SECTION 3

Shrub Swamps

V. Shrub Swamps

Shrub swamps are wetland plant communities dominated by woody vegetation less than 20 feet in height and with a dbh of less than 6 inches. Shrub swamps in Minnesota and Wisconsin are categorized as shrub-carrs or alder thickets depending upon the dominant shrub species. Both occur on organic soils (peats/mucks) as well as on hydric mineral soils.

Shrub swamps are an important habitat for many songbirds, ruffed grouse, American woodcock and small mammals, and are particularly important winter habitat for ring-necked pheasant, eastern cottontail and white-tailed deer.

V.A. Shrub-Carrs

Shrub-carrs are plant communities composed of tall, deciduous shrubs growing on saturated to seasonally flooded soils. Dominant shrubs are typically willows, red-osier dogwood, silky dogwood or gray dogwood. Groundlayer species include some of the ferns, forbs, grasses and sedges of sedge meadow and fresh (wet) meadow communities. The diversity of groundlayer species is dependent upon the degree of shrub canopy cover, degree of disturbance, water source and other factors. For example, disturbed shrub-carrs may have a groundlayer dominated by reed canary grass, an invasive species. Relatively undisturbed shrub-carrs can have a high diversity of groundlayer species.

Shrub-carrs are common both north and south of the vegetative tension zone. Artificial drainage and fire suppression are two factors that promote succession of inland fresh meadow communities to shrub-carr communities.

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VEGETATION: This shrub-carr is dominated by slender willow (*Salix petiolaris*), Canada blue-joint grass (*Calamagrostis canadensis*) and marsh fern (*Thelypteris palustris*). Additional shrub species include beaked willow (*Salix bebbiana*), pussy willow (*Salix discolor*), sandbar willow (*Salix exigua*) and meadowsweet (*Spiraea alba*). Non-dominant herbaceous species include lake sedge (*Carex lacustris*), common yellow lake sedge (*Carex utriculata*), hummock sedge (*Carex stricta*), fowl bluegrass (*Poa palustris*), blue flag iris (*Iris versicolor*), tall meadowrue (*Thalictrum dasycarpum*), giant goldenrod (*Solidago gigantea*), redstem aster (*Symphyotrichum puniceum*), joe-pye weed (*Eupatorium maculatum*), marsh skullcap (*Scutellaria galericulata*), marsh milkweed (*Asclepias incarnata*) and water hemlock (*Cicuta maculata*).

SOILS: Seelyeville muck (Typic Haplosaprists), very poorly-drained soils with an organic layer greater than 51 inches in depth. Landscape position is a glacial lake plain.

HYDROLOGY: Seelyeville soils are typically saturated at or near the surface throughout the growing season and may be inundated by up to 1 foot of water.

LOCATION: Willowsippi Wildlife Management Area, Aitkin County, Minnesota.

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SLENDER WILLOW

(*Salix petiolaris* J.E. Smith)

WILLOW FAMILY (Salicaceae) **C of C:** Native (5 MN)(6 WI) **IND. STATUS:** FACW

SYNONYM: *Salix gracilis* Anderss.

FIELD CHARACTERISTICS: A tall shrub with many branches to 4 m. in height. Bark is gray, smooth or slightly rough. Leaves are linear to lanceolate to narrowly elliptical and 3.8-11 cm. by 0.6-1.9 cm. Leaf margins are serrate to subentire, upper surfaces are dark green while lower surfaces are pale green to grayish (glaucous). Immature leaves have long silky hairs. Flowers in unisexual catkins that appear with the leaves in spring or slightly before. Pistillate catkins are 1-3.5 cm. long while male catkins are 1-3 cm. long. Capsules are hairy and 4-8 mm. long. In flower late April to late May.

ECOLOGICAL NOTES: Slender willow is probably the most common and abundant willow in Minnesota, often dominating or codominating large wetland complexes (Smith 2008). It is similarly common in Wisconsin. In addition to shrub-carrs, slender willow occurs in sedge meadows, shallow marshes, prairie swales and along riverbanks. It is apparently intolerant of strongly acidic soils (e.g., bogs) and flood-borne sediments (e.g., floodplain forests) that smother its roots.

