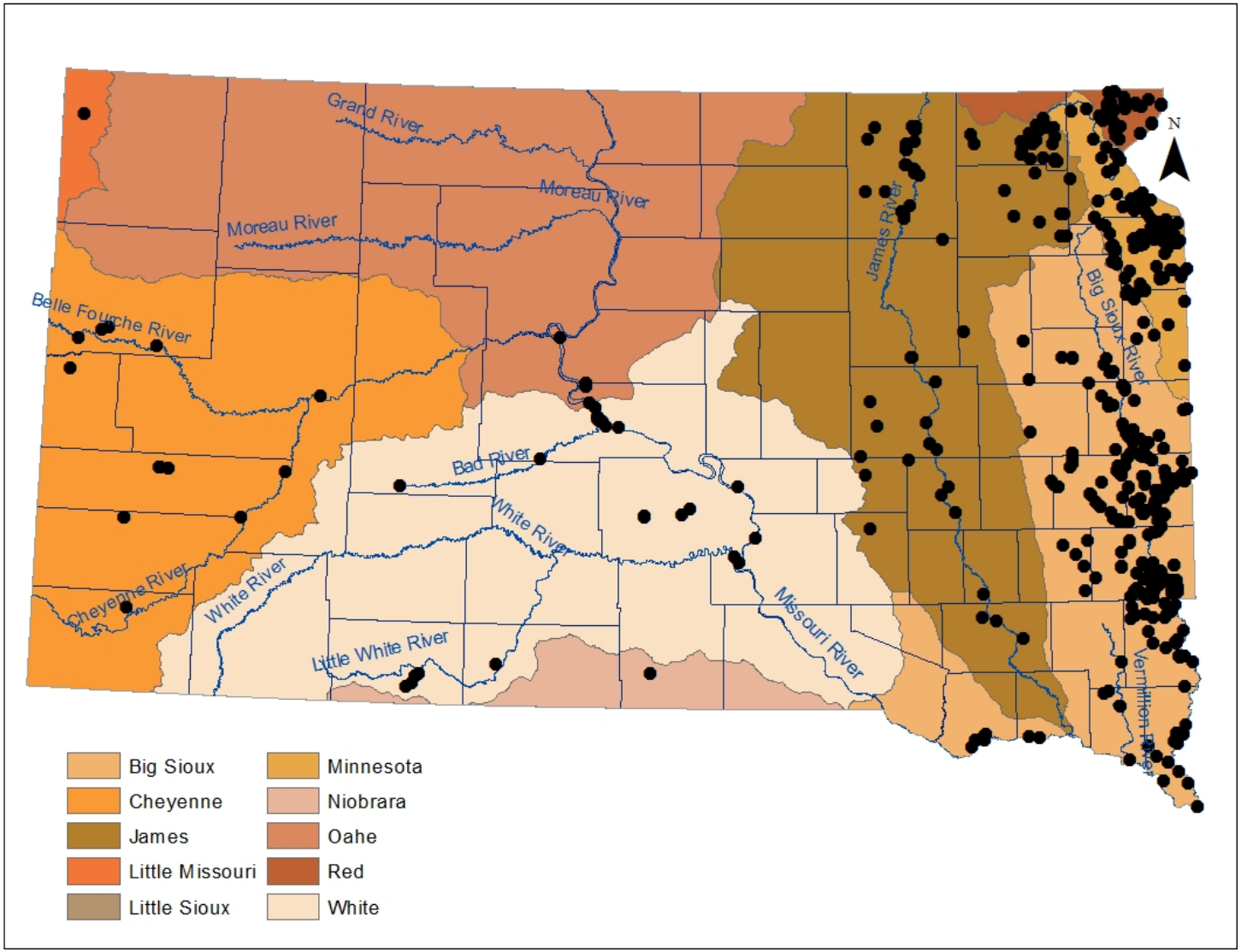

Figure 2. Location of 575 river otter reports in South Dakota watersheds, 1979 - 2019.

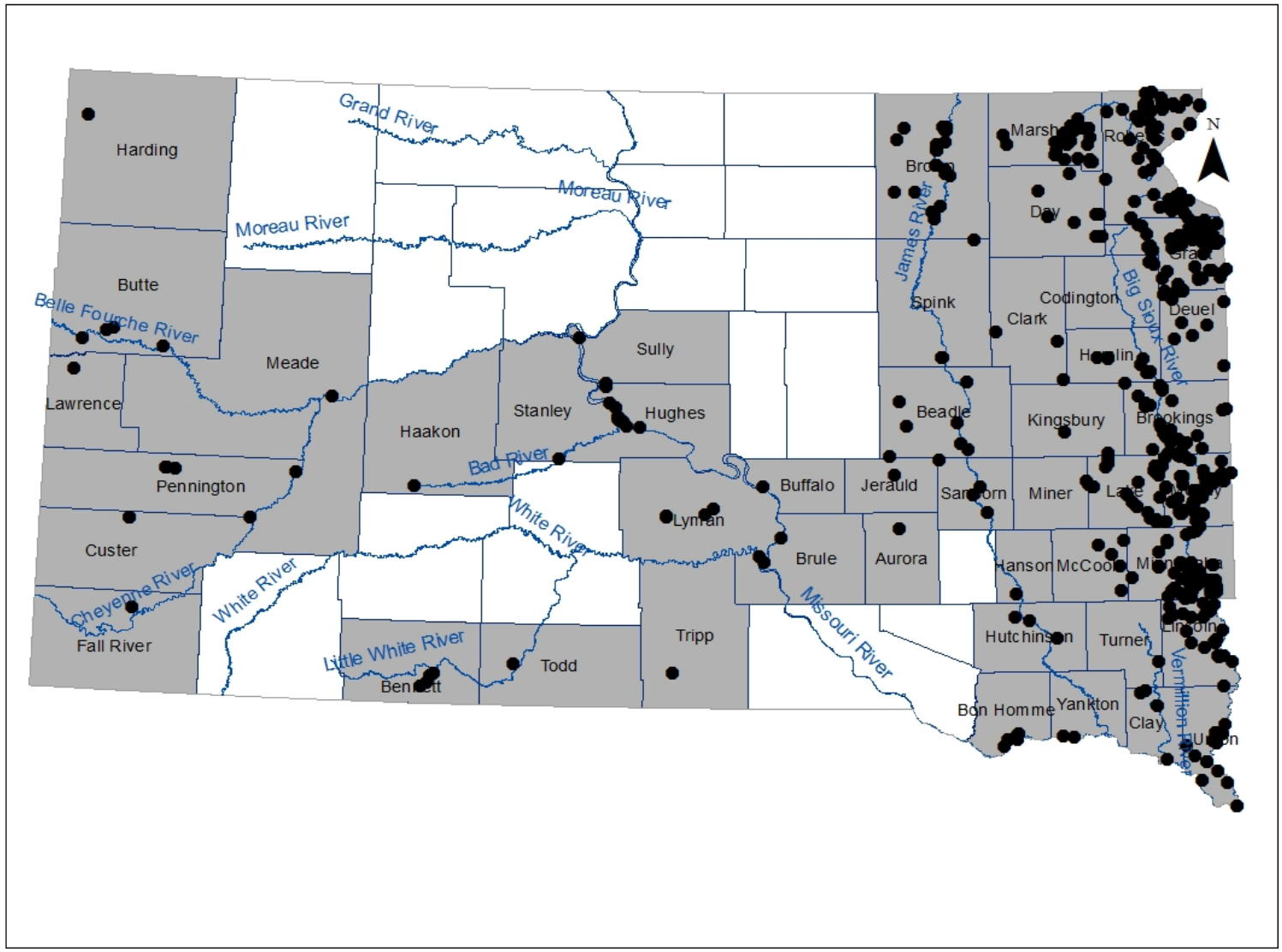

Figure 3. Location of 575 river otter reports in South Dakota counties, 1979 - 2019.

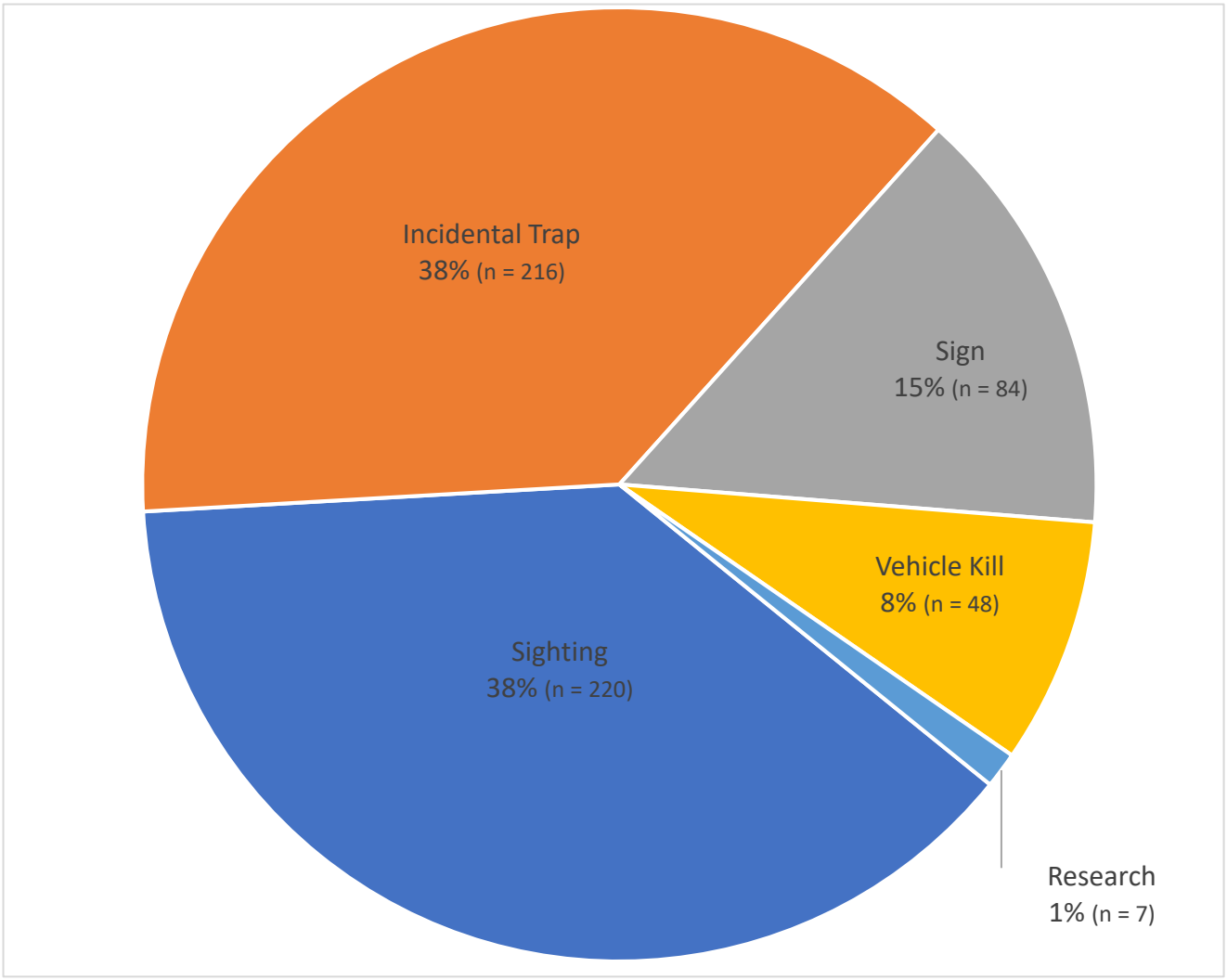

Figure 4. Composition of 575 river otter reports in South Dakota, 1979 - 2019.

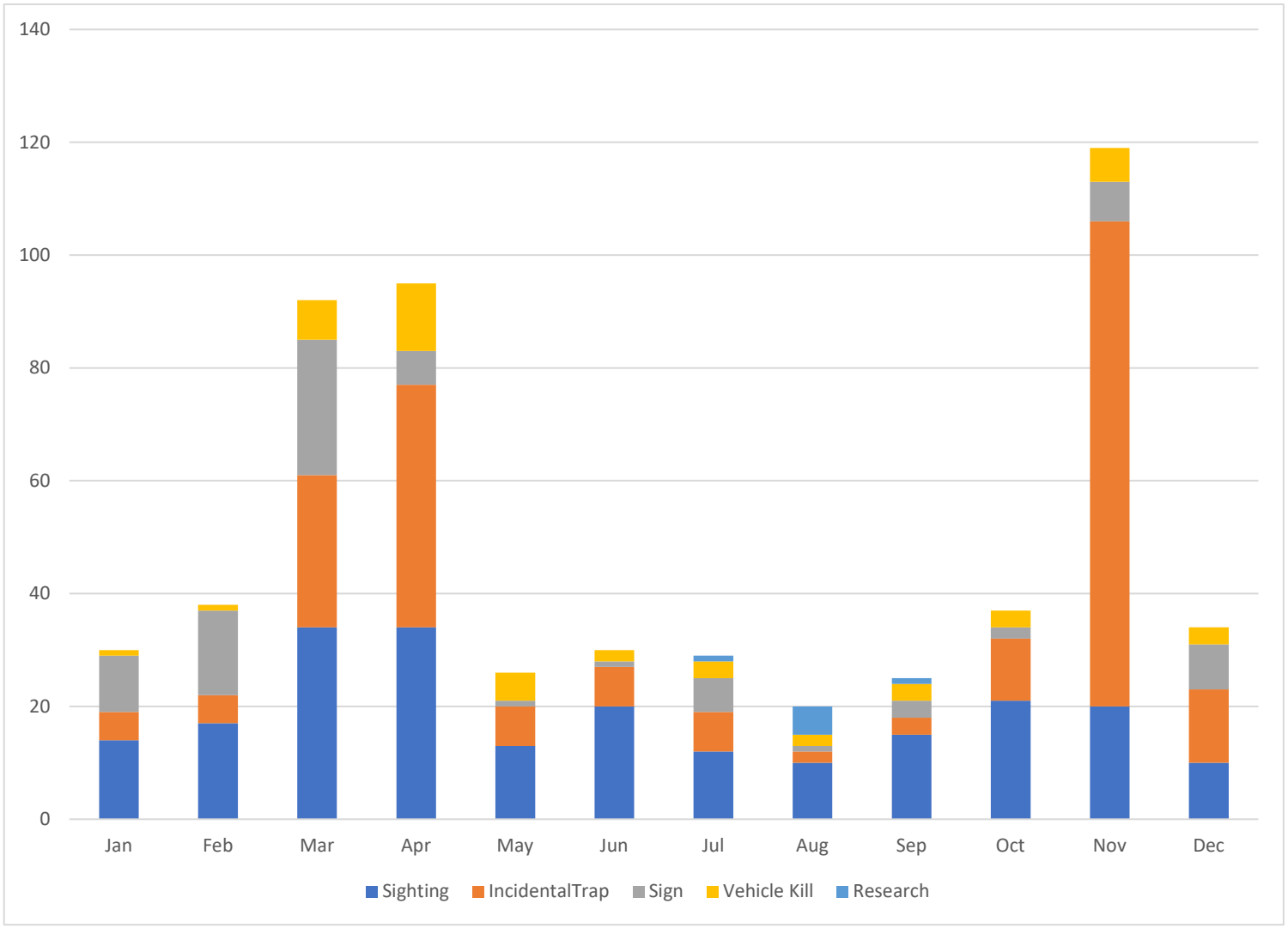

Figure 5. Monthly frequency of 575 river otter report types in South Dakota, 1979 - 2019.

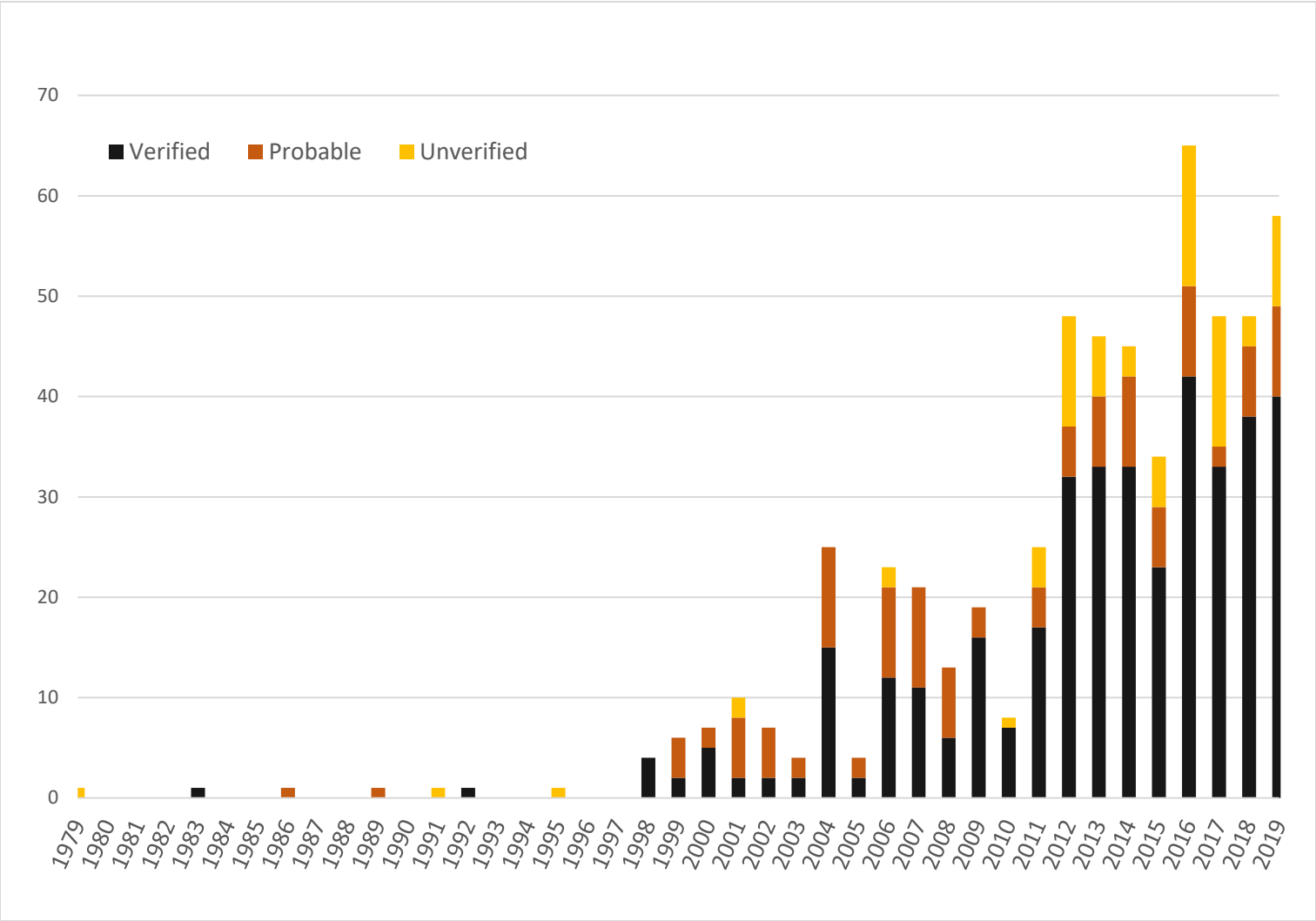

Figure 6. Annual frequency of verified, probable, and unverified river otter reports in South Dakota, 1979 - 2019.

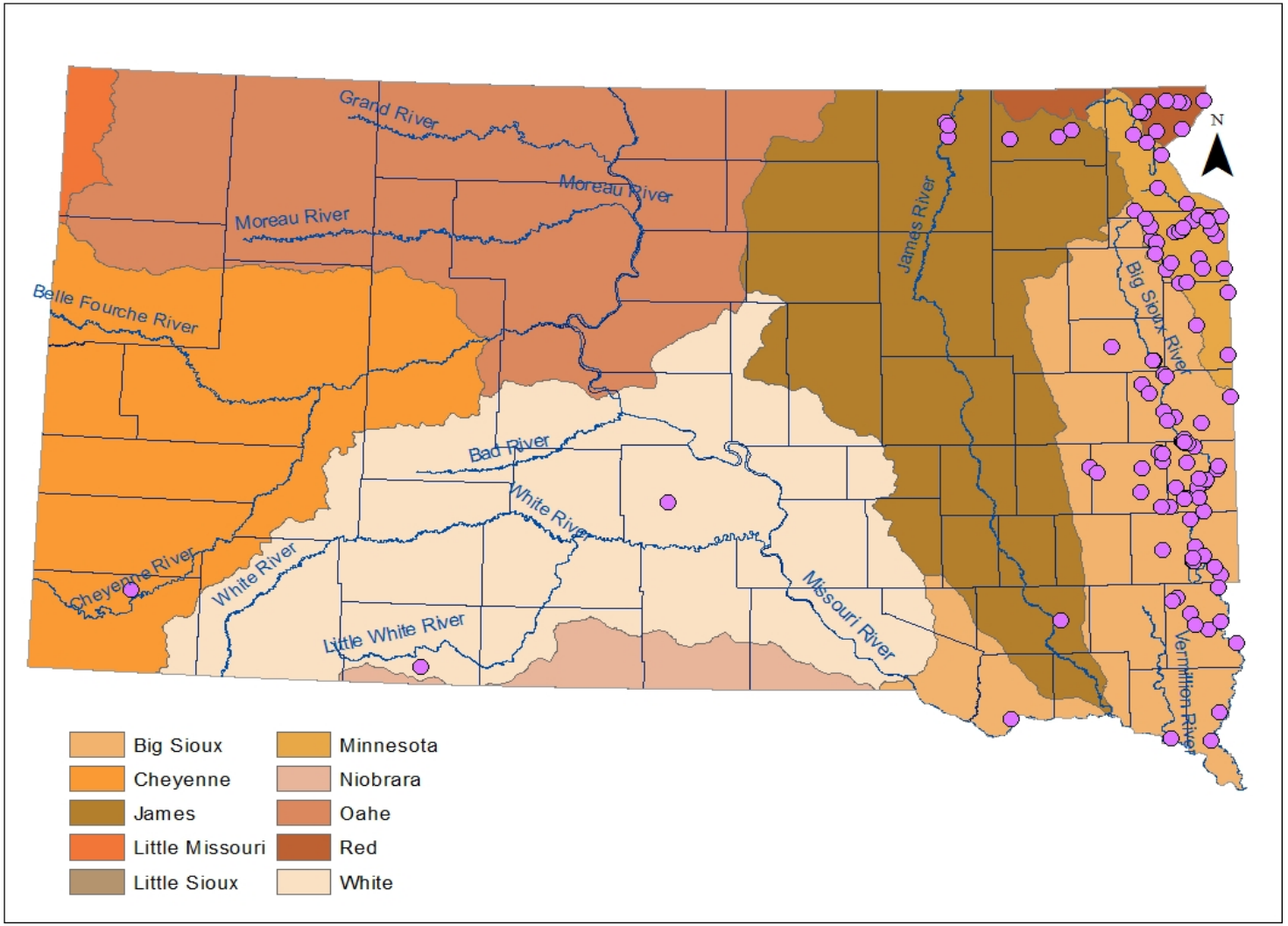

Figure 7. Location of 148 river otter reports that provide evidence of reproduction in South Dakota, 1979 - 2019.

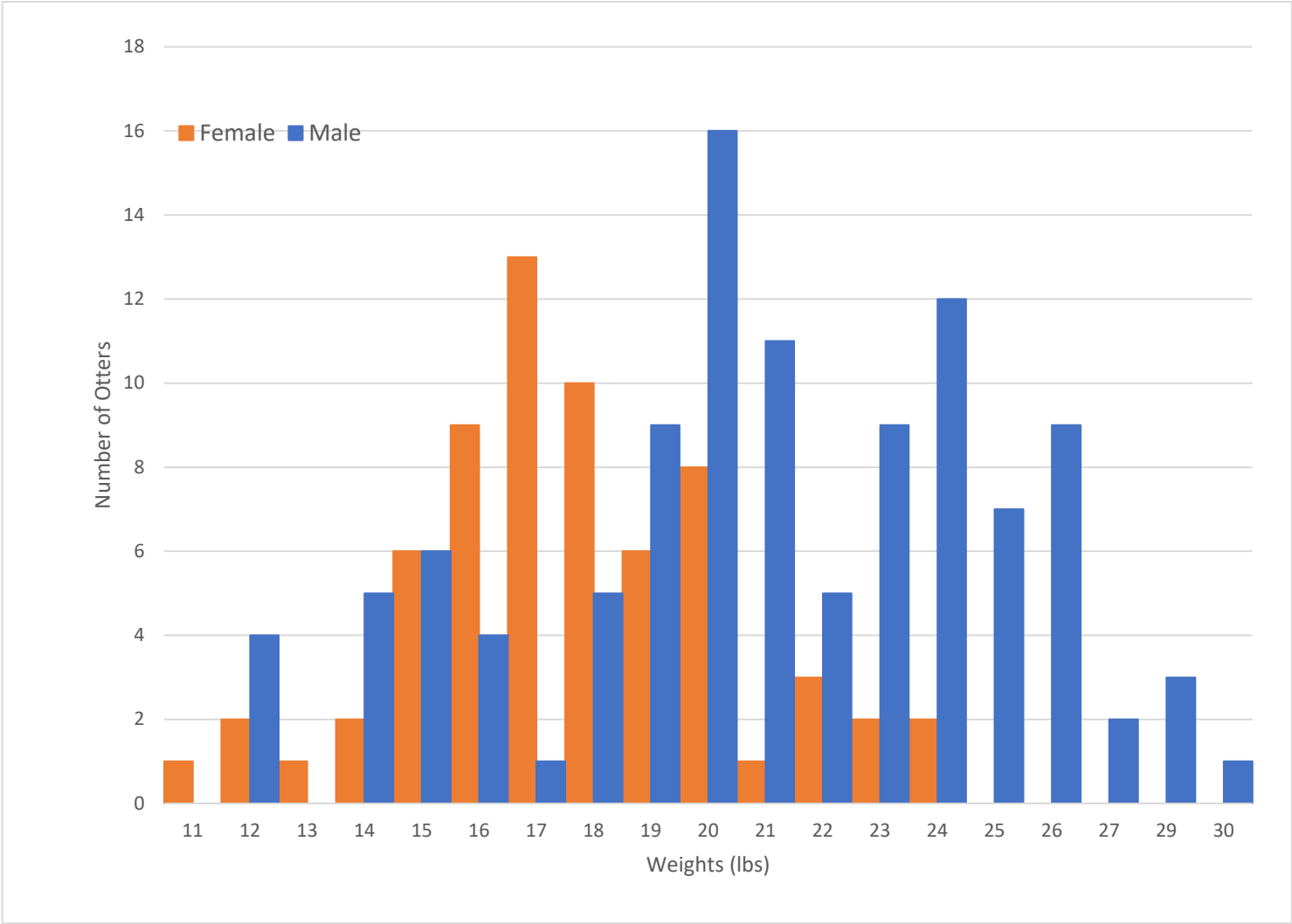

Figure 8. Carcass weights of 109 males and 66 females in South Dakota, 2004-2019.

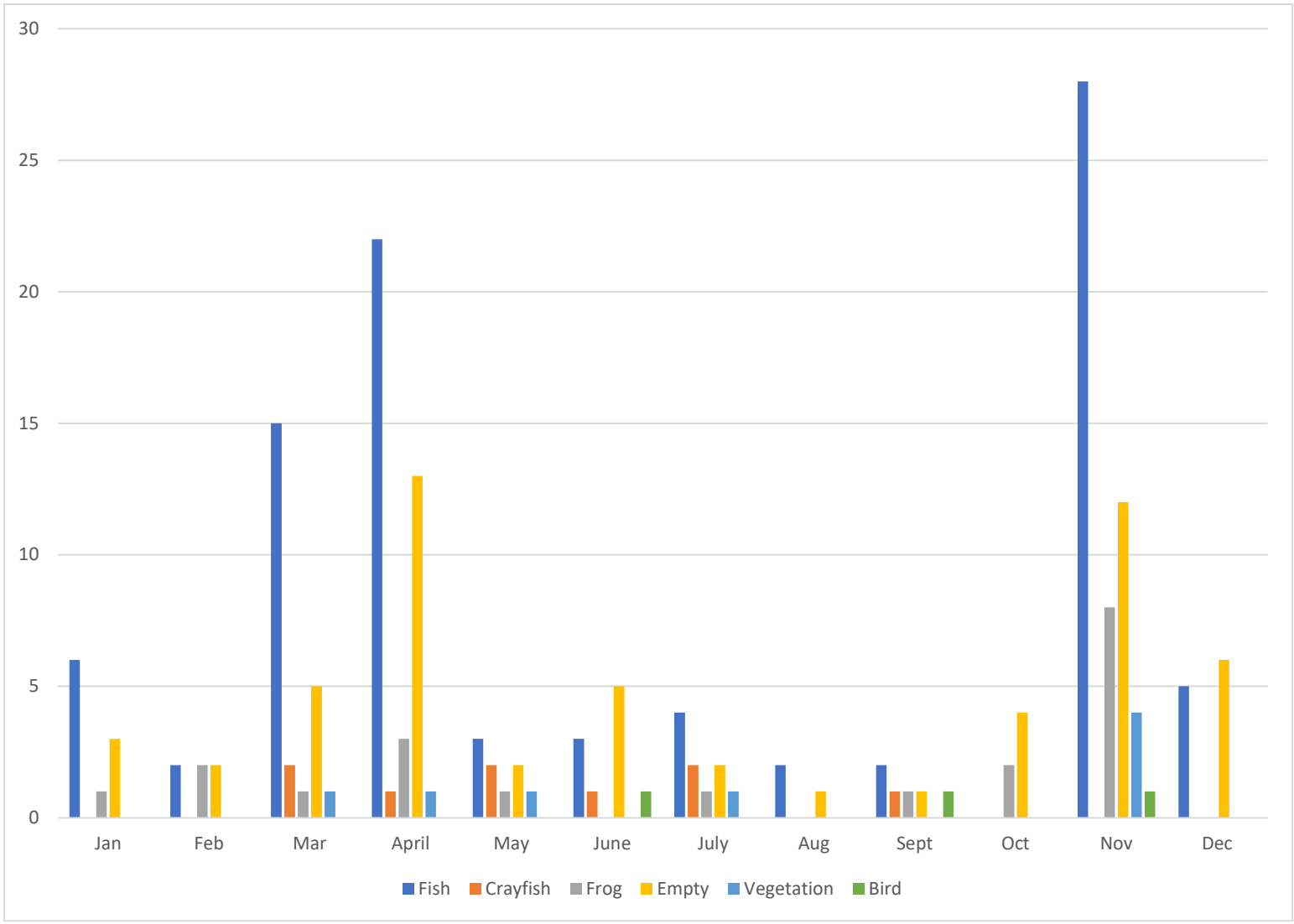

Figure 9. Contents of 192 river otter stomachs in South Dakota, 2003 - 2019.

Appendices

Appendix A. Status review of the state threatened North American river otter, April 2018

STATE T&E SPECIES STATUS REVIEW

Species Name: North American River Otter, *Lontra canadensis*

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:04, List of threatened mammals)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S2 (imperiled species)
- Included as a Species of Greatest Conservation Need in the South Dakota Wildlife Action Plan
- Considered a game species with no season

Federal Status:

- NatureServe global rank G5 (species apparently secure); last reviewed 18 November 1996
- Considered a sensitive species in Region 2 of the U.S. Forest Service
- Listed as an Appendix II species under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) because of similarity of appearance to other species listed under CITES.

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The justification for including the river otter on the first list of state threatened mammals is unknown but was presumably due to likely extirpation from the state due to unregulated harvest. Continued listing as a state threatened species is recommended at this time with an additional review of species status again within one year.

Description, biology and life history:

The river otter is a semiaquatic carnivore adapted to life in the water. Their cylindrical body shape, short legs and webbed feet make them agile swimmers. Eyes sit high on the head and small, rounded ears are set far back to allow a mostly submerged river otter to see and hear above water. River otters range from 35 to over 50 inches long. The tail comprises 30-40% of the total body length and is useful for diving and steering. River otter fur is extremely dense, providing insulation that is needed for life in the water. River otters are brown with a tan to silvery-white chin and chest.

Female river otters can give birth to their first litter at two years of age. Males typically do not become successful breeders until 5-7 years of age. The breeding season begins in late winter and can extend until early spring. River otters have delayed implantation. This means when an egg is fertilized, it remains unattached and undeveloped in the uterus. After this delay, the fertilized egg will attach to the uterus and grow during a 50-60-day gestation period. Two to four young are then born in early spring almost a year after conception. Pups

leave the natal den with the female at two months of age and are weaned at three months, but may stay with the adult until she gives birth to her next litter. Males are typically solitary except during breeding. River otters are most active during the evening and early morning. Life expectancy in the wild is typically 6-7 years with some living close to 20 years.

River otters primarily eat fish. They also eat crayfish, frogs, aquatic invertebrates, birds, and small mammals. River otters take fish species based on abundance and ease of capture.

Habitat:

River otters can be found in a variety of aquatic environments including rivers, streams, lakes, and marshes with deep pools, all of which should have abundant vegetation and prey. Good water quality, year-round access to open water and limited disturbance are often important habitat characteristics. River otters have a commensal relationship with beavers as beaver dams provide year-round open water and beaver bank dens and lodges are used by river otters as rest and natal sites.

Distribution within the state:

This species is thought to have historically occurred throughout South Dakota in appropriate habitat (Toweill and Tabor 1982, Jones Jr. et al. 1983). Melquist et al. (2003) estimated that in 1977 river otters occupied less than 75% of their historical range in North America. South Dakota was not included in this occupied range. Kiesow and Dieter (2003) also reported no indication of a remnant population of river otters in South Dakota. A small population existed as the result of a reintroduction in Moody County. See Figure 1 for predicted current distribution of river otters in South Dakota.

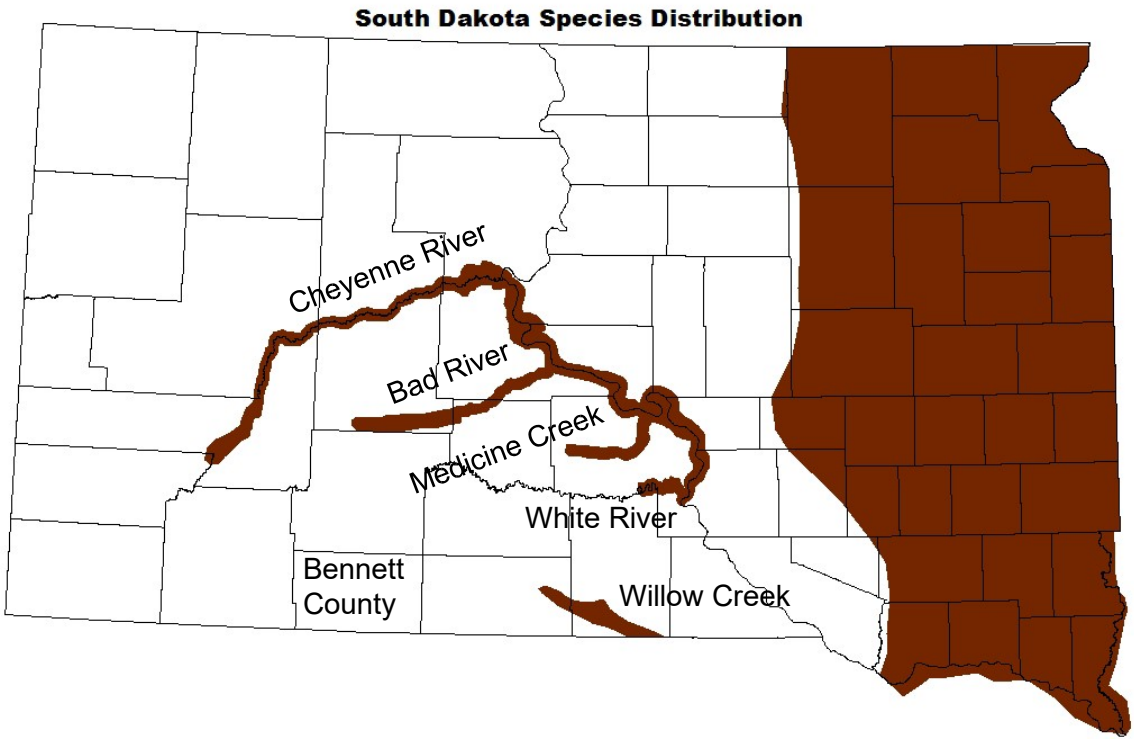

Figure 1. Predicted current distribution of river otters in South Dakota as determined by reports (verified, probable and unverified) submitted to the South Dakota Department of Game, Fish and Parks (South Dakota Department of Game Fish and Parks 2015).

Conservation / Management Considerations:

Known threats to river otters in South Dakota include incidental trapping and road kills. Of 117 reported river otters killed in South Dakota from 1979 through 2016, 73% were killed incidental to legal trapping activities; 15% of the 117 reported river otter mortalities resulted from being struck by vehicles (South Dakota Department of Game, Fish and Parks, unpublished data). Degradation of streams, loss of riparian habitat and seasonal variations in water levels also threaten long-term population stability. The impact of agricultural chemical run-off is unknown. A year-round beaver trapping season west of the Missouri River and a focus on non-native trout management in Black Hills streams will impair statewide recovery of river otters. Due to these issues and evidence of more suitable habitat in eastern South Dakota, the focus of recovery is on watersheds within the eastern part of the state.

Conservation Efforts in South Dakota:

Past

The Flandreau Santee Sioux Tribe conducted a reintroduction along the Big Sioux River near Flandreau in Moody County by releasing 35 river otters. Ten males and seven females were released on 23 May 1998. On 14 May 1999, eight males and 10 females were released. The

released animals were not marked or monitored and subsequent information on current distribution or reproduction of these released otters was limited.

In 2001, South Dakota Department of Game, Fish and Parks (SDGFP) worked with South Dakota State University's Biology Department to determine the current distribution of river otters in the state and assess the feasibility of river otter reintroduction (Kiesow 2003). Kiesow and Dieter (2003) reported that 89% of 34 reported river otter sightings occurred in the eastern third of South Dakota, particularly along the Big Sioux River and that those reported sightings were likely the result of the release conducted by the tribe. The authors' survey efforts provided no indication that there was a naturally occurring remnant river otter population in the state. As such, the authors recommended additional reintroductions of river otters. Kiesow and Dieter (2005) further identified suitable areas for reintroduction: Bad River, Big Sioux River, James River, North Fork of the Whetstone River and the Little White River. River otter reintroductions were not a high SDGFP Wildlife Division priority at that time and did not occur.

For three winters beginning in 2005, SDGFP contracted with Jacquie Ermer, currently the Regional Terrestrial Resources Supervisor in SDGFP Wildlife Division Region Four, to collect additional information on river otter distribution, evaluate suitable survey methods, solicit and collect otter observations and conduct necropsies on incidentally killed river otters. Ermer's work was focused on eastern South Dakota.

