5, claws linear, 8-14 mm long, paler than the limbs, petal limbs 3-9 mm long, 2-5 mm broad, lacking appendages at base, margins entire or emarginate (less often irregular), purplish, or deep rose to pink; sepals 5, lobes 1-3 mm long, acute, often purplish with hyaline margins, tube 12-15 mm long, cylindrical at first, but soon inflated toward base; (in fruit) the persistent calyx up to 11 mm broad when fully inflated, the tube becoming flask-shaped or pyriform to broadly urceolate with

wing-like ridges, each wing with a strong, cord-like vein at its margin, the green, glossy ridges spanned by paler concavities that are whitish to cream or pinkish-tinged; **pedicels** slender, 6-20 mm long, glabrous, pale greenish to pink-tinged, weakly to strongly ribbed; **inflorescence** a cyme-like panicle or dichasium of few to dozens of flowers, ovoid in outline to conspicuously flat-topped; **bracts** paired, connate at base, ovoid to linear-lanceolate with acute to acuminate tips, 2-10 (18) mm long, green to scarious with a green midrib; **leaves** ovate to obovate or broadly lanceolate, (1) 4-10 (13) cm long, (0.5) 1-4 (4.8) cm broad, tips acute to acuminate (obtuse), bases shallowly clasping, often somewhat auriculate to cordate, surfaces smooth to punctate on drying, margins entire; **petioles** absent; **stipules** absent; **stems** smooth, somewhat glaucous, terete or ribbed, branching above the base, erect, 15-70 cm tall; **root system** a twisted, slender to stout, annual taproot ($2n = 30, 60$).

Infraspecific Variation: In certain individuals the inflated calyx bears a clear outline of five pale lobes (possibly epicalyx) incorporated into its commissures. Although these structures are totally fused with the calyx structure, their fringed margins may be raised and clearly distinguishable. Flower color varies from purple to rose, brick-red or pink (rarely white).

Importance: Like its relative, the corn-cockle (*Agrostemma*), cow-cockle (*Vaccaria*) is an aggressive invader of cultivated fields in many parts of the world. It competes readily with crops such as linseed flax, significantly decreasing productivity (Alex, 1968). The plants contain dangerous amounts of saponin and githagenin (sapogenin), especially in the fruits, and have been reported to kill both humans and livestock when ingested with grain. Modern screening processes have rendered this threat to humans negligible in commercial products, however, and livestock usually find toxic concentrations of the plants distasteful. Symptoms of githagenin poisoning are shortness of breath, vomiting and dizziness as well as gastroenteritis and lesions in severe cases. The seeds of cow-cockle are rich in starch, but suggestions that it might be grown as a starch crop have not been followed up, partially due to the necessity for extracting the poisonous compounds. Though somewhat showy, *Vaccaria* is not usually valued as a horticultural plant.

19. SAPONARIA

Common Names: Soapwort, Bouncing-Bet

Authority: Linnaeus, Species Pl. I, p. 408, 1753

A genus of about 30 species native to Mediterranean Europe, north Africa and western Asia. Bouncing-bet or soapwort, *S. officinalis* L. is the only species that escapes widely in North America. It is sometimes cultivated in gardens, but it is aggressively competitive with a tough rhizome. The plants were once extracted for a crude soap. Though used in folk medicine in the past, the extract is rich in saponin and other steroid glycosides that should not be ingested in quantity. The seeds are particularly poisonous.

1. *Saponaria officinalis* L.

Common Names: Bouncing-Bet, Soapwort, London-pride, Bruisewort, Fuller's-herb, Sheep-weed, Soapwort Gentian, Sweet-Betty, Boston-pink, Old-maid's-Pink, Hedge-pink, Chimney-pink

Type Description: Linnaeus, Species Pl. I, p. 408, 1753

Origin: A native of Eurasia

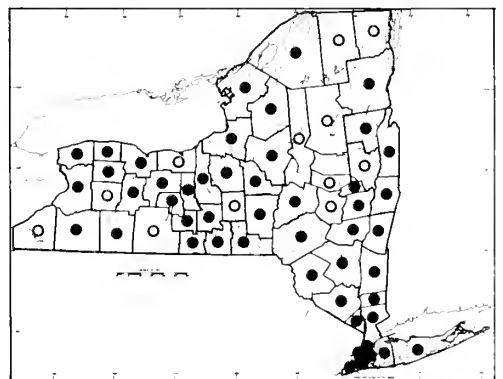
Habitats: Roadsides, waste places, sidewalks, vacant lots and other urban settings as well as in cultivated fields

Habit: Erect, decumbent or ascending, robust, perennial herbs

Flowering: Late June-September

Fruiting: (June) July-November

General Distribution: Naturalized from cultivation: Newfoundland to British Columbia, Mexico,



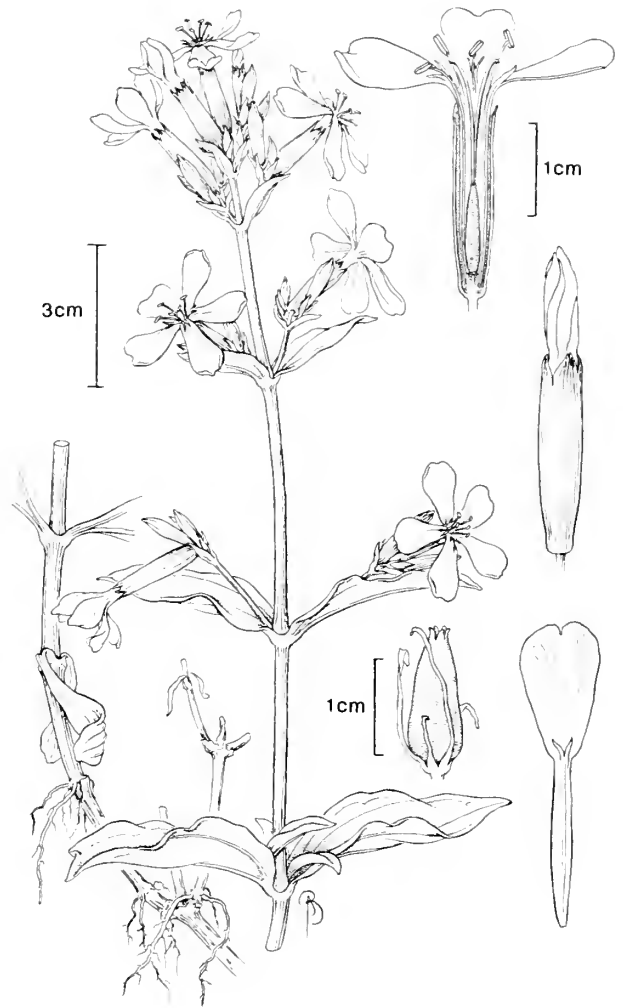
Florida and elsewhere; also weedy in Eurasia where it is native

Description: Plants with bisexual flowers; stigmas 2 (rarely 3), linear; styles 2 (rarely 3), filamentous, 16-24 mm long, free or fused just above a short valvate cap; ovary ovoid; fruit an ellipsoid to cylindrical capsule, 12-18 mm long, 2.9-6.8 mm broad, subsessile within the persistent calyx, smooth, tan, opening by 4 (6) narrow valves about 1/3 its length; seeds many, comma-shaped, plump, though somewhat compressed, 1.8-2.0 mm long, brown to ebony with muricate surfaces; stamens 10; anthers ca. 1.5 mm long, golden to pinkish, dorsifixed; filaments slender, up to 3 cm long; perianth of 2 whorls, not subtended by an epicalyx; petals 5, claw 1-20 (26) mm long, ca. 2 mm broad, limb 5-11 (16) mm long, 3-9 (13) mm broad, entire, emarginate or cleft, with a pair of coronal scales 1-2 mm long borne at the junction of limb and claw, corolla and fringe white to pink; sepals 5, lobes 2-4 mm long, acuminate to caudate, sometimes lacerate, margins with a ciliate fringe, calyx tube 16-21 (27) mm long, 3-7 mm broad, cylindrical to slenderly ovoid, greenish, with ca. 20 ribs, not strongly inflated in fruit; pedicels glabrous, ribbed, mostly 1-3 mm long; peduncles bearing flower clusters mostly 1.5 cm long or less; inflorescences dichasial, of congested, cyme-like fascicles, borne terminally and in the upper leaf axils; bracts paired, connate at base, lanceolate and acuminate to long-attenuate, mostly 1-4 mm long, the margins sometimes ciliate near the node;

leaves broadly elliptic or obovate to ovate-lanceolate (2) 5-8 (12) cm long, (1) 2-4 (5) cm broad, margins entire, often minutely revolute and papillose, blade glabrous (to puberulent), with 3 major pseudo-parallel veins arching from the base to near the acute to rounded leaf tip, bases attenuated, often to a petiole 2-5 mm long, barely clasping at base; stipules absent; stems terete, with swollen nodes at which they often bear small, leafy short-shoots, sparsely opposite-branched upward, stalks green to tan or pinkish tinged, erect or ascending up to a meter tall (or nodding), densely colonial from perennial bases; rhizomes much-branched, mostly 4-8 mm broad, often arched upward at the plant base into a caudex, with pale, yellowish wood; root system finely fibrous, largely adventitious from the nodes of the rhizomes ($2n = 14, 28$).

Infraspecific Variation: Plants with sterile, multi-petaled, *flore pleno* flowers are not uncommon in the northern parts of their native range in Eurasia and also as escapes in north-temperate North America.

Importance: Bouncing-bet continues to be grown in gardens, but it was once far more widely cultivated. It has perhaps decreased in popularity because of its weediness and association with abandoned lots, back streets and waste places. It is an aggressive, colonial plant, self-propagating from woody, perennial rhizomes, and, in extreme cases, it may become a pest requiring eradication in both urban and agricultural settings. Another common name, "soapwort," comes from the fact that a lather that can be derived by crushing the plants in water. This extract has been used as a soap substitute and a base for homemade and commercial shampoos. The plants have medicinal and folk uses, but the poisonous saponin content has proved dangerous, and demands strict precautions. Europeans and early American settlers used decoctions to treat arthritis, venereal disease, jaundice and a number of other health problems, including external application of poultices for such complaints as itches, warts and bruises. Poisoning and death may result from ingestion of quantities of any portion of the plant, but the seeds are particularly dangerous, since they are richest in saponin and githagenin.



They pose a threat to both humans and livestock, especially if chewed. Symptoms of saponin poisoning include, dizziness, vomiting and shortness of breath, and toxic doses may result in gastroenteritis and lesions as well.

Note: *Saponaria ocymoides* L., the rock soapwort, is a European native that has been found once in New York State, naturalized in a hollow in Ulster County (1967). It has spatulate leaves and bright purplish to pink flowers about a centimeter long, with densely glandular-pubescent calyces.

20. LYCHNIS

Common Names: Campion, Lychnis, Pink

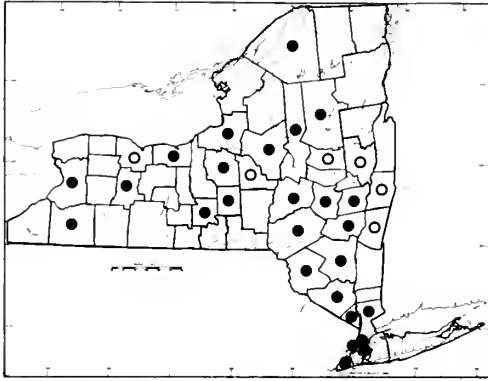
Authority: Linnaeus, Species Pl, I, p. 436, 1753

A genus of about 15 species distributed widely in Europe and eastern Asia. Species reported from North Africa and South America are referable to *Silene*. The characters separating *Lychnis* from the closely related genus, *Silene*, have been subject to interpretation, such that some taxa have been transferred back and forth between genera. Certain *Lychnis* species can be quite showy, with scarlet, orange, purple, rose, pink or white flowers, and a number of them have found wide acceptance as garden ornamentals.

Description: Plants with bisexual flowers; stigmas usually 5; styles usually 5; ovary 1, gynophore present or absent; ovules many; fruit a capsule, on a carpophore or sessile, unilocular or 3-5 septate from the base, dehiscent by 5 acute or bifid valves; seeds copious, small, somewhat compressed, muriculate or tuberculate; embryo curved around the perisperm; stamens 10; anthers dorsifixed; filaments slender; perianth of 2 whorls, lacking an epicalyx; petals free, white, purple, pink, orange or red, each strongly divided into a limb and claw, usually with a fringe of coronal scales where they join at the corolla mouth; sepals 5, united for most of their lengths into a cylindrical calyx tube that may become somewhat inflated in fruit; pedicels and peduncles slender to stout; inflorescences variously cymose to paniculate, diffuse to densely clustered; bracts paired; leaves paired, entire, their bases connate at the node; petioles present or absent; stipules absent; stems erect or ascending from perennial rhizomes and fibrous adventitious root systems.

KEY TO SPECIES

1. Surface of the calyx tube glabrous; petal margins dissected into linear lobes and teeth; corolla white, pink, purplish or rosy-tinged 1. *L. flos-cuculi*
1. Surface of the calyx tube sparsely to densely pubescent; petal margins entire, emarginate or deeply bifid, but not dissected; corolla orange, scarlet, or pale red to dark reddish-purple (rarely white) (2)
 2. Inflorescence a congested cyme, the pedicels less than 0.5 cm long; petal tips conspicuously bifid-notched; plants sparsely pubescent, not silvery-tomentose; mature capsule stalked within the clavate calyx tube 2. *L. chalconica*
 2. Inflorescence not congested, few-flowered, pedicels mostly 2-10 cm long; petals entire to emarginate, but not strongly bifid; plants grayish, often densely woolly-tomentose; capsule sessile within the obovoid calyx tube 3. *L. coronaria*



1. *Lychnis flos-cuculi* L.

