

Appendices

Best Management Practices

URBAN AREA PRACTICES

Bioretention (Rain Gardens)

Bioretention areas (often called rain gardens) are shallow surface depressions planted with specially selected native vegetation to capture and treat stormwater runoff from rooftops, streets, and parking lots. Variations for this practice include subsurface storage, use of underdrain, and use of impervious liner.

Capture Reuse

Structures designed to intercept and store runoff from rooftops allow for its reuse, reducing volume and overall water quality impairment. Storm water is contained in the structures and typically reused for irrigation or other water needs. Variations for this practice include rain barrels and cisterns.

Constructed Filter

Constructed filters are structures or excavated areas containing a layer of sand, compost, organic material, peat, or other media that reduce pollutant levels in stormwater runoff by filtering sediments, metals, hydrocarbons, and other pollutants. Constructed filters are suitable for sites without sufficient surface area available for bioretention. Variations for this practice include vegetated, infiltration, contained, linear perimeter, and subsurface.

Detention Basin

Detention basins are temporary stormwater storage structures that help prevent downstream flooding. The primary purpose of detention basins is the attenuation of stormwater runoff peaks. Variations can include dry ponds, wet ponds, constructed wetlands, and bioretention.

Infiltration Practices

Infiltration practices are natural or constructed land areas located in permeable soils that capture, store, and infiltrate the volume of stormwater runoff into surrounding soil. Variations include dry wells, infiltration basins, infiltration berms, infiltration trenches, subsurface infiltration beds, and bioretention.

LID Site Design

The LID site design process builds on the traditional approach to site design. It begins with analysis of the site, and incorporates steps to involve local decision makers early in the process. An essential objective of the site design process is to minimize storm water runoff by preventing it from occurring. This can be accomplished through the use of nonstructural BMPs in the site design (LID Manual for Michigan- Chapter 6). Once prevention is maximized, some amount of mitigation is needed to address storm water peak rate, volume, and water quality from increased impervious surfaces. These storm water management objectives can be met with the following structural BMPs (also see LID Manual for Michigan- Chapter 7).

Pervious Pavement w/ Infiltration

Pervious pavement is an infiltration technique that combines stormwater infiltration, storage, and structural pavement consisting of a permeable surface underlain by a storage reservoir. Pervious pavement is well suited for parking lots, walking paths, sidewalks, playgrounds, plazas, tennis courts, and other similar uses. Variations include porous asphalt, pervious concrete, permeable paver blocks, reinforced turf/gravel.

Planter Boxes

Planter boxes receive runoff from multiple impervious surfaces, which is used for irrigation of the vegetation in the planter box preventing storm water from directly draining into nearby storm sewers. They also play an important role in urban areas by minimizing storm water runoff, reducing water pollution, and creating a greener and healthier appearance of the built environment by providing space for plants and trees near buildings and along streets. Variations of planter boxes which can be used on sidewalks, plazas, rooftops, and other impervious areas include contained, infiltration, and flow-through.

Sanitary Sewer Hookup

Municipalities which operate a sanitary sewer system can require properties that use septic systems for wastewater treatment to connect to sanitary if the affected property line is within 300 feet of the sanitary line under Indiana Code 36-9-23-30.

Septic System Operation & Maintenance Program Ordinance

The purpose of a septic system operation and maintenance program is to establish requirement for the inspection, maintenance and repair of septic systems. Maintenance of septic systems is crucial for their operation, particularly the removal of accumulated sludge.

Stream Daylighting

Stream daylighting restores stream channels that have been piped/buried to an open channel. This type of restoration practice can restore a variety of ecosystem functions which benefit fish and wildlife and people. Examples include reduction in pathogen concentrations, increased habitat, nutrient uptake and sediment deposition, floodwater storage, recreation, scenic beauty.

Vegetated Filter Strip

A vegetated filter strip is a permanent, maintained strip of vegetation designed to slow runoff velocities and filter out sediment and other pollutants from urban stormwater. Filter strips require the presence of sheet flow across the strip, which can be achieved through the use of level spreaders. Frequently, filter strips are designed where runoff is directed from a parking lot into a stone trench, a grass strip, and a longer naturally vegetative strip. Variations include turf grasses, prairies grasses, shrubs and trees.

Vegetated Roof (Green Roof)

Green roofs are rooftops that include a thin covering of vegetation allowing the roof to function more like a natural vegetated surface. The overall thickness of the vegetated roof may range from 2 to 6 inches, typically containing multiple layers consisting of waterproofing, synthetic insulation, non-soil engineered growth media, fabrics, synthetic components, and foliage.

