A GUIDE TO THE PLANTS AND ANIMALS OF DAY, GRANT, MARSHALL AND ROBERTS COUNTIES, SOUTH DAKOTA

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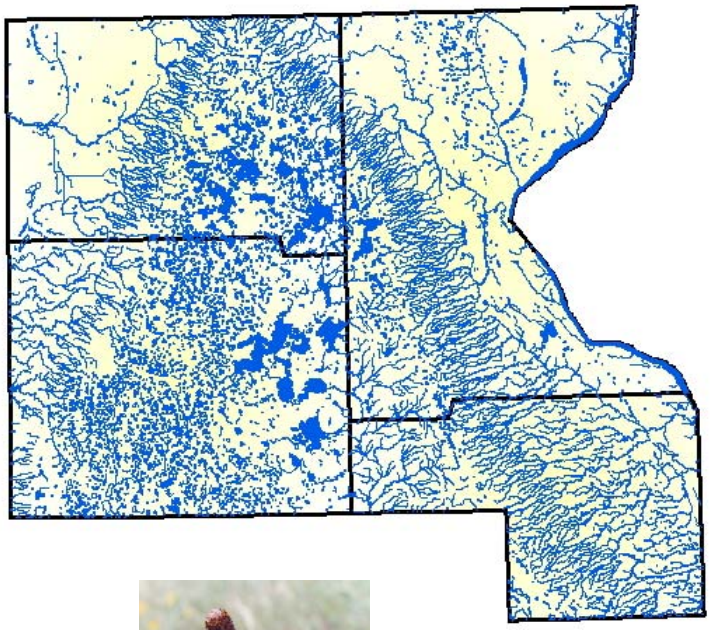


DECEMBER 2009

Preface

This guide is written as an introduction to the rich natural history of the northeast corner of South Dakota. I hope this guide will be useful for both the beginning and advanced naturalist, and professional resource managers including private landowners who care for and conserve the land around us. The guide provides a list of what we currently know resides or migrates through the area for several groups of flora and fauna. Interesting, rare, and unusual species are annotated with additional information given on abundance, distribution, when and where to observe, and interesting details of the plant or animals life history. Information is also provided on extinct and extant species that were once found in the area. Several important wildlife watching locales are highlighted in the last section with information on directions to the site, accessibility, and species to be seen. The most important part of this guide are the suggested references and websites that will allow those who want to learn more than this guide can provide about a particular plant or animal, additional sources of information. In the future additional groups of plants and animals will be covered including non-vascular plants and moths, and information on the areas climate and geology.

I need to acknowledge several persons who contributed to this project. Special thanks to Doug Backlund for allowing the use of his wonderful photographs of birds and insects; Dave Ode for several photographs of wildflowers and plant observations; Laura Hubers, Biologist for the Waubay National Wildlife Refuge and Wetland Management District for photographs and observations; and all those cited in the text.

Special thanks to the South Dakota Department of Game, Fish, and Parks who provide financial support through the Wildlife Diversity Small Grants program for many of the surveys referenced in this publication.

This publication is dedicated to the following professional and amateur naturalists, some of whom have been my personal mentors and several I've never met or were gone before my time, but who's love of nature has left us with a rich historical record of northeast South Dakota's plants and animals; Watson Beed, Herman Chilson, Bruce Harris, David and Nelda Holden, Kenneth Husmann, John Koerner, Arthur Lundquist, Gary Marrone, Doctors Charles McChesney and B. Knickerbocker, and Dan Tallman. I hope someday to have a section in future versions of this guide denoting these people's accomplishments and lives. Last but not least my family who has allowed me to live and learn in this wonderful corner of our State.

Dennis R. Skadsen

Plants (Vascular)

The Great Plains Flora Association's "Atlas of the Flora of the Great Plains" lists over six hundred species and varieties of vascular plants that occur in the counties of Day, Grant, Marshall and Roberts of northeast South Dakota. It would be impractical for a guide like this to list every one of these plants. Listed and shown below are just a few of the hundreds of species growing on the areas tallgrass prairies, woodlands, and aquatic habitats that the casual observer or naturalist can identify in the field with little knowledge of plant taxonomy. The majority of the plant species listed in this publication are depicted in several field guides written for this area. Those interested in pursuing a greater knowledge of plant identification and taxonomy will need to study Harris (1997) and utilize the plant identification manuals listed on page 20.

The scientific names of plants frequently change and common names vary from region to region. The nomenclature used here is from the most recent field guides and manuals available for South Dakota as follows; Moyle (2001), Johnson and Larson (1999), Larson (1993), and Great Plains Flora Association (1991).

This list is compiled from observations and collections of the author and Dave Ode - SD Dept. Game, Fish, and Parks Botanist, and species listed as occurring in the area by Larson (1993), Van Bruggen (1976), and the Great Plains Flora Association (1977).

Plants Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

❖ Tallgrass Prairie Wildflowers and Grasses

Native tallgrass prairie near Blue Dog Lake (photo by Dennis Skadsen)

Some of the largest contiguous tracts of native tallgrass prairie remaining in the state are found in northeast South Dakota. What you'll find is largely dependant on how these prairies are managed.

On overgrazed native pastures, you may only find plant species tolerant of grazing. Many forbs, like the purple coneflower, decrease with grazing pressure due to the fact cattle apparently like the taste or possibly need the nutrients, vitamins, and other compounds these plants may provide. Some species, like the goldenrods, actually increase with grazing pressure as other species disappear. These plants are not as palatable to livestock and thrive as competition with other species decrease. Many landowners, especially in the Crandall-Crocker Hills of western Day County, have implemented grazing rotations that strive to protect the diversity of plants and animals on native tallgrass prairies.

By rotating the time of year these pastures are grazed and allowing rest periods with no grazing, many of the plant species that typically disappear with grazing pressure are preserved.

Prairies managed by fall haying have some of the most diverse plant communities. Some of the best hay prairies are located on tribal trust lands managed by the Sisseton Wahpeton Oyate. The diversity of these prairies is important to tribal members who utilize native forbs and grasses for ceremonial and medicinal purposes.

Many native tallgrass prairies owned by state and federal agencies are being managed to improve the diversity and abundance of native flora and fauna. Prairie remnants at Hartford Beach State Park and Pickerel Lake State Recreation Area are good examples that are readily accessible to the public. Prescribed fire, fall haying, and shrub control have been implemented at these sites in efforts to preserve floristic diversity and abundance. Remember it is illegal to disturb or remove plants and animals from state and federal property.

Native Grasses

Andropogon gerardii **Big bluestem**
Bouteloua curtipendula **Sideoats grama**
Bouteloua gracilis **Blue grama**
Bouteloua hirsute **Hairy grama**
Buchloe dactyloides **Buffalograss**
Calamovilfa longifolia **Prairie sandreed**
Elymus canadensis **Canada wildrye**
Elymus trachycaulus **Slender wheatgrass**
Koeleria macrantha **Junegrass**
Panicum virgatum **Switchgrass**
Pascopyrum smithii **Western wheatgrass**
Phalaris arundinacea **Reed canarygrass**
Schizachyrium scoparium **Little bluestem**
Sorghastrum nutans **Indiangrass**
Spartina pectinata **Prairie cordgrass**
Sporobolus heterolepis **Prairie dropseed**
Stipa comata **Needleandthread**
Stipa spartea **Porcupine grass**
Stipa viridula **Green needlegrass**

Wildflowers

Blanket flowers (photo by Dennis Skadsen)

Obviously the best and most enjoyable times to observe wildflowers are during the season in which they are in bloom. In northeast South Dakota the majority of our native prairie forbs blossom from mid-June through early September. These are the warm season species that take advantage of cool wet springs to develop and mature during the usually warm dry days of summer. The majority of these warm season species are in bloom by early July. These include some of the showiest and easiest species to identify; yarrow, leadplant, yellow evening primrose, prairie clovers, coneflowers, and the wild lily. As these species fade by late July, whole new sets of plants begin to color the prairie. By late August the milkweeds, goldenrods, asters, gentians, and gayfeathers are in bloom. During May and early June the cool season forbs and grasses appear. One of the first wildflowers to bloom in the spring is the pasqueflower, followed in late May and early June by blue-eyed grasses, prairie smoke, prairie violets, and puccoons. Listed and shown below are some of the more common wildflowers found on northeast South Dakota's tallgrass prairies.

Achillea millefolium **Common yarrow**
Allium cernum **Nodding onion**
Allium stellatum **Prairie onion, Pink wild onion**
Allium textile **Textile onion**
Amorpha canescens **Leadplant**
Anemone canadensis **Canada anemone, Meadow anemone**
Anemone cylindrica **Thimbleflower**

Pasqueflower (photo by Dennis Skadsen)

Anemone patens **Pasqueflower**

Our state flower is one of the earliest blooming wildflowers. Flowers can appear as early as late March (often covered by snow) through mid-May. This species can tolerate and even proliferate in overgrazed prairies.

Apocynum sibiricum **Prairie dogbane**
Artemisia frigida **Fringed sagewort**

Regal fritillaries nectaring on common milkweed (photo by Dennis Skadsen)

Asclepias ovalifolia **Prairie milkweed**
Asclepias speciosa **Showy milkweed**
Asclepias syriaca **Common milkweed**
Asclepias verticillata **Whorled milkweed**
Asclepias viridiflora **Green milkweed**

Milkweeds are named after the white sap found in their leaves and stems. The sap contains glycosides, a chemical substance poisonous to animals. Several insects that feed on milkweed plants, the most familiar being the Monarch butterfly, have developed immunity to glycosides and have incorporated this chemical into their bodies. This makes insects like the Monarch unpalatable or poisonous to predators.

One species of milkweed, the Woolly milkweed (*Asclepias lanuginosa*), shown below, has not been collected in northeast South Dakota since the early 1970s. Historical records exist of plants collected near Bitter and Blue Dog Lakes in Day County, and near Sica Hollow in

Marshall County. The wooly milkweed may now be extirpated from northeast SD.

Wooly milkweed (photo by Dave Ode)

New England aster (photo by Dennis Skadsen)

Aster ericoides **Heath aster**
Aster novae-angliae **New England aster**
Aster oblongifolius **Aromatic, Prairie aster**
Aster sagittifolius **Arrow-leaved aster**
Aster sericeus **Silky aster**
Astragalus absurgens **Standing milkvetch**
Astragalus agrestis **Field milkvetch**
Astragalus crassicarpus **Prairie plum, Groundplum milkvetch**
Calylophus serrulatus **Toothed-leaved evening primrose, Yellow evening primrose**
Castilleja sessiliflora **Downy paintbrush**
Cerastium arvense **Prairie chickweed**
Chrysopsis villosa **Hairy goldaster**
Comandra umbellata **Bastard toadflax**

Purple pincushion (photo by Dennis Skadsen)

Coryphantha vivapara **Purple pincushion**

The only cactus found in northeast South Dakota occurs on dry native prairie hilltops with sandy soils. Because of the plants low profile and surrounding taller vegetation, it is hard to observe and is often overlooked except when in bloom. Plants flower from late May through mid-June. This cactus apparently does not tolerate over-grazing and is considered an indicator of good prairie health and diversity.

Another species, the brittle prickly pear cactus, grows on the granite outcrops found along the Minnesota River located in the Big Stone

National Wildlife Refuge just a few miles downstream of Big Stone Lake in Grant County.

Small white lady's slipper (Photo by Dennis Skadsen)

Cypripedium candidum **Small white lady's slipper**

This small rare orchid grows in low wet native prairies, often near the edges of wetlands and fens. Much of the native prairie habitat this species favors has been converted to cropland. Prairies where this orchid occurs should be protected. One of the largest populations of small white lady's slippers occurs on a native hayfield in Roberts County that, because of its occurrence, has been protected from conversion to cropland by the landowner. Lady's slippers bloom from late May through mid-June. Populations of this orchid should be reported to the S.D. Dept. of Game, Fish, and Park's Natural Heritage Program staff.

Dalea candida **White prairie clover**
Dalia purpurea **Purple prairie clover**
Delphinium virescens **Prairie larkspur**

Purple Coneflower (photo by Dennis Skadsen)

Echinacea angustifolia **Purple coneflower**

This wildflower, which blooms in early July, is well known by ethno-botanists for its medicinal qualities. Kindscher (1992) reported the purple coneflower was the most widely used medicinal plant of the Plains Indians. Many people purchase echinacea extracts as a preventative for colds, although science has not conclusively shown any benefits from the plant for this ailment. Scientists however, are investigating the plant for compounds useful in developing antibiotics, anti-cancer drugs, and insecticides.

Unfortunately, the purple coneflower is one species that does not tolerate grazing pressure. This plant decreases or disappears altogether from grazed pastures, quite possibly because livestock like its taste or benefit from some of the same medicinal properties being studied by scientists.

Erigeron strigosus **Rough fleabane, Daisy fleabane**
Gaillardia aristata **Blanket flower**
Gaura coccinea **Scarlet gaura**

Closed gentian (photo by Dennis Skadsen)

Gentiana andrewsii **Closed gentian**
Gentiana puberulenta **Downy gentian**

Two of our showiest wildflowers: the downy gentian is found on drier upland prairie sites while the closed or bottle gentian is found on wet prairies. The flowers of the closed gentian can only be pollinated by bumblebees that are strong enough to push the petals apart to reach the stamens.

Both gentians are indicators of high quality prairie and may become extirpated due to overgrazing or a lack of disturbance like fire or haying. These two flowers bloom in late summer from August through September.

Downy gentian (photo by Dennis Skadsen)

Geum triflorum **Purple Avens, Prairie smoke**
Glycyrrhiza lepidota **American licorice**
Grindelia squarrosa **Gum plant, Curlycup gumweed**
Helianthus maximilianii **Maximilian sunflower**
Helianthus pauciflorus **Stiff sunflower**
Heliopsis helianthoides **Ox-eye**
Heuchera richardsonii **Alum root**

Prairie smoke (photo by Dennis Skadsen)

Hypoxis hirsuta **Yellow star grass**
Kuhnia eupatorioides **False boneset**

Monarch on rough gayfeather (photo by Dennis Skadsen)

Liatris aspera **Rough gayfeather**
Liatris punctata **Dotted gayfeather**
Liatris pycnostachya **Tall blazing star, Prairie blazing star**

Wild lily (photo by Dennis Skadsen)

Lilium philadelphicum **Wild lily**
Lithospermum canescens **Hoary puccoon**
Lithospermum incisum **Fringed puccoon**
Lobelia spicata **Pale-spike lobelia**
Lygodesmia juncea **Rush skeleton plant**
Monarada fistulosa **Wild bergamot**
Oenothera biennis **Common evening primrose**
Onosmodium molle **False gromwell**
Oxalis violacea **Violet wood sorrel**
Oxytropis lambertii **Locoweed, Lambert crazyweed**
Pedicularis canadensis **Common lousewort, Wood betony**
Penstemon albidus **White beardtongue**
Penstemon gracilis **Slender penstemon**

Large flowered penstemon (photo by Dennis Skadsen)

Penstemon grandiflorus **Large flowered penstemon, Shell-leaf penstemon**
Polygala alba **White milkwort**
Potentilla arguta **Tall cinquefoil**

Pediomelum argophyllum **Silver-leaved psoralea, Silverleaf scurf**pea

Dusted skipper nectaring on prairie turnip (photo by Dennis Skadsen)

Pediomelum esculentum **Prairie turnip, Breadroot scurfpea**

Prairie coneflower (photo by Dennis Skadsen)

Ratibida columnifera **Prairie coneflower**
Rosa arkansana **Prairie rose**
Rudbeckia hirta **Blackeyed susan**
Senecio plattensis **Prairie ragwort**
Sisyrinchium angustifolium **Blue-eyed-grass**
Sisyrinchium campestre **White-eyed grass**
Solidago canadensis **Canada goldenrod**
Solidago gigantea **Late goldenrod**
Solidago missouriensis **Missouri goldenrod**
Solidago mollis **Soft goldenrod**
Solidago nemoralis **Gray goldenrod**
Solidago rigida **Stiff goldenrod**

Ladie's-tresses (photo by Dennis Skadsen)

Spiranthes magnicamporum **Great Plains ladies'-tresses**
Spiranthes cernua **Nodding ladies'-tresses**

Both the Great Plains ladies'-tresses and the rarer nodding ladies'-tresses are found on northeast South Dakota prairies. Brown (2006) notes the only way to accurately discern between the two species is to carefully examine the seeds in a laboratory setting. Ladies'-tresses bloom from late August through September.

Sphaeralcea coccinea **Scarlet globemallow**

Spiderwort (photo by Dennis Skadsen)

Tradescantia bracteata **Bracted spiderwort**
Tradescantia occidentalis **Prairie spiderwort**
Tragopogon dubius **Goatsbeard**
Verbena stricta **Woolly verbena**
Vicia americana **American vetch**

Prairie violet (photo by Dennis Skadsen)

Viola nuttallii **Nuttall's violet**
Viola pedatifida **Prairie violet**

These two prairie violets are important larval food for several species of fritillary butterflies, including the rare Regal fritillary. Female Regal fritillaries are apparently able to detect dormant violet plants in late summer and lay eggs on nearby vegetation. When fritillary larvae hatch in the spring they feed on the emerging violet plants. In many areas of the United States, the loss of native prairie has led to the decline of both violets and fritillaries. The nuttall's and prairie violets bloom from May into June.

Nuttall's violet (photo by Dennis Skadsen

Viola pratincola **Meadow violet**
Zigadenus elegans **White camas, Showy deathcamas**
Zizia aptera **Heart-leaved alexanders, Heartland alexanders**
Zizia aurea **Golden alexanders**

❖ Woodland Plants

Ostrich ferns, Munson Gulch (photo by Dennis Skadsen)

The plants listed and shown below occur in the woodlands and forests of northeast South Dakota. Ecologists have classified the larger forest communities of northeast South Dakota as Northern Bur Oak Mesic and Plains Basswood forests. These two forest communities are found in the coulees located along the eastern slope of the Couteau in Marshall and Roberts Counties including Sica Hollow State Park. Smaller forests with these plant communities are found at Hartford Beach State Park, and the Hatchery Creek Public Access on Pickerel Lake. Another forest community Bur Oak Savannah is found on the Waubay National Wildlife Refuge. The majority of woodland wildflowers bloom from mid-May through early June.

Actaea rubra **Baneberry**
Allium tricoccum **Wild leek**
Aquilegia canadensis **Columbine**
Aralia nudicaulis **Wild sarsaparilla**

Jack-in-the-pulpit (photo by Dennis Skadsen)

Arisaema triphyllum **Jack-in-the-pulpit**

Wild Ginger (photo by Dennis Skadsen)

Asarum canadense **Wild ginger**
Aster ciliolatus **Lindley's, Woodland blue aster**
Botrychium virginianum **Rattlesnake fern**
Cardamine concatenata **Toothwort**
Celastrus scandens **Climbing bittersweet**

Climbing Bittersweet (photo by Dennis Skadsen)

Corydalis aurea **Golden corydalis**

Yellow lady's slipper (photo by Dave Ode)

Cypripedium parviflorum **Yellow lady's slipper**

Our largest orchid occurs in the rich woods of Sica Hollow and a few other undisturbed coulees located in Marshall and Roberts Counties. It may also grow along the edges of wetlands and fens where it was once known to occur on the Waubay National Wildlife Refuge and a few wetland sites in Grant County. The yellow lady's slipper blooms mid-May.

Common bladderfern (photo by Dennis Skadsen)

Cystopteris fragilis **Common bladderfern**
Dicentra cucullaria **Dutchman's breeches**
Eupatorium rugosum **White snakeroot**
Hydrophyllum virginianum **Virginia waterleaf**
Maianthemum canadense **False lily of the valley**

Matteuccia struthiopteris **Ostrich fern**

There are four species of native ferns found in northeast South Dakota woodlands including the rattlesnake fern, common bladderfern, ostrich fern, and the rarer bulbil bladder fern. Another species the marsh fern, is found growing in calcareous bogs and fens

Polygonatum biflorum **Smooth solomon's seal**

Bloodroot (photo by Dennis Skadsen)

Sanguinara canadensis **Bloodroot**
Smilacina stellata **Star-flowered false solomen's seal**
Solidago flexicaulis **Zigzag goldenrod**

Nodding trillium (photo by Dennis Skadsen)

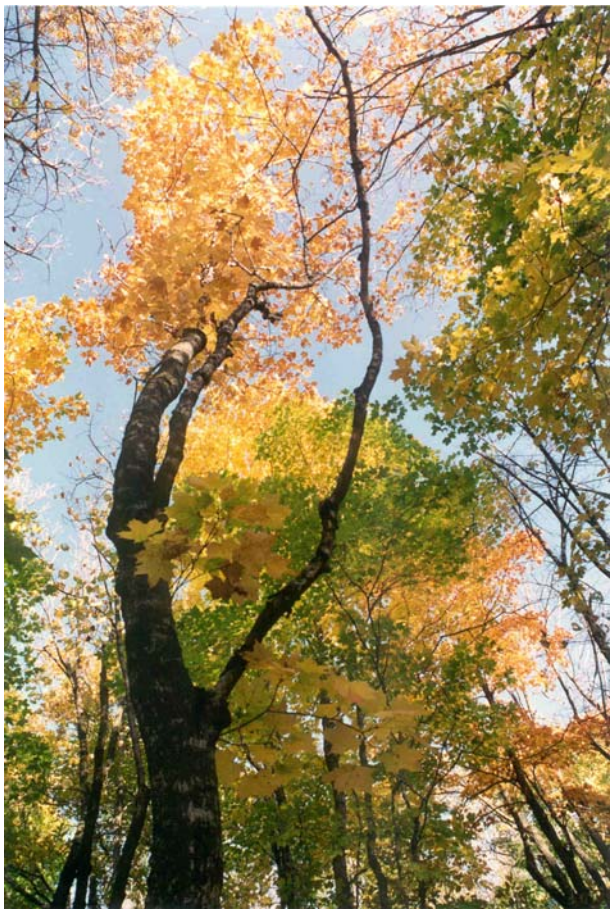
Trillium cernuum **Nodding trillium**

The word trillium, or *tres* in Latin, means three. Trillium plants have three leaves, three petals, and three sepals. The nodding trillium is named due to the blossom that hangs downward below three large leaves. This plant is found in rich woods having acidic soils. It has been observed in several of the wooded coulees including Sica Hollow, Munson's Gulch, and Red Iron Springs. Nodding trillium blooms from May into early June.

Large-flowered bellwort (photo by Dennis Skadsen)

Uvularia grandiflora **Large-flowered bellwort**
Viola canadensis **Canada violet**
Viola pubescens **Yellow violet**

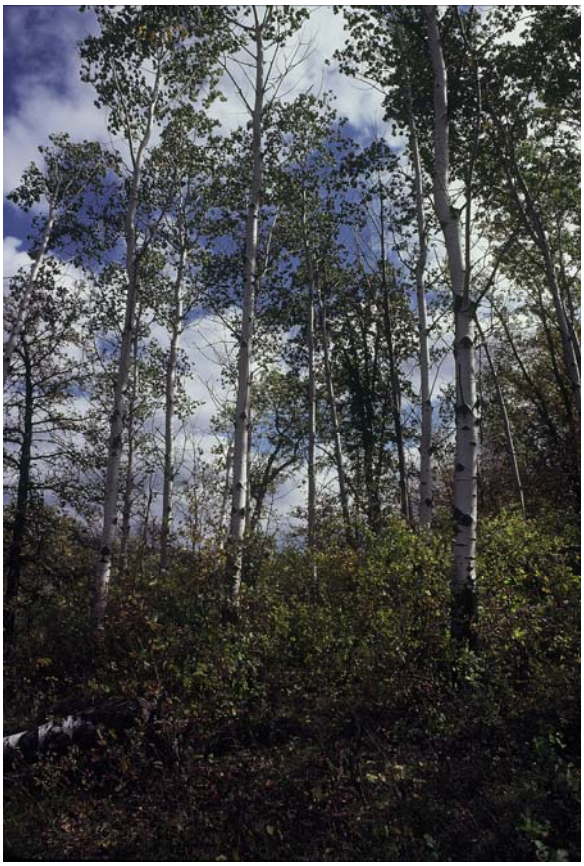
❖ Native Woodland Trees, Shrubs and Vines



Fall Sugar maples, Sica Hollow State Park (photo by Dennis Skadsen)

The trees, shrubs, and vines listed below are all native to northeast South Dakota and can be found growing in wooded coulees and riparian forests along the shores of lakes, streams, and wetlands.