Common Names: Cuckoo-flower, Ragged Robin, Crowflower, Meadow-pink, Cuckoos, Indian-pink, Ragged-jack

Type Description: Linnaeus, Species Pl., I, p. 436, 1753

Synonyms: *Coronaria flos-cuculi* (L.) A. Braun

Origin: A native of northern and central Europe

Habitats: Roadside depressions, open fields and moist meadows

Habit: Slender, erect-ascending, perennial herbs

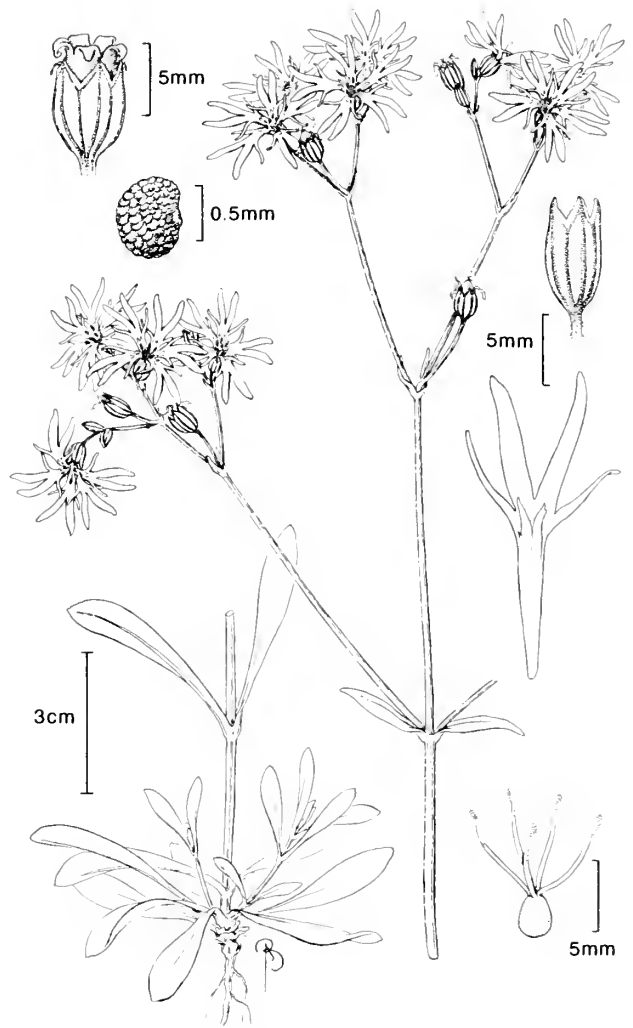
Flowering: May-July

Fruiting: June-September

General Distribution: Escaping cultivation and becoming naturalized from New Brunswick, Nova Scotia and Quebec to New York, New Jersey and Pennsylvania

Description: Plants with bisexual flowers; stigmas 5; styles 5, filamentous, 3-5 mm long; ovary ovoid,

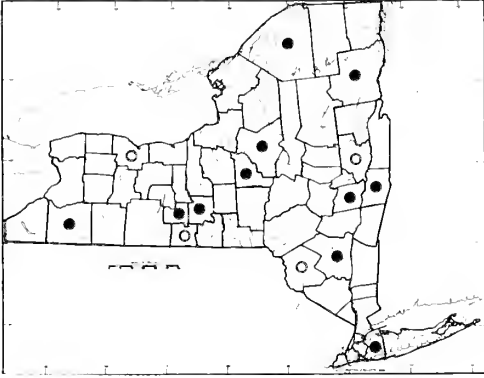
sessile; **fruit** an ovoid capsule, 6-9 mm long, 4-6 mm broad, subsessile, dehiscent by 5 reflexing valves 2-3 mm long, the surface smooth, greenish to tan; **seeds** many, 0.6-0.8 mm long and broad, somewhat compressed, reniform, the surfaces brown, covered with sharp tubercles; **stamens** 10; **anthers** linear, ca. 1.5 mm long, dorsifixed; **filaments** slender, 6-9 mm long; **perianth** of 2 whorls, not subtended by an epicalyx; **petals** 5, claw slender, often pale, 5-8 mm long, ca. 1 mm broad or less, petal limb 6-10 (13) mm long, bifid, but usually further dissected into linear lobes and teeth for up to 2/3 its length, appendaged at the junction with the claw with 2 slender, bifid or lacerate coronal scales 2-3 mm long, corolla rose, bluish purple or pale pink to white; **sepals** 5, the lobes deltoid, acute to obtuse 2-3 (4) mm long, with copiously ciliate margins, the calyx tube becoming inflated in fruit, 5-8 mm long, 2-7 mm broad, glabrous, glossy, purplish to dark rose, especially along the 10 prominent ribs, often yellow-green or glaucous between them; **pedicels** slender, 1-12 (16) mm long, sparsely woolly-viscid, red-purple; **peduncles** similar, but up to 6 cm, strongly ascending; **inflorescence** often symmetrical, a slender series of 2-4 pairs of upper-axillary and terminal corymbs; **bracts** reddish-purple, linear to lanceolate, mostly 1-6 (13) mm long, with ciliate-fringed margins; **cauline leaves** paired, linear to broadly lanceolate, oblanceolate or spatulate, 1-6 (10) cm long, 1-5 (8) mm broad, margins minutely revolute, glabrous or slightly ciliate on young leaves and those transitional to bracts, tips acuminate to obtuse green, often red or purple tinged, ciliate or bearded at the junctures of the leaf bases that are attenuated into poorly defined petioles and barely connate-clasping, **basal leaves** similar to the lower cauline ones, but more obovate to spatulate with (acute) obtuse to rounded tips, up to 14 cm long, 15 mm broad, borne in a cespitose clusters or rosettes, the **petioles** sometimes relatively well-defined, up to 4 cm long; **stipules** absent; **stems** terete to strongly ridged and furrowed, puberulent, especially on the upper nodes, erect, up to 70 cm tall, little branched



above, but proliferating by densely branching basal shoots and **rhizomes**; **root system** soft-fibrous, matted, adventitious ($2n = 24$).

Infraspecific Variation: *Lychnis flos-cuculi* ssp. *subintegra* Hayek was described from the Balkan Peninsula, with bifid-emarginate (but uncut) lobe tips. Such plants have not been recorded as naturalized in New York State.

Importance: This is a popular garden ornamental, planted in sunny places in relatively moist, northern climates. Its spread as a weed was largely coincidental with the construction of the Interstate highway system in the Northeast.



2. *Lychnis chalcedonica* L.

Common Names: Maltese Cross, Scarlet Lychnis, London Pride, Fireballs, None-such, Jerusalem Cross, Knight's Cross

Type Description: Linnaeus, Species Pl., p. 436, 1753

Origin: A native of Northern Eurasia

Habitats: Escaping to woodland borders, meadows, fields, roadsides, waste places and thickets

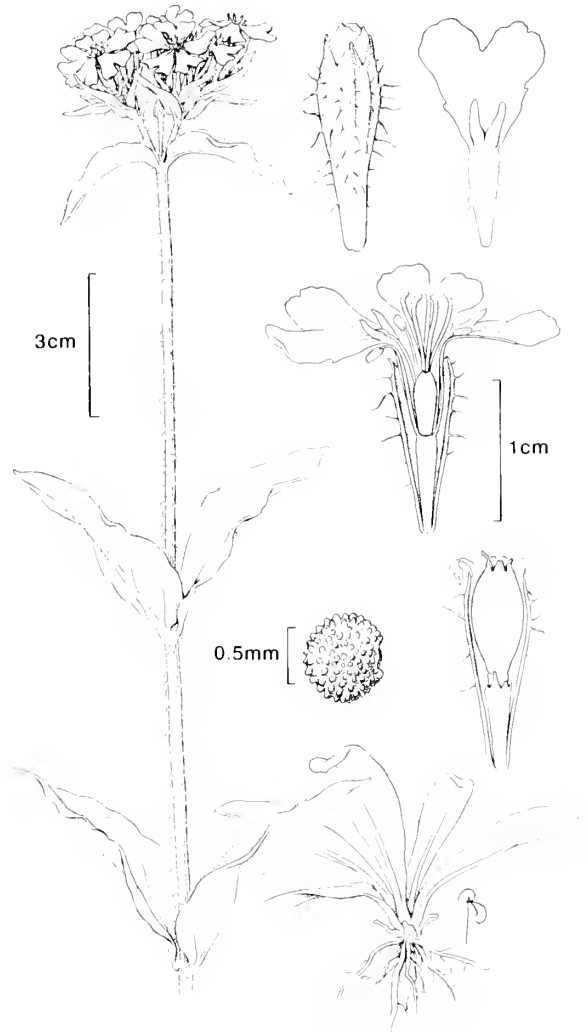
Habit: Erect or spreading, leafy perennial herbs

Flowering: June-September

Fruiting: July-November

General Distribution: Escaped from cultivation in North America from Newfoundland to Minnesota, south to Pennsylvania

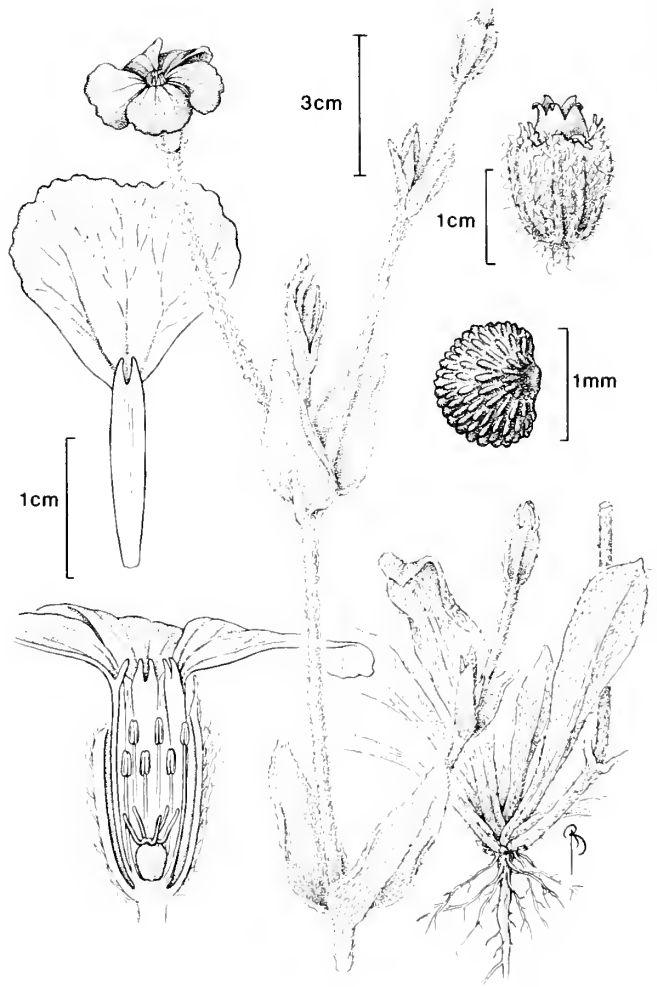
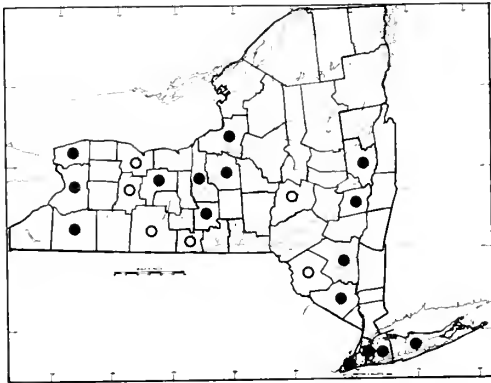
Description: Plants with **bisexual** flowers; **stigmas** minutely papillose receptive areas 1-2 mm long on the dorsal tips of the styles; **styles** 5 (6), free, capillary, 3-6 mm long, green, somewhat spreading from the ovary tip, green, purplish toward the stigmatic zone; **ovary** obovoid-cylindric 4-5 mm long, ca. 3 mm broad, shiny green, glabrous, borne on a gynophore; **fruit** a shiny, ovoid, tan capsule, enclosed in the persistent calyx tube, dehiscent by 5 (6) acute-tipped valves for less than a third its length, 7-9 mm long, 5-7 mm broad, borne on a carpophore 6-11 mm long, and included in the clavate, persistent calyx tube; **seeds** copious, ca. 0.8 mm broad, brown, tuberculate; **stamens** 10, attached just below the ovary at the apex of the androgynophore; **anthers** ca. 1 mm long, golden-brown or orangish; **filaments** slender 4-13 mm long, curved outward toward tips, greenish hyaline below, orange toward tips; **perianth** of two whorls, with a fringe of ligule-like appendages at the base of the petal limbs; **petals** free, distinctly divided into claw and limb, the claw 13-19 (21) mm long, strap-like, barely exceeding the calyx tube, very narrow and greenish below, expanded and 3-4 mm broad above, where it is somewhat membranous and hyaline with a small keel on the abaxial side and a few hirsute hairs at the margin, the limb diverging at a right angle from the claw tip, 5-13 (16) mm long, 4-12 mm broad, oblanceolate to obovate, tip bifid, the notch 2-6 mm deep with a rounded sinus, lobes entire or slightly crose, scarlet to bright orange-red (rarely white), 2 ligulate coronal scales borne at the limb base (claw apex), ovate to lanceolate-tubular, 1.8-3.6 mm long, ca. 1 mm broad, acute or notched at tips, colored like the petal



limbs; **sepals** 5, lobe tips acuminate, narrowly hyaline-margined, 2-6 mm long, calyx tube cylindric, 12-17 (20) mm long, green, 10-ribbed, hirsute to sparsely woolly with septate hairs, persistent, becoming clavate and somewhat inflated (up to 8 mm in diameter) around the stalked fruit; **pedicels** stout, hispid, 2-3 (4) mm long; **peduncles** like the pedicels, usually less than 1 cm long; **inflorescence** a dense, terminal cyme, flat-topped to hemispheric, often 4-10 cm broad; **bracts** of the inflorescence linear-lanceolate, 3-20 mm long, 1-4 mm broad, slightly hispid, particularly at the margins; **leaves** opposite, somewhat leathery, elliptic, ovate to ovate-lanceolate or oblanceolate, 2-8 (14) cm long, 1-4 (6) cm broad, with acute to obtuse tips, the bases attenuate to rounded, the lower ones often cordate and somewhat clasping, partially to wholly connate at the nodes, upper cauline leaves ciliate on margins and major veins, but the surfaces almost glabrous, lower leaves hirsute to sparsely villous throughout; **petioles** absent; **stipules** absent; **stems** erect or strongly ascending, 2-14 mm thick, tough, up to a meter tall or more, sparsely hirsute to moderately villous, not much branched, but with short, suppressed shoots bearing dwarf leaves (shoots) at the slightly enlarged **nodes**; **rhizomes** tough, woody; **root system** largely adventitious, fibrous (2n = 18, 24, 48).

Infraspecific Variation: White-flowered variants occur, but these are less commonly cultivated than those with orange, rose or salmon hues. There is also a large-flowered, 'Grandiflora' cultivar.