Vegetated Swale

A vegetated swale (or bioswale) is a shallow stormwater channel that is densely planted with a variety of grasses, shrubs, and/or trees designed to slow, filter, and infiltrate stormwater runoff. Check dams can be used to improve performance and maximize infiltration, especially in steeper areas. Variations for this practice include vegetated swale with infiltration trench, linear wetland swale and grass swale.

Water Quality Devices

Various proprietary, commercially available BMPs have been designed to remove nonpoint source pollutants from the conveyance system for stormwater runoff. These structural BMPs vary in size and function, but all utilize some form of filtration, settling, or hydrodynamic separation to remove particulate pollutants from overland or piped

flow. The devices are generally configured to remove pollutants including coarse sediment, oil and grease, litter, and debris. Some filtration devices employ additional absorbent/adsorbent material for removal of toxic pollutants. Pollutants attached to sediment such as phosphorus, nitrates, and metals may be removed from stormwater by effective filtration or settling of suspended solids.

AGRICULTURAL AREA PRACTICES

Access Control

Access control is used for the temporary or permanent exclusion of animals, people, vehicles and/or equipment from an area. The purpose of the measure is to achieve and maintain desired resource conditions by managing the intensity of use as specified in the conservation plan.

Alternative Watering Systems

Alternative watering systems provide an alternate location for livestock to seek water rather than using a surface water source. This removes the negative impacts of livestock access to streams including direct deposit of manure and bank erosion and destabilization, while improving the health of livestock by providing a clean water source and better footing while drinking. Alternative watering systems may include pump systems or gravity systems connected to a well, or running pipe from a pond or spring.

Conservation Cover

Conservation cover establishes and maintains permanent vegetative cover to reduce erosion and water quality degradation, improve soil health, and enhance wildlife and pollinator habitat.

Cover Crops

Cover crops include legumes and non-legumes which are planted prior to or following crop harvest. Cover crops typically grow for one season to one year and are typically grown in non-cropping seasons. Cover crops are used to improve soil quality and future crop harvest by improving soil tilth, reducing wind and water erosion, increasing available nitrogen, reducing phosphorus transport, suppressing weed cover, and encouraging beneficial insect growth.

Critical Area Planting

Critical area planting is the planting of grasses, legumes, or other vegetation to stabilize slopes in small, severely eroding areas. The permanent vegetation stabilizes areas such as gullies, over-grazed hillsides and terraced backslopes. Although the primary goal is erosion control, the vegetation can also provide nesting cover for birds and small animals.

Denitrifying Bioreactor

A denitrifying bioreactor is a structure containing a carbon source, installed to reduce the concentration of nitrate nitrogen in subsurface agricultural drainage flow via enhanced denitrification.

Drainage Water Management

Drainage water management is the process of managing water discharges from surface and/or subsurface agricultural drainage systems to reduce nutrient and pathogen loading; improve plant productivity, health and vigor; reduce oxidation of organic matter in soils; and provide seasonal wildlife habitat.

Fencing

Fencing is used to help accomplish conservation objectives by controlling the movement of animals, people and vehicles. For the purposes of this watershed restoration plan, fencing is identified as strategy to exclude livestock access for pasture management and access control.

Field Border

A field border is a strip of permanent vegetation established at the edge or around the perimeter of a field. The practice can be applied to reduce wind and water erosion, provide wildlife habitat, and connect other buffer practices on cropland and grazing lands.

Filter Strips

A filter strip is a strip or area of vegetation for removing sediment, organic matter, and other pollutants from runoff and wastewater before they reach water bodies or water sources, including wells.

Forage and Biomass Planting

This practice is for establishing herbaceous species suitable for pasture, hay or biomass production to improve or maintain livestock nutrition and/or health; provide or increase forage supply; reduce soil erosion, improve soil and water quality; and produce feedstock for biofuel or energy production

Stabilization Structures

A grade stabilization structure is a structure used to control the grade in natural or constructed channels to reduce erosion and improve water quality.

Grassed Waterway

Grassed waterways are natural or constructed channels established for transport of concentrated flow at safe velocities using adequate channel dimensions and proper vegetation. They are generally broad and shallow by design to move surface water across farmland without causing soil erosion. Grassed waterways are used as outlets to prevent rill and gully formation. The vegetative cover slows the water flow, minimizing channel surface erosion, and uptakes nutrients. The waterways can also function as wildlife corridors.