Ermer (2006, 2007, 2008) proposed using a combination of methods to monitor river otters in South Dakota: sign surveys (aerial snow track and bridge sign surveys), survey of licensed trappers, continued collection of river otter sightings, carcass collection and necropsy as well as population modeling to determine the status of river otters in the state. If feasible, a small scale study to estimate home range, fecundity and survival should be conducted (Ermer 2006). In addition, the origin of South Dakota otters should be determined and river otter awareness programs developed.

A brochure was created in 2008 that provided basic information on river otters, requested reports of any river otter observed in South Dakota and illustrated ways to reduce incidental river otter captures while trapping for other furbearing species. This brochure was made available at all SDGFP offices and on the Department website. An updated version was created in 2010, is available at SDGFP offices, through the SDGFP website and was mailed to all resident furbearer license holders in South Dakota in 2010.

In December of 2010, a group of SDGFP staff began developing a plan for river otter conservation and management. This team produced the *South Dakota River Otter Management Plan* (South Dakota Department of Game Fish and Parks 2012). The 5-year plan is intended to provide general, strategic guidance to SDGFP and potential partners for the recovery and sustained management of river otter in South Dakota. More specifically, it

recognizes the need to collect updated information on the distribution and population of river otters in South Dakota and to establish delisting criteria. As such, a State Wildlife Grant-funded project was initiated with Dr. Wayne Melquist in 2011 to determine current river otter distribution and evaluate habitat of unoccupied sites with the potential for population expansion. A final report was submitted to SDGFP in May 2015 (Melquist 2015).

Neither river otters nor their sign were observed during visits to over 300 bridge crossings and 135.2 km (84 miles) of stream (17.7 km [11 miles] walked, 117.5 km [73 miles] boated) (Melquist 2015). River otter tracks on the East Fork of the Vermillion River and an observation of a river otter on a dammed tributary of the East Fork were detected during aerial surveys of major drainages conducted 6-8 March 2013. Current confirmed distribution as identified by Melquist (2015) of river otters in South Dakota includes the Big Sioux, Vermillion and James River drainages, Jorgenson River, Little Minnesota River, Whetstone River, Yellow Bank River, Jim Creek/Big Slough and the Missouri River downstream from Pierre. Melquist (2015) also reported that the Bad and Cheyenne River drainages and Medicine Creek may have or had river otters based on unconfirmed reports previously submitted to SDGFP. Reports submitted to SDGFP in the early 1990's and late 2000's indicate that otters may have been or are found on the Bad, Cheyenne and White rivers and Medicine and Willow creeks. The intermittent flow of water in several of these streams limits the year-round use by river otter.

Suitable reintroduction or translocation sites to address river otter depredation complaints were selected based upon riparian habitat, water permanence, available prey, evidence of current beaver activity and banks with suitable resting sites (Melquist 2015). Potential reintroduction sites were located on the Cheyenne, Belle Fourche and Little White rivers. No evidence of recent otter occurrence exists in the areas selected for reintroduction. Note that current conservation challenges west of the Missouri River (as listed above) impair recovery at these sites. Translocation sites were recommended on the James, Missouri and Vermillion rivers. At least one site was recommended in each administrative Wildlife Division region of SDGFP.

Two incidentally captured otters (one male and one female) were radio-marked and released on the Little White River Game Production Area in Bennett County (Figure 1) on 14 November 2013 to further evaluate habitat suitability on the Little White River (Melquist 2015). Radio contact with the male was last obtained on 25 March 2014. The female occupied both the Little White River and Lacreek National Wildlife Refuge giving birth to at least one pup on the refuge during the spring of 2014. The adult female was found dead on 19 January 2015. Hypertrophic cardiomyopathy is the suspected cause of death (U.S.

Geological Survey, National Wildlife Health Center Diagnostic Services case report #26185). Portions of the Little White River and the Lacreek National Wildlife Refuge have suitable year-round otter habitat.

Ongoing

Since the late 1970's, the South Dakota Natural Heritage Program, housed within SDGFP, has collected reports of river otter observations (Figure 2). These reports have included the sighting of a live animal, incidental catch, river otter sign (tracks, slides or scat) or road kill.

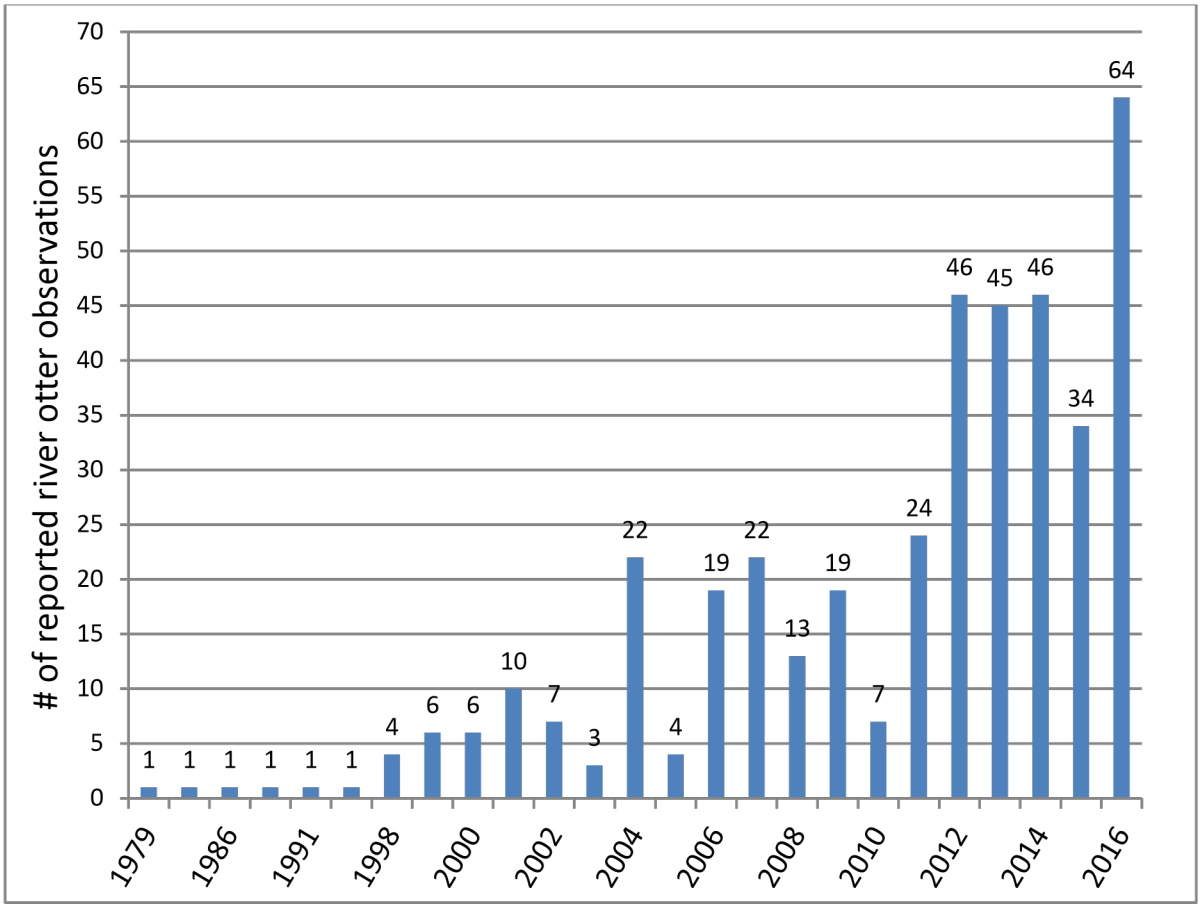

Figure 2. Reports of river otters in South Dakota from 1979 through 2016. An observation is based on a sighting of a live animal, incidental catch, river otter sign (tracks, scat or sign) or road kill. An observation can be an individual animal or a group of animals.

According to South Dakota Administrative Rule 41:08:02:12, if a wild animal is found dead in a trap or snare when the established season is closed the animal shall remain in the trap or snare and a SDGFP representative must be contacted within twelve hours. If the animal is found alive, it must be released. Currently, there is no season on river otters in South Dakota. SDGFP collects biological information from reported dead river otter including size, sex, age, body condition, stomach contents and reproductive status. The lower canine teeth are collected for accurate aging, tongue or muscle tissue is collected for DNA analysis and liver tissue is collected for future contaminants testing.

Future

Refer to the South Dakota River Otter Management Plan (South Dakota Department of Game Fish and Parks 2012) for conservation and management strategies and objectives proposed through 2017.

Recovery Criteria/Goals

Delisting of the river otter will be recommended when the following conditions are met:

- confirmed reports of reproduction are documented in three of the five basins (60%) within the recovery area, AND
- within each of these basins, the presence of river otters has been documented by verified reports in at least 40% of the subbasins.

Both criteria shall be met during two of the five years prior to proposed delisting.

Reproduction is confirmed by verified reports of family groups (>2 individuals), observation of corpora lutea during necropsy of a female river otter, evidence of lactation, and presence of known age individuals (1 year or younger) as determined by laboratory analysis of cementum annuli. Cementum annuli analysis of teeth is an aging technique useful in many mammal species.

Basins are hydrological unit level six watersheds and defined by the U. S. Geological Survey (USGS) National Watershed Boundary Dataset. Subbasins are hydrological unit level eight watersheds, also defined by USGS (Figure 3).

A verified report of a river otter is one of a carcass or live-captured individuals or where evidence exists that proves the report was a river otter. Photos where the animal can clearly be identified as a river otter may also be considered verified. Tracks associated with sliding marks in the snow, if confirmed by knowledgeable reviewers can also be considered a confirmed sighting. Knowledgeable reviewers may include agency staff familiar with river otters or river otter experts.

A probable report is a sighting not accompanied by a photo only if the observer is experienced and knowledgeable. In addition, tracks and scats not in snow are considered probable reports in part because of the difficulty of correctly identifying them. Photos will be evaluated by knowledgeable reviewers. Unverified reports are those with no evidence to support or reject the report. Probable or unverified reports will not contribute to delisting benchmarks but may help identify sites for follow-up monitoring.

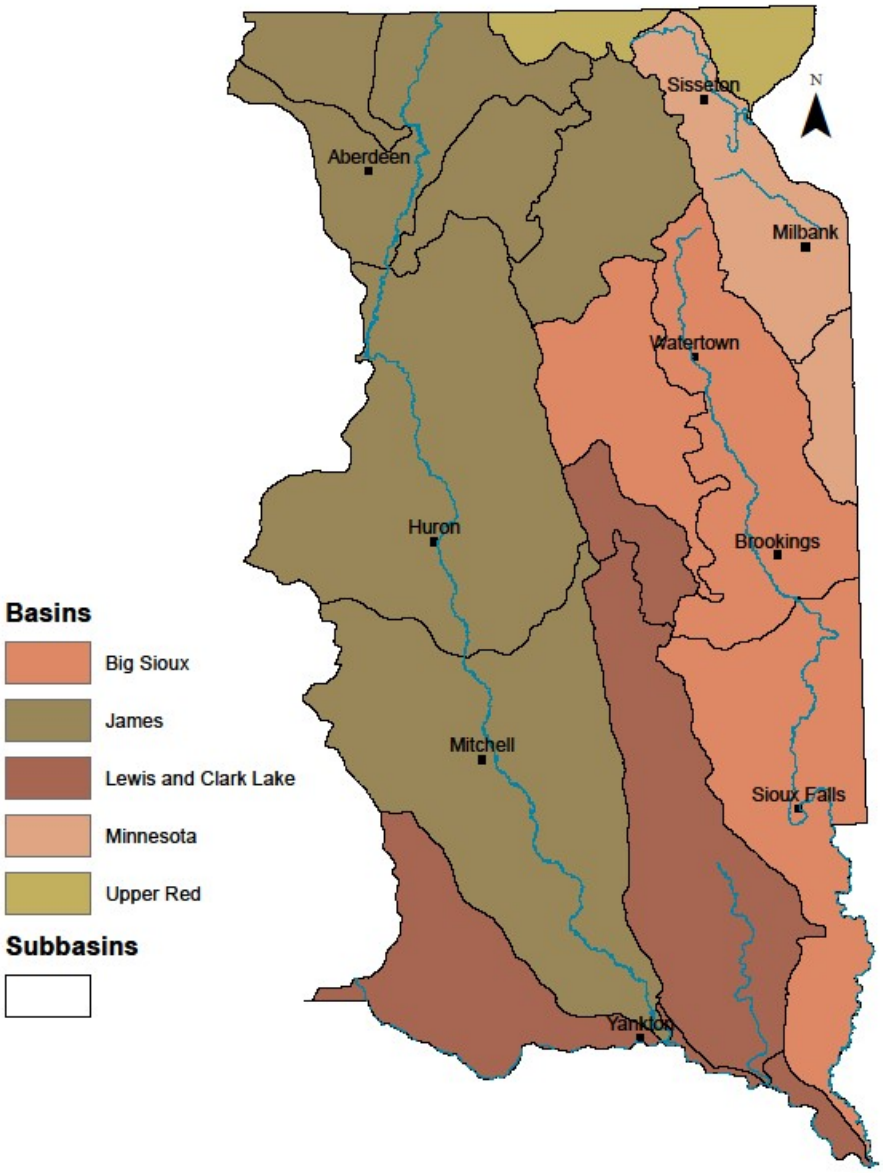

Figure 3. River otter recovery watershed basins and subbasins. Basins are hydrological unit level six watersheds defined by the U. S. Geological Survey (USGS) National Watershed Boundary Dataset. Subbasins are hydrological unit level eight watersheds, also defined by USGS.

Primary Reviewer: Silka Kempema, wildlife biologist

Other Staff or Experts Involved in the Review: Julie DeJong, Jacquie Ermer, Eileen Dowd Stukel and Chad Switzer, SDGFP

Date Review Finalized:

Dates of Other Reviews, if appropriate:

References or Information Sources:

Ermer, J. 2006. Preliminary investigation to determine presence or absence of river otters in northeastern South Dakota. Final Report to South Dakota Department of Game, Fish and Parks.

_____. 2007. Investigation to determine presence/absence of river otters (*Lontra canadensis*) in eastern South Dakota. Final Report to South Dakota Department of Game, Fish and Parks.

_____. 2008. Investigation to determine presence/absence of river otters (*Lontra canadensis*) in eastern South Dakota. Final Report to South Dakota Department of Game, Fish and Parks.

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Appendix B. SDGFP Commission action to delist the North American river otter

GAME, FISH, AND PARKS COMMISSION ACTION

FINALIZATION

State Threatened and Endangered Species Listings Chapter 41:10:02:04			
Commission Meeting Dates:	**Proposal**	**March 5-6, 2020**	**Pierre**
	Public Hearing	**May 7, 2020**	**Custer State Park**
	Finalization	**May 7-8, 2020**	**Custer State Park**

COMMISSION PROPOSAL

Proposed change: Remove North American River Otter (*Lontra canadensis*) from list of state threatened mammals.

DEPARTMENT RECOMMENDATION

Recommended changes to proposal: None.

SUPPORTIVE INFORMATION

River otters were historically widespread across North America, including South Dakota in appropriate habitats. However, due to habitat loss and degradation and unregulated take during the early 20th century, river otter populations were drastically reduced, including likely extirpation from South Dakota. In 1978, river otters were included on the first list of South Dakota state threatened mammals.

Several factors have allowed river otter populations to rebound across much of their former range, including reintroductions, improvements in wetland and river habitat management, and protections afforded under various state threatened and endangered species laws. In South Dakota, the Flandreau Santee Sioux Tribe released 35 river otters along the Big Sioux River on tribal grounds in Moody County in 1998 and 1999. As part of a study to determine river otter distribution in the state, Kiesow and Dieter (2003) collected 34 confirmed reports of river otter in South Dakota. The majority (89%) of these reports occurred along the Big Sioux River; half occurred in Moody County. Melquist reported in 2015 that river otter distribution included the following: Big Sioux, Vermillion and James River drainages, Jorgenson River, Little Minnesota River, Whetstone River, Yellow Bank River, Jim Creek/Big Slough and the Missouri River downstream from Pierre (Melquist 2015).

South Dakota Game, Fish and Parks (SDGFP), through the South Dakota Natural Heritage Program, maintains a database of river otter reports from across the state. Data are from a variety of sources including universities, government wildlife agencies, private contractors, and the general public. Reports include the sighting of an otter, incidental catch, river otter sign (tracks, scat, or snow slide), or a vehicle kill. Not every river otter encounter is reported to SDGFP and not all reports are verified. The number of verified river otter reports has increased

over time (Figure 1). Approximately half of these reports came from Grant, Roberts or Moody counties. The tribal reintroduction, along with natural recolonization from other areas has resulted in a growing river otter population in eastern South Dakota.

In 2012, a 5-year plan was written to provide general, strategic guidance for the recovery and sustained management of river otter. As directed in the plan, recovery criteria were developed to justify removing the species from the state threatened species list when appropriate. Delisting of the river otter will be recommended when the following conditions are met: 1) verified reports of reproduction are documented in three of the five basins (60%) within the recovery area (Figure 2), and 2) within each basin, the presence of river otters has been documented by verified reports in at least 40% of their subbasins. Both criteria shall be met during at least two of the five years prior to recommended delisting. These criteria were met in 2019 (Figure 3). Because protection under the state endangered species law is no longer justified, the Department recommends that the species be removed from the state list of threatened mammals.

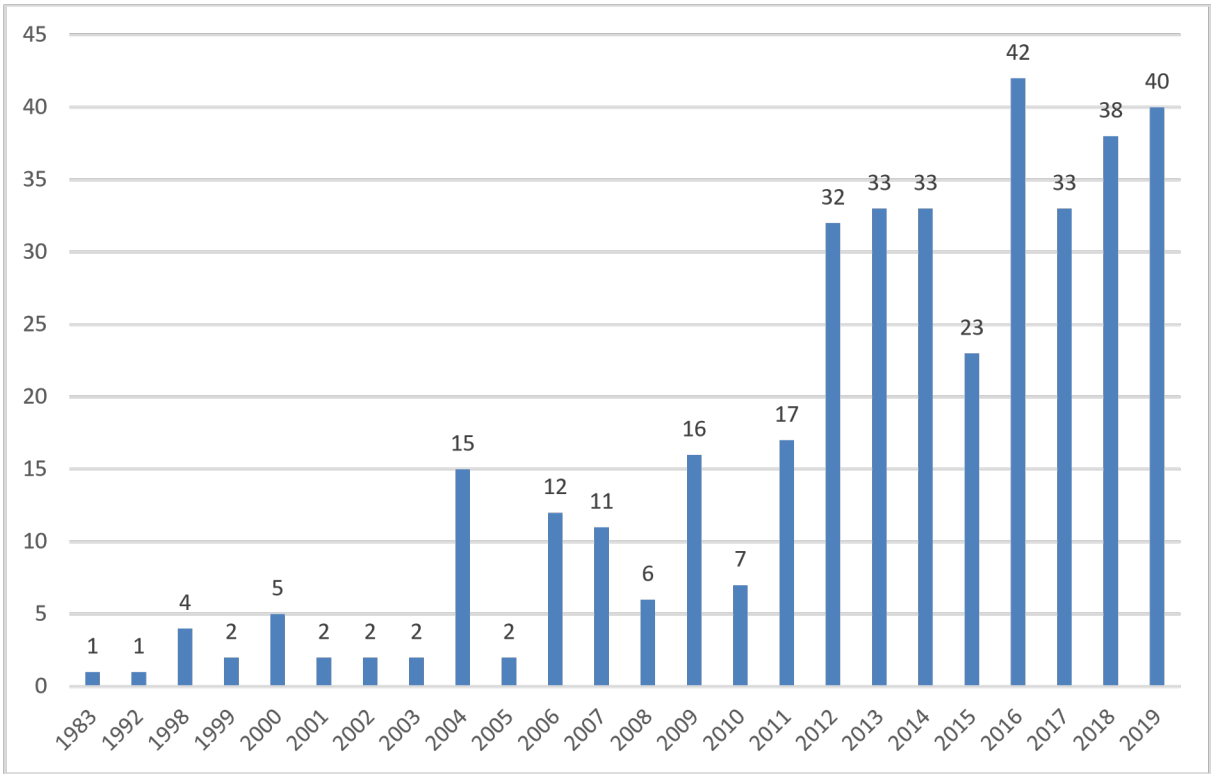

Figure 1. Verified reports of river otters in South Dakota from 1983 through 2019. Reports include the sighting of an otter, incidental catch, river otter sign (tracks, scat or sign) or vehicle kill.

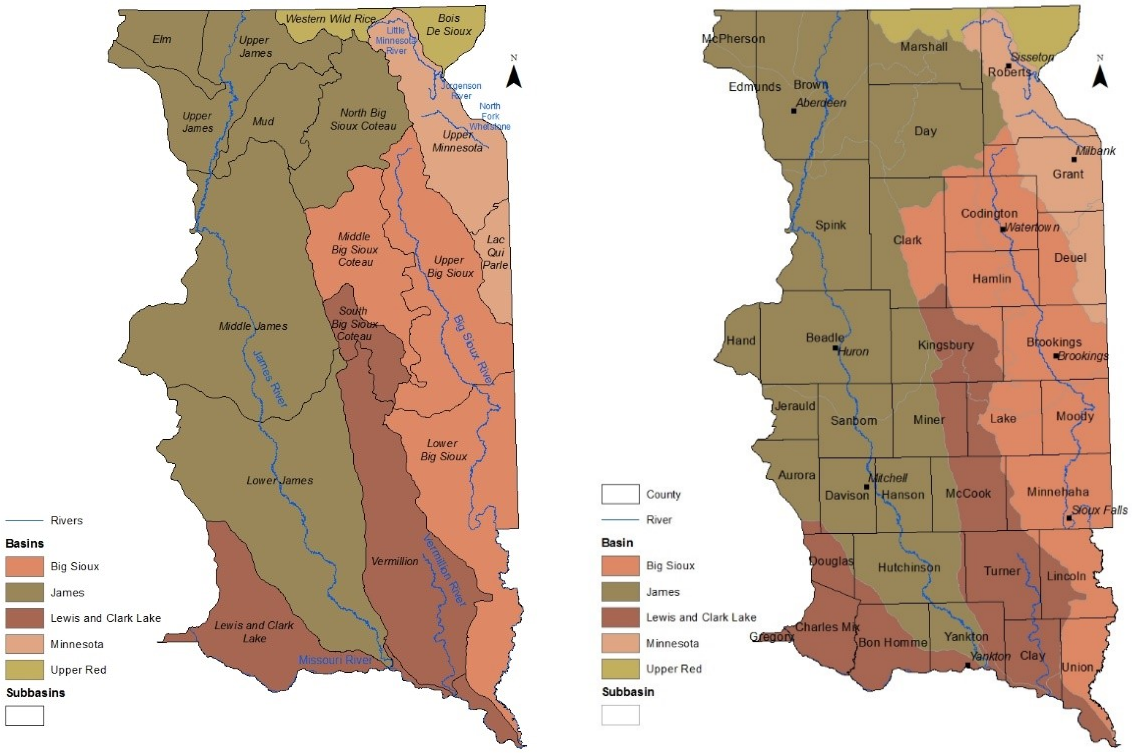

Figure 2. Recovery area watershed basins and subbasins. Basins are hydrological unit level six watersheds while subbasins are hydrological unit level eight watersheds, as defined by the U. S. Geological Survey (USGS) National Watershed Boundary Dataset.

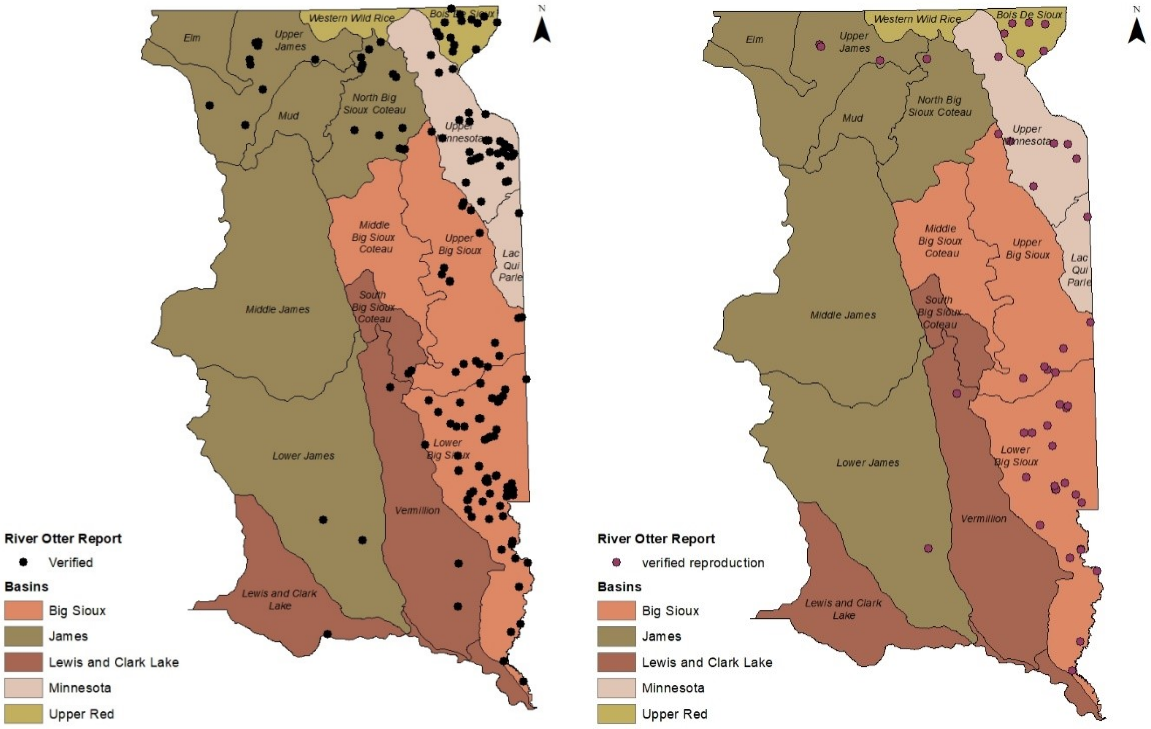

Figure 3. Verified reports of river otters (left) and reproduction (right) across the recovery watersheds in eastern South Dakota from 2015 – 2019. These reports represent a conservative estimate because many reports come from the public, and it is reasonable to assume not every river otter encounter is reported to SDGFP.

Literature Cited

Kiesow, A. M. and C. D. Dieter. 2003. Status and distribution of river otters, *Lontra canadensis*, in South Dakota. Proceedings of the South Dakota Academy of Science 82:79-87.

Melquist, W. E. 2015. Determination of river otter (*Lontra canadensis*) distribution and evaluation of potential sites for population expansion in South Dakota. South Dakota Department of Game, Fish and Parks, Wildlife Division Final Report, Pierre, SD.

Appendix C. Proposal to SDGFP Commission for a river otter trapping season in 2020

GAME, FISH AND PARKS COMMISSION ACTION PROPOSAL

River Otter Trapping Season
Chapters 41:08:01

Commission Meeting Dates:	**Proposal**	**May 7-8, 2020**	**Custer State Park**
	Public Hearing	**July 16, 2020**	**Pierre**
	Finalization	**July 16-17, 2020**	**Pierre**

DEPARTMENT RECOMMENDATION

Duration of Recommendation: 2020 trapping season

Recommended changes from last year: To establish a conservative river otter trapping season.

1. Establish a trapping season that is open from sunrise on November 1 to sunset on December 31 in all counties of the state.
2. Limit of one river otter per trapper per season.
3. Statewide harvest limit of 15 river otters. Season will end prior to December 31 if the harvest limit is reached.
4. Trapping season open to residents only with a furbearer license.
5. A river otter shall be reported to the Department within 24 hours of harvest. At time of reporting, arrangements will be made to check-in carcass and detached pelt at a GFP office or designated location for registration and tagging of the pelt within 5 days of harvest. Additionally, once the season has closed (last day of season or harvest limit reached), a person has 24 hours to notify the Department of a harvested river.
6. The pelt shall be removed from the carcass and the carcass shall be surrendered to the Department. After the pelt has been tagged, it shall be returned to the trapper. Upon request, the carcass may be returned to the trapper after the carcass has been inspected and biological data collected.
7. Any river otter harvested after the 24-hour period following the close of the season, will be considered incidental take and shall be surrendered to the Department.
8. A person may only possess, purchase or sell raw river otter pelts that are tagged through the eyeholes with the tag provided by the Department or if the river otter was harvested on tribal or trust land of an Indian reservation or another state and is properly and securely tagged with a tag supplied by the governmental entity issuing the license.

SUPPORTIVE INFORMATION

River otter populations in South Dakota continue to grow and expand into available habitat. A statewide season will provide harvest information from across the state. It also provides the greatest opportunity to pursue trapping of river otter. Over the last five years (2015-2019) the Department has received an average of 16.6 incidentally trapped river otter/year. River otter are most frequently incidentally taken during the beaver trapping season given similarity of habitat and trapping methods. The majority (72%) of the 83 incidentally trapped river otter reported over the last five years were taken in November. Updates on river otter harvest will be available on the Department website and by calling a designated phone number. A press release and other information tools will be used when the harvest limit has been met, similar to the mountain lion harvest notification process.

RESIDENT/NONRESIDENT CRITERIA

1. The Issue

- Why make the change, what are the change alternatives, how will public/stakeholder input be solicited, and how will the change be evaluated if implemented?
    i. River otter populations in South Dakota continue to grow and expand into available habitat. In reviewing the number of river otters incidentally trapped, the population can sustain a conservative harvest by trappers. Public input will be solicited during the Commission process. If implemented, Department staff will collect biological data, evaluate season structure and bring any recommended changes to the Commission for consideration for future seasons.

2. Historical Considerations – River otters were classified as a furbearer by the South Dakota Legislature in 2019 and were removed from the state's list of threatened species by the Commission in 2020 after meeting delisting criteria.
3. Biological Considerations
    - What is the current and projected status of the population and habitat conditions for these populations?
    i. As already indicated, river otter populations in South Dakota continue to grow and expand into available habitat.
4. Social Considerations
    - The allowance of a restrictive trapping season will provide additional opportunities for resident trappers. It is recommended to limit this season to residents only, given the limited opportunity and expected high interest from resident trappers.
5. Financial considerations – Not Applicable.

RECRUITMENT, RETENTION, REACTIVATION (R3) CRITERIA

1. Does the regulation or fee inhibit a user's ability to participate? Not applicable.
2. Does the regulation increase the opportunity for new and existing users?
    - Yes, the inclusion of a conservative trapping season for river otters will provide additional opportunities for existing trappers and likely spark interest from new trappers.
3. How does the regulation impact the next generation of hunters, anglers, trappers and outdoor recreationists? Provides additional trapping opportunity.
4. Does the regulation enhance the quality of life for current and future generations by getting families outdoors? Yes.

Appendix D. SDGFP Commission action to finalize a river otter trapping season in 2020

GAME, FISH AND PARKS COMMISSION ACTION
FINALIZATION

River Otter Trapping Season

Commission Meeting Dates:	**Proposal**	**May 7, 2020**	**Teleconference**
	Public Hearing	**July 16, 2020**	**Teleconference**
	Finalization	**July 16-17, 2020**	**Teleconference**

COMMISSION PROPOSAL

Duration of Proposal: 2020 trapping season

Proposed changes from last year: To establish a conservative river otter trapping season.

1. Establish a trapping season that is open from sunrise on November 1 to sunset on December 31 in all counties of the state.
2. Limit of one river otter per trapper per season.
3. Statewide harvest limit of 15 river otters. Season will end prior to December 31 if the harvest limit is reached.
4. Trapping season open to residents only with a furbearer license.
5. A river otter shall be reported to the Department within 24 hours of harvest. At time of reporting, arrangements will be made to check-in carcass and detached pelt at a GFP office ordesignated location for registration and tagging of the pelt within 5 days of harvest. Additionally, once the season has closed (last day of season or harvest limit reached), a person has 24 hours to notify the Department of a harvested river otter.
6. The pelt shall be removed from the carcass and the carcass shall be surrendered to the Department. After the pelt has been tagged, it shall be returned to the trapper. Upon request, the carcass may be returned to the trapper after the carcass has been inspected and biological data collected.
7. Any river otter harvested after the 24-hour period following the close of the season, will be considered incidental take and shall be surrendered to the Department.
8. A person may only possess, purchase or sell raw river otter pelts that are tagged through the eyeholes with the tag provided by the Department or if the river otter was harvested on tribal or trust land of an Indian reservation or another state and is properly and securely tagged with a tag supplied by the governmental entity issuing the license.

DEPARTMENT RECOMMENDATION

Recommended changes to proposal:

1. Modify the open area from statewide to the following counties in eastern South Dakota: Aurora, Beadle, Bon Homme, Brookings, Brown, Charles Mix, Clark, Clay, Codington, Davison, Day, Deuel, Douglas, Grant, Hamlin, Hanson, Hutchinson, Jerauld, Kingsbury, Lake, Lincoln, Marshall, McCook, Miner, Minnehaha, Moody, Roberts, Sanborn, Spink, Turner, Union and Yankton (see Figure 1).

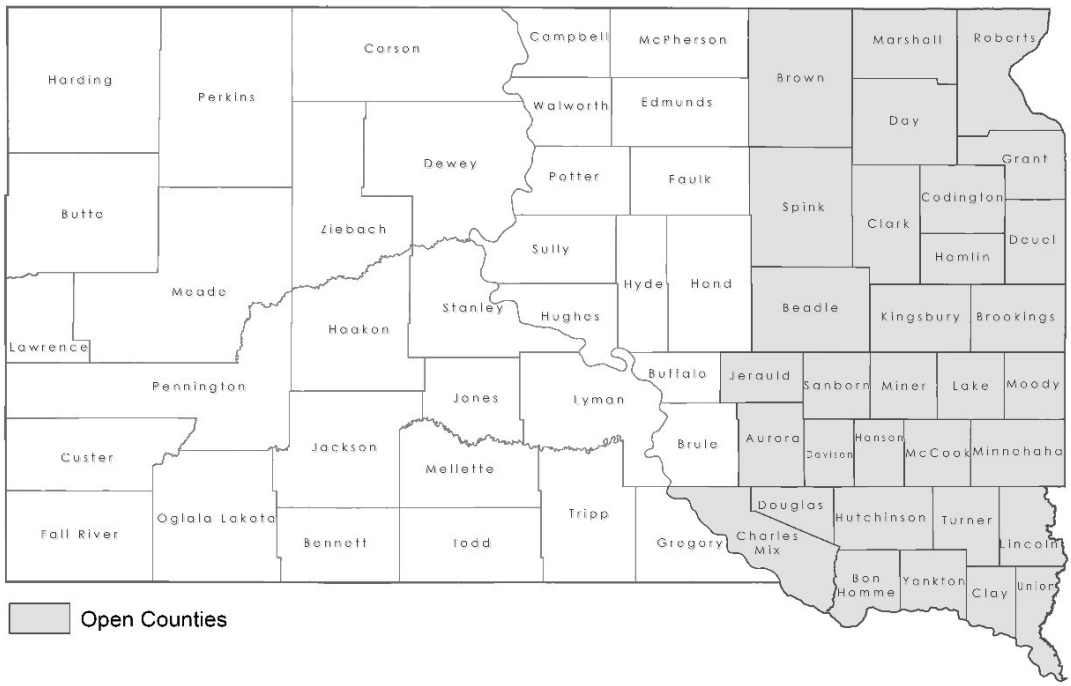

Figure 1. Recommended open area for river otter trapping season.

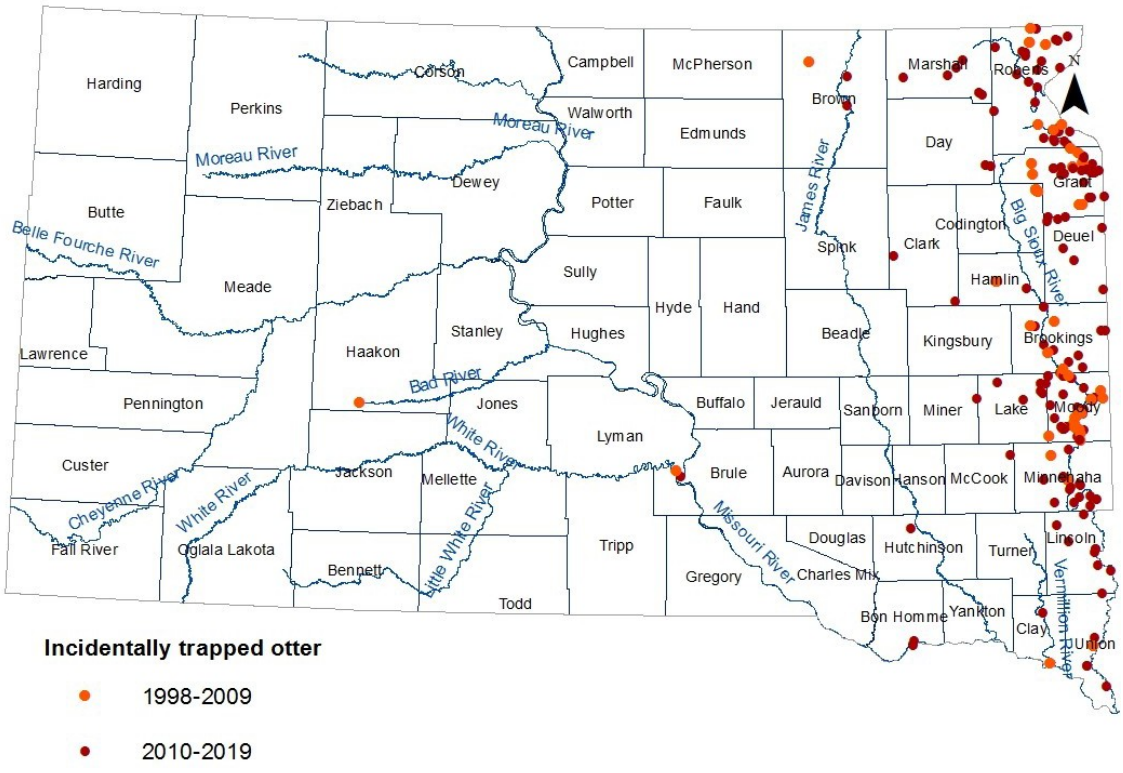

Figure 2. Reports of incidentally trapped river otters, 1998-2019.

SUPPORTIVE INFORMATION

River otter populations in South Dakota continue to grow and expand into available habitat. A statewide season will provide harvest information from across the state. It also provides the greatest opportunity to pursue trapping of river otter. Over the last five years (2015-2019) the Department has received an average of 16.6 incidentally trapped river otter/year. River otter are most frequently incidentally taken during the beaver trapping season given similarity of habitat and trapping methods. The majority (72%) of the 83 incidentally trapped river otter reported over the last five years were taken in November. Updates on river otter harvest will be available on the Department website and by calling a designated phone number. A press release and other information tools will be used when the harvest limit has been met, similar to the mountain lion harvest notification process.

RESIDENT/NONRESIDENT CRITERIA

1. The Issue
    - Why make the change, what are the change alternatives, how will public/stakeholder input be solicited, and how will the change be evaluated if implemented?
        i. River otter populations in South Dakota continue to grow and expand into available habitat. In reviewing the number of river otters incidentally trapped, the population can sustain a conservative harvest by trappers. Public input will be solicited during the Commission process. If implemented, Department staff will collect biological data, evaluate season structure and bring any recommended changes to the Commission for consideration for future seasons.

