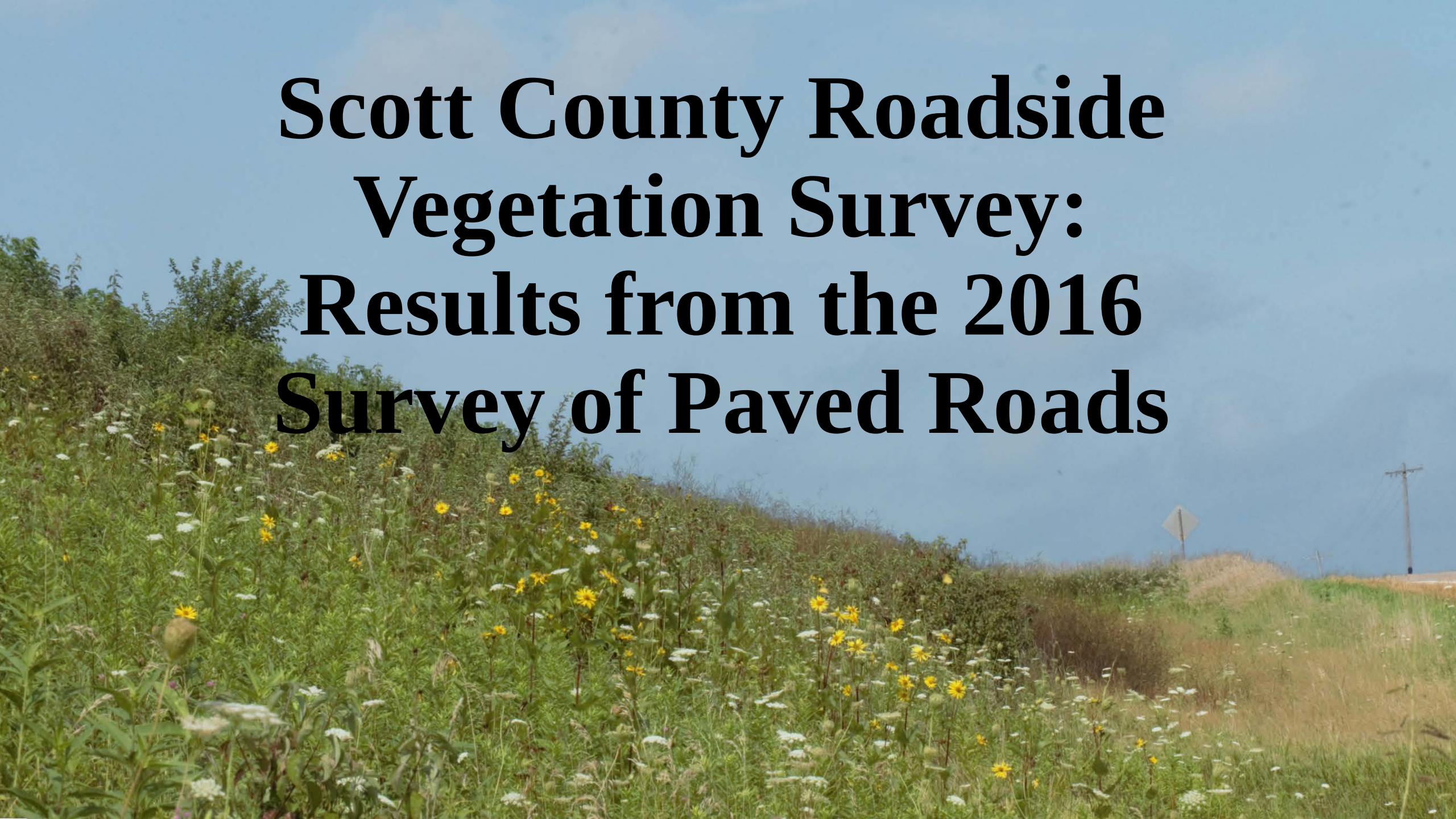


Scott County Roadside Vegetation Survey: Results from the 2016 Survey of Paved Roads

Field Crew

- Lee Searles, Plant Ecologist & Field Supervisor
- Bob Bryant, Plant Ecologist & Area Plant Expert
- Elana Gingerich, Field Assistant
- Curtis Lundy, Observer

Surveying from the Windshield

- Plant identification from 15-30 ft. distance
  - Overall plant structure
  - Leaf shape
  - Blossom color and shape
  - Seedhead structure

Left: Plume Grass (*Miscanthus sacchariflorum*) in a dense, single-species patch.
Right: Thin, arching leaves of Tall Dropseed (*Sporobolus asper*) mixed with straight seedheads of Prairie Dropseed (*S. heterolepis*).

