

**COMPLETED PROJECTS FUNDED UNDER STATE WILDLIFE GRANTS IN SOUTH DAKOTA  
As of 14 December 2015**

<b>Project</b>	<b>Objectives</b>	<b>PI or contractor</b>	<b>Final Products and Related Publications</b>
Survey of animal species of greatest conservation needs at representative public areas in South Dakota T-2-R	<ol style="list-style-type: none"> <li>1. survey animal species of greatest conservation need at three publicly-owned areas in eastern SD</li> <li>2. draw attention to species of concern and methods used to conduct biological surveys</li> <li>3. compile set of survey protocols that have application to future taxa surveys in SD</li> </ol>	Ken Higgins, SDSU, Coop. Unit	<a href="#">Project Summary</a>  SD Conservation Digest article: <a href="#">Higgins, K.F., C.R. Berry, Jr. and S.R. Chipps. 2005. South Dakota's first "Bioblitz". SD Conservation Digest May/June 2005. SDGFP.</a>  <a href="#">Bird Checklist</a> <a href="#">Other Animals Checklist</a> <a href="#">Vascular Plants Checklist</a>
Black-backed and Lewis's woodpeckers responses to fire; can post-burn use be predicted using pre-burn forest structure variables? T-3-R	<ol style="list-style-type: none"> <li>1. determine the validity of a black-backed woodpecker model predicting occurrence in a burned site based on pre-fire forest structure</li> <li>2. determine the response of other woodpecker species to fire</li> <li>3. quantify habitat characteristics of nest sites compared to random sites to determine habitat preferences of breeding woodpeckers</li> </ol>	Kerri Vierling, SD School of Mines and Technology	<a href="#">Project Summary</a>  Final Report: <a href="#">Vierling, K. 2005. Report on woodpecker breeding in the Jasper fire. Submitted to the Game, Fish, and Parks Department. South Dakota School of Mines and Technology/University of Idaho May 18, 2005.</a>  Publication: <a href="#">Vierling, K.T. L.B. Lentile, and N. Nielsen-Pincus. 2006. Preburn characteristics and woodpecker use of burned coniferous forests. Journal of Wildlife Management 72(2):422-427.</a>
Enhance wildlife habitat provided by aspen in Custer State Park T-4-R	Protect/enhance essential habitats for wildlife species by treating at least 40 aspen clones	Gary Brundige, CSP	<a href="#">Project Summary</a>  <a href="#">Final Report</a>
An evaluation of nesting success of grassland birds in fragmented and unfragmented areas in the mixed grass prairie region of South Dakota, with emphasis on declining grassland species T-5-R	<ol style="list-style-type: none"> <li>1. to evaluate the relationship between nest density and grassland patch size and landscape composition</li> <li>2. to evaluate the relationship between nest success and grassland patch size and landscape composition</li> <li>3. to evaluate the relationship between nest predation and parasitism and grassland patch size and landscape composition</li> <li>4. to determine the most effective size</li> </ol>	Kristel Bakker, DSU and Ken Higgins, SDSU, Coop. Unit	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Berman, G. M. 2007. Nesting success of grassland birds in fragmented and unfragmented landscapes of north central South Dakota. MS thesis. South Dakota State University, Brookings, SD. 64pp.</a>

	<p>of grassland patches for bird conservation areas in eastern South Dakota</p> <ol style="list-style-type: none"> <li>5. to determine habitat requirements for Le Conte's and Henslow's sparrows, if encountered</li> <li>6. to record species of concern from all taxa encountered during research</li> </ol>		
Development of South Dakota's comprehensive wildlife conservation plan T-6-R	Complete the South Dakota wildlife comprehensive plan by September 30, 2005	Jon Haufler, Ecosystem Management Research Institute	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">SDGFP. 2006. South Dakota Comprehensive Wildlife Conservation Plan. SDGFP, Pierre, Wildlife Division Report 2006-08.</a></p> <p><a href="#">Guide to the Plan</a></p>
Ecology of the Black Hills redbelly snake ( <i>Storeria occipitomaculata pahasapae</i> ) with emphasis on food habits T-7-R	<ol style="list-style-type: none"> <li>1. determine seasonal activity, reproductive characteristics, relative body size, habitat selection, population characteristics, distribution, and food habits of the Black Hills redbelly snake</li> <li>2. determine if there is an association between prey selection and abundance of prey and whether prey abundance is influencing the Black Hills redbelly snake population</li> </ol>	Chuck Dieter, SDSU	<p><a href="#">Project Summary</a></p> <p><a href="#">Final Report</a></p> <p>(awaiting M.S. thesis)</p>
Herpetology surveys for South Dakota Comprehensive Wildlife Conservation Plan T-8-R	By January 30, 2005, survey ten priority habitats for all species of reptiles and amphibians; these surveys will focus on species of concern and state listed species of amphibians and reptiles	Many (10 total)	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">South Dakota Statewide Herpetology Survey 2004. South Dakota Department of Game, Fish and Parks. Report prepared by Doug Backlund, South Dakota Department of Game, Fish and Parks, Pierre.</a></p>
Evaluation of a decision support tool to help support fish species at risk in South Dakota streams T-9-R	<ol style="list-style-type: none"> <li>1. assess the accuracy of models to validate their use as decision support tools</li> <li>2. increase data on distributions of fish species focusing on 9 species of concern</li> <li>3. obtain data on the habitat and community associations of 9 fish species of concern</li> </ol>	Chuck Berry, SDSU, Coop. Unit	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Hayer, C., S.S. Wall, and C.R. Berry, Jr. 2006. Evaluation of aquatic gap analysis fish distribution models, with emphasis on rare fish species in South Dakota. Final Report to SDGFP. SD Cooperative Wildlife and Fisheries Research Unit, South Dakota State University, Brookings.</a></p>

<p>Reintroduction of osprey into suitable sites along the Missouri River in South Dakota T-10-R</p>	<ol style="list-style-type: none"> <li>1. reintroduce 20-30 osprey chicks per year from 2004 through 2007 at selected sites in southeastern South Dakota</li> <li>2. document timing, distance and routes of migration for juvenile ospreys hatched from selected sites in South Dakota</li> <li>3. identify wintering areas and arrival and departure dates</li> <li>4. evaluate characteristics of the migration routes and wintering areas and attempt to identify potential threats to ospreys based on this evaluation</li> </ol>	<p>Melissa Horton, Wildlife Experiences, Janie Fink and Wayne Melquist, University of Idaho</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Dowd Stukel, E. and W. Melquist. 2011. Reintroduction of osprey into suitable sites along the Missouri River in South Dakota. Final Report, T-10. SDGFP, Pierre.</a></p> <p>SD Conservation Digest article: <a href="#">Fink, J. 2009. Wings over water – Restoring a piece of South Dakota’s natural heritage. SD Conservation Digest March/April 2009. SDGFP, Pierre.</a></p>
<p>Peregrine falcon (<i>Falco peregrinus</i>) reintroduction in South Dakota T-10-R-1</p>	<p>By September 30, 2013: Reintroduce 15 captive-reared falcons in an urban setting in South Dakota to facilitate the return of adult peregrine falcons to establish breeding territories in the vicinity of the reintroduction area.</p>	<p>Janie Fink, Birds of Prey Northwest</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Dowd Stukel, E. 2013. Peregrine falcon (<i>Falco peregrinus</i>) reintroduction in South Dakota. Final Report, T-10-R-1, Amendment #5. SDGFP, Pierre.</a></p> <p>SD Conservation Digest article: Fink, J. 2013. Black Hills peregrine falcon reintroduction project. South Dakota Conservation Digest 80(3):12-15. SDGFP, Pierre.</p>
<p>A proposal to examine endemism and population relationships of the Black Hills <i>Oreohelix</i> snails T-11-R</p>	<ol style="list-style-type: none"> <li>1. determine if the <i>Oreohelix</i> in the Black Hills consist of one or more than one biological entities that can be defined by genetics, morphology, anatomy, and/or environmental conditions</li> <li>2. determine if <i>Oreohelix</i> in the Black Hills represent an endemic group, unique from other <i>Oreohelix</i> in the geographical region</li> </ol>	<p>Tamara Anderson, University of Colorado</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Anderson, T., R. Guralnick, and K. Weaver. 2006. Endemism and population relationships of the Black Hills <i>Oreohelix</i> snails – Final Report.</a></p> <p>Publications: Anderson, T. K., K. F. Weaver, and R. P. Guralnick. 2007. Variation in adult shell morphology and life-history traits in the land snail <i>Oreohelix cooperi</i> in relation to biotic and abiotic factors. <i>Journal of Molluscan Studies</i> 73: 129-137. Weaver, K., T. K. Anderson, and R. P. Guralnick. 2006. Combining phylogenetic and ecological niche modeling approaches to determine distribution and historical biogeography of the Black Hills Mountain Snails</p>