Importance: This is a showy garden perennial, grown widely around the world in north-temperate climates, escaping occasionally, but not usually extremely aggressive as a weed.



3. *Lychnis coronaria* (L.) Desr.

Common Names: Rose-campion, Mullein Pink, Gardener's-delight

Type Description: Linnaeus, Species Pl, I., p. 436, 1753

Synonyms: *Agrostemma coronaria* L., *Coronaria coriacea* (Moench) Schischk. & Gorschk.

Origin: A native of southeastern Europe

Habitats: Roadsides, fields, clearings, shores, borders and woodlands as a naturalizing escape from cultivation

Habit: Erect, rhizomatous perennial herbs

Flowering: June-August

Fruiting: June-September

General Distribution: New Brunswick to British Columbia, south to Oregon and Louisiana, escaping cultivation and naturalized in widely scattered places between

Description: Plants with bisexual flowers; **stigmas** (4) 5, linear; **styles** (4) 5, filamentous, 2-3 (5) mm long; **ovary** ovoid, sessile; **fruit** an elliptic to obovoid-cylindric capsule, smooth, tan, 9-14 (17) mm long, 6-10 (13) mm broad, sessile or carpophore less than 2 mm long, opening by 5 acute valves 2-4 mm long that are often shallowly bifid; **seeds** many, 0.5-0.8 mm long and broad, plump, gray-brown to black, bluntly tuberculate;

stamens 10; **anthers** narrow, ca. 2 mm long, dorsifixed; **filaments** slender, 10-14 mm long; **perianth** of 2 whorls, lacking an epicalyx; **petals** 5, divided into claw and limb, the claw paler than the limb 10-15 (20) mm long, 2-3 mm broad, the limb broadly oval to obovate, up to 17 mm long and broad, pale red to dark red-purple (rarely white), margin entire or shallowly emarginate, coronal scales borne in pairs, slightly included within the corolla at the limb-claw junction, lance-acuminate or shallowly bifid, 2-3 mm long; **sepals** 5, the free lobes attenuate, 3-5 mm long, often tortuous to spirally contorted, densely to sparsely woolly-tomentose, the calyx tube (8) 10-14 (20) mm long, obovate, becoming inflated and up to 14 mm broad in fruit, 10-ribbed, the ribs somewhat raised and darker green, the calyx tube surface covered with a dense, gray to silvery, woolly tomentum; **pedicels** stout, up to 3 mm in diameter, 1-12 cm long, elongating as the flower develops; **inflorescence** of several axillary and terminal, obscurely cymose clusters, the flowers (often 3 per cluster) developing, one at a time, the pedicel greatly-elongating during development (or rarely flower solitary); **bracts** leaf-like, 4-20 mm long, up to 5 mm broad, broadly lanceolate with acute to acuminate tips and entire margins, woolly-tomentose, directly subtending the short pedicels before elongation, but remote by the time of flowering; **leaves** dimorphic, **cauline leaves** paired, mostly 2-8 (11) cm long, 1-3 (4) cm broad, broadly lanceolate to elliptic or obovate with entire margins, densely woolly-tomentose, gray to silvery surfaces, margins, a strong midrib, apiculate to acute or obtuse (rounded) woolly-tufted tips, and bases tapering or slightly auriculate at the point where clasp the stem, **basal leaves** like the cauline ones, except densely clustered in rosettes, up to 25 cm long and 5 cm broad, narrowly to broadly obovate to spatulate, and often tapered at base into poorly defined **petioles**; **stipules** absent; **stems** terete, woolly-tomentose, up to 7 cm in diameter and 85 cm tall, erect or ascending from a woody **rhizome**; **root system** adventitious ($2n = 24$).

Infraspecific Variation: Flower color is quite variable in cultivars, ranging from rose to salmon, brick-red, purple or white.

Importance: This is a showy garden perennial or biennial, grown almost worldwide, that escapes and becomes naturalized widely in Eurasia and northern North America.

Note: *Lychnis viscaria* L., German catchfly, has been reported as a rare escape in New York State. The plants have spike-like panicles of rosy flower clusters, zones of viscous hairs at the internodes, and the basal rosettes of oblanceolate leaves.

21. SILENE

Common Names: Champion, Catchfly, Pink

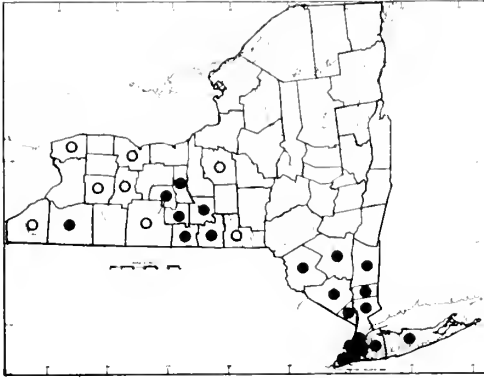
Authority: Linnaeus, Species Pl. I, p. 416, 1753

A genus of 500-700 species, native primarily in north-temperate, boreal and montane habitats around the world. The group is best represented in Eurasia. A reinterpretation of generic characters has led to the transfer of certain species from the closely related genus *Lychnis* into *Silene*. The showier species, called pinks, catchflies and champions, are popular in horticulture, grown widely in borders, annual and perennial beds, especially in rock gardens.

Description: Plants with **bisexual** flowers or dioecious; **stigmas** 3 (4 or 5); **styles** 3 (4 or 5); **ovary** 1, usually stalked, unilocular 3- to 5-chambered, or partially so toward the base; **ovules** numerous; **fruit** a capsule, opening by 6 (8 or 10) teeth, borne on a **carpophore** or sessile; **seeds** many, small, often muricate or tuberculate; **embryo** strongly curved around the **perisperm**; **stamens** 10; **filaments** slender; **anthers** dorsifixed; **perianth** of 2 distinct whorls, lacking a distinct epicalyx; **petals** 5, free, usually strongly divided into a narrow, basal claw (sometimes auricled) and flared limb that is often bifid or otherwise cut; **coronal scales** present at the junction of the petal claw and limb (or absent); **sepals** 5, with short, free lobes, united for most of their length into a calyx tube, 10-35+ veined, persistent and becoming more or less inflated in fruit; **pedicels** slender to stout; **inflorescences** various, often cymose or paniculate, or flowers solitary; **bracts** paired or whorled, sometimes leaf-like; **leaves** paired, entire, connate-clasping at base; **petioles** usually absent or poorly defined; **stipules** absent; **stems** erect or ascending or cespitose, from perennial **rhizomes**, annual or biennial **taproots**.

KEY TO SPECIES

1. Cauline leaves mostly in whorls of 4, subequal in size; petal margins conspicuously lacerate-fringed 1. *S. stellata*
1. Cauline leaves paired (sometimes with clusters of smaller leaves in their axils); petals margins not fringed, often bifid to entire (2)
 2. Surface of the calyx tube glabrous (3)
 2. Surface of the calyx tube pubescent (6)
3. Petals white (rarely pink-tinged); internodes lacking viscous zones; calyx veins inconspicuous, branching, up to 20 in number at the base of the tube (5)
3. Petals pink, red, purple or lacking (rarely white); internodes often with golden to dark viscous zones; veins of the calyx tube 10 or fewer, unbranched, often prominent or ridged (4)
 4. Ovary distinctly stalked; fruiting calyx tube conforming to the stalked capsule within, to become cylindrical-turbinate; petals showy 2. *S. armeria*
 4. Ovary sessile; fruiting calyx tube conforming closely to the sessile, elliptic-obovoid capsule; petals usually inconspicuous and thread-like (or lacking) 3. *S. antirrhina*
5. Stipe of the capsule (within the calyx tube) minutely pubescent, ca. 1.5 mm long; calyx closely conforming to the mature fruit, its veins not conspicuously netted; capsule teeth narrow, acuminate, exerted from the calyx on dehiscence 4. *S. cserii*
5. Stipe of the capsule glabrous, usually 2-3 mm long; the calyx conspicuously inflated in fruit, its veins strongly reticulate; capsule teeth acute, not usually exerted from the calyx after dehiscence 5. *S. vulgaris*
 6. Plants caespitose, with dense tufts of oblanceolate to broadly spatulate basal leaves; flowering stems with 1-3 pairs of cauline leaves, usually less than 20 cm tall, with clustered, showy, terminal cymes. 6. *S. caroliniana*
 6. Plants not caespitose; flowering stems elongate, usually with many pairs of cauline leaves; inflorescences ranging from spikes to open cymes and panicles (7)
7. Flowers sessile or subsessile, borne in pairs of spike-like cymes at the branch tips (sometimes in upper leaf axils as well); fruiting calyces remaining subsessile, appressed upward against the axis 7. *S. dichotoma*
7. Flowers mostly with well-developed pedicels, in open cymes or panicles; fruiting calyces not appressed upward on the axis of the infructescence (8)
 8. Capsule teeth 6; styles 3; flowers bisexual, their subtending floral bracts narrowly lanceolate; seeds gray-brown with blunt, dark-tipped tubercles 8. *S. noctiflora*
 8. Capsule teeth 10; styles 5; flowers unisexual, the subtending bracts deltoid to broadly lanceolate; seeds brown with evenly colored, blunt to acute tubercles (9)
9. Flowers white; capsule ovoid, the aperture somewhat constricted on dehiscence, the marginal teeth erect or slightly spreading 9. *S. latifolia*
9. Flowers rose or pink (rarely white); capsule globose, often gaping on dehiscence, the teeth strongly reflexed 10. *S. dioica*



1. *Silene stellata* (L.) Ait. f.

Common Names: Starry Campion, Widow's-frill, Therman Snakeroot, Four-leaved Campion

Type Description: Linnaeus, Species Pl. L., p. 414, 1753

Synonyms: *Cucubalus stellatus* L., *Evactoma stellata* (L.) Nieuwl., *E. stellata* var. *scabrella* Nieuwl., *S. stellata* var. *scabrella* (Nieuwl.) Palmer & Steyerl., *S. scabrella* (Nieuwl.) G. N. Jones

Origin: Native to eastern North America

Habitats: Dry, rocky places including woodlands, thickets, clearings, banks and forest margins

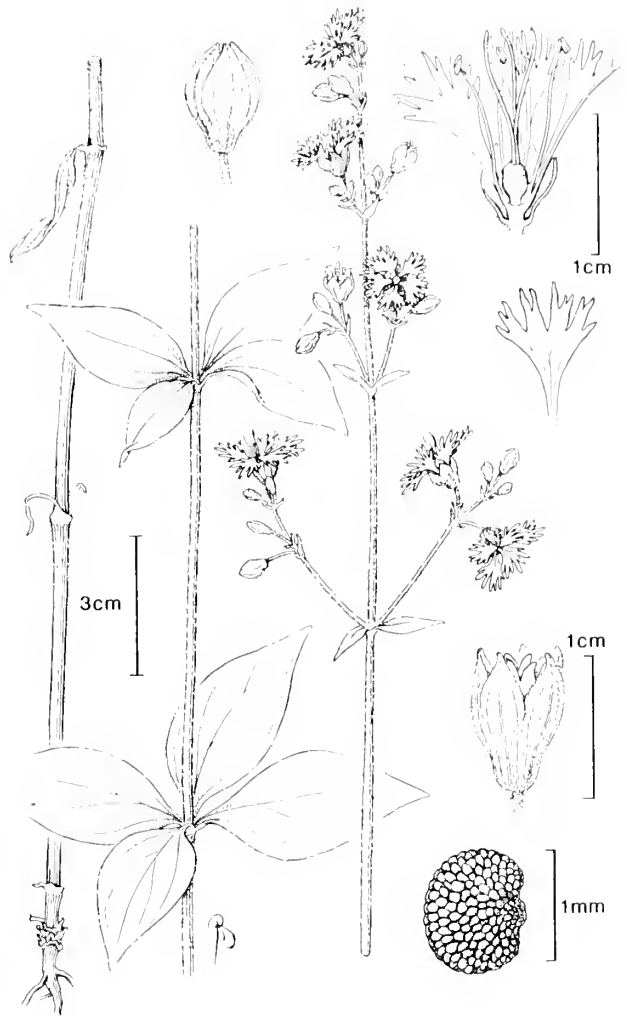
Habit: Erect to ascending, somewhat woody, perennial herbs

Flowering: July-October

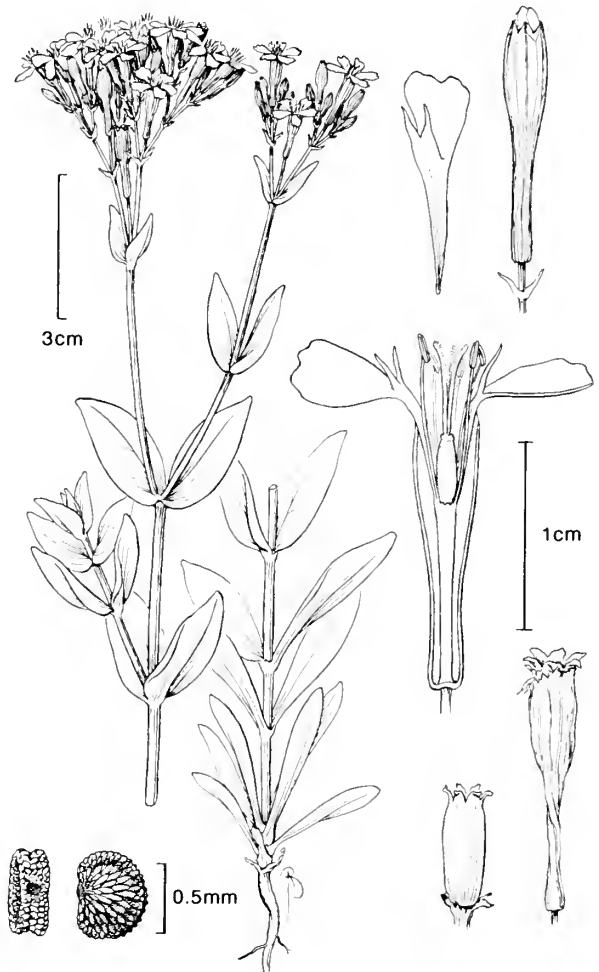
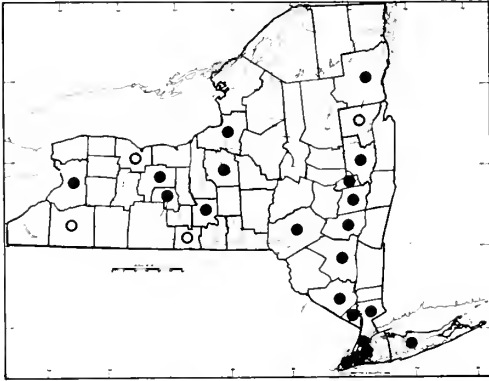
Fruiting: July-December