Acer nigundo **Box elder**
Acer saccharum **Sugar maple**
Amelanchier alnifolia **Juneberry**
Amorpha nana **Dwarf indigo**
Betula papyrifera **Paper birch**
Celtis occidentalis **Hackberry**
Corylus americana **American hazelnut**
Corylus cornuta **Beaked hazelnut**
Cornus amomum **Pale dogwood**
Cornus stolonifera **Red osier**
Crataegus succulenta **Hawthorn**
Fraxinus pennsylvanica **Green ash**
Oxtrya virginiana **Ironwood**
Parthenocissus vitacea **Woodbine**
Populus deltoids **Plains cottonwood**



Quaking aspen near Hartford Beach State Park (photo by Dennis Skadsen)

Populus tremuloides **Quaking aspen**
Prunus americana **Wild plum**
Prunus virginiana **Choke cherry**
Quercus macrocarpa **Bur oak**
Rhus glabra **Smooth sumac**
Ribes americanum **Wild black currant**
Ribes cynosbati **Dogberry**
Ribes missouriense **Missouri gooseberry**
Rubus idaeus **Red raspberry**
Salix amygdaloides **Peach-leaved willow**
Salix bebbiana **Long-beaked willow**

Salix discolor **Large pussy willow**
Salix eriocephala **Diamond willow**
Salix exigua **Sandbar willow**
Salix petiolaris **Meadow willow**

Choke cherry fruit (photo by Dennis Skadsen)

Symphoricarpos occidentalis **Western snowberry**
Tilia americana **Basswood**
Toxicodendron rydbergii **Poison ivy**
Ulmus americana **American elm**
Ulmus rubra **Slippery elm**

Nannyberry (photo by Dennis Skadsen)

Viburnum lentago **Nannyberry**
Vitus riparia **River-bank grape**
Zanthoxylum americanum **Prickly ash**

❖ Aquatic Plants

Aquatic plants grow is a wide variety of habitats that include wetlands, lakes, streams and rivers. Listed below are species found in area lakes and streams, important wildlife species, and wetland wildflowers.

Many lake property owners consider emergent and submersed aquatic plants a nuisance when growing along their shorelines, and when lakes are over-enriched by nutrients (hypereutrophic) submersed plants like coontail can become overabundant and impair the recreational use of a waterbody. These plants however, are an important component of a lakes ecosystem providing food and habitat for fish and other aquatic organisms and under most conditions should be allowed to thrive and grow.

Few field guides cover aquatic plants. Larson (1993) is the best publication for identifying aquatic plants in South Dakota.

The following list of aquatic plants were observed in northeast South Dakota lakes during recent surveys of Amsden Dam, Enemy Swim, Pickerel, Roy, and Minnewasta Lakes by the author and Dave German of the Water Resources Institute - South Dakota State University, observations and collections of Dave Ode, SD Dept. of Game, Fish, and Parks.

Emergent Aquatic Plants

Emergent aquatic plants grow in shallow water where the majority of the plants vegetation can grow above the water line. Leaves and stems of these plants are made of spongy tissue with several air chambers making them very buoyant. Several species of birds like grebes and terns utilize this buoyant plant material to build nests that can float on the waters surface. Emergent plants also buffer shorelines from wave action that can cause shoreline erosion. Examples of

emergent aquatic plants found growing along the shorelines of northeast South Dakota lakes are listed below.

Scirpus acutus **Hardstem bulrush**
Scirpus tabernaemontani **Softstem bulrush**
Typha angustifolia **Narrowleaf cattail**
Typha latifolia **Common cattail**
Zizania aquatica **Annual wildrice**

Floating-Leaf and Submerged Aquatic Plants

These plants live in water from a few feet to fifteen feet or deeper in certain lakes. The depth at which they can grow is limited by the amount of sunlight that penetrates to the bottom. Cleaner lakes like Enemy Swim that have excellent water clarity will have more abundant and deeper beds of these plants. Enemy Swim has one of the most diverse populations of submerged aquatic plants in northeast South Dakota due to its excellent water clarity. A recent survey found twenty-six species of submerged aquatic plants growing in the lake. A decline in water quality that would favor the development of algae blooms would decrease water clarity causing many of these plant species to become extirpated from the lakes flora. Floating-leaf and submerged aquatic plants found in northeast South Dakota lakes are listed below

Floatingleaf pondweed, Enemy Swim Lake (photo by Dennis Skadsen)

Ceratophyllum demersum **Hornwort, coontail**
Myriophyllum exalbescens **Water milfoil**
Najas flexilis **Naiad**

Yellow water lily (photo by Dennis Skadsen)

Nuphar luteum **Yellow water lily, spatterdock**

This is the only water lily known from northeast South Dakota and has been observed on Pickerel Lake, Chekapa Creek and Owen's Creek in Day County. The white water lily may have occurred historically in eastern South Dakota but are now probably extirpated.

Potamogeton friesii P**ondweed**
Potamogeton gramineus **Variable pondweed**
Potamogeton illinoensis **Illinois pondweed**
Potamogeton natans **Floatingleaf pondweed**
Potamogeton pectinatus **Sago pondweed**
Potamogeton praelongus **Whitestem pondweed**
Potamogeton richardsonii **Claspingleaf pondweed**
Potamogeton zosteriformas **Flatstem pondweed**
Ruppia maritima **Ditch grass, widgeon-grass**
Utricularia vulgaris **Common bladderwort**
Zosterella dubia **Water stargrass**

Wetland Wildflowers and Plants

Some of the most beautiful and unusual looking wildflowers and plants grow along the shores of or in streams, wetlands, bogs and fens. Unfortunately, due to wetland drainage and habitat destruction many of the plants listed below are becoming increasingly rare.

Acorus calamus **Sweet flag**

Swamp milkweed (photo by Dennis Skadsen)

Asclepias incarnata **Swamp milkweed**

The swamp milkweed and joe-pye-weed (page 17) grow along the edges of permanent wetlands and streams. Both species bloom July through August.

Marsh marigold (photo by Dennis Skadsen)

Caltha palustris **Marsh marigold**

The marsh marigold is found growing along spring fed creeks in Sica Hollow and Hartford Beach State Park and elsewhere. One of the earliest wildflowers to bloom in northeast South Dakota, late April through early May.

Fringed gentian (photo by Dave Ode)

Gentianopsis crinita **Fringed gentian**

This flower, the twayblade, bogbean, and grass-of-parnassus listed and shown below, grow along calcareous fens, springs, and bogs. These habitats are extremely rare, and due to nutrient enrichment from nearby croplands are being invaded by phragmites and narrow-leaf cattails that eventually crowd out these native wildflowers. Changes in groundwater flow due to well drilling and spring development, and grazing of these sites by livestock; all cause irreversible damage to these sensitive ecosystems. The fringed gentian blooms in late summer.

Narrowleaf cottonsedge (photo by Dennis Skadsen)

Eriophorum polystachion **Narrowleaf cottonsedge**

The narrowleaf cottongrass is a species of sedge that grows along the edges of fens, bogs, and springs. Due to the large seed head that resembles a ball of cotton, it is easily observed when in bloom June through July.

Eupatorium maculatum **Joe-Pye weed**

Impatiens capensis **Spotted touch-me-not**
Impatiens pallida **Pale touch-me-not**

The touch-me-nots grow along the edges of woodland streams and springs. Ruby-throated hummingbirds are often observed sipping nectar from these flowers at Sica Hollow and Hartford Beach State Parks, July through September.

Joe-pye weed (photo by Dennis Skadsen)

Liparis loeselii **Loesel's twayblade**
Lobelia kalmii **Kalm's lobelia**

Great blue lobelia (photo by Dennis Skadsen)

Lobelia siphilitica **Great blue lobelia**

Buckbean (photo by Dennis Skadsen)

Menyanthes trifoliata **Buckbean**

Thick-leaved grass of parnassus (photo by Dave Ode)

Parnassia glauca **Thick-leaved grass of parnassus**

Northern green bog orchis (photo by Dennis Skadsen)

Platanthera aquilonis **Northern green bog orchis**

The Northern green bog orchis and Loesel's twayblade are two very inconspicuous native orchids, which could be easily overlooked in the field. In fact, the Loesel's twayblade was only recently discovered to be growing in northeast South Dakota in 1990s. The twayblade grows in calcareous fens, the bog orchis has been observed in the same habitats as the twayblade, but may also grow along the wet margins of streams and wetlands.

Sagittaria cuneata **Arrowhead, duck potato**
Sparganium eurycarpum **Giant burreed**

❖ Endangered and Threatened Species

None of the above species are currently listed as state or federally endangered at this time. However, one federally threatened species, the western prairie fringed orchid (shown below), may possibly occur in the area. Any observations of this plant should be reported to the S.D. Dept. of Game, Fish, and Park's Natural Heritage Program or the U.S. Fish and Wildlife Service.

Western prairie fringed orchid (photo by Dennis Skadsen)

The South Dakota Natural Heritage Program managed by the SD Dept. of Game, Fish, and Parks monitors a total of 213 species of rare and uncommon plants. A complete list can be viewed at:

http://www.sdgfp.info/Wildlife/Diversity/RarePlant.htm

❖ Suggested References

Plant Identification Field Guides

Grassland Plants of South Dakota and the Northern Great Plains
By James R. Johnson and Gary E. Larson
1999, South Dakota State University, Brookings.

Northland Wildflowers, The Comprehensive Guide for the Minnesota Region, Rev. Ed.
By John B. and Evelyn W. Moyle
2001, University of Minnesota Press, Minneapolis.

Peterson Field Guides to Trees, 2nd Ed.
By George A. Petrides and Janet Wehr
1998. Houghton Mifflin Co., Boston.

Peterson Field Guide to Wildflowers, Northeastern/Northcentral North America, Rev. Ed.
By Roger Tory Peterson and Margaret McKenny
1998. Houghton Mifflin Co., Boston.

Tallgrass Prairie Wildflowers, A Field Guide to Common Wildflowers and Plants of the Prairie Midwest. 2nd Ed.
By Doug Ladd and Frank Oberle
2005. Falcon Press, Helena.

Wildflowers of the Tallgrass Prairie: The Upper Midwest 2nd Ed. (Bur Oak Guide)
By Sylvan T. Runkel and Dean M. Roosa
2009. University of Iowa Press, Iowa City.

Wild Orchids of the Prairies and Great Plains Region of North America
By Paul Martin Brown
2006. University Press of Florida

Plant Identification Manuals & Taxonomic Keys

Aquatic and Wetland Vascular Plants of the Northern Great Plains
By Gary E. Larson
1993. USDA Forest Service Gen. Tech. Rep. GM-238

Flora of the Great Plains
By The Great Plains Flora Association
1986. University Press of Kansas, Lawrence.

Plant Identification Terminology, an Illustrated Glossary
By James and Melinda Harris
1997. Spring Lake Publishing, Spring Lake.

The Vascular Plants of South Dakota, 3rd ed.
By Theodore Van Bruggen
1996. University of South Dakota, Vermillion

Natural History

Dakota Flora, a seasonal sampler
By David J. Ode
2006. SD State Historical Society Press, Pierre.

The Elemental Prairie: Sixty Tallgrass Plants (Bur Oak Books)
By John Madson
2005. University of Iowa Press, Iowa City.

Ethnobotany

Edible Wild Plants of the Prairie
By Kelly Kindscher
1987. University Press of Kansas, Lawrence.

Medicinal Wild Plants of the Prairie
By Kelly Kindscher
1992. University Press of Kansas, Lawrence.

❖ Literature Cited

Great Plains Flora Association. 1977. Atlas of the Flora of the Great Plains. Iowa State University Press, Ames. 600 pp.

Great Plains Flora Association. 1986. Flora of the Great Plains. University Press of Kansas, Lawrence. 1402 pp.

Larson, Gary E. 1993. Aquatic and Wetland Vascular Plants of the Northern Great Plains. Gen. Tech. Rep. RM-238. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 681 pp.

Ode, David J. 1999. Vascular Plants of Sica Hollow State Park, Roberts and Marshall Counties, South Dakota. Unpublished checklist. S.D. Dept. Game, Fish, and Parks, Pierre. 6 pp.

Van Bruggen, Theodore. 1996. The Vascular Plants of South Dakota, 3rd edition. University of South Dakota, Vermillion. 293 pp.

Dragonflies & Damselflies

Dragonflies and damselflies belong to a group of insects called Odonata. Larvae of these insects called nymphs are aquatic and depending on species can be found in several types of aquatic environments that include streams, wetlands, and lakes. Adults are terrestrial and can be found flying well away from water. Twenty-three species of dragonflies and nineteen species of damselflies have been recorded in the counties of Day, Grant, Marshall, and Roberts.

Despite the varied aquatic habitats found in this area that includes; coldwater spring fed creeks, warmwater streams, lakes, fens and wetlands, surprisingly little fieldwork has been undertaken to determine the species of Odonata occurring in northeast South Dakota. Several stream surveys completed in Grant and Roberts Counties have only identified Odonata to families and genus. Bick et al. (1977) listed several species of dragonflies and damselflies for the state including several species collected in Day Grant, Marshall, and Roberts Counties. In 2002 and 2003, the author and Dave German completed a study of aquatic macro-invertebrates occurring in Enemy Swim and Pickerel Lakes located in Day County including Odonata. Some species may have habitat requirements that restrict their range in northeast South Dakota. For instance, the American rubyspot has only been observed along the lower stretches of the Whetstone River in Grant County. Certainly more fieldwork needs to be completed to determine what species occur and where they can be found in northeast South Dakota.

There are two ways to identify Odonata. Adults can be observed through binoculars; however some species like the darners and many of the damselflies are better identified in-the-hand by capturing with a net. Dragonfly and damselfly larvae or nymphs can be collected in wetlands and other waterbodies by using dip or kick nets, however you'll need a magnify lens or microscope to observe some of the taxonomic details that identify to species. Species may also be identified by their shed exoskeletons. These exoskeletons are left behind when nymphs emerge as adults and can be found on emergent vegetation like the stems of bulrushes and cattails in wetlands, lakes, and along streams.

Shed exoskeleton of a dragonfly nymph on cattail leaf (photo by Dave German)

An interesting way to document dragonfly occurrences without killing specimens is to use a flatbed scanner. Collect the dragonfly and carefully place in a large (1 gallon) Ziploc plastic bag with plenty of air. Place

in a refrigerator until the dragonfly becomes torpid (do not freeze). Quickly spread the dragonfly on the scanner bed. You must use a piece of foam board with a hole in the middle to prevent the scanner lid from crushing or injuring the specimen.

For more information on this process visit the *Digital Dragonfly* website at;

http://www.dragonflies.org/welcome.html

The best time to observe adult dragonflies and damselflies is from mid-July through September. During these months, adults of a majority of the species found in our area have emerged. Some species like the Common green darner are present from late spring through fall. Sica Hollow State Park, Hartford Beach State Park, and One Road Lake are just a few sites with public access that have diverse populations of Odonata.

The following list of dragonflies and damselflies is compiled from the aforementioned sources and additional observations and collections of the author. Common and scientific names used follow Odonata Central (2007).

Dragonflies and Damselflies Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

❖ Dragonflies

Darners

Lance-tipped darner *(Aeshna constricta)*
Variable darner *(Aeshna interrupta)*
Shadow darner *(Aeshna umbrosa)*
Common green darner *(Anax junius)*

Variable darner (photo by Dennis Skadsen)

Emeralds

Common baskettail *(Epitheca cynosura)*
Plains emerald *(Somatochlora ensigera)*

Skimmers

Calico pennant (digital scan by Dennis Skadsen)

Calico pennant *(Celisthemis elisa)*
Halloween pennant *(Celithemis eponina)*

Halloween pennant (digital scan by Dennis Skadsen)

Widow Skimmer (photo by Doug Backlund

Eastern pondhawk (photo by Doug Backlund

Common whitetail (photo by Dennis Skadsen)

Eastern pondhawk *(Erythemis simplicicollis)*
Dot-tailed whiteface *(Leucorrhinia intacta)*
Widow skimmer *(Libellula luctuosa)*
Common whitetail *(Libellula lydia)*
Twelve-spotted skimmer *(Libellula pulchella)*
Four-spotted skimmer *(Libellula quadrimaculata)*

Twelve-spotted skimmer (photo by Doug Backlund

Four-spotted Skimmer (photo by Dennis Skadsen)

Blue dasher dragonfly at Enemy Swim Lake, Day Co. (photo by Dave German)

Blue dasher *(Pachydiplax longipennis)*
Eastern amberwing *(Perithemis tenera)*
Variegated meadowhawk *(Sympetrum corruptum)*
Saffron-winged meadowhawk *(Sympetrum costiferum)*
Cherry-faced meadowhawk *(Sympetrum internum)*
White-faced meadowhawk *(Sympetrum obtrusum)*
Ruby meadowhawk *(Sympetrum rubicundulum)*
Black saddlebags *(Tramea lacerata)*
Red saddlebags *(Tramea onusta)*

Black saddlebags (scan by Dennis Skadsen)

❖ Damselflies

Broadwings

River jewelwing (photo by Dennis Skadsen)

American rubyspot *(Hetaerina americana)*
River jewelwing *(Calopteryx aequabilis)*

Spreadwings

Spotted spreadwing *(Lestes congener)*
Northern spreadwing *(Lestes disjunctus)*
Emerald spreadwing *(Lestes dryas)*

Lyre-tipped spreadwing *(Lestes unguiculatus)*

Bluets

Prairie bluet ***(****Coenagrion angulatum)*
Taiga bluet *(Coenagrion resolutum)*
Rainbow bluet *(Enallagma antennatum)*
Boreal bluet *(Enallagma boreale)*
Tule bluet *(Enallagma carunculatum)*
Familiar bluet *(Enallagma civile)*
Alkali bluet *(Enallagma clausum)*
Northern bluet *(Enallagma annexum)*
Marsh bluet *(Enallagma ebrium)*
Hagen's bluet *(Enallagma hageni)*

Bluet's in-situ at Enemy Swim Lake (photo by Dave German)

Forktails

Plains forktail *(Ischnura damula)*
Eastern forktail *(Ischnura verticilis)*

Sprites

Sedge sprite *(Nehalennia Irene)*

❖ Suggested References

Dragonflies and Damselflies of the West (Princeton Field Guide Series)
Dennis Paulson
2009. Princeton University Press

Dragonflies through Binoculars, a Field Guide to Dragonflies of North America.
Sidney W. Dunkle
2000. Oxford University Press, NY.

To learn more about the life histories etc. of Odonata visit the *Odes for Beginners* website at;
http://www.odesforbeginners.com/

❖ Literature Cited

Bick, George H., Juanda C. Bick, and Lothar E. Hornuff. 1977. An Annotated List of the Odonata of the Dakotas. The Florida Entomologist. 60: 149-165.

Odonata Central. Sponsored by Texas Natural Science Center, The University of Texas at Austin. Available at;
http://www.odonatacentral.org

Butterflies

Butterflies are one of the most easily and well studied groups of insects. Most can be identified on the wing, and a number of field guides (second only to birds) are available to aid the observer in identifying both adult and larvae, learning where to find species, and flight periods of adults.

The life history of butterflies, as with most insects, involves a complex series of changes known as metamorphosis. Adult females lay eggs, most often on or near a specific species of plant or plants which the larvae will feed on. A larva or caterpillar hatches from the egg. The main purpose of the larval stage of a butterfly's life history is to eat and grow.

Monarch caterpillar feeding on common milkweed leaves (photo by Dennis Skadsen)

The caterpillar will eventually cease growing and enter the pupa or chrysalis form, the next to last stage in metamorphosis. Dependant on whether the species is bivoltine, meaning two broods per year, or univoltine, meaning only one brood per year, determines how long before the pupa emerges as an adult butterfly. In our area the majority of species overwinter as pupae emerging as adults during late spring to early summer. A few species like the Mourning cloak overwinter as adults, hibernating in brush piles, under the bark of fallen or dying trees, and other sites that will keep the adult dry and protected from harsh winter conditions. One of the most recognizable butterflies, the Monarch is one of only a few species that actually migrates to a warmer climate to overwinter as an adult.

Due to the fact that some butterfly larvae are restricted to feeding on certain plants, several species of butterflies are categorized as specialists. In northeast South Dakota we have several species know as tallgrass prairie-dependent butterflies. These butterflies are only found on native tallgrass prairies, and many, due to the conversion of native prairie to cropland, are threatened or endanger of becoming extinct.

To date, ninety-three species of butterflies have been observed in Day, Grant, Marshall, and Roberts Counties. Of these, twenty-three are considered rare or accidental with three or less records per species.

Annotation is provided for groups and certain species denoting abundance, habitats where the species will most likely be encountered and specific locations where these butterflies may be found.

The species list is compiled from the following sources; Marrone (2002) and the author's personnel collection. Taxonomic order, common and scientific names follow Marrone (2002).

Butterflies Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Swallowtails

Eastern tiger swallowtail (photo by Dennis Skadsen)

Black Swallowtail *(Papilio polyxenes asterius)*
Eastern Tiger Swallowtail *(Papilio glaucus)*

Only two species of swallowtails are common in this area. The Black swallowtail is found on prairies and grasslands with nearby wetlands. The Eastern tiger swallowtail can be found in wooded areas with deciduous trees. Both are frequently seen in gardens. Two other swallowtail species are considered rare in this area; the Canadian swallowtail has been collected at Sica Hollow State Park, and one specimen of the Old world swallowtail was collected by the author in the Hecla Sandhills. The Giant swallowtail has been observed at Hartford Beach State Park, Sica Hollow State Park, and Pickerel Lake State Recreation Area. They may occasionally occur wherever prickly ash is found.

Whites and Sulphurs

Mustard white – spring form (photo by Dennis Skadsen)

Checkered White *(Pontia protodice)*
Western White *(Pontia occidentalis)*
Mustard White *(Pieris oleracea)*
Cabbage White *(Pieris rapae)*
Clouded Sulphur *(Colias philodice)*
Orange Sulphur *(Colias eurytheme)*

Both the Checkered and Western white can be found on grassy fields, tame pastures, and native prairie sites. The Mustard white is found in deciduous woods especially along streams, and has been observed at the Hatchery Creek Public Access Area and at Hartford Beach State Park. The Cabbage white is an introduced species from Europe that can be observed in a variety of habitats from backyard gardens to prairie. The larva of this species can be a garden pest. Both the Clouded and Orange sulphurs are common in this area and are usually found in grasslands, especially fields with alfalfa and clover.

Harvesters, Coppers, Hairstreaks, and Blues

Gray Copper *(Lycaena dione)*
Bronze Copper *(Lycaena hyllus)*
Purplish Copper *(Lycaena helliodes)*

All three copper species listed above can be found near streams, lakes, and wetlands making area parks and public wildlife areas good sites to find these butterflies'.

Coral Hairstreak (photo by Dennis Skadsen)

Coral Hairstreak *(Satyrium titus)*
Acadian Hairstreak *(Satyrium acadicum)*
Edward's Hairstreak *(Satyrium edwardsii)*
Banded Hairstreak *(Satyrium calanus falacer)*
Striped Hairstreak *(Satyrium liparops aliparops)*
Gray Hairstreak *(Strymon melinus franki)*

The hairstreaks are somewhat harder to find and identify in the field. Most of these species are listed as uncommon or local for this area. Both Sica Hollow and Hartford Beach State Parks are good areas to find these species.

Eastern tailed-blue sipping water at Hartford Beach State Park (photo by Dennis Skadsen)

Eastern Tailed-Blue *(Everes comyntas)*
Summer Azure *(Celastrina neglecta)*
Silvery Blue *(Glaucopsych lygdamus oro)*
Melissa Blue *(Lycaeides melissa)*

The blues, all except the Summer azure which is a woodland species, can be found on tame pastures, alfalfa fields, and native prairies. Most can be identified in the field using a good butterfly guide.

Brushfoots

Variegated Fritillary *(Euptoieta claudia)*
Great Spangled Fritillary *(Speyeria cybele)*
Manitoba Fritillary *(Speyeria Aphrodite manitoba)*
Regal Fritillary *(Speyeria idalia)*
Myrina Fritillary *(Boloria selene myrina)*
Meadow Fritillary *(Boloria Bellona)*

Visit any native prairie in mid-July and you may observe all of the fritillary species listed above. Unfortunately, populations of one species the Regal fritillary, have declined in many parts of the United States due to the loss of native tallgrass prairie. Larvae of the Regal fritillary feed

exclusively on prairie violets including *Viola pedatifida* and *Viola nuttallii.*

Regal fritillary (photo by Doug Backlund)

Gorgone Checkerspot *(Chlosyne gorgone carlota)*
Silvery Checkerspot *(Chlosyne nycteis)*
Pearl Crescent *(Phyciodes tharos)*
Northern Crescent *(Phyciodes cocyta)*
Question Mark *(Polygonia interrogationis)*

The brushfoots, one of the largest families of butterflies found in northeast South Dakota, are a diverse and unique group that includes two species, the Painted lady and Monarch that migrate as adults to southern climes in the winter; the Mourning cloak which overwinters as an adult by hibernating; and the Viceroy (page 5) a species that gains protection from predators by mimicking the unpalatable Monarch. The best areas to observe members of this butterfly family are Sica Hollow and Hartford Beach State Parks.