			<p>(Oreohelicidae). Diversity and Distributions 12:756-766.</p> <p>Anderson, T. K and C. Schmidt. 2007. Population dynamics of a land snail species of conservation concern in the Black Hills. Intermountain Journal of Sciences 13:13-31.</p> <p>Anderson, T. K. 2004. Field Guide to Black Hills Land Snails. Natural History Inventory Publication No. 22. University of Colorado Museum.</p> <p>Anderson, T. K. 2004. A Review of the U.S. distribution of <i>Melanoides tuberculatus</i> (Muller, 1774), an exotic freshwater snail. Ellipsar 6(2): 15-18.</p>
<p>Topeka shiner (<i>Notropis topeka</i>) monitoring in eastern South Dakota streams T-12-R</p>	<p>Develop and implement a 3-year Topeka shiner survey program in 11 watersheds necessary to evaluate the management goals outlined in the State Plan and provide baseline data for evaluating long-term trends in Topeka shiner populations and habitat</p>	<p>Steve Wall</p>	<p><a href="#">Project Summary</a></p> <p><a href="#">Executive Summary from final report:</a> Wall, S.S. and S. K. Thomson. 2007. Topeka shiner (<i>Notropis topeka</i>) monitoring in eastern South Dakota streams (2004-2006). Unpublished report submitted to the South Dakota Game, Fish and Parks, Pierre, SD.</p>
<p>Nesting success, brood survival, and movements of long-billed curlews (<i>Numenius americanus</i>) in grazed landscapes of western South Dakota T-13-R</p>	<ol style="list-style-type: none"> <li>determine the effects of land-use practices (grazing regimes) on nesting habitat selection, nest density, and nesting success by long-billed curlews</li> <li>determine the effects of land-use practices (grazing regimes) on movement rates and brood survival of long-billed curlews</li> <li>assess the importance of early-seasons food availability from different grazing regimes on the resultant nesting success and population recruitment in long-billed curlews</li> </ol>	<p>K.C. Jensen, SDSU</p>	<p><a href="#">Project Summary</a></p> <p>Project Thesis: <a href="#">Clarke, J. N. 2006. Reproductive ecology of long-billed curlews breeding in grazed landscapes of western South Dakota. M.S. Thesis, South Dakota State University, Brookings. 94 pp.</a></p>
<p>Natural history and genetic makeup of the northern flying squirrel (<i>Glaucomys sabrinus bangsi</i>) population in the Black Hills and northeastern South Dakota T-14-R</p>	<ol style="list-style-type: none"> <li>determine reproductive characteristics, morphological characteristics, habitat selection, seasonal activity patterns, population characteristics, distribution and food habits</li> <li>to develop proper handling, trapping, and radio-collaring techniques</li> <li>determine the genetic variability and</li> </ol>	<p>Chuck Dieter, SDSU and Hugh Britten, USD</p>	<p><a href="#">Project Summary</a></p> <p>Project Thesis and Dissertation <a href="#">Hough, M.J. 2008. Research techniques, habitat use, and ecology of northern flying squirrels, and research techniques and distribution of red squirrels in the Black Hills National Forest and northeastern South Dakota. M.S. Thesis, South Dakota State University, Brookings.</a> <a href="#">Kiesow, A.M. 2008. Genetic structure of Northern flying</a></p>

	<p>genetic distance between the Black Hills, South Dakota and northeastern South Dakota populations of northern flying and red squirrel using microsatellite markers, mitochondrial DNA markers, and Y-chromosome markers</p> <p>4. study the population and develop parentage testing for the <i>Glaucomys sabrinus</i> and <i>Tamiasciurus hudsonicus</i> in the Black Hills, South Dakota and northeastern South Dakota using microsatellite markers</p>		<p><a href="#">squirrel (<i>Glaucomys sabrinus</i>) and red squirrel (<i>Tamiasciurus hudsonicus</i>) populations in the Black Hills. PhD Dissertation, University of South Dakota, Vermillion.</a></p> <p>Publications:  <a href="#">Hough, M.J. and C.D. Dieter. 2009. Resource selection habitat model for northern flying squirrels in the Black Hills, South Dakota. <i>Am. Midl. Nat.</i> 162:356-372.</a>  <a href="#">Hough, M.J. and C.D. Dieter. 2009. Summer nest tree use by northern flying squirrels in the Black Hills, South Dakota. <i>Am. Midl. Nat.</i> 162:98-111.</a>  <a href="#">Hough, M.J. and C.D. Dieter. 2009. Home range and habitat use of northern flying squirrels in the Black Hills, South Dakota. <i>Am. Midl. Nat.</i> 162:112-124.</a>  Kiesow, A.M., L.E. Wallace, and H.B. Britten. 2011. Characterization and isolation of five microsatellite loci in northern flying squirrels, <i>Glaucomys sabrinus</i> (Sciuridae, Rodentia). <i>Western North American Naturalist</i> 71: 553-556.  Kiesow, A.M., E.M. Monroe, and H.B. Britten. 2012. Genetic structure of the arboreal squirrels <i>Glaucomys sabrinus</i> and <i>Tamiasciurus hudsonicus</i> in the North American Black Hills. <i>Canadian Journal of Zoology</i> 90(9): 1191-1200.  <a href="#">Hough, M. and C. Dieter. 2013. Relative abundance of northern flying squirrels and red squirrels in different forest types, Black Hills, South Dakota. <i>Great Plains Research</i> 23:25-31.</a></p> <p>SD Conservation Digest article:  Hough, Melissa and Chuck Dieter. 2007. Flying squirrels: Graceful Gliders. <i>SD Conservation Digest</i> March/April 2007. SDGFP, Pierre.</p>
<p>Bat habitat protection and evaluation: implementing and assessing management techniques T-15-R</p>	<ol style="list-style-type: none"> <li>1. evaluate the management activities undertaken within the Black Hills region to date</li> <li>2. determine the role of Black Hills habitat in supporting regional bat populations</li> <li>3. identify ten additional sites providing significant habitat to regional bat species and develop</li> </ol>	<p>Joel Tigner, Bat Works</p>	<p><a href="#">Project Summary</a></p>

	<p>management plans for their protection</p> <ol style="list-style-type: none"> <li>4. establish a database of bat survey data based upon active and hibernation seasons</li> <li>5. compile a call library of bat echolocation calls for all species identified within South Dakota</li> </ol>		
Statewide colonial and semi-colonial waterbird inventory with a plan for long-term monitoring T-16-R	Implement a statewide inventory of colonial and semi-colonial waterbird populations in South Dakota and develop a plan for their long-term monitoring	Nancy Drilling, Rocky Mountain Bird Observatory	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Drilling, N.E. 2007. South Dakota statewide colonial and semi-colonial waterbird inventory with a plan for long-term monitoring: Final report. SDGFP Wildlife Division Report 2008-01. Tech. Rep. M-ColonySD-04. Rocky Mountain Bird Observatory, Brighton, CO. 80 pp.</a></p> <p>SD Conservation Digest article:  <a href="#">Drilling, N. 2009. Breeding colonial waterbirds. SD Conservation Digest, pages 12-15, July/August 2009. SDGFP, Pierre.</a></p>
Monitoring the American burying beetle in South Dakota T-17-R	<ol style="list-style-type: none"> <li>1. expand monitoring efforts to cover more habitat annually than is currently being surveyed</li> <li>2. increase sampling time in June and August, when adult ABB are most active</li> <li>3. tag individuals with numbered bee tags to facilitate tracking movements and estimate population size through recaptures</li> </ol>	Doug Backlund and Gary Marrone	<p><a href="#">Project Summary</a></p> <p>Publication:  <a href="#">Backlund, D.C., G.M. Marrone, C.K. Williams, and K. Tillman. 2008. Population Estimate of the Endangered American Burying Beetle, <i>Nicrophorus americanus</i>, Olivier (Coleoptera: Silphidae) in South Dakota. The Coleopterists Bulletin 62(1): 9-15.</a></p>
Monitoring butterfly species of concern in South Dakota T-17-R	<ol style="list-style-type: none"> <li>1. survey suitable habitat throughout the Black Hills and northeastern South Dakota for 4 target species</li> <li>2. collect information on plant species used as larval food sources and adult nectar sources</li> <li>3. develop a monitoring plan for 4 target species, if populations are found that warrant monitoring</li> </ol>	Doug Backlund	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Marrone, G. 2009. Summary of Five Years of Butterfly Monitoring in the Black Hills with Emphasis on Species Monitored by the South Dakota Natural Heritage Program. Report to SD Department of Game, Fish and Parks.</a></p>
Monitoring American dippers in the Black Hills	<ol style="list-style-type: none"> <li>1. monitor annual production at nest sites for 5 years</li> </ol>	Doug Backlund	<a href="#">Project Summary</a>