General Distribution: Massachusetts to North Dakota, south to Texas and Georgia

Description: Plants with bisexual flowers; **stigmas** 3, papillose areas near the style tips; **styles** 3, slender, 11-17 mm long, exerted from the corolla, free to the base, where they are attached on a pale, hemispherical swelling or cap formed by the valves; **ovary** 1, borne on a short stipe (androgynophore); **fruit** a highly glossy capsule, olive green to tan, elliptic 5-8 mm long, 4-6 mm broad, dehiscent by 6 sharp, triangular valves that reflex strongly, further splitting the capsule to about 2/3 its length; **carpophore** minutely woolly, 1-2 mm long; **seeds** many, dark golden to reddish-brown, reniform, somewhat compressed, 1.2-1.6 mm long, ca. 1 mm broad, surfaces rugose, with rounded papillae; **stamens** 10; **anthers** pale, elongate, ca. 1 mm long, dorsifixed; **filaments** slender, 7-13 mm long, attached at the expanded upper rim of the stipe; **perianth** of 2 whorls; **petals** 5, pale pink or white, 13-22 mm long, claw ca. 1 mm broad, limb 3-6 mm broad, the margin fringed with lacerations up to 5 mm deep, coronal scales lacking; **sepals** 5, calyx lobes 3-5 mm long, 3-6 mm broad, acuminate to apiculate, with some hyaline tissue at the margins, the calyx tube cylindrical-turbinate in flower, becoming inflated and campanulate in fruit, 7-12 mm long, up to 13 mm broad in fruit, the surface pale green, sparsely to densely puberulent; **pedicels** 3-9 mm long, hispidulous to short-woolly; **inflorescence** an elongate, compound dichasium, with spreading lower branches; **bracts** of the inflorescence paired, 2-8 mm long, ciliate-margined greenish with somewhat hyaline margins; **leaves** mostly borne in whorls of 4 (rarely 6) or paired near the inflorescence or stem base, (3) 4-11 cm long, (0.5) 1-5 (6) cm wide, broadly ovate to narrowly lanceolate, with long-acuminate tips and rounded to attenuate bases, clasping at the swollen nodes, leaf margins entire, often scabrescent, upper leaf surfaces often scabrescent, the lower scabrescent to puberulent; **petioles** absent; **stipules** absent; **stems** up to 1 m tall, erect-ascending, tough, woody, the **nodes** swollen into conspicuous woody collars, stem surfaces green or reddish on lower internodes, puberulent to short hispid; **rhizome** tough, woody; **root system** adventitious, fibrous ($2n = 48$).



Importance: Frequent in gardens as an interesting horticultural novelty, due to its woody canes with star-like leaf whorls and fringed flowers. These plants are grown in sunny gardens and along borders where erect, perennial plants up to a meter tall are preferred.



2. *Silene armeria* L.

Common Names: Sweet-William, Garden Pink, Catchfly, or Campion, None-so-pretty

Type Description: Linnaeus, Species Pl. Ed. 2, p. 601, 1762

Synonym: *S. glauca* Salisb. *S. lituanica* Zapal.

Origin: A native of Eurasia

Habitats: A garden escape, apparently requiring soil disturbance to become naturalized: roadsides, construction sites, vacant lots and dumps

Habit: Erect-ascending annual or biennial herbs

Flowering: June-October

Fruiting: Late June-November

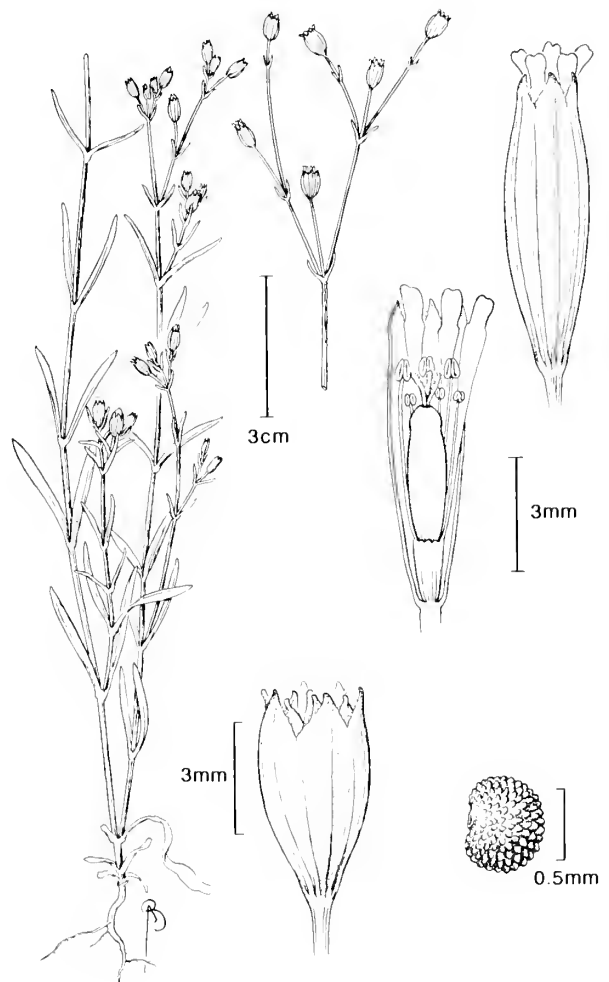
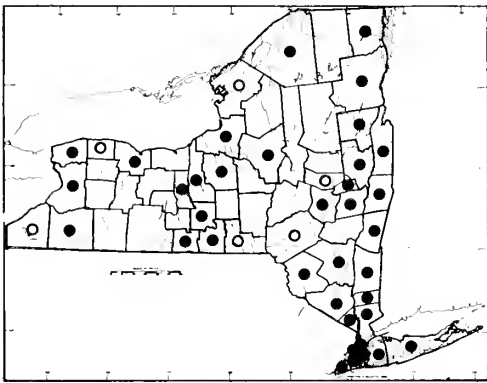
General Distribution: Widely escaped from cultivation from Quebec to British Columbia, southward to California and Arkansas (South America); also escaped in Africa and in Eurasia, where it was originally native

Description: Plants with bisexual flowers; stigmas

3 (4) linear, puberulent; styles 3 (4), filamentous, hyaline, 4.8-5.2 mm long; ovary 1, green, cylindrical, 3-4 mm long, ca. 1 mm broad, borne on a stipe consisting of a gynophore ca. 1 mm long, terminal to a columnar androgynophore, 6-14 mm long in flower, 0.6-1.1 mm broad; fruit an almost completely 3-chambered capsule, smooth, tan, cylindrical, 5-9 (10) mm long, 2.1-3.2 mm broad, enclosed within the persistent calyx, dehiscent by 6 (rarely 8) recurving teeth, ca. 1.3 mm long; carpophore 7-16 mm long, ca. 1 mm broad, glabrous; seeds many, dark brown, reniform and laterally compressed with sharp edges, 0.6-0.7 mm long, irregularly rugulose; stamens usually 10, diverging ca. 1 mm below the ovary base, with the claw and petal bases; anthers oblong, flat, 0.5-1.1 mm long, pale yellow or colored like the petals; filaments white, thread-like, 0.8-1.3 mm long their lower extremities sheathing, adnate to the androgynophore for most of its length; perianth of 2 whorls; petals 5, the claws greenish, linear-oblongate, up to 1.6 mm broad at the junction with the limb, where they bear a pair of ligulate appendages (coronal scales) 2-3 mm long, ca. 1 mm broad, colored like the petal limbs, but free and erect, petal limbs diverging at right angles to the claws (as in salverform corollas) pink to deep rose, lavender (or white), 4.5-6.5 mm long, 4.1-5.6 mm broad, bilobed, emarginate, or slightly ragged at tip, somewhat pleated toward the base; sepals 5, the lobes ca. 1 mm long, brownish, even in flower, acute to obtuse or mucronate, calyx tube 12-15 (17) mm long, cylindrical, expanded gradually toward the tip, pale green to pinkish, conspicuously 10-ribbed and fluted, persistent in fruit, becoming clavate with the development of the capsule and shrinkage in the area of the stipe; pedicels glabrous, 2-5 mm long, or absent; peduncles stiff, glabrous, 8-16 (22) mm long; inflorescences congested, terminal and axillary flat-topped cymes and panicles

of few to many flowers; inflorescence **bracts** lanceolate with mucronate tips, greenish to almost white, those directly subtending calyx tubes ca. 2 mm long, up to 6 mm or longer below; **cauline leaves** mostly 1-6 cm long, 0.5- 2.5 (3) cm broad, ovate to narrowly oblanceolate, glabrous, margins entire, tips acute to rounded. bases attenuate to rounded or slightly cordate, clasping; **basal leaves** like the cauline leaves, but obovate to spatulate and soon withering; **petioles** absent; **stipules** absent; **stems** strongly ribbed and channeled, pale greenish-tan, glabrous to sparsely puberulent, 15-40 (55) cm tall unbranched or with ascending flowering branches; **root system** a short, abruptly tapered annual or biennial taproot with strong laterals and fibrous rootlets ($2n = 24$). **Infraspecific Variation:** Stems may be simple or much-branched above, varying from glabrous and glaucous to puberulent and dark green. Diffusely branched plants with non-congested inflorescences are known in the wild in the eastern Mediterranean Region, and such plants have been found as escapes in upstate New York, sometimes designated *S. armeria* var. *sparsiflora* Schur. Flower color is variable from pink to purple or white, and plants with almost entire petals have been called var. *lituanica* Zapal. Such variants probably do not deserve taxonomic recognition.

Importance: This is a very popular, showy plant in cultivation, where it behaves as an annual. Seeds are often collected in fall and sown in tilled soil in the spring to promote germination.



3. *Silene antirrhina* L.

Common Names: Sleepy Catchfly

Type Description: Linnaeus, Species Pl. I, p. 419, 1753

Synonyms: *S. antirrhina*: var. *depauperata* Rydb.; var. *divaricata* Robins.; forma *apetala* Farw.; f. *bicolor* Farw.; f. *deaneana* Fern., *S. divaricata* (Robins.) Smyth

Origin: Native to the Americas

Habitats: Clearings, meadows, fields, open wood lands, roadsides and waste places (a somewhat weedy native plant)

Habit: Slender, erect-ascending (rarely decumbent), annual and biennial herbs

Flowering: May-September (in NY)

Fruiting: June-October

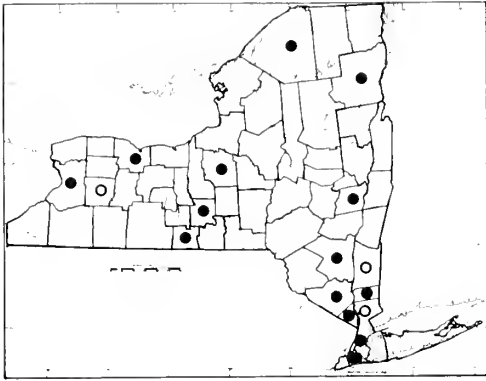
General Distribution: New Brunswick and Quebec to British Columbia, south to Mexico and South America (naturalized elsewhere)

Description: Plants with **bisexual flowers**; **stigmas** 3, pale, ca. 1.3 mm long, ciliate; **styles** 3, ca. 1.5 mm long, free; **ovary** 1, ovoid, ca. 3 mm long, 2 mm broad, borne on a short androgynophore, the 6 valves forming a pale valvate cap, the apex of the olive-green ovary nearly completely 3-chambered; **fruit** an elliptic to ovoid capsule, (3) 6-8 (10) mm long, (2) 3-4 (5.5) mm broad, smooth, olive to tan, opening by 6 short, triangular valves and closely invested within the persistent calyx, from which it is often slightly exerted upon dehiscence; **carphophore**

ca. 1.5 mm long; **seeds** many, 0.6-0.7 mm long, plump, reniform, the surfaces charcoal gray (somewhat glaucous) to dark, glossy brown, covered with sharp tubercles; **stamens** 10; **anthers** oblong, dorsifixed, golden or pale; **filaments** very slender, 6-9 mm long; **perianth** of 2 whorls, or petals lacking; **petals** (0-) 5, free, not showy, 2-12 (16) mm long, often less than 1 mm broad, linear and poorly differentiated into claw and limb or spatulate, the limb, when expanded, usually less than 2 mm broad, bifid or entire, (or limbs sometimes linear, arched or twisted), coronal scales lacking or obscure, petals pink to roseate with pink, rosy, dark red, purplish or white tips; **sepals** 5, the calyx lobes 0.9-1.7 mm long and broad, obtuse to acute, usually reddish-purple, at least along the ciliate margins, calyx tube cylindric in early flower, becoming fusiform, urceolate, persistent and closely conforming to the elliptic to ovoid capsule in fruit, 4.0-9.7 mm long, 2.3-4.5 (5.6) mm broad, with 10 prominent veins that extend to the pedicel, surface smooth, shiny green, glabrous; **pedicels** very slender, ribbed, at least above, 3-30 (36) mm long, glabrous; **inflorescence** a many-flowered panicle, a series of axillary and terminal clusters (or single flowers); **bracts** of the inflorescence paired, linear to lanceolate, 1-6 (9) mm long, pale green often with purplish tips and entire, ciliate margins (rarely bifid); **cauline leaves** paired, linear to broadly lance-elliptic or oblanceolate, mostly 1-5 (7) cm long, 0.2-1.5 (2) cm broad, usually puberulent, at least along the veins and the entire margins, tips acute to acuminate, bases connate or incompletely so, clasping the node with villous hairs along the margin of their juncture; **basal leaves** similar, or up to 9 cm and obovate to spatulate; **petioles** absent; **stipules** absent; **stems** erect, ascending or lax, up to 80 cm long or tall, solitary or more often branched above, ribbed and channeled, irregularly short-puberulent and usually with golden to dark glutinous zones, up to several cm long on the internodes, their sticky excretions associated with a few longer hairs and soft glandular tissues; **root system** an annual or biennial taproot ($2n = 24$).

Infraspecific Variation: Petals are sometimes abortive or totally lacking. Petal tips may be entire or emarginate, and the several flower colors include bicolored variants. These traits have been used to distinguish varieties and forms that seem to lack geographic or taxonomic significance.