Eastern coma (photo by Dennis Skadsen)

Eastern Comma *(Polygonia comma)*
Gray Comma *(Polygonia progne)*
Mourning Cloak *(Nymphalis antiopa)*
Red Admiral *(Vanessa atalanta rubria)*
American Lady *(Vanessa virginiensis)*
Painted Lady *(Vanessa cardui)*
Common Buckeye *(Junonia coenia)*

White Admiral (photo by Dennis Skadsen)

White Admiral *(Limenitis a. arthemis)*
Red-spotted Purple *(Limenitis arthemis astyanax)*

Viceroy (photo by Dennis Skadsen)

Viceroy *(Limenitis archippus)*
Hackberry Emperor *(Asterocampa c. celtis)*
Tawny Emperor *(Asterocampa clyton)*
Northern Pearly-Eye *(Enodia anthedon)*
Eyed Brown *(Satyrodes eurydice)*
Little Wood-Satyr *(Megisto cymela)*

Prairie Ringlet (photo by Dennis Skadsen)

Prairie Ringlet *(Coenonympha tullia benjamini)*
Common Wood-Nymph *(Cercyonis pegala nephele)*
Uhler's Arctic *(Oeneis uhleri varuna)*
Monarch *(Danaus plexippus)*

Skippers

Common Checkered Skipper (photo by Dennis Skadsen)

Silver-spotted Skipper *(Epargyreus clarus)*
Common Checkered Skipper *(Pyrgus communis)*
Common Sootywing *(Pholisora catullus)*
Least Skipper *(Ancyloxypha numitor)*

Leonard's skipper nectaring on blazing star (photo by Dennis Skadsen)

Poweshiek Skipperling *(Oarisma Poweshiek)*
Plains Skipper *(Hesperia assiniboia)*
Leonard's Skipper *(Hesperia leonardus pawnee)*

Dakota Skipper *(Hesperia dacotae)*
Sachem *(Atalopedes campestris)*
Peck's Skipper *(Polites peckius)*

Tawny-edged Skipper
(photo by Dennis Skadsen)

Tawny-edged Skipper *(Polites themistocles)*
Long Dash *(Polites mystic dacotah)*
Northern Broken Dash *(Wallengrenia egeremet)*
Arogos Skipper *(Atrytone arogos iowa)*
Delaware Skipper *(Anatrytone logan lagus)*
Hobomok Skipper *(Poanes hobomok)*
Broad-winged Skipper *(Poanes viator)*
Eastern Dun Skipper *(Euphyes vestris metacomet)*
Dusted Skipper *(Atrytonopsis hianna)*

Due to their small size, similar appearance and flight speed, the skippers are a challenge to identify in the field. With practice, and a good knowledge of habitat requirements and flight periods, one can become adept at identifying these interesting little butterflies.

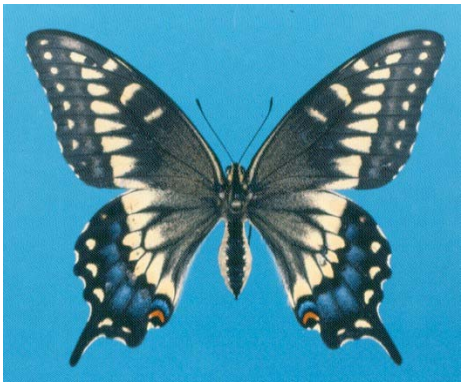
The Skipper Family includes are smallest butterfly, the Least skipper. Less than a half inch in length, this little butterfly can be found along streams and wetland edges.

The Broad-winged skipper and rarer Mulberrry wing are two species found only in wetlands. To observe these two butterflies one must venture into the wet margins of wetlands where emergent vegetation like sedges are growing. These two species may be more common than previously thought due to the fact most lepidopterists concentrate on more terrestrial habitats like woods and grasslands.

Several species of skippers are tallgrass prairie-dependent, and many of these species are in danger of becoming extinct due to the loss of quality native tallgrass prairie habitat. The Dakota skipper is a candidate for listing as federally endangered and could become extinct in the near future; the Poweshiek skipperling and Arogos skipper may become extirpated from northeastern South Dakota due to habitat degradation and destruction.

Poweshiek skipperling (photo by Dennis Skadsen)

❖ Accidental and Rare Species



Old world swallowtail (specimen by Dennis Skadsen)

These species are represented by three or less records for the four counties's covered by this publication.

Old World Swallowtail *(Papilio machaon bairdii)*
Giant Swallowtail *(Papilio cresphontes)*
Canadian Tiger Swallowtail *(Papilio Canadensis)*
Olympia Marble *(Euchloe olympia)*
Dog Face *(Zerene cesonia)*
Little Yellow *(Eurema lisa)*
Dainty Sulphur *(Nathalis iole)*
Harvester *(Feniseca tarquinius)*
Reakirt's Blue *(Hemiargus isola)*
Lupine Blue *(Icaricia lupini)*
American Snout *(Libytheana carinenta bachmanii)*
Texan Crescent *(Phyciodes texana)*
Compton Tortoiseshell *(Nymphalis vaualbum j-album)*
Milbert's Tortoiseshell *(Nymphalis milberti)*
Northern Cloudywing *(Thorybes pylades)*
Juvenal's Duskywing *(Erynnis juvenalis)*
Horace's Duskywing *(Erynnis horatius)*
Uncas Skipper *(Hesperia uncas)*
Ottoe Skipper *(Hesperia ottoe)*
Crossline Skipper *(Polites origenes rhena)*
Mulberry Wing *(Poanes massasoit)*
Common Roadside Skipper *(Amblyscirtes vialis)*
Eufala Skipper *(Lerodea eufala)*

❖ Endangered and Threatened Species

Dakota skipper male on purple coneflower (photo by Dennis Skadsen)

<u>Candidate for Federal Endangered Species:</u>
Dakota Skipper *(Hesperia dacotae)*

The following species are tracked by the South Dakota Natural Heritage Program managed by the SD Dept. of Game, Fish, and Parks;

Poweshiek skipperling
Ottoe skipper
Dakota skipper
Arogos skipper
Mulberry wing
Broad-winged skipper
Regal fritillary.

❖ Butterfly Collecting & Gardening

Orange sulphur specimens collected by Dennis Skadsen

Whether for 4-H, Boy or Girl Scout projects, many young people have had their first experiences with nature by collecting butterflies and other insects. In a few cases the hobby carries over into adulthood and may even lead to the scientific study of these beautiful insects as it has with so many well known naturalists during the 20th century. Winter (2000) notes that recently a "no collecting' philosophy is becoming more prevalent even though there is still relevance in children learning about the natural world through butterfly collections. With this philosophy in mind, the butterfly collector should be discrete and use moderation.

Never collect more specimens than you can properly care for. Specimens should be carefully labeled with museum quality labels and storage boxes or cabinets. The collector should make arrangements to deposit larger collections at some point in the future at a museum or leaning institution like a university.

Collectors should always refrain from collecting rare species unless for legitimate scientific purposes. State and federal permits are almost always required to capture species listed as threatened and endangered on public lands. In South Dakota, it is illegal to capture or remove any plant or animal from State Parks and Recreation Areas, and most National Parks, Monuments, and Federal Wildlife Refuges also prohibit the collection of plants and animals for non-scientific purposes.

An alternate to collecting butterflies is photography. Good equipment and patience is needed however to capture good photos. You will need a good SLR 35mm film or digital camera body with a minimum 100mm macro lens and flash, preferably a ring flash.

Another alternative to collecting butterflies, and an excellent way to observe and photograph butterflies in your own backyard, is to build a butterfly garden. A properly designed butterfly garden will offer plants suitable to the region to be utilized as sources of nectar for adults and food for caterpillars, rock and shrub piles to be used as overwintering habitat for adults and pupae, and water.

Butterfly garden located at the USDA Service Center - Webster, SD. (photo by Dennis Skadsen)

There are several publications and websites devoted to butterfly gardening.

You can download several fact sheets on butterfly gardening and backyard wildlife habitat from the National Wildlife Federation at;

http://www.nwf.org/gardenforwildlife/

❖ Suggested References

Guides for Identifying Adults and Larvae

Field Guide to Butterflies of South Dakota., Gary M. Marrone
2002. S.D. Dept. of Game, Fish, and Parks, Pierre, SD.

Caterpillars of Eastern North America, a Guide to Identification and Natural History. David L. Wagner
2005. Princeton University Press Field Guides, Princeton.

Basic Techniques for Observing and Studying Moths and Butterflies, William D. Winter, Jr.
2000. Memoirs of the Lepidopterists' Society No. 5, Los Angeles, CA.

Butterfly Gardening, Conservation, and Life Histories

The Lives of Butterflies
Matthew M. Douglas
1986. University of Michigan Press, Ann Arbor.

Pollinator Conservation Handbook, Matthew Shepherd et al.
2003. Xerces Society, Portland, OR.

Sharing Your Space, A Homeowner's Guide to Attracting Backyard Wildlife.
Eileen Dowd Stukel et al.
1995. SD Dept. Game, Fish and Parks, Pierre, SD.

Miscellaneous Butterfly Websites

The Butterfly Website
http://butterflywebsite.com/

Butterflies and Moths of North America
http://www.butterfliesandmoths.org/

The Lepidopterists Society
http://www.lepsoc.org/

North American Butterfly Association
http://www.naba.org/

Each of the websites listed above also provide links to dozens of other websites devoted to butterflies and other invertibrates.

❖ Literature Cited

Marrone, Gary M. 2002. Field Guide to the Butterflies of South Dakota. South Dakota Dept. of Game, Fish, and Parks, Pierre. 478 pp.

Winter, William D. Jr. 2000. Basic Techniques for Observing and Studying Moths and Butterflies. Memoirs of the Lepidopterists' Society No. 5, Los Angeles. 444 pp.

Moths

Unlike butterflies, very little fieldwork has been completed to determine species composition and distribution of moths in northeast South Dakota. This is partly due to the fact moths are harder to capture and study because most adults are nocturnal, and identification to species is difficult in the field. Many adults can only be differentiated by studying specimens in the hand with a good understanding of moth taxonomy.

Although behavior and several physiological characteristics separate moths from butterflies including flight periods (moths are mainly nocturnal (night) and butterflies diurnal (day)), the shapes of antennae and wings; each have similar life histories. Both moths and butterflies complete a series of changes from egg to adult called metamorphosis. The only difference being adult moths develop in cocoons and most butterflies in chrysalises. Like butterflies, the host plants that moth larvae feed upon are important. These food sources will determine when and where you will find larvae and adults.

Adult moths are most often found on warm summer nights lying on the ground below bright outside lights. It is believed moths are attracted to these nighttime lights, and upon reaching the source become trapped and disorientated. The moth circles the light trying to escape and may end up falling helplessly to the ground where they are vulnerable to predators. Some scientists believe the proliferation of nighttime lighting, deemed light pollution, may be one reason for declining populations of this and many other nocturnal insects.

A good book for beginners is Himmelman's (2002) book "Discovering Moths'. Winter (2000) describes several methods for capturing and observing moths including the use of light traps and sugar baits. There are a few other essential books listed in the suggested references section located on pages 6 & 7. Many moth identification guides can now be found on the internet, the North Dakota and Iowa sites are the most useful for our area.

Listed below are just a few of the species that probably occur in northeast South Dakota. The list is compiled from the author's personnel collection, and specimens collected by Gary Marrone or listed in Opler (2006). Common and scientific names follow Moths of North Dakota (2007) or Opler (2006).

Moths Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Leaf Rollers and Bell Moths

Linden leafroller moth (specimen by Dennis Skadsen)

Linden leafroller moth *(Pantographa limata)*

Geometrids/Inchworm Moths

Crocus geometer (specimen by Dennis Skadsen)

Scallop moth *(Cepphis armataria)*
Maple spanworm *(Ennomis magnaria)*
The beggar *(Eubaphe mendica)*
Johnson's euchlaena *(Euchlaena johnsonaria)*
Saw-wing *(Euchlaena serrata)*
Mottled euchlaena *(Euchlaena tigrinaria)*
Snowy geometer *(Eugonobapta nivosaria)*
Confused eusarca *(Eusarca confusaria)*
Chickweed geometer *(Haematopsis grataria)*
Pale metanema *(Metanema inatomaria)*
Honest pero *(Pero honestaria)*
Large maple spanworm moth *(Prochoerodes transversata)*
Sharp lined yellow *(Sicya macularia)*
White slant-line *(Tetracis cachexiata)*
Crocus geometer *(Xanthotype sospeta)*

Giant Silk Moths

Cecropia moth (photo by Dennis Skadsen)

The largest moths found in this area, with wingspans up to six inches, are the Cecropia and Polyphemus moths. Both species are found in or near hardwood forests and occasionally urban areas.

Polyphemus moth *(Antheraea polyphemus)*
Cecropia moth *(Hyalophora cecropia)*

Polyphemus moth (photo by Dennis Skadsen

Sphinx Moths

White-lined sphinx moth (photo by Dennis Skadsen)

The sphingidae are one of the better known and identifiable moth families. Several sphinx moths fly during the daytime. The White-lined sphinx (shown above) is sometimes mistaken for a hummingbird when observed feeding on petunias and other flowers. The Bumblebee or Snowberry clearwing (shown on page 4) mimics a bumblebee to gain protection from predators. Several other diurnal moths mimic wasps. The larvae of sphinx moths feed on a variety of trees; therefore adults are most often encountered in woodlands and urban areas with trees. One species, the Willow-herb day-sphinx may be a prairie-specialist dependant on remnant tallgrass prairie plants for survival.

Waved sphinx *(Ceratonia undulosa)*
Hog sphinx, Virginia-creeper sphinx *(Darapsa myron)*
Lettered sphinx *(Deidamia inscriptum)*

Hog sphinx (specimen by Dennis Skadsen)

Achemon sphinx (specimen by Dennis Skadsen)

Achemon sphinx *(Eumorpha achemon)*
Pandora sphinx *(Eumorpha pandoris)*

Pandora sphinx (specimen by Dennis Skadsen)

Clearwing (photo by Doug Backlund)

Bumblebee clearwing caterpillar (photo by Dennis Skadsen)

Bumblebee clearwing/Snowberry clearwing *(Hemaris diffinis)*
Bedstraw sphinx *(Hyles gallii)*
White-lined sphinx *(Hyles lineate)*
Five-spotted hawk moth (*Manduca quinquemaculatus)*
Big poplar sphinx *(Pachysphinx modesta)*
Blinded sphinx *(Paonis excaecatus)*
Small-eyed sphinx *(Paonis myops)*
Willow-herb day-sphinx *(Proserpinus juanita)*
Twin-spotted sphinx *(Smerinthus jamaicensis)*
Great ash sphinx *(Sphinx chersis)*
Laurel sphinx *(Sphinx kalmiae)*
Vashti sphinx *(Sphinx vashti)*

Twin-spotted sphinx caterpillar (photo by Dennis Skadsen)

Prominents

Yellow necked caterpillar moth *(Datana ministra)*
Gray furcula *(Furcula cinera)*
Common gluphisia *(Gluphisia septentrionis)*
Variable oakleaf caterpillar *(Lochmaeus manteo)*
White-dotted prominent *(Nadata gibbosa)*
Elegant prominent *(Odontosia elegans)*
Black-rimmed prominent *(Pheosia rimosa)*
Orange-humped mapleworm *(Symmerista leucitys)*

Owlet Moths

Short-lined chocolate *(Argyrostis anilis)*
Canadian owlet *(Calyptra canadensis)*
Hitched arches *(Melanchra adjuncta)*
Owl moth *(Thysania zenobia)*

Sweetheart underwing (specimen by Dennis Skadsen)

Underwing Moths

Aptly named due to their colorful underwings, this group of moths is easily attracted to sugar baits. A slightly fermented mixture of stale beer and brown sugar painted on a tree will attract feeding adults at night. By approaching the bait slowly with a flashlight you can easily observe and capture these medium sized moths. Most adult underwings emerge in August and are found in woodlands. The Three-staffed and Whitney's underwings are associated with prairie habitats. McDaniel and Fauske (1981) published a taxonomic key to twenty-eight species of Catocala collected in eastern South Dakota that is useful for identifying underwings in this area.

Sweetheart underwing *(Catocala amatrix)*
Three-staffed underwing *(Catocala amestris)*
Darling underwing *(Catocala cara)*
Sleepy underwing *(Catocala concumbens)*
Woody underwing *(Catocala grynea)*
Mother underwing *(Catocala parta)*
Ultronia underwing *(Catocala ultronia)*
Whitney's underwing *(Catocala whitneyi)*

Underwing moth at rest (photo by Dennis Skadsen)

Fruit Piercers

Herald moth (specimen by Dennis Skadsen)

The Herald *(Scoliopteryx labatrix)*

Foresters

Beautiful wood-nymph (specimen by Dennis Skadsen)

Beautiful wood-nymph *(Eudryas grata)*
Pearly wood-nymph *(Eudryas unio)*

Flower Moths

Orange phlox moth *(Heliothis acesias)*
Prairie-sage flower moth *(Schinia cumatilis)*
Hulst flower moth *(Schinia hulstia)*
Leadplant flower moth *(Schinia lucens)*

Lichen Moths

Painted lichen moth *(Hypoprepia fucosa)*
Scarlet winged lichen moth *(Hypoprepia miniata)*

Tiger Moths

Lesser milkweed tiger moth/Unexpected cycnia *(Cycnia inopinatus)*
Dogbane tiger moth/Delicate cycnia *(Cycnia tenera)*
Acrea moth/Saltmarsh caterpillar *(Estigmene acrea)*
Parthenice Tiger Moth *(Grammia parthenice)*
Virgin tiger moth *(Grammia virgo)*

Virgin tiger moth (specimen by Dennis Skadsen)

Banded tussock moth *(Halysidota tessellaris)*
Confusing haploa *(Haploa confusa)*
LeConte's haploa *(Haploa lecontei)*
Ruby tiger moth *(Phragmatobia fuliginosa)*
Lined ruby tiger moth *(Phragmatobia lineata)*
Woolly bear/Isabella tiger moth *(Pyrrharctia Isabella)*
Virginia tiger moth *(Spilosoma virginica)*
Rusty virbia *(Virbia ferruginosa)*
Immaculate holomelina *(Virbia immaculate)*

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Opler, Paul A., Harry Pavulaan, Ray E. Stanford, Michael Pogue, coordinators. 2006. Butterflies and Moths of North America. Bozeman, MT: Big Sky Institute. http://www.butterfliesandmoths.org/

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Freshwater Mussels

Freshwater mussels, more commonly known as clams, are the inland version of the better-known seashell, their saltwater equivalent. Most people are only familiar with the shells or valves that remain long after the animal it protected has died, few have ever observed an actual living mussel. Mussels spend their lives buried in the bottom sediment or benthos of the waterbody they inhabit. In the shallow water of streams, and in some of our cleaner lakes like Enemy Swim, the careful observer may be able to see the posterior end of a mussel sticking above the bottom sediment where the siphon tubes are located. Although mussels are mainly sedentary, you may also observe tracks resembling small furrows left in the sediment where mussels have moved slowly along the bottom (see picture below).

White Heelsplitter moving along the bottom of the Little Minnesota River, siphon tubes are visible along the posterior end of the mussel on the left (photo by Dennis Skadsen)

Like seashells along ocean beaches, the valves of freshwater mussels will wash up on lakeshores, or along the banks and sandbars of rivers and streams. Occasionally you'll find where raccoons and other predators have piled shells left from a recent meal. Often these piles indicate a nearby mussel bed located in the adjacent stream or river bottom that may support several species and dozens of individual clams.

A pair of white heelsplitter shells or valves (photo by D. Skadsen)

Freshwater mussels have very complex life histories. Mussel larvae called glochidia develop in the female and are released when fish are nearby. The glochidia attach themselves to a fish's gills or fins spending the next stage of their life (from a few weeks to a year) as a parasite. A number of mussel species actually use appendages that mimic worms, insects, or small fish to attract potential hosts. While some freshwater mussels are host specific others can parasitize several species of fish. When the juvenile mussel reaches a certain age and size, they drop from the host fish to the sediment too begin their lives as free-living organisms.

Native Americans, especially the mound-building cultures who once lived along northeast South Dakota lakes and streams, used freshwater mussels as a source of food and their shells for pottery, tools and jewelry. In the 1800s the shells of freshwater mussels were utilized for the

production of mother-of-pearl clothes buttons. The button industry lasted until the advent of plastics in the late 1940s. There is no evidence freshwater mussels were ever harvested from northeastern South Dakota streams and rivers for the button industry probably due to the lack of larger thick-shelled species.

Mother-of-pearl buttons (digital scan by Dennis Skadsen)

Mussels were also harvested in the 1800s by speculators in search of pearls. Unfortunately, only about 1 in 1000 mussels will have a harvestable pearl and thousands of mussels were killed during this pearl-rush. Today, freshwater mussels collected in northeast South Dakota are used mainly for fish bait and occasionally food.

Most species of freshwater mussels can be identified by using a good field guide and observing the shells shape, color of the valves exterior and the beak sculpture of live mussels; and the shape of the pseudocardinal and lateral teeth, and the interior nacre color of dead shells.

Two pearls forming on the posterior end of a Giant floater (digital scan by Dennis Skadsen)

Twelve species of freshwater mussels have been documented in the counties of Day, Grant, Marshall, and Roberts. The majority are lotic species found only in the moving waters of streams and rivers. Two species are found in lentic conditions; the Giant floater and Fatmucket are found in larger northeast South Dakota lakes.

This list is compiled from the following sources; Perkins et al. (1995), Burgess and Shearer (2008), and the author's collection. Taxonomic order, common and scientific names follow Sietman (2003).

Freshwater Mussels Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Threeridge (digital scan by Dennis Skadsen)

Amblema plicata **Threeridge**

Rare in northeast South Dakota, only known from one pair of valves collected from the Whetstone River near Big Stone City. Species may prefer larger rivers and streams than those found in this area.

Wabash Pigtoe (digital scan by Dennis Skadsen)

Fusconaia flava **Wabash Pigtoe**

Uncommon, collected from the North and South Forks of the Yellowbank River in Grant County, and the North and South Forks of the Whetstone River in Grant County. Apparently absent from the Little Minnesota River and its tributaries in Roberts County. The above mentioned rivers are the only known locations where the specie is currently still found alive in the state. Species declining statewide due to decreasing water quality in many eastern stream and river systems.

Anodontoides ferussacianus **Cylindrical Papershell**

Common, collected from Owens Creek, Jim Creek, Jorgenson River, Little Minnesota River, and the North Fork of the Whetstone River in Roberts County; and the North and South Forks of the Yellowbank River, and North and South Forks of the Whetstone River in Grant County. This species usually only found in the small spring-fed headwaters of these rivers.

White Heelsplitter (digital scan by Dennis Skadsen)

Lasmigona complanata **White Heelsplitter**

Common, collected from the Bois De Sioux, Jorgenson, and Little Minnesota Rivers in Roberts County; and the South Fork of the Whetstone River, and North and South Forks of the Yellowbank River in Grant County.

Creek Heelsplitter (digital scan by Dennis Skadsen

Lasmigona compressa **Creek Heelsplitter**

Rare, collected from the Little Minnesota River in Roberts County; and from the South Fork of the Whetstone River, and North and South Forks of the Yellowbank River in Grant County. Only long-dead or relic shells found for this species until 2005 when fresh dead shells were recovered from the South Fork of the Yellowbank River by Burgess and Shearer (2008). Species declining statewide due to decreasing water quality in many eastern stream and river systems.

Pyganodon grandis **Giant Floater**

Common, found in all the larger streams, rivers and in several lakes in northeast South Dakota. This species is tolerant of pollution, and unfortunately due to this fact, one of the most abundant species in the state.

Live Creeper with foot visible (photo by Dennis Skadsen)

Strophitus undulates **Creeper**

Uncommon, collected from Jim Creek, Jorgenson River, Little Minnesota River, and North Fork of the Whetstone River in Roberts County; and from the North and South Forks of the Whetstone and Yellowbank Rivers in Grant County.

Plain Pocketbook (digital scan by Dennis Skadsen)

Lampsilis cardium **Plain Pocketbook**

Rare, only found in the Jorgenson River in Roberts County and the North Fork of the Whetstone River in Grant County. Reported to be rarely abundant when present which may explain the lack of specimen records from northeast South Dakota.

Fatmucket (digital scan by Dennis Skadsen)

Lampsilis siliquoidea **Fatmucket**

The second most common species in northeast South Dakota has been collected from all of the rivers in the area, and from most of the larger lakes.

Live Fat Mucket in the Little Minnesota River (photo by Dennis Skadsen)

Fragile Papershell (digital scan by Dennis Skadsen)

Leptodea fragilis **Fragile Papershell**

Uncommon, collected from the Little Minnesota River and North Fork of the Whetstone River in Roberts County; Big Stone Lake; and the North

and South Forks of the Yellowbank River in Grant County.

Pink Heelsplitter (digital scan by Dennis Skadsen)

Potamilus alatus **Pink Heelsplitter**

Uncommon, collected from the Big Stone Lake, the Bois De Sioux and Little Minnesota Rivers in Roberts County; the North Fork of the Whetstone River in Grant County; and Blue Dog Lake in Day County.

Potamilus ohiensis **Pink Papershell**

Rare, only collected from the Bois De Sioux River in Roberts County, and the North Fork of the Whetstone River in Grant County. One of northeast South Dakota's rarest species.

Toxolasma parvus **Lilliput**

Rare, only collected in Grant County from the Whetstone and Yellowbank Rivers. One of the smallest Unionid mussels. Specimens collected by the author rarely longer that 1 inch from anterior to posterior.

(Sphaeriidae) **Fingernail Clams**

These small clams, seldom larger than a penny, can be found in most of the rivers and streams in the area. Apparently hard to identify to species as most guides list only to family.

❖ Endangered and Threatened Species

Overharvesting by the button industry in the 1800 and early 1900's and declining water quality has led to almost half of North America's freshwater mussels being listed as federally endangered or threatened species. No state or federally threatened and endangered species are known to occur in this area. However, species like the Creek Heelsplitter and Wabash Pigtoe have no doubt declined due to degraded water quality (mainly sedimentation) in northeast South Dakota streams and rivers.

The following species are tracked by the South Dakota Natural Heritage Program managed by the SD Dept. of Game, Fish, and Parks. Observations of these species should be reported to Game, Fish, and Parks personnel. The condition of dead shells should be reported as relic or fresh dead (see photo below).