T-17-R	<ol style="list-style-type: none"> <li>2. assess aquatic insect abundance at nest sites</li> <li>3. monitor winter use of stream habitat by dippers for 5 years</li> <li>4. track movements and length of survival of color banded dipper for 5 years</li> </ol>		<p>Final Report:  <a href="#">Lovett, K. no date. The American Dipper (<i>Cinclus mexicanus</i>) in the Black Hills of South Dakota. Final report to SD Department of Game, Fish and Parks.</a></p>
Comprehensive aquatics survey of the Minnesota River tributaries T-17-R	Provide up-to-date survey information on the relative abundance of fish, unionid mussel, and aquatic insect species to determine populations trends and state heritage ranks	Jeff Shearer and Andy Burgess	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Burgess, A. and J. Shearer. 2008. A comprehensive aquatics survey of Minnesota River tributaries. SDGFP, Pierre.</a></p>
Biology of American three-toed woodpeckers in the Black Hills T-18-R	<ol style="list-style-type: none"> <li>1. survey Black Hills white spruce habitat for resident American three-toed woodpeckers</li> <li>2. characterize Black Hills white spruce habitats and other habitats used by American three-toed woodpeckers</li> <li>3. locate nests and monitor production</li> <li>4. band American three-toed woodpeckers in the Black Hills with standard FWS bands and color bands and use radio transmitters to track movements of a subset of banded birds</li> <li>5. collect information on foraging behavior and attempt to relate this to habitat</li> <li>6. record presence and nesting of sympatric avian species inhabiting Black Hills white spruce habitats and evaluate competition</li> <li>7. collect DNA samples from the Black Hills populations of American three-toed woodpeckers and sequence mitochondrial and microsatellite DNA</li> <li>8. obtain samples from other populations and determine the genetic uniqueness of Black Hills population</li> </ol>	Dave Swanson, USD	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Swanson, D. L. 2009. Breeding Ecology of American Three-toed Woodpeckers in the Black Hills. Final Report to SD Dept. of Game, Fish and Parks.</a></p> <p>Project Dissertation:  <a href="#">Ervin, A.M. 2011. Habitat selection, nesting success and genetic structure of American three-toed woodpecker (<i>Picoides dorsalis</i>) in the Black Hills of South Dakota. PhD Dissertation, University of South Dakota, Vermillion. 157 pp.</a></p>
Assessing the impacts of	1. compare bird density among	Dave Naugle,	<a href="#">Project Summary</a>

<p>tree plantings on grassland birds in South Dakota T-19-R</p>	<p>transects placed at variable distances from tree plantings</p> <ol style="list-style-type: none"> <li>2. evaluate bird density in transects at sites with trees to those from grassland sites without trees (i.e., controls)</li> <li>3. assess changes in bird density at sites before and after trees are removed as part of an experimental manipulation</li> </ol>	<p>University of Montana</p>	<p>Project Dissertation: <a href="#">Quamen, F.R. 2007. A landscape approach to grassland bird conservation in the prairie pothole region of the Northern Great Plains. PhD Dissertation. University of Montana, Missoula, MT.</a></p>
<p>Blanchard's cricket frog (<i>Acris blanchardii</i>) seasonal status and distribution in southeastern South Dakota T-20-R</p>	<ol style="list-style-type: none"> <li>1. determine cricket frog occurrence and abundance in appropriate habitats within its historic range in South Dakota</li> <li>2. determine overwintering habitat and habitat conditions in South Dakota</li> <li>3. determine freezing tolerance capacity for cricket frogs in South Dakota</li> </ol>	<p>Dave Swanson, USD</p>	<p><a href="#">Project Summary</a></p> <p>Project Thesis: <a href="#">Burdick, S. 2008. Seasonal status and distribution of Blanchard's cricket frog in South Dakota. M.S. Thesis, University of South Dakota, Vermillion.</a></p> <p>Publications: Burdick, S.L. and D.L. Swanson. 2010. Status, distribution and microhabitats of Blanchard's cricket frog <i>Acris blanchardi</i> in South Dakota. <i>Herpetological Conservation and Biology</i> 5:9-16. Swanson, D.L. and S.L. Burdick. 2010. Overwintering physiology and hibernacula microclimates of Blanchard's cricket frogs at their northwestern range boundary. <i>Copeia</i> 2010:248-254. Dinsmore, S., II, and D.L. Swanson. 2008. Temporal patterns of tissue glycogen, glucose and glycogen phosphorylase activity prior to hibernation in freeze-tolerant chorus frogs, <i>Pseudacris triseriata</i>. <i>Canadian Journal of Zoology</i> 86:1095-1100.</p>
<p>Status and distribution of turtles and turtle nests, particularly species of greatest conservation need, in southeastern South Dakota T-20-R</p>	<ol style="list-style-type: none"> <li>1. survey waterways in southeastern South Dakota, particularly the Missouri River, to locate and identify turtle nests and locations</li> <li>2. determine characteristics of the identified areas, including occupied niches</li> <li>3. compare habitats occupied to habitats available as nest sites to help in making management recommendations</li> </ol>	<p>Chuck Dieter, SDSU</p>	<p><a href="#">Project Summary</a></p> <p><a href="#">Project Thesis:</a> Dixon, L.A. 2009. False map, spiny softshell and smooth softshell turtle nest and nest-site habitat characteristics along the lower stretch of the Missouri National Recreation River in South Dakota. M.S. Thesis, South Dakota State University, Brookings.</p> <p>Publication: Dieter, C. D., L. A. Dixon, S. L. Ronningen, and T. Ronningen. 2014. Survey of turtles nesting on the</p>

			Missouri River on the South Dakota-Nebraska Border. Great Plains Research 24 (Fall 2014):111-118.
Genetic variation in the smooth green snake, <i>Liochlorophis vernalis</i> , in South Dakota T-21-R	<ol style="list-style-type: none"> <li>1. analyze the extent of genetic variation in this species within South Dakota.</li> <li>2. examine genetic distance amongst South Dakota populations relative to those outside of the state</li> </ol>	Brian Smith, Black Hills State University	<a href="#">Project Summary</a>  Final Report: <a href="#">Smith, B. E., C. Anderson, S. Sarver, and L. R. Cottingham. 2007. Genetic variation in the Smooth Green Snake, <i>Opheodrys vernalis</i>, in South Dakota. Final Report Submitted to the South Dakota Department of Game, Fish, and Parks. Department of Biology, Black Hills State University.</a>  Publication: Sarver, S.K., C.M. Anderson, F. Cain, and B. Smith. 2010. Development of polymorphic microsatellite markers for the smooth green snake <i>Opheodrys vernalis</i> . Molecular Ecology Resources, Database I.D. #43323-43330, 7 pp.
Distribution and monitoring of bat species along the lower Missouri River with emphasis on resident vs. migratory behavior T-22-R	<ol style="list-style-type: none"> <li>1. determine migratory behaviors/patterns and migratory timing of bats in South Dakota, specifically those that may use the Missouri River drainage as a corridor</li> <li>2. determine the distribution, seasonal activity pattern and habitat selection of bats using the Missouri River drainage</li> </ol>	Scott Pedersen, SDSU	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Bales, B.T. 2007. Regional distribution and monitoring of bats, especially species of conservation concern, along the lower Missouri River in South Dakota. M.S. Thesis, South Dakota State University, Brookings.</a>  Publications: <a href="#">Weiming, K. and B. Bales. 2007. Estimation of sampling effort for catching enough bats. Significance 4(1):19-21.</a> <a href="#">Bales, B.T. 2007. Records of western small-footed myotis in central South Dakota. Prairie Naturalist 39(3/4):159-162.</a>
Does prairie dog colony size matter? Implications for the conservation of grassland biota in South Dakota T-23-R	<ol style="list-style-type: none"> <li>1. compare burrowing owl abundance across a range of prairie dog colony sizes</li> <li>2. compare prairie dog density and productivity across a range of prairie dog colony sizes</li> <li>3. compare vegetation cover and composition across a range of prairie dog colony sizes as a measure of forage utility to prairie dogs and other herbivores</li> <li>4. develop a suite of competing models</li> </ol>	Kristy Bly and Mike Phillips, Turner Endangered Species Fund	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Bly, K.L.S. 2008. Influence of local and landscape characteristics of prairie dog colonies on burrowing owl nest ecology in South Dakota. M.S. Thesis, Montana State University, Bozeman.</a>