- Technology:
  - **Trimble R1 receiver** for satellite positioning signals, accurate to about 30 inches
  - **iPad with ESRI Collector** software and Scott County GIS road segment mapping
- Botanical
  - Statewide list of vascular plant species, in spreadsheet format (adapted from Neal Smith NWR, “Coefficients of Conservation for Iowa Plants”)
  - Ludwig Guldner, 1960, *The Vascular Plants of Scott and Muscatine Counties*.
  - Standard Iowa botanical codes to speed species data collection
  - Codes for exotic & native plant communities for rapid evaluation

- Road maintenance
  - Data fields for Erosion, Bare Soil, and Encroachments
    - Erosion mostly confined to gravel shoulders after heavy rains
    - Some bare soil from recent retrenching, driveway construction, or housing development
    - A few erosion points that threaten the paved surface
    - Few encroachments from landowners & residents noted on paved roads
    - Major encroachments: woody growth, large populations of very invasive plant species
  - Data summary of major segments with longterm needs
    - Pavement & shoulder repair
    - Invasive plant populations requiring constant or frequent attention

Plant Species

- Overall total: 270 species
- Exotic total: 79 species (29%)
- Native total: 190 species (71%)
  - Comparison with Guldner 1960, *The Vascular Plants of Scott and Muscatine Counties*:
    - Most exotic and native species already documented in Scott
    - A few more recent exotics and even some native Iowa species not in Guldner
- 2017 survey of gravel roads: greater plant diversity likely
- Selected species (next slides)
  - **Coefficient of Conservatism**: 0 (generalist, very common) to 10 (rare, very sensitive to disturbance and loss of surrounding ecosystem

Buttonbush, *Cephalanthus occidentalis*

with Silver-Spotted Skipper, *Epargyreus clarus*

CofC: 6

Sunflowers: 5 species (3 shown)

Sawtooth Sunflower (CofC: 4)
Helianthus grosseserratus

Giant Sunflower
Helianthus giganteus

Maximilian's Sunflower
(CofC: 4)
Helianthus maximilianii

Halberd-Leaved Rose Mallow,
Hibiscus laeve
CofC: 6

Pale Purple v. Purple Coneflower (CofC: 7 & 9)

Pale Purple Coneflower
Echinacea pallida
Native to Scott County

Purple Coneflower
Echinacea purpureum
Not native to Scott County


Partridge-Pea
Chamaecrista fasciculata
(CofC: 1)

Scribner’s Panic Grass (CofC: 5)

Dichanthelium oligosanthes scribnerianum


Switchgrass (CofC: 5)
Panicum virgatum

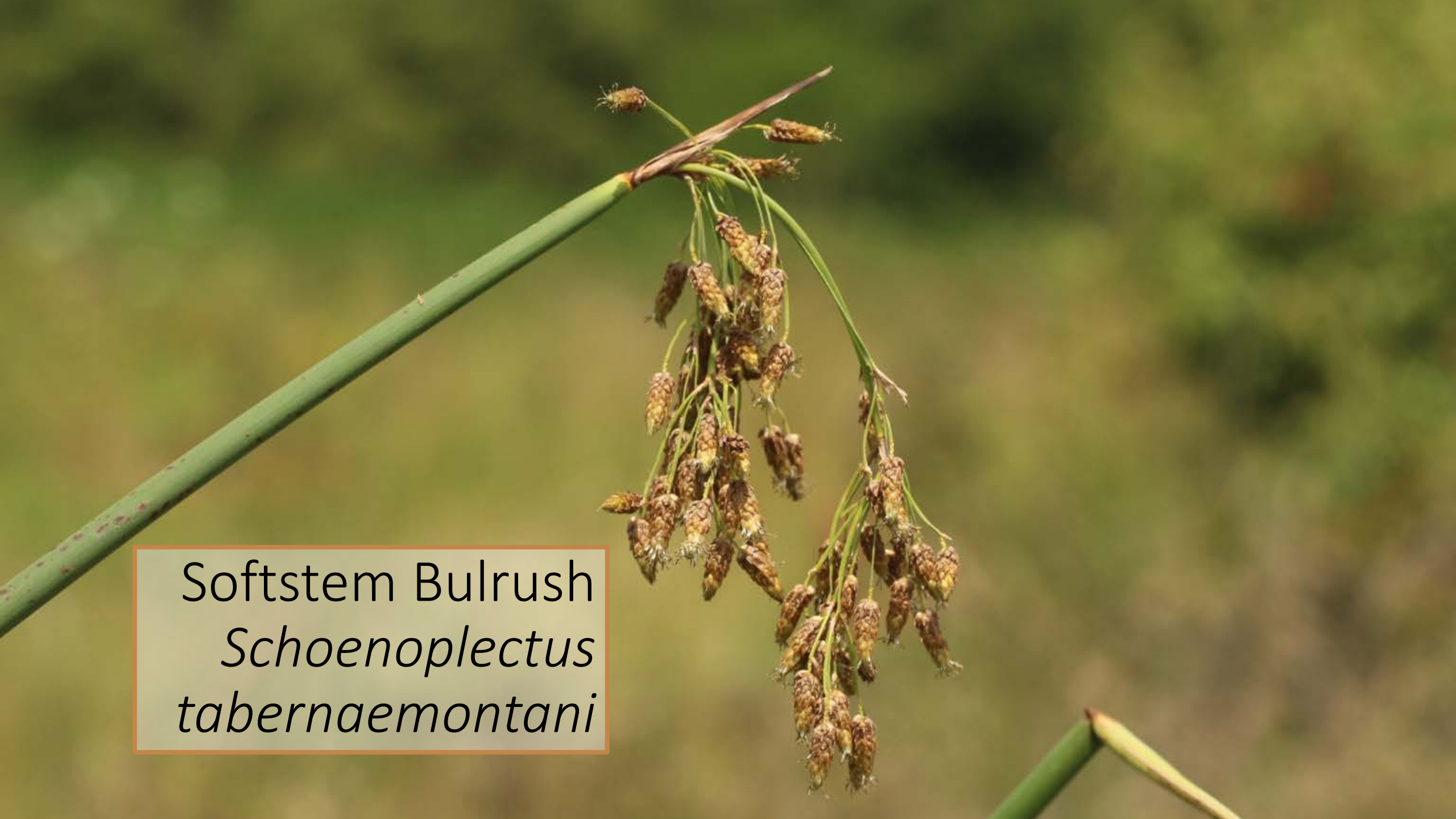
Sawtooth Sage (CofC: 10)