Amblema plicata **Threeridge**
Fusconaia flava **Wabash Pigtoe**
Lasmigona compressa **Creek Heelsplitter**
Strophitus undulates **Creeper**
Lampsilis cardium **Plain Pocketbook**
Potamilus alatus **Pink Heelsplitter**
Toxolasma parvus **Lilliput**

Top: relic or long dead shell, Bottom: fresh dead shell (digital scan by Dennis Skadsen)

❖ Suggested References

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❖ Collecting Freshwater Mussels

There are currently no laws protecting freshwater clams other than species listed as federally threatened or endangered. These include the Scaleshell (*Leptodea leptodon*), Higgins Eye (*Lampsilis higginsii*), and the Winged Mapleleaf (*Quadrula fragosa*). Possession of both live mussels and dead shells of these species is illegal. These three species have not been observed in northeast South Dakota, however several mussels found in this area are rare and collecting of live specimens is discouraged. Collectors should only take dead shells.

Searching for live mussels in the Yellowbank River, Grant County (photo by Dennis Skadsen)

Fish

A total of 65 species of fish have been recorded as occurring in the lakes, streams and rivers located in the northeast South Dakota counties covered by this publication. This total includes forty-eight extant native species, five native species that are now extirpated from the area, six hypothetical species, five introduced native species (Lake herring, Brook, Brown, Rainbow, and Steelhead trout), and one introduced exotic species (Common carp).

The majority of species occurring in this area are categorized as small fish. These include several species of minnows, chubs, shiners, daces, darters, the mudminnow and killifish. While overlooked by most sportsmen, these small and sometimes colorful fish provide food for larger predators desired by fisherman and are important components of a stream or rivers ecosystem. The next largest group occurring in the area are the game or sports fish. These are well known species that include the Northern pike, Walleye, Yellow perch and several species of sunfish. The underused species or rough fish include several large species usually not sought by sportsmen. These include the Shortnose gar, Central quillback carpsucker, Golden and Shorthead redhorse.

The recent publication "History of Fisheries and Fishing in South Dakota" (Berry et al. 2007) provides a detailed look at the current and past distribution of fish in the state by major watersheds, history of fish stocking, brief descriptions of several species of warm-water and cold-water fish, and many other interesting facts about South Dakota's fisheries.

This list is compiled from the following sources; Bailey and Allum (1962), Burgess and Shearer (2008), Churchill and Over (1933), Dieterman and Berry (1996), Olsen (2007), Vandel and Kreil, Minnesota Dept. of Natural Resources Fisheries Stream Surveys, South Dakota Game, Fish & Parks Statewide Fisheries Surveys, and observations by the author. Taxonomic order, common and scientific names follow Fishes of Minnesota (2001) with recent name changes from Berry et al. (2007). Annotation is provided for some of the more interesting and rare species.

All photos and artwork other than the authors are acknowledged and used with permission.

Fish Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Hartford Beach Creek (photo by Dennis Skadsen)

❖ Streams and Rivers

The most diverse population of native fish in northeast South Dakota occur in the numerous small streams and medium sized rivers located in Grant and Roberts Counties. The headwaters of these streams and rivers begin in the dozens of coulees located along the eastern edge of the Prairie Coteau that include Munson Gulch, Sica Hollow, Long Hollow, Big Coulee, and Big Springs. The majority of these small headwater streams flow to the Jorgenson River or Little Minnesota River before emptying into Big Stone

Lake near Browns Valley, Minnesota; or are tributaries of the Whetstone and Yellowbank Rivers that join the Minnesota River east of Big Stone City, South Dakota.

There are some differences in distribution of stream and river species. Some species like the Blacknose dace occur upstream in headwaters like Roy Creek in Sica Hollow State Park, while other species like the Central quillback carpsucker, Golden and Shorthead redhorse are found only in the downstream reaches of the Yellowbank, Whetstone, and Little Minnesota Rivers. All species but the Common carp are considered native creek and river fishes. Attempts were made in the 1960s to introduce Brook, Brown, and Rainbow trout in several northeastern SD streams and rivers including the South Fork of the Yellowbank River in Grant County and Roy Creek in Sica Hollow State Park; however none of these introductions were successful.

Species listed below are based on stream surveys and observations made during the last fifteen years. Recent surveys suggest some species like the Northern Redbelly Dace are declining or possibly extirpated from the region, however most species listed below appear to still be extant in area streams and rivers at the present.

Minnows

Central Stoneroller (photo by Dennis Skadsen)

Central Stoneroller *(Campostoma anomalum)*
Common Carp *(Cyprinus carpio)*
Brassy Minnow *(Hybognathus hankinsoni)*
Common Shiner *(Luxilus cornutus)*
Hornyhead Chub *(Nocomis biguttatus)*
Golden Shiner *(Notemigonus crysoleucas)*
Emerald Shiner *(Notropis atherinoides)*
Bigmouth Shiner *(Notropis dorsalis)*
Spottail Shiner *(Notropis hudsonius)*
Carmine Shiner *(Notropis percobromus)*
Eastern Sand Shiner *(Notropis stamineus)*

Northern Redbelly Dace (artwork provided by the New York State Department of Environmental Conservation)

Northern Redbelly Dace *(Phoxinus eos)*
McCoy and Hales (1974) reported finding this species in both North and South Forks of the Yellowbank River in Grant County in 1973, however was not found by Dieterman and Berry (1996) during their survey in 1993 or by Burgess and Shearer (2008) in 2005. May now be extirpated from northeast South Dakota. Observations of this species should be reported to the S.D. Dept. of Game, Fish, and Parks.

Bluntnose Minnow *(Pimephales notatus)*
Fathead Minnow *(Pimephales promelas)*
Western Blacknose Dace *(Rhinichthys obtusus)*
Creek Chub *(Semotilus atromaculatus)*

Suckers

Central Quillback Carpsucker *(Carpiodes cyprinus hinei)*
White Sucker *(Catostomus commersoni)*
Bigmouth Buffalo *(Ictiobus cyprinellus)*
Golden Redhorse *(Moxostoma erytrurum)*

Shorthead Redhorse *(Moxostoma macrolepidotum)*

Catfish

Tadpole Madtom (picture by Konrad Schmidt)

Black Bullhead *(Ameiurus melas)*

Tadpole Madtom *(Noturus gyrinus)*
One of the smallest members of the catfish family rarely reaches lengths longer than 4 inches and has a body resembling a tadpole. This fish has poisonous glands connected to sharp spines located along the leading edge of its pectoral fins that can cause a painful wound if stuck.

Pike

Northern Pike *(Esox lucius)*

Mudminnow

Central Mudminnow (photo by Konrad Schmidt)

Central Mudminnow *(Umbra limi)*
Known only from the Owens Creek drainage in Day and Roberts Counties and from the North Fork of the Yellowbank River in Grant County. Prefers slow-moving streams with soft bottom sediments like Owens Creek. The mudminnow is hard to capture in seines and other types of nets due to its habit of burrowing into the sediment when scared. The author has only collected these fish using stream bottom samplers.

Stickleback

Brook Stickleback (photo by Konrad Schmidt)

Brook Stickleback *(Culaea inconstans)*

Temperate Bass

White Bass *(Morone chrysops)*

Sunfish

Rock Bass *(Ambloplites rupestris)*
Pumkinseed *(Lepomis gibbosus)*
Green Sunfish *(Lepomis cyanellus)*
Orangespotted Sunfish *(Lepomis humilus)*
Bluegill *(Lepomis macrochirus)*
Largemouth Bass *(Micropterus salmoides)*
White Crappie *(Pomoxis annularis)*
Black Crappie *(Pomoxis nigromaculatus)*

Perch

Blackside Darter (photo by Konrad Schmidt)

The Blackside darter pictured above is one of four darter species currently found in northeast South Dakota lakes and streams. These small fish lack swim bladders and are unable to remain afloat in the water. Due to this fact, the fish can only dart around the lake or stream bottom while swimming or moving with the current. Look for the colorful male Iowa darter (page 6) along the shorelines of Enemy Swim and other lakes in the spring when this species is spawning.

Iowa Darter *(Etheostoma exile)*
Johnny Darter *(Etheostoma nigrum)*
Yellow Perch *(Perca flavescens)*
Blackside Darter *(Percina maculata)*
Walleye *(Sander vitreus)*

Drum

Freshwater Drum *(Aplodinotus grunniens)*

Enemy Swim Lake (photo by Dennis Skadsen)

❖ Lakes (Other than Big Stone Lake and Lake Traverse)

As the glaciers retreated and lakes formed in glacial outwash, fish made their way to these new waterbodies through meltwater channels connected to the Big Sioux, and possibly the Minnesota and Red River systems. It is hard to say what native species populated these lakes originally. Archeological sites give some clues as to what species were consumed by Native Americans. Fish bones identified from an archeological site located on the Waubay National Wildlife Refuge in 1983 include White sucker, Northern pike, Walleye, and Yellow perch. All of these species could easily have been speared, netted or caught by the first inhabitants of this area. One of the first surveys of northeast South Dakota fisheries was published in 1926 by W.H. Over. His account provides us with some idea of the species of fish that probably occurred naturally in area lakes before settlers and state agencies began full scale stocking and introduction programs. Over listed the following species for Clear Lake (Marshall Co.) - Largemouth bass, Black crappie, Walleye, and Green sunfish; and for Pickerel Lake (Day Co.) - Walleye, Northern pike, Yellow perch, Black crappie, Largemouth bass, Bluegill, White bass, and White sucker.

The extreme droughts of the 1930s likely devastated native fish populations in most northeast South Dakota lakes. It was reported that the only lakes in the area that had enough water to support fisheries in 1933 were Enemy Swim, Pickerel, Blue Dog and Roy Lakes. It was after this event that full scale stocking begin to re-establish and increase populations of native species and introduce new species. One native species that did not occur naturally in the glacial lakes is the Smallmouth bass. This species was introduced to most northeast South Dakota lakes beginning in the early 1980s.

The following list of species is based on recent fisheries surveys of area lakes by the S.D. Dept. of Game, Fish, and Parks, and the author's observations and collections.

Minnows

Spottail Shiner (photo by Dennis Skadsen)

Common Carp *(Cyprinus carpio)*
Common Shiner *(Luxilus cornutus)*
Emerald Shiner *(Notropis atherinoides)*
Spottail Shiner *(Notropis hudsonius)*
Fathead Minnow *(Pimephales promelas)*

Suckers

White Sucker *(Catostomus commersoni)*

Catfish

Black Bullhead *(Ameiurus melas)*

Channel Catfish *(Ictalurus punctatus)*
Enemy Swim Lake was stocked with Channel catfish in 1952. A recent proud angler Flathead catfish reported from this lake was no doubt a misidentified Channel catfish.

Pike

Northern Pike *(Esox lucius)*

Mudminnow

Central Mudminnow *(Umbra limi)*
Has only been recorded from Blue Dog Lake.

Salmon

Lake Herring *(Coregonus artedi)*
Escaped from Blue Dog Fish Hatchery, caught occasionally in Blue Dog and Waubay Lakes.

Killifish

Western Banded Killifish (photo by Konrad Schmidt)

Western Banded Killifish *(Fundulus diaphanous)*
The only current records from northeast South Dakota are for several specimens collected from South Waubay Lake by the author in 1986. Historical records for the Whetstone River and Big Stone Lake by A.J. Wollman in 1896 were reported by Bailey and Allum (1962). Observations of killifish should be reported to the S.D. Dept. of Game, Fish, and Parks.

Stickleback

Brook Stickleback *(Culaea inconstans)*

Temperate Bass

White Bass *(Morone chrysops)*

Sunfish

Orangespotted Sunfish (photo by Konrad Schmidt)

Rock Bass *(Ambloplites rupestris)*
Pumpkinseed *(Lepomis gibbosus)*

Orangespotted Sunfish *(Lepomis humilus)*
Our smallest sunfish seldom exceeds 4 inches in length is rarely caught by hook and line. Found in Enemy Swim Lake, but more common in streams located in Grant and Roberts Counties.

Bluegill *(Lepomis macrochirus)*
Smallmouth Bass *(Micropterus dolomieu)*
Largemouth Bass *(Micropterus salmoides)*
White Crappie *(Pomoxis annularis)*
Black Crappie *(Pomoxis nigromaculatus)*

Perch

Iowa Darter (photo by Dennis Skadsen)

Iowa Darter *(Etheostoma exile)*
Johnny Darter *(Etheostoma nigrum)*
Yellow Perch *(Perca flavescens)*
Logperch *(Percina caprodes)*
Walleye *(Sander vitreus)*

❖ Lake Traverse and Big Stone Lake

Lake Traverse, Big Stone Lake, and the Minnesota River lie in a channel formed approximately 10,000 years ago by the prehistoric River Warren. The River Warren was the southern outlet of a huge glacial meltwater lake called Agassiz that covered 175,000 square miles, and at times stretched from northeast South Dakota north into Canada. After Lake Agassiz drained, the Little Minnesota River formed a large delta of silt near Browns Valley, Minnesota that eventually divided the old River Warren channel into two separate drainages. The river valley located north of Browns Valley became Lake Traverse. This area

drains to the north through the Bois de Sioux and Red Rivers. Big Stone Lake formed south of Browns Valley and drains into the Minnesota River flowing south.

Due to these two lakes connections to the Red and Minnesota River systems, their fish assemblages are more diverse than any other northeast South Dakota lake. The Shortnose gar, Central quillback, and Freshwater drum are just a few of the species unique to these two lakes. Several species that once occurred in Big Stone Lake are now extirpated; these include the Lake sturgeon, Bowfin, American eel, and Skipjack herring. Declining water quality and/or the construction of downstream dams that may have blocked movement of these river species upstream to Big Stone Lake probably account for their disappearance. An unsuccessful attempt was made in 1916 to stock Big Stone Lake with Steelhead trout.

The following list is compiled from recent fisheries surveys conducted by the Minnesota Department of Natural Resources (Olson 2007).

Gars

Shortnose Gar (photo by Konrad Schmidt)

Shortnose Gar *(Lepisosteus platostomus)*

Minnows

Central Stoneroller *(Campostoma anomalum)*
Common Carp *(Cyprinus carpio)*
Brassy Minnow *(Hybognathus hankinsoni)*
Common Shiner *(Luxilus cornutus)*
Hornyhead Chub *(Nocomis biguttatus)*
Emerald Shiner *(Notropis atherinoides)*
River Shiner *(Notropis blennius)*
Bigmouth Shiner *(Notropis dorsalis)*
Spottail Shiner *(Notropis hudsonius)*
Eastern Sand Shiner *(Notropis stramineus)*
Bluntnose Minnow *(Pimephales obtusus)*
Fathead Minnow *(Pimephales promelas)*
Western Blacknose Dace *(Rhinichthys atratulus)*
Creek Chub *(Semotilus atromaculatus)*

Suckers

Central Quillback Carpsucker *(Carpiodes cyprinus)*
White Sucker *(Catostomus commersoni)*
Bigmouth Buffalo *(Ictiobus cyprinellus)*
Golden Redhorse *(Moxostoma erytrurum)*
Shorthead Redhorse *(Moxostoma macrolepidotum)*

Catfish

Black Bullhead *(Ameiurus melas)*
Yellow Bullhead *(Ameiurus natalis)*
Brown Bullhead *(Ameiurus nebulosus)*
Channel Catfish *(Ictalurus punctatus)*

Pike

Northern Pike *(Esox lucius)*

Stickleback

Brook Stickleback *(Culaea inconstans)*

Temperate Bass

White Bass *(Morone chrysops)*

Sunfish

Rock Bass *(Ambloplites rupestris)*
Green Sunfish *(Lepomis cyanellus)*
Pumpkinseed *(Lepomis gibbosus)*
Orangespotted Sunfish *(Lepomis humilus)*
Bluegill *(Lepomis macrochirus)*
Largemouth Bass *(Micropterus salmoides)*
White Crappie *(Pomoxis annularis)*
Black Crappie *(Pomoxis nigromaculatus)*

Perch

Iowa Darter *(Etheostoma exile)*
Johnny Darter *(Etheostoma nigrum)*
Yellow Perch *(Perca flavescens)*
Walleye *(Sander vitreus)*

Drum

Freshwater Drum *(Aplodinotus grunniens)*

❖ Endangered and Threatened Species

State Endangered
Banded Killifish *(Fundulus diaphanous)*
Blacknose Shiner *(Notrophis heterolepis)*

State Threatened
Northern Redbelly Dace *(Phoxinus eos)*

The following species are tracked by the South Dakota Natural Heritage Program managed by the SD Dept. of Game, Fish, and Parks. Observations and populations of these species should be reported to Game, Fish, and Parks personnel.

Blacknose Shiner
Blackside Darter
Carmine Shiner
Central Mudminnow
Central Quillback Carpsucker
Hornyhead Chub
Golden Redhorse
Logperch
Northern Redbelly Dace
River Shiner
Western Banded Killifish

For more information on eastern South Dakota's rare fishes visit the following website:

http://www.sdgfp.info/Wildlife/Diversity/Fish/Rare_fish11.html

❖ Extirpated Species

Lake Sturgeon *(Acipenser fulvescens)*
Listed as hypothetical for Big Stone Lake by Bailey and Allum (1962). However, the Minnesota DNR at Ortonville has a record of a 6 ft. 75 lb. Lake Sturgeon found dead along the shores of Big Stone Lake in 1946 (Olson 2007) Severeid (1935) gives an account in his book *Canoeing with the Cree* of an encounter on Big Stone Lake with a 6 foot long sturgeon in 1930. An old newspaper account (no date) pictures a 6 foot 110 lb sturgeon speared near the old mill dam located below Big Stone City on the Minnesota River. These fish probably migrated to the upper reaches of the Minnesota River including Big Stone Lake during pre-settlement times (and possibly during the post-glacial period through the River Warren channel), and due to this fish's longevity of nearly 100 years, the species may have persisted into the mid-1900s. The construction of dams and degrading

water quality post-settlement no doubt led to the species extirpation.

Blacknose Shiner *(Notropis heterolepis)*
Historical records exist for the Little Minnesota River and Lake Traverse (Bailey and Allum 1962). However these authors reported that by 1962 this fish, once common throughout eastern South Dakota, was becoming quite rare.

Northern Hog Sucker *(Hypentelium nigricans)*
Bailey and Allum (1962) report a specimen was collected by J.C. Underhill from the Yellowbank River in Grant County. No other observations or collections have been reported for this species in northeast South Dakota.

Stonecat *(Noturus flavus)*
Historical record for specimens collected in 1952 by Bailey and Allum (1962) from the Whetstone River near Big Stone City, Grant County; and near Milbank in 1975 by B. Schmidt (Schmidt 1975).

Trout-Perch *(Percopsis omiscomaycus)*
Historical records for the Little Minnesota River and Big Stone Lake by A.J. Wollman in 1896 were reported by Bailey and Allum (1962). No other observations or collections have been reported for this species in Day, Grant, Marshall, and Roberts Counties.

Slenderhead Darter *(Percina phoxocephala)*
The only recorded occurrence for this species is based on seven specimens collected from the Whetstone River near Big Stone City, Grant County in 1952 by Bailey and Allum (1962)

❖ Hypothetical Species

Longnose Gar *(Lepisosteus osseus)*
Hypothetical, reported by Churchill and Over (1938) as occurring in Big Stone Lake, however no other historical or recent observations found. May have been misidentified since the Shortnose gar is currently caught in Big Stone Lake.

Bowfin *(Amia calva)*
Hypothetical, reported by Churchill and Over (1938) as generally occurring in the streams and lakes of eastern South Dakota. Bailey and Allum (1962) presumed the species occurred in Big Stone Lake based on the species distribution in Minnesota. These authors surmise the severe droughts of the 1930s caused the species extirpation from the northeast corner of state. No actual specimen records exist.

American Eel *(Anguilla rostrata)*
Hypothetical, reported by Churchill and Over (1938) as occurring in Big Stone Lake, however no specimen records or other historical or recent observations reported.

Skipjack Herring *(Alosa chrysochloris)*
Hypothetical, Bailey and Allum (1962) reported this species formerly occurred in Big Stone Lake but is now extirpated. No specimen records reported.

Blackchin Shiner *(Notropis heterodon)*
Hypothetical, a historical record for the Whetstone River by A.J. Wollman in 1896 was reported by Bailey and Allum (1962) however these authors questioned the specimen's identification.

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Amphibians and Reptiles

The herpetofauna of northeast South Dakota includes one salamander, four species of toads, five species of frogs, three species of turtles, one lizard, and five species of snakes. Two species of snakes and one turtle are considered accidental species, and the status of one species - the Mudpuppy, is unknown.

The following list is compiled from several references including; Backlund (2004), Fisher (1998), Kiesow (2006), and observations by the author, local conservation officers, and other reliable sources. Common and scientific names follow Kiesow (2006).

Amphibians and Reptiles Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

❖ Amphibians

Salamanders

Tiger Salamander (photo by Dennis Skadsen

Gray Tiger Salamander *(Ambystoma tigrinum diaboli)*

The Gray tiger salamander is common throughout northeast South Dakota. Eggs are laid in wetlands where the larvae hatch and mature to adults. Most adults are terrestrial; however some adults remain in the larval or neotenic form spending their entire lives in the water. Neotenic adults can become quite large and often are mistakenly identified as mudpuppies (see below).

Tiger Salamander larvae (photo by Dennis Skadsen)

Mudpuppy *(Necturus maculosus)*

Status questionable. There are no recent observations of the mudpuppy in northeast South Dakota. Over (1923) stated the species is found only in Big Stone Lake and E.C. O'Roke (1924) reported collecting a single specimen from Waubay Lake in 1924; however neither reports were confirmed by museum specimens. Also a literature report of a mudpuppy collected from Big Stone Lake was referenced by Oldfield and Moriarty (1994). Mudpuppies were not caught during extensive fisheries surveys conducted by the Minnesota Department of Natural Resources in recent years on Big Stone Lake and Lake Traverse.

The severe droughts of the 1930s may have drastically reduced the distribution of this

species and it may no longer occur in northeast South Dakota. Often the larvae and neotenic adult form of the Tiger salamander is mistaken for mudpuppies; however Mudpuppies have four toes on the hind feet while the tiger salamander has five toes. Any observations or specimens of the Mudpuppy should be reported to the S.D. Dept. of Game, Fish, and Parks.

Frogs and Toads

American Toad *(Anaxyrus americanus)*
Great Plains Toad *(Anaxyrus cognatus)*
Canadian Toad *(Anaxyrus hemiophrys)*

All three species listed above are considered common and abundant in northeast South Dakota. All adults are terrestrial and can often be found some distance from water.

Woodhouse's Toad (photo by Dennis Skadsen)

Woodhouse's Toad *(Anaxyrus woodhousii)*

No museum or literature records existed prior to 1998. Fisher (1998) reported the species calling in Marshall and Roberts Counties in 1997 and 1998, and collected a specimen near Rosholt in 1998. However, neither Skadsen nor Jessen could find Woodhouse's toad during surveys conducted in 2004 (Backlund 2004). This species may be at the northern limits of its range in northeast South Dakota and populations may vary from year-to-year.

Gray Treefrog (photo by Dennis Skadsen)

Cope's Gray Treefrog *(Hyla chrysoscelis)*
Eastern Gray Treefrog *(Hyla versicolor)*

The status of these two frogs in northeast South Dakota is still unclear. The only way to distinguish between the two is by their calls; however they're very similar. Currently a study is underway that will identify which species are present in northeast South Dakota by testing specimens blood for chromosome type. The Eastern gray treefrog was once considered the only species of treefrog occurring in northeast South Dakota and records were confined to only the forested coulees located along the eastern slope of the prairie coteau. During a recent survey however, Jessen heard both species calling in Sica Hollow State Park. Both Jessen and Skadsen (Backlund 2004) heard Cope's gray treefrogs calling from wetlands well away from forested habitats near Drywood and One Road Lakes in western Roberts County in 2004. Skadsen heard Cope's gray treefrogs calling at the West Unit of the Pickerel Lake State Recreation Area in June 2009. Jessen (in

Backlund 2004) heard a treefrog calling at Hartford Beach State Park in 2004 but was unsure as to which species he was hearing; however in June 2009 Skadsen heard Cope's gray treefrogs calling at Camp Iyataka a few miles north of Hartford Beach along Big Stone Lake. At Sica Hollow State Park, treefrogs are often found setting on the large basal leaves of Common burdock plants.

Boreal Chorus Frog (photo by Dennis Skadsen)

Boreal Chorus Frog *(Pseudacris maculate)*

Common throughout northeast South Dakota. Our smallest frog is the most frequently heard species, calling from late April through early June from all types of wetlands.

Northern Leopard Frog - Burnsi variety (photo by Dennis Skadsen)

Northern Leopard Frog *(Lithobates pipiens)*

Common throughout northeast South Dakota. All three color morps, the burnsi color morph shown above, the kandiyohi color morph, and the normal color shown below have been observed in this area.

Northern Leopard Frog – normal color (photo by Dennis Skadsen)

Wood Frog (photo by Dennis Skadsen

Wood Frog *(Lithobates sylvaticus)*

Prior to the severe droughts of the 1930s Wood frogs were apparently common throughout northeast South Dakota. Over (1923) reported the species as common in the coulees of Marshall and Roberts Counties but no museum specimens from these areas have been found. Confirmed museum specimens include five Wood frogs collected near the outlet of Blue Dog Lake (Day County) in 1929; and one specimen collected at Hartford Beach along Big Stone Lake (Roberts County) in 1923. In 1960, Fishbeck and Underhill (1960) reported that Wood frogs no longer occurred in the coulees of Marshall and Roberts Counties as reported by Over, and surmised droughts, as well as over-harvesting of lumber and grazing of the coulees, may had led to the species demise in northeast South Dakota.