	that compare the influence of covariates (i.e., colony size, age, and spatial arrangement, soil type, and annual precipitation) on burrowing owls, prairie dogs, and vegetation		
Development and application of a habitat assessment tool for juvenile pallid sturgeon in the upper Missouri River T-24-R	<ol style="list-style-type: none"> <li>1. develop and evaluate a juvenile pallid sturgeon bioenergetics model.</li> <li>2. quantify effects of water temperature, turbidity and water velocity on feeding rate of juvenile pallid sturgeon.</li> <li>3. model habitat suitability for juvenile pallid sturgeon in the Missouri River.</li> <li>4. quantify prey selectivity of age-0 pallid sturgeon</li> </ol>	Steve Chipps, SDSU, Coop. Unit	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Chipps, S.R., R.A. Klumb and E.B. Wright. 2008. Development and Application of Juvenile Pallid Sturgeon Bioenergetics Model. Final Report, State Wildlife Grant Program, Study T-24-R Study No. 2424. Submitted to South Dakota Department of Game, Fish and Parks, Pierre, SD.</a></p> <p>Project Theses:  <a href="#">Spindler, B.D. 2008. Modeling spatial distribution and habitat associations for juvenile pallid sturgeon (<i>Scaphirhynchus albus</i>) in the Missouri River. M.S. Thesis, South Dakota State University, Brookings.</a>  <a href="#">Grohs, K.L. 2008. Macroinvertebrate composition and patterns of prey use by juvenile pallid sturgeon (<i>Scaphirhynchus albus</i>) in the Missouri River, South Dakota and Nebraska. M.S. Thesis, South Dakota State University, Brookings.</a></p> <p>Publications:  Grohs, K. L., R. A. Klumb, S. R. Chipps and G. A. Wanner. 2009. Ontogenetic patterns in prey use by pallid sturgeon in the Missouri River, South Dakota and Nebraska. <i>J. Appl. Ichthyol.</i> 25: 48-53.  Spindler, B. D., S. R. Chipps, R. A. Klumb and M. C. Wimberly. 2009. Spatial analysis of pallid sturgeon <i>Scaphirhynchus albus</i> distribution in the Missouri River, South Dakota. <i>J. Appl. Ichthyol.</i> 25: 8-13.  French, W. E., B. D. S. Graeb, S. R. Chipps, K. N. Bertrand, T. M. Selch and R. A. Klumb. 2010. Vulnerability of age-0 pallid sturgeon <i>Scaphirhynchus albus</i> to fish predation. <i>J. Appl. Ichthyol.</i> 26: 6-10.  Spindler, B.D., S.R. Chipps, R.A. Klumb, B.D.S. Graeb, and M.C. Wimberly. 2012. Habitat and prey availability attributes associated with juvenile and early adult pallid sturgeon occurrence in the Missouri River, USA.</p>

Endangered Species Research Vol. 16: 225-234.			
Restoring swift foxes ( <i>Vulpes velox</i> ) to the Bad River Ranches and environs in western South Dakota T-25-R	<p>Job 1:</p> <ol style="list-style-type: none"> <li>1. establish a self-sustaining population of swift fox in west-central South Dakota (Haakon, Jackson, Jones, Lyman and Stanley counties) that serves as a course for swift fox recovery and expansion in the northern Great Plains, assists in removing this species from the South Dakota threatened species list, restores native biodiversity to the area, and promotes prairie conservation awareness.</li> <li>2. collect and disseminate scientific information on the ecology of the species, the ecological requirements for successful restoration, and the evaluation of reintroduction and management techniques.</li> </ol> <p>Job 2:</p> <ol style="list-style-type: none"> <li>1. to evaluate resource selection of swift foxes during the pup-rearing period in the mixed-grass prairie of west-central South Dakota</li> <li>2. to refine the existing habitat suitability model developed by Kunkel et al. (2003) for the pup-rearing period using updated techniques and area-specific data</li> </ol>	Kevin Honness and Mike Phillips, Turner Endangered Species Fund; amended to Dr. Jon Jenks, SDSU	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Jenks, J. 2010. Assessing Swift Fox (<i>Vulpes velox</i>) habitat use and resource selection in the pup-rearing period in the mixed grass prairie of west-central South Dakota. Final Report to SDGFP.</a></p> <p>Project Dissertation:  <a href="#">Sasmal, I. 2011. Population viability analysis of swift fox (<i>Vulpes velox</i>) at the Badlands National Park. Ph.D. Dissertation, South Dakota State University, Brookings.</a></p> <p>Publications:  Sasmal, I., J. A. Jenks, T. W. Grovenburg, S. Datta, G. M. Schroeder, R. W. Klaver, and K. M. Honness. 2011. Habitat selection by female swift foxes (<i>Vulpes velox</i>) during the pup-rearing season. <i>Prairie Naturalist</i> 43(1/2):29-37.  Sasmal, I., J. A. Jenks, L. P. Waits, M. G. Gonda, G. M. Schroeder, and S. Datta. 2012. Genetic diversity in a reintroduced swift fox population. <i>Conserv. Genet.</i> DOI 10.1007/s10592-012-0429-8. Published online 27 November 2012.  Sasmal, I., K. Honness, K. Bly, M. McCaffery, K. Kunkel, J. Jenks, and M. Phillips. 2015. Release method evaluation for swift fox reintroduction at Bad River Ranches in South Dakota. <i>Restoration Ecology</i>. doi: 10.1111/rec.12211. Published online 9 March 2015.</p>
Wildlife habitat inventory on game production areas in eastern South Dakota T-26-R	To map, categorize, and make management recommendations for remaining tracts of native grassland and associated native habitats on state Game Production Areas in a 33 county area of eastern South Dakota	Dan Limmer, Sustained Horizons	<p><a href="#">Project Summary</a></p> <p><a href="#">Final Report</a></p>
Exploration of factors that influence productivity of American white pelicans at Bitter Lake in northeastern South Dakota T-27-R	<ol style="list-style-type: none"> <li>1. determine nest-attendance schedules and chick-feeding rates during the pre-crèche stages of breeding</li> <li>2. estimate distances to foraging sites</li> <li>3. determine locations and attributes of foraging sites</li> </ol>	Marsha Sovada and Pam Pietz, USGS-Northern Prairie Wildlife Research Center	<p><a href="#">Project Summary</a></p> <p>U.S.G.S. Report:  Sovada, M. A., P. J. Pietz, , R. O. Woodward, A. J. Bartos, D. A. Buhl and M. J. Assenmacher. 2013. American white pelicans breeding in the northern plains – Productivity, behavior, movements, and migration: U.S.</p>

	<ol style="list-style-type: none"> <li>4. document sources of disturbance at nesting areas;</li> <li>5. monitor colony productivity</li> </ol>		<p>Geological Survey Scientific Investigations Report 2013-5105, 177 p., <a href="http://pubs.usgs.gov/sir/2013/5105/">http://pubs.usgs.gov/sir/2013/5105/</a>.</p> <p>Publications  <a href="#">Sovada, M. A., P. J. Pietz, K.A. Converse, D. T. King, E. K. Hofmeister, P. Scherr, and H. S. Ip. 2008. Impact of West Nile virus and other mortality factors on American white pelicans at breeding colonies in the northern plains of North America. <i>Biological Conservation</i> 141:1021-1031.</a>  <a href="#">Sovada, M. A., L. D. Igl, P. J. Pietz, and A. J. Bartos. 2014. Influence of climate change on productivity of American white pelicans, <i>Pelecanus erythrorhynchos</i>. <i>PLoS ONE</i> 9(1): e83430. doi:10.1371/journal.pone.0083430.</a></p>
Mapping big sagebrush vegetation in western South Dakota T-29-R	To map remaining stands of big sagebrush vegetation in three western SD counties: Butte, Harding and Fall River	Mike Pucharelli, USBR and Dan Cogan, Cogan Technology Inc.	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Wright, P. and D. Wegner. 2007. Mapping sagebrush for sage grouse habitat in Butte and Harding counties, South Dakota. Final Report to SDGFP. Technical Memorandum No. 86-68260-08-01. Remote Sensing and GIS Group. Technical Service Center. Bureau of Reclamation. Denver, CO.</a></p>
Population estimates, habitat relationships, and movement patterns of turtles, with an emphasis on two species of greatest conservation need, the False Map Turtle, <i>Graptemys pseudogeographica</i> and the Smooth Softshell, <i>Apalone mutica</i> , in southeastern South Dakota T-30-R	<ol style="list-style-type: none"> <li>1. determine age structure, sex ratios, and abundance of turtles</li> <li>2. investigate effects of harvest in James River</li> <li>3. utilize radio telemetry to investigate how patterns of movement relate to seasonal, sexual and age related parameters of Smooth Softshells and False Map Turtles on the Missouri River and associated tributaries</li> <li>4. monitor radio tagged turtles and environmental variables associated with their hibernacula in order to investigate the occurrence of, and factors related to winter mortality</li> <li>5. document and determine how habitat characteristics of aquatic and riparian areas relate to the utilization and distribution of turtle</li> </ol>	David Swanson USD	(awaiting PhD dissertation)