2. Historical Considerations – River otters were classified as a furbearer by the South Dakota Legislature in 2019 and were removed from the state's list of threatened species by the Commission in 2020 after meeting delisting criteria.

3. Biological Considerations
    - What is the current and projected status of the population and habitat conditions for these populations?
        i. As already indicated, river otter populations in South Dakota continue to grow and expand into available habitat.

4. Social Considerations
    - The allowance of a restrictive trapping season will provide additional opportunities for resident trappers. It is recommended to limit this season to residents only, given the limited opportunity and expected high interest from resident trappers.

5. Financial considerations – Not Applicable.

RECRUITMENT, RETENTION, REACTIVATION (R3) CRITERIA

1. Does the regulation or fee inhibit a user's ability to participate? Not applicable.
2. Does the regulation increase the opportunity for new and existing users?
    - Yes, the inclusion of a conservative trapping season for river otters will provide additional opportunities for existing trappers and likely spark interest from new trappers.
3. How does the regulation impact the next generation of hunters, anglers, trappers and outdoor recreationists? Provides additional trapping opportunity.
4. Does the regulation enhance the quality of life for current and future generations by getting families outdoors? Yes.

River otters should be appreciated for their value as watchable wildlife

People sometimes confuse river otters with sea otters. Sea otters are 2-3 times larger than river otters. They usually congregate in small to large groups, spending most of their time in the water. Sea otters typically swim on their backs and often eat while floating on their backs. These characteristics make the sea otter a popular mammal to watch and photograph. The more secretive river otter swims with its belly down and spends much more time on land, using waterways to travel and find food. River otters are typically alone or in family groups. Although seeing a river otter is a special experience, their secretive, solitary nature makes them less predictable for wildlife viewing.

River otters are closely tied to water quality

River otters need adequate prey, year-round open water, and suitable places to den and bear young. Harvesting a conservative number of river otters will not impact the efforts of private landowners; nongovernmental organizations; or local, tribal, state, or federal entities to improve the quality of South Dakota's lakes, rivers and streams. SDGFP's aquatic plans include commitments to enhance aquatic habitats through such activities as small and large-scale habitat projects, small dam inspections, shoreline alteration permitting and inspection, small dam and water structure repair and maintenance, sedimentation removal, rough fish removal, submergent and emergent vegetation plantings, stream habitat projects, flow regime and water level modifications, riparian zone and watershed improvements, and water quality improvements (SDGFP Statewide Aquatics Plan).

Beginning July 1, 2020, a habitat stamp is required for anyone 18 years of age or older who purchases or applies for a hunting, fishing or furbearer license. Habitat stamp funds associated with fishing license sales will fund aquatic habitat projects on public waters across South Dakota, as well as projects that create or enhance public access to those waters. Dam maintenance, repairs and replacements will be conducted on aging structures around the state. Boat docks, roads and vault toilets may be added or improved to create more opportunities for users. Small-scale projects may include dredging, aeration, shoreline restoration, stream restoration, artificial and natural habitat structure placements, and outlet structure repair and maintenance. Large-scale projects may include whole-lake restorations, river/stream restorations, watershed improvements, sediment removal and controls, chemical renovations of the fish populations, riparian buffer zone creations, and habitat diversifications (SDGFP website Habitat Stamp FAQs).

Existing and future water quality efforts are likely to enhance river otter populations.

SDGFP should make sure river otters are recovered throughout western South Dakota

Some people believe river otters should inhabit additional watersheds in central and western South Dakota before they are considered recovered and that SDGFP should reintroduce river otters to make that happen. SDGFP has considered this scenario and contracted with river otter expert Dr. Wayne Melquist to evaluate additional river otter habitat potential besides the

primary eastern South Dakota recovery area. Dr. Melquist found that some western South Dakota river systems may have potential for this species. River otters continue to be protected in the state as furbearers with a proposed season, and their take is not allowed outside that proposed season. Reintroductions are typically conducted with very rare species that are unlikely to expand on their own, because such projects require a large investment of time and funding. SDGFP has determined that river otter reintroduction does not meet this standard and expects river otters to continue their natural expansion into areas with suitable habitat.

Citizen Involvement and Outreach

Public involvement is an important component in developing and implementing wildlife management plans in South Dakota. Information on the development of the South Dakota River Otter Management Plan was available online at https://gfp.sd.gov/management-plans/ under "Plans Up for Revision". Media outlets were informed of the draft plan through the standard press release distribution process. Press releases were sent via email to a group of over 5,000 recipients who have opted in to receive all SDGFP News (or press releases). Individuals had opportunity to provide comments by writing to wildinfo@state.sd.us or mail them to 523 E Capitol Ave., Pierre, SD 57501.

SDGFP will continue to encourage the public to report river otter sightings year-round. Moreover, SDGFP will continue to provide educational programs and materials through various media outlets with a goal of reaching a diverse public, trappers, agencies and organizations, and others as identified. Public involvement is a continuous process and SDGFP will strive to inform and ensure opportunities are accessible to all citizens.

Tribal Coordination

The regional SDGFP wildlife staff in the northeast have had several conversations regarding river otter with the Sisseton Wahpeton Oyate (SWO) tribal wildlife manager and biologist over the years. Most recently, regional SDGFP staff met with SWO in March 2020 to discuss plans for delisting river otters, a possible otter harvest strategy, management plan revisions and any concerns or questions they had. Due to concerns with COVID-19, more recent communication has been difficult and limited due to office closures. Nonetheless, shortly after the SDGFP Commission's proposals for delisting and then later the harvest season proposal, an email was sent to SWO describing the proposals and asking for their review and comment. SDGFP staff will continue to coordinate with the SWO wildlife manager.

A brief discussion was held with the Flandreau Santee Sioux Tribe's Director of Natural Resources in spring 2020 with regards to delisting proposal and potential for a conservative harvest season. Efforts will be made to continue conversations with them.

Regulated Trapping

Trapping is highly regulated and strictly enforced by wildlife conservation officers in South Dakota. Trapping provides environmental, social, and economic benefits. Regulated trapping is consistent with other "methods of take" which allow the public to harvest wildlife species and follow sustainable use of wildlife resources and it is a proven method for conserving and

managing our wildlife resources. Furbearer seasons and regulations are reviewed at least every two years or more often as needed. If a harvest is approved, biological data collected from harvested river otters will help inform future management, including proposed seasons and harvest limits. Members of the public who trap tend to be wildlife watchers as well and are some of the strongest advocates for habitat conservation, which benefits a myriad of other species.

SDGFP understands and acknowledges that incidental capture of non-target species can happen. This is considered when developing and recommending harvest seasons and limits. We have provided and will continue to provide information and outreach regarding techniques to avoid incidental trapping of river otters. For instance, a brochure was developed in 2008 to provide information on river otter identification and avoidance techniques to use when trapping other species. SDGFP staff have also presented numerous times over the years at the SD Trappers Association Annual Rendezvous to talk about river otters, reporting, and avoidance techniques. SDGFP staff respond to requests for service from the public regarding beaver causing damage to private property. These trained staff are aware of their surroundings and will modify their methods used in order to minimize the potential for incidentally capturing an otter when they remove beaver causing damage.

Monitoring plan and population estimate

SDGFP recognizes the importance of monitoring wildlife species, including river otter. Some species, including river otter, tend to be more difficult to monitor due to their secretive nature. Over the years, biologists across the country have used various methods with differing success to monitor river otters; and typically must use multiple methods (see section in the plan "Methods used in nearby states and provinces"). As indicated by Objective 1b in the management plan, SDGFP is committed to determine and implement the most feasible monitoring method(s) for South Dakota as well as determine the need for a specific river otter occupancy model and population estimate. Tools to predict river otter occupancy and potentially estimate the population will incorporate knowledge gained in South Dakota and elsewhere regarding critical habitat features for the river otter. Trends within river otter populations can be more telling than actual counts. Managers are interested in knowing if the population is increasing, decreasing or stable. By looking at trends, management actions can be assessed, and adjustments made if necessary. SDGFP staff will continue to collect reports of sightings and perform necropsies to obtain important biological data.

Appendix F. SDGFP Commission action to adopt river otter management plan

GAME, FISH AND PARKS COMMISSION ADMINISTRATIVE ACTION

River Otter Management Plan

Commission Meeting Dates:	**Draft Shared**	**June 4-5, 2020**	**Virtual Meeting**
	Public Hearing	**September 2, 2020**	**Virtual Meeting**
	Adoption	**September 2-3, 2020**	**Virtual Meeting**

ADOPTION OF MANAGEMENT PLAN

Executive Summary

Over the last 41 years the number of incidental river otter reports continues to increase and their geographic distribution continues to expand. Age structure indicates a young and growing population. Delisting criteria developed as part of a status review have been met and the species has been delisted. South Dakota will manage river otter populations with scientifically sound data and techniques to encourage occupation of suitable available habitats and to provide sustainable use and enjoyment within the social tolerance level for this species. Although the river otter is secretive and difficult to survey, the need to develop a long-term monitoring program is a priority. Feasible and flexible survey methods will be used to meet monitoring program objectives, be suited to the state's climate and landscape, and implemented with available resources. Information, education and outreach will continue to enhance river otter management in South Dakota.

Introduction

In December of 2010, a group of South Dakota Department of Game, Fish and Parks (SDGFP) staff began developing a plan for the conservation and management of river otters. This team produced the South Dakota River Otter Management Plan. That 5-year plan provided general, strategic guidance to SDGFP and potential partners for the recovery and sustained management of river otter in South Dakota. It also included background information on the biology, ecology and management of river otter.

The current plan identifies what we strive to accomplish related to the management of river otter in South Dakota over the next 10 years; including development of a feasible long-term monitoring program and continued outreach about this species. It also includes updates to the relevant supporting information included in the first river otter management plan. These two documents should be used in concert with one another.

The current plan update will be used by SDGFP staff and Commission on an annual basis and will be formally evaluated at least every 10 years. Supporting information will be formally updated at least every 5 years. All text and data contained within this document are subject to revision for corrections, updates, and data analyses.

Management Goal

South Dakota will manage river otter populations with scientifically sound data and techniques to encourage occupation of suitable available habitats and to provide sustainable use and enjoyment within the social tolerance level for this species.

Public Involvement

An initial public comment period on the revised plan was announced following the May Commission with a deadline of June 19, 2020. Another public comment period was made available following the July 2020 Commission meeting with a deadline of August 16, 2020. A draft of the revised river otter management plan was made available at https://gfp.sd.gov/management-plans/ under "Plans Up for Revision." Written comments were sent to 523 E. Capitol Ave., Pierre, SD 57501 or emailed to OtterPlan@state.sd.us.

APPROVE _____ MODIFY _____ REJECT _____ NO ACTION _____

Biennial Commission Review of SD Threatened and Endangered Species List
September 2020 Commission Meeting

SDCL 34A-8-4 states: The Game, Fish and Parks Commission shall conduct a review of the state list of endangered and threatened species within the period ending July 3, 1979, and every two years thereafter and may amend the list by appropriate additions or deletions.

In 2018, Wildlife Diversity staff drafted status reviews for all state threatened and endangered (T&E) species to describe the current level of knowledge and identify monitoring and research priorities needed to help develop and meet downlisting and delisting goals. If sufficient information allowed, downlisting and/or delisting criteria were identified. Downlisting a species changes its status from state endangered to threatened. Delisting a species removes it from the state T&E list.

Staff identified state downlisting and/or delisting goals for 12 species. Six species are also federal listed, and state recovery will be linked to federal recovery goals. Four species lacked sufficient information to allow setting downlisting and/or delisting goals in 2018.

Staff updated the status reviews in 2020 to reflect completion of projects that provided revised survey or research information. The revised document also reflects the delisting of the river otter earlier this year. Each status review includes a section that highlights any significant updates since 2018. Some overall highlights are described here:

- Updated information on American dippers (ST) in the Black Hills collected through a contract with the Bird Conservancy of the Rockies showed no change in distribution for this species in the past 2-3 decades. Volunteer birding groups placed 62 new nestboxes at appropriate sites to replace old nestboxes.
- The Least Tern (SE) has been proposed for delisting as a federal endangered species by the U.S. Fish and Wildlife Service. GFP will revisit state endangered species status when that action is finalized.
- Updated information on ospreys (ST) nesting in the Black Hills was collected through a contract with John Halverson of Rapid City. Results showed that ospreys need continued expansion in the Black Hills to meet delisting criteria.
- GFP continued contracting with peregrine falcon (SE) expert Bob Oakleaf of Lander, WY to search for and monitor nesting in western South Dakota, with an emphasis on the Black Hills. This species has not yet met its delisting criteria.
- Regional and statewide aquatic management plans now include commitments to standardize nongame fish sampling across the state through 2023. These efforts have the potential to provide additional records for the state listed fish species.
- GFP is conducting research on shovelnose sturgeon in Lake Sharpe, a closely related species to the pallid sturgeon (SE).
- GFP is conducting a study on sicklefin and sturgeon chubs in the Missouri River and its major tributaries to update information on distribution and status of these species, which are being evaluated for potential Endangered Species Act listing by the U.S. Fish and Wildlife Service.
- GFP contracted research with USD to learn about distribution of the false map turtle (ST) in Lake Oahe, information needed to evaluate potential delisting.

- A Wildlife Diversity Small Grant project resulted in detection of new locations for the lined snake (SE) in Hutchinson County and identified road mortality as a significant threat.
- GFP continued to assist locally and nationally in a variety of efforts to recover the black-footed ferret (SE).
- GFP provided funding and coordination assistance to a swift fox (ST) research project in northwestern South Dakota to learn more about this part of the population, which is likely linked to swift fox in Montana and North Dakota.

For the 2020 biennial review of South Dakota's list of threatened and endangered species, Wildlife Diversity staff have no recommendations for additions or deletions. Emphasis will continue to be placed on identifying and meeting information and data needs of current state listed species to aid in developing and documenting downlisting and delisting criteria.

STATE THREATENED or ENDANGERED SPECIES
(as of September 2020)

COMMON NAME	SCIENTIFIC NAME	STATE STATUS
Fishes		
Banded killifish	*Fundulus diaphanus*	SE
Blacknose shiner	*Notropis heterolepis*	SE
Finescale dace	*Chrosomus neogaeus*	SE
Longnose sucker	*Catostomus catostomus*	ST
Northern pearl dace	*Margariscus nachtriebi*	ST
Northern redbelly dace	*Chrosomus eos*	ST
Pallid Sturgeon	*Scaphirhynchus albus*	SE
Sicklefin chub	*Macrhybopsis meeki*	SE
Sturgeon chub	*Macrhybopsis gelida*	ST
Reptiles and amphibians		
Eastern hognose snake	*Heterodon platirhinos*	ST
False map turtle	*Graptemys pseudogeographica*	ST
Lined snake	*Tropidoclonion lineatum*	SE
Birds		
American dipper	*Cinclus mexicanus*	ST
Eskimo curlew	*Numenius borealis*	SE
Least tern	*Sternula antillarum*	SE
Osprey	*Pandion haliaetus*	ST
Peregrine falcon	*Falco peregrinus*	SE
Piping plover	*Charadrius melodus*	ST
Whooping crane	*Grus americana*	SE
Mammals		
Black-footed ferret	*Mustela nigripes*	SE
Swift fox	*Vulpes velox*	ST

SE = State Endangered; ST= State Threatened

STATE T&E SPECIES STATUS REVIEWS
SEPTEMBER 2020

- A status review was updated for each state threatened or state endangered species to summarize the current status of each in the state.
- If sufficient information existed, draft criteria for downlisting (changing status from endangered to threatened) and/or delisting (removing a threatened or endangered species from the state list) are described. If such information was lacking, the review describes additional monitoring or research needs.
- For species also listed as federal threatened or federal endangered under the federal Endangered Species Act, separate state recovery goals were not drafted. For those, SD Game, Fish and Parks (SDGFP) will continue cooperating with the U.S. Fish and Wildlife Service to meet identified recovery goals or assist in recovery planning, consistent with the "Cooperative Agreement between the U.S. Department of Interior Fish and Wildlife Service and South Dakota Game, Fish and Parks for the Conservation of Endangered and Threatened Animals." This agreement was approved on June 30, 1977 and has been updated annually since then.
- The authority for state threatened and endangered species conservation and recovery, including listings and delistings, corresponds to the state's boundaries. South Dakota's state endangered species law does not require that the state list of threatened and endangered species agree with the federal list developed under the authority of the Endangered Species Act (ESA). Species that have been delisted under the ESA may be included on South Dakota's list because they remain rare within the state's boundaries, and federal listed species not considered rare within South Dakota's borders are not necessarily state listed.
- South Dakota's endangered species law is included in this document as Appendix B. The law can also be viewed here: http://www.sdlegislature.gov/Statutes/Codified_Laws/DisplayStatute.aspx?Type=Statute&Statute=34A-8
- These status reviews will be revisited at least every two years to comply with the biennial review schedule of the state list of threatened and endangered species.

Reviews are organized by species groups in the following order:

STATE T&E SPECIES STATUS REVIEW

Species Name: American Dipper, *Cinclus mexicanus*

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:02. List of threatened birds)
- Monitored by the South Dakota Natural Heritage Program
- State Heritage rank S2 (imperiled; state species rank last reviewed on 19 April 2020)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)

Federal Status:

- Protected under the Migratory Bird Treaty Act (protection for covered birds, body parts, nests, and eggs)
- NatureServe Global Rank of G5 (Secure, although it may be rare in some portions of the range); global rank last reviewed 07 April 2016

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The American dipper was listed as state threatened in 1996 due to the species' declining distribution and isolated population in the Black Hills. Continued listing as a state threatened species is recommended.

Description, biology and life history:

The American dipper is a small, stocky gray bird with a short tail and long legs. It is named for its habit of bobbing up and down while foraging in streams. Sexes are similar in appearance, but the male is slightly larger than the female. Dippers have many contour feathers and a heavy layer of down that helps maintain body heat in cool temperatures.

Nesting occurs from April through July. Nests are dome-shaped and made of moss with grasses and pine needles used for lining. A typical clutch has 4-5 eggs that are laid in March or April. The female incubates the eggs while the male helps build the nest and provides food. Eggs will hatch after two weeks of incubation and young fledge at approximately 4 weeks old. After the young fledge, pairs may begin a second brood in May or June. Dippers are typically monogamous, but males have been documented being polygynous when nest sites are limited and concentrated (Backlund 2007). In the Black Hills, dippers generally remain in the same established territory for nesting over multiple years (Lovett 2009).

American dipper's primary prey is aquatic insects, including larval caddisflies and mayflies. Less commonly they will prey on small fish, larval amphibians and fish eggs (Kingery 1996). High mortality occurs during the winter and is likely related to the availability of ice-free streams required for foraging (Price and Brock, 1983).

Habitat:

The American dipper occupies habitats of clear, unpolluted, fast-moving streams that remain partially open to provide sustenance through the winter. In addition, dippers select rivers with a substrate of stone, gravel or sand that supports aquatic invertebrates which is their main food source. Dippers are rarely observed far from water and during flight seem to prefer following stream courses rather than flying over land. However, dipper will disperse over land to adjacent watersheds (Price and Brock 1983).

Nests are built over-water on both natural and human-made structures including cliffs, rock outcrops, boulders and bridges. Nest site availability is an important factor that may be limiting dipper populations in the Black Hills.

Distribution within the state.

The American dipper's eastern most part of its overall range occurs as an isolated population in the Black Hills (Willson and Kingery 2011). Dippers are non-migratory; however they will disperse to lower elevations during the winter. The American dipper population in the Black Hills is genetically distinct from populations in the west (Anderson et al. 2007). Dippers were once found along all larger rivers and streams throughout the Black Hills. Currently their population numbers around 50-75 individuals and is limited to the Spearfish Creek watershed and portions of Whitewood Creek in the northern Black Hill (Anderson et al. 2007).

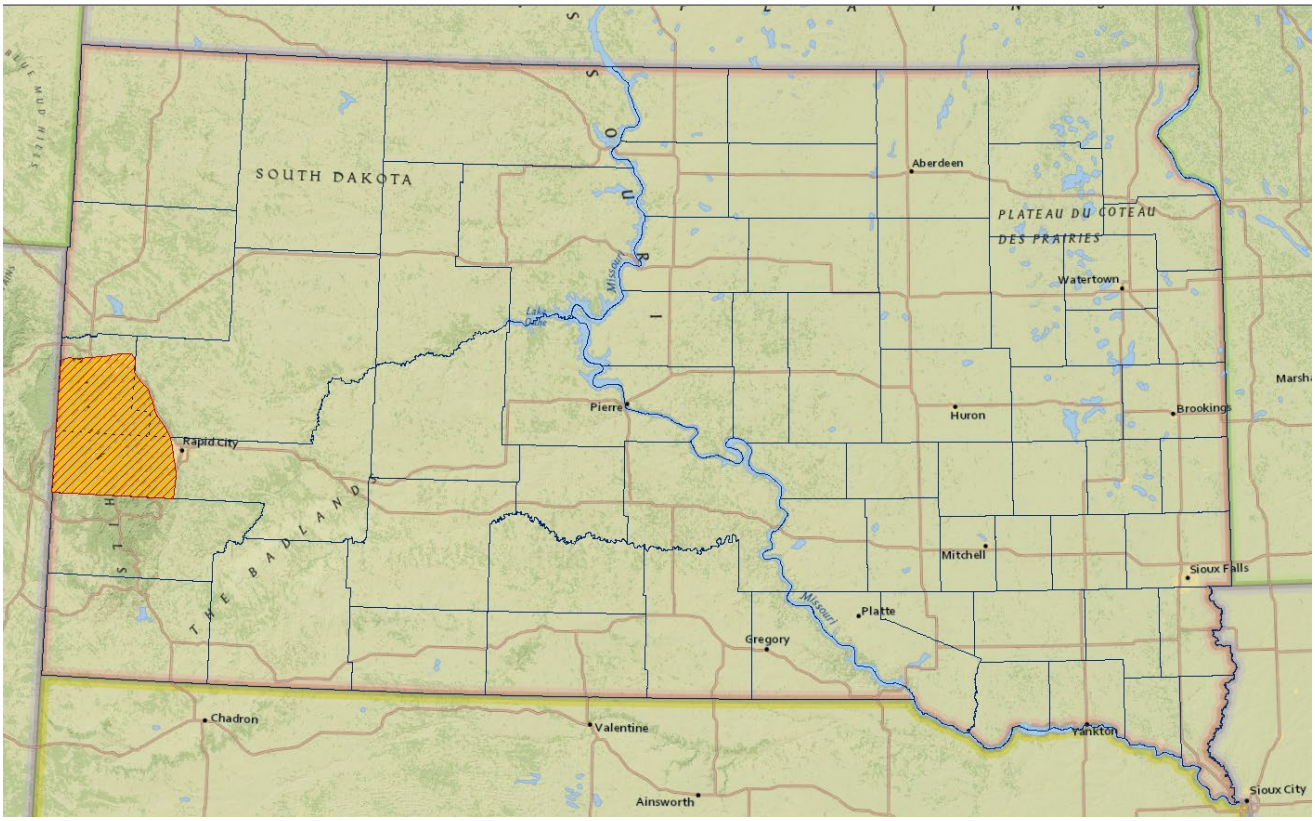

Figure 1. Year round distribution of the American Dipper (*Cinclus mexicanus*) in South Dakota.

Conservation / Management Considerations:

Population modeling conducted by Palmer and Javed (2014) found that American dippers in the Black Hills had higher survival rates but lower reproductive rates then other populations. A model that neglected age-structure differences in reproductive rates resulted in a less than 1% annual growth rate in the Black Hills dipper population, suggesting a delicate balance between population growth and decline. Given the relatively small population size and limited habitat, the dipper population in the Black Hills could be more susceptible to events such as flooding or extreme weather conditions.

Due to the species dependence on clear, cold, fast moving streams, any changes in water quality are a threat to the species. Sedimentation of streams destroys the habitat for most aquatic insects which dippers rely on for food. Some causes of sedimentation include livestock over use, logging of slopes near streams and building of roads along streams. Pollution from runoff, mining, agricultural practices or other sources can also be detrimental to dipper populations. The recent abnormal growth of a naturally occurring diatom, *Didymosphenia geminata,* is another threat to dippers and aquatic systems in the Black Hills.

American dippers were once prevalent on French and Rapid creeks. The absence of dippers on Rapid Creek is likely due to the creation of the Pactola Dam which has caused erratic and lower stream flows. The loss of breeding birds on French Creek is likely due to pollution, sedimentation, and the construction of Stockade Lake Dam (Backlund 2007). American dippers in the Black Hills were found to be generally tolerant of human activity as long as it is not excessive. The placement of nesting boxes on the underside of bridges over water can provide nesting opportunities where no natural nest sites exist.

Conservation Efforts in South Dakota:

- In 1997, the Department of Game, Fish and Parks with the assistance of the Spearfish Canyon Preservation Trust placed nest boxes for American dippers under bridges along Spearfish Creek. Since then, additional nest boxes have been placed along Whitewood and Rapid Creeks.

- From 2002 through 2005, 52 dippers were banded and monitored to assess dipper biology, habitat use, and movement in the Black Hills.

- In 2002 and 2005, feathers and blood samples were taken for DNA analysis. Results from the analysis suggested that the Black Hills population of American dippers is a distinct population of dipper.

- State Wildlife Grant Project T-17-R (2004-2009) intensive field monitoring took place to document nesting success, general behavior, longevity, dipper movement and territoriality.

- Macroinvertebrates were sampled from Spearfish and Whitewood creeks in 2009.

- Palmer and Javed (2014) modeled the long-term survival of the Black Hills American dipper population using data from the tracked 2002 color-banded cohorts.

- In 2015, as part of a collaborative climate change assessment, Amy Symstad (USGS, Northern Prairie Wildlife Research Center) conducted a Climate Change Vulnerability Assessment for the American Dipper and determined that they have a moderate vulnerability to climate change. The American dipper's adaptive capacity in the Black Hills is primarily hampered by its low population size and the lack of appropriate habitat if climate change makes its current habitat unsuitable (see Stamm et al. 2015).

- State Wildlife Grant Project T-76-R1 conducted surveys of selected Black Hills riparian areas for nesting American Dippers. Nest site occupancy and success were monitored in the current known breeding areas as well as any newly located sites to better describe the current distribution of American Dippers in the Black Hills of South Dakota.

- During the summer of 2019, local birding groups place 62 nest boxes at new sites and at existing sites to replace old boxes in need of replacement.

Recovery Criteria/Goals

For delisting there needs to be evidence of a self-sustaining population on Whitewood and Spearfish creeks for at least 5 years in a 6-year timespan. In addition there needs to be evidence of a self-sustaining population established on at least one additional river drainage over a similar timeframe.

A self-sustaining population is defined as one that maintains or increases its numbers over a period of time without significant human intervention (i.e. release of individuals to supplement population numbers), with the exception of birds produced by the use of human-made nesting structures.

Recovery Criteria Considerations:

Additional research and surveys are necessary to determine how many breeding pairs are necessary to obtain self-sustaining populations in each river drainage as well as:

- Determine what may be causing lower reproductive rates of dippers in the Black Hills compared to other populations.
- Have a better estimate of juvenile survival rate and its impact on dipper population dynamics.
- Influence of density dependence on reproductive rates if suitable nesting habitat is a limiting factor.
- Information on winter habitat availability, survival and movements.

Primary Reviewer:

Casey Heimerl, Wildlife Biologist, SDGFP, Pierre

Other Staff or Experts Involved in the Review:

- Nancy Drilling, wildlife biologist, Bird Conservancy of the Rockies, Rapid City, SD
- Doug Backlund, retired wildlife biologist, South Dakota Dept. of Game Fish and Parks, Pierre SD.

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6, 2018

References or Information Sources:

Anderson, T. 2002. Conservation assessment for the American dipper in the Black Hills National Forest, South Dakota and Wyoming. USDA Forest Service Report. Custer, SD.

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SUMMARY OF UPDATES IN 2020:

State Wildlife Grant Project T-67-R1: Identification and monitoring of American Dipper populations and inhabited areas in South Dakota (Drilling 2019).

- From April 2017 through March 2019, surveys were conducted over approximately 100 miles of selected Black Hills riparian areas for nesting American Dippers. Nest site occupancy and success were also monitored in the current known dipper breeding areas as well as any newly located nest sites. The distribution of dippers in the Black Hills has not changed since previous surveys conducted in the late 1990s and early 2000s. A total of 44 active and 15 inactive nests were found in the Spearfish and Whitewood creek systems and one unsuccessful nest on Rapid Creek.
- During the summer of 2019, local birding groups place 62 nest boxes at new sites and at existing sites to replace old boxes in need of replacement.

STATE T&E SPECIES STATUS REVIEW

Species Name: Eskimo Curlew, *Numenius borealis*

South Dakota Status, including legal status and special listings:

- State endangered (SD Administrative Rule 41:10:02:01. List of endangered birds)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank SNA (A state-level conservation status rank is not applicable according to NatureServe's Natural Heritage methodology because it neither breeds nor winters in South Dakota)

Federal Status:

- NatureServe global rank GH (possibly extinct, some hope of rediscovery); last reviewed 9 April 2016
- Protected under the Migratory Bird Treaty Act (protection for migratory birds, body parts, nests and eggs)
- Federal endangered. This species was listed as endangered in 1967 pursuant to precursor legislation to the Endangered Species Act of 1973. Information on the species is insufficient for the development of a recovery plan.
- Listed as an Appendix I species under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) due to its extreme rarity among CITES-listed animals and plants. CITES prohibits the commercial international trade of specimens of Appendix I species.

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The specific justification for including the Eskimo curlew on the first list of endangered birds is unknown, but was likely done so to reflect the federal status of the species and because sightings of this species were considered very rare even in the early 1900s. Continued state listing is recommended because the species faces a high probability of extinction.

The U. S. Fish and Wildlife Service (USFWS) believes the chances this species is extant are extremely low. However, uncertainty remains if it is extinct or not. There is enough uncertainty to keep the species as federal endangered because: 1) there have been several potential sightings within the last 15 years, 2) we don't know the best places to conduct surveys and, 3) the difficulty in differentiating between this and other *Numenius* spp. In the event that this species is declared extinct and removed from the federal list of threatened and endangered species, we will reassess whether continued listing under the SD endangered species law is warranted.

Description, biology and life history:

A 14" shorebird that is cinnamon-brown above and below with a slender, somewhat long, down curved bill. Crown is dark with a pale stripe. There are chevron marks on the breast and barring on the flanks. Legs are blueish-gray. Overall, the Eskimo Curlew looks similar to the Whimbrel.

Peak of nesting occurs from June through July in extreme northwestern Canada and northeastern Alaska. Four eggs are laid in a nest scraped into the ground lightly lined with leaves and/or grass. Little information is known about the breeding behavior of this species.

Fall migration occurs from July through October. Migrants fly southeast across northern Canada, towards Hudson Bay and to the Atlantic coast, fly over the Atlantic to South America where they continue overland crossing through the center of Brazil to the wintering grounds in southern Brazil, Uruguay, Argentina, Tierra del Fuego and Chile. Spring migration northward begins in March when birds fly along the Pacific coast of South America, over Central America and through the central United States where a northwesterly flight pattern takes them to breeding grounds.

Habitat:

Breeds in treeless tundra and grassy meadows. More specifically, heath and coastlines with crowberries are favored. During fall migration it is found using a variety of terrestrial and aquatic habitats and in some areas, observed in open fields. During spring migration it favors grasslands, pastures, plowed fields and at times marshes and mudflats; also shows preference for burned grasslands and marshes. In the United States, Eskimo Curlews have been reported to use old fields, pastures, meadows and sand dunes. This species eats a wide variety of insects as well as seeds and berries.

Distribution within the state:

The Eskimo curlew was once described as an abundant to common spring migrant in eastern South Dakota that followed river corridors in the tallgrass prairie and to a lesser degree mixed-grass prairie in late-March to mid-May. Specimen collected on 19 March 1878 near Pierre (Museum of Comparative Zoology, Harvard University). No records of this species are in the South Dakota Natural Heritage database. Current distribution is unknown.

Conservation / Management Considerations:

Eskimo curlew populations drastically declined as early as the late 1800's as the result of overharvest, habitat conversion from grassland to agriculture, fire suppression, change in available grasshopper prey (including the extinction of the Rocky Mountain grasshopper), and the reduced availability of insects uncovered by plows planting wheat in the fall instead of during curlew spring migration.

Few confirmed sightings and limited information on the basic biology of this species prevent effective conservation planning. The last confirmed sighting with physical evidence occurred in 1963 in Barbados. Other potential sightings (39) have been reported, most recently in 2006 in Nova Scotia, but these reports are not supported by physical evidence.

Five-year species status reviews are conducted by the USFWS to determine if the status of listed species should be changed or removed from the federal list. The most recent 5-year status review conducted by the USFWS recommended the Eskimo curlew remain listed as endangered (USFWS 2016).

Conservation Efforts in South Dakota:

Conservation of this species in South Dakota has occurred primarily by increasing awareness through education (Ashton and Dowd 2008, Stukel 2013). If a report of an Eskimo curlew is received by SDGFP, follow-up and request for photographs would be made. SDGFP would share this report with the USFWS and work cooperatively to confirm its validity.

Recovery Criteria/Goals

Recovery criteria are not proposed at this time. Refer to the Recovery Criteria Considerations section for more details.

Recovery Considerations

There are no federal recovery criteria. The USFWS does not recommend the development of conservation actions because of the extremely low likelihood that the species is extant. However, other existing shorebird conservation efforts would help this species. If species existence is confirmed, recovery plan development would be warranted. Well-designed and coordinated searches of known or suspected use areas should be conducted. Those areas that are thought to or known to be used by this species should be protected. Captive rearing should occur if an appropriate number of birds are found in the wild. Educational programs should be developed to increase public awareness of this species.

Primary Reviewer: Silka Kempema, wildlife biologist

Other Staff or Experts Involved in the Review: Eileen Dowd Stukel, senior wildlife biologist

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6.

References or Information Sources:

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Stukel, E. D. 2013. Eskimo curlew. Pages 28-29 in South Dakota Conservation Digest. Omaha Print.

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SUMMARY OF UPDATES IN 2020:

- None.

STATE T&E SPECIES STATUS REVIEW

Species Name: Least Tern (*Sternula antillarum*)

South Dakota Status, including legal status and special listings:

- State endangered (SD Administrative Rule 41:10:02:01. List of endangered birds).
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S3 (vulnerable; state rank last reviewed 2019)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)
- Originally listed as a subspecies (*Sterna antillarum athalassos*); taxonomy updated at SDGFP Commission meeting, November 2-3, 2017

Federal Status:

- Protected under Migratory Bird Treaty Act (protection for covered birds, body parts, nests, and eggs).
- Federal endangered species. Federal recovery plan finalized in 1990 (USFWS 1990).
- NatureServe global rank G4 (apparently secure); global rank last reviewed 10 April 2016.

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The specific justification for including the Least Tern on the first list of state endangered birds is unknown but was presumably intended to mirror its federal status as an endangered species. Continued listing as a state endangered species is recommended.

Description, biology and life history:

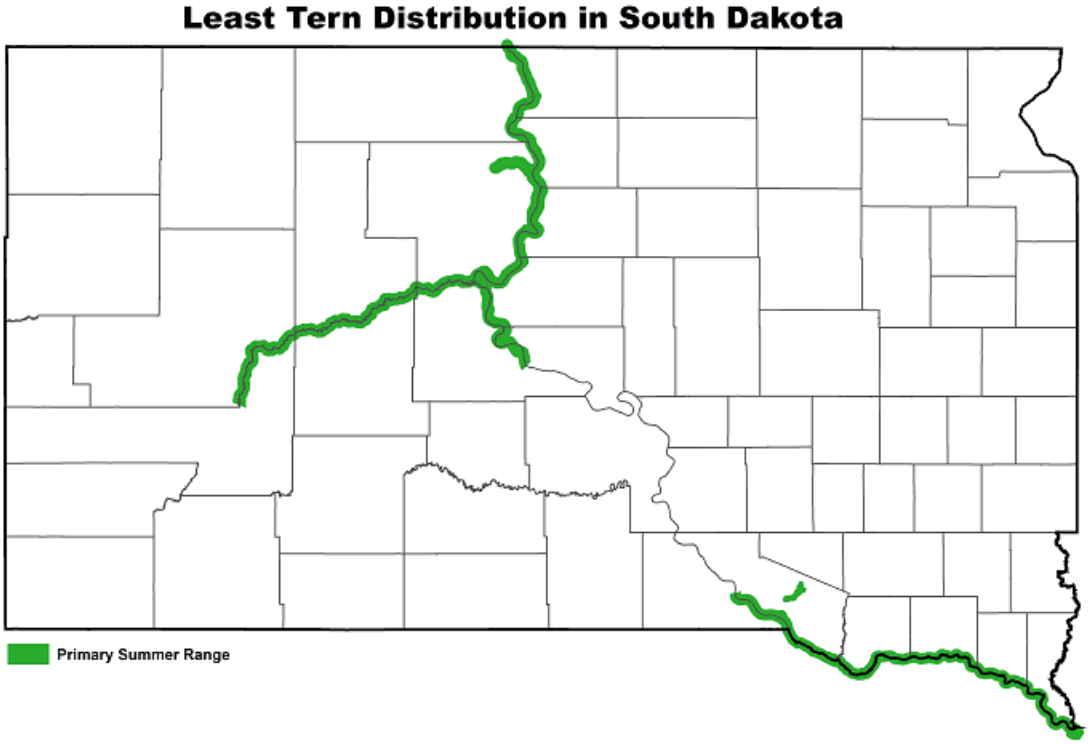
This smallest species in the gull and tern family measures 8-9 inches long and has a 20-inch wingspan. Adult males and females are similar in appearance, with a black crown, white forehead, gray back, gray wings above with white below, orange legs, and a black-tipped yellow bill. Immature birds have darker feathers, a dark bill, and dark eye stripes on white heads. Individuals begin breeding at 2-3 years of age. Least Terns arrive in South Dakota in early May and begin nesting in late May or early June in small, loosely-defined groups, often in association with Piping Plovers. This species has adapted to using both natural and human-created habitats and, in some areas outside South Dakota, it may nest on flat gravel rooftops.

Habitat:

The Least Tern is associated with large rivers. Nesting areas are barren, treeless beaches of sand, gravel, or shells; dry mudflats and salt flats; and sand and gravel pits along rivers. The nest is an inconspicuous scrape typically containing 2-3 eggs. Least Terns eat small adult fish, fingerlings, and crustaceans taken by diving from the air into shallow water. During the breeding season, they typically feed near the nesting colony.

Distribution within the state:

This species nests along the Missouri and Cheyenne rivers, with the majority nesting below Gavins Point Dam in southeastern South Dakota. For unclear reasons, the Cheyenne River's importance to nesting Least Terns has declined.