The Wood frogs status in the state was unknown until 1997 when Fisher (1998) found the species during surveys in northeast Roberts County. Further surveys by Jessen and Skadsen in 2004 found calling Wood frogs at Cottonwood Lake and several wetlands near Rosholt, SD in northeast Roberts County (Backlund 2004). This species is apparently expanding back into its former South Dakota range from Minnesota; possibly due to extremely wet conditions during the last ten years that have filled wetlands to capacity. If favorable conditions continue the species may well expand its range back into the forested coulees of northwestern Roberts County, and may also expand south along Lake Traverse to Big Stone Lake eventually to Hartford Beach and northeast Grant County.

❖ Reptiles

Turtles

Snapping Turtle laying eggs along Owen's Creek (photo by Dennis Skadsen)

Snapping Turtle *(Chelydra serpentia)*
Painted Turtle *(Chrysemys picta)*

The Snapping turtle and Painted turtle are both common throughout northeast South Dakota and can be observed in a variety of aquatic habitats that include streams, rivers, wetlands, and lakes. While the Painted turtle is usually docile, the Snapping turtle can inflict a nasty bite if improperly held or cornered while on land. They usually do not bite humans while in the water.

Painted Turtle (photo by Dennis Skadsen)

Spiny Softshell *(Apalone spinefera)*

The Spiny softshell's range is restricted to the lower reaches of the Yellowbank and Whetstone Rivers in Grant and Roberts Counties. May also occur in Big Stone Lake.

Lizards

Northern Prairie Skink (photo by Dennis Skadsen)

Northern Prairie Skink *(Eumeces septentrionalis)*

The only lizard found in northeast South Dakota appears to be common despite the continuing loss of grassland habitat. As the name implies this skink is found on native prairies and other grasslands. The skink has an interesting defense mechanism to escape predators. When handled incorrectly or captured by a predator the skink's tail will detach. The wiggling detached tail will distract the predator allowing the skink to escape unharmed although tail-less. The tail will eventually re-grow.

Snakes

Western Hog-Nosed Snake (photo by Dennis Skadsen)

Western Hog-Nosed Snake *(Heterodon nasicus)*

This species has only been observed along the western slope of the Coteau in Day County in the area locally known as the Crocker-Crandall Hills. The upturned snout of the Western hog-nosed snake is used like a shovel to dig burrows in sandy soil.

Smooth Green Snake (photo by Dennis Skadsen)

Smooth Green Snake *(Liochlorophis vernalis)*

Reportedly uncommon, but this may be due to this snakes secretive manner. The green snake is relatively small with an average length of only 16 inches. It is most often encountered in grasslands sunning on pocket gopher mounds or flat rocks.

Northern Redbelly Snake (photo by Dennis Skadsen)

Northern Redbelly Snake *(Storeria o. occipitomaculata)*

One of our smallest snakes, the Northern redbelly is common throughout northeast South Dakota in suitable habitat. This snake is one of our smallest seldom reaching a length longer than ten inches. This species can be found along the wooded shorelines of area lakes and in forested coulees like Sica Hollow State Park.

Common Gartersnake (photo by Dennis Skadsen)

Plains Gartersnake *(Thamnophis radix)*
Common Gartersnake *(Thamnophis sirtalis)*

Both species common throughout northeast South Dakota, however the Common gartersnake is more apparent in the lowlands like the Little Minnesota and Whetstone Valleys of Roberts and Grant Counties.

❖ Accidental Species

Blanding's Turtle *(Emydoidea blandingii)*

Accidental. A Blanding's turtle observed in northern Robert's County in 2005 was likely an

escaped or released pet. There are no known natural populations of this species in northeast South Dakota and only a few records exist for the southeast corner of the state where the species is considered extremely rare.

Brownsnake *(Storeria dekayi)*

Accidental. The only South Dakota record of the Brownsnake is for a specimen collected near Big Stone City in 1922. An extensive survey for the species in 2004 found no evidence the species is extant in northeast South Dakota.

Gophersnake *(Pituophis catenifer)*

Accidental. A Gophersnake (or bullsnake) was captured near Pickerel Lake in 1969. Another Gophersnake was observed several months later near Bitter Lake; however the Pickerel Lake specimen may have been released at that locale.

❖ Endangered and Threatened Species

None of the above species are currently listed as state or federally endangered at this time. However, the following species are tracked by the South Dakota Natural Heritage Program managed by the SD Dept. of Game, Fish, and Parks. Observations of these species should be reported to the SD GFP.

Mudpuppy
Cope's gray treefrog
Eastern gray treefrog
Wood frog
Spiny softshell turtle
Blanding's turtle
Smooth green snake
Northern redbelly snake

❖ Suggested References

Amphibians and Reptiles Native to Minnesota
By Barney Oldfield and John J. Moriarty
1994. University of Minnesota Press, Minneapolis.

Field Guide to Amphibians and Reptiles of South Dakota.
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Birds

A total of 303 species of birds have been observed in the four county area covered by this publication. This list includes one species now extinct, the Passenger pigeon; six species listed as state or federally threatened or endangered; and 147 species observed breeding in the area.

The following list is compiled from several sources including bird checklists from the Waubay National Wildlife Refuge, Hartford Beach State Park, Sica Hollow State Park, Roy Lake State Park, and Pickerel Lake State Recreation Area; observations published in South Dakota Bird Notes, Birds of South Dakota (Tallman et al. 2002), South Dakota Breeding Bird Atlas (Peterson 1995), SDOU Online Seasonal Bird Report System; and the author's personnel observations.

Annotation is provided for some groups and individual species that are unique to northeast South Dakota or merit special attention due to location or interest by birdwatchers.

Taxonomic order and common names follow Tallman et al. (2002)

❖ Seasonal Status and Abundance

The seasonal status and abundance of each species follows the common name. The category given for each bird best describes the species seasonal status and abundance specifically for northeast South Dakota based on the authors experience and published records. To save space, only the season that the bird is most likely to be encountered is given. Even though a bird is listed for only one season in this publication, it may also be present during another season. For instance, the Lesser scaup listed here as a common migrant has been observed nesting in northeast South Dakota and could be listed as an uncommon summer resident. Serious birders will want to consult a resource like Birds of South Dakota (Tallman et al. 2002) for more specific seasons and dates.

Descriptions for each category are given below.

Seasonal Status:

Permanent Resident – A bird that breeds and winters in the same area (year-round). In northeast South Dakota examples of permanent residents include; Downy woodpecker, Black-capped chickadee, White-breasted nuthatch.

Summer Resident – A bird that breeds in a given area, but spends the winter elsewhere. The summer season is the months of June and July. In northeast South Dakota examples of summer residents include; Great blue heron, Black tern, Red-eyed vireo, Tree swallow.

Winter Resident – A bird that regularly spends the winter in northeast South Dakota, but breeds elsewhere. The winter season is the months of December through February. In northeast South Dakota examples of winter residents include; Dark-eyed junco, Lapland longspur, Common redpoll.

Winter Visitor – A bird that is present on an irregular basis during the winter season as described above. In northeast South Dakota examples include; Northern goshawk, Snowy owl, Evening grosbeak.

Migrant – A bird moving to or from its summer breeding range to its wintering grounds. Spring migration is the months of March through May; fall migration is the months of August through November. In northeast South Dakota examples include; Snow goose, Gray-cheeked thrush, and Yellow-rumped warbler.

***Asterisk* * -** Denotes a species that has been observed nesting or behavior confirming breeding (carrying food, distraction displays etc.) has been observed in Day, Grant, Marshall and/or Roberts Counties. Some species are localized breeders like the Veery and Scarlet tanager which have been found nesting only in heavily forested coulees like Sica Hollow State Park.

Abundance:

Common – Easily found in suitable habitat and appropriate season. In northeast South Dakota examples include; Canada goose, American crow, American robin.

Uncommon – May be found in suitable habitat or locale with some effort and patience. In northeast South Dakota examples are; Red-bellied sapsucker, Red-breasted nuthatch, and Chestnut-collared longspur.

Rare – Only a few individual birds are observed during a particular season or the species has very restricted habitat requirements. In northeast South Dakota examples are; Broad-winged Hawk, Pileated woodpecker, and Veery (restricted habitats).

Birds Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Loons and Grebes

Western Grebe (photo by Doug Backlund)

Common Loon* *(Uncommon Migrant)*
Most often observed during spring and fall migration on larger area lakes that include Big Stone, Enemy Swim, Pickerel, Roy, and Rush Lakes. Dave German and the author observed adult loons with flightless young on Enemy Swim Lake during the months of June and July in 2005 and 2006. No nest has been observed, but it is speculated the birds are building their nests on Campbell Slough where there is little shoreline development and little disturbance from recreational boating.

Pied-billed Grebe* *(Common Summer Resident)*
Horned Grebe* *(Rare Summer Resident)*

Red-necked Grebe* *(Uncommon Summer Resident)*
Eared Grebe* *(Uncommon Summer Resident)*
Western Grebe* *(Common Summer Resident)*
Clark's Grebe* *(Rare Summer Resident)*

Look for grebes on area wetlands and lakes with emergent vegetation. Good areas to observe the Red-necked grebe include Enemy Swim Lake and several small lakes north and east of Lake City in Marshall County, including Greys and Turtlefoot Lakes near Sica Hollow. For Western and Eared Grebes, the northwest corner of Bitter Lake near Waubay, SD is a good site. Other grebe hotspots include Bullhead Lake located east of Wilmot, SD, and Cottonwood Lake and Slough in northern Roberts County. All six species have been observed nesting in northeast South Dakota

Pelicans and Cormorants

Nesting American White Pelicans (photo by Dennis Skadsen)

American White Pelican* *(Common Summer Resident)*
Double-crested Cormorant* *(Common Summer Resident)*

Both of these birds can be found nesting in large colonies in northeast South Dakota. Currently, the largest colony is situated on several small islands located in the southwest corner of Bitter Lake in Day County. In 2007, 14,713 American white pelican nests where counted at this location making it one of the largest breeding populations currently extant in the continental United States. Prior to 1998, colonies were established on islands located at North and South Waubay Lake, Piyas Lake, North Drywood Lake, and Bitter Lake. However, due to extremely wet conditions all of these locations were inundated in the late 1990s by rising lake levels. These displaced breeding populations no doubt consolidated on new islands created by the rising water levels of Bitter Lake.

Bitterns, Herons, and Ibis

Least Bittern (photo by Doug Backlund)

American Bittern* *(Uncommon Summer Resident)*

Least Bittern* *(Uncommon Summer Resident)*
Great Blue Heron* *(Common Summer Resident)*
Great Egret* *(Common Summer Resident)*
Snowy Egret* *(Uncommon Summer Resident)*
Little Blue Heron *(Rare Migrant)*
Cattle Egret* *(Uncommon Summer Resident)*
Green Heron* *(Uncommon Summer Resident)*
Black-crowned Night-Heron* *(Uncommon Summer Resident)*
White-faced Ibis* *(Uncommon Summer Resident)*

All of the species listed above are associated with aquatic habitats, and seven are colonial nesting species. One of the largest heron rookeries in northeast South Dakota is located on Bitter Lake. Species nesting at this rookery include Great blue heron, Great egret, Snowy egret, Cattle egret, and Black-crowned night-heron. The rookery is situated in a grove of trees located on an island in the lakes southwest corner. A nesting colony of White-faced ibis is located in a marshy area along Bitter Lake's northwest shore near the city of Waubay.

The American bittern, Least bittern, and Green heron are more solitary nesting species. The American and Least bitterns prefer wetlands with dense emergent vegetation and are more often heard than seen. These two species were heard at two dozen locations during a recent survey in Day, Grant, Marshall, and Roberts Counties. The Green heron seems to prefer riparian areas along the larger lakes, look for this bird along the outlet creek located in the West Unit of Pickerel Lake State Recreation Area, and at Hartford Beach State Park along Big Stone Lake's shoreline.

Great Blue Heron (photo by Doug Backlund)

White-faced Ibis (photo by Doug Backlund)

Vultures

Turkey Vulture *(Uncommon Summer Resident)*
Historically nested near Fort Sisseton (McChesney 1879), however no recent nest records exist. Frequency of summer observations in Marshall and Roberts Counties has increased during recent years and this species may be nesting in the forested coulees of these two counties.

Swans, Geese, and Ducks

Mallard hen (photo by Dennis Skadsen)

Greater White-fronted Goose *(Common Migrant)*
Snow Goose *(Common Migrant)*
Ross's Goose *(Uncommon Migrant)*
Cackling Goose *(Common Migrant)*
Canada Goose* *(Common Summer Resident)*
Tundra Swan *(Common Migrant)*
Wood Duck* *(Common Summer Resident)*
Gadwall* *(Common Summer Resident)*
American Wigeon* *(Common Migrant)*
American Black Duck* *(Rare Migrant)*
Mallard* *(Common Summer Resident)*
Blue-winged Teal* *(Common Summer Resident)*
Cinnamon Teal *(Rare Migrant)*
Northern Shoveler* *(Common Summer Resident)*
Northern Pintail* *(Uncommon Summer Resident)*
Green-winged Teal* *(Common Migrant)*
Canvasback* *(Common Summer Resident)*
Redhead* *(Common Summer Resident)*
Ring-necked Duck* *(Common Migrant)*
Greater Scaup *(Uncommon Migrant)*
Lesser Scaup* *(Common Migrant)*
Surf Scoter *(Rare Migrant)*
White-winged Scoter *(Rare Fall Migrant)*
Long-tailed Duck *(Rare Migrant)*
Bufflehead* *(Common Migrant)*
Common Goldeneye* *(Common Migrant)*
Hooded Merganser *(Uncommon Migrant)*
Common Merganser *(Common Migrant)*
Red-breasted Merganser *(Uncommon Migrant)*
Ruddy Duck* *(Common Summer Resident)*

The best season to observe waterfowl in northeast South Dakota is during spring migration. Migrating waterfowl arrive as soon as open water appears, occasionally as early as late February. Spring migration peaks by late April. Some of the earliest migrants can be seen along the west shore of Blue Dog Lake where discharge from the State Fish Hatchery flows into Blue Dog Lake providing some of the earliest open water for ducks and geese. During the winter months, check the cooling ponds located at the Big Stone Power Plant just east of Big Stone City, SD for over-wintering waterfowl. With the number of wetlands and lakes found in this area, waterfowl are one of the most abundant and easiest groups of birds to find and study.

Hooded Merganser – male (photo by Doug Backlund)

Kites, Hawks, Eagles, and Falcons

Osprey (photo by Doug Backlund)

Osprey *(Uncommon Migrant)*
Bald Eagle* *(Uncommon Migrant)*
Two of our largest raptors have apparently never been common in this area. The Bald eagle was reported as only a casual visitor during the mid to late 1800s by McChesney (1879) who made no mention of this species ever nesting in the region. Populations of both these birds were threatened with extinction due to pesticide use, but in the last few decades, after the use of DDTs and other chemicals were banned, populations have rebounded especially in South Dakota. As of the spring of 2007 there were seven active Bald eagle nests in the four counties covered by this publication; two nests in Day County, one nest in Grant County, one nest in Marshall County, and three nest sites located in Roberts County. In 2007, Osprey were reported to have successfully nested on an artificial platform in Grant County. Both species however, are still listed by state and federal agencies as either threatened or endangered.

Northern Harrier* *(Uncommon Summer Resident)*
Sharp-shinned Hawk *(Uncommon Migrant)*
Cooper's Hawk* *(Uncommon Summer Resident)*
Northern Goshawk *(Rare Winter Visitor)*
Broad-winged Hawk* *(Rare Summer Resident)*
Swainson's Hawk* *(Uncommon Summer Resident)*
Red-tailed Hawk* *(Common Summer Resident)*

Ferruginous Hawk* *(Rare Summer Resident)*
A pair successfully nested along SD Highway 12 just east of Ortley, SD for five years from 1988 to 1992 until one of the pair was killed by a vehicle along the highway. May be nesting in the Crandall-Crocker Hills of western Day County.

Rough-legged Hawk *(Uncommon Winter Resident)*
Golden Eagle *(Rare Migrant)*
American Kestrel* *(Uncommon Summer Resident)*
Merlin *(Uncommon Winter Visitor)*
Gyrfalcon *(Rare Winter Visitor)*
Peregrine Falcon *(Rare Migrant)*
Prairie Falcon *(Rare Migrant)*

Because of their size and propensity for soaring over open country, most of the raptors occurring in this area are easy to find and identify. Look for Ospreys during spring migration, especially along the wooded shorelines of large lakes like Big Stone, Waubay, and Enemy Swim. The Northern harrier can be seen near prairie wetlands at sites like Jensen Waterfowl Production Area during summer months. During late fall and winter, the Sharp-

shinned hawk, Northern goshawk, and Merlin can be found in wooded habitats like the Waubay National Wildlife Refuge, and especially at sites with conifer plantings like Hartford Beach State Park and Pickerel Lake State Recreation Area. The Cooper's hawk and Broad-winged hawk have been observed nesting along the wooded shorelines of Big Stone Lake and Sica Hollow State Park. The Swainson's and Red-tailed hawks also nest along the shores of area lakes, and will also occupy shelterbelts, especially those situated away from human habitation. Prairie falcons have been observed often during the Waubay Christmas Bird Count on prairies north of Enemy Swim Lake.

Partridge, Grouse, Turkey, and Quail

Sharp-tailed Grouse on lek (photo by Doug Backlund)

Gray Partridge* *(Rare Permanent Resident)*
Ring-necked Pheasant* *(Common Permanent Resident)*

Sharp-tailed Grouse* *(Uncommon Permanent Resident)*
Greater Prairie-Chicken* *(Rare Permanent Resident)*
The Sharp-tailed grouse has made a dramatic comeback in the last decade, thanks in part to the Conservation Reserve Program (CRP) that planted several hundred thousand acres of cropland back to grass in Day, Grant, Marshall, and Roberts Counties. Leks can be found near Enemy Swim Lake, One Road Lake, and in the Crandall-Crocker Hills of western Day County. As CRP acres retire and are returned to cropland, populations of Sharp-tailed grouse may decline in northeast South Dakota.

The Greater Prairie-Chicken has not fared as well. During the 1930s hundreds of prairie chickens would winter at the Waubay National Wildlife Refuge. Today small numbers still occur in Marshall County at Jensen WPA, in western Grant County, and in southwest Day County.

Wild Turkey* *(Common Permanent Resident)*

Rails, Gallinules, and Coots

Virginia Rail (photo by Doug Backlund)

Virginia Rail *(Uncommon Summer Resident)*
The Virginia rail was found at 23 locations during a recent survey of Day, Grant, Marshall, and Roberts Counties between 2005 and 2007 (Drilling 2007). Surveys indicated the best areas to find this bird are wetlands dominated by cattails and cordgrass located in northern Roberts County between Claire City and Cottonwood Slough.

Sora* *(Common Summer Resident)*

American Coot* *(Common Summer Resident)*

Cranes

Sandhill Crane* *(Uncommon Migrant)* McChesney (1879) reported that a few Sandhill cranes remained and bred on the Prairie Coteau near Fort Sisseton. No longer breeds in the area, occasionally a single adult bird will remain throughout the summer however.

Whooping Crane *(Rare Migrant)*

Plovers

Black-bellied Plover *(Uncommon Migrant)*
American Golden-Plover *(Common Spring Migrant)*
Semipalmated Plover *(Uncommon Migrant)*

Piping Plover (photo by Doug Backlund)

Piping Plover* *(Rare Summer Resident)* Formerly nested along Bitter and Waubay Lakes in Day County. Last reported Bitter Lake observation was a pair seen by the author on 12 June 1988. Flooding in the 1990s altered these two lake's shoreline, possibly making shoreline habitat unfavorable for Piping plovers.

Killdeer* *(Common Summer Resident)*

Stilts and Avocets

American Avocet (photo by Doug Backlund)

Black-necked Stilt *(Rare Migrant)*
American Avocet* *(Uncommon Summer Resident)*

Sandpipers and Phalaropes

Greater Yellowlegs *(Common Migrant)*
Lesser Yellowlegs *(Common Migrant)*
Solitary Sandpiper *(Uncommon Migrant)*
Willet* *(Uncommon Summer Resident)*
Spotted Sandpiper* *(Uncommon Summer Resident)*
Upland Sandpiper* *(Uncommon Summer Resident)*
Hudsonian Godwit *(Common Spring Migrant)*
Marbled Godwit* *(Uncommon Summer Resident)*
Ruddy Turnstone *(Uncommon Spring Migrant)*
Sanderling *(Uncommon Migrant)*
Semipalmated Sandpiper *(Common Migrant)*
Least Sandpiper *(Common Migrant)*
White-rumped Sandpiper *(Common Spring Migrant)*
Baird's Sandpiper *(Common Migrant)*
Pectoral Sandpiper *(Common Migrant)*
Dunlin *(Common Spring Migrant)*
Stilt Sandpiper *(Common Migrant)*
Buff-breasted Sandpiper *(Rare Migrant)*

Short-billed Dowitcher *(Uncommon Migrant)*
Long-billed Dowitcher *(Common Migrant)*

Common Snipe* *(Uncommon Summer Resident)*
American Woodcock* *(Uncommon Summer Resident)*
The males of these two species perform spectacular courtship flights during April and early May. Look for Common snipe in wet meadows adjacent to wetlands. The American woodcock prefers meadows located in wooded areas like Hartford Beach State Park, Pickerel Lake State Recreation Area, Sica Hollow, and the Waubay National Wildlife Refuge. Courtship flights of male woodcocks can be observed during early evening hours. Listen for the male's distinctive "peent" call.

Wilson's Phalarope (photo by Doug Backlund)

Wilson's Phalarope* *(Common Summer Residennt)*
Red-necked Phalarope *(Uncommon Migrant)*

Plovers, stilts, avocets, sandpipers, and phalaropes are collectively known as shorebirds. In the spring, shorebirds arrive in late March or early April dependant on weather and snowmelt. During spring, concentrations of these birds can be found almost anywhere in northeast South Dakota on mudflats and shorelines, flooded fields, and shallow wetlands. Shorelines and shallow bays along Bitter and Waubay Lakes are good shorebird areas in the spring, but also are excellent areas to find those species that breed in northeast South Dakota including the American avocet, Willet, Marbled godwit, and Wilson's phalarope. Fall migration begins as early as mid-July and continues through early November. Due to drier conditions, mudflats along the shores of larger permanent wetlands become the predominant shorebird habitat during fall migration.

Gulls and Terns

California Gull nestlings (photo by Dennis Skadsen)

Franklin's Gull* *(Common Summer Resident)*
Bonaparte's Gull *(Common Migrant)*
Ring-billed Gull* *(Common Summer Resident)*
California Gull* *(Uncommon Summer Resident)*
Herring Gull *(Uncommon Spring Migrant)*
Caspian Tern* *(Uncommon Summer Resident)*

Common Tern* *(Uncommon Summer Resident)*
Forster's Tern* *(Common Summer Resident)*
Black Tern* *(Common Summer Resident)*

Seven species of gulls and terns regularly nest in northeast South Dakota and two species are migratory. The Franklin's gull, Ring-billed gull, California gull, Caspian tern, Common tern, Forster's tern, and Black tern are all colonial nesting species. One of the largest nesting colonies in northeast South Dakota is located on Bitter Lake. Franklin's gulls and Black terns are found nesting in the marshy area along the northwest corner of the lake near Waubay. The other four species are found nesting on islands located in the southwest corner of the lake. Bitter Lake is one of two known breeding locations for the Caspian tern and California gull in South Dakota. Adult Caspian terns are often observed during the summer months hunting over Church Bay on Enemy Swim Lake.

Both Bonaparte's gull and the Herring gull are migrant species. The Herring gull is observed most often during spring migration in northeast South Dakota.

Pigeons and Doves

Eurasian Collared-Dove (photo by Doug Backlund)

Rock Pigeon* *(Common Permanent Resident)*

Eurasian Collared-Dove *(Rare Permanent Resident)*
This dove, native to southern Asia, escaped captivity in the Bahamas and rapidly spread across North America from Florida in the 1980s. The first South Dakota record was of a bird observed in Edmunds County in 1996. The author has observed this bird in the city limits of both Waubay and Webster, South Dakota, and populations will no doubt be found in most towns or cities across the region in the near future.

Mourning Dove* *(Common Summer Resident)*

Cuckoos

Black-billed Cuckoo (photo by Doug Backlund)

Black-billed Cuckoo* *(Uncommon Summer Resident)*
Yellow-billed Cuckoo *(Rare Summer Resident)*

These two birds are most often found in heavily wooded areas like Sica Hollow and Hartford Beach State Parks. Knowing the songs of male cuckoos is useful since these two species are more often heard than seen.

Owls

Immature Great Horned Owl (photo by Dennis Skadsen)

Eastern Screech-Owl* *(Uncommon Permanent Resident)*
Great Horned Owl* *(Common Permanent Resident)*
Snowy Owl *(Rare Winter Visitor)*
Burrowing Owl* *(Rare Summer Resident)*
Barred Owl *(Rare Winter Visitor)*
Long-eared Owl* *(Rare Summer Resident)*
Short-eared Owl *(Uncommon Winter Resident)*
Northern Saw-whet Owl* *(Rare Migrant)*

Breeding records exist for five of the seven species of owls observed in northeast South Dakota. The Great horned owl is the most frequently reported breeding species in this area, partially due to the fact it nests early in the season well before trees have begun to leaf and hide nest sites. The Eastern screech-owl nests in tree cavities, and occasionally nest boxes. The Long-eared owl has been observed nesting along the wooded shores of Big Stone Lake and in Sica Hollow State Park.