	assemblages within southeastern South Dakota		
Testing the ecosystem diversity approach of South Dakota's Wildlife Action Plan T-31-R	<ol style="list-style-type: none"> <li>develop a prototype process for focussing the scope of the South Dakota Wildlife Action Plan to address discrete local-level planning areas using a selected portion of the Missouri Coteau Planning Area</li> <li>identify and explore additional opportunities to assess South Dakota's ecosystem diversity at a local level</li> </ol>	EMRI	<a href="#">Project Summary</a>  Final Report: <a href="#">Mehl, C. A., J. B. Haufler, and S. Yeats. 2009. Native ecosystem diversity of the South Dakota Missouri Coteau. Ecosystem Management Research Institute, Seeley Lake, MT.</a>
Avian monitoring in the Black Hills T-32-R	Monitor aspen and shrubland habitats on Black Hills National Forest using techniques developed by Rocky Mountain Bird Observatory	Glenn Giroir, RMBO	<a href="#">Project Summary</a>
An evaluation of habitat use and requirements for grassland bird species of greatest conservation need in central and western South Dakota T-33-R	<ol style="list-style-type: none"> <li>describe local vegetational habitat requirements of SoGCN and Level I and Level II priority grassland bird species</li> <li>describe habitat associations for SoGCN and Level I and Level II priority grassland bird species</li> <li>identify patch and landscape level habitat requirements for SoGCN and Level I and Level II priority grassland bird species</li> </ol>	Kristel Bakker, DSU and Charles Dieter, SDSU	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Greer, M.J. 2009. An evaluation of habitat use and requirements for grassland bird species of greatest conservation need in central and western South Dakota. M.S. Thesis, South Dakota State University, Brookings.</a>
Estimating conversion of native grassland to cropland in South Dakota: Loss of habitat for grassland-nesting birds T-34-R	<ol style="list-style-type: none"> <li>estimate recent rates of conversion of native grassland to cropland in South Dakota</li> <li>use observed recent conversion to validate predictive models of the probability of conversion of grassland to cropland</li> <li>develop predictive models of the cost of protection for native grassland</li> <li>employ probability models to develop a GIS which will enable wildlife managers to assess the conservation priority of grassland habitats and landscapes in South</li> </ol>	Scott Stephens, DU	<a href="#">Project Summary</a>  Final Report: <a href="#">Prioritizing grassland conservation on the Missouri Coteau of South Dakota. Final report to the South Dakota Department of Game, Fish, and Parks. 21 December 2007. Scott E. Stephens, Johann A. Walker, Aaron J. Smith, and Darin R. Blunck, Ducks Unlimited, Inc.</a>

<p>Understanding the relationship between prairie dog ecology and black-footed ferret resource selection T-35-R</p>	<p>Dakota</p> <ol style="list-style-type: none"> <li>1. measure the spatial distribution of prairie dogs at multiple spatial scales through state-of-the-art resource monitoring and GIS techniques</li> <li>2. measure resource selection by ferrets and relate resource selection to the spatial distribution of prairie dogs</li> <li>3. measure prey selection by ferrets</li> </ol>	<p>Joshua Millspaugh, University of Missouri-Columbia</p>	<p><a href="#">Project Summary</a></p> <p>Project Thesis: <a href="#">Eads, D. A. 2009. Evaluation and development of black-footed ferret resource selection models. M.S. Thesis, University of Missouri, Columbia.</a></p> <p>Publications: Jachowski, D. S., J. J. Millspaugh, D. E. Biggins, T. M. Livieri, M. R. Matchett. 2008. Implications of black-tailed prairie dog spatial dynamics to black-footed ferrets. <i>Natural Areas Journal</i> 28:14-25. Jachowski, D. S., J. J. Millspaugh, D. E. Biggins, T. M. Livieri and M. R. Matchett. 2010. Home-range size and spatial organization of black-footed ferrets <i>Mustela nigripes</i> in South Dakota, USA. <i>Wildl. Biol.</i> 16:66-76. Eads, D. A., J. J. Millspaugh, D. E. Biggins, T. M. Livieri, and D. S. Jachowski. 2011. Post-breeding resource selection by adult black-footed ferrets in the Conata Basin, South Dakota. <i>Journal of Mammalogy</i> 92:760-770. Eads, D.A., D.E. Biggins, D.S. Jachowski, T.M. Livieri, J.J. Millspaugh, and M. Forsberg. 2010. Morning ambush attacks by black-footed ferrets on emerging prairie dogs. <i>Ethology, Ecology &amp; Evolution</i> 22:345-352. Eads, D. A., J. J. Millspaugh, D. E. Biggins, D. S. Jachowski, and T. M. Livieri. 2011. Evaluation of a black-footed ferret resource selection model. <i>Journal of Wildlife Management</i> 75:1155-1163. Jachowski, D.S., J.J. Millspaugh, D.E. Biggins, T.M. Livieri, M.R. Matchett, and C.D. Rittenhouse. 2011. Resource selection by black-footed ferrets in South Dakota and Montana. <i>Natural Areas Journal</i> 31:218-225. Eads, D. A., D. E. Biggins, D. Marsh, J. J. Millspaugh, and T. M. Livieri. 2012. Black-footed ferret digging activity in summer. <i>Western North American Naturalist</i> 72:140-147. Eads, D. A., D. S. Jachowski, D. E. Biggins, T. M. Livieri, M. R. Matchett, and J. J. Millspaugh. 2012. Resource selection models are useful in predicting distributions of black-footed ferrets in prairie dog colonies. <i>Western</i></p>
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			North American Naturalist 72:206-215. Eads, D. A., D. S. Jachowski, J. J. Millsbaugh, and D. E. Biggins. 2012. Lunar and temporal influences on post-breeding spotlight surveys of adult black-footed ferrets <i>Mustela nigripes</i> . Western North American Naturalist 72:179-190.
An aquatic invasive species risk assessment for South Dakota T-36-R	<ol style="list-style-type: none"> <li>1. supply information required for effective control and management of aquatic invasive species (AIS) in South Dakota</li> <li>2. develop an objective ranking of threat from AIS</li> </ol>	Dr. Katie Bertrand, South Dakota State University	<a href="#">Project Summary</a>  Final Report: <a href="#">Bertrand, K. 2008. South Dakota aquatic nuisance species risk assessment. Dept. of Wildlife and Fisheries Sciences, South Dakota State University, Brookings</a>  <a href="#">State of SD Aquatic Nuisance Species Management Plan</a>  <a href="#">SDGFP AIS website</a>
Assessment, monitoring and protection of bat habitats in western South Dakota T-37-R	<ol style="list-style-type: none"> <li>1. continue to evaluate the management activities undertaken within western South Dakota to date to benefit bat species by surveying protected hibernacula (both abandoned mines and natural caves), surveying active season bat use of protected sites (compared with pre-gating surveys), and annually monitoring protected sites for vandalism</li> <li>2. identify and install bat-friendly, vandal-resistant gates at up to 20 additional sites that provide significant habitat to regional bat species and develop management plans for their protection</li> </ol>	Joel Tigner, Batworks	<a href="#">Project Summary</a>  Final Report: <a href="#">Tigner, J. 2010. Final Report: Assessment, monitoring and protection of bat habitats in western South Dakota, Grant Number T-37-R-1.</a>
What factors affect territoriality and productivity of black-footed ferrets? T-38-R	<ol style="list-style-type: none"> <li>1. measure space use of black-footed ferrets in small black-tailed prairie dog complexes and relate territory size, colony size, and carrying capacity by December 15, 2010</li> <li>2. measure space use by female ferrets and compare the degree of overlap with offspring and unrelated ferrets by December 15, 2010</li> <li>3. measure space use and resource</li> </ol>	Shaun Grassel, University of Idaho	<a href="#">Project Summary</a>  Project Dissertation: <a href="#">Grassel, S. M. 2015. Ecological relationships of black-footed ferrets, American badgers, and black-tailed prairie dogs in South Dakota. PhD Dissertation, University of Idaho, Moscow.</a>