Artemisia serrata

Wirestem Muhly Grass (CofC: 3)
Muhlenbergia frondosa

Big Bluestem (CofC: 4)

Andropogon gerardi


Softstem Bulrush
Schoenoplectus tabernaemontani

Milkweeds: 4 species

But not a single Butterfly Milkweed!!!

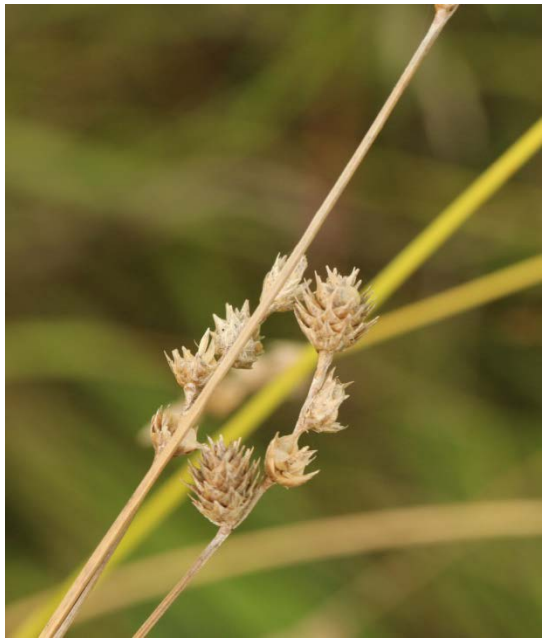
Left: Blunt-Leaved or Sand Milkweed, *Asclepias amplexicaulis* (CofC: 4). Center: Whorled Milkweed, *Asclepias verticillata* (CofC: 0). Upper right: Swamp Milkweed, *Asclepias incarnata* (CofC: 4). Lower right: Common Milkweed, *Asclepias syriaca* (CofC: 0).

Wild Roses, 3 species (2 shown)
Rosa sp.

Smooth Rose, *Rosa blanda* (CofC: 4)

Carolina Rose, *Rosa Carolina* (CofC: 4)

The *Carex* Sedges: 11 species (4 shown)



Far left: Heavy Sedge, *Carex gravida*, Cof C: 1. *Center left:* Inflated Longbeak Sedge, *Carex vesicaria*, CofC: 7. Center Right: Crested Sedge, *Carex cristatella*, CofC: 5. Far right: Soft Fox Sedge, *Carex conjuncta*, CofC: 7.

Plant Communities

Left: A “bird’s-nest” of Queen-Anne’s-Lace (*Daucus carota*).

Below: A monocultural stand of Giant Reed (*Phragmites australis*).