Burrowing owls (photo by Doug Backlund)

The Burrowing owl was last reported nesting in this area in 1985. This species nests in underground burrows in pastures and native prairies near colonies of ground squirrels. There have been unconfirmed reports of Burrowing owls nesting in the southwest corner of Grant County between Strandburg and Troy. Loss of native prairie and pest control of ground squirrels has negatively affected populations of this owl which are declining in eastern South Dakota and elsewhere. The only east river breeding record for the Northern saw-whet owl is from Roberts County for an adult observed with two immature young in 1978.

Eastern Screech-Owl (photo by Doug Backlund)

Due to the secretive nature of owls and the fact few birders are active during the

evening hours when owls are most active, several of the species listed above may be nesting more frequently than reported in northeast South Dakota.

Goatsuckers

Common Nighthawk nestling (photo by Dennis Skadsen)

Common Nighthawk* *(Uncommon Summer Resident)*

Whip-poor-will *(Rare Migrant)*
Male Whip-poor-wills have been heard calling during early evenings in late May and early June at Hartford Beach State Park and Munson Gulch. Possibly nests along Big Stone Lake and in the large forested coulees like Sica Hollow State Park.

Swifts

Chimney Swift *(Uncommon Summer Resident)*
Rarely seen in rural areas, this bird called the "flying cigar" can usually be found in larger cities like Britton, Milbank, Webster, and Sisseton where chimneys provide nesting sites. Has been observed at Hartford Beach State Park where it may nest in tree cavities.

Hummingbirds

Ruby-throated Hummingbird at nectar feeder, Buffalo Lake (photo by Dennis Skadsen)

Ruby-throated Hummingbird*
(Uncommon Summer Resident)
The ruby-throated hummingbird is found along the wooded shores of northeast South Dakota lakes and forested coulees with perennial streams like Sica Hollow. Nests have been found along the shores of Big Stone Lake and at Pickerel Lake State Recreation Area, both located in tree branches overhanging water. The author has observed this bird regularly during the summer at nectar feeders along Buffalo and Enemy Swim Lakes. The presence of jewelweed, an important source of nectar, along watercourses and lakeshores may influence the species presence. Nectar feeders placed in urban settings may attract hummingbirds during migration in northeast South Dakota.

Kingfishers

Belted Kingfisher *(Uncommon Summer Resident)*

Woodpeckers

Red-bellied Woodpecker (photo by Doug Backlund)

Red-headed Woodpecker* *(Rare Summer Resident)*
Red-bellied Woodpecker* *(Uncommon Permanent Resident)*
Yellow-bellied Sapsucker* *(Rare Summer Resident)*
Downy Woodpecker* *(Common Permanent Resident)*
Hairy Woodpecker* *(Uncommon Permanent Resident)*
Northern Flicker* *(Common Summer Resident)*
Pileated Woodpecker* *(Rare Permanent Resident)*

One of the best areas to observe this family of birds is Hartford Beach State Park. All but the Red-headed woodpecker may be observed in this park during the summer months including our largest species the Pileated woodpecker. The Pileated woodpecker is a recent newcomer to the area. The species was first observed in northeast South Dakota along the shores of Big Stone Lake near Hartford Beach State Park in the mid-1980s. The species was confirmed breeding in the state in 1994 when Bruce Harris found a nest with young near Hartford Beach State Park. Since the 1990s this woodpecker has expanded its range up along the Whetstone, Yellowbank, and Little Minnesota River drainages into the wooded coulees that form the headwaters of these rivers including Sica Hollow State Park. Maybe establishing populations on the coteau highlands, reported from Drywood Lake in west-central Roberts County and the Waubay National Wildlife Refuge in Day County.

Pileated Woodpecker (photo by Doug Backlund)

Flycatchers

Great Crested Flycatcher (photo by Doug Backlund)

Olive-sided Flycatcher *(Rare Migrant)*
Eastern Wood-Pewee* *(Uncommon Summer Resident)*
Yellow-bellied Flycatcher *(Rare Spring Migrant)*
Alder Flycatcher *(Rare Spring Migrant)*
Willow Flycatcher* *(Uncommon Summer Resident)*
Least Flycatcher* *(Uncommon Summer Resident)*
Eastern Phoebe* *(Uncommon Summer Resident)*
Great Crested Flycatcher* *(Uncommon Summer Resident)*
Western Kingbird* *(Common Summer Resident)*
Eastern Kingbird* *(Common Summer Resident)*

The majority of the flycatchers listed above will be found in mature woodlands like Sica Hollow and shrubby riparian areas along lakes and streams. The Eastern and Western kingbirds prefer more open country, often seen around farmstead shelterbelts. The Eastern phoebe is one of our earliest spring migrants; pairs are often building nests by mid-April.

Shrikes

Loggerhead Shrike* *(Rare Summer Resident)*
Northern Shrike *(Uncommon Winter Resident)*

Vireos

Red-eyed Vireo (photo by Doug Backlund)

Yellow-throated Vireo* *(Uncommon Summer Resident)*
Blue-headed Vireo *(Uncommon Migrant)*
Warbling Vireo* *(Common Summer Resident)*
Philadelphia Vireo *(Rare Spring Migrant)*
Red-eyed Vireo* *(Uncommon Summer Resident)*

All the vireos listed above may be found in mature woodlands. Male Yellow-throated and Red-eyed vireos are often heard singing during the summer months at Hartford Beach and Sica Hollow State Parks, and may possibly occur in the other forested coulees located along the eastern slope of the coteau in Grant, Marshall, and Roberts Counties.

Jays, Magpies, and Crows

Blue Jay* *(Uncommon Permanent Resident)*
Black-billed Magpie *(Rare Winter Visitor)*
American Crow* *(Common Permanent Resident)*

Larks

Horned Lark (photo by Doug Backlund)

Horned Lark* *(Common Permanent Resident)*

Swallows

Barn Swallow (photo by Doug Backlund)

Purple Martin* *(Common Summer Resident)*
Tree Swallow* *(Common Summer Resident)*
Northern Rough-winged Swallow* *(Uncommon Summer Resident)*
Bank Swallow* *(Uncommon Summer Resident)*
Cliff Swallow* *(Common Summer Resident)*
Barn Swallow* *(Common Summer Resident)*

Titmice, Chickadees, Nuthatches, and Creepers

Red-breasted Nuthatch (photo by Doug Backlund)

Black-capped Chickadee* *(Common Permanent Resident)*

Red-breasted Nuthatch *(Uncommon Winter Resident)*
Although usually observed during the winter months, especially in areas with mature pines like Pickerel Lake State Recreation Area, there is some evidence a few Red-breasted nuthatches remain to breed in northeast South Dakota. The author, and Dan Tallman - formerly of Aberdeen, SD, has banded females with well developed brood patches in May and June, indicating these females may be incubating eggs. No actual nests of this cavity nesting species have been found however.

White-breasted Nuthatch* *(Common Permanent Resident)*
Brown Creeper *(Uncommon Winter Resident)*

Wrens

Marsh Wren (photo by Doug Backlund)

House Wren* *(Common Summer Resident)*
Winter Wren *(Rare Migrant)*

Sedge Wren *(Common Summer Resident)*
Marsh Wren* *(Common Summer Resident)*
Look and listen for these two species in area wetlands. The Marsh wren is found in the interior and along the edges of wetlands where cattails grow. Sedge wrens occupy the grassy margins of wetlands and wet meadows. Since both species tend to remain out-of-sight-in heavy wetland vegetation, their presence is often confirmed by listening for singing males.

Kinglets

Golden-crowned Kinglet (photo by Doug Backlund)

Golden-crowned Kinglet *(Common Migrant)*
Ruby-crowned Kinglet *(Common Migrant)*

Both species may overwinter, especially in areas with mature pine and cedar trees like Pickerel Lake State Recreation Area, Hartford Beach and Roy Lake State Parks.

Gnatcatchers

Blue-gray Gnatcatcher (photo by Doug Backlund)

Blue-gray Gnatcatcher* *(Rare Summer Resident)*
This species may be establishing a small breeding population at Hartford Beach State

Park where Jeff Palmer found a nest with young in 2004. Adults were also observed the summer of 2006 and 2007 at this location.

Thrushes

Eastern Bluebird pair at nest box, Waubay National Wildlife Refuge (photo by Dennis Skadsen)

Eastern Bluebird* *(Uncommon Summer Resident)*
Mountain Bluebird *(Rare Migrant)*
Townsend's Solitaire *(Rare Winter Visitor)*

Veery* *(Rare Summer Resident)*
During the breeding season, the Veery may occur in all of the heavily forested coulees located along the eastern slope of the Prairie Coteau. The only confirmed breeding record is from Sica Hollow State Park, however the species has been observed in Big Coulee and Munson's Gulch during June and July.

Gray-cheeked Thrush *(Uncommon Spring Migrant)*
Swainson's Thrush *(Common Migrant)*
Hermit Thrush *(Uncommon Migrant)*

Wood Thrush* *(Rare Spring Migrant)*
A nest with young found by Bruce Harris in 1978 along Big Stone Lake in Roberts County is the only breeding record for this species in northeast South Dakota. The Wood thrush may be an accidental or occasional localized breeder in Sica Hollow State Park and other large forested coulees located in Marshall and Roberts Counties.

American Robin* *(Common Summer Resident)*
Varied Thrush *(Rare Winter Visitor)*

Mockingbirds and Thrashers

Gray Catbird (photo by Doug Backlund)

Gray Catbird* *(Common Summer Resident)*
Northern Mockingbird *(Rare Migrant)*
Brown Thrasher* *(Common Summer Resident)*

Starlings

European Starling* *(Common Permanent Resident)*

Pipits

American Pipit (photo by Doug Backlund)

American Pipit *(Common Fall Migrant)*

Waxwings

Bohemian and Cedar Waxwings (photo by Doug Backlund)

Bohemian Waxwing *(Rare Winter Visitor)*
Cedar Waxwing* *(Common Permanent Resident)*

The Cedar waxwing is most often observed late fall and winter when flocks move into residential areas and shelterbelts where fruit and cedar trees are available to provide food. The much larger Bohemian waxwing occasionally wanders south from northern Canada, where it is considered a permanent resident, possibly due to food shortages. In this area a few are observed with flocks of Cedar waxwings every few years. Large conifer plantings at area State Parks are good areas to observe Cedar waxwings and the occasional Bohemian waxwing.

Wood Warblers

Yellow-rumped Warbler - male (photo by Doug Backlund)

Blue-winged Warbler *(Rare Spring Migrant)*
Golden-winged Warbler *(Rare Migrant)*
Tennessee Warbler *(Common Spring Migrant)*
Orange-crowned Warbler *(Common Migrant)*
Nashville Warbler *(Common Fall Migrant)*
Northern Parula *(Rare Migrant)*
Yellow Warbler* *(Common Summer Resident)*
Chestnut-sided Warbler *(Uncommon Migrant)*
Magnolia Warbler *(Uncommon Migrant)*
Cape May Warbler *(Rare Migrant)*

Black-throated Blue Warbler *(Rare Fall Migrant)*
Yellow-rumped Warbler *(Common Migrant)*
Black-throated Green Warbler *(Rare Migrant)*
Blackburnian Warbler *(Uncommon Migrant)*
Pine Warbler *(Rare Fall Migrant)*
Palm Warbler *(Uncommon Migrant)*
Bay-breasted Warbler *(Uncommon Fall Migrant)*
Blackpoll Warbler *(Common Spring Migrant)*
Cerulean Warbler *(Rare Spring Migrant)*

American Redstart – male (photo by Doug Backlund)

Black-and-white Warbler* *(Common Migrant)*
American Redstart* *(Common Migrant)*
Ovenbird* *(Common Migrant)*
For most areas in northeast South Dakota the three species listed above are considered migrants; however all have been confirmed as localized breeding species in Roberts and/or Marshall Counties. In a recent survey of Sica Hollow State Park, Draeger and Johnson (2003) observed behavior confirming the Black-and-white warbler and Ovenbird as breeding species, and the American redstart as a probable breeding species. Bruce Harris observed an American redstart nesting along Big Stone Lake in 1940, and the author has observed both American redstart and Ovenbird males singing at Hartford Beach State Park during June and July. Birdwatchers should look for evidence of breeding by these three species in other woodlands located in Marshall and Roberts Counties.

Northern Waterthrush *(Uncommon Migrant)*
Connecticut Warbler *(Casual Fall Migrant)*
Mourning Warbler *(Uncommon Migrant)*
Common Yellowthroat* *(Common Summer Resident)*
Wilson's Warbler *(Common Fall Migrant)*
Canada Warbler *(Uncommon Migrant)*
Yellow-breasted Chat *(Rare Migrant)*

All but two of the twenty-nine species of wood warblers observed in Day, Grant, Marshall, and Roberts Counties are considered migrants. Both the Yellow warbler and Common yellowthroat are listed as common summer residents that breed in this area. As noted previously, three other species are considered localized breeders. The best season to observe a majority of the warblers listed above is during spring migration when males are showing their brilliant colors. Spring migration usually peaks around the first two weeks of May. Hartford Beach State Park is one of the states warbler hotspots, a total of twenty-two species have been observed in the park.

Black-throated Blue Warbler (photo by Doug Backlund)

Tanagers

Scarlet Tanager* *(Rare Summer Resident)*
The Scarlet tanager is observed during June and July at Sica Hollow State Park where Draeger and Johnson (2003) confirmed breeding in 2003. Occasionally observed at Hartford Beach State Park and a few of the larger woodlands located in Marshall and Roberts Counties namely, Munson's Gulch (Knights Canyon) and Big Springs Coulee.

Towhees, Sparrows, Juncos, and Longspurs

LeConte's Sparrow (photo by Dennis Skadsen)

Spotted Towhee *(Rare Migrant)*
Eastern Towhee *(Rare Migrant)*
American Tree Sparrow *(Common Migrant)*
Chipping Sparrow* *(Common Summer Resident)*
Clay-colored Sparrow* *(Common Summer Resident)*
Field Sparrow* *(Uncommon Summer Resident)*
Vesper Sparrow* *(Common Summer Resident)*
Lark Sparrow *(Rare Summer Resident)*
Lark Bunting *(Rare Summer Resident)*

Grasshopper Sparrow (photo by Doug Backlund)

Savannah Sparrow* *(Uncommon Summer Resident)*
Grasshopper Sparrow *(Uncommon Summer Resident)*
Henslow's Sparrow *(Rare Summer Resident)*
Le Conte's Sparrow* *(Rare Summer Resident)*
Nelson's Sharp-tailed Sparrow *(Rare Migrant)*
Fox Sparrow *(Uncommon Migrant)*
Song Sparrow* *(Common Summer Resident)*
Lincoln's Sparrow *(Common Migrant)*
Swamp Sparrow* *(Uncommon Summer Resident)*
White-throated Sparrow *(Common Migrant)*
Harris's Sparrow *(Common Migrant)*
White-crowned Sparrow *(Uncommon Migrant)*
Dark-eyed Junco *(Common Migrant)*
Lapland Longspur *(Common Winter Visitor)*
Smith's Longspur *(Rare Fall Migrant)*
Chestnut-collared Longspur* *(Uncommon Summer Resident)*
Snow Bunting *(Common Winter Visitor)*

Knowing the songs of male sparrows, and the types of plant communities each species inhabits are useful tools in finding and identifying this diverse group of birds. The aptly named Swamp Sparrow is found,

along with the Marsh Wren, in permanent wetlands with cattails and phragmites. The rarer LeConte's Sparrow may be found along the grassy edges of prairie wetlands. On larger prairie sites like those found in the Crandall-Crocker Hills look, and especially listen for Savannah and Grasshopper Sparrows. The songs of these two sparrows resemble insects more than birds. The Field Sparrow has a seemingly restricted range in northeast South Dakota, most often seen and heard along Big Stone Lake at Hartford Beach State Park.

Cardinal, Grosbeaks, Buntings, and Dickcissel

Northern Cardinal (photo by Doug Backlund)

Northern Cardinal *(Rare Permanent Resident)*
The Northern cardinal has been expanded its range since the 1800s. The cardinal has populated a small area in northeast South Dakota along the shores of Big Stone Lake in Grant and Roberts Counties. A few are usually observed at Hartford Beach State Park and in Big Stone City.

Rose-breasted Grosbeak* *(Common Summer Resident)*
Indigo Bunting* *(Uncommon Summer Resident)*

Dickcissel – male (photo by Doug Backlund)

Dickcissel *(Common Summer Resident)*
Due to the loss of grassland habitat, populations of Dickcissels were declining throughout North American. However, with the onset of the Conservation Reserve Program (CRP) that planted several hundred thousands of acres of cropland back to grass, populations increased. Unfortunately, many CRP contracts are expiring and due to the push to plant corn for ethanol, many of these grasslands will be converted back to crops, causing a decline in populations once again.

Meadowlarks, Blackbirds, and Orioles

Bobolink* *(Common Summer Resident)*
Red-winged Blackbird* *(Common Summer Resident)*
Western Meadowlark* *(Common Summer Resident)*
Yellow-headed Blackbird* *(Common Summer Resident)*
Rusty Blackbird *(Uncommon Winter Resident)*

Brewer's Blackbird* *(Rare Summer Resident)*
Common Grackle* *(Common Summer Resident)*
Brown-headed Cowbird* *(Common Summer Resident)*
Orchard Oriole* *(Common Summer Resident)*
Baltimore Oriole* *(Common Summer Resident)*

Finches

Red Crossbill – male (photo by Doug Backlund)

Pine Grosbeak *(Rare Winter Visitor)*
Purple Finch *(Common Winter Visitor)*
House Finch* *(Uncommon Permanent Resident)*

Red Crossbill* *(Uncommon Winter Visitor)* Occasionally nests at Pickerel Lake State Recreation Area, where the author observed a nest with young in 1987, and females with recently fledged young in 1993 and 1997. The crossbill has a unique bill adapted for removing the seeds from pinecones. In this area the bird is always associated with plantings of Ponderosa pine like those found at the west unit of Pickerel Lake State Recreation Area, Hartford Beach and Roy Lake State Parks.

White-winged Crossbill *(Rare Winter Visitor)*
Common Redpoll *(Uncommon Winter Visitor)*
Hoary Redpoll *(Rare Winter Visitor)*
Pine Siskin* *(Uncommon Winter Resident)*
American Goldfinch* *(Common Permanent Resident)*
Evening Grosbeak *(Rare Winter Visitor)*

Pine Siskins feeding on niger seed (photo by Dennis Skadsen)

This group of birds as a whole are often called "winter finches" due to the fact they appear during late fall into the winter season. The Purple finch, House finch, Common redpoll, Pine siskin, and American goldfinch are frequent guests at winter bird feeder stations throughout northeast South Dakota.

Old World Sparrows

House Sparrow* *(Common Permanent Resident)*

❖ Accidental Species

Swallow-tailed Kite (photo by Doug Backlund)

Accidental species are birds observed well outside their normal or expected range. The number in parenthesis is the number of observations reported for each species in Day, Grant, Marshall, and Roberts Counties.

Tricolored Heron (3)
Brant (1)
Trumpeter Swan (1)
Mississippi Kite (1)
Swallow-tailed Kite (Ft. Sisseton 1800s)
Red-shouldered Hawk (3)
Yellow Rail (1)
Common Moorhen (2)
Whimbrel (1)
Long-billed Curlew (2)
Least Tern (1)
Boreal Owl (2)
Lewis's Woodpecker (2)
Vermilion Flycatcher (1)
Gray Jay (1)
Clark's Nutcracker (1)
Common Raven (1)
Tufted Titmouse (1)
Prairie Warbler (1)
Prothonotary Warbler (1)
Worm-eating Warbler (1)
Summer Tanager (1)
Western Tanager (1)
Lazuli Bunting (1)

❖ Extinct Species

Passenger Pigeon
McChesney (1879) reported taking (shooting) several Passenger pigeons the fall of 1877, and observing additional birds in July 1878. Krosch (1987) provided a reprint of an article first published in 1880 that denotes a Passenger pigeon seen by Thomas S. Roberts and Franklin Benner between Lake Traverse and Big Stone Lakes in 1879.

❖ Endangered and Threatened Species

State Endangered
Peregrine Falcon

Federal and State Endangered
Whooping Crane
Eskimo Curlew
Interior Least Tern

Federal and State Threatened
Bald Eagle
Piping Plover

State Threatened
Osprey

The South Dakota Natural Heritage Program managed by the SD Dept. of Game, Fish, tracks forty-seven species of birds found in this area and Parks including seven endangered or threatened species. For a full list of species tracked by the Natural Heritage Program go to:

http://www.sdgfp.info/Wildlife/Diversity/RareAnimal.htm

❖ Birding Activities and Organizations

Waubay Christmas Count Participants (photo by Dennis Skadsen)

South Dakota Ornithologists Union

The organizations primary mission is to promote the study of South Dakota's birds. It accomplishes this goal by publishing a state bird book and breeding bird atlas (see references), checklists, quarterly journal (South Dakota Bird Notes), conducting field trips and meetings, sponsoring an on-line data entry and retrieval system for bird observations across the state, and issuing grants and scholarships to students and researchers to further ornithological study in the state. The organization's members range from amateur birdwatchers to professional ornithologists.

More information on SDOU can be found on the following website;

http://www.homepages.dsu.edu/palmerj/SDOU/

South Dakota Breeding Bird Survey II

A statewide survey beginning in 2008 will determine the distribution and current status of all bird species breeding in the state. The results of this survey will be compared to the first statewide breeding bird survey completed in 1992. The survey utilizes volunteer birdwatchers to collect data. The project is co-sponsored by the SD Dept. of Game, Fish, and Parks, and the Rocky Mountain Bird Observatory. Survey information and forms can be found on the following website;

http://www.rmbo.org/SDBBA2/

Christmas Bird Count

The Christmas Bird Count is an annual survey of birds usually conducted during the last two weeks of December through the first week of January. Participants drive and walk specific routes in a count circle 15 miles in diameter, tallying the species and number of birds observed within the count circle during a 24 hour period or count day. In this area, one count is still active. The Waubay National Wildlife CBC has been… Other counts have been conducted in the past for Webster and Wilmot. Unfortunately, these count circles are no longer active. The CBC is sponsored by the National Audubon Society.

For more information contact the Waubay National Wildlife Refuge at (605) 947-4521 or the WNWR website listed below in early December for count date and information.

http://www.fws.gov/waubay/

Great Backyard Bird Count

The Great Backyard Bird Count takes place mid-February. Participants count the highest number of individuals for each species observed in one location for a period of fifteen minutes over a period of four days. The count is co-sponsored by the National Audubon Society and the Cornell Laboratory of Ornithology.

For more information visit the GBBC website at:

http://www.birdsource.org/gbbc/

Project FeederWatch

Participants count birds visiting their feeding stations from November through April to help ornithologists track winter bird distribution and abundance. Participants count the highest number of individuals for each species visiting their site, usually during a set period of time once a week. Project FeederWatch is sponsored by the Cornell Laboratory of Ornithology.
For more information visit the Project FeederWatch website at:

http://www.birds.cornell.edu/pfw/

❖ Suggested References

There is an overwhelming amount of bird books to choose from dealing with identification, life histories, bird feeding and attracting birds, regional and state bird books, breeding bird atlases, bird songs etc. In addition to books there are several electronic guides available on DVD, computer programs and web-sites devoted to bird identification, and compact discs and other electronic formats used to learn and identify bird songs and calls.

The most popular bird books are field guides used to aid in identifying species. The classic "Peterson" field guide format presents paintings of birds with arrows pointing out important field marks to aid in identification. These books are usually published as eastern or western field guides using the 100th meridian as a dividing line between the eastern and western United States. More recently, authors have begun using actual photographs (some digitally enhanced) of birds in their guides, and have combined eastern and western species into one book. There are many specialty guides available that concentrate solely on identification of groups like hawks, shorebirds, gulls, warblers or sparrows.

Listed below are some useful guides and references for this area.

Field Guides:

A Field Guide to Birds of Eastern and Central North America, Fifth Edition
By Roger Tory Peterson
2006. Houghton Mifflin Publishing

In my opinion still one the best for the beginning or advanced birdwatcher. Easily carried in pocket or pack. The eastern guide will suffice for northeast South Dakota. A new edition is scheduled for publication the fall of 2008.

Field Guide to the Birds of North America, Fifth Edition
2006, National Geographic Society

The Sibley Guide to Birds
By David Allen Sibley
2006. Alfred A. Knopf, New York

State and Regional Guides:

Birds of South Dakota
By Dan Tallman, D.L. Swanson, and J.S. Palmer
2002. South Dakota Ornithologists Union

A must have for anyone interested in South Dakota birds. Accounts list the species current known status in the state, distribution map, information on habitat, and migration, nesting, and winter observation dates.

Bird Songs:

Stokes Field Guide to Bird Songs, Eastern Region
1997. Time Warner AudioBooks
(3 cd set with booklet)

Specialty Guides:

There are currently several specialty Peterson Guides in print including; Advanced Birding, Hawks, Hummingbirds of North America, Warblers, Feeder Birds, and Birds' Nests.