Manure Management Planning

Manure management planning includes consideration of the volume and type of manure produced annually, crop rotations by field, the volume of manure and nutrients needed for each crop, field slope, soil type, and manure collection, transportation, storage, and distribution methods. Manure management planning uses similar techniques to nutrient management planning with regards to nutrient budgets. Proper management of animal waste can be done by implementing BMPs, through safe storage, by application as a fertilizer, and through composting. Manure management can also be addressed in education and outreach to encourage farmers to participate in this BMP.

Manure Storage Facilities

Waste storage facilities are one component of agricultural waste management systems, designed to temporarily store manure, wastewater, and contaminated runoff. Storage facilities include impoundments created by building an embankment or excavating a pond, or by building a structure such as a tank. Facilities should be constructed, operated and maintained in such a way that they do not pollute water resources. Facilities must be located outside of floodplains and with a minimum 300 foot setback from surface waters and drainage inlets, or a 100 foot setback if the facility is for solids storage only. In addition, facilities should be located so as to minimize the potential impacts from breach of embankment, accidental release and liner failure

Nutrient Management

Nutrient management is the management of the amount, source, placement, form, and timing of the application of plant nutrients and soil amendments to minimize the transport of applied nutrients into surface water or groundwater. Nutrient management seeks to supply adequate nutrients for optimum crop yield and quantity, while also helping to sustain the physical, biological, and chemical properties of the soil. A nutrient budget for nitrogen, phosphorus, and potassium is developed considering all potential sources of nutrients including, but not limited to, animal manure, commercial fertilizer, crop residue, and legume credits.

Prescribed Grazing

This practice may be applied on all lands where grazing and/or browsing animals are managed. Removal of herbage by the grazing animals is in accordance with production limitations, plant sensitivities and management goals. Frequency of defoliations and season of grazing is based on the rate of growth and physiological condition of the plants. Duration and intensity of grazing is based on desired plant health and expected productivity of the forage species to meet management objectives. The practice minimizes concentrated livestock areas to enhance nutrient distribution and improve or maintain ground cover and riparian/floodplain plant community structure and functions.

Residue and Tillage Management, No Till

Conservation tillage refers to several different tillage methods or systems that leave at least 30% of the soil covered with crop residue after planting. This practice includes planting methods commonly referred to as no-till, quality no till, never-till, zero till, slot plant, zone till, strip till, or direct seed. The purpose of conservation tillage is to reduce sheet and rill erosion, maintain or improve soil organic matter content, conserve soil moisture, reduce plant damage, and provide habitat and cover for wildlife. The remaining crop residue helps reduce soil erosion and run-off volume.

Residue and Tillage Management, Reduced Till

This practice includes tillage methods commonly referred to as mulch tillage where a majority of the soil surface is disturbed by tillage operations such as vertical tillage, chiseling and disking and also includes tillage/planting systems with relatively minimal soil disturbance but which do not meet the criteria for Indiana (IN) Field Office Technical Guide (FOTG) Standard Residue and Tillage Management, No-Till. It applies to stubble mulching on summer-fallowed land, to tillage for annually planted crops and to tillage for planting perennial crops. Also included is the use of a “modified no-till” system (Indiana definition) that uses full width tillage but leaves as much as 85% of the initial residue on the soil surface.

Saturated Buffer

A saturated buffer is a riparian buffer in which the water table is artificially raised by diverting subsurface drainage along the buffer accomplished by installing a water control structure in the main drainage outlet. The purpose of the practice is to hydrologically reconnect a subsurface drainage outlet with an edge-of-field buffer. This practice takes advantage of both the denitrification and plant nutrient uptake opportunities that are known to exist in buffers with perennial vegetation as a way to remove nutrients from the drainage water.

WATERSHED-WIDE PRACTICES

Floodplain Reconnection

Floodplain reconnection restores the interactions between the stream and its floodplain, resulting in a regaining of hydrologic and ecological function. This may be accomplished by lowering of the floodplain terrace through benching, excavation to create lower floodplains, or raising the stream through bankfull channel restoration.

Native Revegetation

Native revegetation includes the restoration of forest and/or prairie. Revegetation should primarily use native vegetation due to the numerous benefits, including lower long-term maintenance needs, storm water runoff volume reduction, improved water quality, and habitat. Variations include prairie, no-mow lawn areas, woodland (trees), constructed wetlands, buffer areas, and turfgrass replacement.

Riparian Buffer Restoration

Restores herbaceous and tree/shrub cover between waterbodies and upland human land uses. Riparian buffers create shade to lower or maintain water temperatures; improve habitat for terrestrial and aquatic organisms; reduce excess sediment and nutrients in surface runoff; and reduce runoff volume and velocity.