	<p>overlap between black-footed ferrets and badgers by December 15, 2010</p> <p>4. measure and relate ferret productivity, prairie dog productivity, and forage productivity by December 15, 2010</p>		
<p>Importance of mountain pine beetle infestations and fire as Black-backed Woodpecker habitat in the Black Hills, South Dakota T-39-R</p>	<p>Understand the relative importance of fire and MPB infestations on population and habitat selection processes of BBWO:</p> <ol style="list-style-type: none"> <li>1. estimate home ranges during the breeding season, fall, and winter in recently burned and MPB habitats</li> <li>2. document seasonal time budgets in recently burned and MPB habitats</li> <li>3. compute general and forage resource selection models for BBWO</li> <li>4. develop a demographic population model that compares BBWO demographics in burned and MPB habitats of the Black Hills, SD</li> <li>5. write an article for the public (e.g., South Dakota Conservation Digest, etc.) about the role of disturbance in maintaining BBWO habitat</li> </ol>	<p>Josh Millspaugh, UMC and Mark Rumble, Forest Service</p>	<p><a href="#">Project Summary</a></p> <p>Project Dissertation:  <a href="#">Rota, C. T. 2013. Not all forests are disturbed equally: Population dynamics and resource selection of black-backed woodpeckers in the Black Hills, South Dakota. Ph.D. Dissertation, University of Missouri-Columbia.</a></p> <p>Final Report:  <a href="#">Rota, C. T., D. C. Kesler, C. P. Lehman, M. A. Rumble, J. J. Millspaugh. 2012. The importance of wildfire and mountain pine beetle infestations as Black-backed Woodpecker habitat. Final report to South Dakota Department of Game, Fish and Parks, Agreement 05-0600-085.</a></p> <p>Publications:  Bonnot, T. W., J. J. Millspaugh, and M. A. Rumble. 2009. Multi-scale nest-site selection by black-backed woodpeckers in outbreaks of mountain pine beetles. <i>Forest Ecology and Management</i> 259:220-228.  Bonnot, T. W., M. A. Rumble and J. A. Millspaugh. 2008. Nest success of black-backed woodpeckers in forests with mountain pine beetle outbreaks in the Black Hills, South Dakota. <i>Condor</i> 110(3):450-457.  Lehman, C. P., D. C. Kesler, C. T. Rota, M. A. Rumble, E. M. Seckinger, T. J. Juntti, and J. J. Millspaugh. 2011. Netguns: a technique for capturing Black-backed Woodpeckers. <i>J. Field Ornithology</i> 82(4):430-435.  <a href="#">Rota, C. T., M. A. Rumble, J. J. Millspaugh, C. P. Lehman and, D. C. Kesler. 2014. Space-use and habitat associations of Black-backed Woodpeckers (<i>Picoides arcticus</i>) occupying recently disturbed forests in the Black Hills, South Dakota. <i>Forest Ecology and Management</i> 313 (2014) 161-168.</a>  <a href="#">Rota, C. T., J. J. Millspaugh, M. A. Rumble, C. P. Lehman, and D. C. Kesler. 2014. The role of wildfire, prescribed</a></p>

			<a href="#">fire, and mountain pine beetle infestations on the population dynamics of black-backed woodpeckers in the Black Hills, South Dakota. PLoS ONE 9(4): e94700. doi.10.1371/journal.pone.0094700</a> <a href="#">Rota, C. T., M. A. Rumble, C. P. Lehman, D. C. Kesler, and J. J. Millspaugh. 2015. Apparent foraging success reflects habitat quality in an irruptive species, the Black-backed Woodpecker. The Condor: Ornithological Applications 117:178-191.</a>
Nesting success of tree-nesting waterbirds in colonies on selected wetlands in northeast South Dakota T-40-R	<p>By June 30, 2010:</p> <ol style="list-style-type: none"> <li>1. to determine the nesting success of tree-nesting waterbirds breeding in colonies on selected wetlands in northeast South Dakota as suggested in the SDWCCP and SDABCP</li> <li>2. to identify important aspects of habitat required for colonial tree-nesting waterbirds on wetlands of northeast South Dakota in order to create management recommendations</li> </ol>	<p>Chuck Dieter, SDSU and Kristel Bakker, Dakota State University</p>	<p><a href="#">Project Summary</a></p> <p>Project Thesis:  <a href="#">Baker, N. J. 2010. Nesting success of colonial tree-nesting waterbirds on selected wetlands in northeast South Dakota. M.S. Thesis, SDSU. 104 pp.</a></p> <p>Publication:  <a href="#">Baker, N. J., C. D. Dieter, and K. K. Bakker. 2015. Reproductive success of colonial tree-nesting waterbirds in prairie pothole wetlands and rivers throughout northeastern South Dakota. Am. Midl. Nat. 174:132-149.</a></p>
Faunal survey of the delta habitat of Upper Lewis and Clark Lake T-42-R-1	<p>By June 1, 2012:</p> <ol style="list-style-type: none"> <li>1. Survey the delta for marsh birds, amphibians, reptiles, and freshwater invertebrates, specifically targeting Wildlife Action Plan species of greatest conservation need.</li> <li>2. Examine the potential for trematode infection in amphibian, snail, and bird hosts.</li> <li>3. Disseminate information concerning the delta fauna to both wildlife biologist and the general public.</li> </ol>	<p>Jacob Kerby and David Swanson, USD</p>	<p><a href="#">Project Summary</a></p> <p>Project Thesis:  <a href="#">Wert, K. 2012. An examination of the effects of anthropogenic habitat modification and contaminants on Missouri River valley fauna. M.S. Thesis, University of South Dakota, Vermillion.</a></p> <p>Final Report:  <a href="#">Kerby, J. and D. Swanson. 2012. Final Report: Faunal Survey of the Delta Habitat of Upper Lewis and Clark Lake. University of South Dakota, Department of Biology.</a></p>
Status of the Bear Lodge Meadow Jumping Mouse ( <i>Zapus hudsonius campestris</i> ) T-43-R1	<p>By December 31, 2012:</p> <ol style="list-style-type: none"> <li>1. Determine the present distribution, abundance, and habitat affinity of <i>Zapus hudsonius campestris</i> in the Black Hills of South Dakota during June and July of 2010 and 2011.</li> <li>2. Compare the present distribution and abundance with historical</li> </ol>	<p>Tim Mullican, Dakota Wesleyan University</p>	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Mullican, T. R. 2013. Status and habitat association of the Bear Lodge meadow jumping mouse in the Black Hills of South Dakota. Final report to South Dakota Game, Fish and Parks. 25 pp.</a></p>

	records of this species.		<p>Publications:</p> <p><a href="#">Mullican, T.R. 2011. First Record of the Least Weasel in the Black Hills of South Dakota. The Prairie Naturalist. 43(1/2): 59-60.</a></p> <p>Mullican, T.R. 2014. Population estimates and habitat associations of the Bear Lodge meadow jumping mouse in the Black Hills of South Dakota. Proceedings of the South Dakota Academy of Science 93:89-99.</p>
Distribution, abundance, and seasonal habitat use patterns in ornate box turtles in South Dakota T-44-R1	<p>By May 15, 2012:</p> <ol style="list-style-type: none"> <li>1. Estimate the geographic range of ornate box turtles in South Dakota through the use of ecological niche modeling.</li> <li>2. Document the macro- and microhabitat use throughout the active season (May through September).</li> <li>3. Describe movements and estimate home range size.</li> <li>4. Document daily and seasonal activity periods.</li> <li>5. Estimate population size.</li> <li>6. Provide training in ecological field research to Oglala Lakota College (OLC) students.</li> </ol>	Alessandra Higa and Hugh Quinn, Oglala Lakota College	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Higa, A., H. Quinn, and D. W. Uresk. 2012. Distribution, abundance, and seasonal habitat use patterns in ornate box turtles (<i>Terrapene ornata</i>) in South Dakota. Final Report, Grant Number: T-44-R-1.</a></p> <p>Publication: <a href="#">Quinn, H.R., H. Quinn and A. Higa. 2014. Notes on reproduction and growth of South Dakota ornate box turtles (<i>Terrapene ornata</i>.) Chelonian Conservation Biology 13:65-71.</a></p>
Survey and mapping of Black Hills montane grasslands T-45-R-1	<p>By December 31, 2012:</p> <ol style="list-style-type: none"> <li>1. Digitally map higher quality Black Hills montane grasslands; construct a montane grassland GIS layer in cooperation with public agencies.</li> <li>2. Provide a set of photos of survey sites from relocatable points.</li> <li>3. Thoroughly characterize the Black Hills montane grassland vegetation type.</li> <li>4. Develop a field key to the type.</li> <li>5. Share information through national databases and publication in an academic journal.</li> </ol>	Hollis Marriott, Don Faber-Langendoen, and Jim Drake	<p><a href="#">Project Summary</a></p> <p>Final Report <a href="#">Marriott, H. 2012. Survey and Mapping of Black Hills Montane Grasslands. Prepared for the South Dakota Department of Game, Fish and Parks. State Wildlife Grant T-45-R-1, CFDA # 15-634.</a></p>
Evaluation of artificial bat roost selection and occupancy in South Dakota ecoregions	<p>By May 15, 2014:</p> <ol style="list-style-type: none"> <li>1. Determine optimal bat house designs for habitat specific ecoregions in South Dakota.</li> </ol>	Scott Pedersen, SDSU	<p><a href="#">Project Summary</a></p> <p>(awaiting M.S. thesis)</p>