Below right: Wild Parsnip (*Pastinaca sativa*)

- *Exotics or introduced species*: not surveyed by ecology, e.g., dry or wet
  - **Grass-dominant**: Smooth Brome, Reed Canary-Grass, Kentucky Bluegrass, Plume Grass, Giant Reed, Redtop, lesser species
  - **Forb-dominant**: rare, usually Queen-Anne’s-Lace, Wild Parsnip
  - **Mixed**: tendency toward grass-dominant, but Canada Thistle, Queen-Anne’s-Lace, Wild Parsnip

- *Native prairie*: varying from dominant tall- and medium grass species to mixed grasses and forbs, 200 to 350 species in Iowa
  - **Xeric** (dry): Maximilian's Sunflower, Little Bluestem, Heath Aster, Sideoats Grama,
  - **Mesic**: Scribner's Panic Grass, Big Bluestem, Jerusalem Artichoke, Round-Headed Bush Clover, Purple Prairie Clover, Common Milkweed, Plains Oval Sedge, Prairie Sage, Black-Eyed Susan
  - **Wet**: Sawtooth Sunflower, Indian Hemp, Swamp Milkweed, Calico Aster, Heavy and Crested Sedges, Culver's Root, Pale Dock

Left: Prairie Sage, *Artemisia ludoviciana*.

Right: Round-Headed Bush Clover, *Lespedeza capitata.*

Far right: Indian Hemp, *Apocynum sibiricum.*

- *<u>Savannah</u>*: similar to prairie, but with scattered fire-tolerant oaks of varying size and some woods edge species: *xeric, mesic, wet*
  - Solomon's Seal, Allegheny Blackberry, Wild Plum, Downy Hawthorn, Wafer-Ash (or Hoptree), Wild Bergamot, Blue Vervain, Milkweeds
  - Outside roadways: Bur Oak, White Oak

Left: Solomon's Seal (*Polygonatum biflorum*). *Center:* Allegheny Blackberry (*Rubus allegheniensis*). *Right:* Downy Hawthorn (*Crataegus mollis*)




Above left, moving clockwise: Dark-Green Bulrush (*Scirpus atrovirens*), Great Blue Lobelia (*Lobelia siphilitica*), Fringed Loosestrife (*Lysimachia ciliate*), Canada Anemone (*Anemone canadensis*)

- *Wetlands*: from very moist to saturated soil to shallow and deep standing water
  - **Wet Fringe**: wet to saturated soil for at least two weeks/year
    - Common Cattail (native), Narrow-Leaved Cattail (exotic), Dark-Green Bulrush, Woolgrass, Fringed Loosestrife, Common Scouring Rush, Canada Anemone, Boneset, lesser species
  - **Shallow Wetland**: wet ditches by rock outcrops, ephemeral & temporary streams, oxbows
    - Softstem Bulrush, Inflated Shortbeak Sedge, Great Blue Lobelia, Buttonbush, Seedbox, River Bulrush, Broad-Leaved Arrowhead, Joepyeweed, Sensitive-Fern
  - **Deep Wetland**: none in roadways, but adjacent open-water marshes, river backwaters (Scott Co Park, Wapsi floodplain, lower tributaries)

- *Woods*
  - **Upland**: well-drained, dry soils
    - Bur and White Oaks, Shagbark Hickory, Black Oak, other large & small trees, shrubs
    - White Snakeroot, Black Snakeroot
  - **Mesic to Wet:**
    - Jack-in-the-Pulpit, Calico Aster, Smooth Solomon's-Seal, Woodland Fescue, Gray Sedge
  - **Wet Bluffs**: north-facing, seep-fed
    - Northern Red Oak, Ninebark
    - American Bellflower, Tall Blue Lettuce, ferns
  - **Riparian:** moist loamy or sandy soils, varying water table
    - Silver Maple, Boxelder, Hackberry, Sycamore
    - Various sedges, Indian Tobacco, Cutleaf Coneflower

Roadside Manager

- Necessary areas of expertise:
  - Plant ecology
    - Identification
    - Ecosystems & communities
    - Effects of land uses & changes
  - GIS basics
    - Understanding GIS mapping & data use
  - Prescribed fire
    - Training in S-130/190 courses & beyond
  - Chemical herbicide/pesticide training/certification
- Ideal areas of expertise
  - Certified burn crew leader (qualifies for fire insurance)
  - Experience in uses of chemicals in ecological restoration work
  - ArcGIS or similar computer data applications; CAD

- Activities:
  - Work with SC department staff in coordination & planning, budget & reporting
  - Coordinate & assist/lead roadside native plantings
  - Enhance roadside spraying to implement & maintain native plantings
  - Keep accurate records of all interventions (plantings, spraying) & make reports to agencies, sponsors, county
  - Work with adjacent landowners for better control of invasive species
  - Coordinate controlled burns as/with fire chief, crew, neighbors to maintain remnants & plantings
    - Sufficient equipment, safety precautions, day-of coordination, go/no-go decisions, mop-up, follow-up
  - Plan & carry out public engagement through presentations, informative literature, online & print media

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