Streambank Stabilization & Shoreline Protection

Used to stabilize and protect streambanks, constructed channels, and shorelines for the purposes of preventing the loss or damage of land, land uses, or facilities; maintaining flow capacity; reducing offsite or downstream effects of sediment from bank erosion; and improving or enhancing the stream corridor for fish and wildlife habitat, aesthetics, recreation.

Two-Stage Ditch

The open channel practice applies to constructing or improving a channel, either natural or artificial, in which water flows with a free surface to provide discharge capacity required for flood prevention, drainage, other authorized water management purposes, or any combination of these purposes.

Wetland Restoration

This practice returns a wetland and its functions to a close approximation of its original condition as it existed prior to disturbance on a former or degraded wetland site.

Literature Cited

Balmford (2002). Economic Reasons for Conserving Wild Nature. *Science*. Vol. 297, Issue 5583, pp. 950-953.

Harman, W., R. Starr, M. Carter, K. Tweedy, M. Clemmons, K. Suggs, C. Miller. 2012. *A Function-Based Framework for Stream Assessment and Restoration Projects*. US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Washington, DC EPA 843-K-12-006.

Schueler, T. (2000). *Microbes and Urban Watersheds: Ways to Kill 'Em: The Practice of Watershed Protection*. Center for Watershed Protection, Ellicott City, MD. pp. 392-400

Schueler, T., Hirschman, D., Novotney, M., Zielinski, J. (2007). *Manual 3: Urban Stormwater Retrofit Practices Manual: Urban Subwatershed Restoration Manual Series*. Center for Watershed Protection, Ellicott City, MD.

SEMCOG. (2008). *Low Impact Development Manual for Michigan: A Design Guide for Implementers and Reviewers*.

Natural Heritage Data

High quality natural communities & endangered, threatened, rare species located within the watershed.

Scientific Name	Common Name	Natural Communities
<i>Achalarus lyciades</i>	The Hoary Edge Skipper	Savanna or Prairie
<i>Aethes patricia</i>	--	Prairie
<i>Agalinis auriculata</i>	Earleaf Foxglove	Prairie
<i>Agalinis skinneriana</i>	Pale False Foxglove	Prairie
<i>Agrotis stigmata</i>	--	Savanna or Prairie
<i>Agrotis vetusta</i>	A Moth	Prairie
<i>Amblyscirtes vialis</i>	Common Roadside-skipper	Prairie
<i>Ambystoma laterale</i>	Blue-spotted Salamander	Savanna or Woodlands
<i>Ammodramus henslowii</i>	Henslow's Sparrow	Prairie
<i>Anas clypeata</i>	Northern Shoveler	Marsh
<i>Ancylis semiovana</i>	--	Prairie or Savanna
<i>Anepia capsularis</i>	The Starry Campion Capsule Moth	Savanna
<i>Apamea burgessi</i>	A Noctuid Moth	Prairie
<i>Apamea indocilis</i>	The spastic apamea	Prairie
<i>Apamea nigror</i>	Black-dashed Apamea	Prairie
<i>Aralia hispida</i>	Bristly Sarsaparilla	Savanna
<i>Arctostaphylos uva-ursi</i>	Bearberry	Dune or Sand Prairie
<i>Arethusa bulbosa</i>	Swamp-pink	Bog or Swamp
<i>Aristida intermedia</i>	Slim-spike Three-awn Grass	Savanna or Dry Sand Prairie
<i>Aristida tuberculosa</i>	Seabeach Needlegrass	Sand Prairie or Dunes
<i>Armoracia aquatica</i>	Lake Cress	Pond or Marsh
<i>Aster borealis</i>	Rushlike Aster	Sedge Meadow or Wet Prairie
<i>Aster furcatus</i>	Forked Aster	Perched Fen
<i>Aster sericeus</i>	Western Silvery Aster	Sand Savanna
<i>Atrytonopsis hianna</i>	Dusted Skipper	Prairie
<i>Betula papyrifera</i>	Paper Birch	Forest
<i>Boloria selene myrina</i>	Silver-bordered Fritillary	Prairie or Sedge Meadow
<i>Botaurus lentiginosus</i>	American Bittern	Marsh or Sedge Meadow
<i>Botrychium matricariifolium</i>	Chamomile Grape-fern	Forest
<i>Botrychium simplex</i>	Least Grape-fern	Prairie
<i>Bruchomorpha dorsata</i>	--	Prairie
<i>Bruchomorpha extensa</i>	The Long-nosed Elephant Hopper	Prairie
<i>Bruchomorpha oculata</i>	--	Prairie
<i>Callophrys irus</i>	Frosted Elfin	Savanna or Sand Prairie
<i>Capis curvata</i>	A Noctuid Moth	Prairie or Sedge Meadow
<i>Carex aurea</i>	Golden-fruited Sedge	Prairie or Sedge Meadow
<i>Carex conoidea</i>	Prairie Gray Sedge	Prairie
<i>Carex crawei</i>	Crawe Sedge	Prairie or Sedge Meadow
<i>Carex echinata</i>	Little Prickly Sedge	Prairie