Conservation / Management Considerations:

Potential nesting habitat for this species in the Northern Great Plains was drastically reduced with the construction of 6 major dams on the Missouri River, 4 of which were built in South Dakota. Dams have converted previous riverine habitats to lacustrine habitats and disrupted sediment deposition important for habitat creation. Threats to nesting colonies include mammalian and avian predators, unrestricted pets, recreationists who disturb incubating adults or destroy nests or chicks, hail or other severe weather, elevated water levels or natural flooding during the nesting season, habitat erosion, and vegetative encroachment/plant succession.

The federal Endangered Species Act of 1973, as amended, requires that the status of listed species be reviewed at least every 5 years. The USFWS began a 5-Year Review (Review) of the Least Tern in 2008 and published its findings in 2013 (USFWS 2013). The Review concluded that this species is operating as a metapopulation, population size has increased substantially, and population targets have been met in 3 of the 5 major drainages (Mississippi, Red, and Arkansas rivers). The Least Tern population in the Missouri River drainage has remained stable, despite extensive habitat creation and other management efforts. The Review further characterized the relative importance of the Missouri River drainage (Missouri, Loup, and Platte rivers) to the metapopulation by stating that this drainage supports less than 10% of the listed population.

The review recommended that the Least Tern be delisted due to recovery, following the accomplishment of the following, all of which are in progress:

1. Completion of a habitat-driven metapopulation model;
2. Development of conservation agreements for post-listing monitoring and management; and
3. Development of a post-listing monitoring strategy and plan.

In October of 2019, the U.S. Fish and Wildlife Service (USFWS) proposed that the inland population of the Least Tern, which includes South Dakota, be removed from the federal list of endangered and threatened wildlife (USFWS 2019). The USFWS stated that this population has recovered and no longer meets the definition of an endangered species, threats identified at the time of listing have been eliminated or reduced, and this population has increased in abundance and range. The proposal invited comments through December 23, 2019, with a commitment to make a final determination within one year of the proposal's publication.

Conservation Efforts in South Dakota:

Past:

More than 90,000 acres of land were transferred from the U.S. Army Corps of Engineers (USACE) to the State of South Dakota as a result of the Water Resources Development Act of 1999. Land transferred to the State of South Dakota is managed by Wildlife and/or Parks and Recreation divisions of South Dakota Game, Fish and Parks (SDGFP). Two products resulted from SDGFP's expanded role in endangered species management along the Missouri River, an interagency Memorandum of Agreement (MOA) regarding endangered species protection and recovery along the river and a state management plan for the Least Tern and Piping Plover (state management plan) (Aron 2005).

The first 5-year Missouri River endangered species interagency MOA was finalized in 2001 and included specific and shared commitments of 3 agencies; SDGFP, USACE, and the USFWS. Subsequent MOAs included the National Park Service in addition to the original 3 agencies. MOA accomplishments by all participants include such activities as biological surveys and nesting season productivity for Least Terns and Piping Plovers within the portion of the Missouri River surveyed by the USACE and SDGFP, specific protocols or policies developed to help implement the MOA, outreach and educational efforts related to Missouri River endangered species, law enforcement efforts, and relevant Section 7 consultations among federal agencies.

As SDGFP assumed responsibility for additional ownership and management of lands along the Missouri River, concern increased about the possibility of needing permission for incidental take. State management plans were prepared for the 4 species covered by the MOA as part of an agency intention to submit a habitat conservation plan to allow incidental take of federal listed species. Management plans were prepared for the Pallid Sturgeon and Bald Eagle. Piping Plover and Least Tern were covered in one plan. The HCP was not formally pursued.

Ongoing:

The SDGFP Commission passed the following administrative rule in 1989 to provide added protection for Least Tern and Piping Plover nesting colonies in the state:

> Administrative Rule 41:10:02:18. Harassment prohibited. Harassment of the nesting and rearing sites of the least tern, an endangered species, and the piping plover, a threatened species, is prohibited. The department shall post conspicuous signs near critical nesting and rearing sites on the sandbars and shoreline of the Missouri River to warn against entry during the nesting period.

As the 5-year MOAs have expired, participating agencies have recommended changes prior to finalization. The current 5-year MOA was finalized on October 26, 2015, when the final participating agency representative signed the document (Appendix 1). SDGFP has fulfilled its commitments to this MOA annually since 2002, except for one year when seasonal employees could not be hired during a state government hiring freeze and the current year (2020), when the COVID-19 pandemic precluded state government hiring of certain summer personnel. However, SDGFP rehired an experienced contractor to assist the USACE with upper Lake Oahe nesting surveys in 2020.

Nesting survey data are collected by state, federal, and tribal personnel. The most extensive nesting data are collected by the USACE. These data are collected in a systematic manner, with strict quality control measures, prior to incorporation into the USACE's endangered species data management system. This system is used to document USACE compliance with a Jeopardy Biological Opinion between the USACE and USFWS regarding Missouri River endangered species, to assist the USACE in implementing its Missouri River Recovery Program, and to assist the USACE in avoiding negative impacts to nesting colonies while making short- and long-term water management decisions. The USACE allows SDGFP to access the data management system to assist the South Dakota Heritage Database Manager and other SDGFP staff in conducting environmental review.

Future:

SDGFP intends to continue its participation in the multiagency Missouri River endangered species MOA. When this species is delisted by the USFWS, SDGFP will reassess whether continued listing under the SD endangered species law is warranted. SDGFP plans to pursue a more flexible means of providing nesting season assistance to the USACE besides hiring summer interns.

State Recovery Criteria/Goals:

South Dakota continues to monitor the federal delisting and post-delisting monitoring process for this species, because that process reflects the most current scientific and management information. The final federal delisting determination should be made at the earliest by October 2020, after which SDGFP will evaluate whether state listing should continue. If that decision is affirmative, SDGFP will develop and propose state recovery goals in the future, if sufficient information is available.

Primary Reviewer:

Eileen Dowd Stukel, Senior Wildlife Biologist, SD Game, Fish and Parks, Pierre

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: April 5-6, 2018

References or Information Sources:

Aron, C. 2005. South Dakota Interior Least Tern (*Sterna antillarum athalassos*) and Piping Plover (*Charadrius melodus*) Management Plan. South Dakota Department of Game, Fish and Parks, Pierre, Wildlife Division Report No. 2005-02, 76 pp.

South Dakota Department of Game, Fish and Parks (SDGFP). 2014. South Dakota Wildlife Action Plan. Wildlife Division Report 2014-03. South Dakota Department of Game, Fish and Parks, Pierre.

U.S. Fish and Wildlife Service (USFWS). 1990. Recovery plan for the interior population of the least tern (*Sterna antillarum*). U.S. Fish and Wildlife Service, Twin Cities, Minnesota. 90 pp.

U.S. Fish and Wildlife Service (USFWS). 2013. Interior least tern (*Sternula antillarum*), 5-Year Review: Summary and evaluation. USFWS, Southeast Region, Jackson, MS. 71 pp.

U.S. Fish and Wildlife Service (USFWS). 2019. Endangered and threatened wildlife and plants; Removal of the interior least tern from the federal list of endangered and threatened wildlife. Federal Register Vol. 84, No. 206, pages 56977-56991.

SUMMARY OF UPDATES IN 2020:

In October of 2019, the USFWS proposed that the inland population of the Least Tern be removed from the federal list of endangered and threatened wildlife. The proposal invited comments through December 23, 2019, with a commitment to make a final determination within one year of the proposal's publication. This species lacks state recovery goals in favor of cooperating with the USFWS in meeting federal recovery goals. Should the Least Tern be delisted from protection of the Endangered Species Act, SDGFP will formulate state delisting and downlisting goals in the future, if sufficient information is available.

Appendix A. Missouri River Endangered Species Interagency Memorandum of Agreement, finalized on 26 Oct 2015.

MEMORANDUM OF AGREEMENT

AMONG

SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS, U.S. FISH AND WILDLIFE SERVICE, NATIONAL PARK SERVICE, AND U.S. ARMY CORPS OF ENGINEERS

Least tern, piping plover, pallid sturgeon, and bald eagle management, protection, and recovery and coordination along the Missouri River in South Dakota

I. PURPOSE

The purpose of this Memorandum of Agreement (MOA) is to provide guidance and specific agency commitments for management, protection, and recovery of the least tern, piping plover, pallid sturgeon, and bald eagle along the Missouri River for the three signatory agencies, since each has a statutory responsibility for endangered species recovery. The signatory agencies agree that fulfillment of conditions contained in this MOA will help enhance annual productivity and in the long term contribute to recovery of these species. Effective August 8, 2007, the bald eagle was deemed a recovered species and protections afforded by the Endangered Species Act were removed. However, the Migratory Bird Treaty Act and Bald and Golden Eagle protection Acts still apply to this species, thus the signatories herein commit to continuing efforts to further enhance the status of the bald eagle along the Missouri River.

II. ACTIONS

It is the intent of the signatory agencies to cooperatively protect and manage nesting populations of the least tern and piping plover along the Missouri River in South Dakota through monitoring, site protection, law enforcement, and public outreach. It is also the intent of the signatory agencies to protect bald eagle nesting sites and important winter roost sites along the Missouri River in South Dakota. Additionally, signatory authorities will commit to protect pallid sturgeon and their habitat by minimizing threats from existing and proposed human activities, law enforcement and public outreach. As always, all obligations of the participating agencies are subject to the availability of funds.

A. South Dakota Department of Game, Fish and Parks (SDGFP):

1. Will hire at least three seasonal employees each nesting season to be stationed where most needed to assist the U.S. Army Corps of Engineers (Corps) in monitoring and protecting least tern and piping plover nesting areas.
2. Will provide law enforcement assistance where and when most needed to patrol for human disturbance at least tern and piping plover nesting colonies up to 10

potential weekend periods from Memorial Day weekend to August 15 (including the high use events such as the July 4 holiday). This would be a cooperative effort by both SDGFP and the U.S. Fish and Wildlife Service (USFWS) providing staff on the river for the tern and plover nesting period. The details of such efforts will be worked out on an annual basis and dependent on nesting locations and active recreation areas on the river.

3. Will make arrangements with the Service and the Corps to obtain the necessary tern and plover training for law enforcement and seasonal personnel.
4. Will work cooperatively with the Corps and the USFWS to implement Missouri River Management Plans for least terns, piping plovers, pallid sturgeons, and the bald eagles that established biological/conservation goals for South Dakota and management actions to achieve those goals. Management actions include at least the following actions.

   a) On sites owned or managed by SDGFP, will close portions of the area where least terns or piping plovers are nesting, as needed, to include appropriate buffer zones.
   b) Will participate in public outreach efforts, including but not limited to placing informational posters at recreation sites, distributing informational brochures to recreation site users, random patrolling of nesting areas, and posting of nesting areas. Results of random patrolling of nesting areas will help set priorities for law enforcement follow-up.
   c) Will participate with signatory agencies and other interested entities in seeking solutions to site-specific threats to nesting success, such as livestock grazing.
   d) On sites owned or managed by SDGFP, will develop specific management strategies on sites consistently used each year by least terns and piping plovers, such as fencing or posting sites prior to arrival of nesting birds.
   e) Will not remove bald eagle nest trees on areas owned or managed by SDGFP, except for limited removal of single trees within campgrounds that pose a human safety hazard. Any tree removed will be replaced at a 2:1 ratio with efforts to ensure successful establishment of the tree plantings.
   f) Except for limited removal of single trees within campgrounds that pose a human safety hazard, will not remove trees from documented bald eagle winter roost sites if removal could adversely affect winter roost site use at areas owned or managed by SDGFP. Any tree removed will be replaced at a 2:1 ratio along with efforts to ensure successful establishment of the tree plantings.
   g) SDGFP will protect known bald eagle roost sites by restricting usage from November 15 through the last Friday in March at Chief White Crane Recreation Area below Gavins Point Dam, Oahe Downstream Recreation Area below Oahe Dam, and Randall Creek Recreation Area below Fort Randall Dam.
   h) SDGFP will sign Cottonwood Trail in Oahe Downstream Recreation Area November 15 through the last Friday in March. (Information on sign will

inform park users of trail closure 1 hour prior to sunset to 1 hour after sunrise.) The trail leads to an important roosting site and use of the trail can disturb roosting bald eagles. SDGFP also will evaluate other trails used by winter recreationists to determine if other trail signage or procedures are needed to minimize disturbance to know winter roosts, and take appropriate action when necessary.

i) Activities will not occur in December, January, or February within or near (within 0.25 mile) bald eagle roosts. However, when necessary, SDGFP may perform some maintenance actions in or near identified nighttime winter roosts associated with campground closure areas. Restrictions regarding these activities, as well as the types of allowable activities are described below:

1) Restrictions
   a) Work will only occur during the hours of 1 hour after sunrise to 1 hour before sunset and when temperatures or wind chills are above 20°F and in the absence of heavy rain, sleet, snow, or high winds.
   b) SDGFP will notify the signatories as soon as possible of their intent to perform routine interior maintenance prior to starting work.
   c) If eagles are observed or if any of the above described adverse weather conditions develop during the activities, work will cease to allow eagles to utilize the roosting area, exclusive of emergency situations.
   d) Burning of a slash pile will occur within the confines of the southernmost portion of Oahe campground #3, Oahe Downstream Recreation Area. The slash pile would be burned each winter in established vegetation-free area. Burn plans will incorporate measures to preclude disruption of roosting bald eagles resulting from smoke plumes. Equipment and vehicles used to conduct the burn will travel on west road to avoid disturbing eagles roosting along the shoreline.
2) Allowable Maintenance Activities (subject to the previous restrictions)
   a) Maintenance and repairs of interior building infrastructure. Work would be limited to existing structures and could include repairs to building interiors (tile walls and floors, shower and bath partitions, plumbing and heating fixtures).
   b) Limited work on exterior of buildings prior to December 1 and after March 1 could include cabin decks and siding, repairs to roofing, replacement of windows or vents, work on pow-wow facility, etc. Will notify signatories as soon as possible of intent to perform routine work.
   c) Maintenance and repairs of operating lift stations, electrical pumps, and associated meters.
   d) Removal of leaves and branches from within the campground perimeters and dormant seeding of grasses in those restricted areas prior to December 1 and after March 1.
3) SDGFP and Corps are permitted to conduct activities surrounding the annual Oahe disabled hunt. The event takes place the second weekend of

the West River Deer season and provides 12 wheelchair-bound hunters the opportunity to hunt deer within the Oahe Downstream Recreation Area for this one weekend a year.

4) Emergency activities will be allowed including maintenance and repair of existing electrical, sewer, and water lines that exist within the campgrounds and the removal of hazardous tree(s) and or limb(s) that pose an immediate threat to persons and or facilities. Staff may enter the areas outside the established weather parameters to perform the necessary repairs. Work would include but not be limited to excavation of soil within the vicinity of existing utility lines and the service structures, operations of chainsaw and other equipment needed to accomplish the tasks. SDGFP will notify the signatories as soon as possible when emergency situations necessitate immediate action outside of established parameters when park staff must enter these areas during November 15 through the last Friday in March.

j) Will not construct within 0.5 mile of bald eagle nests during the nesting season. Appropriate measures to preclude bald eagle disturbance and nest abandonment of any bald eagle nests located on SDGFP managed areas will be implemented upon discovery of nests or in compliance with a Habitat Conservation Plan.

k) Will continue law enforcement and public outreach activities at State park and recreation areas in regard to State regulations prohibiting the take of pallid sturgeon.

B. U.S. Fish and Wildlife Service (USFWS) Office of Law Enforcement (OLE):

1. USFWS-OLE will investigate alleged Complaints of Violation concerning take and nest disturbances at tern/plover nesting sites and for other migratory bird (including bald and golden eagle) nesting sites when information is timely reported and deemed accurate.
2. Will provide law enforcement assistance commensurate with State law enforcement action where and when most needed to patrol for human disturbance at nesting least tern and piping plover colonies when USFWS-OLE resources allow.
3. USFWS-OLE will provide law enforcement guidance and training (when appropriate) to Corps and SDGFP personnel to insure that proper documentation is being gathered for investigations involving potential violations of USFWS-OLE enforced federal laws .
4. The USFWS will work with SDGFP and the Corps to provide technical assistance and review/revise as needed Missouri River Management Plans for the bald eagle, least tern/piping plover, and pallid sturgeon that establish biological/conservation goals for South Dakota and management actions to achieve those goals.

C. U.S. Army Corps of Engineers (Corps):

1. Will provide yearly survey and productivity monitoring techniques training for all seasonal and permanent employees working with least terns and piping plovers.
2. With assistance from SDGFP seasonal employees, will conduct distribution and census surveys, and productivity monitoring on all potential nesting habitat.
3. Will ensure near real time data availability to all signatories, including all nest locations and nest and chick status, through its web based Data Management System.
4. With assistance from SDGFP seasonal employees, will implement nest specific management actions at all nesting sites (cages, moving nests, etc.).
5. On sites owned or managed by Corps, will close portions of the area where least terns or piping plovers are nesting, to include appropriate buffer zones.
6. Will work cooperatively with SDGFP and the USFWS to develop a Missouri River Management Plan for least terns, piping plovers, pallid sturgeons, and the bald eagles that establishes biological/conservation goals for South Dakota and management actions to achieve those goals.
7. Will work cooperatively with SDGFP and the Service on a Habitat Conservation plan or some similar process for State actions.
8. Will participate with the USFWS and SDGFP on training Corps personnel for proper documentation on investigating potential violations of State and Federal law.

D. National Park Service (NPS):

1. On sites owned or managed by NPS, will close portions of the area where least terns or piping plovers are nesting, to include appropriate buffer zones.
2. On sites owned or managed by NPS, will buoy off least tern foraging areas if potentially impacted by watercraft traffic.
3. Will work cooperatively with SDGFP, the USFWS, and the Corps to develop a Missouri River Management Plan for least terns, piping plovers, pallid sturgeons, and bald eagles that establishes biological/conservation goals for South Dakota and management actions to achieve those goals.
4. Will work cooperatively with SDGFP, the USFWS, and the Corps on a Habitat Conservation plan or some similar process for State actions.

E. All signatory agencies:

1. Will participate in meetings or conference calls as needed during the tern and plover nesting season or if other species management needs warrant an additional meeting.
2. Will participate in the identification of sites for the restoring of backwater habitats to the Missouri River Ecosystem.
3. May assign special designation to areas under their authority for endangered species emphasis, as appropriate.

4. Will participate in an annual coordination meeting and preparation of periodic accountability reports, with SDGFP as lead agency for report preparation.

III. PRINCIPAL CONTACTS

1. U.S. Fish and Wildlife Service
Noreen Walsh
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Denver, CO 80225
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noreen_walsh@fws.gov

2. SD Dept. of Game, Fish and Parks
Kelly Hepler
523 E. Capitol Ave.
Pierre, SD 57501
(605) 773-4229
(605) 773-6245 (fax)
kelly.hepler@state.sd.us

IV: OFFICIALS NOT TO BENEFIT

No member or delegate to Congress shall receive any benefit that may arise from this Program Agreement.

V. WITHDRAWAL OF A SIGNATORY AND TERMINATION

If a signatory determines to withdraw from This Agreement, the reasons for withdrawal are to be provided in writing to the other signatories and made public. This Agreement terminates upon the withdrawal of a signatory or by mutual agreement of the signatories. Following a withdrawal by any one of the signatories, the other signatories are to determine whether and under what circumstances the Agreement could continue.

VI. THIRD-PARTY BENEFICIARY RIGHTS

The signatories do not intend to create in any other individual or entity the status of third party beneficiary, and this Agreement shall not be construed so as to create such status. The rights, duties, and obligations contained in this Agreement shall operate only between the signatories to this Agreement and shall insure solely to the benefit of the signatories to this Agreement.

VII. AGREEMENT TERM

This MOA will remain in force for a period of 5 years from the date of the signature.

VIII. APPROVAL

We, the undersigned designated officials, do hereby approve this Memorandum of Agreement.

APPROVED _____ DATE 7/27/2015

Kelly R. Hepler
Department Secretary
South Dakota Department of Game, Fish and Parks

_____ DATE 9-11-15

Noreen Walsh
Regional Director, Region 6
U.S. Fish and Wildlife Service

_____ DATE 9/8/2015

Steve Oberholtzer
Special Agent in Charge, Office of Law Enforcement, Region 6

_____ DATE 8/28/15

Richard A. Clark
Superintendent, MNRR
National Park Service

_____ DATE 10/26/15

Colonel John W. Henderson
Colonel, U.S. Army Corps of Engineers
District Engineer

STATE T&E SPECIES STATUS REVIEW

Species Name: Osprey, *Pandion haliaetus*

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:02. List of threatened birds)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S3 (vulnerable; state rank last reviewed in 2020)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)

Federal Status:

- Migratory bird under Migratory Bird Treaty Act (protection for covered birds, body parts, nests, and eggs)
- NatureServe global rank G5 (secure); global rank last reviewed 9 April 2016

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The justification for including the Osprey on the first list of state threatened birds is unknown, but was presumably due to rarity, limited distribution, and evidence of historical nesting in the state. Continued listing as a state threatened species is recommended at this time.

Description, biology and life history:

This large, dark brown and white raptor has a wingspan of 63 inches. The adult has a white crown, dark eyestripes, and yellow eyes. The juvenile has a streaky crown and nape, eyes that are red to orange, and a scaly appearance to the plumage. Wings are long and pointed, with a dark wrist patch at the bend of the wing. Ospreys are typically at least 3 years old before breeding. Individuals are faithful to nest sites, which contributes to mate fidelity. The female lays 2-4 eggs and handles the majority of the 5-6 week incubation duties. Ospreys prey almost exclusively on fish, typically on whatever is most available and catchable in shallow water or near the surface.

Factors that influence breeding success:

Poole (1989) listed 3 ways to describe breeding success: average number of young fledged per successful nest; number of young fledged per active nest; and young fledged per occupied nest. An active nest has incubating parents, eggs, or young. A successful nest has at least 1 fledged young.

Ospreys typically lay 3 eggs per clutch. Poole (1989) mentioned 2 limits to Osprey brood size. The quality of young declines as brood size increases. The larger the brood, the more weight the parents lose. Weather affects nesting success by influencing the male's ability to hunt and the earliest time the female can begin laying eggs. Laying dates explain more variation in breeding success than age or mate retention. Young that hatched early in the nesting season survive to breeding age with more success than young that hatch later,

possibly due to the longer time available to them prior to their first migration. Poole (1989) also reported that breeding success is higher as the nesters' ages increase and when the mate from the previous season is retained. An experienced male contributes strongly to a pair's breeding success, even with an inexperienced female, but the reverse is not true.

Poole (1989) stated that Osprey populations are regulated by birth and death rates, how far birds disperse from natal and breeding areas, when birds start breeding, and the number of pairs the habitat can support. Because males are more likely to nest near their natal sites, local reproduction helps determine population stability. Age at first breeding likely varies with availability of nesting sites. The number of young needed to be produced per nest for population stability may be higher in areas where Ospreys begin nesting later due to limited nest sites. Ospreys using artificial sites tend to rear more young than adults using natural sites, due to loss of natural nests to blow downs and possibly easier tree nest access for predators. The use of nesting platforms and other artificial nest sites has allowed Ospreys to concentrate and to exploit new habitats, such as urban areas and shallow wetlands.

Poole (1989) described the Osprey's nesting success cycle as centered on areas with sufficient numbers of safe nest sites. Males tend to return to the same areas to nest, with these new recruits supporting an expanding population. By using safe nest sites, birds may begin nesting at an earlier age, which lowers the breeding rate needed to stabilize a population. As a population grows, nest sites become more limited, causing birds to disperse farther, delay breeding, and begin using more marginal sites.

Threats:

Poole (1989) described the importance of Ospreys as indicators of environmental contamination, forest conditions, fisheries status, and human attitudes to wildlife. Raccoons are a threat to accessible nests. Nest visits by humans cause a certain amount of disturbance. Techniques include using a mirror mounted on a pole to view nest contents and nest visits to count eggs and young and collect prey remains, addled eggs, and data on growth and condition of young. Aerial surveys of nests with helicopters may cause less disturbance than visits involving direct access. The use of drones as a survey technique has shown some promise for this species (Junda et al. 2015). Boaters or others lingering near nests can disturb nesting pairs. The impact of disturbance depends on the timing and the pair's level of acclimation to that disturbance type.

Poole (1989) also summarized knowledge of contaminant impacts to Ospreys. Organochlorine compounds, such as DDT, dieldrin, aldrin, heptachlor, and PCBs are most harmful because of their stability, widespread dispersal, tendency to be trapped in fatty tissues, and propensity to bioaccumulate. These compounds cause reduced egg viability at very low concentrations. Birds cannot metabolize or excrete them, although a female excretes a portion of these compounds into the yolks of her eggs. Contaminant impacts to Osprey populations are magnified by the species' limited immigration, due to their tendency to return to natal sites to nest. Mercury can be a localized problem for Ospreys, although it can be excreted by moving from the blood to growing feathers.

Habitat:

Ospreys are associated with aquatic habitats, such as lakes, large rivers, and coastal bays. They build a large stick nest at the top of a large living or dead tree near wetlands. The nest site is in an open area to allow this large raptor to maneuver around the nest. Nest trees are typically higher than surrounding trees. Birds may also nest on cliffs, utility poles, cell towers, and other tall, human-made structures. Ospreys generally reuse the same nest.

Within the Black Hills, 5 Osprey pairs built nests adjacent to water treatment plants with surface ponds. Presumably the pairs were attracted to water bodies, as the ponds do not contain fish (Shelly Deisch, personal communication, 2015). Some Osprey nests in the Black Hills are in less typical sites, such as within moderate tree crown closure, likely due to such factors as human developments associated with reservoirs, presence of stocked trout, and tall powerlines within pine forests of the Black Hills. However, these sites are in nest trees that are typically higher than surrounding trees. Osprey use of natural nest sites (ponderosa pine) in the Black Hills fluctuates due to poor nest support and short duration of standing snags (Shelly Deisch, personal communication, 2017).

Distribution within the state.

The majority of Ospreys in South Dakota nest in the Black Hills and surrounding areas. In this context, SDGFP considers the Black Hills as the fire-protection boundary (https://denr.sd.gov/des/aq/bhfpb.aspx). The population has grown slowly from the first successful nest documented in the South Dakota portion of the Black Hills at Pactola Lake in Pennington County in 1991. The source of this pioneering pair is unknown, although there was speculation at the time that they originated from the Keyhole Reservoir in northeastern Wyoming.

Table 1 lists documented Osprey nests in South Dakota and their status as of 2019 (Deisch 2020, South Dakota Natural Heritage Program 2020). The Black Hills have additional platforms available for nesting that are not included in Table 1.

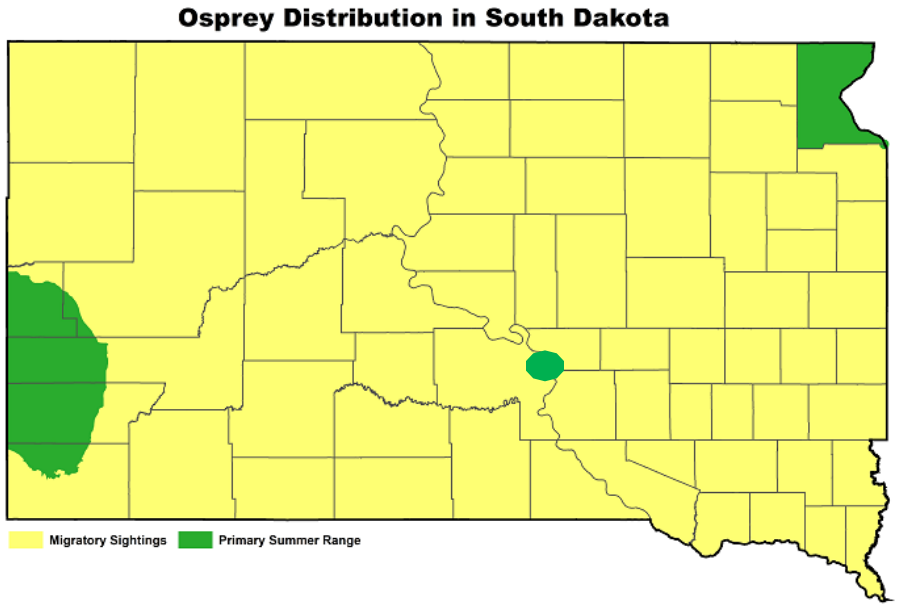
At least 3 pairs have nested in Roberts County in northeastern South Dakota. One-two pairs nest consistently on nesting platforms at the Big Stone Power Plant property in the extreme southeastern portion of Roberts County, although both nests are not always active each year (various Big Stone Power Plant staff, personal communications). A pair has nested on a cell tower west of Hartford Beach State Park since at least 2013, but SDGFP was informed by the cell tower company in 2019 that the company had deactivated and abandoned this tower. SDGFP offered to work with the company on an alternative platform, but the company did not accept this invitation.

The presumed source of the northeastern South Dakota pairs is an expanding population in Minnesota. Additional summer observations are reported, particularly in this general area and at various places along the Missouri River, but many reports are of birds seen during the summer without nest locations provided.

An osprey reintroduced in South Dakota was part of a nesting pair at Big Bend Dam near Fort Thompson in 2017. This nest has been monitored by GFP employee Brent Vander Ley,

among others. Vander Ley reported that the nest has been active for a number of years, but not successful until 2017, when 4 young were fledged. The reintroduced bird (color leg band code 5E) was collected from a nest at Cougar Bay, near the mouth of the Spokane River in Idaho on July 20, 2010 and taken to the hack site at Lake Yankton near Gavins Point Dam. Based on size, 5E is assumed to be a female. Its 2017 mate was also banded on both legs, but its identity was not determined. Interestingly, this same bird (5E) was photographed on October 31, 2010 and December 18, 2010 by Alexander Dzib at the Celestun Estuary on the Yucatan Peninsula, Mexico.

The number of active Osprey nests statewide in 2019 is conservatively estimated at 29, with at least 26 in the Black Hills and surrounding areas and 2-4 along and east of the Missouri River.



Conservation / Management Considerations:

A SDGFP Wildlife Biologist and GIS Program Specialist in Rapid City work closely with Black Hills National Forest, Black Hills Energy, Black Hills Electric Cooperative, Butte Electric Cooperative, and various communities and landowners in the Black Hills to resolve existing and potential conflicts from Osprey nest placement. These efforts are designed to alleviate bird electrocutions, risks of fires or power outages, and avoid conflicts in areas with extensive public use. These ongoing coordination activities also include technical assistance regarding appropriate nesting platform design, placement, and relocation when necessary. A related opportunistic activity is the placement of nesting platforms along lakes that have been dredged for sediment removal, in cooperation with Black Hills National Forest. In Rapid City, Osprey nesting platforms have been placed at the SDGFP Outdoor Campus West and at a city park property, sites with public accessibility, to take advantage of the value of public education and watchable wildlife viewing opportunities.

Black Hills Osprey nests are negatively impacted by the incorporation of plastic baling twine and fishing line into nests. Baling twine has been seen in platform nests, although no Osprey

in the area has yet been observed entangled in the twine. At least one Osprey was found dead after she became entangled in fishing line and hung until death. Other Black Hills Osprey challenges include severe weather, particularly thunderstorms, high winds, and hail (Shelly Deisch, personal communication, 2017).

Nesting sites used by Ospreys in South Dakota have not yet resulted in significant conflicts with recreationists regarding disturbance of nesting pairs. Several nesting pairs in the Black Hills that tolerate relatively high human disturbance provide a wonderful opportunity for wildlife viewing for residents and visitors in the area (Shelly Deisch, personal communication, 2017).

One area of concern is the potential for conflicts with Ospreys nesting near commercial facilities that rear trout or provide trout for paid fishing opportunities. SDGFP and other agencies address these situations on a case-by-case basis to try to alleviate monetary impacts to businesses while promoting the continued expansion of Ospreys in the Black Hills and surrounding areas. Locations of public and private fish hatcheries are considered when nests are relocated or new nesting platforms are erected.

SDGFP operates 2 fish hatcheries in the Black Hills - McNenny and Cleghorn Springs. Although McNenny has experienced considerable Osprey depredation in the past, staff have developed a technique involving floats and lines to simulate the appearance of swimming pool lanes. This method has dramatically decreased losses to Ospreys. Although somewhat inconvenient for hatchery staff activities, this compromise has allowed Ospreys to be accommodated for their watchable wildlife value. All of Cleghorn's rearing facilities are indoors or covered, making bird depredation impossible. Ospreys are not collected under a federal depredation permit at these facilities (Mike Barnes, personal communication, 2020).

Following 3 years of monitoring a subset of Osprey nests in the Black Hills, Engler and Halverson of Avian Research and Consulting (2013) offered the following recommendations, quoted in italics, followed by SDGFP commentary when appropriate:

- *Utility companies upgrade all nesting platforms to an offset type* (Figure 1)*;*
  Prior to 2014, most nesting platforms were based a center-pole design, which has proven to be problematic when access is needed to remove fishing line or baling twine. Many platforms are in inaccessible areas with saturated soils, making access with a boom-equipped truck difficult during the spring and summer. An offset platform allows a certified climber to access nests for emergency or research purposes. SDGFP has a partnership with utility companies to switch to nesting platforms with an offset design and larger platform space. In 2015-2016, SDGFP and utility companies replaced several center-mounted platforms with offset platforms with 90-degree perches designed by SDGFP. The new platforms are larger and deeper to help reduce nest lost in high winds, and perches will not get covered as the nest enlarges.
- *Interpretive signage be installed at selected nesting sites to inform the public about ospreys in the Black Hills;*
  See Conservation / Management Considerations section for discussion of potential sites in Rapid City.

- *Future power structure sites be surveyed for suitability as osprey nesting sites and appropriate platforms be installed to discourage nesting on the power structures;* SDGFP has provided these comments during environmental review of proposed new powerlines throughout the greater Black Hills. Some powerline areas will still be managed on a reactive basis and other areas will have deterrents pro-actively installed by the companies when powerlines are being retrofitted or are non-energized.
- *Specific surveys or evaluation be conducted to determine the extent of osprey predation on trout at commercial fish operations in the Black Hills.*

The South Dakota Department of Environment and Natural Resources (SDDENR) monitors water quality in a variety of ways, such as ambient water quality monitoring in lacustrine and riverine systems (http://denr.sd.gov/linkswaternav.aspx). In addition, SDDENR, SDGFP, and the SD Department of Health cooperate on the collection, sampling, and public information sharing regarding fish sampling to assess human consumption risks, such as elevated mercury concentrations (http://denr.sd.gov/des/sw/fish.aspx). If Osprey nesting success declines in a significant way, water quality measures will be considered as potential information sources.

Conservation Efforts in South Dakota:

Past:

SDGFP reintroduced 120 Ospreys along the Missouri River in southeastern South Dakota, an area where this species historically nested (Agersborg 1885). Young birds, primarily from the Coeur d'Alene, Idaho area, were reintroduced from 2003 – 2006 and from 2008 – 2010 (Dowd Stukel et al. 2011). Nesting platforms were subsequently placed near Gavins Point Dam, close to the site of the most recent reintroductions (Figure 2).

Trout are not native to South Dakota. Brook Trout (*Salvelinus fontinalis*) were introduced to the Black Hills in 1886, Rainbow Trout (*Oncorhynchus mykiss*) were introduced in 1896, and Brown Trout (*Salmo trutta*) and Cutthroat Trout (*S. clarkii*) were introduced in 1898 (Cordes 2007). SDGFP contracted with Jennifer Fowler through the Wildlife Diversity Small Grants Program to conduct a short-term investigation of the foraging behavior of Ospreys in the Black Hills, particularly related to trout fisheries (Fowler 2006). The investigation involved observations concentrated at 3 Osprey nests, at Pactola, Bismarck, and Center lakes, all of which are stocked with Rainbow Trout by SDGFP. Fowler concluded that the average number of fish caught per day based on observations was 6.63, with trout comprising 66% of captured fish (n=44). Trout observed being caught by Ospreys during the investigation were 12 inches or less, indicating that the birds were catching stocked trout rather than trophy-sized trout. The investigation did not include an assessment of available fish to allow a comparison of trout taken to the proportion of trout in these lakes. Other fish species observed being captured by Ospreys were Yellow Perch (*Perca flavescens*), Northern Pike (*Esox luciens*), Largemouth Bass (*Micropterus salmoides*), an unidentified species of sucker, and other undetermined fish species (Fowler 2006).

SDGFP contracted with Avian Research and Consulting (ARC), LLC, in Rapid City from 2011 – 2013 to assist with nest monitoring in the Black Hills, gather biological information on monitored nests, and describe population trends. ARC monitored 15 nests in 2011, 10 nests in 2012, and 13 nests in 2013. An additional 5 nests were monitored in the Black Hills

by SDGFP in 2012. Numbers of young observed at monitored nests were 20-21 in 2011, 26-27 in 2012, and 25 in 2013 (Engler and Halverson 2013).

Poole et al. (2002) summarized that various studies have shown that Ospreys need to produce 0.8 – 0.9 young per active nest to achieve population stability. However, Poole (1989) described the variables that influence this estimate, such as age at first breeding and availability of nest sites. Assuming most young observed during the 2011-2013 monitoring project by ARC survived to fledging, these figures indicate the Black Hills osprey population was increasing during that survey period.

SDGFP contracted with John Halverson to survey and report on nest success for known and possible Osprey nests in the Black Hills of South Dakota during 2018 and 2019. Of 39 possible nests surveyed in 2018, 23 were active, and 1 was abandoned. Of this set of 24 nests, 20 were on artificial structures, and 4 were in live or dead trees Twenty-three active nests produced 34 fledglings. Seventeen of these active nests produced at least 1 fledgling (Halverson 2019).

Halverson surveyed 44 possible nests in 2019 and found 26 to be active and 1 abandoned. The 27 active or abandoned nests were on artificial structures (19) or in live or dead trees (8). Twenty-six active nests produced 16 fledglings. Fourteen of these active nests produced at least 1 fledgling. Halverson reported that 2019 nesting was heavily influenced by repeated snowfalls early in the nesting season and severe summer weather that included heavy rainfalls, cool weather, and hail events (Halverson 2019).

Ongoing:
SDGFP's website contains information about the Missouri River reintroduction project and solicits information about color-banded Ospreys that may provide evidence of nesting by reintroduced birds (https://gfp.sd.gov/forms/bandedosprey/). Specific contacts have regularly been made with nearby state wildlife agencies to inform them of the reintroduction project and request reports of color-banded Ospreys that originated with the South Dakota reintroduction project. A similar appeal for information has periodically been posted on the South Dakota Ornithologists' Union's list serv. Based on the length of time since reintroductions in the state, this information source has become less valuable. Most recent reports have been live Ospreys sighted with U.S. Geological Survey (USGS) bands originating from any number of undetermined places.

SDGFP will continue to gather information on nesting locations and nest success opportunistically from bird watchers, landowners, land management agencies, and agency staff.

Activities described for the Black Hills Osprey population are ongoing as the population appears to be slowly increasing annually and as new nests on powerlines or other human-made structures must be addressed.

Future:

SDGFP will periodically conduct specific nest monitoring with agency staff or by contract to assess the status of the nesting population in the Black Hills.

SDGFP will assess the feasibility of an Osprey nest watch program using agency staff, volunteer landowners, and birdwatchers for monitoring specific nests to determine nesting status and production.