T-46-R-1	<ol style="list-style-type: none"> <li>2. Record and assess occupancy and microclimate of existing artificial roosts for comparison with historical data collected by Joel Tigner and throughout the period of the grant.</li> <li>3. Develop bat house design recommendation plans for landowners and homeowners; create a pamphlet for the SDSU Extension Service and link to South Dakota Bat Working Group website to make research results available to the public.</li> <li>4. Evaluate potential for a continued volunteer monitoring program at sites.</li> <li>5. Assess potential influence of environmental factors on artificial roost selection/occupancy.</li> <li>6. Perform acoustic surveys at occupied sites for determination of bat species present and DNA fecal analysis to determine species using bat houses.</li> </ol>		
Revision of South Dakota comprehensive wildlife conservation plan T-48-R-1	By December 31, 2013: Revise the South Dakota Wildlife Action Plan by reviewing and updating the 8 required elements and including consideration of climate change as a potential cause of concern for South Dakota's fish and wildlife species and associated habitats.	Jon Haufler, EMRI, and GFP staff	<p>Final Report:  <a href="#">South Dakota Department of Game, Fish and Parks, 2014. South Dakota Wildlife Action Plan. Wildlife Division Report 2014-03. South Dakota Department of Game, Fish and Parks, Pierre.</a></p> <p>Plan approval letter from USFWS dated May 12, 2015.</p>
Preliminary investigation into migratory movements of bats in South Dakota T49-R-1	<p>By June 30, 2013:</p> <ol style="list-style-type: none"> <li>1. Describe (graphically) and detect (statistically) significant peaks in annual, monthly, and nightly bat activity (as measured by a bat activity index) at 16 selected bat migration stations located throughout South Dakota.</li> <li>2. Determine if the 15 selected monitoring stations experience peaks in bat activity during spring</li> </ol>	Joel Tigner, Batworks, and Silka Kempema	<p><a href="#">Project Summary</a></p> <p>Final Report:  <a href="#">Kempema, S. 2013. Preliminary investigation into migratory movements of bats in South Dakota. Final Report, T-49-R-1. SDGFP, Pierre.</a></p> <p>This report satisfied SWG requirements, but did not include information from all sites. This work has continued under project T-64.</p>

	<p>and fall migration during each calendar year of the study.</p> <ol style="list-style-type: none"> <li>Determine if a correlation exists between environmental variables (time, temperature, wind speed, etc.) and a bat activity index at each of the 16 selected bat migration stations during spring and fall or throughout the calendar year.</li> <li>Measure annual and seasonal (spring and fall) bat species (or species group) richness at each of 16 selected bat migration stations.</li> <li>Provide recommendations for a long-term bat migration monitoring program.</li> </ol>		
<p>Classification and mapping of riparian forest along the White River in South Dakota T-50-R-1</p>	<p>By June 30, 2014:</p> <ol style="list-style-type: none"> <li>Map vegetation extent, structure, and composition along the riparian corridor of the White River in South Dakota within a GIS framework, using a hierarchical classification system compatible with the National Vegetation Classification.</li> <li>Sample and quantify riparian forest composition and structure within selected study reaches along the White River, with a particular emphasis on the delta where the White River flows into the Missouri River (Lake Francis Case).</li> <li>Quantify historic changes in riparian vegetation extent, recruitment, and channel dynamics via analysis of historic aerial photography using GIS, along selected reaches of the White River.</li> </ol>	<p>Mark Dixon, USD and W. Carter Johnson, SDSU</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Cahlander-Mooers, A., M. Volke, M. Dixon, and W. C. Johnson. 2014. Final Report: Classification and Mapping of Riparian Forest along the White River in South Dakota. Dept. of Biology, USD and Dept. of Natural Resource Mgmt., SDSU.</a></p> <p>Project Dissertation: <a href="#">Volke, M. A. 2015. Ecological significance of emerging reservoir deltas: Evidence from the White River delta in South Dakota. Ph. D. Dissertation, South Dakota State University, Brookings.</a></p>
<p>Past and Current Vegetation Conditions of Core Sagebrush Habitat and Leks of the Greater Sage-Grouse (<i>Centrocercus urophasianus</i>) at the</p>	<p>By April 30, 2013:</p> <ol style="list-style-type: none"> <li>Review and analyze data and field check locations of historical data on GRSG occurrences and associated habitat information.</li> <li>Repeat data collection at historical</li> </ol>	<p>Shelly Deisch, SDGFP and Daryl Mergen, Mergen Ecological Delineations, Inc.</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Mergen, D. E., C. J. Corley, and S. Deisch. 2013. Past and recent vegetation conditions of sagebrush habitat and habitat of the greater sage-grouse (<i>Centrocercus</i></a></p>

<p>easternmost extent of its range in Western South Dakota T-51-R-1</p>	<p>sites described in Carter data, including vegetation data and observations of individual GRSG, GRSG leks and collection of plant voucher specimens, as needed.</p> <ol style="list-style-type: none"> <li>3. Compile and summarize existing information on GRSG counts and lek data collected in South Dakota for comparison to the historical Carter data and the results obtained in Objective 2.</li> <li>4. Compile information on sagebrush habitat restoration methods and evaluate public land sites for potential future restoration work.</li> </ol>		<p><a href="#">urophasianus) in western South Dakota. Final report to South Dakota Game, Fish and Parks. 110 pp.</a></p>
<p>Colonial and semi-colonial waterbird monitoring T-52-R-1</p>	<p>By December 31,2012:</p> <ol style="list-style-type: none"> <li>1. Survey major and important colonial and semi-colonial waterbird breeding colonies to document and enumerate breeding species.</li> <li>2. Document current habitat conditions at each major and important colony site and identify the surrounding land use and management practices within ½ mile of the colony centroid.</li> <li>3. Conduct aerial surveys in the Prairie Coteau, Lake Thompson watershed, and Northern Pothole regions of South Dakota to document breeding status in known colonial and semi-colonial waterbird colonies and search for new colonies.</li> </ol>	<p>Nancy Drilling, RMBO</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Drilling, N. E. 2013. South Dakota 2012 Colonial waterbird survey. Tech. Rpt. SC-Colony-SD-05. Rocky Mountain Bird Observatory, Brighton, CO, USA. 56 pp.</a></p>
<p>Determination of river otter distribution and evaluation of potential sites for population expansion in South Dakota T-55-R-1</p>	<p>By December 31, 2014:</p> <ol style="list-style-type: none"> <li>1. Update river otter occupancy status of drainages with evidence more than 5 years old.</li> <li>2. Determine river otter occupancy status of agreed-upon drainages.</li> <li>3. Evaluate agreed-upon sites for reintroduction suitability.</li> </ol>	<p>Wayne Melquist</p>	<p><a href="#">Project Summary</a></p> <p>Final Report: <a href="#">Melquist, W. E. 2015. Determination of river otter (<i>Lontra canadensis</i>) distribution and evaluation of potential sites for population expansion in South Dakota. Report for Grant Number T-55-R-1, Study No. 2465.</a></p>
<p>Threats, management, and suggested harvest and</p>	<p>By September 1,2012:</p> <ol style="list-style-type: none"> <li>1. Provide recommendations on take</li> </ol>	<p>Brian Smith, BHSU and Hugh</p>	<p><a href="#">Project Summary</a></p>