Carex richardsonii	Richardson Sedge	Sand Prairie
Carex straminea	Straw Sedge	Prairie or Savana
Catocala gracilis	Graceful Underwing	Prairie
Catocala praeclara	Praeclara Underwing	Prairie
Chlidonias niger	Black Tern	Marsh
Chloealtis conspersa	Sprinkled Locust	Savanna
Chlorotettix fallax	A Leafhopper	Prairie
Chrysanympha formosa	The Huckleberry Looper Moth	Savanna
Cicadula straminea	--	Prairie
Cirsium hillii	Hill's Thistle	Prairie
Cirsium pitcheri	Dune Thistle	Dune
Cistothorus palustris	Marsh Wren	Marsh or Sedge Meadow
Cistothorus platensis	Sedge Wren	Marsh or Sedge Meadow
Clemmys guttata	Spotted Turtle	Fen or Sedge Meadow
Clintonia borealis	Clinton Lily	Fen or Seep
Coenochroa bipunctella	Sand Dune Panic Grass Moth	Sand Prairie
Coenochroa illibella	Dune Panic Grass Moth	Sand Prairie
Conocephalus saltans	Prairie Meadow Katydid	Prairie
Cornus amomum ssp. amomum	Silky Dogwood	Savanna
Cornus rugosa	Roundleaf Dogwood	Dunes, Woodlands, or Forest
Corydalis sempervirens	Pale Corydalis	Prairie or Savanna
Cosmotettix bilineatus	Two-lined cosmotettix	Prairie
Crambus bidens	--	Marsh or Sedge Meadow
Crambus girardellus	Orange-striped Sedge Moth	Marsh or Sedge Meadow
Crambus murellus	Prairie Sedge Moth	Prairie
Croesia curvalana	--	Savanna or Prairie
Croesia semipurpurana	--	Savanna
Cyclophora penduliniaria	Sweetfern Geometer	Savanna
Cycnia inopinatus	The Unexpected Milkweed Moth	Savanna or Sand Prairie
Cyperus houghtonii	Houghton's Nutsedge	Dune or Sand Prairie
Cypripedium calceolus var. parviflorum	Small Yellow Lady's-slipper	Savanna
Dichanthelium sabulorum var. thinium	Hemlock Panic-grass	Prairie
Dichomeris aleatrix	Aleatrix dichomeris	Prairie
Diervilla lonicera	Northern Bush-honeysuckle	Savanna
Drosera intermedia	Spoon-leaved Sundew	Bog or Sedge Meadow
Eleocharis melanocarpa	Black-fruited Spike-rush	Sedge Meadow or Wet Prairie
Eleocharis microcarpa	Small-fruited Spike-rush	Marsh or Sedge Meadow
Eleocharis wolfii	Wolf Spikerush	Wet Prairie
Emydoidea blandingii	Blanding's Turtle	Marsh or Sedge Meadow
Epigaea repens	Trailing Arbutus	Dune or Woodland
Epipaschia zelleri	--	Savanna
Eriophorum angustifolium	Narrow-leaved Cotton-grass	Sedge Meadow or Wet Prairie
Erynnis martialis	Mottled Duskywing	Savanna
Erynnis persius persius	Persius Dusky Wing	Savanna