SOURCE: Gleason and Cronquist (1991); and Smith (2008).

Leaves are dark green above and grayish below.

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Leaves and pistillate catkins.

Slender Willow

(*Salix petiolaris*)

PUSSY WILLOW

(*Salix discolor* Muhl.)

WILLOW FAMILY (Salicaceae) **C of C:** Native (3) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: An erect, deciduous shrub usually 2-5 m. high. The alternate leaves are generally elliptic, entire to slightly toothed, dark green above, whitened beneath, and are without hairs (may have sparse hairs beneath); usually less than 5.5 times as long as wide. Large, roundish stipules are deciduous. Twigs are stout, reddish to dark brown, and lack hairs (although new twigs may be hairy). Plants are unisexual. The pistillate catkins are 3-12(14) cm. long with black scales, while staminate catkins are 1.5-5 cm. long. The fruit is a densely hairy capsule. In flower April-May.

ECOLOGICAL NOTES: Pussy willow is common in shrub-carrs, inland fresh meadows, the edges of wooded swamps and along shores. It is usually the first willow to flower in spring. The twigs are browsed by white-tailed deer, moose and eastern cottontail. Various willows (*Salix* spp.) can be recognized in winter by insect galls that may be shaped like pine cones. Willows (*Salix* spp.) in general hybridize, sometimes making identification difficult.

SOURCE: Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

Pussy Willow

(*Salix discolor*)

© Photos by Steve D. Eggers

Pistillate catkin.

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Leaves and pistillate catkins.

Leaf and staminate catkin.

BEAKED WILLOW

(*Salix bebbiana* Sarg.)

WILLOW FAMILY (Salicaceae) **C of C:** Native (6) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: An erect, deciduous shrub or small tree, usually 2-6 m. high, with one to a few stems. The alternate leaves are elliptic to obovate, subentire to crenate, and conspicuously rugose-reticulate veined. An abruptly acute leaf apex (beak) is present. The leaf blades are usually less than 2.8 times as long as wide and may be pubescent above, but glaucous underneath. Small, less than 2 mm. long, deciduous stipules may be present. Twigs are slender and brownish in color. The pistillate catkins are 2-7 cm. long while the staminate catkins are small and subsessile. The fruit is pubescent. Beaked willow is usually in flower from March to early June.

ECOLOGICAL NOTES: Beaked willow, also known as Bebb's willow, occurs in a wide variety of wetland habitats, but it is most often seen in sedge meadows, shrub-carrs, fresh (wet) meadows, fens, and along wet forest edges. Swink and Wilhelm (1994) state that this willow is frequent in shrub zones "...where there has been disturbance." The authors have also observed it in some fairly pristine sites.

SOURCE: Fassett (1976); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

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Leaves and pistillate catkins.

Leaves and staminate catkins.

SANDBAR WILLOW

(*Salix interior* Rowlee)

WILLOW FAMILY (Salicaceae) **C of C:** Native (2) **IND. STATUS:** OBL

SYNONYM: *Salix exigua* Nutt.

FIELD CHARACTERISTICS: An erect, deciduous shrub 2-5 m. high. A distinctive characteristic of this willow is its long, linear leaves (usually 10 times longer than wide) that are irregularly toothed. Mature leaves are without hairs. Leaf stalks lack glands and no stipules are present. It often has many stems that are slender, reddish-brown, lack hairs, and are leafy. Pistillate catkins are (3-6(8) cm. long) appearing with the leaves or later. Fruit is a capsule that is hairless to thinly silky. In flower May-June.

ECOLOGICAL NOTES: Sandbar willow frequently forms large, dense, circular colonies (clones) that can be an acre or two in extent. In addition to shrub-carrs, this willow is common on sandbars, mudflats, beaches, and other alluvial mineral soils. It responds positively to water level changes and is often found colonizing dredged material sites.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1985).