Importance: Although this species is considered native over a broad geographic range in the Americas, it is an aggressive weed, often associated with disturbance. Its distribution range may have expanded significantly with the advent of the migration of mankind into the New World.



4. *Silene cserii* Baumg.

Common Names: Campion

Type Description: Baumgarten, Enum. Stirp. Transs. vol. 3, p. 345, 1816

Synonyms: *S. cserei*, *S. czerei* and *S. czerii* of authors, *S. fabaria sensu* Rydb., not (L.) Sibth. & Sm.

Origin: Native to southeastern Europe

Habitats: Disturbed ground, roadsides, quarries, particularly widespread along railways

Habit: Erect or ascending biennial herbs

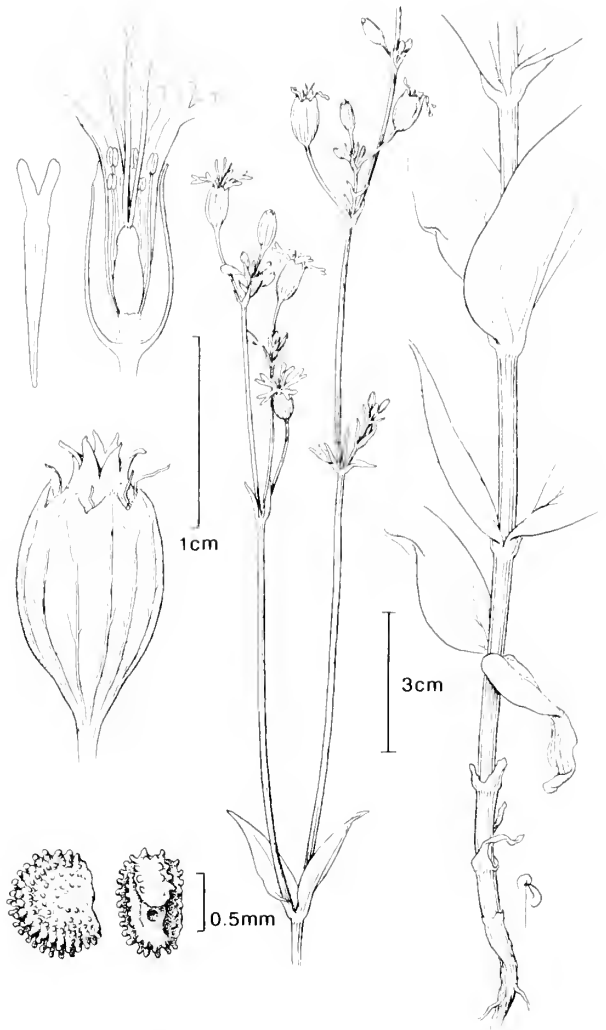
Flowering: Late May-September

Fruiting: June-November

General Distribution: Quebec to British Columbia, Montana, Indiana, Missouri, Ohio and southern Pennsylvania

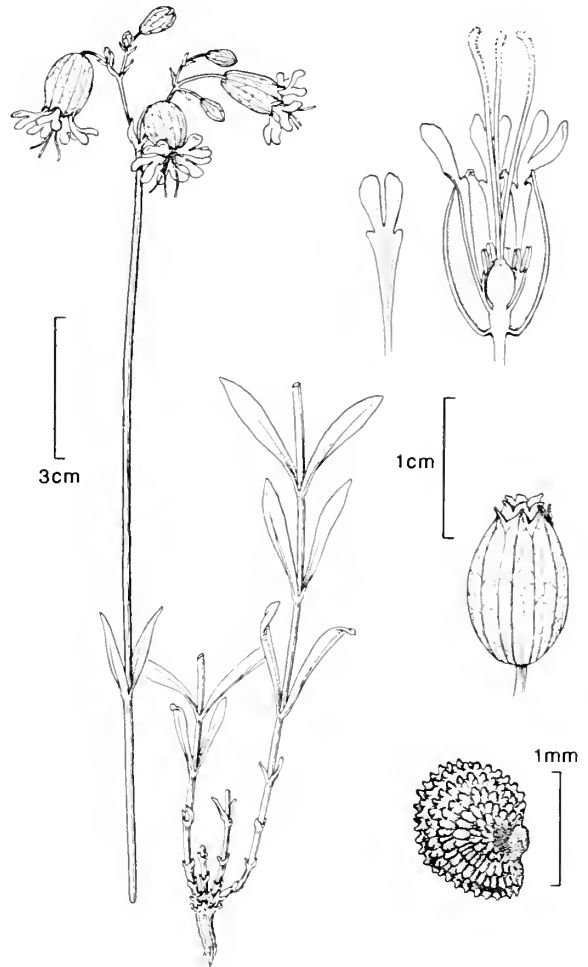
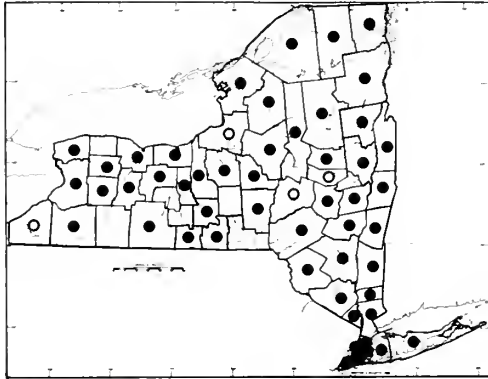
Description: Plants with bisexual flowers; stigmas (1-) 3-5 (-8), the ciliate receptive line prominent expanded at the reddish-purple, somewhat flattened stigmatic tips of the styles;

styles (2) 3-5 (-8), linear 10-15 (17) mm long, sometimes branched at tips; ovary 1, fusiforme, borne on a minutely pubescent gynophore, ca. 1 mm long; fruit an ovoid capsule, 8-13 mm long, 5-8 mm broad, tan, smooth and glossy, dehiscent by 6 narrowly acuminate valves 1-2 mm long that are only slightly reflexed and exerted from the flower after dehiscence; carpophore 0.9-1.6 mm long, minutely woolly-pubescent; seeds many, 0.8-1.0 mm long, triangular in outline to comma-shaped with concave sides, golden brown to chocolate, the surfaces strongly papillate, sometimes with stalked papillae; stamens 10; anthers linear-ovate, ca. 1.5 mm long, dorsifixed, golden; filaments linear, pale, up to 2 cm long; perianth of 2 whorls; petals 10-15 (18) mm long, white to creamy, claw mostly less than 1 mm broad, flared at the tip into a narrow, bilobed limb 4-5 mm long lobes 1-2 (3) mm long, obtuse at the tips, coronal scales obscure or lacking; sepals 5, calyx lobes deltoid, 1-2 mm long and broad, often ciliate-tufted at apex, calyx tube cylindric, becoming fusiform, 7-11 mm long, up to 8.2 mm broad inflating only to the dimensions of the mature fruit and closely investing it, tube surface green becoming pale, yellowish, glabrous, main veins ca. 20, 10 long and 10 short, sometimes dichotomously branching, but not strongly reticulate-anastomosing; pedicels glabrous, terete to ribbed, 5-25 mm long; inflorescence a narrow, raceme-like panicle (often a dichotomously branched pair), 7-30 (40) cm long, bearing up to 50 flowers; bracts of the inflorescence lanceolate, up to 6 mm long, often ciliate-margined; leaves 3-8 (10) cm long, 0.6-3.0 (3.8) cm broad, narrowly oblong to broadly ovate, acute to cuspidate, with connate-perfoliate bases (except basal leaves, which are more attenuate), margins entire, surfaces glabrous, somewhat glaucous; stipules absent; stems robust, erect, often grooved, green to yellow-green, glabrous, not conspicuously swollen at the nodes, up to 60 (75) cm tall; root system a thick, tough biennial taproot, pale in color, often contorted, with thick, lateral branches ($2n = 24$).



Intraspecific Variation: A biennial member of an extremely variable species complex of Eurasia. In Europe *S. cserii* is sometimes confused with *S. fabaria* (L.) Sibth. & Sm., which is said to differ from it in having succulent, smaller leaves, borne more basally, acute calyx lobes and only 10 main calyx veins. Plants approaching this condition occur in New York State, but inconsistency of characters prompts the recognition of a single species for the purposes of this flora.

Importance: A weed, primarily of railroad beds and waste places.



5. *Silene vulgaris* (Moench) Garcke

Common Names: Bladder Campion, Maiden's-tears

Type Description: Moench, Fl. Nord Middle-Deutch., ed. 9, p. 64, 1869

Synonyms: *Behen vulgaris* Moench, *Cucubalus behen* L., *C. inflatus* Salisb., *C. latifolius* Mill., *S. cucubalus* Wibel, *S. inflata* (Salisb.) Sm., *S. latifolia* (Mill.) Britten & Rendle, not Poir., *S. venosa* (Gilib.) Aschers, a *nomen illeg.*

Origin: A native of Europe and eastern Asia

Habitats: A wide range of disturbed habitats, including roadsides, pastures and gardens, but also in less disturbed meadows, thickets and open forests

Habit: Sprawling-decumbent to erect perennial herbs

Flowering: April-November

Fruiting: June-December

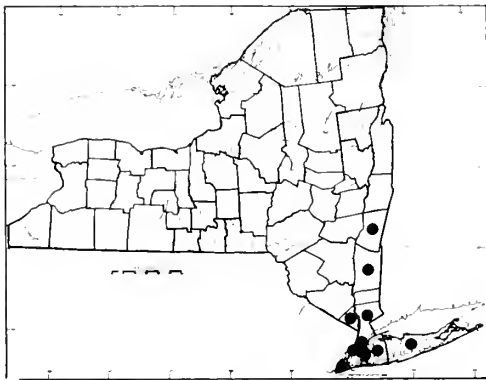
General Distribution: Naturalized from Nova Scotia to British Columbia, scattered southward to southern California, Colorado, Arkansas and Georgia

Description: Plants with bisexual flowers; stigmas 3, papillose, filiform; styles 3, filiform, 12-20 (28) mm long, the tips sometimes recurved, free to their point of attachment on a pale valvate cap; ovary 1, ovoid, green, ca. 3 mm long, 1.5 mm broad, borne on a glabrous androgynophore (1.4-) 1.9-3.5 mm long; fruit a shiny, olive to tan, ovoid to oblong capsule, partially to fully 3-chambered, 7-9 (11) mm long, 6-8 mm broad, the teeth deltoid, 1 mm or less, acute, not strongly reflexed or exerted on dehiscence; carpophore glabrous, somewhat fluted, (1.4-) 2.0-3.8 mm long; seeds many, irregularly triangular to comma-shaped with 1 or 2 concave sides, 0.9-1.4 (2) mm long, dark brown, the edges and surfaces variably rugose to prominently papillose; stamens 10; anthers ca. 2 mm long, 0.5 mm broad, golden, dorsifixed; filaments slender, 9-15 (18) mm long; perianth of 2 whorls; petals 5, white (or pink tinged), the claw 6-13 mm long, linear below, expanded into auricles near the mouth of the calyx tube, the limb 5-8 (10) mm long, 3-5 mm broad, usually deeply cleft into 2 obtuse lobes, coronal scales absent or much reduced; sepals 5, broadly deltoid, 2-3 mm long, 2-4 mm broad, acute to slightly apiculate, margins ciliate, at least toward the tips, calyx tube cylindric to ovate in flower, becoming inflated, campanulate to broadly urceolate, 10-16 (20) mm long, 6-12 (14) mm broad, somewhat membranaceous,

loosely enclosing the capsule in fruit, the surface glabrous, greenish to yellowish or tan, often with a purple blush (or chalky), veins becoming strongly reticulate and slightly raised; **pedicels** slender, 3-15 (25) mm long, terete or angled, glabrous or puberulent; **peduncle** like the pedicels, up to 4 cm long; **inflorescences** open dichasia at branch tips, usually several per plant with 3-20 (30) flowers each; **inflorescence bracts** paired, pale, membranaceous, at least on the margins, ovate to lanceolate, 2-3 mm long, entire and glabrous or ciliate; **leaves** opposite, (linear) lanceolate to broadly elliptic or ovate, entire, 1.5-7.5 (9) cm long, 0.3-2.0 (3.6) cm broad, surfaces glabrous, punctate, margins glabrous or hirsutulous, the tips acuminate to obtuse-apiculate, bases broadly rounded to tapered or attenuate into poorly defined **petioles**; **stipules** absent; **stems** decumbent to ascending, tough, only slightly swollen at the nodes, internodes often grooved, glabrous or sparsely puberulent, greenish turning tan or reddish, up to a meter tall, the base a tough, perennial **caudex**, **stolon** or **rhizome** bearing a fibrous **root system** that is largely adventitious ($2n = 24, 48$).

Infraspecific Variation: *Silene vulgaris* is a polymorphic species with a number of named varieties. Biosystematic studies of this species in the European flora revealed at least 15 "life forms" (Aeschimann, 1985). The plants differ in floral morphology, including stipe length, calyx size and presence or absence of well-developed coronal scales. They may also be stoloniferous, rhizomatous, decumbent or erect. Bract shape and texture also vary, and different varieties and races show extremes, ranging from small, petioled, mostly basal, linear-lanceolate leaves to large, clasping, mostly cauline, ovate ones. Two statistically distinct seed morphologies have also been reported for the species. It is likely that both diploids and tetraploids are found in New York State, since the morphological spectrum described for Europe is well represented by naturalized plants here.

Importance: A prolific weed of disturbed ground, and an occasional pest in gardens.



6. *Silene caroliniana* Walt.