Eubaphe meridiana	A Moth	Savanna
Euchloe olympia	Olympia Marble	Dune or Sand Prairie
Eucoptocnemis fimbriaris	A Noctuid Moth	Sand Prairie or Dunes
Eucosma bilineana	--	Prairie
Eucosma bipunctella	A Moth	Prairie
Eucosma fulminana	--	Prairie
Eucosma giganteana	--	Prairie
Euphydryas phaeton	Baltimore	Fen or Sedge Meadow
Euphyes bimacula	Two-spotted Skipper	Prairie
Euphyes dion	Sedge Skipper	Wet Prairie or Sedge Meadow
Euxoa albipennis	White-striped Dart	Savanna
Euxoa aurulenta	Dune Cutworm	Dune
Fagitana littera	The Marsh Fern Moth	Marsh or Wet Prairie
Faronta rubripennis	The Pine Streak	Sand Prairie or Dunes
Fimbristylis puberula	Carolina Fimbry	Wet Prairie
Flexamia pyrops	The Long-nose Three-awn Leafhopper	Interdunal Wetlands
Flexamia reflexus	Indiangrass Flexamia	Prairie
Forest - floodplain wet	Wet Floodplain Forest	Forest
Forest - floodplain wet-mesic	Wet-mesic Floodplain Forest	Floodplain Forest
Forest - upland dry	Dry Upland Forest	Forest
Forest - upland dry-mesic	Dry-mesic Upland Forest	Forest
Forest - upland mesic	Mesic Upland Forest	Forest
Formica glacialis	--	Wet Prairie or Sedge Meadow
Fuirena pumila	Dwarf Umbrella-sedge	Marsh or Sedge Meadow
Gabara pulverosalis	--	Prairie
Gabara subnivosella	A Noctuid Moth	Prairie
Gentiana puberulenta	Downy Gentian	Prairie
Geranium bicknellii	Bicknell Northern Crane's-bill	Prairie or Savanna
Graminella mohri	--	Prairie or Savanna
Grammia anna	Anna's tiger moth	Prairie or Savanna
Grammia figurata	The Figured Grammia	Prairie or Savanna
Grammia phyllira	The Sand Barrens Grammia	Prairie
Grammia virguncula	--	Prairie
Hemaris gracilis	The Blueberry Clearwing Sphinx	Savanna
Hemicarpha drummondii	Drummond Hemicarpha	Sedge Meadow or Wet Prairie
Hesperia leonardus	Leonard's Skipper	Prairie
Hesperotettix viridis pratensis	A Grasshopper	Prairie or Savanna
Holomelina opella	The Smokey Holomelina	Prairie or Savanna
Hudsonia tomentosa	Sand-heather	Dune or Sand Prairie
Hydrastis canadensis	Golden Seal	Forest
Hypericum kalmianum	Kalm St. John's-wort	Marsh or Wet Prairie
Ixobrychus exilis	Least Bittern	Marsh or Wet Prairie
Juncus articulatus	Jointed Rush	Sedge Meadow or Wet Prairie

Juncus balticus var. littoralis	Baltic Rush	Sedge Meadow or Interdunal Wetlands
Juncus scirpoides	Scirpus-like Rush	Sedge Meadow or Wet Prairie
Lanius ludovicianus	Loggerhead Shrike	Prairie
Lasiurus borealis	Eastern Red Bat	Savanna or Forest
Lasiurus cinereus	Hoary Bat	Savanna or Forest
Lasius minutus	--	Wet Prairie or Sedge Meadow
Laterallus jamaicensis	Black Rail	Marsh or Sedge Meadow
Lathyrus venosus	Smooth Veiny Pea	Savanna
Lesmone detrahens	A Moth	Savanna or Prairie
Leucania inermis	A Moth	Prairie
Leucania linita	Salt Marsh Wainscot	Marsh
Liatris pycnostachya	Cattail Gay-feather	Prairie or Sedge Meadow
Limotettix divaricatus	--	Prairie
Liochlorophis vernalis	Smooth Green Snake	Prairie
Loxagrotis acclivis	A Noctuid Moth	Prairie
Ludwigia sphaerocarpa	Globe-fruited False-loosestrife	Marsh or Pond
Lycaeides melissa samuelis	Karner Blue	Savanna
Lycaena helloides	Purplish Copper	Marsh or Sedge Meadow
Lycopodiella inundata	Northern Bog Clubmoss	Bog or Sedge Meadow
Macrochilo absorptalis	A Moth	Prairie
Macrochilo hypocriticalis	A Noctuid Moth	Prairie
Macrochilo louisiana	--	Prairie
Melanomma auricinctaria	Huckleberry Eye-spot Moth	Savanna
Melanoplus viridipes viridipes	Green-legged Spur-throated Grasshopper	Prairie
Meropleon diversicolor	A Noctuid Moth	Prairie
Mesamia nigradorsum	A Leafhopper	Prairie
Metanema determinata	Dark Metanema	Savanna or Prairie
Metanema inatomaria	Pale Metanema	Savanna or Prairie
Myosotis laxa	Smaller Forget-me-not	Fen or Sedge Meadow
Myrmica lobifrons	--	Wet Prairie or Sedge Meadow
Neoconocephalus exiliscanorus	A Katydid	Prairie
Neoconocephalus nebrascensis	A Katydid	Prairie
Nola cilicoides	--	Prairie or Savanna
Nola pustulata	Sharp-blotched Nola	Prairie or Savanna
Nycticorax nycticorax	Black-crowned Night-heron	Marsh or Pond
Odontosia elegans	Elegant Prominent	Sedge Meadow or Fen
Oenothera perennis	Small Sundrops	Prairie
Ophisaurus attenuatus attenuatus	Western Slender Glass Lizard	Sand Prairie
Orphulella pelidna	Green Desert Grasshopper	Sand Prairie or Dunes
Paectes abrostolella	The Barrens Paectes Moth	Prairie or Savanna
Panax quinquefolius	American Ginseng	Forest
Panicum boreale	Northern Witchgrass	Prairie, Marsh or Fen