Other useful selections currently in print:

A Guide to the Identification and Natural History of the Sparrows of the United States and Canada
By James D. Rising, Illustrated by David D. Beadle
1996. Academic Press

A Guide to the Nests, Eggs, and Nestlings of North American Birds, Second Edition
By Paul J. Baicich and Colin J.O. Harrison
2005. Princeton University Press

The Shorebird Guide
By Richard Crossley, Kevin Karlson, and Michael O'Brien
2006. Houghton Mifflin

Websites:

South Dakota Birds and Birding
http://sdakotabirds.com/

❖ Literature Cited

Draeger, Rosemary and Linda Johnson. 2003. Breeding Bird Survey of Sica Hollow State Park, Marshall and Roberts Counties, South Dakota Summer 2003. Unpublished report, South Dakota Dept. of Game, Fish, and Parks, Pierre. +20 pp.

Krosch, Penelope 1987. A Contribution to the Ornithology of Minnesota. Reprint. Loon 59:66-71

McChesney, Charles E. 1879. Notes on the Birds of Fort Sisseton, Dakota Territories. Bull. U.S. Geol. and Geog. Surv. of the Territories 5:71-103.

Peterson, Richard. 1995. The South Dakota Breeding Bird Atlas. South Dakota Ornithologists Union, Aberdeen. 276 pp.

South Dakota Ornithologists Union. Online Seasonal Bird Observation Report System Available at:
http://homepages.dsu.edu/palmerj/sdousbor/

Tallman, Dan A., David L. Swanson, and Jeffrey S. Palmer. 2002. Birds of South Dakota. South Dakota Ornithologists Union, Aberdeen. xxvi+ 441 pp.

Mammals

A total of fifty-seven species of mammals have been reported from the four counties covered by this publication based on literature and museum records dating from the 1800s to the present. This number includes; two introduced species (house mouse and Norway rat), four mammals whose occurrence in the area is considered accidental (mountain lion, lynx, wolverine, and moose), and forty-one native species still extant in the region based on recent surveys and reliable observations during the last twenty-seven years from 1980 to 2007. Historical records exist for ten species; many of these mammals are now considered extirpated from northeast South Dakota due to loss of habitat and other pressures exerted post settlement.

The following list is compiled from the following sources; Higgins et al. (2000), observations by the author, local conservation officers, and other reliable sources. Taxonomic order, common and scientific names follow Higgins et al. (2000).

Mammals Observed in Day, Grant, Marshall, and Roberts Counties, South Dakota.

Opossum

Virginia Opossum *(Didelphis virginiana)*

There may be small-established populations of opossum in northeast South Dakota. This interesting mammal would most likely be encountered along the wooded shores of Big Stone Lake, Lake Traverse, and forested coulees located along the eastern slope of the Coteau in western Roberts County. Most observations reported to the author were of road-killed individuals. The range of this species has been expanding northward during the last sixty years. Historically, Over and Churchill (1941) reported the opossum as uncommon in South Dakota with most observed in the extreme southeast corner of the state.

Shrews

These secretive mainly nocturnal animals are hardly ever observed alive in the wild. Most encounters are with dead specimens in mousetraps or carcasses dragged in by cats. All species listed below are commonly found in northeast South Dakota except for the Arctic and Water shrew.

Arctic Shrew (*Sorex articus*)
Water Shrew *(Sorex palustris)*

The only confirmed records of these two species in northeast South Dakota are from two Arctic shrews collected by Dr. McChesney at Fort Sisseton in 1876 and 1877, and four Water shrews collected in 1876 and 1878. The author may have observed Water shrews near Buffalo Lake in the late 1960s.

The Water shrew's required habitat, perennial streams in forested habitats and more rarely upland sites, is typical of the dozens of small streams that flow from the coulees located along the eastern slope of the Coteau in Marshall, Roberts and Grant Counties. Rubbelke and Saupe (1984) reported all of the Water shrews they collected in Minnesota were trapped near beaver dams and lodges. Beaver dams are

rarely tolerated in this area due to flooding worries and loss of crop and hayland, thus this type of habitat may today, be limited in northeast South Dakota. Future surveys for the Water shrew should concentrate in areas where beavers are active. The severe droughts of the 1930s may also have caused the extirpation of this species from the area.

A 1997 small mammal survey conducted by the author failed to find either the Arctic or Water shrews in northeast South Dakota. The Arctic shrew was recently collected in McPherson County and further surveys may find this species in northeast South Dakota.

Masked Shrew *(Sorex cinereus)*
Hayden's Shrew *(Sorex haydeni)*

The Masked and Hayden's shrew are difficult to distinguish; recent research suggests the only definitive way to separate these two species is through DNA testing. Hayden's shrew reportedly favors grassland habitats, though both species were collected from riparian areas along area lakes, wetlands, and streams in 1997 by the author.

Pygmy Shrew *(Sorex hoyi)*
Northern Short-Tailed Shrew *(Blarina brevicauda)*

The smallest (Pygmy) and largest (Short-tailed) shrews found in northeast South Dakota. Both species can be found in wooded riparian areas along water.

Bats

Red Bat roosting in tree (photo by Doug Backlund)

Silver-Haired Bat *(Lasionycteris noctivagans)*
Eastern Red Bat *(Lasiurus borealis)*

Little is known about the distribution of bats in northeast South Dakota. Only two species have been confirmed for this area, the Eastern red bat which the author has observed at Sica Hollow State Park and Fort Sisseton, and the Silver-haired bat which was collected at the Waubay National Wildlife Refuge in 1952. Both of these species are considered "tree bats" favoring wooded habitats adjacent to water.

The Northern myotis *(Myotis septentrionalis)*, Little brown bat *(Myotis lucifugus)*, Big brown bat *(Eptesicus fuscus)*, and Hoary bat *(Lasiurus cinereus)* are listed as probably occurring in the area by Higgins et al (2000). The Northern myotis, Big brown and Little brown bats often roost in

buildings and may occur in northeast South Dakota towns.

Hares and Rabbits

White-Tailed Jackrabbit (photo by Doug Backlund)

Eastern Cottontail *(Sylvilagus floridanus)*
White-Tailed Jackrabbit *(Lepus townsendii)*

Both species are common in northeast South Dakota. The Eastern cottontail is found in both urban and rural areas, especially where trees and shrubs occur. The White-tailed jackrabbit prefers grassland. Jackrabbit populations increased in northeast South Dakota with the onset of the Conservation Reserve Program (CRP) that converted thousands of acres of cropland to grassland from 1986 through 2006. Many of these CRP contracts expired in 2007 and thousands of acres are being converted back to cropland. The impact on grassland species like the jackrabbit will no doubt be negative.

Chipmunks, Marmots, and Squirrels

Eastern Chipmunk (photo by Dennis Skadsen)

Eastern Chipmunk *(Tamias striatus)*

The Eastern chipmunk only occurs in northeast South Dakota and can be found along the wooded shores of Lake Traverse and Big Stone Lake in Roberts County, Pickerel Lake in Day County, and the larger forested coulees located along the eastern slope of the Coteau in western Roberts and Marshall Counties. It is uncertain why chipmunks are found at Pickerel Lake, but absent from nearby Enemy Swim Lake and the larger lakes located in Marshall County. Eastern chipmunk bones have been identified from archeological sites excavated on the Waubay National Wildlife Refuge suggesting the species may historically have had a wider distribution than today.

Woodchuck (photo by Dennis Skadsen)

Woodchuck *(Marmota monax)*

Common along wooded shores of area lakes, larger wetlands, streams, and forested coulees like Sica Hollow. Called groundhogs in eastern and southern states where its emergence from hibernation in late winter is said to predict early or late springs based on whether the animal casts a shadow or not.

Thirteen-lined Ground Squirrel (photo by Doug Backlund)

Franklin's Ground Squirrel
(Spermophilus franklinii)
Richardson's Ground Squirrel
(Spermophilus richardsonii)
Thirteen-Lined Ground Squirrel
(Spermophilus tridecemlineatus)

All three species of ground squirrels are common in northeast South Dakota. Most are familiar with the Thirteen-lined ground squirrel or stripped gopher found in both urban and rural areas. The Richardson's ground squirrel or flicker-tail resembles a small prairie dog and will form large colonies especially on overgrazed pastures. The Franklin's ground squirrel is the most secretive of the three. This species inhabits tallgrass prairie. Thirteen-lined and Richardson's ground squirrels are considered pests by park and golf course managers and by farmers who often let "plinkers" shoot these animals for sport.

Red Squirrel (photo by Dennis Skadsen)

Eastern Gray Squirrel *(Scirus carolinensis)*
Eastern Fox Squirrel *(Scirus niger)*
Red Squirrel *(Tamiasciurus hudsonicus)*

Of the three species of squirrels found in northeast South Dakota, the Eastern fox squirrel is the most common. Populations of

Eastern gray and Red squirrels exist in northeast Grant County. The author has observed both species at bird feeders located in Big Stone City during winter months. The Red squirrel has been observed along the shores of Big Stone Lake in Roberts County as far west as Hartford Beach State Park.

A small population of Eastern gray squirrels can be found in Webster South Dakota. These squirrels were introduced in 1907. These introductions may have been the source of Eastern gray squirrels observed at the Waubay National Wildlife Refuge through the 1930s and 40s.

Pocket Gophers

Plains Pocket Gopher *(Geomys bursarius)*

Common on grasslands and alfalfa fields throughout northeast South Dakota. Seldom seen aboveground, their presence is known by the mounds of dirt pushed to the surface from excavated burrows. Considered an agricultural pest on pasture and hayland due to these mounds.

The Northern pocket gopher *(Thomomys talpoides)* has been collected in nearby Clark County. Pendleton (1983) refers to this record and an additional (possibly historical) record from Fort Sisseton in Marshall County, but no other information provided. Probably occurs in the Crocker-Crandall Hills area of Day County and Hecla Sandhills of western Marshall County.

Pocket Mice

Plains Pocket Mouse *(Perognathus flavescens)*

The only record for this species in northeast South Dakota is a specimen collected near Lake Traverse in 1887. Life history accounts for the Plains pocket mouse denote the species may only occur in discrete isolated populations, and has a narrow habitat requirement of well drained sandy soils with sparse vegetation. May inhabit the Crandall-Crocker Hills area of western Day County and the Hecla Sandhills of western Marshall County. Listed by the Minnesota Department of Natural Resources as a species of special concern due to the loss of native prairie habitat.

Beaver

Beaver dam (photo by Dennis Skadsen)

Beaver *(Castor Canadensis)*

Common along northeast South Dakota streams, lakes, and permanent wetlands with an adequate supply of trees and shrubs. Because of the Beaver's habit of downing shoreline trees, it is considered a nuisance along developed lakeshores.

Mice, Rats, and Voles

Western Harvest Mouse *(Reithrodontomys meglotis)*

The only report from northeast South Dakota is for a specimen collected at Waubay National Wildlife Refuge in the 1980s (Koerner 1983). Higgins et al. (2000) indicates the species is distributed statewide, however records indicate the Western harvest mouse is more common in the southern half of the state.

White-Footed Mouse *(Peromyscus leucopus)*
Deer Mouse *(Peromyscus maniculatus)*

Both species are common throughout northeast South Dakota. The bi-colored tail of the deer mouse distinguishes this species from the similar looking White-footed mouse. Both are found in similar habitats that include grasslands and woodlands, although the White-footed mouse is more likely to be encountered in heavily forested areas like Sica Hollow. The Deer mouse, like the house mouse, often invades homes and out-buildings.

Northern Grasshopper Mouse
(Onychomys leucogaster)

Populations of this mouse may be declining due to loss of native prairie habitat. Most museum records for the four counties described in this publication are from the 1800s and 1930s. A Grasshopper mouse was recently collected in nearby Brown County. Life history accounts list the species as locally common and never abundant in the drier grassland habitat it prefers. This may account for the lack of specimen records. The Northern grasshopper mouse probably inhabits the drier prairies found in the Crandall-Crocker Hills of western Day County.

Southern Red-Backed Vole
(Clethrionomys gapperi)

This vole is found only in the Black Hills and extreme northeast South Dakota where it prefers to live along wooded streams. Red-backed voles have been collected from Sica Hollow, Hartford Beach, and Roy Lake State Parks; and along the outlet and old hatchery site creeks on Pickerel Lake.

Prairie Vole *(Microtus ochrogaster)*

As the name implies this vole inhabits native prairies and grassland. The only recent collections are from Day County (Koerner 1984). Historical records exist for several specimens collected near Lake Traverse in 1887. May be more common than records indicate, however in nearby Minnesota the Prairie vole is listed as a species of special concern due to the loss of its native prairie habitat.

Meadow Vole *(Microtus pennsylvanicus)*

Common throughout the area, specimens have been collected in all four counties. This vole prefers to inhabit areas near water especially riparian areas along creeks and wetlands. The Meadow vole may also be found in wet meadows and grasslands including native prairie.

Muskrat

Muskrat lodge (photo by Dennis Skadsen)

Muskrat *(Ondatra zibethicus)*

Common throughout northeast South Dakota, muskrats occupy permanent wetlands with sufficient aquatic vegetation to build lodges and provide food. Muskrats may also live in burrows along the steep banks of area streams and lakes.

Old World Rats and Mice

House Mouse *(Mus musculus)*
Norway Rat *(Rattus norvegicus)*

Both of these species were introduced from Europe and are considered pests. Commonly found in areas inhabited by humans.

Jumping Mice

Meadow Jumping Mouse *(Zapus hudsonius)*

Western Jumping Mouse *(Zapus princeps)*

The Meadow jumping mouse has been collected in all four counties and is the more common of the two Zapus species based on current museum and literature records. The range of the Western jumping mouse just enters the northeast corner of the state. Higgins et al. (2000) shows only the counties of Day, Grant, Marshall, and Roberts as the probable distribution in South Dakota, and reports a museum record exists for Day County although no other references to this specimen was found by the author. Both species are similar in appearance and therefore hard to identify in the field. The Meadow jumping mouse can be found in a variety of habitats including grasslands and wooded areas, while the Western jumping mouse prefers grassy areas along streams, lakes, and wetlands.

Porcupine

Common Porcupine *(Erethizon dorsatum)*

Recently confirmed from southwestern Day County, in June of 2008 a landowner in the Crandall-Crocker Hills showed the author quills that had been removed from their dog's snout. The author had received previous unconfirmed reports from a hunter who observed porcupines in southwestern Day County and in the Hecla-Sandhills area of western Marshall County in the 1980s. Apparently occupies wooded coulees along the western slope of the Prairie Coteau in Day and Marshall Counties. Higgins et al. (2002) listed the porcupine as probably occurring in Roberts County but no reason for the listing is given and the author has found no records for this county. There are no historical accounts of this species occurring in northeast South Dakota.

Dogs, Wolves, Foxes and Bear

Coyote (photo by Terry Sohl)

Coyote *(Canis latrans)*
Red Fox *(Vulpes vulpes)*
Common Gray Fox *(Urocyon cinereoargenteus)*

The Coyote and the Red fox are the best known and most common of the three Canids found in northeast South Dakota. Populations of the Coyote increased over the last decade, possibly due to the Conservation Reserve Program (CRP), which provided more grassland habitat for the species. While Coyotes can be a problem to livestock producers, this predator will reduce numbers of Red fox, skunks, and raccoons that prey on ground nesting birds like the Ring-necked pheasant, and more importantly, native grasslands species like the Sharp-tailed grouse.

Common gray fox are rarely seen due to their secretive nature. They are found in wooded hilly areas and are very adept at climbing trees to escape predators or hide. The gray fox has been observed at Hartford Beach and Sica Hollow State Parks, Pickerel Lake State Recreation Area, Waubay National Wildlife Refuge, and along the Whetstone River near Milbank. They may occur in all of the wooded coulees along the east edge of the Prairie Coteau and the more heavily wooded and undisturbed shorelines of area lakes.

Common Gray Fox (photo by Gary M. Stolz U.S. Fish and Wildlife Service)

Gray Wolf *(Canis lupus)*

Accidental. Reported by Knickerbocker as being found near Fort Sisseton in 1869, however over-hunting and loss of habitat caused extirpation of the species from much of the northern Great Plains by the early 1900s. Occasional observations of Gray wolf are reported in the area, and while it is not impossible that wandering individuals may enter northeast South Dakota from northern Minnesota, many of these unconfirmed observations may be escaped animals or crossbred dogs. Several wolves were reportedly killed in Roberts County the fall of 2008 and winter of 2009.

Black Bear *(Ursus americanus)*

Accidental. Reported by Knickerbocker as being found near Fort Sisseton in 1869, however over-hunting and loss of habitat caused extirpation of the species from much of the northern Great Plains by the early 1900s. The fall of 2008 a Black bear was observed east of Milbank in Grant County. The bear apparently hibernated in a granite

waste pile near one of the quarries, emerging the following spring. The bear was observed at several locations east of Milbank and to the west and north along the shores of Big Stone Lake in April and May of 2009, including Hartford Beach State Park. The bear was shot mid-May at a farmstead along the South Dakota/North Dakota border. Bears are being observed more frequently in the Red River valley including the city of Fargo, North Dakota.

Raccoons

Common Raccoon *(Procyon lotor)*

The raccoon is common throughout northeast South Dakota in both rural and urban habitats.

Weasels, Badgers, Skunks, and Otters

Mink (photo by Doug Backlund)

Ermine (Short-Tailed Weasel) *(Mustela erminea)*
Long-Tailed Weasel *(Mustela frenata)*
Least Weasel *(Mustela nivalis)*
Mink *(Mustela vison)*

The Mink is the best known and most common of the Mustelids found in northeast South Dakota. The three weasel species are less common and more secretive, with records for all counties except Grant. The Ermine and Long-tailed weasel occur in wooded areas along waterways and most collections and observation have been near area lakes including Pickerel, Blue Dog and Waubay Lakes in Day County, Bullhead Lake in Roberts County, and near Fort Sisseton in Marshall County. All but the Mink turn completely white during the winter months.

Wolverine *(Gulo gulo)*

Accidental. The author observed one Wolverine near Pickerel Lake in 1999. This may have been an escaped animal.

American Badger *(Taxidea taxus)*

Common on grasslands throughout northeast South Dakota, however solitary and secretive thus not often observed. Often found near colonies of Richardson's ground squirrels.

Eastern Spotted Skunk *(Spilogale putorius)*
Striped Skunk *(Mephitis mephitis)*

The Striped skunk is common throughout northeast South Dakota.

According to Higgins et al. (2000) populations of the Eastern spotted skunk (also know as the civet cat) have declined during the last twenty-five years. All of the museum and literature records found for this species were of observations or specimens collected between 1940 and 1965.

Northern River Otter *(Lutra Canadensis)*

The river otter was reported as being common in northeast South Dakota prior to settlement. Dr. Knickerbocker observed them near Fort Sisseton in 1868 and 69. However, over harvesting by trappers, settlement and habitat degradation led to the species extirpation from northeast South Dakota by the early 1900s. River otters were successfully reintroduced at the Big Stone National Wildlife Refuge located on the Minnesota River, just a few miles east of Big Stone City in 1980 and 1981. This population has apparently expanded its range into South Dakota as otters are now frequently observed along the Whetstone and Yellowbank River drainages in Grant and Roberts Counties. Recent sightings from Pickerel Lake, Red Iron Lake, and near Roy Lake suggest this species is now becoming established across the Prairie Coteau.

Cats

Dr. B. Knickerbocker did not report these three species from the Fort Sisseton area. It's hard to believe that with the availability of larger prey like the buffalo and elk that at least two of these predators, the Bobcat and Mountain lion, were not present prior to settlement.

Mountain Lion *(Felis concolor)*

Populations of Mountain lions, once rarely seen in the Black Hills, have increased to a point where the species is expanding its range as far east as the Missouri River. The frequency of east river observations has also increased during the last few years, the author observed one Mountain lion near Pickerel Lake State Recreation Area the fall of 2005. While most Mountain lions observed in eastern South Dakota are transient young males, there are some experts who believe populations, if not already, will become established in areas like the forested coulees of northeast South Dakota.

Bobcat (photo by Doug Backlund)

Bobcat *(Felis rufus)*

Rarely observed in the area, however a small population of Bobcats may be present in northeast South Dakota. The author observed one Bobcat near Wilmot, SD in 1983 and local conservation officers have reported Bobcat sightings near Sica Hollow. Two Bobcats were shot in the late 1970s in either Grant or Roberts County (Haas 1983). Most likely to be encountered in the larger forested coulees like Sica Hollow.

Lynx *(Lynx Canadensis)*

Accidental. The only confirmed record of the Lynx is from a specimen shot in Marshall County in 1962. This specimen was collected during a well-documented irruption of the species into the northern Great Plains during the winter of 1962-63 (Gunderson 1978).

Ungulates

Mule Deer fawn (photo by Dennis Skadsen)

Mule Deer *(Odocoileus hemionus)*

Common in the central and western half of the state, the Mule deer is only occasionally observed in northeast South Dakota. This deer has been reported from numerous sites including; Pickerel Lake, Hartford Beach State Park, and the Crandall-Crocker Hills area. An observation of a doe with fawn in the 1980s (Haas 1983) confirms the species may occasionally breed in the area.

White-Tailed Deer *(Odocoileus virginianus)*

As with the other large ungulates occurring in northeast South Dakota, populations of the White-tailed deer plummeted as the area was settled in the early 1900s. Over (1941) reported the White-tailed deer, once common over the entire state, was by 1941 only found in the Black Hills and along the Missouri River. Many northwest Day County residents protested the first official hunting season in 1951, closing their lands to public hunting under the belief there were not enough deer in the area to support a harvest. Fortunately, populations of the White-tailed deer have recovered and the species is found throughout northeast South Dakota in a variety of habitats from grassland to woodlands.

Moose *(Alces alces)*

Accidental. Individual Moose are observed almost yearly in northeast South Dakota with most sightings during the fall months. The majority are young males wandering down the Red River Valley from northern North Dakota and Minnesota into Roberts County. These moose usually do not stay in the area any longer than a few days or weeks. No breeding populations are known; however there was a report of a cow and calf observed near Drywood Lake in west-central Roberts County by local residents in 1988.

Pronghorn *(Antilocapra americana)*

Prior to settlement in the late 1800s, the antelope was probably a common sight on the prairies of northeast South Dakota. Knickerbocker reported observing antelope near Fort Sisseton in 1868 and 69. However, by the late 1800s, over-hunting and the conversion of native prairie to croplands caused the species near extinction.

Between 1960 and 1965, the SD Dept. of Game, Fish, and Parks released several hundred antelope in Day, Grant, Marshall, and Roberts Counties in an attempt to reintroduce the species to northeast South Dakota. Populations apparently never reached a successful level to support a hunting season. Remnant populations still exist today with antelope occasionally observed near Pickerel, Drywood, and One Road Lakes; and along the western edge of Grant County near Marvin and Summit. The largest remaining population from these

reintroductions is found in the Crandall-Crocker Hills of western Day County.

❖ Endangered and Threatened Species

State Threatened
River Otter *(Lontra Canadensis)*

The following species are monitored by the South Dakota Natural Heritage Program managed by the S.D. Dept. of Game, Fish, and Parks. Observations of these species should be reported to Game, Fish, and Parks personnel.

Arctic shrew
Water shrew
Pygmy shrew
Silver-haired bat
Eastern chipmunk
Eastern gray squirrel
Meadow jumping mouse
Eastern spotted skunk
Northern river otter

❖ Extirpated Species

American Marten *(Martes Americana)*
Elk *(Cervus elaphus)*
American Bison *(Bos bison)*

Knickerbocker reported all three species listed above as being found near Fort Sisseton in 1869. Unfortunately, as this area was settled in the late 1800s over-hunting and the loss of habitat caused the near extinction of all of these species in the northern Great Plains with only remnant populations remaining in wilderness areas elsewhere.

Morris (no date) reports that one of the last recorded buffalo hunts occurred in June of 1879 near present day Stockholm, SD in Grant County. A group of eight buffalo were seen and Native Americans from a nearby encampment on the Yellowbank River killed five. Today, private producers and the Sisseton Wahpeton Oyate in northeast South Dakota maintain captive herds of Elk and buffalo.

❖ Hypothetical Species

Northern Flying Squirrel *(Glaucomys sabrinus)*

No confirmed specimens. Over (1941) stated that flying squirrels are found along the west shores of Big Stone Lake in Roberts County and northeast Grant County. Local landowners interviewed by the author recall seeing flying squirrels along Big Stone Lake, probably in the 1920s and 1930s. Jones (1983) shows this species as occurring in the Red River Valley from the South Dakota border north, however flying squirrels were not found during a recent survey of northeast South Dakota in 2006 and 2007.

Swift Fox *(Vulpes velox)*

The author received reports of Swift fox being observed in western Roberts County from biologists working for the Sisseton Wahpeton Oyate and one landowner; however specimens or photographs have never confirmed these sightings. Over (1941) reported that the Swift fox was abundant over the entire state prior to 1875 but Knickerbocker did not report this species during his tenure at Fort Sisseton.

❖ Suggested Reference

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By Fiona Reid
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By Kenneth F. Higgins et al.
2000. Dept. of Game, Fish and Parks, Pierre, SD.

❖ Literature Cited

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Haas, Arlo. 1983. List of mammals observed or trapped in northeast SD. Personal correspondence.