Common Names: Wild Pink, Common Pink, Carolina Pink

Type Description: Walter, Fl. Carol., p. 142, 1788

Synonyms: *Melandrium pensylvanicum* (Michx.) Rohrb., *S. caroliniana* ssp. *pensylvanica* (Michx.) Clausen, *S. caroliniana*: ssp. *wherryi* (Small) Fern.; var. *pensylvanica* (Michx.) Fern.; var. *wherryi* (Small) Fern., *S. pensylvanica* Michx., *S. wherryi* Small

Origin: Native to eastern North America

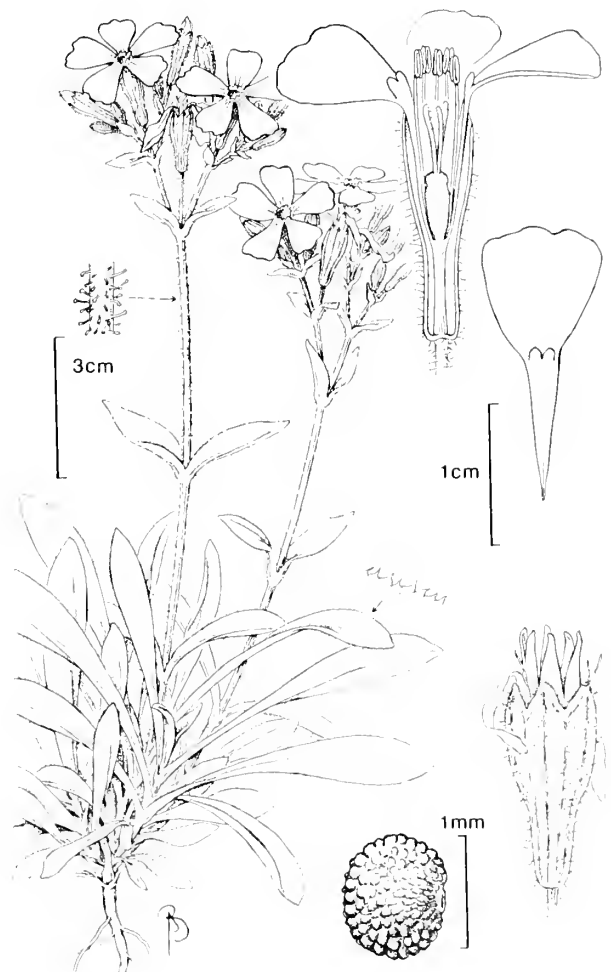
Habitats: Dry, often sandy soils, fields banks or cliffs in full sun or partial shade of open woods

Habit: Cespitose, perennial herbs

Flowering: April-June

Fruiting: May-August

General Distribution: Southern New Hampshire, southeastern New York and southern Ontario to Missouri, south to Alabama and South



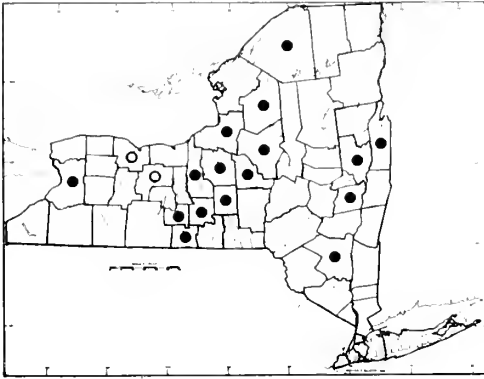
Carolina. Ours is so-called var. *pensylvanica*, which occurs mostly in the northern end of the range, then sporadically south to Tennessee and North Carolina

Rarity Status: This species is protected from exploitation by New York State law, but it is not listed by NYNHP in their rare plant status list. It is historically known from about 15 locations on Long Island and in the New York city boroughs, with 10 populations recorded northward to the southern Taconic range. Since a number of these populations are possibly extirpated, the species may be far rarer in the State than its current rank would suggest.

Description: Plants with **bisexual** flowers; **stigmas** 3, papillose zones ca. 1.5 mm along the style tips; **styles** 3, filiform, 6-10 mm long, free; **ovary** 1, the valvate cap ovate-hemispherical, 1.5-3.0 mm long, distinct from the ovary wall below, the ovary (below the cap) 3-6 mm long, hemispheric to broadly cylindrical, borne on an androgynophore 5-9 mm long; **fruit** an ovoid to cylindrical capsule, 9-13 mm long, 5-8 mm broad, dehiscent in the upper third by 6 golden-brown, leathery, lanceolate teeth, 3-4 mm long, the lower capsule thinner-walled, glossy, greenish to tan; **carpopophore** stout, fluted, 5-8 mm long; **seeds** brown, 1.3-1.5 mm long, tuberculate, ovoid; **stamens** 10; **anthers** linear, 1.1-1.5 mm long, golden; **filaments** slender, free above the androgynophore, 9-16 mm long; **perianth** of 2 whorls; **petals** 5, pale pink to rosy or white, the distinct claw 7-14 (17) mm long, included to slightly exceeding the calyx, ciliate-margined, the limb showy, often diverging at a right angle, 5-14 (18) mm long, 3-12 mm broad, rounded to somewhat truncate at tip, entire or only slightly crose (less often emarginate or notched), coronal scales well-developed, colored like the petals, with 2 lobes, 2-3 mm long, ca. 1 mm broad; **sepals** 5, acute to bluntly deltoid, 1-3 mm long, 1-2 mm broad, greenish to purple, or with hyaline margins, glandular-hispid, the calyx tube (0.6) 1-2 (2.4) cm long, tapering upward from a slender base, turbinate or (in ours) cylindrical, green below to rosy or deep purple above, short glandular-hispid, the 10 major veins somewhat raised; **pedicels** (glandular) hispid, 1-8 (14) mm long (or individual flowers may be sessile); **peduncles** like the pedicels, but up to 4 cm long; **inflorescence** of terminal clusters of relatively dense, showy, few-flowered cymes; **bracts** linear to ovate, leaf-like, glandular-pubescent to almost glabrous, less than 1 cm long; **leaves** paired on the flowering stems, but mostly in dense, cespitose, basal tufts; **cauline leaves** linear to broadly lanceolate, ovate or oblanceolate, one pair subtending the terminal inflorescence and usually 1-2 pairs (rarely 3) below, linear to lanceolate or oblanceolate 0.8-3.5 (5) cm long, 1-7 mm broad, perfoliate-clasping to indistinctly petioled, tips acute to obtuse, entire, ours glandular-hispid, especially along the entire margins; **basal leaves** numerous, tufted, (lanceolate) oblanceolate to spatulate, 1-11 cm long, 2-16 (20) mm broad at the widest point, both surfaces (in ours) glabrous, the tips acute to obtuse or apiculate, margins entire, ciliate, the bases long-attenuate into indistinct petioles; **stipules** absent; **flowering stems** glandular-hispid or merely short-hispid above, 2-20 (32) cm tall, spreading, ascending or erect, from cespitose, basal tufts, branching at or near ground level from an erect or ascending, woody **caudex** up to 1 cm in diameter (sometimes spirally twisted), and lateral **rhizome** system; **root system** fibrous ($2n = 48$).

Infraspecific Variation and Hybridization: Three infraspecific taxa are often recognized, either at the varietal or subspecies level, but these are far from well-differentiated, and intergrade, especially in the southern part of the distribution range of the species. In plants of the north, often called *S. caroliniana* var. *pensylvanica*, the calyx tube is slender, narrowing further toward the base, the plants are copiously glandular-hispid (except for basal-leaf surfaces), petal claws slightly exceed the calyx tube, and flowering stems may reach heights up to 30 cm. In so-called var. *wherryi*, plants are shorter, mostly clothed with eglandular hairs on the upper stems and the calyx, which is broader, more evenly tubular and not exceeded by the petal claws. Other characters, (e.g., cauline leaf shape) have also been cited in making infraspecific distinctions; however, plants studied in preparation for this publication showed a broad range of variability, and geographic correlations seemed far less obvious than indicated in the literature. *Silene caroliniana* is known to hybridize naturally with *S. virginica* L., the scarlet catchfly, in the southern Piedmont (Mitchell & Uttal, 1968). The hybrids are taller than typical plants of the wild pink, with narrower, darker pink, notched petals; thus, the cleft petals more common in southern populations may have been derived through introgression.

Importance: Wild pink is widely grown ornamentally in moderate climates, especially in open, sandy places and rock gardens. Its cespitose habit and dense clusters of showy, pale pink, salmon or white flowers make it a horticultural favorite.



7. *Silene dichotoma* Ehrh.

Common Names: Forked Catchfly, Forking Catchfly

Type Description: J. Ehrhart, Beitr. 7, p. 143, 1792

Synonyms: *S. anglica* and *S. gallica* of NY authors, not L., *S. racemosa* Oth in DC.

Origin: A native of Eurasia

Habitats: Roadsides, fields, lake shores and waste places

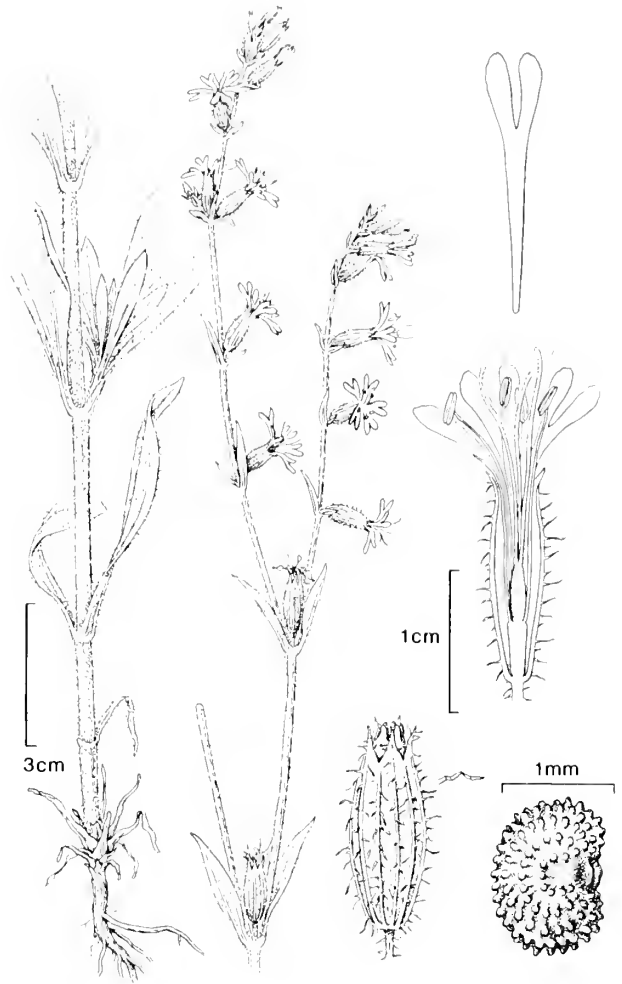
Habit: Robust, erect or ascending, annual herbs

Flowering: June-September

Fruiting: June-November

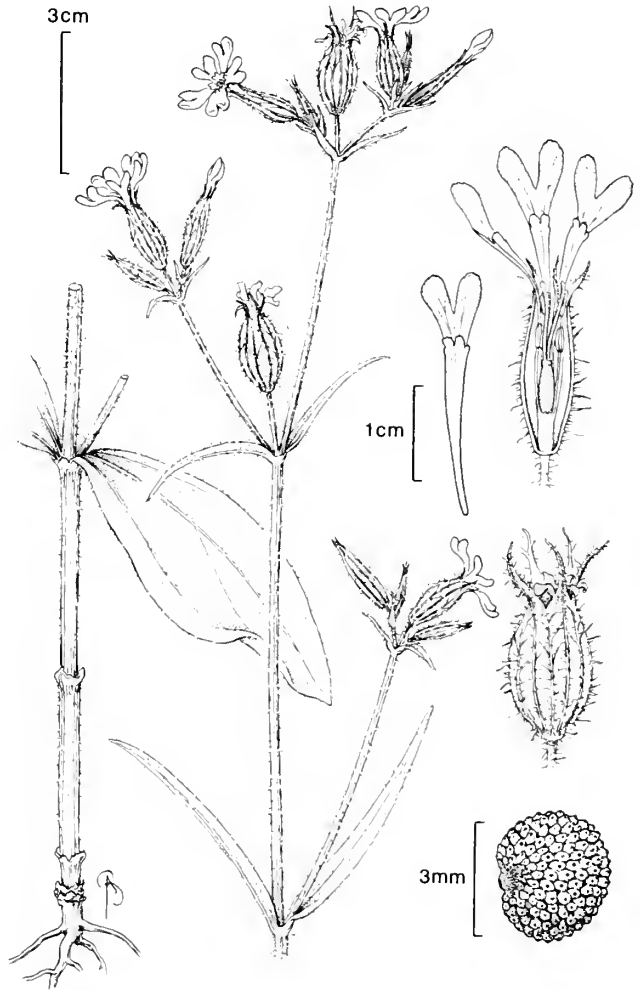
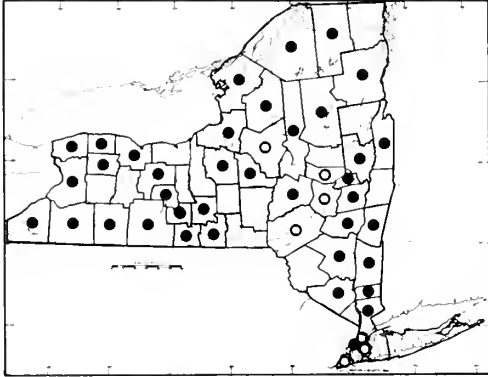
General Distribution: Of sporadic, weedy distribution from southern Quebec to British Columbia, south to California, the Carolinas and Georgia (Texas)

Description: Plants with **bisexual** flowers or **polygamomonoecious**; **stigmas** 3, papillose zones on the style branches; **styles** 3, filamentous, pale, 7-14 (16) mm long; **ovary** 1, fusiform-cylindric, ca. 5 mm long, 1 mm broad, borne on a smooth androgynophore ca. 2 mm long; **fruit** an ovoid capsule, 6-8 mm long, 4-6 mm broad, smooth, greenish-tan, dehiscent by 6 short, acute valves; **carpophore**, stout, 1.8-2.8 (3.7) mm long, glabrous, fluted; **seeds** 1.1-1.4 mm long, comma-shaped with indented sides, shallowly indented along the dorsal margin, dark brown, prominently rugose-papillose; **stamens** 10; **anthers** 1.5-2.5 mm long, golden, dorsifixed; **filaments** slender, (4-) 9-17 mm long; **perianth** of 2 whorls of 5; **petals** 5, white (rarely pinkish), the claw slender, tapering toward base from about 1 mm in width at summit, the limb 6-8 mm long, 3-4 mm broad, tips obtuse, shallowly to deeply bilobed (entire or minutely crenate), coronal appendages ca. 1 mm long and broad, colored like the petals; **sepals** 5, acute, 1-2 mm long, with minutely woolly-fringed margins, calyx tube slenderly tubular-cylindric in flower, 0.9-1.7 mm long, 3-5 mm broad, becoming elliptic to fusiform, up to 6.3 mm broad, not inflated, closely conforming to the fruit, surfaces minutely villous between veins, coarsely hispid (with jointed trichomes) along the 10 prominent veins; **pedicels** short-hispid, up to 2 (3) mm long or often very short, the flowers subsessile; the **inflorescences** are spike-like monochasial cymes, borne in terminal pairs, sometimes in upper leaf axils as well, flowers oriented laterally or slightly drooping, but becoming appressed upward and ascending in fruit; **bracts** paired, with ciliate margins and veins, grading from green, linear, leaf-like structures in the lower inflorescence to obovate, scarious floral bracts above, upper bracts 3-6 mm long, 1-4 mm broad; **leaves** paired at the \pm swollen, jointed nodes, linear-lanceolate to oblanceolate, elliptic or obovate, 1-6 (8) cm long, 3-35 (40) mm broad, margins entire, hispid to villous, lamina often prominently 3-veined, the surfaces puberulent to hispid (or densely villous), tips (acuminate) acute to obtuse-apiculate, bases long-attenuate into indistinct, clasping **petioles**; **stipules** absent; **stems** terete to deeply grooved, tough, up to 1 cm in diameter below, yellow-green to deep reddish-brown



toward the base, puberulent to retrorsely villous or hispid, erect-ascending up to 1.2 (1.6) m; **root system** stout, annual taproot with strong lateral branches ($2n = 24$).