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HEART-LEAVED WILLOW

(*Salix eriocephala* Michx.)

WILLOW FAMILY (Salicaceae) **C of C:** Native (4) **IND. STATUS:** FACW

SYNONYMS: *Salix cordata* Muhl.; *S. rigida* Muhl.

FIELD CHARACTERISTICS: A many-stemmed, deciduous shrub to 7 m. in height. Leaves are alternate, narrowly oblong to narrowly elliptical or lance-elliptical, the larger leaves 6-12 cm. long by 1-3 cm. wide. Leaf bases are acute to blunt or rarely subcordate. Leaf blades are dark green above and pale green below with a serrulate (finely-toothed) margin. Stipules are prominent, leafy and persistent. Staminate catkins are 1.5-4.5 cm. long while pistillate catkins are 2-6 cm. long, both appearing with or slightly before the leaves. Capsules are glabrous and 3-7 mm. long. In flower mid-April to late May.

ECOLOGICAL NOTES: Heart-leaved willow is a common species of shrub-carrs, inland fresh meadows, shallow marshes, streambanks and ditches. Despite its common name, the leaves are rarely heart-shaped. Leaf shape is highly variable and can resemble slender willow (*S. petiolaris*) and black willow (*S. nigra*); however, the leafy, persistent stipules (see photos) distinguish heart-leaved willow.

SOURCE: Fassett (1976); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

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Note the persistent, leafy stipules and serrulate leaf margins.

Pistillate catkins.

Heart-Leaved Willow

(*Salix eriocephala*)

© Photos by Steve D. Eggers

AUTUMN WILLOW

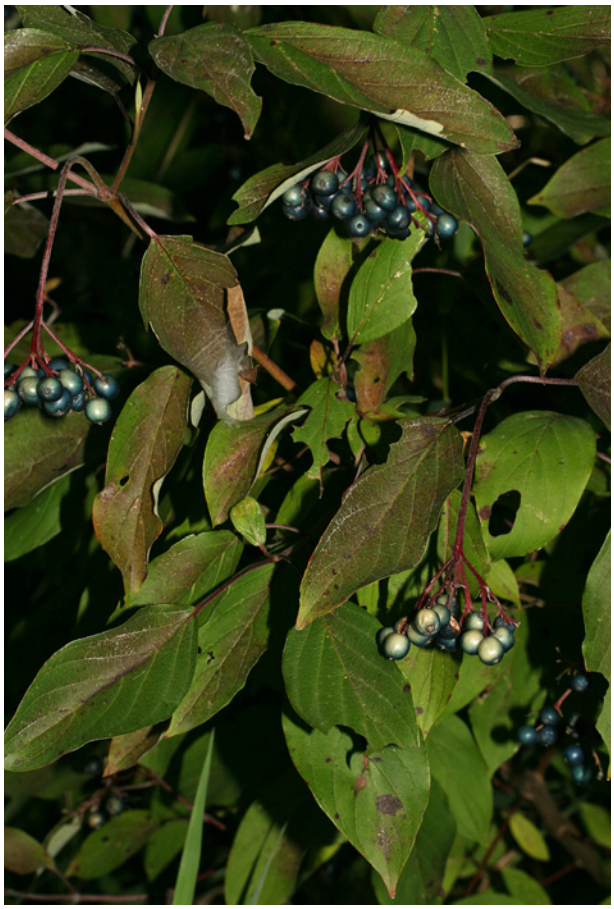
(*Salix serissima* (Bailey) Fernald)

WILLOW FAMILY (Salicaceae) **C of C:** Native (7) **IND. STATUS:** OBL

FIELD CHARACTERISTICS: A deciduous shrub 1-4 m. in height. First year branchlets are yellowish and glabrous while second year branchlets are yellowish to red, shiny and glabrous. Leaves are alternate, elliptical to oval to lance-shaped, and 4-10 cm. long by 1-3 cm. wide. Leaf blades are glossy, dark green above and white-waxy below. Leaf margins are finely-toothed (serrulate). Petioles have glands near the summit and stipules are usually absent. Staminate catkins are 1.5-3(4) cm. long while pistillate catkins are 2-4 cm. long, both appearing with or after the leaves in spring (mid-May to mid-June). Capsules are glabrous and 7-10 mm. long. Seeds are not released until late summer or autumn. Capsules are often seen retaining seeds after the leaves are shed in autumn, sometimes after snow falls (Smith 2008).