SDGFP will continue to collect reports of summer season observations outside the known range of this species and follow up on promising reports of possible new nesting areas, if feasible, with aerial or boat searches.

SDGFP will evaluate the need to place additional nesting platforms in the vicinity of the Big Stone Power Plant and/or reintroduce additional young Ospreys to eastern South Dakota to attempt to encourage growth of this secondary population.

Recovery Criteria/Goals

For delisting, South Dakota's Osprey population should consist of an average of at least 20 active nests in the Black Hills for at least 5 years in a 7-year timespan and a second group of an average of at least 6 active nests outside the Black Hills for at least 5 years in a 7-year timespan. An active nest is one that is claimed or built by a pair that lays eggs during that nesting season.

At least 75% of the Black Hills nests should be successful (produce at least 1 fledged young) during the timespan considered. At least 4 of the 6 nests outside the Black Hills should be successful (produce at least 1 fledged young) during the timespan considered.

Primary Reviewer:

Eileen Dowd Stukel, Senior Wildlife Biologist, SD Game, Fish and Parks, Pierre

Other Staff or Experts Involved in the 2018 Review:

Will Sayler, Fisheries Program Administrator, SDGFP, Pierre
Shelly Deisch, Wildlife Biologist/Forest Service Liaison, SDGFP, Rapid City
Samantha Nichols, Regional GIS Program Specialist, SDGFP, Rapid City
Wayne Melquist, PhD, CREX Consulting, St. Maries, Idaho
Silka Kempema, Wildlife Biologist, SDGFP, Pierre

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: April 5-6, 2018

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SUMMARY OF UPDATES IN 2020:

SDGFP gained updated information on the status and productivity of Osprey nests in the Black Hills of South Dakota by contracting with John Halverson of Rapid City. Even without analyzing the numbers of nests and their activity status for the past 7 years, this species has not yet met the delisting component of having 6 active nests east of the Missouri River.

Table 1. Documented Osprey nests in South Dakota, as of 2019*

NEST NAME	2019 STATUS
NORTHERN AND CENTRAL BLACK HILLS	
State Line	inactive platform nest
Johnson Place	active platform nest; 3 fledglings
Breezy Meadows	inactive platform nest
Pilot Knob	active platform nest; 2 fledglings
Deer Creek 1	active platform nest; nest failure
Deer Creek 3	active platform nest; 1 fledgling
Pactola Basin	inactive platform nest
Pactola 2	active powerline nest; 1 fledgling
Cement Plant	active nest on civil defense siren; 2 fledglings
Cheyenne Crossing 17.8	active tree nest; 2-3 fledglings
Mitchell Lake/China Gulch	active platform nest; 1 fledgling
Hill City Lagoons	active platform nest; 0 fledglings
Hill City ballfield	active floodlights nest; 1 fledgling
Hill City Mickelson Trail	inactive platform nest
Hill City Sawmill	active platform nest; 0 fledglings
Long Draw Pond (Hanna Road)	active tree nest; 0 fledglings
Major Lake	active platform nest; 0 fledglings
Rafter J	active platform nest; 1 fledgling
Willow Creek Lagoons 1	active platform nest; 0 fledglings
Willow Creek Lagoons 2	active platform nest; 3 fledglings
Bismarck Lake 1	inactive tree nest
Bismarck Lake 2	active tree nest; 1 fledgling
Stockade Lake 1	active platform nest; 1 fledgling
Silver City	active platform nest; 0 fledglings
Hydro 2	active tree nest; 0 fledglings
Cox Lake	active platform nest; 1 fledgling
Sheridan Lake Dakota Point	active tree snag nest; nest failure
Deerfield Gold Run	inactive (new in 2019) platform nest
Deerfield Dam	active tree nest; 2 fledglings
Deerfield Dutchman Trail	inactive tree snag nest
Deerfield Walk-in Fishery	inactive tree nest
Cheyenne Crossing	active tree nest; 2-3 fledglings
Spearfish Canyon 4.1	inactive tree nest
SOUTHERN BLACK HILLS	
Romey Lagoons	active platform nest; 3 fledglings
Cheyenne River Airstrip	inactive platform nest
March Property	active platform nest; 2 fledglings
CENTRAL SOUTH DAKOTA	
Big Bend Dam	active nest on powerline support structure; 2 young observed

NORTHEASTERN SOUTH DAKOTA	
Big Stone Power Plant	active platform nests; 2019 productivity unknown

*An active nest has incubating parents, eggs, or young. An inactive nest was occupied in previous years.

Figure 1. Osprey nest platform with offset design

Source of image: www.osprey-watch.org

Figure 2. Nest platform installation (similar design used near site of Yankton, South Dakota area osprey reintroductions)

STATE T&E SPECIES STATUS REVIEW

Species Name: Peregrine Falcon, *Falco peregrinus*

South Dakota Status, including legal status and special listings:

- State endangered (SD Administrative Rule 41:10:02:01. List of endangered birds)
- Monitored by the South Dakota Natural Heritage Program
- State Heritage rank S1 (Critically imperiled breeding population; state species ranks are currently being reevaluated by Natural Heritage Program staff)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)

Federal Status:

- Protected under the Migratory Bird Treaty Act (protection for covered birds, body parts, nests, and eggs).
- NatureServe Global Rank G4 (Apparently secure, although it may be rare in some portions of the range); global rank last reviewed 07 Apr 2016

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The Peregrine Falcon was included on the list of state endangered birds because it was once federally listed, and breeding populations were historically found in the state. Continued listing as a state endangered species is recommended.

Description, biology and life history:

Large falcon with long, pointed wings, a long narrow tail, and a rapid wingbeat. When perched, wingtips nearly reach tip of tail. Sexes are similar in appearance; however the female is approximately 20% larger than the male. Adults are blue-gray above with a blackish facial malar stripe extending down from the eye. Underparts are whitish-grey with a variable amount of dark barring and spotting. Under tail and under wing coverts are barred. The upperparts of juveniles are pale to slate brown and underparts are buffy with streaking patterns instead of the barring of adults (White et al. 2002).

Instead of building nests, peregrines use scrapes of loose material to form a depression. Males typically make several scrapes and the female will select which to use for egg laying. One brood is fledged per year, typically with a clutch size of 3-4 eggs that hatch after 33-35 days. Renesting may occur if clutches are removed or lost early in the incubation period. Breeding pairs and individuals often show strong nest site fidelity.

During the breeding season peregrines will strongly defend the area surrounding their nest site. As the distance from the nest increases, territoriality decreases and most often occurs over food or preferred perch sites (Cade 1960). Size of territories varies by location and may be influenced by prey availability. Barnes et al. (2015) reported the closest distance eyries, or nesting locations, were from neighboring territories was 1.2 km for peregrines nesting in the Lake Mead National Recreation Area. In central West Greenland, Wightman and Fuller

(2005) found the average distance of an eyrie to the nearest neighbor was 3.27 km and ranged from 1.3-11.2 km.

A majority of the peregrine's diet consists of birds and on rare occasions small mammals. In urban areas pigeons and doves make up a large portion of the diet. Peregrines search for prey while flying or from perches that offer a high vantage point. Hunting is most often done in the air by conducting stoops on lower flying prey.

Predators of adults are primarily large raptors including great horned owls, eagles, and gyrfalcons. Nestlings or juveniles have a wider array of predators including other peregrines and many mammalian nest predators. In many reintroduction efforts, eagles and great horned owls are the primary predators on the young (Cade et al. 1988). Other causes of mortality in urban locations include collisions with automobiles and windows or drowning after fledging from bridges (Cade and Bird 1990). In non-urban environments mortality can be caused by collisions or electrocution from power lines, wire or fence collisions or illegal shooting (Barclay and Cade 1983).

Habitat:
The peregrine's natural habitat consists of tall cliffs for nesting with open landscapes for foraging. Nests are often established on cliffs at heights ranging from 50 to 200 meters. Preferred nesting sites provide isolation from mammalian and avian predators and are in close proximity to an abundant prey base (Oakleaf 2017).

Peregrines have become adapted to artificial habitat in urban areas and will establish nests on human-made structures such as tall buildings, towers and bridges.

Distribution within the state.
Currently the peregrine is a rare summer resident of the Black Hills and an uncommon statewide migrant. Historically there was a limited nesting distribution in western South Dakota with only two confirmed nesting records at separate locations in 1925 and 1948-1960 (Patton 1926, Pettingill and Whitney 1965). Since then, there were no known nesting records until recently, when surveys for peregrines in the spring and summer of 2017 documented two confirmed and one potential nest locations in the northern and central Black Hills (Oakleaf 2017).

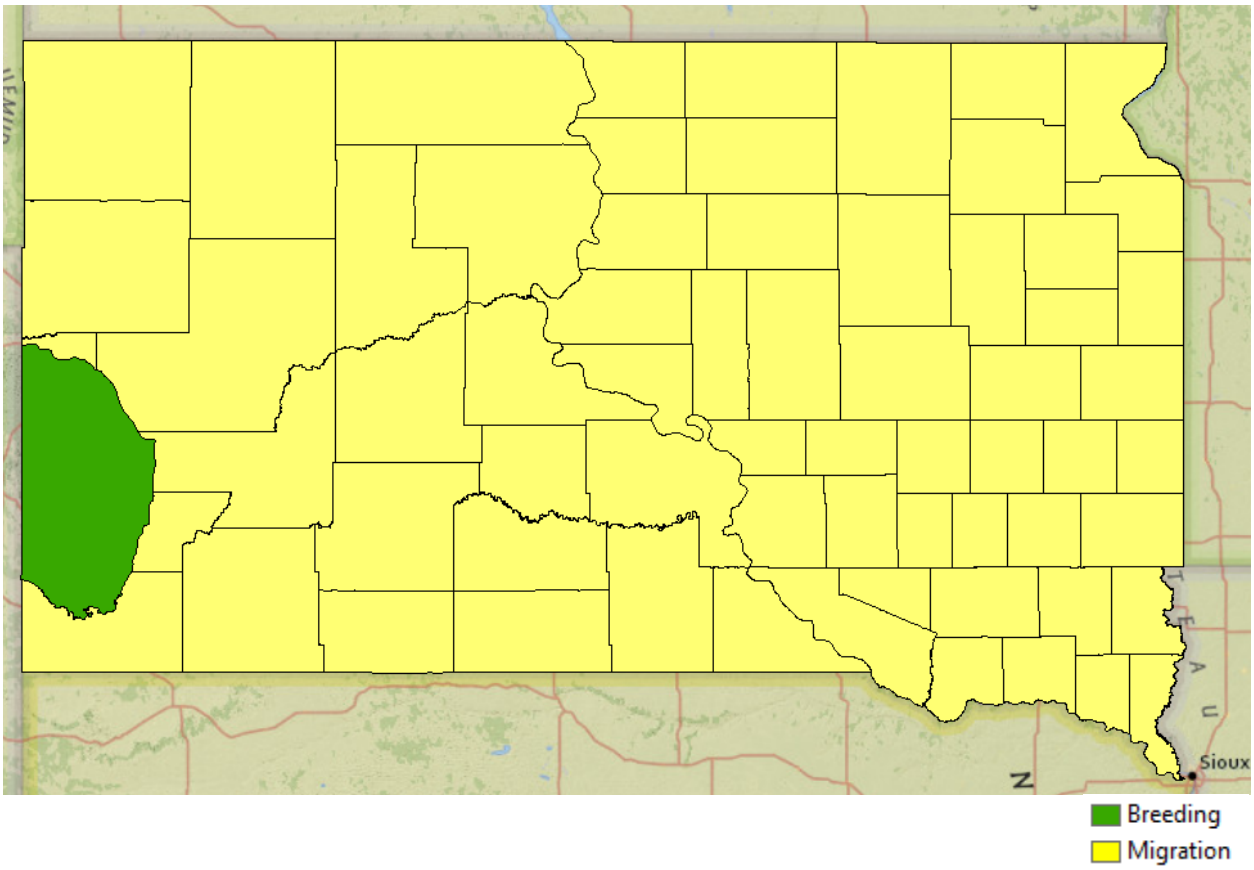

Figure 1. Current distribution of Peregrine Falcon (*Falco peregrinus*) in South Dakota.

Conservation / Management Considerations:

Peregrine Falcon populations rapidly declined between 1940 and 1970 (Hickey 1969) causing the species to be listed as federal endangered. Population declines were primarily attributed to the widespread use of the pesticide DDT, which accumulated in small birds eaten by peregrines and caused eggshell thinning and breakage. After successful reintroduction efforts the peregrine was federally delisted in 1999 (USFWS 1999, Cade et al. 2003).

After conducting surveys for nesting Peregrines and preliminary evaluations of cliffs for potential nesting suitability, Oakleaf (2017) indicated that approximately 6 to 8 breeding pairs of peregrines could potentially occupy cliffs in the Black Hills within the next few years. This number equates to approximately one pair per 1000 km^2; a density White et al. (2002) noted was typical for peregrines in North America. The Slim Buttes range in the Custer National Forest of Harding County was also evaluated in 2018 and found to have nesting potential for peregrines (Oakleaf 2018). Suitable natural (non-urban) habitat availability is limited in South Dakota to the Black Hills and potentially portions of northwestern South Dakota, and available nests sites are potentially further limited by conflicting recreational uses.

Successful management should include the protection of nest sites from disturbance. The Black Hills are a popular tourist destination and many of the cliffs that were identified as

suitable peregrine nesting habitat are also popular spots for rock climbers. Excessive climbing activity in the vicinity of a nest could result in nest failure and the presence of climbers could prevent pairs from establishing new nest sites. Monitoring for contaminants should also be considered if deemed necessary. Programs and materials should also be developed to educate the public on appropriate activities near nesting sites.

Conservation Efforts in South Dakota:

1979 and 1980 – Jon Sharps and Dan O'Brien cross-fostered Peregrine Falcon chicks with Prairie Falcon parents in the Black Hills.

1997 – 5 young Peregrines were reintroduced from the Zip Feed building in Sioux Falls by members of the Lakota Audubon Chapter.

1999 – 4 young Peregrines were reintroduced from the roof of the Hotel Alex Johnson in Rapid City as part of an Eagle Scout project.

2011-2013 – State Wildlife Grant Project T-10-R-1. Across three years a total of 57 Peregrine Falcons were released in Rapid City.

2017 – SDGFP contracted with Bob Oakleaf (Lander, Wyoming) to identify and prioritize suitable cliff sites in the Black Hills and to document nesting peregrines. Two confirmed and one potential nest locations were found.

2018-2019 – State Wildlife Grant Project T-81-R-1. SDGFP continued to contract with Bob Oakleaf to monitor nest occupancy and productivity of documented peregrine nests and to continue surveys of suitable cliff nesting sites to document new breeding pairs.

Recovery Criteria/Goals

Drafting downlisting and delisting goals for this species was done with the understanding that Peregrines nesting in South Dakota are part of a larger population in western North America. Although the following goals may be modest compared to recovery goals for other species, they represent a reasonable expectation of what the suitable and available natural nesting sites can support for a sustained period within the state's boundaries.

For downlisting to threatened, South Dakota's Peregrine Falcon population should consist of an average of two active nests for at least 5 years in a 6-year timespan. For delisting, there should be an average of five active nests for at least 5 years in a 6-year timespan. Active nests may be the result of both naturally occurring pairs or from returning reintroduced individuals that establish breeding territories. In addition, average productivity of the active nests must be 1.25 naturally produced young/pair across the 5-year period.

The following efforts should be considered to achieve recovery criteria:

- Continue to identify active peregrine nests statewide.
    - Conduct surveys in historic and suitable peregrine nesting habitat to document presence/absence.

    - Solicit observations from agency personnel, local birding groups, and landowners to identify nesting sites.
- Continue to monitor nesting success and productivity of active nests.
    - Document number of young hatched and successfully fledged.
    - Identify nest site characteristics and evaluate their influence on nest success.
- Monitor "floaters" or non-breeding individuals' activities to identify potential nest sites.
- Place nest boxes on suitable structures in urban areas where peregrines have been observed to encourage nesting where feasible.
- Reduce or eliminate disturbance of nest sites during the breeding season.

Primary Reviewer:
Casey Heimerl, Wildlife Biologist, SD Game, Fish and Parks, Pierre

Other Staff or Experts Involved in the Review:
- Bob Oakleaf, former Wyoming Game and Fish Department Nongame Coordinator
- Janie (Fink) Veltkamp, Raptor Biologist, Birds of Prey Northwest

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6, 2018

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White, C.M., N.J. Clum, T.J. Cade, and W.G. Hunt. 2002. Peregrine falcon (*Falco peregrinus*). *In* A. Poole (Ed.) The Birds of North America. No. 660. Cornell Lab of Ornithology, Ithaca, NY.
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SUMMARY OF UPDATES IN 2020:

State Wildlife Grant Project T-81-R-1:

- 2018
    - Ground surveys for nesting peregrine falcons occurred at 20 cliff sites throughout the Black Hills National Forest.
    - Breeding pairs of peregrines were observed at four of the sites.
    - An apparent unsuccessful pair was observed in early June at a fifth site and a single, unpaired, adult was observed at one additional location.
    - Two of the four nesting pairs successfully fledged young and the other two pairs failed.
    - One of the successful nests fledged three young and the other successful nest likely fledged young.
    - Helicopter surveys were also conducted in the Slim Butte range of the Custer National Forest. No peregrines were observed however a small number of suitable cliff sites were documented.
- 2019
    - Ground surveys for nesting peregrine falcons occurred at 20 cliff sites throughout the Black Hills National Forest.
    - Breeding pairs of peregrines were observed at four of the sites.

- Only one of the four pairs were successful, producing two young.
- No new nesting locations were found.
- A meeting was held with the Black Hills Climber's Association in May to learn if members have observed any cliffs with peregrines while climbing.

STATE T&E SPECIES STATUS REVIEW

Species Name: Piping Plover (*Charadrius melodus*)

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:02. List of threatened birds)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S3 (vulnerable; state rank last reviewed 2019)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)

Federal Status:

- Protected under Migratory Bird Treaty Act (protection for covered birds, body parts, nests, and eggs)
- Federal threatened species. South Dakota is part of the Northern Great Plains population. The Great Lakes Piping Plover population is federal endangered. Federal recovery plan covering both populations was finalized in 1988 (USFWS 1988). Since then, separate revised recovery plans have been finalized or are in the process of revision and finalization.
- NatureServe global rank G3 (Vulnerable); last reviewed 7 April 2016

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The specific justification for including the Piping Plover on the first list of state threatened birds is unknown, but was presumably intended to mirror its federal status as a threatened species. Continued listing as a state threatened species is recommended at this time based on limited habitat available in the state and numerous threats to successful fledging.

Description, biology and life history:

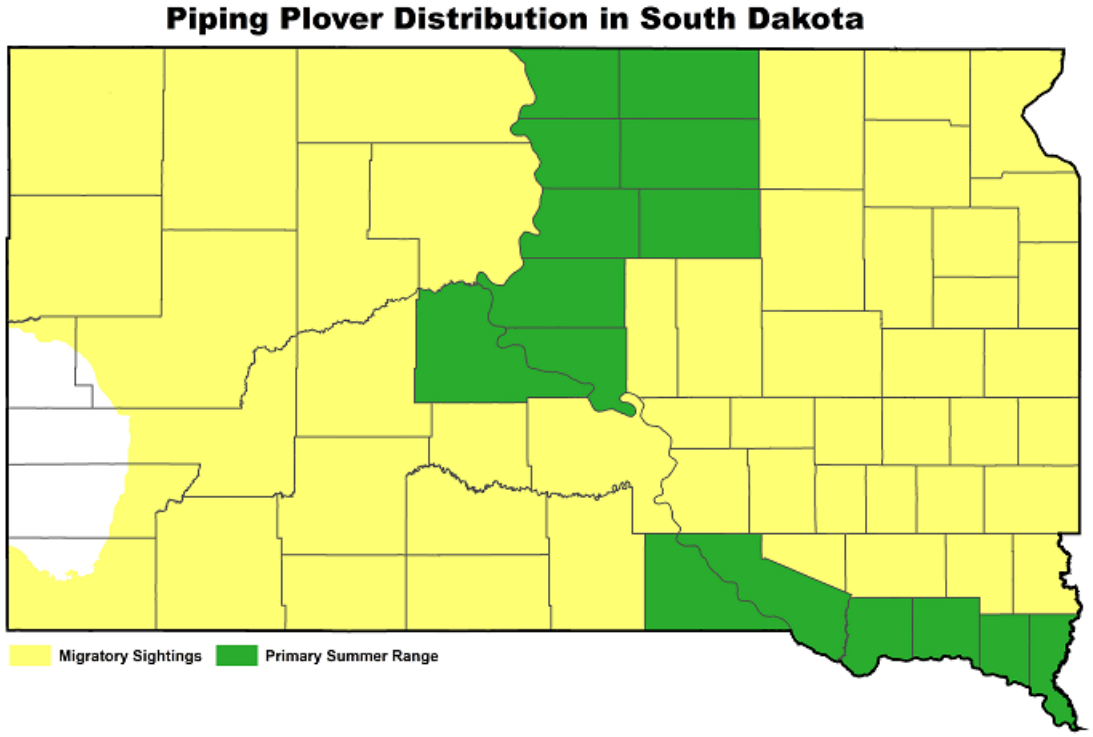
The Piping Plover is a sandy-gray colored, robin-sized shorebird with one dark breast band and a dark stripe across the crown during the breeding season. The white rump is visible during flight. This species is present in South Dakota during the breeding season. It arrives in April and nests through July or August. Nests are shallow, scraped depressions, sometimes lined with small pebbles or shells. The female lays a clutch typically of 4 eggs in late May or early June. Eggs hatch 27-31 days later. In South Dakota, this species often nests in association with the Least Tern.

Habitat:

Nesting areas are sandbars and sand and gravel beaches with short, sparse vegetation. Piping Plovers feed along the water's edge on small insects, crustaceans, and mollusks. They will use both natural and human-made habitats.

Distribution within the state:

Nesting areas are primarily along Lake Oahe and the lower Missouri River below Fort Randall and Gavins Point dams. Additional nesting occurs on alkaline wetlands of northcentral and northeastern South Dakota, when habitat conditions are suitable, and very rarely along lakeshores in western South Dakota.



Conservation / Management Considerations:

Potential nesting habitat for this species in the Northern Great Plains was drastically reduced with the construction of 6 major dams on the Missouri River, 4 of which were built in South Dakota. Threats to nesting colonies include mammalian and avian predators, unrestricted pets, recreationists who disturb incubating adults or destroy nests or chicks, hail or other severe weather, elevated water levels during the nesting season, habitat erosion, and vegetative encroachment/plant succession.

Conservation Efforts in South Dakota:

Past:

More than 90,000 acres of land were transferred from the U.S. Army Corps of Engineers (USACE) to the State of South Dakota as a result of the Water Resources Development Act of 1999. Land transferred to the State of South Dakota is managed by Wildlife and/or Parks and Recreation divisions of South Dakota Game, Fish and Parks (SDGFP). Two products resulted from SDGFP's expanded role in endangered species management along the Missouri River, an interagency Memorandum of Agreement (MOA) regarding endangered species protection and recovery along the river and a state management plan for the Interior Least Tern and Piping Plover (state management plan) (Aron 2005).

The first 5-year Missouri River endangered species interagency MOA was finalized in 2001 and included specific and shared commitments of 3 agencies; SDGFP, USACE, and the U.S. Fish and Wildlife Service (USFWS) (Dowd Stukel 2003). Subsequent MOAs included the National Park Service in addition to the original 3 agencies. MOA accomplishments by all participants include such activities as biological surveys and nesting season productivity for Least Terns and Piping Plovers within the portion of the Missouri River surveyed by the USACE and SDGFP, specific protocols or policies developed to help implement the MOA, outreach and educational efforts related to Missouri River endangered species, law enforcement efforts, and relevant Section 7 consultations among federal agencies.

As SDGFP assumed responsibility for additional ownership and management of lands along the Missouri River, concern increased about the possibility of needing permission for incidental take. State management plans were prepared for the 4 species covered by the MOA as part of an agency intention to submit a habitat conservation plan (HCP) to allow incidental take of federal listed species. Management plans were prepared for the Pallid Sturgeon and Bald Eagle. Piping Plover and Least Tern were covered in one plan. The HCP was not formally pursued.

The International Piping Plover Census was designed to be conducted every 5 years on both wintering and breeding grounds. Begun in 1991, the census was most recently conducted in 2016. The effort relies on federal, tribal, and state wildlife personnel and volunteers and at the state level is typically overseen by staff with the U.S. Geological Survey or USFWS. South Dakota's participation has varied depending on other commitments and whether water level conditions are conducive to the census.

Ongoing:

The SDGFP Commission passed the following administrative rule in 1989 to provide added protection for Least Tern and Piping Plover nesting colonies in the state:

> Administrative Rule 41:10:02:18. Harassment prohibited. Harassment of the nesting and rearing sites of the least tern, an endangered species, and the piping plover, a threatened species, is prohibited. The department shall post conspicuous signs near critical nesting and rearing sites on the sandbars and shoreline of the Missouri River to warn against entry during the nesting period.

As the 5-year Missouri River Endangered Species MOAs have expired, participating agencies have recommended changes prior to finalization. The current 5-year MOA was finalized on October 26, 2015, when the final participating agency representative signed the document (Appendix 1 of Least Tern species account). SDGFP has fulfilled its commitments to this MOA annually since 2002, except for one year when seasonal employees could not be hired during a state government hiring freeze and the current year (2020), when the COVID-19 pandemic precluded state government hiring of certain summer personnel. However, SDGFP rehired a contractor to assist with upper Lake Oahe nesting surveys in 2020.

Nesting survey data are collected by state, federal, and tribal personnel. The most extensive nesting data are collected by the USACE. These data are collected in a systematic manner, with strict quality control measures, prior to incorporation into the USACE's endangered

species data management system. This system is used to document USACE compliance with a Biological Opinion between the USACE and USFWS regarding Missouri River endangered species and to assist the USACE in avoiding negative impacts to nesting colonies while making short- and long-term water management decisions. The USACE allows SDGFP to access the data management system to assist the South Dakota Heritage Database Manager and other SDGFP staff in conducting environmental review.

The USFWS designated portions of South Dakota as critical nesting habitat for the Piping Plover in 2002 (Federal Register 2002). Included areas were Lake Oahe and the Missouri River from Fort Randall Dam south to Ponca State Park, Nebraska, including Lewis and Clark Lake. Critical habitat contains important elements or habitat features that meet a species' life cycle needs. Critical habitat is relevant when there is a federal nexus, such as federal funding provided or federal approval needed for a project within designated critical habitat.

SDGFP Senior Wildlife Biologist for Wildlife Diversity was invited to be a member of the Northern Great Plains Piping Plover Recovery Team (Team) in 2010. The Team's primary task was to assist in the revision of the Northern Great Plains Piping Plover Recovery Plan. The Team included representatives from state and federal wildlife agencies and research entities with experience with this species in the Northern Great Plains. The earlier recovery plan was finalized in 1988 (U.S. Fish and Wildlife Service 1988). The Team effort was led by USFWS wildlife biologists in North Dakota. The resulting draft recovery plan (Draft Plan) was published in the Federal Register on March 16, 2016, with 60 days allowed for public comment (U.S. Fish and Wildlife Service 2016). USFWS wildlife biologists in North Dakota subsequently met with Team members by conference call to discuss questions and comments from the public. In January 2018, the USFWS informed Team members of the USFWS's intent to revise the Draft Plan and prepare a species report and recovery implementation strategy, to be available for public comment during the spring of 2018. As of the time of this status review update (September 2020), neither of these documents has been shared with Team members, and their development status is unknown.

Future:
SDGFP will continue its participation in the multiagency Missouri River endangered species MOA. SDGFP further intends to assist with new recovery goals established in the revised Northern Great Plains Piping Plover Recovery Plan once the document is finalized and approved. SDGFP plans to pursue a more flexible means of providing nesting season assistance to the USACE besides hiring summer interns.

SDGFP will participate in future International Piping Plover Censuses as time and staff availability allow, particularly focused on potential habitat away from the Missouri River that may not be surveyed on a regular basis.

State Recovery Criteria/Goals:

South Dakota will cooperate with the USFWS in meeting recovery goals described in the revised federal recovery plan, because this revised federal plan will reflect the most current scientific and management information. Separate state recovery goals are not recommended.

Primary Reviewer:
Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Other Staff or Experts Involved in the Review:
Paul Mammenga, Wildlife Biologist, SDGFP, Aberdeen

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: April 5-6, 2018

References or Information Sources:

Aron, C. 2005. South Dakota Interior Least Tern (*Sterna antillarum athalassos*) and Piping Plover (*Charadrius melodus*) Management Plan. South Dakota Department of Game, Fish and Parks, Pierre, Wildlife Division Report No. 2005-02, 76 pp.

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U.S. Fish and Wildlife Service (USFWS). 2016. Endangered and Threatened Wildlife and Plants: Draft Revised Recovery Plan for the Piping Plover. Federal Register Vol. 81, No. 51, pages 14121-14122.

SUMMARY OF UPDATES IN 2020:

The USFWS has not yet finalized or released a revised Northern Great Plains Piping Plover Recovery Plan, following a public comment period during 2016. SDGFP will monitor this situation to determine how the agency can continue assisting with species recovery in the state.

STATE T&E SPECIES STATUS REVIEW

Species name: Whooping Crane, (*Grus americana*)

South Dakota Status, including legal status and special listings:

- State endangered (SD Administrative Rule 41:10:02:01, List of endangered birds)
- Monitored by the South Dakota Natural Heritage Program
- State Heritage rank SNA (A state-level conservation status rank is not applicable according to NatureServe's Natural Heritage methodology because it neither breeds nor winters in South Dakota)
- Included as a Species of Greatest Conservation Need in the South Dakota Wildlife Action Plan

Federal Status:

- Nature Serve global rank G1 (species critically imperiled); last reviewed 8 April 2016
- Protected under the Migratory Bird Treaty Act
- Federal endangered. This species was listed as endangered in 1967 pursuant to precursor legislation to the Endangered Species Act (ESA) of 1973. International recovery plan, third revision published in 2007 (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007)

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The specific justification for including the whooping crane on the first list of state endangered birds is unknown but was presumably intended to mirror its federal status. In the event that this species is down-listed or delisted by the U.S. Fish and Wildlife Service (USFWS), we will reevaluate whether continued listing as a state endangered species is warranted.

Description, biology and life history:

At 4-5' tall, the whooping crane is the tallest wading bird in North America. The adult is white with long black legs, wingtips and markings below the eye. The top and sides of the head are featherless with bright red skin. Juveniles are a cinnamon color. The common name likely originates from the single note vocalization that is repeatedly given when alarmed. Average age in the wild is estimated to be 30 years.

Successful nesting and egg production begin at five years of age. Whooping cranes are monogamous and will rapidly replace a lost mate. Pairs exhibit strong site fidelity to nesting areas. Two eggs are laid in late April to mid-May and hatch about one month later. Typically only one young successfully reaches the wintering grounds.

Migration north begins in late March to early-April and is completed in two to four weeks. Fall migration begins in mid-September with most birds arriving on the wintering grounds in late November. These birds are observed in South Dakota beginning in early to mid-April during the spring and again in October during the fall migration. Whooping cranes migrate

during the day and can be seen as individuals, in small groups or more rarely in flocks of up to 20 birds. Whoopers can also be seen migrating with sandhill cranes.

Habitat:

The only self-sustaining, wild migratory population in the world breeds in portions of the Northwest Territories in Canada and adjacent areas of Alberta, especially within Wood Buffalo National Park. During breeding, this species prefers poorly drained headwater areas with abundant wetlands interspersed with spruce and tamarack. Bulrush dominates the diatom ponds that are used for nesting. Whooping cranes migrate twice a year through the Great Plains of North America. During migration, whooping cranes will use a variety of wetlands including marshes, wet prairies, and shallow water in rivers, reservoirs or lakes as well as grain and stubble fields. The winter range is along a 30-mile stretch of the Gulf of Mexico coastline in Texas including the Aransas National Wildlife Refuge. Estuarine marshes, shallow bays and tidal flats are used on the wintering grounds.

Whooping cranes are omnivorous consuming a variety of items including insects, berries, grains, plant tubers, crustaceans, fish, reptiles and amphibians. Animal foods including blue crabs and clams are the primary foods during the winter. Agricultural grains are especially consumed during migration.

Distribution within the state:

Although individuals of this population can be found during migration anywhere in South Dakota, they are most commonly found along and adjacent to the Missouri River.

Conservation / Management Considerations:

Overharvest was one of the main reasons for the historical decline of this species. Population declines were suspected by the early 1900s. Conversion of grassland and wetland for hay and grain production destroyed and altered traditional breeding grounds in the central United States. Similarly, migratory stopover habitat has been lost or degraded due to wetland drainage and river water diversion. Wintering grounds are impacted by reduced freshwater inflows into coastal estuaries making the water too saline for whooping cranes. This increased salinity reduces availability of blue crabs, the primary food source during the winter.

Loss and alteration of grassland and wetland habitats continue to impact this species as well as mortality from power lines, disease and loss of genetic diversity. Sixty to 80% of mortalities occur during migration. Strikes with power lines constitute a substantial portion of that mortality and is the primary cause of death, especially for young birds. Wind turbines and guy wires associated with communication towers also pose a collision risk for whooping cranes. Mortality is also caused by accidental shootings resulting from misidentification of harvested bird species as well as intentional shootings. Whooping cranes are also susceptible to disturbance from humans, especially those on foot. Boat, plane and vehicle traffic are also potential sources of human disturbance. Research and monitoring needs in South Dakota include updating the National Wetlands Inventory, monitoring the impacts of tile drainage, continued migration monitoring and further understanding of stopover habitat.

Five-year species status reviews are conducted by the USFWS to determine if the status of listed species should be changed or removed from the federal list. No change in whooping crane status was recommended (USFWS 2012). The USFWS conducts Species Status Assessments (SSA) to determine the current and future status of listed species and assess their viability into the future. An SSA is currently being conducted for the whooping crane.

Conservation Efforts in South Dakota:

Seasonal press releases are distributed to inform the public that migrating whooping cranes are protected, that whooping cranes can be confused with other large white birds with black wing-tips and that reports of whooping crane sightings are important and encouraged. Confirmed reports of migrating whooping cranes from the public and wildlife professionals are entered into the South Dakota Natural Heritage database and provided to the USFWS through the Grand Island, Nebraska Field Office of the Ecological Services Division.

SDGFP has provided review and oversight of the Great Plains Wind Energy Habitat Conservation Plan (HCP). This HCP is being developed by the Wind Energy Whooping Crane Action Group. This HCP addresses the potential impacts from development and operation of wind energy facilities on federal listed species potentially impacted by wind energy development in the Great Plains. It is also intended to streamline the ESA permitting process.

Recovery Criteria/Goals

SDGFP will cooperate with the USFWS in meeting downlisting goals detailed in the recovery plan (Canadian Wildlife Service and U.S. Fish and Wildlife Service 2007).

Primary Reviewer: Silka Kempema, wildlife biologist

Other Staff or Experts Involved in the Review:

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6.

References or Information Sources:

Ashton, D. E., and E. M. Dowd. 2008. Fragile legacy: Rare animals of South Dakota. Wildlife Division Report Number 91-04.

Canadian Wildlife Service and U.S. Fish and Wildlife Service. 2007. International recovery plan for the whooping crane (*Grus americana*). Ottawa: Recovery of Nationally Endangered Wildlife (RENEW) and U.S. Fish and Wildlife Service. Albuquerque, New Mexico. 162 pages.

U.S. Fish and Wildlife Service. 2012. Whooping crane (*Grus americana*) 5-year review: Summary and evaluation. U. S. Department of the Interior.

SUMMARY OF UPDATES IN 2020:

- None.

STATE T&E SPECIES STATUS REVIEW

Species Name: Banded Killifish, *Fundulus diaphanus*

South Dakota Status, including legal status and special listings:

- State endangered, (SD Administrative Rule 41:10:02:05. List of endangered fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S1, (critically imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G5 (secure, although it may be rare in some portions of the range); last reviewed 30 January 2012 (NatureServe 2014)

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Banded Killifish is widespread and secure throughout the eastern portion of its range. Banded Killifish are at the western edge of their range and listed as critically imperiled in South Dakota. The justification for including Banded Killifish on the first list of state endangered (16 March 1978) fish is unknown but was presumably due to wetland drainage, possible climatic conditions, and fragmentation from interconnecting waterways of suitable habitat. Based on the presumed limited area of occupancy, threat of wetland drainage and limited potential for range expansions; Banded Killifish are extremely vulnerable to extirpation with limited ability for recolonization and continued listing as a state endangered species is recommended.

Description, biology and life history:

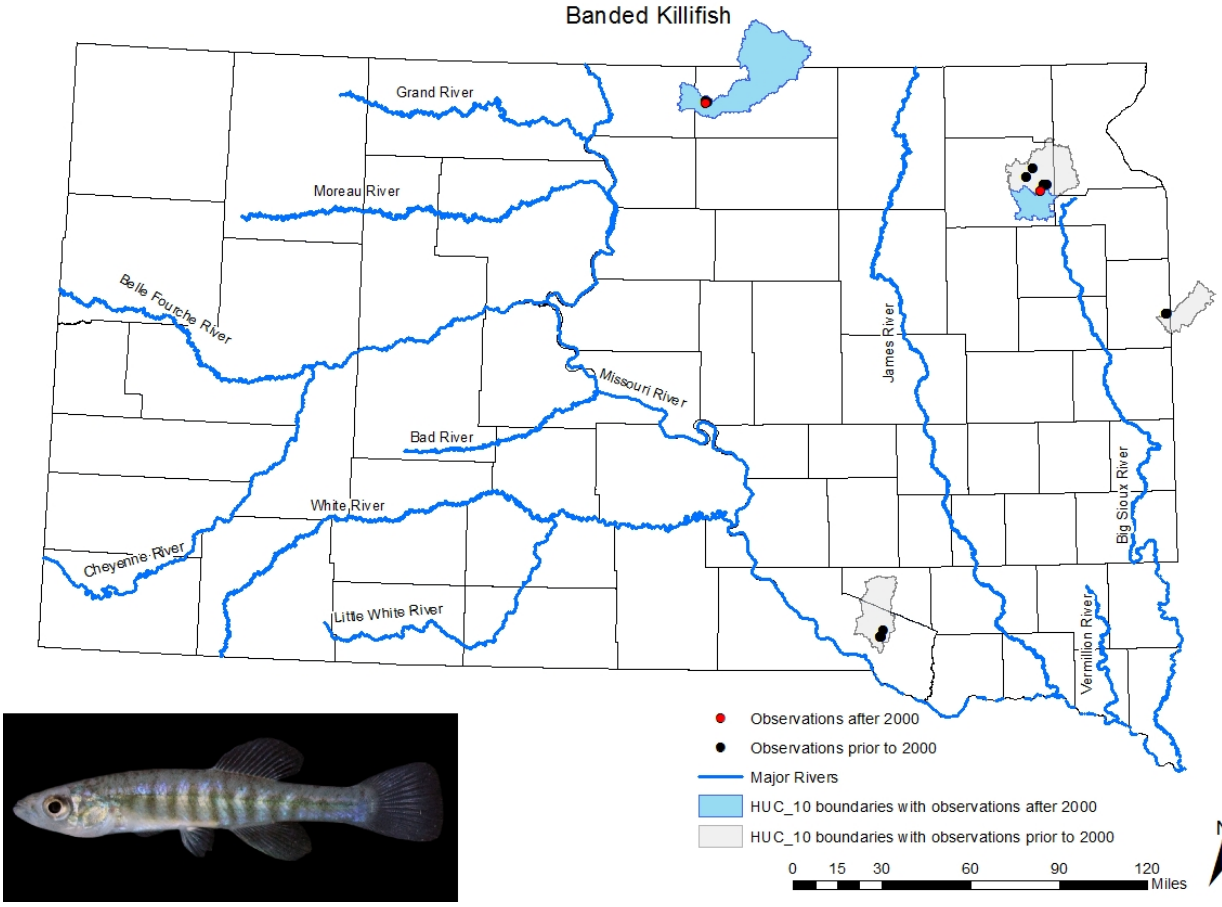
The Banded Killifish is a small, olive colored fish with yellow sides having green-brown vertical bands. It has a flattened head, protruding lower jaw and rounded caudal fin which make this fish well-adapted for surface feeding. Similar species include Central Mudminnow, which has a dark black vertical band at the caudal fin base and dark spot below the eye. Also the Plains Killifish is similar in appearance with vertical bands along the lateral sides, however they have smaller scales with roughly 50-67 scales in the alter series. Banded Killifish spawn in late spring and summer when water temperatures reach 21°C to 23°C. Eggs are released and immediately fertilized in clusters of 5-10 eggs, which adhere to vegetation. Spawning continues until 50 or more eggs are released. Eggs hatch within 10 to 12 days. The diet consists of small crustaceans, insect larvae and some plant material (SDGFP 2006; Phillips et al. 2007).