Panicum leibergii	Leiberg's Witchgrass	Prairie
Papaipema cerina	Golden Borer Moth	Prairie
Papaipema leucostigma	Columbine Borer	Savanna
Papaipema lysimachiae	The St. John'Swort Borer Moth	Sedge Meadow or Wet Prairie
Papaipema maritima	The Giant Sunflower Borer Moth	Prairie
Papaipema rigida	A Borer Moth	Prairie
Papaipema sciata	The Culver's Root Borer	Prairie
Papaipema silphii	Silphium Borer Moth	Prairie
Papaipema speciosissima	The Royal Fern Borer Moth	Wet Prairie or Interdunal Wetlands
Paraphlepsius lobatus	--	Prairie
Parasa indetermina	A Moth	Prairie or Fen
Peoria gemmatella	Gemmed Cordgrass Borer	Prairie
Peoria tetradella	--	Prairie or Savanna
Perideridia americana	Eastern Eulophus	Prairie or Savanna
Phaneta ochroterminana	--	Prairie or Savanna
Phaneta olivaceana	--	Prairie
Phaneta ornatula	--	Prairie
Phaneta raracana	--	Prairie
Phaneta striatana	--	Prairie
Phaneta umbrastriana	--	Prairie
Philaenarcys killa	Great Lakes dune spittlebug	Dune
Pinus banksiana	Jack Pine	Dune or Savanna
Plantago cordata	Heart-leaved Plantain	Seeps or Springs
Platanthera ciliaris	Yellow-fringe Orchis	Bog or Savanna
Platanthera flava var. herbiola	Pale Green Orchis	Prairie
Platanthera psycodes	Small Purple-fringe Orchis	Wet Prairie or Floodplain Forest
Platyperigea meralis	The Rare Sand Quaker	Savanna
Platyperigea multifera	Dune rustic	Dune
Poanes viator viator	Big Broad-winged Skipper	Marsh and Sedge Meadow
Polyamia caperata	Little Bluestem Polyamia	Prairie
Polyamia herbida	The Prairie Panic Grass Leafhopper	Prairie
Polyamia obtectus	Sand Panic Grass Leafhopper	Prairie
Polygonella articulata	Eastern Jointweed	Dune and Sand Prairie
Polygonum careyi	Carey's Smartweed	Prairie or Savanna
Polygonum hydropiperoides var. opelousanum	Northeastern Smartweed	Wet Prairie or Sedge Meadow
Prairiana kansana	The Kansas Prairie Leafhopper	Prairie
Prairie - dry-mesic	Dry-mesic Prairie	Prairie
Prairie - mesic	Mesic Prairie	Prairie
Prairie - sand dry	Dry Sand Prairie	Prairie
Prairie - sand dry-mesic	Dry-mesic Sand Prairie	Prairie
Prairie - sand mesic	Mesic Sand Prairie	Prairie
Prairie - sand wet	Wet Sand Prairie	Prairie