Infraspecific Variation: Densely gray-pubescent plants with tufted basal rosettes of leaves and deeply cleft petals are called ssp. *racemosa* (Oth in DC.) Gräbn. A few specimens from New York fit this category. American authors have shown considerable inconsistency in treating *S. dichotoma*, often confusing it with *S. gallica* L. There are conflicting statements as to whether the petals are entire, notched or deeply bifid, and this character is sometimes used in keys, perhaps unwisely, since it seems variable (at least in weedy North American materials). In Europe, where the diversity of characters and species is much greater within the genus, *S. dichotoma* is separated from *S. gallica* on the basis of its glabrous, longer carpophore and seeds over 1 mm long.



8. *Silene noctiflora* L.

Common Names: Night-flowering Catchfly or Campion, Sticky Campion or Cockle

Type Description: Linnaeus, Species Pl. I, p. 419, 1753

Synonym: *Melandrium noctiflorum* (L.) Fries

Origin: A native of Eurasia

Habitats: Cultivated fields, pastures, roadsides, waste places, meadows, clearings, often in dry, sandy or rocky soils

Habit: Erect, annual (or winter-annual) herbs

Flowering: June-September (night-flowering)

Fruiting: July-December

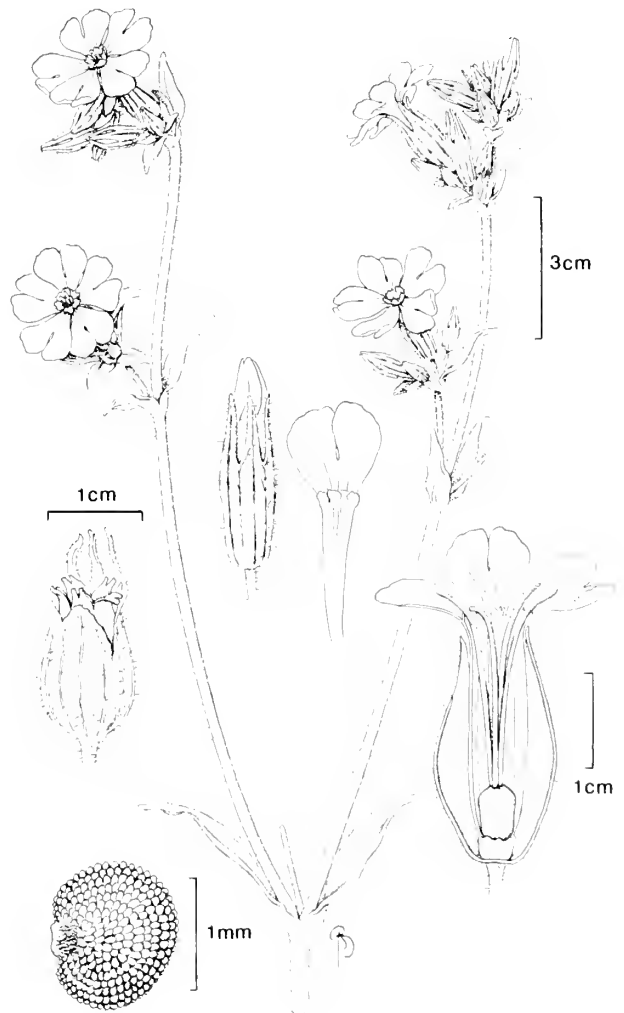
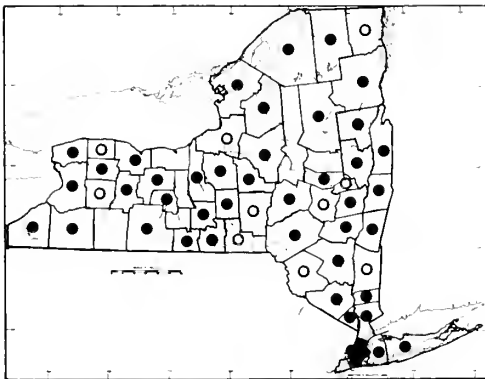
General Distribution: Sporadic, from Newfoundland to the Yukon, south to California and Louisiana

Description: Plants with **bisexual** flowers (opening primarily at night); **stigmas** 3 (4), papillose, somewhat flattened; **styles** 3 (4), 4-8 mm long, linear; **ovary** 1, ovate, borne on an androgynophore, ca. 1 mm long; **fruit** an ovoid capsule, 1.4-1.9 (2.3) mm long, 7-12 mm broad, the surface tan, glossy, dehiscent at the apex by 6 (-8) acute, moderately reflexed valves 2-3 mm long, borne on a stout carpophore 1-2 (3) mm long; **seeds** 1.0-1.3 mm long, ca. 1 mm broad, plump, ovoid-lenticular or trapezoidal and shallowly indented on the sides and dorsal surface, brown turning dark gray-brown, the blunt tuberculae with darker tips; **stamens** 10; **anthers** golden, dorsifixed, 1.6-1.8 mm long, ca. 0.8 mm broad; **filaments** 1.6-2.5 mm long, linear; **perianth** of 2 whorls; **petals** 5, white, pink or creamy-yellow tinged, the pale claw 1.7-2.2 (2.8) mm long, slightly exceeding the calyx tube, ca. 1 mm broad below, flared above into lateral auricles ca. 1 mm long and broad, the petal limb 6-10 (14) mm long when expanded (only in pale light or darkness) creamy at base, pinkish-tinged toward the narrowly-rounded, deeply-bifid tips, ligulate, with 2 short, coronal appendages at the limb/claw juncture; **sepals** 5, the lobes 3-8 (11) mm long, linear-cuspidate, viscid, glandular and abaxially hispid, adaxially minutely woolly, the margins often hyaline,

calyx tube cylindric in flower, tapering toward the tip, becoming fusiform and constricted above the developing fruit, and finally ovate, closely conforming to the outline of the mature fruit and almost equalling it, 0.9-2.2 mm long, 7-13 mm broad, 10-veined, the veins prominent, glandular-hispid, green with pale, whitish to hyaline zones between them that are largely glabrous; **pedicels** stout, (2) 5-12 (28) mm long, hispid and glandular-pubescent; **inflorescences** terminal (sometimes paired) cymes (dichasia), often of several 3-flowered units; **bracts** green, linear to lanceolate, glandular and hispid, 2-8 mm long subtending the flowers, up to 2.5 cm subtending the inflorescence; **leaves** (linear) lanceolate, lance-elliptic or oblanceolate to broadly ovate, obovate or spatulate, 2-12 (14) cm long, 0.4-5.5 (7) cm broad, strongly 3- to 5-veined from the base, strongly glandular-hispid to weakly strigose, margins entire, tips acuminate to acute or obtuse-apiculate, bases obtuse, acute or narrowly attenuated into **petioles**, especially on basal rosette leaves (when present); **stipules** absent; **stems** stout, terete to strongly grooved, glandular and hispid throughout, up to 60 (90) cm tall; **root system** a stout, annual taproot with strong, lateral branches ($2n = 24$).

Infraspecific Variation and Hybridization: Plants of this species are sometimes confused with the white campion (*S. latifolia* Poir.), but they may usually be distinguished by their linear-caudate calyx lobes, 3 styles and 6-valved capsules; however, a few New York specimens were found that seem to represent intermediates. These plants have intermediate length calyx lobes that are not strongly viscous, 4 styles and 7-9 capsule valves. Attempts to produce hybrids between these two species in the greenhouse have been unsuccessful (Prentice, 1978), and a reported cross of *S. noctiflora* and *S. dioica* L. is also suspect according to McNeill (1980a).

Importance: Night-flowering catchfly is a weed of grain, alfalfa, bean and mustard fields, reaching detrimental population densities in some areas of Canada and northern Europe. In areas where it is a noxious weed, it has also been found to be resistant to 2,4-D and other widely-used herbicides.



9. *Silene latifolia* Poir.

ssp. alba (Mill.) Greuter & Burdet

Common Names: White Campion, White Cockle, White-robin, Evening Campion or Lychnis, Snake-flower, Cuckoo-flower, Thunder-flower, Bullrattle

Type Description: Poiret, Bot. Barb. ii, p. 165, 1789

Note: To avoid confusion, some authors may wish to list this species as:

S. latifolia Poir. *non* (Mill.) Britt. & Rendle

Synonyms: *Lychnis alba* Mill., *L. arvensis* Gaertn., Meyer & Scherb., *L. vespertina* Sibth., *Melandrium album* (Mill.) Garcke, *M. dioicum* ssp. *album* (Mill.) D. Löve, *S. alba* (Mill.) Krause in Sturm, not Muhl. ex Britt., *S. pratensis* (Rafn) Godr. & Gren., not Poir.

Origin: A native of Eurasia

Habitats: Fields, ditches, roadsides, urban streets and waste places, cultivated fields, meadows, thickets, borders and open woods; a ubiquitous weed

Habit: Erect or ascending, often much-branched, biennial or short-lived perennial herbs

Flowering: Late May-October

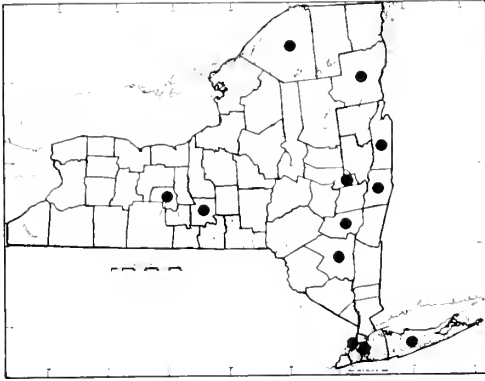
Fruiting: June-November

General Distribution: (Greenland) Nova Scotia and Quebec to British Columbia and Alaska, south to California, Illinois, Arkansas and Georgia

Description: Plants **dioecious**; **stigmas** (4) 5, densely papillose zones on the upper halves of the styles; **styles** (4) 5, linear, pale, 10-17 mm long; **ovary** smooth, green ovoid, ca. 4 mm long, 3 mm broad, subsessile; **fruit** a glossy, golden-brown capsule 1.4-1.9 (2.2) cm long, 1.0-1.5 (1.8) cm broad, ovoid, subsessile, virtually filling the calyx tube at maturity and equal in length to slightly exerted, dehiscing by (8-) 10 acute teeth 1-3 mm long that are erect or moderately recurved; **seeds** plump or with concave sides, 1.1-1.3 mm long, brown with obtuse to acute tubercles; **stamens** 10; **anthers** creamy, linear, ca. 1.5 mm long; **filaments** slender, 1.4-2.3 cm long; **perianth** of 2 whorls; **petals** white (or pink-tinged), claw 1-2 cm long in male flowers, up to 3 cm in females, slender, auriculate, not strongly exerted, petal limb 0.8-1.6 cm long, ca. half as broad, bifid with obtuse lobes; **sepals** 5, lobes obtuse to acute (acuminate) ovate to lanceolate, 3-8 (10) mm long, short-hispid, often glandular pubescent, usually with a strong, central vein, calyx tube (female flowers): 1.8-2.5 (3) cm long, ovate-cylindric becoming ovoid in fruit, up to 1.7 cm broad, veins up to 20, (male flowers): tube cylindric to narrowly ovoid, 0.8-2.1 cm long, 3-7 mm broad, hispid and often glandular-pubescent, usually 10-veined; **pedicels** 1-16 (30) mm long, those on solitary or axillary flowers usually substantially longer, sparsely to densely hispid, often glandular-pubescent; **inflorescence** a few to many-flowered dichasium, much branched on the male plants with copious clustered bracts; **inflorescence bracts** leaf-like, up to 3 cm long, those directly subtending the flowers deltoid to ovate, acute, 1-6 mm, mostly 2-4 times as long as broad, hispid, often glandular; **cauline leaves** lanceolate to broadly elliptic or obovate with acute to acuminate (rarely obtuse) tips and rounded to attenuated clasping bases, 2-9 (11) cm long, 0.5-2.5 (3) cm broad, entire, pustulate-puberulent to short-scarious or downy-hispid when young; **basal leaves** of the first year rosette similar to cauline leaves but often obovate with more attenuated bases; **petioles** absent or some leaf bases long attenuated; **stipules** absent; **stems** terete or grooved, hispid, often glandular-pubescent, particularly above, up to 8 dm (1 m) tall, branching sparingly in female plants, but sometimes profusely in the males; **root system** a tough, biennial (rarely annual or perennial) taproot or twisted semi-erect rootstock ($2n = 24$).

Intraspecific Variation and Hybridization: Although they have sometimes been placed in separate genera, *Silene noctiflora* and *S. latifolia* (often called *Lychnis alba*) have parallel morphology, even though they have been placed in different sections of the genus; they have the same chromosome number; however, greenhouse attempts at crossing them have failed. Seed characters are usually distinctive, while other commonly cited morphological differences, such as glandularity, bract shape and flower color prove less reliable in distinguishing these taxa. Style and capsule tooth numbers are directly linked with sexually dimorphic versus bisexual flowers, and have been afforded great significance by some authors. Dioecious, day- and evening-flowering plants of this species complex (e.g., *S. latifolia* and *S. dioica* in our area) have 5 styles and ± 10 capsule teeth, while late-evening and night-flowering *S. noctiflora* plants have bisexual flowers with 3 styles and 6 capsule teeth. This is not a clearcut distinction, however, since plants of intermediate morphology have been noted in which the style number is 4, and capsule teeth number 7-9. Capsule teeth also often bear sutures in excess of the number expected for the species, and when these become involved in dehiscence, the exercise of counting teeth becomes suspect. To further complicate matters, putative *Silene dioica* x *latifolia* hybrids have been reported, both in Europe and within our range in New York State. Occasional pink flower color in white campion and white-flowered sports of the red campion also serve to confuse the picture.