Habitat:

Habitat for the Banded Killifish may be lentic or lotic. Banded Killifish prefer quiet and shallow waters of sloughs, marshes, ponds and lakes, as well as low gradient streams with gravel or sand substrate and abundant vegetation (SDGFP 2006).

Distribution within the state:

Banded Killifish have been reported from a few lakes (Lake Andes, Garden Creek HUC_1014010117; Lake Eureka, Long Lake HUC_1013010603; Lake Cochrane, Lazarus Creek HUC_702000302; Blue Dog Lake, Waubay Lakes HUC_1017020102; Waubay Lake, Waubay Lakes HUC_1017020102; Bitter Lake, Bitter Lakes HUC_1017020103) in eastern South Dakota which is on the western periphery of its range (Bailey and Allum 1962; Bauer 1988; Lott 1991; Bertrand et al. in prep.). Since 2000, reported Banded Killifish have been limited to the inlet of Bitter Lake, Day County and Little Eureka Lake, McPherson County.



Conservation / Management Considerations:

Banded Killifish have been impacted by ecosystem/habitat conversion and loss, ecosystem alteration and habitat degradation due to shoreline development, conversion of wetlands to agriculture, pollution, and application of pesticides and herbicides (SDGFP 2006; 2014a).

Research and monitoring needs will focus on determining the current status of populations by increasing monitoring efforts, assessing population dynamics, and identifying conservation opportunity areas and limiting factors.

Conservation Efforts in South Dakota:

Conservation efforts will focus on increased survey efforts, expanding partnerships and cooperative arrangements, increasing awareness through education, and promoting best

management practices that reduce/limit soil erosion and nutrient/pesticide runoff. Additionally, objectives and strategies will follow those outlined within the East River Fisheries Management Plan to standardize survey and sampling protocols to inventory and monitor stream and riverine fishes (SDGFP 2014b).

State Wildlife Grant Accomplishments:

- Evaluation of a decision support tool to help support fish species at risk in South Dakota streams– T-9 (2006). Aquatic GAP is a tool for predicting where aquatic species might find suitable habitat. This study's goal was to test the accuracy of aquatic GAP by surveying streams and watersheds with historic occurrences of rare fish species and wetlands with potential habitat for them.
- Small stream fish ladders for steel culverts– T-67 (2016). Assessing the use of fish ladder designs to estimate the increase in passability of round galvanized steel culverts in natural streams in both eastern and western South Dakota.

Recovery Criteria/Goals:

Given that Banded Killifish have limited natural dispersal abilities the primary recovery goal is to maintain existing populations and protect the habitat within watersheds where Banded Killifish are found. Specific goals for managing Banded Killifish are to work with fisheries biologists to standardize shoreline seining efforts in coordination with lake surveys and work with private land and habitat biologists to develop site specific best management practices to ensure habitat protection. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current population status (Post-2000) and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist SDGFP

Other Staff or Experts Involved in the Review:

Dave Lucchesi, Fisheries Biologist, SDGFP, Sioux Falls
Brian Blackwell, Fisheries Biologist, SDGFP, Watertown
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Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

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SUMMARY OF UPDATES IN 2020:

In coordination with the Northeast Fisheries Management Area Strategic Plan and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. In 2019, the first year of sampling was completed in the northeast, sampling Waubay Lake in coordination with standard lake surveys. Although no rare nongame species were reported, including Banded Killifish, standardized nongame sampling in coordination with standard lake surveys will continue into the future. Currently, workplans have identified one standing water and one tributary per year to sample for nongame species through the 2023 sampling season.

STATE T&E SPECIES STATUS REVIEW

Species Name: Blacknose Shiner, *Notropis heterolepis*

South Dakota Status, including legal status and special listings:

- State endangered, (SD Administrative Rule 41:10:02:05. List of endangered fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S1 (critically imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G5 (secure, although it may be rare in some portions of the range); last reviewed 16 January 2013 (NatureServe 2014).

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Blacknose Shiner are widespread and apparently secure throughout the northern portion of their range; however, the species is currently listed as critically imperiled in South Dakota. Blacknose Shiner populations have declined or are presumed extirpated throughout the majority of their Midwestern distribution (Bernstein et al. 2000; Roberts and Burr 2006; Hoagstrom et al. 2007; Felts 2013), and remaining populations in South Dakota are now on the periphery of the Blacknose Shiner's distribution. The justification for adding Blacknose Shiner to the list of state endangered fish on 22 May 1996 is unknown but was presumably due to the presence of only small, isolated relict populations, threat of wetland loss, and increased turbidity and siltation resulting from erosion. Due to this species' limited ability for recolonization it is vulnerable to extirpation and continued listing as a state endangered species is recommended.

Description, biology and life history:

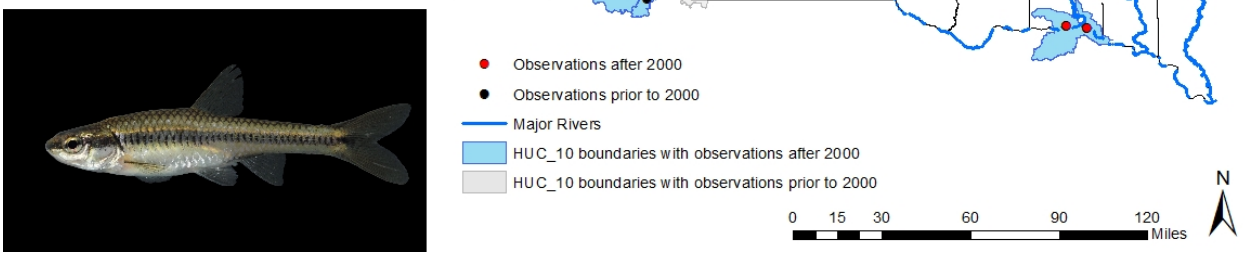
The Blacknose Shiner is a slender, silvery minnow with large eyes. Black crescent-shaped marks form a dark stripe along the lateral line from the tip of the nose to the caudal fin, passing through the eyes (Bertrand et al. in prep.). Little is known about the reproductive biology of life history for Blacknose Shiner; a study in Illinois found then to spawn late April through late June, with females remaining in reproductive condition for roughly 2-4 weeks. This extended spawning period indicates that females are multiple clutch spawners (Pflieger 1975; Roberts et al. 2006; NGPC 2010). The diet includes aquatic insects, crustaceans, and algae (SDGFP 2006). A subterminal mouth suggests the species is primarily a benthic feeder (Becker 1983).

Habitat:

Blacknose Shiner prefer cool, clear glacial lakes and small quiet, prairie streams with pool and run sequences. Often associated with considerable amounts of aquatic vegetation and organic debris, sand, gravel or rock substrates (Pflieger 1997; Roberts et al. 2006; SDGFP 2006).

Distribution within the state:

Blacknose Shiner have been reported from tributaries of the James (Wolf Creek-HUC_1016001118), Big Sioux (Waubay Lakes HUC_1017020102, Flandreau Creek HUC_1017020303), Minnesota (North Fork Yellow Bank River HUC_0702000109), Missouri (Beaver Creek HUC_1017010112) and Keya Paha (Sand Creek HUC_1015000603, Shadley Creek HUC_1015000605, Jimmie Creek HUC_1015000608) river drainages which are on the western periphery of the species geographic range (Bailey and Allum 1962; Cunningham and Olson 1994; Cunningham et al. 1995). Since 2000, only single fish occurrences of Blacknose Shiner have been reported from a limited number of tributaries of the Big Sioux, Minnesota, Missouri and Keya Paha River drainages (Hoagstrom et al. 2007; Felts 2013).



Conservation / Management Considerations:

Blacknose Shiner have experienced ecosystem alteration/habitat degradation, partially due to increased turbidity and siltation of stream bottoms, reductions in aquatic and riparian vegetation, and grazing/agricultural practices. It is suggested that Blacknose Shiner are moderately vulnerable to climate change (SDGFP 2014a).

Monitoring and research needs will focus on determining current distribution and status through continued monitoring efforts, assessing population dynamics, and identifying conservation opportunity areas and limiting factors.

Conservation Efforts in South Dakota:

Conservation efforts will focus on more intensive surveying, expanding partnerships and cooperative arrangements, increasing awareness through education, and promoting best management practices that reduce/limit soil erosion and nutrient/pesticide runoff (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the East and West River Fisheries Management Plans to standardize survey and sampling protocols to monitor non-game fishes (SDGFP 2014b, 2014c).

State Wildlife Grant Accomplishments:

- Glacial relict fishes in spring fed headwater streams of South Dakota's Sandhills region – T-2-8 (2013). The Sandhills area of South Dakota is a unique ecosystem that is home to many rare species, relict of Pleistocene Glaciation. This research assessed the current distribution, status and habitat requirements for these glacial relict fishes.
- Small stream fish ladders for steel culverts– T-67 (2016). Assessing the use of fish ladder designs to estimate the increase in passability of round galvanized steel culverts in natural streams in both eastern and western South Dakota.
- Evaluation of the James River Conservation Reserve Enhancement Program (CREP) of South Dakota– T-59 (2017). The CREP seeks to enhance natural resource conservation programs in selected watersheds nationwide to address specific regional conservation priorities by attempting to alleviate agriculturally related environmental concerns. This project assessed the effects of CREP on water quality, aquatic habitats, fish assemblages, and avifauna response to the James River CREP.

Recovery Criteria/Goals

Given that Blacknose Shiner have limited natural dispersal abilities, the primary recovery goal for the Blacknose Shiner is to maintain existing populations and protect habitat within watersheds where Blacknose Shiner are found. Specific management goals are to work with fisheries biologists to standardize seining efforts in coordination with increased river/stream surveys and work with private land and habitat biologist to develop site specific best management practices to ensure habitat protection. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current status (Post-2000) and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:

Dave Lucchesi, Fisheries Biologist, SDGFP, Sioux Falls
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George Cunningham, Fisheries Biologist and Environmental Consultant, Eco~centrics, Omaha, NE
Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Date Review Completed: May 28, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

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South Dakota Department of Game, Fish and Parks. 2019. Fisheries and aquatic resources adaptive management system 2019-2023: Northeast Fisheries Management Area Strategic Plan. South Dakota Department of Game, Fish and Parks, Pierre.

SUMMARY OF UPDATES IN 2020:

In coordination with the Northeast and Southeast Fisheries Management Area Strategic Plans and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for both fish management areas have identified one standing water and one tributary per year to sample for nongame species through the 2023 sampling season which will include historic Blacknose Shiner waterbodies. Additionally, a proposed multi-state State Wildlife Grant project if funded would increase sampling efforts within the Sandhills areas of South Dakota.

STATE T&E SPECIES STATUS REVIEW

Species Name: Finescale Dace, *Chrosomus neogaeus*

South Dakota Status, including legal status and special listings:

- State endangered, (SD Administrative Rule 41:10:02:05. List of endangered fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S1, (critically imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G5 (secure, although it may be rare in some portions of the range); last reviewed 3 November 2011 (NatureServe 2014)
- USDA Forest Service, Region 2, Black Hills National Forest sensitive species
- USDA Forest Service, Region 2, Buffalo Gap National Grassland sensitive species
- USDA Forest Service, Region 1, Dakota Prairie Grassland, 2011 aquatic sensitive species
- USDA Forest Service, Region 2, Rocky Mountain Region sensitive species

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Finescale Dace are apparently secure throughout their range, however, listed as critically imperiled in South Dakota. Previously listed state threatened (16 March 1978), the Finescale Dace was listed state endangered in 22 May 1996. The justification for including Finescale Dace on the first list of state threatened is unknown. Surveys during the 1990s failed to document Finescale Dace at all historic locations, except Cox Lake, and the species was reclassified as state endangered (Shearer and Erickson 2005). Their extremely limited distribution is presumably due to habitat alteration, introduction of nonnative fishes, and climate change, which have all limited their potential for range expansions. Finescale Dace are extremely vulnerable to extirpation with limited ability for recolonization and continued listing as a state endangered species is recommended.

Description, biology and life history:

The Finescale Dace is a small, dark olive to silvery minnow with a single dark lateral stripe ending with a spot at the base of the caudal fin. In breeding males, the silvery belly is brassy, to bright yellow or red (NGPC 2010). The ventrolateral surface is peppered with melanophores. The angle of the mouth extends almost to the front of the pupil (Bertrand et al. in prep). Finescale Dace spawn during May-June. Eggs are laid in clusters of 20-30 at a time under logs and brush. Spawning can occur over several days with a female laying as many as 3,000 eggs. Eggs hatch within 4 days. Most individuals live 3 to 4 years (SDGFP 2006). The diet includes algae, mollusks and a variety of aquatic insects (Baxter and Stone 1995).

Habitat:

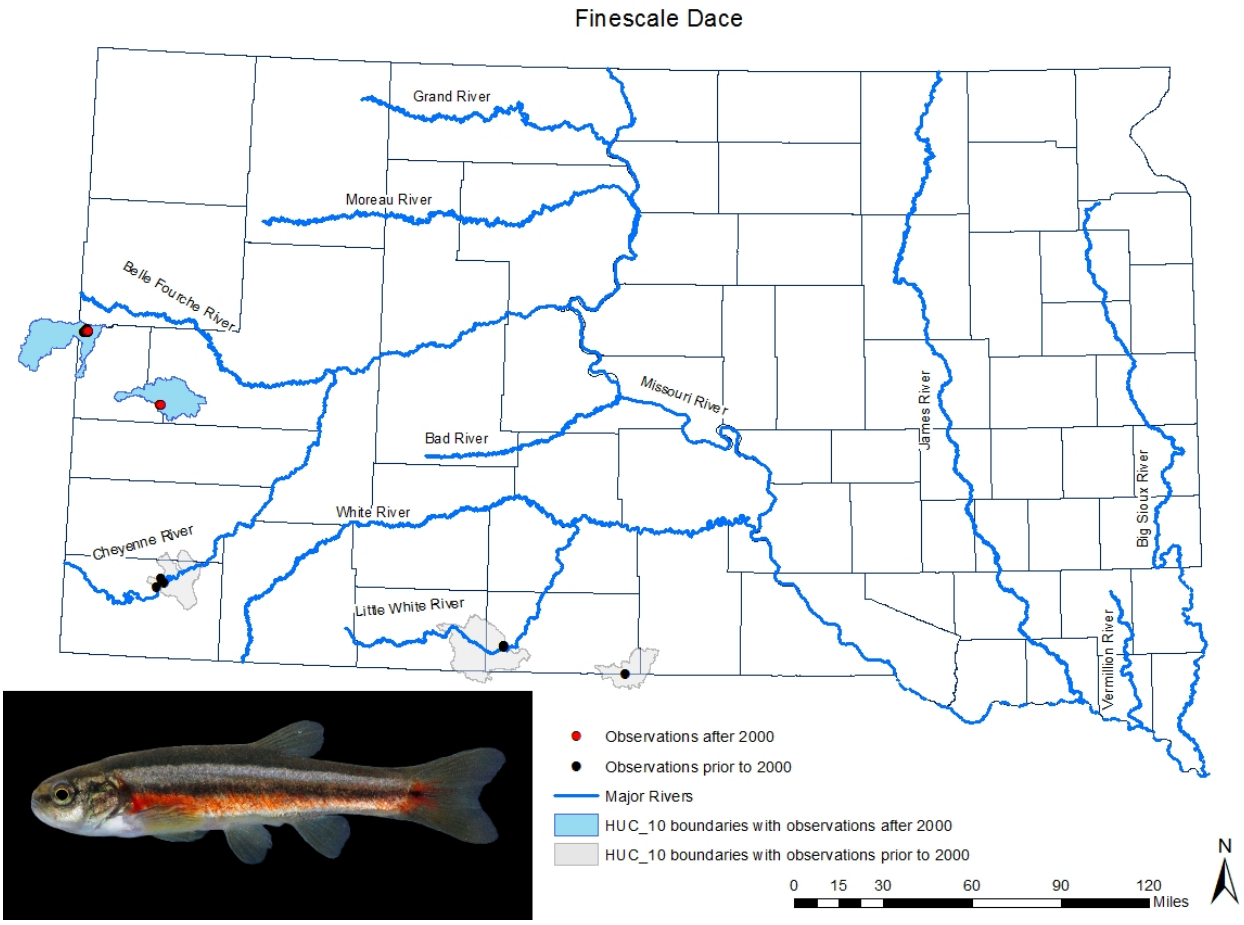
Habitat for Finescale Dace may be lentic or lotic. However, Finescale Dace prefer cool, headwaters streams and ponds with dense aquatic vegetation. Finescale Dace are confined to

cool spring waters and are commonly associated with beaver dams and Northern Redbelly Dace (Stasiak 1977; Baxter and Stone 1995; Isaak et al. 2003).

Distribution within the state:

Within South Dakota, Finescale Dace are found west of the Missouri River and have been reported from tributaries of the Cheyenne (Beaver Creek HUC_1012010903; Dalton Lake-Upper Elk Creek HUC_1012011106), Belle Fourche (Cox Lake, Upper Redwater Creek HUC_1012020303), Little White (Spring Creek HUC_1014020303), and Keya Paha (Sand Creek HUC_1015000603) river drainages, which are on the southern periphery of the geographic range for Finescale Dace (Bailey and Allum 1962; Cunningham and Olson 1994; Olson 1998; Felts 2013). Since 2000, Finescale Dace have been reported in low numbers from Dalton Lake-Elk Creek tributary and a large population from Cox and Mud lakes near Spearfish.

In the fall, 2004, South Dakota Game, Fish and Parks conducted a lake renovation on Mud Lake, near Spearfish to reintroduce Finescale Dace. A rotenone treatment was applied to remove green sunfish and, in the fall of 2005, 50 Finescale Dace were stocked from Cox Lake into Mud Lake (Shearer and Erickson 2005). Mark-recapture population estimates in 2014 indicated 7,022 adult Finescale Dace in Mud Lake, with 95% confidence limits of 5,152 and 9,407 fish (Amiotte et al. 2015).



Conservation / Management Considerations:

Finescale Dace have been impacted by reductions in numbers of beaver dams, ecosystem alteration/habitat degradation, and the introduction of predatory fishes (i.e. green sunfish, trout). Finescale Dace are extremely vulnerable to climate change, due to their need for a specific habitat type (Stasiak and Cunningham 2006; SDGFP 2006, 2014a).

Monitoring and research needs will focus on continuing to expand current monitoring efforts, assessing population dynamics and genetic variation/integrity, identifying conservation opportunity areas and limiting factors, and investigating trap and transfer techniques for potential reintroduction techniques into identified suitable habitats.

Conservation Efforts in South Dakota:

Conservation efforts will focus on expanding partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce/limit soil erosion and nutrient/pesticide runoff (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the Black Hills Fisheries Management Plan to standardize survey and sampling protocols and investigate additional trap and transfer stocking techniques for Finescale Dace into suitable habitats (SDGFP 2014b).

State Wildlife Grant Accomplishments:

- Evaluation of a decision support tool to help support fish species at risk in South Dakota streams– T-9 (2006). Aquatic GAP is a tool for predicting where aquatic species might find suitable habitat. This study's goal was to test the accuracy of aquatic GAP by surveying streams and watersheds with historic occurrences of rare fish species and wetlands with potential habitat for them.
- Glacial relict fishes in spring fed headwater streams of South Dakota's Sandhills region – T-2-8 (2013). The Sandhills area of South Dakota is a unique ecosystem that is home to many rare species, relict of Pleistocene Glaciation. This research assessed the current distribution, status and habitat requirements for these glacial relict fishes.
- Small stream fish ladders for steel culverts– T-67 (2016). Assessing the use of fish ladder designs to estimate the increase in passability of round galvanized steel culverts in natural streams in both eastern and western South Dakota.

Recovery Criteria/Goals

Given that Finescale Dace have limited natural dispersal abilities and are restricted to cool spring waters, the primary recovery goals for the management of the population of Finescale Dace is to maintain existing populations and protect the habitat within watersheds where Finescale Dace are currently found. Specific management strategies are to work with fisheries biologists to standardize sampling efforts in coordination with lake surveys in the Black Hills and explore trap and transfer techniques from the Mud/Cox Lake broodstock population for future reintroductions. Additional management strategies will involve working with private land and habitat biologists to develop site specific best management practices to ensure habitat protection. Additionally, goals for delisting would include 50% of

HUC_10 boundaries previously occupied to maintain current status (Post-2000) and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

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Dates of Other Reviews, if appropriate: December 14, 2017

References:

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SUMMARY OF UPDATES IN 2020:

In coordination with the West River and Black Hills Fisheries Management Area Strategic Plans and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for both fish management areas have identified waters to sample for nongame species through the 2023 sampling season which will include historic Finescale Dace waterbodies.

STATE T&E SPECIES STATUS REVIEW

Species Name: Longnose Sucker, *Catostomus catostomus*

South Dakota Status, including legal status and special listings:

- State threatened, (SD Administrative Rule 41:10:02:06. List of threatened fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S1, (critically imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G5 (secure, although it may be rare in some portions of the range); last reviewed 26 October 2011 (NatureServe 2014).

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Longnose Sucker are widespread and secure throughout majority of their range, and listed as critically imperiled in South Dakota. The justification for including Longnose Sucker on the first list of state threatened (16 March 1978) fish is unknown but was presumably due to the threat of mining and logging practices, possible climatic conditions and fragmentation from interconnecting waterways of suitable habitat. Based on the presumed limited area of occupancy, separation from other populations, and limited potential for range expansions; Longnose Sucker are extremely vulnerable to extirpation with limited ability for recolonization and continued listed as a state threatened species is recommended.

Description, biology and life history:

Longnose Sucker are elongate, cylindrical suckers with long pointed snouts. They range in color from gray to black with a light colored underside. Breeding males have a wide, crimson band on the side that extends onto the snout and tubercles on the head, anal fin and caudal fin. Lips fleshy, heavily papillose. Lower lip completely divided by ventral notch forming an acute angle (Bailey and Allum 1962; Bertrand et al. in prep.). Longnose Sucker spawn in the spring in lakes or shallow slow-flowing streams over gravel substrates (SDGFP 2006). Eggs hatch in 8-14 days. Longnose Sucker become sexually mature at 2-3 years of age and are believed to be long-lived, as marked adult fish have been observed returning for as many as five successive years to spawn (Baxter and Stone 1995; SDGFP 2006). The diet consists primarily of plant material but will also include small crustaceans, snails and insect larvae (SDGFP 2006).

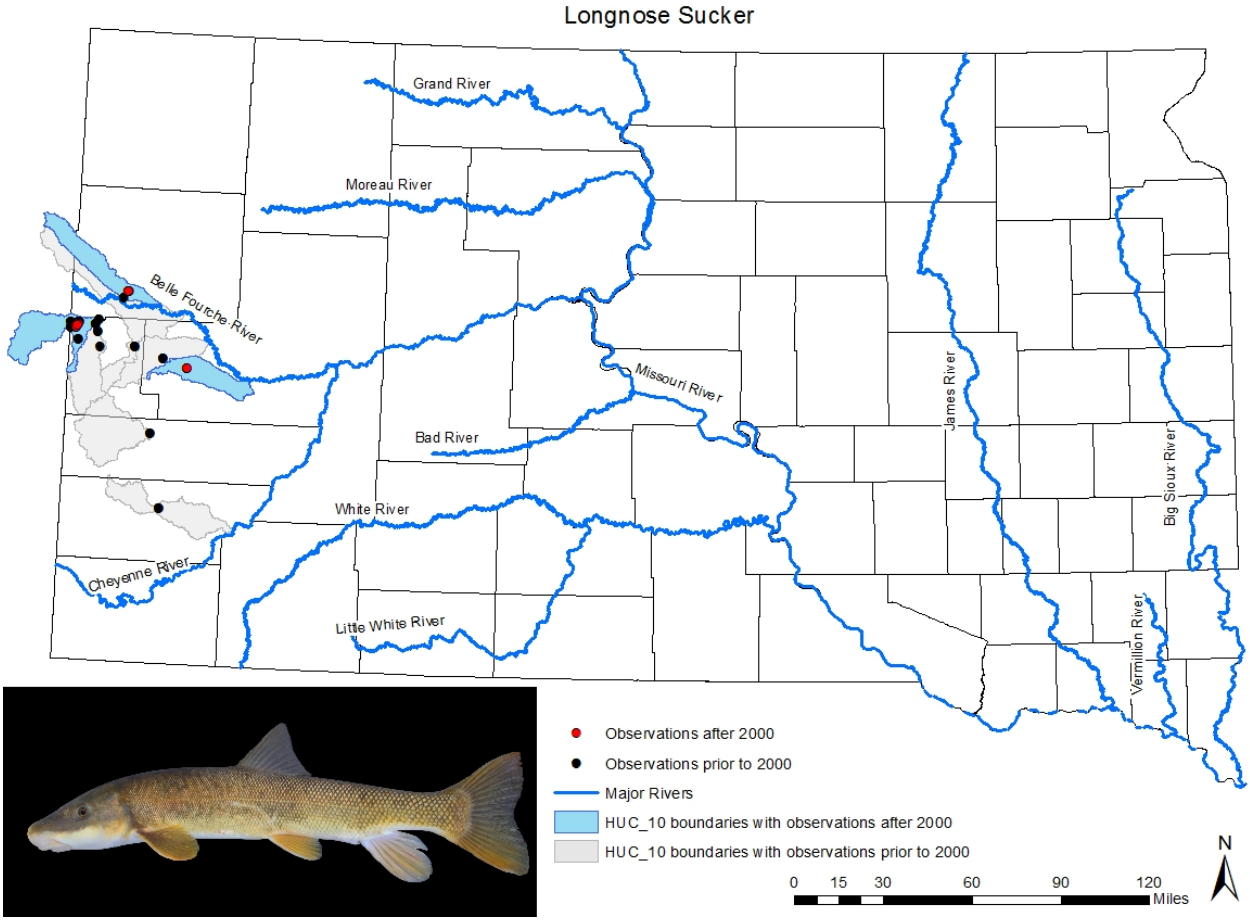
Habitat:

Habitat for Longnose Sucker may be lentic or lotic. Longnose Sucker prefer cool, clear streams and lakes with little to no turbidity and sand or gravel substrates (Baxter and Stone 1995; SDGFP 2006).

Distribution within the state:

Longnose Sucker have been reported from a few cool, spring-fed tributaries of the Belle Fourche (Middle Belle Fourche River HUC_1012020205; Bear Butte Creek

HUC_1012020207; Spearfish Creek HUC_1012020302; Upper Rapid Creek HUC_1012011001; Upper Redwater Creek HUC_1012020303; Belle Fourche Reservoir-Owl Creek HUC_1012020202; Alkali Creek HUC_1012020209) and Cheyenne (French Creek HUC_1012010906) Rivers in the northern Black Hills, which is on the southern periphery of its geographic range (Bailey and Allum 1962; Stewart and Thilenius 1964; Chapman 1989; Olson 1998; Newman 1999). Since 2000, reported Longnose Sucker have been limited to Alkali, Crow, Redwater, and Spearfish creeks, all tributaries to the Belle Fourche River and Belle Fourche Reservoir (Bertrand 2010; Schultz 2011; Conklin and Bergstedt 2012).



Conservation / Management Considerations:

Longnose Suckers have been impacted by ecosystem alteration/habitat degradation. Longnose Suckers could also be threatened by mining, logging, road construction, and other activities near streams that may affect water quality and temperature. Longnose Sucker are highly vulnerable to climate change due to their need for a specific habitat type (SDGFP 2006, 2014a).

Monitoring and research needs will focus on determining baseline data and status through monitoring efforts, identifying conservation opportunity areas and limiting factors, and researching seasonal movements and recolonization capabilities.

Conservation Efforts in South Dakota:

Conservation efforts will focus on increasing partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce/limit soil erosion and nutrient/pesticide runoff and restoring and maintaining habitat and stream connectivity (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the Black Hills Fisheries Management Plan to standardize survey and sampling protocols and investigate trap and transfer techniques for Longnose Sucker into suitable habitats (SDGFP 2014b).

State Wildlife Grant Accomplishments:

- Evaluation of a decision support tool to help support fish species at risk in South Dakota streams– T-9 (2006). Aquatic GAP is a tool for predicting where aquatic species might find suitable habitat. This study's goal was to test the accuracy of aquatic GAP by surveying streams and watersheds with historic occurrences of rare fish species and wetlands with potential habitat for them.
- Small stream fish ladders for steel culverts– T-67 (2016). Assessing the use of fish ladder designs to estimate the increase in passability of round galvanized steel culverts in natural streams in both eastern and western South Dakota.
- Updating and evaluating the distribution, density, and movement patterns of mountain sucker (*Catostomus platyrhynchus*) in South Dakota – T-63 (2020). Previous studies have shown that the Mountain Sucker occupies less than one-third of its historical distribution in the Black Hills of South Dakota. This study will not only update the distribution of Mountain Sucker but also the Longnose Sucker in the Black Hills.

Recovery Criteria/Goals

Given that Longnose Sucker have limited natural dispersal abilities and are confined to cool spring-fed waters, the primary recovery goal for the management of the population of Longnose Sucker is to maintain existing populations and distribution, and protect the habitat within watersheds where Longnose Sucker are found. The specific goals of the management of Longnose Sucker are to work with fisheries biologists to standardize stream surveys to monitor populations and work with private land and habitat biologists to develop site specific best management practices to ensure habitat protection. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current status (Post 2000), and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:

Jake Davis, Senior Biologist, SDGFP, Rapid City
Seth Fopma, Ph.D. Graduate Research Assistant, SDSU, Brookings
Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Date Review Completed: June 10, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

References:

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South Dakota Department of Game, Fish and Parks. 2019. Fisheries and aquatic resources adaptive management system 2019-2023: Northeast Fisheries Management Area Strategic Plan. South Dakota Department of Game, Fish and Parks, Pierre.

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SUMMARY OF UPDATES IN 2020:

In coordination with the Black Hills Fisheries Management Area Strategic Plan and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for the Black Hills Fisheries Management Area have identified waters to sample for nongame species through the 2023 sampling season which will include historic Longnose Sucker waterbodies.

STATE T&E SPECIES STATUS REVIEW

Species Name: Northern Pearl Dace, *Margariscus nachtriebi*

South Dakota Status, including legal status and special listings:

- State threatened, (SD Administrative Rule 41:10:02:06. List of threatened fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S2, (imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G5 (secure, although it may be rare in some portions of the range); last reviewed 18 January 2013 (NatureServe 2016)
- USDA Forest Service, Region 2, Rocky Mountain Region sensitive species

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Northern Pearl Dace are listed as secure throughout their range, however, listed as imperiled in South Dakota (NatureServe 2016). The justification for including Northern Pearl Dace on the first list of state threatened (16 March 1978) fish is unknown but was presumably due to the need for specific cool, clear headwater habitats and limited survey efforts. Northern Pearl Dace are extremely vulnerable to extirpation with limited ability for recolonization and continued listing as state threatened species is recommended.

Description, biology and life history:

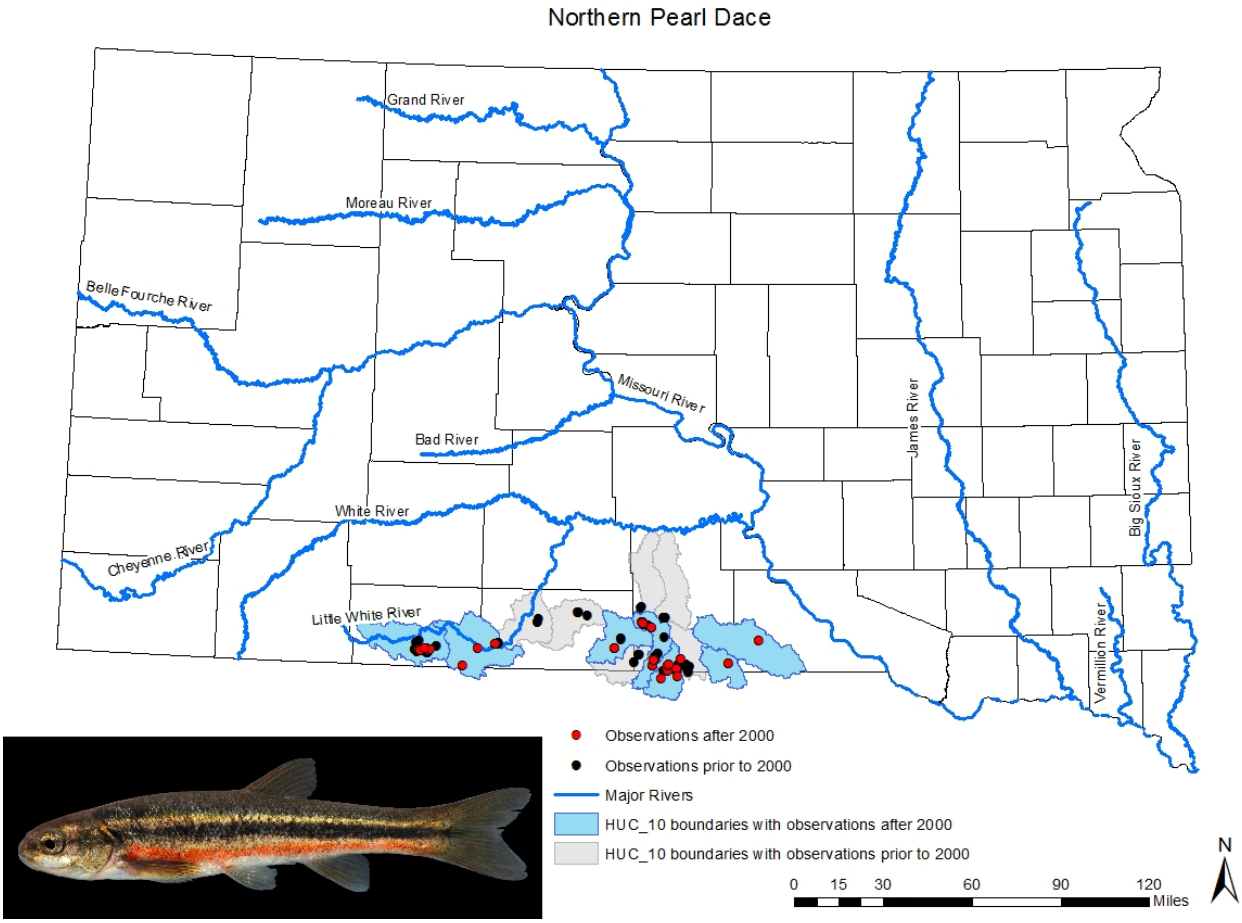
The Northern Pearl Dace is a small fish that is dark olive colored on the back with lighter sides and white belly; a dark lateral band is sometimes present but more distinct on younger individuals (SDGFP 2006; NGPC 2010). Northern Pearl Dace lack a black spot on the anterior portion of the dorsal fin base. The mouth is small and slightly subterminal, rarely reaching past the anterior origin of the eye. Nuptial males have orange-red sides and belly below the dark lateral bad (Bertrand et al. *in prep.*). Little is known about the reproductive biology or life history for Northern Pearl Dace in South Dakota; however it is presumed that they spawn in the spring from April to early June, over gravel substrates (Baxter and Stone 1995; SDGFP 2006). Most individuals live 3 to 4 years (SDGFP 2006). The diet includes copepods, chironomids, molluscs, and other invertebrates along with filamentous algae (Scott and Crossman 1973; Baxter and Stone 1995; SDGFP 2006).

Habitat:

Habitat for Northern Pearl Dace may be lentic or lotic. However, Northern Pearl Dace prefers cool, clear headwater streams, ponds, and small lakes with gravel substrates. Northern Pearl Dace have also been found in association with beaver ponds, and well vegetated stream banks, abundant macrophyte growth and undercut banks (Scott and Crossman 1973; SDGFP 2006; NGPC 2010).

Distribution within the state:

Within South Dakota, Northern Pearl Dace are found west of the Missouri River and have been reported from tributaries of the White, Niobrara and Keya Paha river drainages, which are on the southern periphery of the geographic range for Northern Pearl Dace (Bailey and Allum 1962; Cunningham and Olson 1994; Cunningham et al. 1995; Felts 2013; Bertrand et al. *in prep*.). Since 2000, Northern Pearl Dace have been reported in low numbers from the Little White and Keya Paha river tributaries (Felts 2013; Bertrand et al. *in prep.*).



Conservation / Management Considerations:

Northern Pearl Dace have been impacted by reductions in numbers of beaver dams, ecosystem alteration/habitat degradation, impoundments, channelization, pond drainage, conversion of land to agriculture, and pollution/pesticides/herbicides. Northern Pearl Dace are extremely vulnerable to climate change, due to their need for a specific habitat type (SDGFP 2006, 2014a).

Monitoring and research needs will focus on continuing to expand current monitoring efforts, assessing population dynamics and genetic variation/integrity, identifying conservation opportunity areas and limiting factors, and researching seasonal movements and recolonization capabilities.

Conservation Efforts in South Dakota:

Conservation efforts will focus on preserving suitable habitat, expanding partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce/limit soil erosion and nutrient/pesticide runoff (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the West River Fisheries Management Plans to standardize survey and sampling protocols and examine population status and trends for Northern Pearl Dace (SDGFP 2014b).