Prairie - sand wet-mesic	Wet-mesic Sand Prairie	Prairie
<i>Prenanthes aspera</i>	Rough Rattlesnake-root	Prairie and Savanna
<i>Problema byssus</i>	Bunchgrass Skipper	Prairie
<i>Procambarus gracilis</i>	Prairie Crayfish	Marsh and Wet Prairie
<i>Prosapia ignipectus</i>	Red-legged Spittle Bug	Prairie or Savanna
<i>Protorthodes incincta</i>	Saturn quaker	Prairie or Savana
<i>Prunus pensylvanica</i>	Fire Cherry	Dune or Sand Savanna
<i>Pseudopomala brachyptera</i>	Bunch Grass Locust	Savanna
<i>Psilocarya scirpoides</i>	Long-beaked Baldrush	Marsh or Sedge Meadow
<i>Psinidia fenestralis</i>	Sand Locust	Sand Prairie or Sand Savanna
<i>Pygarctia spraguei</i>	Sprague's Pygartic	Sand Prairie or Sand Savanna
<i>Pyrausta laticlavia</i>	The Southern Purple Mint Moth	Sand Prairie or Sand Savanna
<i>Rallus elegans</i>	King Rail	Marsh or Sedge Meadow
<i>Rallus limicola</i>	Virginia Rail	Marsh or Sedge Meadow
<i>Rana pipiens</i>	Northern Leopard Frog	Marsh or Prairie
<i>Rhus aromatica</i> var. <i>arenaria</i>	Beach Sumac	Dune and Sand Prairie
<i>Rhynchospora macrostachya</i>	Tall Beaked-rush	Marsh or Sedge Meadow
<i>Rhynchospora recognita</i>	Globe Beaked-rush	Sedge Meadow or Wet Prairie
<i>Rubus setosus</i>	Small Bristleberry	Prairie
Savanna - mesic	Mesic Savanna	Savanna
Savanna - sand dry	Dry Sand Savanna	Savanna
Savanna - sand dry-mesic	Dry-mesic Sand Savanna	Savanna
<i>Schinia indiana</i>	Phlox Moth	Prairie or Savanna
<i>Schinia septentrionalis</i>	A Noctuid Moth	Savanna or Sand Prairie
<i>Schoenoplectus hallii</i>	Hall's Bulrush	Sedge Meadow or Marsh
<i>Scirpophaga perstrialis</i>	--	Savanna
<i>Scleria reticularis</i>	Reticulated Nutrush	Sedge Meadow or Wet Prairie
<i>Selaginella rupestris</i>	Ledge Spike-moss	Dune or Savanna
<i>Semiothisa eremiata</i>	The Goat's Rue Looper	Prairie or Savanna
<i>Semiothisa mellistrigata</i>	A Geometrid Moth	Prairie
<i>Semiothisa multilineata</i>	--	Prairie
<i>Sitochroa dasconalis</i>	Pearly Indigo Borer	Prairie
<i>Solidago ptarmicoides</i>	Prairie Goldenrod	Prairie
<i>Spartiniphaga inops</i>	Spartina Borer Moth	Marsh or Wet Prairie
<i>Spermophilus franklinii</i>	Franklin's Ground Squirrel	Prairie or Savanna
<i>Speyeria aphrodite</i>	Aphrodite Fritillary	Prairie or Savanna
<i>Sphinx luscitiosa</i>	The Luscious Willow Sphinx	Prairie
<i>Spiranthes lucida</i>	Shining Ladies'-tresses	Fen or Sedge Meadow
<i>Spiranthes magnicamporum</i>	Great Plains Ladies'-tresses	Prairie
<i>Strophostyles leiosperma</i>	Slick-seed Wild-bean	Prairie or Savanna
<i>Sturnella neglecta</i>	Western Meadowlark	Prairie
<i>Talinum rugospermum</i>	Prairie Fame-flower	Sand Savanna
<i>Tampa dimediatella</i>	Red-striped Panic Grass Moth	Prairie
<i>Thamnophis proximus proximus</i>	Western Ribbon Snake	Sand Prairie

<i>Thorybes pylades</i>	Northern Cloudywing	Prairie or Savanna
<i>Tricholita notata</i>	Marked Noctuid	Prairie
<i>Trichosilia manifesta</i>	The Record Keeper Moth	Prairie
<i>Trichostema dichotomum</i>	Forked Bluecurl	Savanna or Dry Sand Prairie
<i>Trimerotropis maritima</i>	The Dune Locust	Dunes
<i>Utricularia purpurea</i>	Purple Bladderwort	Pond or Marsh
<i>Utricularia subulata</i>	Zigzag Bladderwort	Sedge Meadow or Wet Prairie
<i>Utricularia subulata</i>	Zigzag Bladderwort	Sedge Meadow or Wet Prairie
<i>Venustaconcha ellipsiformis</i>	Ellipse	River or Stream
<i>Viburnum opulus var. americanum</i>	Highbush-cranberry	Fen or Seep
Wetland - fen	Fen	Fen
Wetland - marsh	Marsh	Marsh
Wetland - marsh	Marsh	Marsh
Wetland - meadow sedge	Sedge Meadow	Sedge Meadow
Wetland - swamp shrub	Shrub Swamp	Shrub Swamp
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	Marsh
<i>Zomaria interruptolinea</i>	--	Savanna