Importance: This species can be a noxious weed of crop fields.



10. *Silene dioica* (L.) Clairv.

Common Names: Red Campion, Red Bird's-eye, Red-robins, Soldiers, Adder's-flower, Devil's-flower

Type Description: Linnaeus, Species Pl. I., p. 437, 1753

Synonyms: *Lychnis dioica* L., *L. diurna* Sibth., *Melandrium dioicum* (L.) Coss & Germ., *M. rubrum* (L.) Garcke

Origin: A native of Eurasia

Habitats: Cultivated fields, roadsides, gardens, waste places, meadows and borders

Habit: Spreading to erect, perennial herbs (sometimes biennial or short-lived)

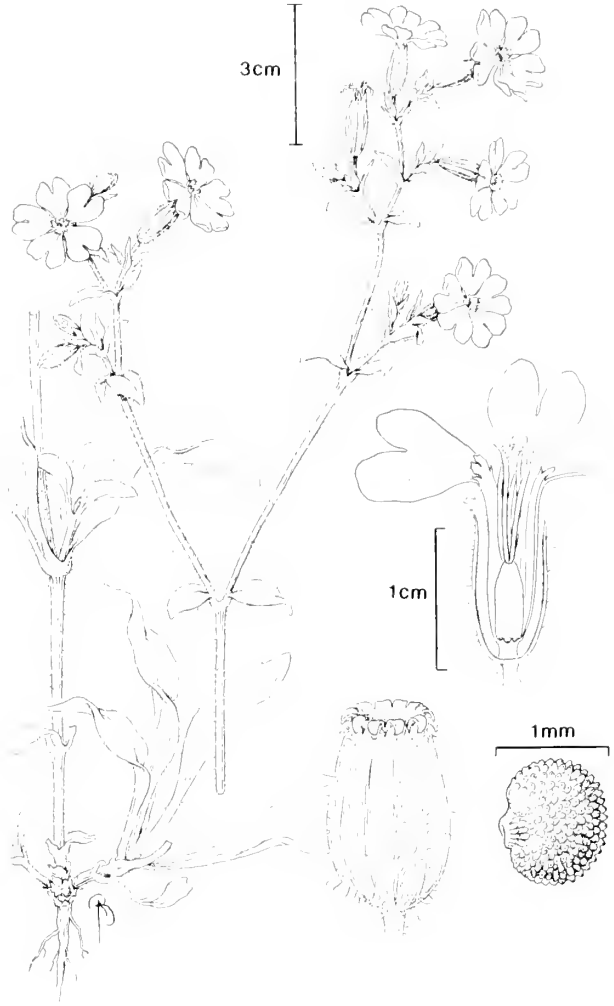
Flowering: Late May-October

Fruiting: June-November

General Distribution: Sporadically, but widely scattered from Newfoundland to British Columbia, south to Oregon, Indiana and Delaware

Distribution Note: McNeill (1978) expressed doubt that this species still occurred in eastern North America, but it was collected or reported at five locations on eastern Long Island (Suffolk Co.) as late as 1964-67.

Description: Plants **dioecious**; **stigmas** 5, papillose; **styles** 5, slender, pale, 8-13 mm long; **ovary** spherical, subsessile, ca. 3 mm in diameter; **fruit** a globose to broadly ovate, glossy, tan capsule, 9-15 mm long and broad, dehiscent by ± 10 strongly recurved teeth 3-4 mm long, often splitting further to form a gaping aperture and stretching the mouth of the calyx tube; **seeds** ca. 1 mm long and broad, plump with slightly concave side, brown with uniformly colored tubercles or tubercles with darker central papillae; **stamens** 10; **anthers** creamy yellow, ca. 1 mm long, dorsifixed; **filaments** very slender, pale, 0.8-1.7 cm long, varying in length within the same flower; **perianth** of 2 whorls; **petals** 5, deep rose to pink (rarely white), claw slender, 12-17 mm long, exerted 1-4 mm from the calyx, not strongly auriculate, the limb 8-15 mm long, ca. half as broad, usually bifid, with obtuse lobes; **sepals** 5, lobes broadly acute to rounded, 1.4-2.6 mm long, green or pinkish, hirsute, often glandular-pubescent with a weak to strong central vein, calyx tube elliptic-cylindric in flower to broadly ovoid in fruit, up to 1.5 cm long and broad, greenish with a yellowish or rosy tint, sparsely to densely hirsute, often glandular-pubescent; **pedicels** hirsute, often glandular-pubescent, 1-7 (10) mm long or flowers subsessile; **inflorescence** a sparse (female) to much-branched (male) dichasium of terminal and axillary flower clusters; **inflorescence bracts** broad, leaf-like, those directly subtending the flowers mostly 5-9 mm long, 3-6 mm broad, ovate to elliptic with acute to acuminate tips, often rosy-tinted, hirsute and glandular, particularly along the margins; **cauline leaves** narrowly elliptic to broadly obovate, mostly 2-13 cm long, 1-6 cm broad, with obtuse, acute or apiculate tips, entire margins and rounded to attenuate clasping bases, surfaces and margins puberulent to hirsute, sometimes with a few glandular hairs; **basal rosette leaves** similar to cauline leaves, but often spatulate with long petioles; **petioles** absent or obscure on upper cauline leaves to pronounced and



winged below, up to 6 cm long on basal leaves, hirsute, often glandular-pubescent; stipules absent; stems green to tan or rosy-tinted above, usually grooved, pilose to densely hirsute-glandular, spreading or erect, up to 1 m tall; rhizomes developing from the caudex in the second season; root system a first and second year taproot, adventitiously rooting from the caudex and rhizome in established perennials ($2n = 24$).

Infraspecific Variation: Plants of this species may rarely have white flowers. The hybrid, *Silene dioica* x *latifolia* has been reported. See also the discussion under *S. latifolia*.

Importance: These plants are uncommon and declining, mostly historically naturalized in New York State, but they sometimes become troublesome weeds in gardens and cultivated fields elsewhere.

Note: *Silene nivea* (Nutt.) Oth occurs at several sites in Pennsylvania along the New York border, and has been found once on a roadside in Sullivan Co., NY. Reports of New York State occurrences of *Silene gallica* L. [as *S. anglica* L. in House (1924) and elsewhere] were apparently based on specimens of *S. dichotoma*.

Waifs and Rare Garden Escapes: *Silene conica* L. (Suffolk, Co.); *S. italica* Pers. ssp. *nemoralis* (Waldst. & Kit.) Nyman (Washington Co.), *Silene nutans* L. (reported from Richmond Co.), *Silene virginica* L. (probably garden-grown, Yates Co.)

APPENDIX SUPPLEMENT TO ASSOCIATED FUNGI

Since the publication of Farr *et al.* (1989), a voluminous work on fungi and their plant hosts, we have modified this appendix in the New York State Flora volumes. The following list was compiled from the mycological collections of the New York State Museum (NYS) by J. Kenneth Dean, and represents only those records not listed by Farr *et al.*

Albugo portulacae (DC.) Kuntze, on *Portulaca oleracea*, Schultz 2179

Alternaria saponariae (Peck) Neergaard, on *Saponaria officinalis*, C.T. Rogerson 9-10-62, det. Rogerson

Cladosporium herbarum (Pers.) Link ex Fr., on *Agrostemma githago*

Marssonina delastrei (DeLac.) Sacc., on *Silene vulgaris* (as *S. cucubalis*), C.T. Rogerson 9-10-62, det. Rogerson

Melampsorella caryophyllaceorum Schroet. on *Stellaria borealis*

Puccinia arenariae (Schum.) Wint., on *Arenaria stricta*, W.R. Gerard, det. House, other collections on *Spergula arvensis*, *Dianthus barbatus*

Puccinia mariae-wilsoni Clinton, on *Claytonia virginica*, S.J. Smith 6539, det. Rogerson, other collections on *C. caroliniana*

Uromyces verruculosus Schr., on *Silene latifolia* (as *Lychnis alba*), R. Latham 1464, det. Jackson

Ustilago violacea (Pers.) Rouss., on *Silene latifolia* (as *Lychnis alba*); S.J. Smith 42172, det. C. Rogerson; other collections on *Minuartia groenlandica*; on *Stellaria borealis*, *Stellaria longifolia* and *S. borealis* x *longifolia*

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INDEX

Note: **Boldface** indicates a name used in this treatment for plants that have been reliably reported to occur in the wild in New York State.

Achyranthes	15	Behen	84
dichotoma	15	Bigelowia	53
Agrostemma	65	Buda	16, 17, 18, 20
coronaria	76	borealis	20
githago	65	marina	18
gracilis	66	media	17
Alsine	17, 18, 27, 31, 46, 48, 49, 50, 51, 55, 56	rubra	16
aquatica	46	Caryophyllaceae	10
borealis	53	Caryophyllum	10
graminea	54	Cerastium	35
holostea	48	apetalum	38
longifolia	55	aquaticum	46
longipes	56	arvense	40
marginata	17	biebersteinii	36, 37
maritima	18	caespitosum	42
media	51	campestre	46
michauxii	31	columnae	37
pallida	51	fontanum	42
procumbens	27	glomeratum	38
pubera	49	glutinosum	39
tennesseensis	50	nutans	39
uliginosa	50	occidentale	40
Alsinopsis	34	pennsylvanicum	40
Ammodenia	24	pubescens	40
Anychia	14	pumilum	42
canadensis	14	semidecandrum	41
dichotoma	14	tenellum	39
divaricata	13	tenuifolium	40
polygonoides	13	tomentosum	37
Arenaria	45	velutinum	40
angustifolia	43	villosum	40
canadensis	20	viscosum	38
caroliniana	32	vulgatum	41
glabra	34	Claytonia	4
groenlandica	33	caroliniana	7
lateriflora	43	latifolia	7
leptoclados	45	media	5
macra	31	multicaulis	5
marginata	17	robusta	5
maritima	17	simsii	5
media	17	virginica	5
michauxii	31	Coronaria	74
peploides	24	Cucubalus	79, 84
rubra	18	behen	84
squarrosa	32	inflatus	84
serpyllifolia	45	stellatus	79
stricta	31	Dianthus	58

armeria	61	noctiflorum	88
armeriastrum	61	pennsylvanicum	85
barbatus	59	rubrum	91
blandus	62	Minuartia	30
carolinianus	57	alabamensis	35
caryophyllus	58	caroliniana	32
deltoides	63	dawsonensis	31
diminutus	57	glabra	34
epirotus	61	groenlandica	33
hoppei	62	michauxii	31
lumnitzeri	62	uniflora	35
praecox	62	Moehringia	43
prolifer	57	lateriflora	43
plumarius	62	macrophylla	43
Evactoma	79	Molluginaceae	8
Gypsophila	66	Mollugo	8
arrostii	69	cerviana	8
bicolor	69	verticillata	9
carminea	67	Myosoton	46
elegans	67	aquaticum	46
grandiflora	67	Paronychia	12
muralis	68	canadensis	14
stepposa	68	dichotoma	14
paniculata	69	fastigiata	13
pilosa	68	Portulaca	2
prolifera	57	grandiflora	2
stevenii	69	oleracea	3
Holosteum	25	Portulacaceae	1
glutinosum	25	Petrorhagia	57
umbellatum	25	prolifer	57
Honckenya	23	prolifera	57
peplodes	24	saxifraga	58
Kohlrauschia	57	Queria	14
Lepigonum	16, 17, 18	Sabulina	31, 33, 34
caninum	18	glabra	34
medium	17	groenlandica	33
rubrum	16	stricta	31
salinum	18	Sagina	26
Lychnis	73	apetala	27, 28
alba	89	corsica	27
arvensis	89	decumbens	28
chalcedonica	75	echinosperma	29
coronaria	76	japonica	29
dioica	91	muscosa	27
diurna	91	procumbens	27
flos-cuculi	74	sinensis	29
githago	65	subulata	28
vespertina	89	taquetii	29
viscaria	77	Saponaria	71
Malachium	46	hispanica	70
Melandrium	85, 88, 89, 91	ocymoides	73
album	89	officinalis	71
dioicum	91	vaccaria	70

Scleranthus	22	<i>campestris</i>	18
annuus	22	canadensis	20
<i>perennis</i>	22	<i>canina</i>	18
<i>uncinatus</i>	22	<i>marginata</i>	17
Silene	77	<i>marina</i>	18
<i>alba</i>	89	media	17
<i>anglica</i>	87	rubra	16
antirrhina	81	salina	18
armeria	80	<i>tangerina</i>	19
caroliniana	85	<i>tenue</i>	18
cserii	83	Stellaria	47
<i>cucubalus</i>	84	alsine	50
dichotoma	87	<i>apetala</i>	51
dioica	91	<i>aquatica</i>	46
<i>divaricata</i>	81	borealis	53
<i>fabaria</i>	83	<i>calycantha</i>	53
<i>gallica</i>	87	<i>corei</i>	49, 50
<i>glauca</i>	87	<i>crassifolia</i>	56
<i>inflata</i>	84	graminea	54
latifolia Poir.	89	<i>graminifolia</i>	54
<i>latifolia</i> (Mill.) B.& R.	84 (89)	<i>groenlandica</i>	33
<i>lituanica</i>	80	holostea	48
noctiflora	88	longifolia	55
<i>pennsylvanica</i>	85	longipes	56
<i>pratensis</i>	89	media	51
<i>scabrella</i>	79	<i>montana</i>	54
stellata	79	<i>neglecta</i>	51
<i>venosa</i>	84	pubera	49
virginica	92	<i>sylvatica</i>	50
vulgaris	84	<i>uliginosa</i>	50
<i>wherryi</i>	85	Tissa	16, 18, 20
Spergula	21	<i>canadensis</i>	20
arvensis	21	<i>marina</i>	18
<i>canadensis</i>	20	<i>rubra</i>	16
<i>decumbens</i>	28	Tunica	57
<i>marina</i>	18	Vaccaria	70
<i>salina</i>	18	hispanica	70
<i>pentandra</i>	21	<i>segetalis</i>	70
Spergularia	15	<i>vaccaria</i>	70
<i>alata</i>	17	<i>vulgaris</i>	70

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