State Wildlife Grant Accomplishments:

- Evaluation of a decision support tool to help support fish species at risk in South Dakota streams– T-9 (2006). Aquatic GAP is a tool for predicting where aquatic species might find suitable habitat. This study's goal was to test the accuracy of aquatic GAP by surveying streams and watersheds with historic occurrences of rare fish species and wetlands with potential habitat for them.
- Glacial relict fishes in spring fed headwater streams of South Dakota's Sandhills region – T-2-8 (2013). The Sandhills area of South Dakota is a unique ecosystem that is home to many rare species, relict of Pleistocene Glaciation. This research assessed the current distribution, status and habitat requirements for these glacial relict fishes.
- Small stream fish ladders for steel culverts– T-67 (2016). Assessing the use of fish ladder designs to estimate the increase in passability of round galvanized steel culverts in natural streams in both eastern and western South Dakota.

Recovery Criteria/Goals

Given that Northern Pearl Dace have limited natural dispersal abilities and are restricted to spring-fed waters, the primary recovery goals for the management of the population of Northern Pearl Dace are to maintain existing populations and protect the habitat within watersheds where Northern Pearl Dace are currently found. Specific strategies of the management of Northern Pearl Dace are to work with fisheries biologists to standardize sampling efforts in coordination with increased river/stream surveys and work with private land and habitat biologists to develop site specific best management practices to ensure habitat protection. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current status (Post-2000) and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:

Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Date Review Completed: June 10, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017
References:

Bailey, R. M. and M. O. Allum. 1962. Fishes of South Dakota. Misc. Publ., Mus. Of Zoology, Univ. of Michigan, No. 119. 131 pp.

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Bertrand et al. In preparation. *Fishes of the Dakotas*

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Felts, E. 2013. Ecology of glacial relict fishes in South Dakota's Sandhills region. M.S. Thesis. South Dakota State University, Brookings, South Dakota.
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South Dakota Department of Game, Fish and Parks. 2019. Fisheries and aquatic resources adaptive management system 2019-2023: Northeast Fisheries Management Area Strategic Plan. South Dakota Department of Game, Fish and Parks, Pierre.

SUMMARY OF UPDATES IN 2020:

In coordination with the West River Fisheries Management Area Strategic Plan and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for the West River Fisheries Management Area have identified waters to sample for nongame species through the 2023 sampling season which will include historic Northern Pearl Dace waterbodies.

STATE T&E SPECIES STATUS REVIEW

Species Name: Northern Redbelly Dace, *Chrosomus eos*

South Dakota Status, including legal status and special listings:

- State threatened, (SD Administrative Rule 41:10:02:06. List of threatened fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S2, (imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G5 (secure, although it may be rare in some portions of the range); last reviewed 3 November 2011 (NatureServe 2016)
- USDA Forest Service, Region 1, Dakota Prairie Grassland, 2011 aquatic sensitive species
- USDA Forest Service, Region 2, Rocky Mountain Region sensitive species

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Northern Redbelly Dace are listed as secure throughout their range, however, listed as imperiled in South Dakota (NatureServe 2016). The justification for including Northern Redbelly Dace on the first list of state threatened (16 March 1978) fish is unknown but was presumably due to the need for specific spring-fed habitats and fragmentation from interconnecting waterways of suitable habitat. Northern Redbelly Dace are extremely vulnerable to extirpation with limited ability for recolonization and continued listing as state threatened species is recommended.

Description, biology and life history:

The Northern Redbelly Dace is a small, dark olive to silvery minnow with two dark lateral stripes separated by an iridescent, silvery band on the sides. In breeding males, the silvery belly is reddish in color with yellow fins (NGPC 2010). The mouth is upturned; with the chin anterior to the upper lip (reaching more than halfway to the eye) and the snout is rounded (Bertrand et al. *in prep*). Little is known about the reproductive biology or life history for Northern Redbelly Dace in South Dakota; however it is presumed that they spawn between late April and June over aquatic vegetation. Eggs hatch within 8-10 days (Faber 1984; SDGFP 2006). Most individuals live 3 to 4 years (NGPC 2010). The diet includes mainly diatoms and filamentous algae, also zooplankton, invertebrates and plant material (SDGFP 2006; NGPC 2010).

Habitat:

Habitat for Northern Redbelly Dace may be lentic or lotic. However, Northern Redbelly Dace prefer spring-fed streams with adequate vegetation; slow to moderate current, and silt or sand substrates. Habitat also includes boggy lakes, ponds, beaver ponds and pools of headwater streams (Lee et al. 1980; SDGFP 2006; NGPC 2010).

Distribution within the state:

Within South Dakota, Northern Redbelly Dace are found primarily east of the Missouri River and have been reported from tributaries of the Missouri, Big Sioux, Minnesota, White, Niobrara and Keya Paha river drainages which are on the southern periphery of the geographic range for Northern Redbelly Dace (Bailey and Allum 1962; McCoy and Hales 1974; Cunningham and Olson 1994; Dieterman and Berry 1994; Cunningham et al. 1995; Cunningham 1999; Heakin et al. 2003; Felts 2013; Bertrand et al. *in prep*.). Since 2000, Northern Redbelly Dace have been reported in low numbers from the Big Sioux, Minnesota, Keya Paha, and Lower Missouri river tributaries (Heakin et al. 2003; Felts 2013; Bertrand et al. *in prep.*).

Conservation / Management Considerations:

Northern Redbelly Dace have been impacted by reductions in numbers of beaver dams, ecosystem alteration/habitat degradation, mining, logging, construction of roads, heavy grazing, and stream channelization. Northern Redbelly Dace are extremely vulnerable to climate change, due to their need for a specific habitat type (SDGFP 2006, 2014a).

Monitoring and research needs will focus on continuing to expand current monitoring efforts, assessing population dynamics and genetic variation/integrity, identifying conservation opportunity conservation opportunity areas and limiting factors, and researching seasonal movements and recolonization capabilities.

Conservation Efforts in South Dakota:

Conservation efforts will focus on expanding partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce/limit soil erosion and nutrient/pesticide runoff (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the East River, West River, and Missouri River Fisheries Management Plans to standardize survey and sampling protocols and examine population status and trends for Northern Redbelly Dace (SDGFP 2014b, 2014c, 2014d).

State Wildlife Grant Accomplishments:

- Evaluation of a decision support tool to help support fish species at risk in South Dakota streams– T-9 (2006). Aquatic GAP is a tool for predicting where aquatic species might find suitable habitat. This study's goal was to test the accuracy of aquatic GAP by surveying streams and watersheds with historic occurrences of rare fish species and wetlands with potential habitat for them.
- Comprehensive aquatic survey of the Minnesota River tributaries – T-17 (2008). This unique aquatic ecosystem in northeastern South Dakota was sampled for fish, mussels, and aquatic invertebrates to identify species composition, with an emphasis on identifying sites with rare aquatic species.
- Glacial relict fishes in spring fed headwater streams of South Dakota's Sandhills region – T-2-8 (2013). The Sandhills area of South Dakota is a unique ecosystem that is home to many rare species, relict of Pleistocene Glaciation. This research assessed the current distribution, status and habitat requirements for these glacial relict fishes.
- Small stream fish ladders for steel culverts– T-67 (2016). Assessing the use of fish ladder designs to estimate the increase in passability of round galvanized steel culverts in natural streams in both eastern and western South Dakota.
- Evaluation of the James River Conservation Reserve Enhancement Program (CREP) of South Dakota– T-59 (2018). The CREP seeks to enhance natural resource conservation programs in selected watersheds nationwide to address specific regional conservation priorities by attempting to alleviate agriculturally related environmental concerns. This project assesses the effects of CREP on water quality, aquatic habitats, fish assemblages, and avifauna response to the James River CREP.

Recovery Criteria/Goals

Given that Northern Redbelly Dace have limited natural dispersal abilities and are restricted to spring-fed waters, the primary recovery goals for the management of the population of

Northern Redbelly Dace are to maintain existing populations and protect the habitat within watersheds where Northern Redbelly Dace are currently found. Specific strategies of the management of Northern Redbelly Dace are to work with fisheries biologists to standardize sampling efforts in coordination with increased river/stream surveys and work with private land and habitat biologists to develop site specific best management practices to ensure habitat protection. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current status (Post-2000) and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:
Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Date Review Completed: June 10, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

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South Dakota Department of Game, Fish and Parks (SDGFP). 2014c. Fisheries and aquatic resources adaptive management system 2014-2018: West River Fisheries Management Area Strategic Plan. South Dakota Department of Game, Fish and Parks, Pierre.
South Dakota Department of Game, Fish and Parks (SDGFP). 2014d. Fisheries and aquatic resources adaptive management system 2014-2018: Missouri River Fisheries Management Area Strategic Plan. South Dakota Department of Game, Fish and Parks, Pierre.
South Dakota Department of Game, Fish and Parks. 2019. Fisheries and aquatic resources adaptive management system 2019-2023: Northeast Fisheries Management Area Strategic Plan. South Dakota Department of Game, Fish and Parks, Pierre.

SUMMARY OF UPDATES IN 2020:

In coordination with the East River, West River and Missouri River Fisheries Management Area Strategic Plans and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for all fish management areas have identified waters to sample for nongame species through the 2023 sampling season which will include historic Northern Redbelly Dace waterbodies.

STATE T&E SPECIES STATUS REVIEW

Species Name: Pallid Sturgeon, *Scaphirhynchus albus*

South Dakota Status, including legal status and special listings:

- State endangered, (SD Administrative Rule 41:10:02:05. List of endangered fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S1, (critically imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- Federal endangered, (55 FR 36641-36647). Federal recovery plan finalized in 1993 (USFWS 1993) and a revised recovery plan was finalized in 2014 (USFWS 2014).
- NatureServe global rank G2 (imperiled, large range and area of occupancy in larger channels of the Mississippi-Missouri river system and Atchafalaya River; range much reduced by dams in the upper Missouri River; habitat changes and barriers have resulted in limited natural recruitment and continuing declines in wild populations in the Missouri River basin; last reviewed 13 November 2007).

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Pallid Sturgeon are listed as imperiled and rare throughout their range, and listed as critically imperiled in South Dakota. The justification for including Pallid Sturgeon on the first list of state endangered (16 March 1978) fish is unknown. Limiting factors include activities which affect in-river connectivity and the natural form, function, and hydrologic processes of rivers; illegal harvest; impaired water quality and quantity; entrainment; and life history attributes of the species (i.e. delayed sexual maturity, females do not spawn every year and larval drift requirements). Despite increased sampling efforts and improved species status within the lower portions of their range (Mississippi and Atchafalaya rivers), data regarding natural recruitment, mortality, habitat use, and abundance remain limited (USFWS 2014). And without supplementation efforts, the species faces local extirpation within several reaches, therefore continued listing as a state endangered species is recommended.

Description, biology and life history:

The Pallid Sturgeon is a primitive fish with a cartilaginous skeleton. Pallid Sturgeon have long, slender grey-white body with a flattened shovel-shaped snout. Pallid Sturgeon have embedded scutes or bony plates that armor their dorsal surface and sides but have naked or smooth bellies. Origins of fringed inner chin barbels are half as long and anterior to origins of two outer barbels (Bertrand et al. in prep.). Pallid Sturgeon are similar in appearance to the more common Shovelnose Sturgeon. Pallid Sturgeon spawn from June through August with fecundity related to body size (40,000-150,000 eggs) (Keenlyne et al. 1992; SDGFP 2006a; George et al. 2012). Pallid Sturgeon can be long-lived, with females reaching sexual maturity later than males (Keenlyne and Jenkins 1993). Sexual maturity can vary between hatchery-reared and wild fish and is dependent on local conditions. For wild fish, estimated age at first reproduction was 15-20 years for females and approximately 5 years for males (Keenlyne and Jenkins 1993). Hatchery-reared Pallid Sturgeon attained sexual maturity

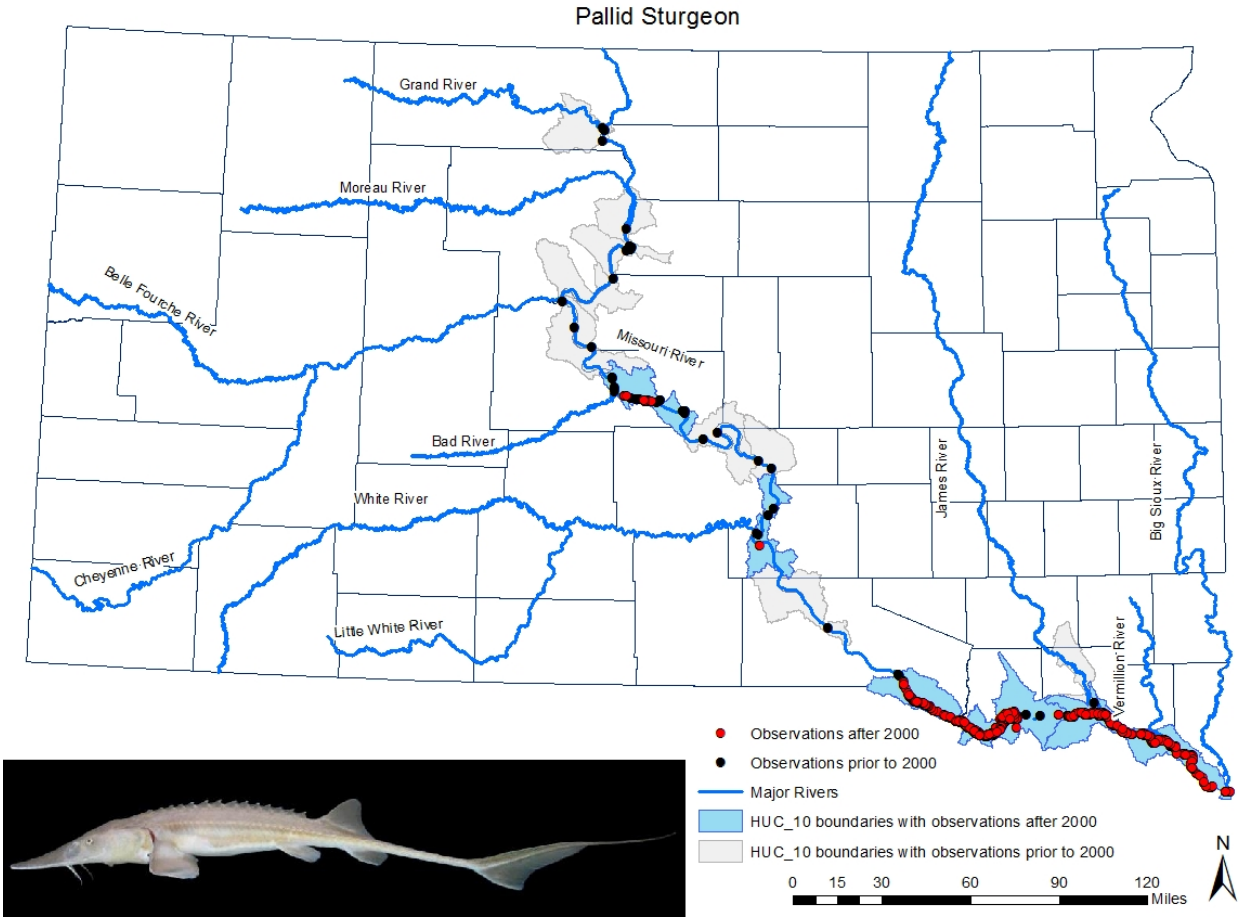
between 6-9 years (Steffensen 2012; USFWS 2014). Females do not spawn each year, spawning every 2-3 years (Kallemeyn 1983; USFWS 2014). Pallid Sturgeon diets are generally composed of fish and aquatic insect larvae (SDGFP 2006a; USFWS 2014).

Habitat:

Habitat for the Pallid Sturgeon is lotic, as they are a bottom-oriented, large river fish inhabiting the Missouri and Mississippi rivers. The Pallid Sturgeon evolved and is adapted to the pre-development habitat conditions that historically existed in these rivers. These conditions generally can be described as large, free-flowing, and turbid rivers with a diverse assemblage of dynamic physical habitats (Pflieger 1975; Kallemeyn 1983; USFWS 2014).

Distribution within the state:

Pallid Sturgeon historically were reported throughout the Missouri River in South Dakota, which is within the northcentral part of the range (Bailey and Allum 1962; SDGFP 2006a; USFWS 2014). Since 2000, Pallid Sturgeon have been reported in low relative numbers from the Missouri River between Fort Randall and Gavins Point dams and downstream from Gavins Point Dam (Shuman et al. 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2013; Shuman and Klumb 2012; Stukel et al. 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014; Pierce et al. 2014; USFWS 2014; Bertrand et al. in prep.). In 2004, a single Pallid Sturgeon was netted during Paddlefish surveys from Lake Francis Case (Bertrand et al. in prep.). In 2006, USFWS and SDGFP staff participated in a collaborative gillnetting effort to search for remnant Pallid Sturgeon for hatchery broodstock in Lake Sharpe. Subsequent sampling efforts on Lake Sharpe have not produced any Pallid Sturgeon. The majority of Pallid Sturgeon collected are of hatchery origin or translocated fish that were used for broodstock production.



Conservation / Management Considerations:

Pallid Sturgeon have been impacted by large river habitat alterations, including river channelization, impoundment, and altered flow regimes, water quality (pollution/pesticides/herbicides), entrainment, and hybridization with Shovelnose Sturgeon. It is also suggested that Pallid Sturgeon are moderately vulnerable to climate change (SDGFP 2014a; USFWS 1993, 2014). The effects from dams (i.e. altered hydrographs and temperature profiles, altered ecologic processes, habitat fragmentation, and conversion of riverine reaches to reservoirs) may be the single greatest factors affecting Pallid Sturgeon in South Dakota.

Monitoring and research needs should continue to expand current monitoring efforts, while developing standardized protocols for monitoring all life history stages of Pallid Sturgeon. Additionally, research needs will evaluate the role of sediment transport and discharge on the creation and maintenance of habitats for all life stages, identifying limiting factors associated with natural recruitment, research spawning and potential natural recruitment on the James River and below Gavins Point Dam and researching seasonal movements (SDGFP 2014a).

Conservation Efforts in South Dakota:

Past:

More than 90,000 acres of land were transferred from the U.S. Army Corps of Engineers (USACE) to the State of South Dakota as a result of the Water Resources Development Act of 1999. Land transferred to the State of South Dakota is managed by Wildlife and/or Parks and Recreation divisions of South Dakota Department of Game, Fish and Parks (SDGFP). Two products resulted from SDGFP's expanded role in endangered species management along the Missouri River; 1) an interagency Memorandum of Agreement (MOA) regarding endangered species protection and recovery along the river, and 2) a state management plan for the Pallid Sturgeon (SDGFP 2006b).

The first 5-year Missouri River endangered species interagency MOA was finalized in 2001 and included specific and shared commitments of 3 agencies; SDGFP, USACE, and the U.S. Fish and Wildlife Service (USFWS). Subsequent MOAs included the National Park Service (NPS) in addition to the original 3 agencies. MOA accomplishments by all participants have been summarized by SDGFP and include such activities as biological surveys and production, specific protocols or policies developed to help implement the MOA, outreach and educational efforts related to Missouri River endangered species, law enforcement efforts, and relevant Section 7 consultations among federal agencies.

As SDGFP assumed responsibility for additional ownership and management of lands along the Missouri River, concern increased about the possibility of needing permission for incidental take. State management plans were prepared for the 4 species covered by the MOA as part of an agency intention to submit a habitat conservation plan to allow incidental take of federal listed species. Management plans were prepared for the Pallid Sturgeon and Bald Eagle. Piping Plover and Interior Least Tern were covered in one plan. The HCP was not formally pursued.

The state management plan (SDGFP 2006b) listed the following components of Pallid Sturgeon recovery in South Dakota:

1. Participate in a river-wide Pallid Sturgeon monitoring projected funded by the USACE.
2. Broodstock recovery from Lake Sharpe for augmentation
3. Pallid Sturgeon stocking
4. Participate in the Missouri River Natural Resources Committee, Mississippi Interstate Cooperative Resources Association, Great Plains Fisheries Workers Association, Missouri River Restoration Program/Task Force, a part of the Missouri River Trust Missouri River Association of States and tribes (MORAST), Upper and Middle Basin Workgroups and in development of the Missouri River Recovery Implementation Committee (MRRIC).
5. Provide input on the Corps' Annual Operating Plan (AOP)
6. Increase public knowledge and interest in Pallid Sturgeon

Ongoing:

As of October 2015, a new 5-year Missouri River Endangered Species MOA went into effect. The purpose of the MOA is to provide guidance and specific agency commitments for

management, protection, and recovery of the Least Tern, Piping Plover, Pallid Sturgeon, and Bald Eagle along the Missouri River for the 4 signatory agencies (SDGFP, USFWS, USACE, and NPS). It is the intent of the signatory agencies to cooperatively commit to protect and manage Pallid Sturgeon through law enforcement and public outreach and their habitat by minimizing threats from existing and proposed human activities.

The Pallid Sturgeon Population Assessment team was assembled to initiate a comprehensive monitoring plan designed to assess survival, movement, distribution, and habitat use of wild and hatchery reared (stocked) Pallid Sturgeon. The Population Assessment Team consists of field crews from several state and federal agencies. The Missouri River was divided into 14 sampling segments for this project. These segments were designated by commonalities in habitat conditions. Each field crew is responsible for sampling one or two segments of the river using standardized methods. Habitat classification, gear deployment, and reporting are all guided by a set of standard operation procedures produced by the team (Welker 2012).

Since 2005, the SDGFP Sturgeon Crew has monitored Segment 7 (of 14) on the Missouri River for Pallid Sturgeon and other native fish populations. This Segment is located between Gavins Point Dam and Ponca State Park, NE (miles 811 to 752). Segment 7 coincides with the lower (59-mile) reach of Missouri National Recreational River.

In addition SDGFP continues to be an active partner and participant in the Missouri River Natural Resources Committee, Mississippi Interstate Cooperative Resources Association, Great Plains Fisheries Workers Association, MORAST, and MRRIC.

Future:
SDGFP intends to continue its participation in the multiagency Missouri River endangered species MOA. SDGFP further intends to assist with new recovery goals established in the revised Pallid Sturgeon Recovery Plan (USFWS 2014).

Additionally, conservation efforts will focus on increasing partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce/limit soil erosion and nutrient/pesticide runoff, maintaining/restoring natural hydrology and stream connectivity when possible, developing captive breeding and stocking programs, and river corridor habitat protection through conservation programs/incentives or purchase (SDGFP 2006b, 2014a). In addition, objectives and strategies will follow those outlined within the Missouri River Fisheries Management Plan to incorporate Pallid Sturgeon population assessment program information into survey and management strategies (SDGFP 2014b).

State Wildlife Grant Accomplishments:

- Development and application of a habitat assessment tool for juvenile Pallid Sturgeon in the upper Missouri River – T-24 (2008). This study was designed to provide a better understanding of the habitat requirements and food habits of juvenile Pallid Sturgeon in the Missouri River.
- Evaluation of the James River Conservation Reserve Enhancement Program (CREP) of South Dakota– T-59 (2017). The CREP seeks to enhance natural resource conservation

programs in selected watersheds nationwide to address specific regional conservation priorities by attempting to alleviate agriculturally related environmental concerns. This project assesses the effects of CREP on water quality, aquatic habitats, fish assemblages, and avifauna response to the James River CREP.

- Population characteristics, movement, and habitat use of Shovelnose Sturgeon in Lake Sharpe, South Dakota- T-72 (2017-ongoing). This study was designed to provide a better understanding of the population demographics of Shovelnose Sturgeon in Lake Sharpe, however has the potential to sample Pallid Sturgeon as well.

Recovery Criteria/Goals

SDGFP intend to continue its participation in the multiagency Missouri River endangered species MOA. Despite having state specific management actions in the state management plan, South Dakota will cooperate with the USFWS in meeting recovery goals described in the revised federal recovery plan, because this revised federal plan will reflect the most current scientific and management information (SDGFP 2006b; USFWS 2014).

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:

Landon Pierce, Fish and Wildlife Biologist, USFWS, Great Plains Fish and Wildlife Conservation Office, Pierre

Sam Stukel, Fish and Wildlife Biologist, USFWS, Gavins Point National Fish Hatchery, Yankton

Nathan Loecker, Fisheries Biologist, SDGFP, Sioux Falls

Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Date Review Completed: June 12, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

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SUMMARY OF UPDATES IN 2020:

As of September 30, 2017, a contract with the Corps to conduct fish community monitoring on the lower Missouri River in South Dakota was not renewed which ended the SDGFP's 13th year of sampling in Segment 7 of the lower Missouri River (59-mile reach of unchannelized Missouri River between Gavins Point Dam and Ponca, Nebraska). SDGFP continues its participation as a signatory on the Missouri River Endangered Species Memorandum of Agreement and remains an active participant in Pallid Sturgeon recovery.

In coordination with the Missouri River Fisheries Management Area Strategic Plan and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for the Missouri River Fisheries Management Area have identified areas throughout the Missouri River reservoirs and its unchannelized reaches to sample for nongame species through the 2023 sampling season which will include Pallid Sturgeon habitats.

STATE T&E SPECIES STATUS REVIEW

Species Name: Sicklefin Chub, *Macrhybopsis meeki*

South Dakota Status, including legal status and special listings:

- State endangered, (SD Administrative Rule 41:10:02:05. List of endangered fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S1, (critically imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G3 (vulnerable, range in the Mississippi and Missouri rivers and their major tributaries has decreased substantially, due to human-caused habitat alteration/fragmentation); last reviewed 30 April 2012 (NatureServe 2014).

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Sicklefin Chub are vulnerable and rare throughout their range, and listed as critically imperiled in South Dakota. Previously listed as state threatened (16 March 1978), the Sicklefin Chub was listed state endangered on 29 January 2007. Prior to impoundment of the Missouri River in South Dakota, records indicated Sicklefin Chub were present from Sioux City, IA upstream to the Grand River confluence. At the time of the last status change (2007) only two individuals were documented in South Dakota. One individual was collected in 1996 near Burbank, South Dakota during a four year benthic fish study designed to document the benthic fish assemblage of the entire Missouri River (Young 2001). The other individual fish was collected in 2005 by South Dakota Game, Fish and Parks staff during the Pallid Sturgeon Assessment project (Bertrand et al. *in prep.*). Since the last state status change, Sicklefin Chub have been limited to the Missouri River below Gavins Point Dam, Yankton County. Due to reservoir impoundment Sicklefin Chub are currently isolated and restricted to the Missouri River below Gavins Point Dam, leaving Sicklefin Chub vulnerable to extirpation with limited ability for recolonization. Continued listing as state endangered is recommended.

Description, biology and life history:

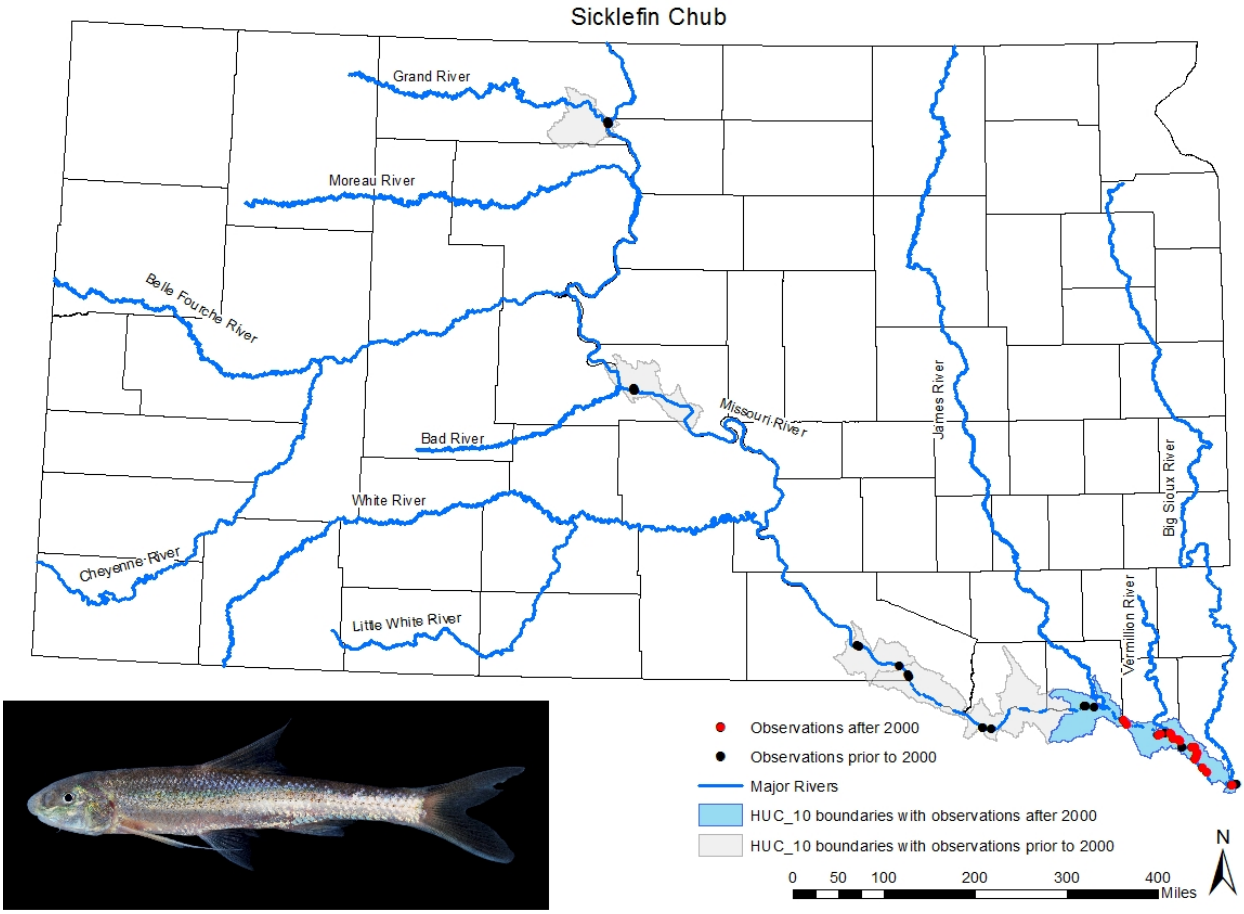
The Sicklefin Chub is a small, slender bodied minnow with small eyes and long sickle shaped pectoral fins. The Sicklefin Chub's body is yellowish-brown with a silvery-white belly and conspicuous barbels at the corners of the mouth (NGPC 2010). The dorsal fin's origin is over or slightly behind the pelvic fin origin (Bertrand et al. in prep.). Little is known of the reproductive biology of Sicklefin Chub; however, it is presumed that they spawn during spring to early summer. Individuals are sexually mature at 2-3 years of age and live up to 4 years (SDGFP 2006; Dieterman et al. 2006; USFWS 2008). Little is known about the diet of Sicklefin Chub, but it's believed to be a bottom feeder (NGPC 2010).

Habitat:

Habitat for the Sicklefin Chub is lotic, as they prefer the main channels of large, turbid rivers with strong currents and sand or fine gravel substrates (Pflieger 1975).

Distribution within the state:

Sicklefin Chub are reported within the Missouri River (Grand River Bay-Lake Oahe HUC_1013010215; Peoria Flats-Lake Oahe HUC_1014010103; Whetstone Creek-Missouri River HUC_1014010118; Randall Creek-Missouri River HUC_1017010104; Lewis & Clark Lake-Missouri River HUC_1017010109; Beaver Creek-Missouri River HUC_1017010112; Lime Creek-Missouri River HUC_1017010115) in South Dakota, which is on the northern periphery of the geographic range for Sicklefin Chub (Bailey and Allum 1962; Werdon 1992; Young 2001). Since 2000, reported Sicklefin Chub have been of individual fish and limited to the lower Missouri River below Gavins Point Dam (Bertrand et al. in prep.).



Conservation / Management Considerations:

Sicklefin Chub have been impacted by ecosystem alteration/habitat degradation and ecosystem/habitat conversion/loss associated with the development and operation of reservoirs on large rivers. These disrupt water regimes due to the combination of modified flow/temperature regimes and sediment transport, channelization, water diversion, fragmentation of once continuous rivers, and reductions in turbidity. It is suggested that Sicklefin Chub are moderately vulnerable to climate change (USFWS 1993, 2001; SDGFP 2014a).

Monitoring and research needs will focus on determining baseline data and status through monitoring efforts and identifying conservation opportunity areas and limiting factors.

Conservation Efforts in South Dakota:

Conservation efforts will focus on increasing partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce water diversion, and maintaining/restoring natural hydrology and stream connectivity when possible (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the Missouri River Fisheries Management Plan to standardize survey and sampling protocols to monitor non-game fishes (SDGFP 2014b).

State Wildlife Grant Accomplishments:

- Evaluation of the James River Conservation Reserve Enhancement Program (CREP) of South Dakota– T-59 (2017). The CREP seeks to enhance natural resource conservation programs in selected watersheds nationwide to address specific regional conservation priorities by attempting to alleviate agriculturally related environmental concerns. This project assesses the effects of CREP on water quality, aquatic habitats, fish assemblages, and avifauna response to the James River CREP.
- Population structure and habitat use of benthic fishes of the Missouri River and its major tributaries with an emphasis on Sicklefin and Sturgeon Chub in South Dakota- T-89. Sicklefin and Sturgeon Chub, state listed endangered and threatened respectively, have been petitioned for federal listing and currently are undergoing a 12-month finding. This study will update the distribution and status of this fish assemblage with an emphasis on Sicklefin and Sturgeon Chub, two rare species in South Dakota.

Recovery Criteria/Goals

Given that Sicklefin Chub have limited natural dispersal abilities the primary recovery goal for the management of Sicklefin Chub is to maintain existing populations, and protect the habitat within watersheds where Sicklefin Chub is found, especially tributary populations. There are three aspects to Sicklefin Chub management in South Dakota. Goals will work to increase sampling regime standardization among fisheries biologists in coordination with reservoir surveys. Improved coordination with private land and habitat biologist should be utilized in the development of site-specific best management practices to ensure habitat protection. The protection of conservation opportunity areas should be promoted by maintaining natural flow regimes in tributary areas where the species is present. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current status (Post-2000) and evidence of natural reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:

Sam Stukel, Fish and Wildlife Biologist, USFWS, Gavins Point National Fish Hatchery, Yankton
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Nathan Loecker, Fisheries Biologist, SDGFP, Yankton

Date Review Completed: June 12, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

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SUMMARY OF UPDATES IN 2020:

As of September 30, 2017, a contract with the Corps to conduct fish community monitoring on the lower Missouri River in South Dakota was not renewed which ended the SDGFP's 13th year of sampling in Segment 7 of the lower Missouri River (59-mile reach of unchannelized Missouri River between Gavins Point Dam and Ponca, Nebraska). SDGFP continues its participation as a signatory on the Missouri River Endangered Species Memorandum of Agreement.

In coordination with the Missouri River Fisheries Management Area Strategic Plan and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for the Missouri River Fisheries Management

Area have identified areas throughout the Missouri River reservoirs and its unchannelized reaches to sample for nongame species through the 2023 sampling season which will include Sicklefin Chub habitats.

STATE T&E SPECIES STATUS REVIEW

Species Name: Sturgeon Chub, *Macrhybopsis gelida*

South Dakota Status, including legal status and special listings:

- State threatened, (SD Administrative Rule 41:10:02:05. List of threatened fish)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S2, (imperiled)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- USDA Forest Service, Region 2, Rocky Mountain Region sensitive species
- NatureServe global rank G3 (vulnerable, historically occurred in the Mississippi, Missouri, and Yellowstone rivers and 30 tributaries of the Missouri and Yellowstone rivers; has declined in range and abundance due to human-caused habitat changes (e.g., dams)); last reviewed 30 April 2012 (NatureServe 2014).

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Sturgeon Chub are vulnerable and rare throughout its range, and listed as imperiled in South Dakota. The justification for including Sturgeon Chub on the first list of state threatened (16 March 1978) fish is unknown but was presumably due to the construction of the Missouri River impoundments. Surveys in 1989-1990, specifically designed to study Sturgeon Chub believed the species was extirpated as the last recorded Sturgeon Chub was from the Little Missouri River in 1976 (Bich and Scalet 1977; Werdon 1992). Surveys in the mid-late 1990s found Sturgeon Chub at a limited number of sites in the White, Little White, and Cheyenne rivers (Cunningham and Olson 1994; Cunningham et al. 1995; Cunningham and Hickey 1997; Hampton 1998; Cunningham 1999). Based on the presumed limited area of occupancy, separation from other populations, and limited potential for range expansions, Sturgeon Chub are extremely vulnerable to extirpation with limited ability for recolonization and continued listing as state threatened species is recommended.

Description, biology and life history:

The Sturgeon Chub is a slender minnow with small eyes, a brownish-blue back with dark specks and a light underside. The Sturgeon Chub's mouth is inferior with conspicuous barbels at each corner of the mouth and a longitudinal ridge or keel is present on dorsal scales (Bertrand et al. *in prep*.). Sturgeon Chub spawn in June and July with females producing between 2,000 and 5,000 eggs (SDGFP 2006; NGPC 2010). Most individuals live 3 to 4 years (Rahel and Thel 2004). Little is known about the diet of Sturgeon Chub, but it's believed to be a bottom feeder with external taste buds, feeding mainly on invertebrates and sediment material (NGPC 2010).