ECOLOGICAL NOTES: Autumn willow is intolerant of shade but is tolerant of a wide range of pH conditions from weakly acidic to strongly calcareous. It occurs on shallow peats, or less frequently hydric mineral soils, as widely scattered individuals or small, sparse populations. This includes shrub-carrs, coniferous swamps, calcareous fens, shallow marshes and floating sedge mats.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Chadde (2011).



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SILKY DOGWOOD

(*Cornus amomum* P. Mill.)

DOGWOOD FAMILY (Cornaceae) **C of C:** Native (4) **IND. STATUS:** FACW

SYNONYM: *Cornus obliqua* Raf.

FIELD CHARACTERISTICS: An erect, deciduous shrub usually 1-3 m. high. Leaves are opposite, ovate to elliptic, and 6-12 cm. long with 4-6 pairs of lateral veins. Twigs and branches are magenta with fine hairs and brown pith. The inflorescence is an open cyme with white flowers. Mature fruit is a dark blue berry while immature fruit is white to bluish-white. In flower May-July.

ECOLOGICAL NOTES: Silky dogwood is not as common as red-osier dogwood (*Cornus sericea*) in shrub-carrs. It is primarily seen along streambanks and in shrubby thickets adjacent to wooded swamps. Silky dogwood is frequently planted for wildlife cover and foodplots.

SOURCE: Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

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RED-OSIER DOGWOOD

(*Cornus sericea* L.)

DOGWOOD FAMILY (Cornaceae) **C of C:** Native (3) **IND. STATUS:** FACW

SYNONYM: *Cornus stolonifera* Michaux

FIELD CHARACTERISTICS: An erect, deciduous shrub usually 1-3 m. high. Leaves are opposite, lanceolate to ovate, 5-10 cm. long with 5-7 pairs of lateral veins. Twigs and branches are greenish to yellowish in summer turning to red in autumn/winter. The inflorescence is an open cyme with white flowers. Mature fruit is a white berry. In flower May-September. *C. sericea* is the only dogwood in our range with both white berries and white pith. It can be easily distinguished from silky dogwood (*Cornus amomum*), which has dark blue berries and brown pith.

ECOLOGICAL NOTES: Red-osier dogwood is a characteristic species of shrub-carrs and can form dense thickets. This common shrub can invade sedge meadows, wet to wet-mesic prairies and calcareous fens in response to water level changes and/or lack of fire. Red-osier dogwood is also found in wooded swamps and along streambanks. The berries are eaten by songbirds and ruffed grouse; white-tailed deer and eastern cottontail browse the twigs and buds.

SOURCE: Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

© Photos by Steve D. Eggers

Red-Osier Dogwood
(*Cornus sericea*)

© Photos by Steve D. Eggers

GRAY DOGWOOD

(*Cornus racemosa* Lam.)

DOGWOOD FAMILY (Cornaceae) **C of C:** Native (2) **IND. STATUS:** FACW

SYNONYM: *Cornus foemina* P. Mill.

FIELD CHARACTERISTICS: An erect, deciduous shrub usually 1-3 m. high. Leaves are opposite, ovate to elliptic, and 6-12 cm. long with 4-6 pairs of lateral veins. Twigs and braches are gray with brown pith. The inflorescence is an open cyme with bright red pedicels, white flowers and white berries. In flower May-July.