<p>collection policy of herpetofauna of South Dakota T-57-R-1</p>	<p>allowances.</p> <ol style="list-style-type: none"> <li>2. Provide data to justify the amount of take, both commercially and via fishing licenses.</li> <li>3. Identify best management practices which could be implemented for herpetofauna during construction projects.</li> <li>4. Identify general threats to reptiles and amphibians in South Dakota.</li> <li>5. Provide a final report with data supported recommendations to South Dakota Game, Fish, and Parks (SDGFP) which could be implemented in management decisions.</li> </ol>	<p>Quinn, OLC</p>	<p>Final Report: <a href="#">Smith, B. and H. Quinn. 2012. Threats to South Dakota Amphibians and Reptiles. Final Report to South Dakota Department of Game, Fish and Parks. Department of Biology, Black Hills State University, Spearfish, SD.</a></p>
<p>Evaluation of timber harvest on nongame bird abundance and diversity in Custer State Park, South Dakota T2-1-R-1</p>	<p>By May 15, 2013:</p> <ol style="list-style-type: none"> <li>1. compare nongame bird abundance and diversity before and after timber sale treatments</li> <li>2. determine the effects of timber harvest on abundance of sensitive or species of greatest conservation need</li> <li>3. quantify macro- and micro-habitat characteristics used by nongame birds in a ponderosa pine ecosystem</li> </ol>	<p>Chad Lehman, SDGFP and Kent Jensen, SDSU</p>	<p><a href="#">Project Summary</a> Final Report: <a href="#">Panning, J., K.C. Jensen, and C. P. Lehman. 2013. Evaluation of timber harvest on nongame bird abundance and diversity in Custer State Park, South Dakota. Final Report to South Dakota Department of Game, Fish and Parks. 35 pp.</a></p> <p>(awaiting M.S. thesis)</p>
<p>Conservation status of the mountain sucker (<i>Catostomus platyrhynchus</i>) in South Dakota T2-2-R-1</p>	<p>By December 31, 2011:</p> <ol style="list-style-type: none"> <li>1. document the current distribution and abundance of mountain sucker in South Dakota for comparison with historical data</li> <li>2. evaluate the potential influence of physical and biological factors on the abundance and distribution of the mountain sucker</li> <li>3. inform management recommendations related to the conservation of mountain suckers in South Dakota</li> </ol>	<p>Katie Bertrand, South Dakota State University</p>	<p><a href="#">Project Summary</a> Project Thesis: <a href="#">Schultz, L. D. 2011. Environmental factors associated with long-term trends of mountain sucker populations in the Black Hills, and an assessment of their thermal tolerance. M.S. Thesis, South Dakota State University, Brookings. 102 pp.</a></p> <p>Publications: <a href="#">Schultz, L. D., S. J. Lewis, and K. N. Bertrand. 2012. Fish assemblage structure in Black Hills, South Dakota streams. Prairie Naturalist 44:98-104.</a> Schultz, L. D. and K. N. Bertrand. 2011. An assessment of the lethal thermal maxima for mountain sucker. Western North American Naturalist 71(3):404-411. Schultz, L. D. and K. N. Bertrand. 2012. Long term trends</p>

			and outlook for mountain sucker in the Black Hills of South Dakota. Am. Midl. Nat. 167:96-110. Breeggemann, J.J., C.A. Hayer, J.R. Krause, L.D. Schultz, K.N. Bertrand, and B.D.S. Graeb. 2014. Estimating the ages of Black Hills Mountain Sucker: Precision, population dynamics, and management implications. Western North American Naturalist 74:299-310.
Prevalence of an emerging disease in South Dakota amphibian populations T2-3-R-1	By June 1, 2011: 1. Survey the prevalence of the chytrid fungus in amphibian populations across South Dakota 2. Use an Amphibian Disease Testing Center to provide timely and cost-efficient evaluations of amphibian disease outbreaks for researchers working in the state of South Dakota 3. Disseminate information concerning the chytrid fungus to both wildlife biologists and the general public	Jake Kerby University of South Dakota	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Brown, J. 2011. Impacts of chytrid fungus and contaminants on amphibians of the Missouri River. M.S. Thesis, University of South Dakota. 65 pp.</a>  Final Report: <a href="#">Kerby, J. 2011. Final Report – Prevalence of an emerging disease in South Dakota amphibian populations. Report to SDGFP. Dept. of Biology, University of South Dakota.</a>
Classification and mapping of riparian vegetation along the Big Sioux River T2-4-R-1	By August 31, 2012: 1. Map vegetation extent, structure, and composition along the riparian corridor of the Big Sioux River from Watertown to Sioux City within a GIS framework, using a hierarchical classification system compatible with the National Vegetation Classification 2. Sample and quantify dominant overstory and understory plant species composition within at least 5 stands of each classified vegetation type in a format compatible with VegBank 3. Quantify historic changes in riparian vegetation extent, adjacent land cover, and channel dynamics along the Big Sioux River in Brookings, County, SD	Mark Dixon University of South Dakota	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Ley, M. J. 2012. Riparian forest vegetation patterns and historic channel dynamics of the Big Sioux River, South Dakota. M.S. Thesis, University of South Dakota, Vermillion. 185 pp.</a>
Burrowing owl distribution in western South Dakota T2-5-R-1	By June 30, 2012: 1. Determine distribution of burrowing owl occupied black-tailed prairie dog colonies on 50% of known	Kristel Bakker, Dakota State University and Chuck Dieter,	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Thiele, J. 2012. Burrowing owl distribution and nest site</a>

	<p>colonies in western South Dakota</p> <ol style="list-style-type: none"> <li>2. Construct a database of black-tailed prairie dog colonies containing multiple burrowing owl pairs which includes size, ownership and management of colonies</li> <li>3. Describe local vegetational habitat factors associated with occurrence and density of burrowing owls in black-tailed prairie dog colonies</li> <li>4. Describe habitat associations (active/inactive black-tailed prairie dog colonies, poisoning and grazing regimes, ownership of colonies), colony and landscape level factors affecting burrowing owl use of black-tailed prairie dog colonies</li> <li>5. Compare vegetation, habitat associations, colony- and colony- and landscape-level characteristics of burrowing owl occupied and unoccupied colonies.</li> <li>6. Determine factors associated with nest site selection by burrowing owls in select colonies.</li> </ol>	SDSU	<p><a href="#">selection in western South Dakota. M.S. Thesis, Biological Sciences, South Dakota State University, Brookings. 140 pp.</a></p> <p>Publication:  <a href="#">Thiele, Jason P., K. K. Bakker, and C. D. Dieter. 2013. Multiscale nest site selection by burrowing owls in Western South Dakota. Wilson Journal of Ornithology 125(4):763-774.</a></p>
<p>Biodiversity inventory of native bees in the Black Hills Ecoregion T2-6-R-1</p>	<p>By December 31, 2012:</p> <ol style="list-style-type: none"> <li>1. Provide a biodiversity inventory of the native bee species of the Black Hills</li> <li>2. Focus the survey and inventory on exemplary forest, meadow, and shrub-steppe habitats in the Black Hills of Lawrence, Pennington, Custer, and Fall River counties in South Dakota</li> <li>3. Document host flowers and analyze floral visitation patterns through seasonal changes</li> <li>4. Use data collected on species occurrence and associated habitat characteristics for initial geospatial evaluations in order to seek patterns associated with historical and</li> </ol>	Paul Johnson, SDSU	<p><a href="#">Project Summary</a></p> <p>Project Thesis:  <a href="#">Drons, D. J. 2012. An Inventory of Native Bees (Hymenoptera: Apiformes) in the Black Hills of South Dakota and Wyoming. M.S. Thesis, Plant Science, South Dakota State University, Brookings. 98 pp.</a></p>

	contemporary land-use		
Distribution and lek locations of Greater Prairie-Chickens and Sharp-tailed Grouse outside of their traditional range in South Dakota T2-7-R-1	By June 30, 2012: 1. To identify and survey areas of eastern South Dakota where populations of Greater Prairie-Chickens and Sharp-tailed Grouse are suspected to reside, and document their distribution and numbers. 2. To characterize the landscape attributes within 3000 m of identified display grounds (leks). 3. To analyze landscape characteristics using Geographic Information System modeling to develop a predictive model to assist natural resource managers in identifying potential prairie-chicken and sharp-tailed grouse habitats.	Charles Dieter and Kent Jensen, SDSU	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Orth, M. R. 2012. Distribution and landscape: Attributes of greater prairie-chickens and sharp-tailed grouse outside of their traditional range in South Dakota. M.S. Thesis, South Dakota State University, Brookings. 77 pp.</a>
Glacial relict fishes in spring fed headwater streams of South Dakota's Sandhills region T2-8-R-1	By June 30, 2013: 1. To assess the occurrence of northern redbelly dace, peal dace, finescale dace, blacknose shiner, and plains topminnow in the Sandhills of South Dakota. 2. To provide recommendations for an effective long-term monitoring plan for relict fishes in spring-fed headwater streams	Katie Bertrand, SDSU	<a href="#">Project Summary</a>  Project Thesis: <a href="#">Felts, E. 2013. Ecology of glacial relict fishes in South Dakota's Sandhills. M.S. Thesis. South Dakota State University, Brookings, SD. 85 pp.</a>  Publications: Felts, Eli A., and Katie N. Bertrand. 2014. Conservation status of five headwater stream specialists in southwestern South Dakota. <i>American Midland Naturalist</i> 172(1): 131-159. Felts, E.A., K. Bertrand, and B.D.S. Graeb. 2014. Northern Pearl Dace Population Dynamics in Southwestern South Dakota Streams. <i>Prairie Naturalist</i> 46:70-75.
Topeka shiner ( <i>Notropis topeka</i> ) monitoring in eastern South Dakota streams (round two) T2-9-R-1	Collect standardized biological and physical habitat data from all previously monitored streams by 2012.	Pasbrig	<a href="#">Project Summary</a>  <a href="#">Final Report Executive Summary</a>  Final Report: <a href="#">Pasbrig, C. A. and D. O. Lucchesi. 2012. Topeka shiner (<i>Notropis topeka</i>) monitoring in Eastern South Dakota streams (2010-2012), #T2-9-R-1. SDGFP, Pierre.</a>