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Over, William H. 1941. Mammals of South Dakota. University of South Dakota, Vermillion. 56 pp.

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WILDLIFE VIEWING AND NATURAL AREAS IN NORTHEAST SOUTH DAKOTA

Bitter Lake

Located: South edge of Waubay, South Dakota.

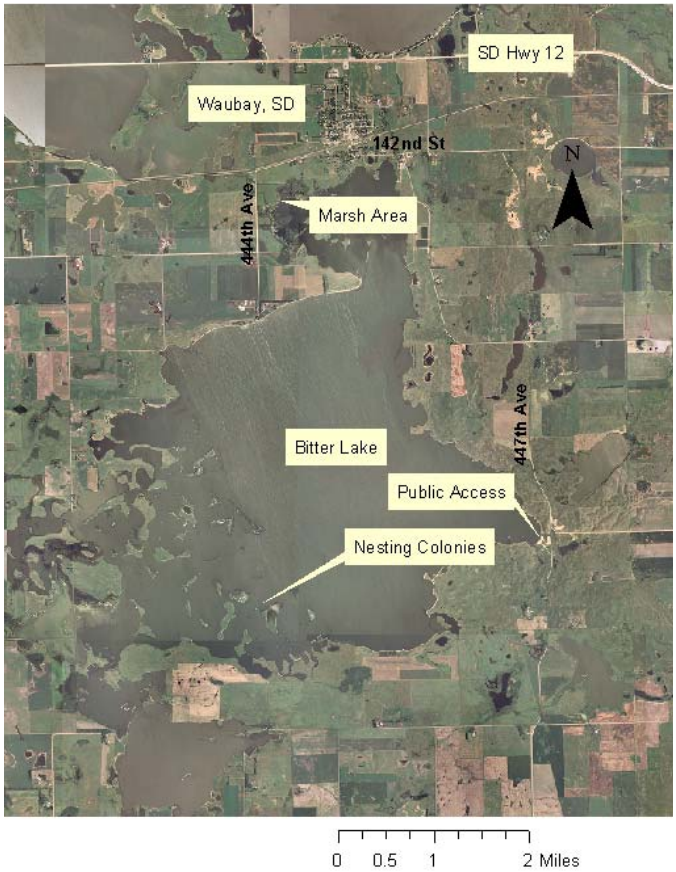
Day County, Twp 121N Rng 54W

Access: Public access off paved highway (447th Ave), parking lot, boat ramp, pit toilet.

Bitter Lake Heron Rookery (photo by Laura Hubers, USF&WS)

Description:

Several species of colonial nesting birds are found at this location. Three islands located in the southwest corner of the lake provide nest sites for the American white pelican, Double-crested cormorant, Great blue heron, Great egret, Snowy egret, Cattle egret, Black-crowned night-heron, Ring-billed gull, California gull, Caspian tern, and Common tern. Several other colonial nesting species are found in the northwest corner of the lake. These species prefer to nest in the cattail marsh found at this location and include Eared grebe, Western grebe, White-faced ibis, Franklin's gull, and Black tern. These colonies should never be disturbed or trespassed upon, view from adjacent roads and shoreline where possible or from a safe distance on the water. Bitter Lake is also a good location to view shorebirds like the American avocet, Willet, and Marbled godwit. The Piping plover formerly nested along Bitter Lake. However this species has not been observed since 1990 possibly due to changing water conditions caused by flooding in the late 1990s that resulted in the lakes elevation rising by twenty-feet, and the lakes water becoming less alkaline.



Crandall Hills Prairie

Peckham Ranch, Crandall Hills (photo by Dennis Skadsen)

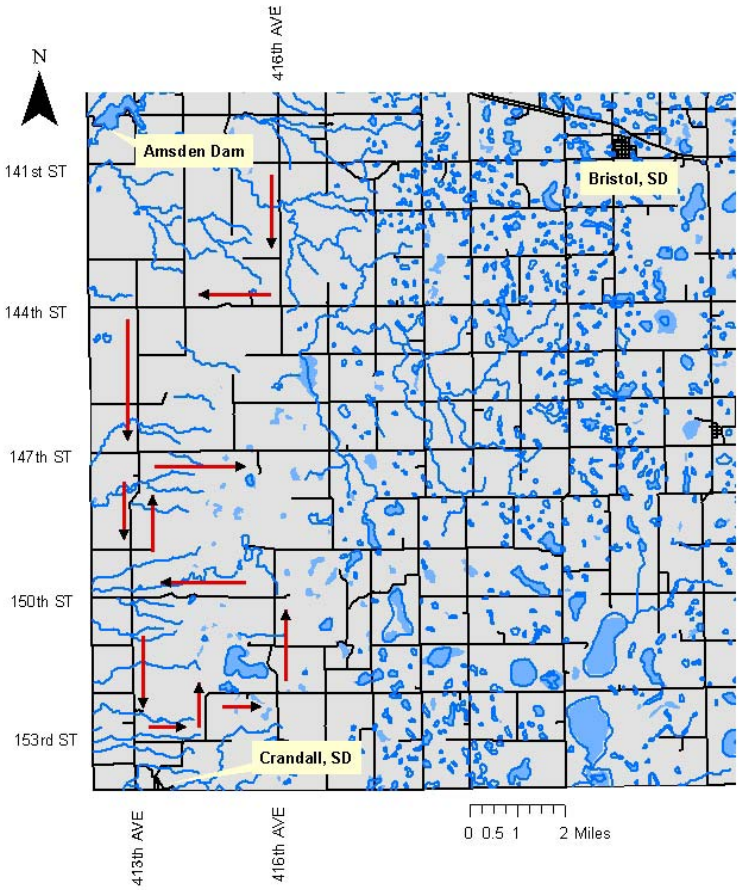
Located: Southwestern Day County, 7 miles west of Bristol, SD to Crandall, SD.

Day County, Twp 120N Rng 59W and Twp 121N Rng 59W

Access: Privately owned lands, obtain permission before entering. Prairie and grassland birds can be viewed from the marked roads. All roads are maintained gravel.

Description:

Some of the largest tracts of remnant tallgrass prairie are found in southwestern Day County in the area locally known as the Crandall Hills. Follow the route marked on the adjacent map beginning on 416th Ave west of Bristol, SD, proceeding south to near Crandall, SD, and then looping back to 413th Ave north to 147th St, finally heading east toward Bristol. This is an excellent area to look for grassland birds. On the upland prairies look for the Short-eared owl, Upland sandpiper, and Chestnut-collared longspur. On the lowland prairies Grasshopper, Henslow's, Savannah, and Vesper sparrows have been observed. Pronghorn antelope, reintroduced to the area in the 1960s, are often observed in the hills along the marked route. Due to the abundance and diversity of native prairie plants the Crandall Hills provides habitat for several species of prairie butterflies that include the Regal fritillary, Prairie ringlet, Plains skipper, Leonard's skipper and the rare Dakota skipper.



Enemy Swim Lake

Bulrush bed, Enemy Swim Lake (photo by Dennis Skadsen)

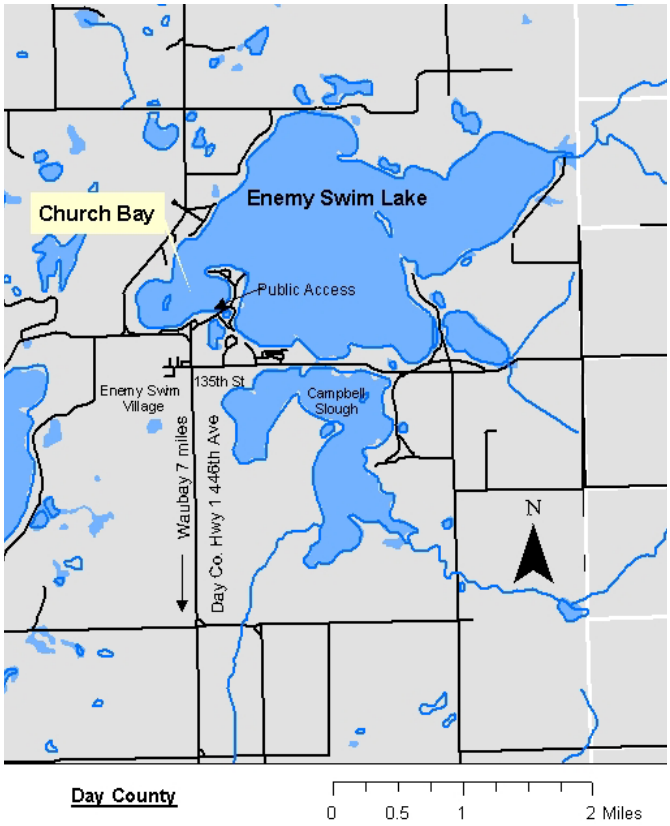
Located: 1 mile east and 7 miles north of Waubay, South Dakota.

Day County, Twp 123N Rng 53 Sec 15 (Access Area)

Access: Public access area in Church Bay, gravel parking lot, boat ramp, pit toilet, handicap accessible boat dock, no camping allowed.

Description:

Enemy Swim is one of South Dakota's cleanest lakes. Due to its excellent water quality, this lake is preferred habitat for the Common loon, Red-necked grebe, and Caspian tern in northeast South Dakota. All three species can easily find aquatic prey in Enemy Swim's clear waters. During the summer months, look for Caspian terns flying along the shoreline of Church Bay in search of food or resting on rocky points and islands on the main lake. The Red-necked grebe commonly nests in bulrush beds in the lakes quieter bays. Adult Common loons often linger on the lake through summer. During June of 2005 and 2006, adult loons with flightless young were observed, the first confirmed breeding of the species in South Dakota.



Enemy Swim Lake has a complex basin with a variety of bottom substrates (large rocks, sand, and gravel) that support extensive beds of macrophytes and a diverse population of fish and aquatic invertebrates rarely found in other South Dakota lakes. A majority of the lakes shoreline is undeveloped and remains in its native state. Along the northeast shoreline lies a large tract of native tallgrass prairie visible from the lake.

Hartford Beach State Park

Hartford Beach State Park prairie (photo by Dennis Skadsen)

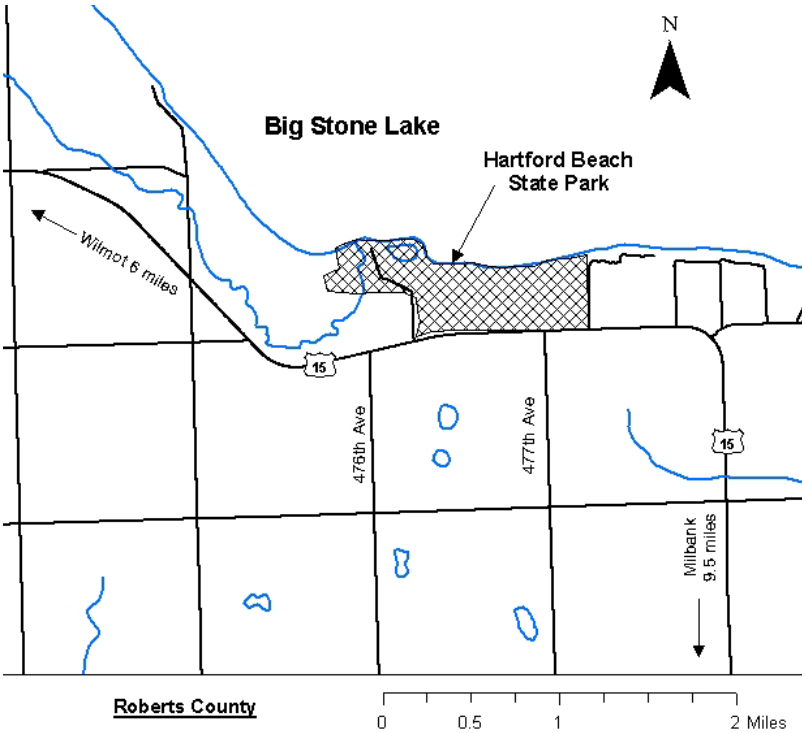
Located: 11.5 miles north and 1.75 miles west of Milbank, South Dakota.

Roberts County, Twp 122N Rng 48W Sec 3

Access: State Park Entrance Fee or License required. Paved roads, parking lots, and maintained hiking trails throughout.

Description:

Hartford Beach State Park is one of South Dakota's most unique parks offering the outdoor enthusiast the opportunity to view several plant and animal communities that include tallgrass prairie, deciduous forest, and spring-fed cold-water streams. Forty-two species of butterflies have been observed in the park; including the rare Dakota skipper on the park's remnant tallgrass prairie. A total of 184 species of birds have been observed in the park including 22 species of warblers. The patient birdwatcher may be able to observe six species of woodpeckers in the park including the Yellow-bellied sapsucker, Red-bellied woodpecker, and the rare Pileated woodpecker. For birdwatchers the best time to visit Hartford Beach State Park is during spring migration in early May, when warblers and other migrants are at their peak numbers. For butterfly enthusiasts, the last week of June through early July is the peak flight period for many of the parks butterflies including the Dakota skipper.



The Aspen Spring Hiking Trail winds along one of the parks spring-fed cold-water streams up onto the parks remnant tallgrass prairie and is the best area for bird and butterfly watching.

Old Fish Hatchery Public Access Area

Located: 1mile east, 9 miles north, and 1 mile east of Waubay, South Dakota on Pickerel Lake.

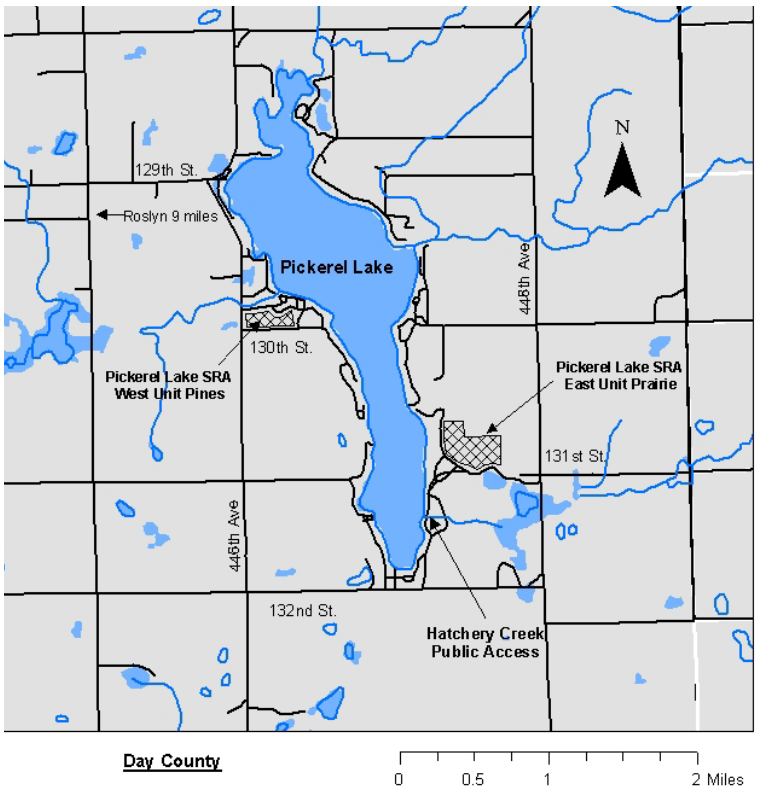
Day County, Twp 124N Rng 53W Sec 35

Access: Gravel road, parking lot, boat ramp, and pit toilet. No camping allowed at site.

Marsh marigold along Hatchery Creek (photo by Dennis Skadsen)

Description:

The Pickerel Lake State Fish Hatchery was located at this site from 1929 until a new hatchery located on Blue Dog Lake opened for operation the spring of 1983. Springs located upstream from the old hatchery site provided water for the hatchery. The springs are still active today and provide most of the water you see flowing to Pickerel Lake. Additional water comes from further upstream in Pickerel Lake's watershed. The moist rich woodland adjacent to this creek provides the right habitat for several wildflowers. Look for Bloodroot, Large-flowered bellwort, and Nodding trillium in bloom during late spring along the north-facing slope. The Marsh marigold, a semi-aquatic plant growing along the creeks swampy margins, is one of the first wildflowers to bloom in late-April early-May.



Several species of butterflies and dragonflies can be observed at this site. Butterflies include the Mustard white, White admiral, and one of our smallest butterflies the Least skipper, found flying along the edge of the creek. The Twelve-spotted, Four-spotted, and Widow skimmers are just three species of dragonflies easily observed here. The Phantom crane fly is an interesting insect that can be found along the creek in the late spring.

Owens Creek Fens

Located: 0.25 miles north, 0.5 miles east, and 1 mile north of Ortley, South Dakota

Roberts County, Twp 122N Rng 52W Sec 8 & 9.

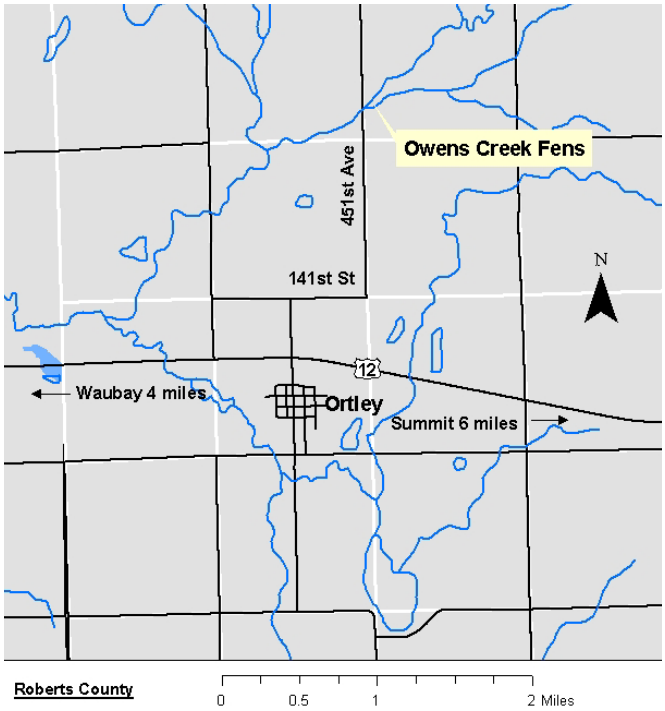
Access: No off-road parking, narrow gravel road with no shoulder. Only view this environmentally sensitive site from road. Tribal Trust Land managed by the Sisseton Wahpeton Sioux Oyate.

Owen's Creek Fen (photo by Dennis Skadsen)

Description:

This site is one of the largest and best examples of a *Bog Birch-Willow Rich Fen* community in northeastern South Dakota. These fens occupy approximately 100 acres along the north fork of Owens Creek. Rare plants inhabiting this fen include bogbean, rush aster, sage willow, and slender cottongrass. Most of these plants can be viewed from the road. Birds inhabiting the fen include the Swamp sparrow, and both Marsh and Sedge wrens. Owens Creek is one of the few waterbodies in South Dakota inhabited by the Central mudminnow.

Bog Buckbean (photo by D. Skadsen)



Pickerel Lake State Recreation Area

Located: 1mile east and 11 miles north of Waubay, South Dakota.

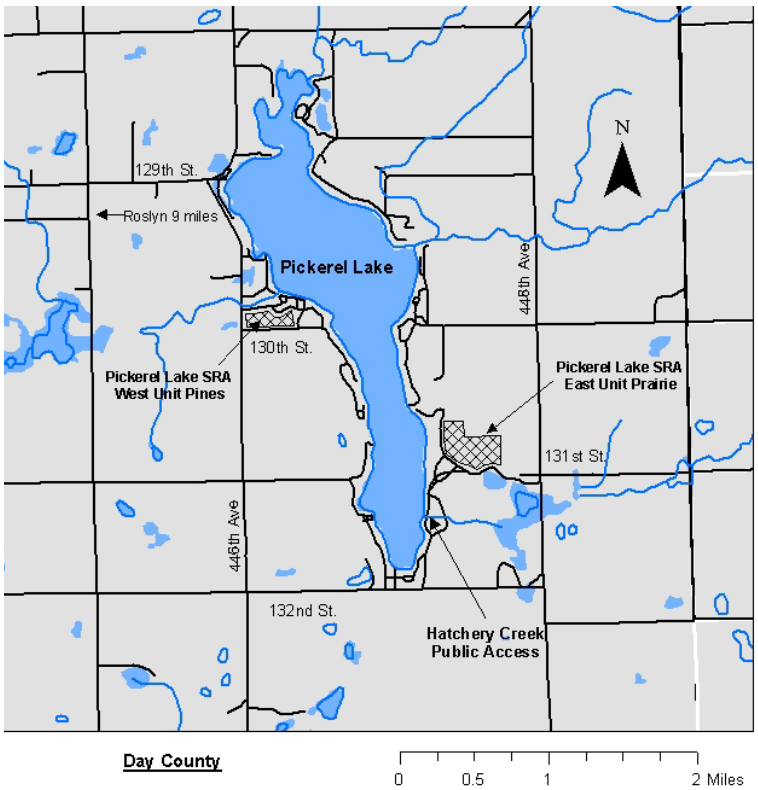
Day County, West Unit – Twp 124N Rng 53W Sec 22; East Unit- Twp 124N Rng 53W Sec 26

Access: State Park entrance fee or license required. Paved roads, parking lots, and maintained hiking trails throughout.

Pickerel Lake State Recreation Area – West Unit (photo by Dennis Skadsen)

Description:

This park, located along the shoreline of the states deepest natural lake, has several different habitat types to explore. The west unit has a large mature stand of ponderosa pine and eastern red cedar that frequently attracts several uncommon and even rare birds during the winter months. Species observed in the past include Merlin, Barred owl, Red-breasted nuthatch, Townsend's solitaire, Varied thrush, Bohemian waxwing, Pine grosbeak, and both Red and White-winged crossbills. The east unit of the park supports several wetlands where waterfowl and other species like the Swamp sparrow may be observed. Efforts are underway to restore the east unit's remnant tallgrass prairie. Controlled burns and shrub removal have been implemented to reinvigorate prairie forbs and grasses. Rare plants found on the parks prairie include pincushion cactus, downy gentian and wild prairie lilies. The Eastern chipmunk and Woodchuck can be found along the lakes wooded shorelines as well as several species of woodland butterflies and birds.



Sica Hollow State Park

Sica Hollow State Park (photo by Don Allen)

Located: 2 miles west, 7 miles north, and 6 miles west of Sisseton, South Dakota.

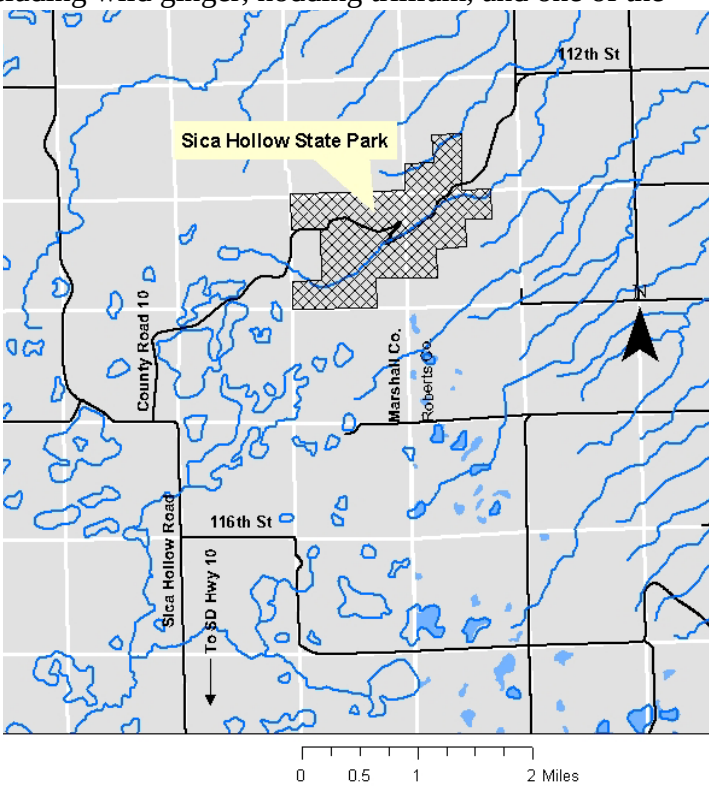
Marshall County, Twp 127N Rng 53W Sec 36; Roberts County, Twp 127N Rng 52W Sec 30 & 31

Access: State Park entrance fee or license required. Paved roads, parking lots, and maintained hiking trails throughout, no camping.

Description:

Sica Hollow State Park is one of several coulees located along the eastern slope of the prairie coteau that due to its unique micro-climate supports an eastern deciduous forest ecosystem. Plant communities and habitats found within the parks 800+ acres include oak-basswood and maple-basswood forests, tallgrass prairie on the upland, fens, and spring-fed cold-water streams.

The park is home to several rare plants including wild ginger, nodding trillium, and one of the few known populations of the yellow lady's slipper orchid. Botanists have recorded 314 species of vascular plants within the parks boundaries. The parks native stands of sugar maples can provide splendid fall colors.



Birdwatchers can observe several species of birds rarely found in eastern South Dakota during the summer months; Broad-winged hawk, Pileated woodpecker, Indigo bunting, Yellow-throated Vireo, Veery, Scarlet tanager, Black-and-white warbler, American redstart, and Ovenbird.

The park is also home to several uncommon species of butterflies, gray treefrogs, and the Eastern chipmunk. Look for Blacknose dace in the quieter pools of Roy Creek.