ECOLOGICAL NOTES: Gray dogwood is a common wetland shrub that is particularly adept at colonizing abandoned agricultural lands, areas disturbed by logging, and forest edges. It is an excellent wildlife food plant. This shrub is especially conspicuous in winter with its dull gray twigs and bright red pedicels.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Smith (2008).

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Comparison of Dogwood Twigs

Red-osier dogwood (*Cornus sericea*) with red twigs and white pith is on the left. Gray dogwood (*C. racemosa*) with gray twigs and brown pith is in the center. On the right is silky dogwood (*C. amomum*) with brownish-magenta twigs and brown pith.

COMMON BUCKTHORN

(*Rhamnus cathartica* L.)

BUCKTHORN FAMILY (Rhamnaceae) **C of C:** Introduced, invasive (0) **IND. STATUS:** FAC

FIELD CHARACTERISTICS: A shrub or small tree growing to 6 m. in height. Some branches end in short thorns. Leaves mostly opposite or subopposite, with some alternate. Leaves broadly elliptic, oblong, or elliptic-oblong, 3-6 cm. long, with a margin of fine teeth. Lateral leaf veins (2)3(4) on each side, strongly upcurved. Plants are dioecious (unisexual) with female plants producing black fruit, 5-6 mm. in diamter, commonly with 4 stones (hard seeds). Flowers appear with the leaves and have parts in 4s.

ECOLOGICAL NOTES: Introduced from Eurasia and planted as an ornamental, common buckthorn is an aggressive invader of both upland and wetland habitats becoming a noxious weed. Birds eat the fruit and spread the seeds such that even scientific and natural area quality fens, prairies and woodlands now have infestations of buckthorn. Common buckthorn can form dense thickets that shade out species of sedge meadows, calcareous fens and the spring ephemerals of woodlands. It is especially prolific in drained peatlands and upland oak forests. Also see comments under glossy buckthorn (*Frangula alnus*).

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Smith (2008).

Leaves and pistillate flowers.

© Photos by Steve D. Eggers

Staminate flowers.

Common Buckthorn

(*Rhamnus cathartica*)

© Photos by Steve D. Eggers

GLOSSY BUCKTHORN

(*Frangula alnus* Mill.)

BUCKTHORN FAMILY (Rhamnaceae) **C of C:** Introduced, invasive (0) **IND. STATUS:** FAC

SYNONYM: *Rhamnus frangula* L.

FIELD CHARACTERISTICS: A shrub or small tree growing to 7 m. in height. Leaves are all or mostly alternate, oblong to obovate-oblong, 5-8 cm. long, and acute to short-acuminate. Leaf margins are entire and may be wavy (see photograph), but are easily distinguished from the fine-toothed leaf margins of common buckthorn (*Rhamnus cathartica*). Leaves are also shiny compared to the leaves of common buckthorn and branches do not end as thorns. Flowers are perfect with parts in 5s. Fruits are red turning to black, with 2-3 stones. In flower May-August.

ECOLOGICAL NOTES: Introduced from Eurasia and planted as an ornamental, glossy buckthorn is an aggressive invader and noxious weed of wooded swamps, shrub swamps, bogs and inland fresh meadows, especially calcareous fens. It is not as widespread in Minnesota and Wisconsin as common buckthorn and prefers wetter habitats. Glossy buckthorn often occurs in association with disturbance (power lines, ditches), but also has infested scientific and natural area quality wetlands such as Cedarburg Bog in southeastern Wisconsin and calcareous fens in the lower Minnesota River valley, due to seed dispersal by birds.

SOURCE: Voss (1985); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

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MEADOWSWEET

(*Spiraea alba* DuRoi)

ROSE FAMILY (Rosaceae) **C of C:** Native (5 MN)(4 WI) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: A low, deciduous shrub, usually up to 2 m. high. Leaves are alternate, simple, unlobed, finely serrate, without hairs, oblanceolate, and 3-5 cm. long. The unarmed twigs are slender, ascending, and generally a dull brown. The inflorescence is a terminal, finely hairy, elongate panicle 5-25 cm. in height. The five-petaled flowers are white, 6-8 mm. wide and fuzzy. The fruit is a follicle. In flower June-August. A similar species, steeplebush (*S. tomentosa*), can be easily distinguished from *S. alba* because of its pink flowers and woolly twigs and leaf undersides.

ECOLOGICAL NOTES: Meadowsweet occurs in sedge meadows, wet to wet-mesic prairies, alder thickets and shrub-carrs. It can form relatively tall, dense thickets on disturbed sites and tends to increase with declining water levels.

SOURCE: Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

© Photos by Steve D. Eggers

STEEPLEBUSH

(*Spiraea tomentosa* L.)

ROSE FAMILY (Rosaceae) **C of C:** Native (7) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: A low, deciduous shrub, usually up to 2 m. high. Leaves are alternate, simple, unlobed, finely serrate, oblanceolate, and 3-5 cm. long. The unarmed twigs are slender, ascending, and generally a dull brown. Both twigs and the undersides of leaves are densely covered with hairs. The inflorescence is a terminal, finely hairy, elongate panicle 5-15 cm. long. The five-petaled flowers are rose-pink, 3-4 mm. wide, and fuzzy. The fruit is a follicle. In flower June-August.

ECOLOGICAL NOTES: Steeplebush occurs in northern sedge meadows, shrub swamps and open bogs.

SOURCE: Gleason and Cronquist (1991); and Swink and Wilhelm (1994).

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WILD CUCUMBER

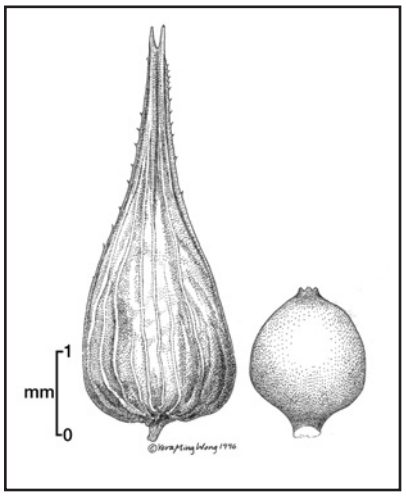
(*Echinocystis lobata* (Michx.) T. & G.)

GOURD FAMILY (Curcurbitaceae) **C of C:** Native (2) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: An annual, vining herb to 5 m. or more in length. Leaves usually have 5 sharp, triangular lobes (some leaves may have 3 or 7 sharp lobes). Flowers are white and unisexual. Staminate flowers are 8-10 mm. wide with lance-like lobes and are arranged in long, upright racemes. Pistillate flowers are 1 to several on short stalks from leaf axils. Fruit is ovate, inflated, 3-5 cm. long, and covered with soft prickles. In flower August-September.

ECOLOGICAL NOTES: Wild cucumber is an abundantly common species of shrub and wooded swamps, floodplain forests, inland fresh meadows, streambanks and road ditches, often seen sprawling over other vegetation or fences.

SOURCE: Chadde (2011).



Perigynium and nutlet.

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STALK-GRAIN SEDGE

(*Carex stipata* Muhl.)

SEDGE FAMILY (Cyperaceae) **C of C:** Native (3) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: A somewhat stout perennial sedge with clustered, sharply triangular stems 30-100 cm. in height. Leaves are coarse, M-shaped, green, and usually shorter than the stem. Whitish, thin sheaths extend beyond the leaf base and are conspicuously cross-wrinkled (see photo on page 178). Each spikelet is typically subtended by a long, linear bract. The lance-triangular shaped perigynia are 4-7 mm. long, sessile, and densely aggregated. The conspicuous beak of the perigynia is less than twice as long as the body and gives the inflorescence a prickly appearance. Similar to fox sedge (*Carex vulpinoidea*)[page 178] but larger with flaccid stems.

ECOLOGICAL NOTES: A common sedge that usually occurs in wooded swamps and shrub swamps. Stalk-grain sedge also occurs in wet ditches and other open, wet habitats.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).