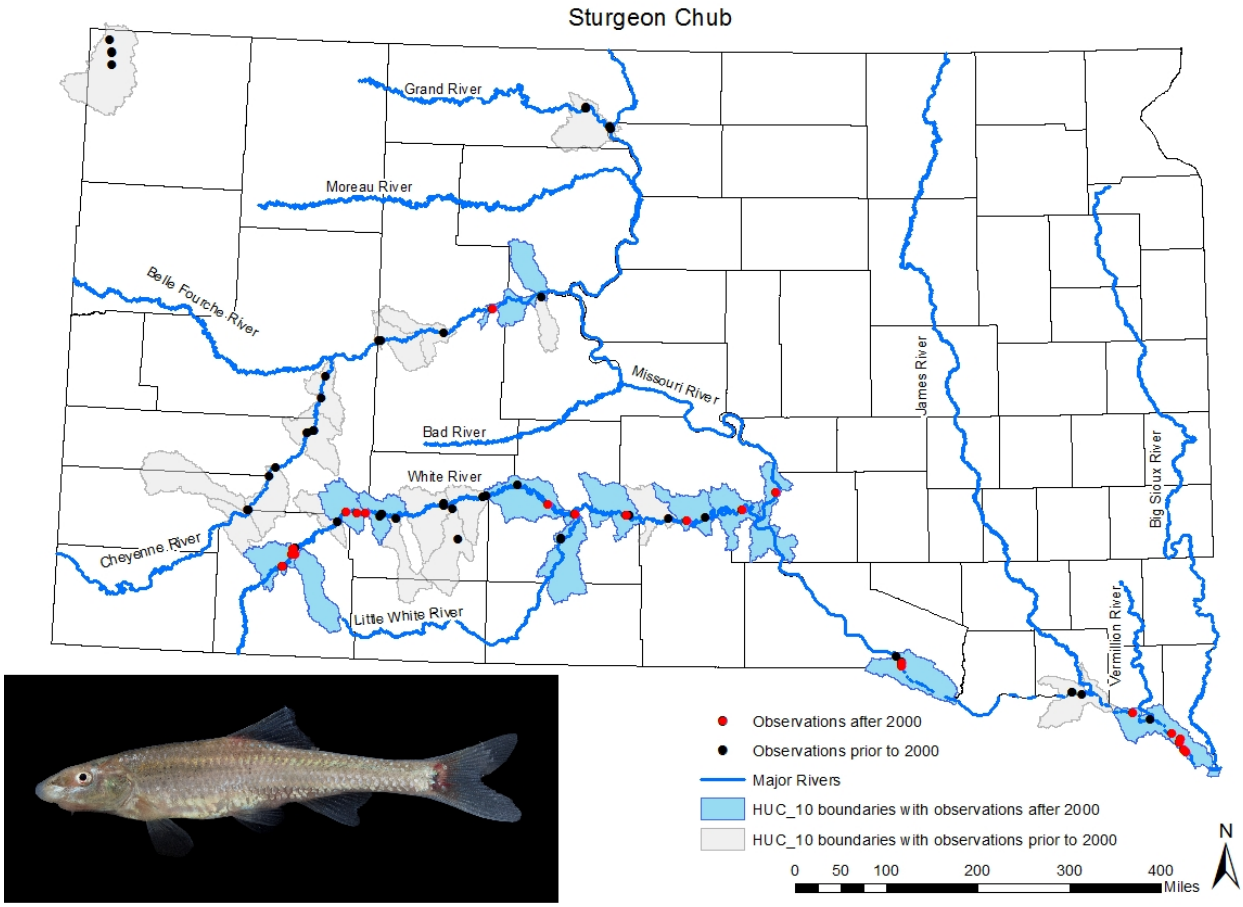
Habitat:

Habitat for the Sturgeon Chub is lotic, as they prefer areas with moderate to strong current on large turbid rivers with rocks, gravel or coarse sand substrates. Also, Sturgeon Chub will

occupy moderate to small tributaries directly connected to larger turbid rivers with extant populations (Pflieger 1975; USFWS 2001; Rahel and Thel 2004).

Distribution within the state:

Sturgeon Chub have been reported at a limited number of sites within the Little Missouri, Grand, Cheyenne, White, and Missouri rivers in South Dakota, which is within the central part of the range (Bailey and Allum 1962; Bich and Scalet 1977; Werdon 1992, 1993; Cunningham and Olson 1994; Cunningham et al. 1995; Cunningham and Hickey 1997; Hampton 1998; Cunningham 1999). Since 2000, Sturgeon Chub have been reported in low relative numbers from the White and Lower Missouri rivers below Fort Randall and Gavins Point dams and a single site from within the Cheyenne River (Heakin, et al. 2002; Cunningham 2014; Bertrand et al. in prep.).



Conservation / Management Considerations:

Sturgeon Chub has been impacted by ecosystem alteration/habitat degradation and ecosystem/habitat conversion loss associated with the development and operation of reservoirs on large rivers. These disrupt water regimes due to a combination of modified flood regimes and sediment transport, channelization, water diversion, fragmentation of once continuous rivers, and reductions in turbidity. It is suggested that Sturgeon Chub are highly vulnerable to climate change (Rahel and Thel 2004; SDGFP 2014a).

Research and monitoring needs will focus on determining baseline data and status through monitoring efforts, and identifying critical habitats and limiting factors.

Conservation Efforts in South Dakota:

Conservation efforts will focus on increasing partnerships and cooperative arrangements, increasing educational efforts, promoting best management practices that reduce water diversion, maintaining/restoring habitat and stream connectivity, and developing programs to reduce or eliminate the threat of non-native fish competing with Sturgeon Chub (SDGFP 2014a). Additionally, objectives and strategies will follow those outlined within the West River and Missouri River Fisheries Management Plans to standardize survey and sampling protocols to monitor non-game fishes (SDGFP 2014b, 2014c).

State Wildlife Grant Accomplishments:

- Evaluation of a decision support tool to help support fish species at risk in South Dakota streams– T-9 (2006). Aquatic GAP is a tool for predicting where aquatic species might find suitable habitat. This study's goal was to test the accuracy of aquatic GAP by surveying streams and watersheds with historic occurrences of rare fish species and wetlands with potential habitat for them.
- Classification and mapping of riparian forest along the White River in South Dakota– T-50 (2014). This study classified and mapped the forest and other floodplain vegetation along the White River. Using historical and modern aerial imagery, they were able to describe the changes in river channel dynamics and subsequent vegetation changes over the past 80 years from 1930s to 2010.
- Population structure and habitat use of benthic fishes of the Missouri River and its major tributaries with an emphasis on Sicklefin and Sturgeon Chub in South Dakota- T-89. Sicklefin and Sturgeon Chub, state listed endangered and threatened respectively, have been petitioned for federal listing and currently are undergoing a 12-month finding. This study will update the distribution and status of this fish assemblage with an emphasis on Sicklefin and Sturgeon Chub, two rare species in South Dakota.

Recovery Criteria/Goals

Given that Sturgeon Chub have limited natural dispersal abilities due to Missouri River mainstem dams, the primary recovery goal for the management of Sturgeon Chub is to maintain existing populations, and protect the habitat within watersheds where Sturgeon Chub are found, especially tributary populations. The specific management goals for Sturgeon Chub are to work with fisheries biologists to standardize seining/otter trawl efforts in coordination with reservoir, Cheyenne River and White River surveys. Additionally management strategies will involve working with private land and habitat biologists to develop site specific best management practices to ensure habitat protection, while working to maintain existing ecological flow regimes in remaining locations to ensure protection of conservation opportunity areas. Additionally, goals for delisting would include 50% of HUC_10 boundaries previously occupied to maintain current status (Post-2000) and have self-reproducing populations.

Primary Reviewer: Chelsey Pasbrig, Aquatic Biologist

Other Staff or Experts Involved in the Review:

Sam Stukel, Fish and Wildlife Biologist, USFWS, Gavins Point National Fish Hatchery, Yankton

George Cunningham, Fisheries Biologist and Environmental Consultant, Eco~centrics, Omaha, NE

Nathan Loecker, Fisheries Biologist, SDGFP, Yankton

Eileen Dowd Stukel, Senior Wildlife Biologist, SDGFP, Pierre

Date Review Completed: June 12, 2020
Date Adopted by SDGFP Commission: April 6, 2018
Dates of Other Reviews, if appropriate: December 14, 2017

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SUMMARY OF UPDATES IN 2020:

As of September 30, 2017, a contract with the Corps to conduct fish community monitoring on the lower Missouri River in South Dakota was not renewed which ended the SDGFP's 13th year of sampling in Segment 7 of the lower Missouri River (59-mile reach of unchannelized Missouri River between Gavins Point Dam and Ponca, Nebraska). SDGFP continues its participation as a signatory on the Missouri River Endangered Species Memorandum of Agreement.

In coordination with the West and Missouri River Fisheries Management Area Strategic Plans and fisheries biologists, an effort has been made to standardize nongame sampling across the state to better sample nongame fishes. Currently, workplans for the West and Missouri River Fisheries Management Areas have identified areas throughout the Missouri River reservoirs and its unchannelized reaches to sample for nongame species through the 2023 sampling season which will include Sturgeon Chub habitats.

STATE T&E SPECIES STATUS REVIEW

Species Name: Eastern Hognose Snake, *Heterodon platirhinos*

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:08. List of threatened reptiles)
- Monitored by the South Dakota Natural Heritage Program
- State Heritage rank S1 (critically imperiled; state species rank last updated on 8 June 2020)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan

Federal Status:

- No federal protection
- NatureServe global rank G5 (Demonstrably secure, although it may be rare in some portions of the range); global rank last reviewed 02 Feb 2016

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The Eastern Hognose Snake was listed as state threatened due to its small population size, restricted range and dependence on limited suitable habitat. Continued listing as a state threatened species is recommended.

Description, biology and life history:

Heavy-bodied, medium sized snake (20-33 inches in length) with a slightly upturned snout and paired dark spots on the back of the head. Body color may be yellow, orange, reddish-brown, olive or dark gray. Center and sides of back and tail have irregular dark spots. Scales are keeled and the underside of the tail is lighter colored then the rest of the belly. When threatened, the Eastern Hognose Snake raises its head, hisses, and flattens its neck like a cobra. If this behavior does not deter a predator it will flip over on its back and play dead.

Eastern Hognose Snakes are primarily active during the day. Their diet includes invertebrates, small mammals, frogs, and salamanders; but they often exclusively feed on toads. The upturned snout is thought to be used to burrow after food. They have adaptations to handle the toxins produced by toads and have large rear fangs in the mouths used to puncture inflated toads making them easier to swallow. Potential predators include any medium to large carnivore.

Individuals become sexually mature around two years of age and mate in April or May, shortly after emergence from the hibernacula. Egg laying is often restricted to the warmest months during late June through August. The female lays 15-25 eggs in depressions in sandy soils under rocks or logs. Eggs incubate for approximately 2 months. Females typically only have one clutch per breeding season. During the fall they will return to hibernacula in burrows under rocks.

Habitat:

The Eastern Hognose Snake's general habitat consists of a diverse mosaic of sandy, well-drained soils and open vegetative cover such as open woodlands and prairies in close proximity to water. Individuals avoid completely open areas to decrease risk of predation and will rely on driftwood and other artificial or natural ground cover.

Distribution within the state:

Due to the likely confusion of the Eastern Hognose Snake with the closely resembling Western, or Plains, Hognose Snake (*Heterodon nasicus*), the historical distribution in South Dakota is unclear. Wright and Wright (1957) showed the range extending from the southeastern to the northwestern corners of the state but indicated that they were not sure of this distribution.

Currently, the Eastern Hognose Snake occurs along the Missouri River only in the extreme southeastern corner of South Dakota in Clay, Union and Yankton counties. In 2017, a photo was confirmed of an Eastern Hognose Snake in Todd County from the Rosebud Indian Reservation. This observation likely reflects nearby populations from Cherry County, Nebraska (Davis, personal communication).

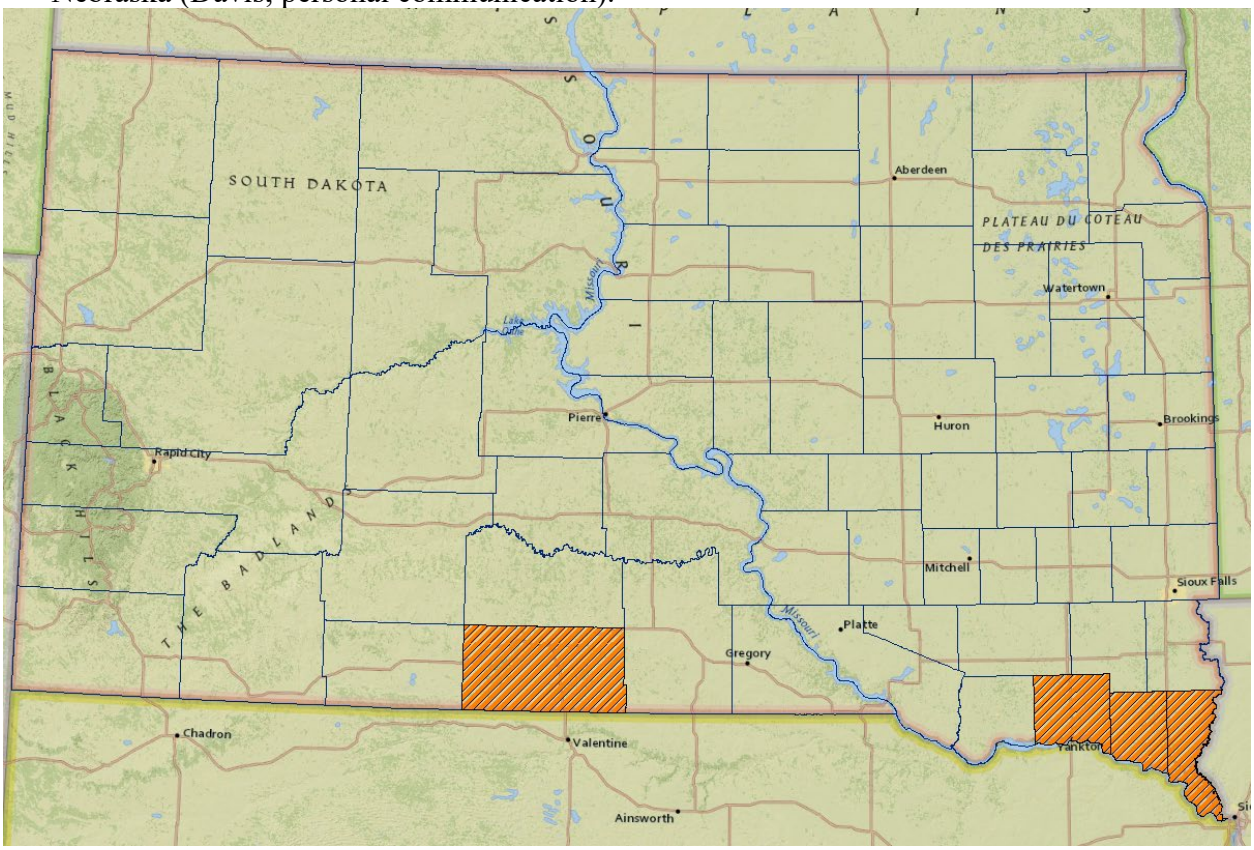

Figure 1. Current known distribution of Eastern Hognose Snake (*Heterodon platirhinos*) in South Dakota.

Conservation / Management Considerations:

Prior to the damming of the Missouri River, frequent flooding events produced sandbars with sparse vegetative growth that is ideal habitat for the Eastern Hognose Snake. These sandbar habitats have rapidly declined due to succession of plants taking place in the absence of floods from the current Missouri Reservoir system. These sandy flood plain habitats are also

popular areas for human use and need to be protected from disturbance. Eastern Hognose Snake habitat has also been altered for agricultural development and recreational uses. The increase in pesticide use in the species range could also be negatively impacting the species, either through direct exposure by runoff, consuming contaminated prey or by reducing prey availability.

Eastern Hognose Snakes are relatively slow moving, making road mortalities a potential threat. Off-road vehicles and mountain bikes also pose a threat to snakes and their nests. The species is also susceptible to human persecution due to its threatening, although harmless, defensive display.

Sand dune habitats near known snake occurrences need to be protected from human disturbance by purchase or easements. Off-road vehicle use should be restricted by fencing and posting. Protecting these habitats will also benefit softshell turtles, False Map Turtles and other species.

Any management plan developed for the Eastern Hognose Snake should address the problem of vegetative encroachment. Public agencies and private landowners should be encouraged to utilize land management practices that promote early plant succession stages where populations of Eastern Hognose Snakes are known to exist. Landowners should also be encouraged to limit or restrict the use of pesticides on their crops. Public awareness and education should be improved to reduce human persecution.

Conservation Efforts in South Dakota:

- State Wildlife Grant Project T-8-R (2004) ten priority habitats were surveyed to collect baseline information on poorly studied reptile and amphibian species.
- State Wildlife Grant Project T-57-R-1 (2012) evaluated a variety of threats to herpetofauna in South Dakota as a component of the South Dakota Wildlife Action Plan revision

Recovery Criteria/Goals:

Recovery criteria are not proposed at this time because of the need for additional information. Refer to the Recovery Criteria Considerations section for more detail.

Recovery Criteria Considerations:

Surveys and research are needed to gain more information to develop recovery criteria including:

- The complete range of the species in South Dakota and the status and connectivity of the remaining populations within their range. Surveys should also be conducted in potential habitats in Todd, Tripp, Bennett and Gregory counties.
- Current population density and genetic makeup.
- Average home range size and reproductive rates.
- Identify core areas that support habitats for all parts of the species life cycle including; foraging areas, hibernacula, breeding sites and nesting sites in addition to the corridors that link these habitat requirements.
- Determine minimum viable population necessary to maintain the species.

- Identify the timing and locations of peak seasonal movements to help prevent road mortalities.

Primary Reviewer:
Casey Heimerl, Wildlife Biologist, SDGFP, Pierre

Other Staff or Experts Involved in the Review:
Hugh Quinn, Herpetologist, Rapid City, SD
Drew Davis, PhD, University of South Dakota, Vermillion, SD

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6, 2018

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SUMMARY OF UPDATES IN 2020:

- None.

STATE T&E SPECIES STATUS REVIEW

Species Name: False Map Turtle, *Graptemys pseudogeographica*

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:08. List of threatened reptiles)
- Monitored by the South Dakota Natural Heritage Program
- State Heritage rank of S3 (vulnerable; state species ranks are currently being reevaluated by Natural Heritage Program staff)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)

Federal Status:

- No federal protection
- NatureServe global rank of G5 (secure, although it may be rare in some portions of the range); global rank last reviewed 2 May 2005

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

The False Map Turtle was listed as state threatened due its limited and localized populations when it once was reported as the most common turtle in the Missouri River. Continued listing as a state threatened species is recommended at this time.

Description, biology and life history:

The False Map Turtle has an olive to brown carapace with knobs running down the center of the back and a saw-tooth edge along the rear border. The female's carapace is 9-10 inches long and the male's is 4-6 inches long. Underside is yellow with dark lines around the edges. The neck has yellow stripes with a yellow "L" shaped spot behind each eye.

False Map Turtles breed in the spring and females will lay up to 16 eggs in early June to July. Eggs hatch after two to three months of incubation. Dixon (2009) found the length of the nesting season was 36 days along the lower stretch of the Missouri National Recreational River (MNRR). Sex of the offspring is dependent on temperature, and vegetation near nest sites can cause lower temperatures that alter sex ratios (Ewert and Nelson 1991). False Map Turtles in the northern portion of their range are capable of producing two clutches per nesting season (Ernst et al. 1994). Sexual maturity for males is reached between 4-6 years of age and around 8 years for females. Turtles are generally long-lived and have high fecundity rates, however survivorship from hatching through the first year of life is low (Ernst et al. 1994). Gregor (2012) found that juvenile females had the longest average linear home ranges of 9.2 miles. Linear home ranges of adult females averaged 4.3 miles and all males averaged 5.8 miles.

False Map Turtles consume aquatic invertebrates, fish, and aquatic vegetation. Predators include mink (*Neovison vison*), coyotes (*Canis latrans*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), opossums (*Didelphis virginiana*) and raccoons (*Procyon lotor*).

Dixon (2009) did not find depredation to be a major factor of nest mortality in most areas, but when it occurred it was concentrated at isolated patches of preferred nesting habitat where turtles were nesting in high densities due to a lark of alternate sites. Higher predation rates also occurred on natural versus human-made sandbars.

Habitat:

Rivers, reservoirs, lakes and ponds with a muddy substrate, basking sites, and some aquatic vegetation. Primarily associated with the Missouri River in South Dakota. Uses sparsely vegetated sand bars and beaches for nesting. Gregor (2012) found the highest capture rates of False Map Turtles using hoop traps that were placed in areas where tributaries entered the Missouri River and in fyke nets located in backwater habitats.

Overwinter in mud or in muskrat dens in areas with flowing water that provides suitable dissolved oxygen levels. Declines in water levels during the winter can be a source of morality by causing ice shelves to collapse and trap animals along the shoreline (Gregor 2012).

Distribution within the state:

The False Map Turtle was once reported to be the most common turtle of the Missouri River in South Dakota (Timken 1968). Currently, it occurs in the Missouri River and backwaters as well as a few mouths of tributaries in southeastern South Dakota where it is considered rare to locally common. It has also been found on the James River upstream from the confluence with the Missouri River (Gregor 2012). It is most common below Gavins Point Dam and Fort Randal Dam. False Map Turtles have been reported as being regularly seen in the Niobrara Delta area (Chris Longhenry, SDGFP biologist, personal communication). Gregor (2012) reported the False Map Turtle to be the dominant species in all habitats sampled within the 59-mile segment of the Missouri National Recreational River. False Map Turtles have been observed below Big Bend Dam and in the Pierre area around Farm Island and Laframboise Island, however their current distribution and status above Fort Randal Dam is more uncertain.

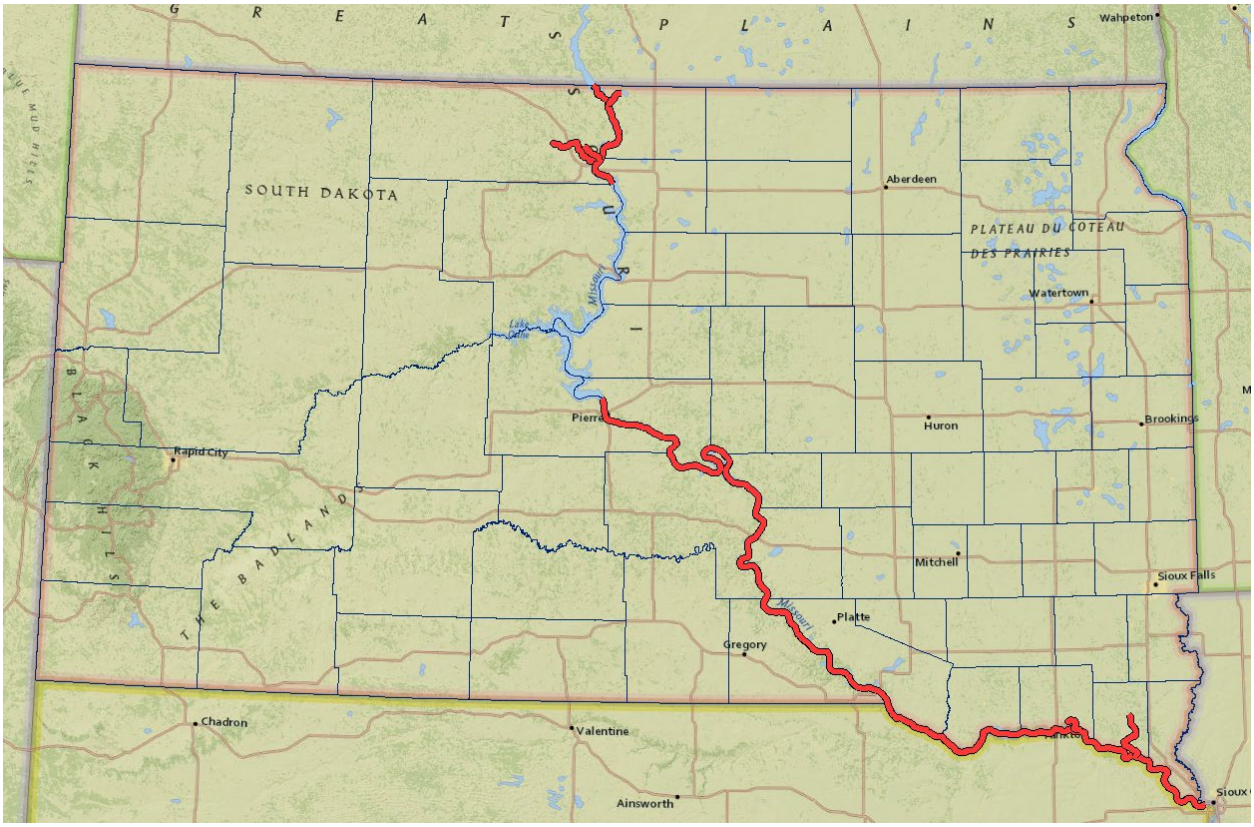

Figure 1. Current known distribution of False Map Turtle (*Graptemys pseudogeographica*) in South Dakota.

Conservation / Management Considerations:

Populations of False Map Turtles have been declining due to water pollution, river channelization and loss of nesting habitat. Sandbars and beaches which are important nesting habitats have been disappearing since the construction of dams on the Missouri River and the near elimination of downstream flooding events. Without the disturbance associated with flooding events the remaining sandbars and beaches are progressing from being sparely vegetated, which is ideal for nesting turtles, to mature forests with an invasive understory of plants (Smith and Quinn 2012).

Bank stabilizations such as rip-rap placement also limit nest site availability and the input of large woody debris that False Map Turtles use for basking, cover and foraging. The decline of nesting habitat has resulted in False Map Turtles concentrating nesting on the few remaining beaches which can result in increased nest depredation rates. Boat collisions are also a hazard for False Map Turtle populations in areas that receive heavy boat traffic. This problem can be exacerbated in early spring and late fall when the turtles are active but slower moving due to low water temperatures (Gregor 2012).

Public agencies and private landowners should be encouraged to utilize land management practices that promote early plant succession stages where populations of False Map Turtles are known to exist. Allowing controlled flooding events to occur would also promote the natural formation of sandbars and beaches. Alternatively, human-made sandbars have also

been found to be used by False Map Turtles for nesting habitat. Bank stabilization projects that utilize riprap should be discouraged in areas of known False Map Turtle populations. Areas of high nesting concentrations should be protected from predators and human disturbances. There is also a need to investigate if False Map Turtle bycatch in fish traps is a considerable threat to the species and if trap modifications need to be made to reduce loss. Requiring those who use fish traps to report bycatch would be one approach to the issue.

The False Map Turtle is also a popular species in the pet trade. South Dakota's turtles are now legally protected from commercial trade; however the species needs to still be monitored to make sure it is not being illegally taken.

Recovery efforts should focus on maintaining and expanding the range of False Map Turtle populations. To implement these goals there is a need to:

- Continue surveying and monitoring the species distribution and population.
- Identify and protect important nesting beaches and sandbars and overwintering sites from predators and human caused mortalities and disturbances.
- Ensure regulations will protect from take if removed from state threatened list.

Conservation Efforts in South Dakota:

- State Wildlife Grant Project T-8-R (2004) surveyed ten priority habitats to collect baseline information on poorly studied reptile and amphibian species.
- State Wildlife Grant Project T-20-R (2009) surveyed waterways in southeastern South Dakota to address a lack of information on annual populations changes, nest locations, and breeding success for the False Map, Smooth and Spiny Softshell turtles.
- State Wildlife Grant Project T-30-R (not competed) determined habitat associates and requirements determined turtle abundance and age structure, and documented turtle movement patterns.
- State Wildlife Grant Project T-57-R-1 (2012) evaluated a variety of threats to herpetofauna in South Dakota as a component of the South Dakota Wildlife Action Plan revision
- State Wildlife Grant Project T-77-R-1 conducted surveys for False Map Turtles and identifying key nesting sites in the Lake Oahe reservoir, an area where there is limited information on the species.

Recovery Criteria/Goals

- Criteria for Lake Sharpe, Lake Francis Case, and Lewis and Clark Lake and associated tributaries
  - Evidence of at least 250 adult females in a breeding season
  - Evidence of successful reproduction resulting in a stable or increasing population over a 10 year period
- Results from survey conducted on Lake Oahe in 2017 and 2018 (SWG Project T-77-R-1) suggest that False Map turtles are not as common as in other Missouri River reservoirs. Further research is needed to develop delisting criteria for this reservoir.
- Have an established, continued plan of periodic monitoring of population trends and habitat after delisting.
- Ensure that collection and bycatch are no longer threats to survival.

Primary Reviewer:
Casey Heimerl, Wildlife Biologist, SD Department of Game, Fish and Parks, Pierre, SD.

Other Staff or Experts Involved in the Review:
Aaron Gregor –PhD Candidate, University of South Dakota, Vermillion, SD
Hugh Quinn, Herpetologist, Rapid City, SD
Drew Davis – PhD, University of South Dakota, Vermillion, SD

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6, 2018

References or Information Sources:

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SUMMARY OF UPDATES IN 2020:

State Wildlife Grant Project T-77-R-1

- Visual surveys and focused trapping efforts for False Map Turtles were conducted in Lake Oahe and its tributaries from 2017 through 2019.
- Survey efforts documented the presence of smooth softshell, spiny softshell and painted turtles but did not result in any findings of false map turtles. Three false map turtles were encountered while assisting SDGFP fishery biologists during walleye spawning operations in the Grand River in 2018. No false map turtles were encountered by SDGFP staff in 2019.
- Three key areas were identified with suitable habitat features that could potentially be used as nesting sites for False Map turtles in the future.

STATE T&E SPECIES STATUS REVIEW

Species Name: Lined Snake, *Tropidoclonion lineatum*

South Dakota Status, including legal status and special listings:

- State Endangered (SD Administrative Rule 41:10:02:07. List of endangered reptiles)
- Monitored by the South Dakota Natural Heritage Program
- State Heritage rank S2 (imperiled; state species rank last reviewed on 19 April 2020)
- Included as a Species of Greatest Conservation Need in South Dakota Wildlife Action Plan (SDGFP 2014)

Federal Status:

- No federal protection
- NatureServe global rank of G5 (Demonstrable secure, although it may be rare in some portions of the range); global rank last reviewed 07 Sep 2006

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Status change in 1996 from state threatened to state endangered and the current recommendations is to continue listing with this status. The species currently has a secure global rank but is considered critically imperiled in South Dakota due to continued habitat loss and alteration to urban and agricultural development.

Description, biology and life history:

Small snake (9-15 inches), gray/brown in color with 3 light-colored stripes running the length of its body with the central stripe being the most distinctive. The stripes are bordered by black dots that are more noticeable on juveniles. The Lined Snake can be distinguished from similar looking garter snake species (*Thamnophis* spp.*)* by double row of black half-moon shaped dots along the belly.

The Lined Snake is most active from April to October, and activity appears to increase after periods of rain. Individuals are solitary, but can be found in groups in overwintering dens and when males are seeking females during the breeding season. Individuals mate in the fall with egg fertilization delayed until the following spring. Female gives birth to 6-7 live young during mid-August.

The Lined Snake's diet consists of invertebrates, primarily earthworms. They forage at night and during rainstorms when earthworms are active or near the soil surface. Predators of the Lined Snake include a variety of carnivorous mammals and birds.

Habitat:

Found in open grasslands and sparsely wooded areas preferring moist habitat near springs, ponds, marshes, streams and rivers. Also found in urban areas such as city lots, parks, cemeteries and gardens. Active at night and typically shelters beneath rocks and logs during the day. Overwinters in underground burrows.

Distribution within the state

Over (1923) and Wright and Wright (1957) reported the distribution was restricted to the southeast corner of South Dakota along the Big Sioux River corridor where it still occurs today but in populations diminished in size and number.

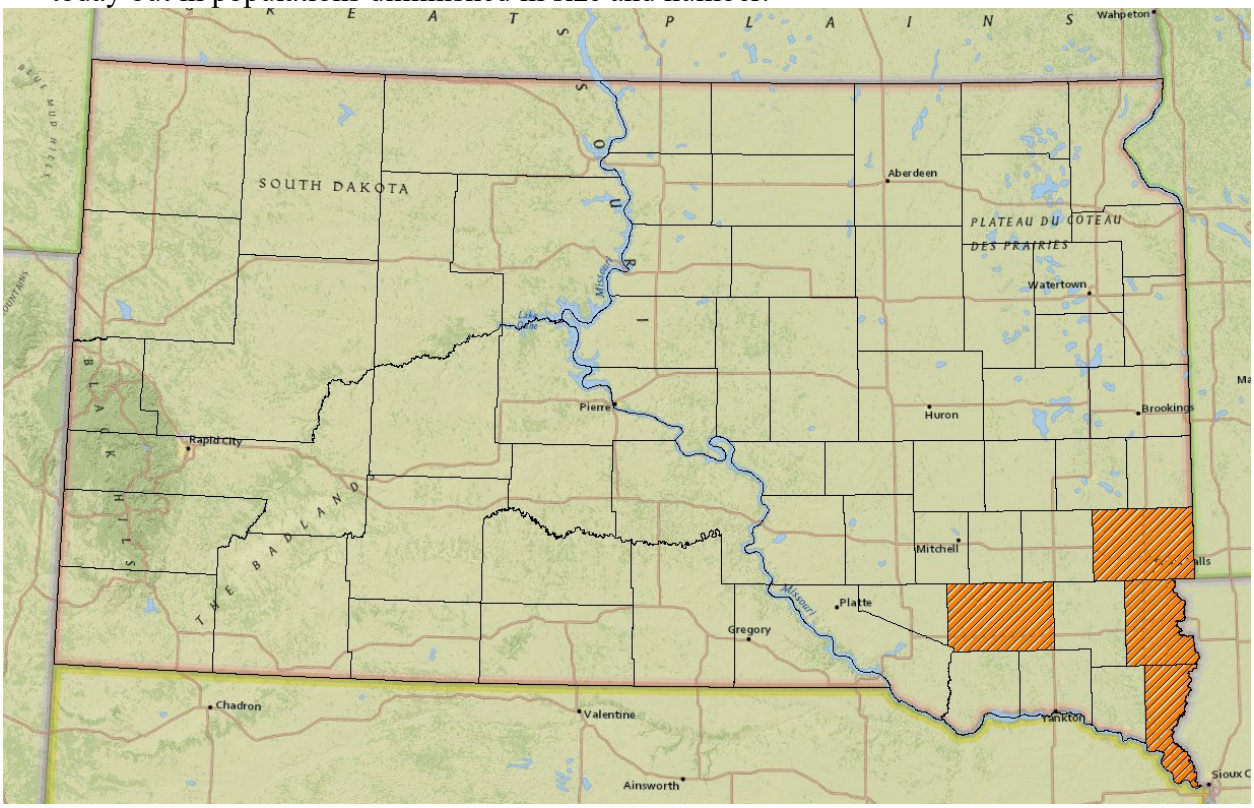

Figure 1. Current known distribution of Lined Snake (*Tropidoclonion lineatum*) in South Dakota.

Conservation / Management Considerations:

In addition to natural habitats, Lined Snakes are also found in urban settings making wetland drainage, agricultural development, pesticide use, and road mortalities some of the main threats to the species. Continued survey work is needed to identify population locations and to locate potential areas of high road mortalities.

There is a need to continue to conduct survey and monitoring work o document populations and potential road crossing hazards. In areas where hazards are identified, drift fences and road crossing culverts should be established to mitigate loss. Current documented populations should be protected by working with landowners to establish buffer zones around agricultural fields where Lined Snakes are known to occur, particularly in roadside ditches.

Conservation Efforts in South Dakota:

- In 2002-2003, Daniel Fogell conducted surveys on state owned lands to document herpetofauna, with a focus on the Lined Snake.
- State Wildlife Grant Project T-8-R (2004) ten priority habitats were surveyed to collect baseline information on poorly studied reptile and amphibian species.

- State Wildlife Grant Project T-57-R-1 (2012) evaluated a variety of threats to herpetofauna in South Dakota as a component of the South Dakota Wildlife Action Plan revision.
- Wildlife Diversity Small Grant Project in 2018 conducted surveys for Lined Snakes to better understand their distribution and occurrence in southeast South Dakota.

Recovery Criteria/Goals:

Recovery criteria are not proposed at this time because of the need for additional information. Refer to the Recovery Criteria Considerations section for more detail.

Recovery Criteria Considerations:

Surveys and research are needed to gain more information to develop recovery criteria including:

- The complete range of the species in South Dakota and the status and connectivity of the remaining populations within their range. Efforts should be targeted to understand the occurrence of the species within the James River corridor and between the James River and Big Sioux River corridors.
- Current population density and genetic makeup.
- Average home range size and reproductive rates.
- Identification of core areas that support habitats for all parts of the species life cycle including foraging areas, hibernacula, breeding sites and nesting sites in addition to the corridors that link these habitat requirements.
- Determine minimum viable population necessary to maintain the species.
- Identifying the timing and locations of peak seasonal movements to help prevent road mortalities.

Primary Reviewer:

Casey Heimerl, Wildlife Biologist, SDGFP, Pierre

Other Staff or Experts Involved in the Review:

Hugh Quinn, Herpetologist, Rapid City, SD
Drew Davis, PhD, University of South Dakota

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6, 2018

References or Information Sources:

Backlund, D. 2004. South Dakota statewide herpetology survey 2004. Final report to the South Dakota Department of Game, Fish and Parks, Pierre, South Dakota.

Ballinger, R.E., J.W. Meeker, and M. Thies. 2000. A checklist and distribution maps of the amphibians and reptiles of South Dakota. Transactions of the Nebraska Academy of Sciences 26:29-46.

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Fogell, D.D. 2003. Amphibian and reptile surveys of southeastern South Dakota with an emphasis on the state-endangered lined snake (*Tropidoclonian lineatum*) May 2002 – June 2003. Final report to the South Dakota Department of Game, Fish and Parks, Pierre, SD.

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SUMMARY OF UPDATES IN 2020:

2018 Wildlife Diversity Small Grant Project – "Surveys for the state-endangered lined snake (*Tropidoclonion lineatum*) along the lower James River Valley

- A series of targeted surveys for Lined Snakes were conducted along the lower James River valley from 25 April – 4 May and 28 September – 5 October 2018 to better understand the distribution and occurrence of Lined Snakes in southeastern South Dakota.
- A total of 16 Lined Snakes were detected from 14 individual locations in Hutchinson County, which only had one documented record prior to this survey effort.
- Initial data suggest that this is a reproducing population and that road mortality may be a significant threat to individuals.
- Attempts to locate individuals in other regions along the James River were unsuccessful.

STATE T&E SPECIES STATUS REVIEW

Species Name: Black-footed Ferret, *Mustela nigripes*

South Dakota Status, including legal status and special listings:

- State endangered (SD Administrative Rule 41:10:02:03, List of endangered mammals)
- Monitored by South Dakota Natural Heritage Program
- State Heritage Rank S1 (critically imperiled species)
- Included as a Species of Greatest Conservation Need in the South Dakota Wildlife Action Plan

Federal Status:

- NatureServe global rank G1 (critically imperiled species); last reviewed 4 April 2016
- Federal endangered. This species was listed as endangered in 1967 pursuant to precursor legislation to the Endangered Species Act (ESA) of 1973. Second revision of the recovery plan was published in 2013 (U.S. Fish and Wildlife Service 2013).

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Specific justification for including the black-footed ferret on the list of state endangered mammals is unknown but was presumably intended to mirror its federal status. In the event that this species is down listed or delisted by the U.S. Fish and Wildlife Service (USFWS), we will reevaluate whether continued listing as a state endangered species is warranted.

Description, biology and life history:

The black-footed ferret is a mink-like mammal that is 20-24 inches long and weighs from 1.5 to 2.5 lbs. As indicated by its common name, feet and legs are black. It also has a black face mask and black-tipped tail. Upper body parts are yellowish buff.

Black-footed ferrets are solitary except during breeding. Breeding begins at approximately one year of age in March through early April. Gestation is approximately 42 days with an average litter of 3.5 kits born in an underground burrow and cared for exclusively by the female. Kits appear above ground in July and are ready to disperse in September or October. Young of the year may stay in the mother's home range; males disperse farther than females.

This nocturnal predator is extremely specialized relying almost exclusively on prairie dogs for both food and shelter. Hunting occurs underground. Prey is cached and one prairie dog is consumed every three to four days. Little information exists on life expectancy, but individuals have been known to live up to five years in the wild.

Habitat:

Black-footed ferrets need prairie dogs for food and their burrows for shelter.

Distribution within the state:

Historical black-footed ferret distribution in South Dakota corresponds with black-tailed prairie dog (*Cynomys ludovicianus*) distribution which includes most of western South

Dakota and those areas in eastern South Dakota that had burrowing rodents, especially black-tailed prairie dogs. Current distribution reflects original reintroduction areas (Figure 1).

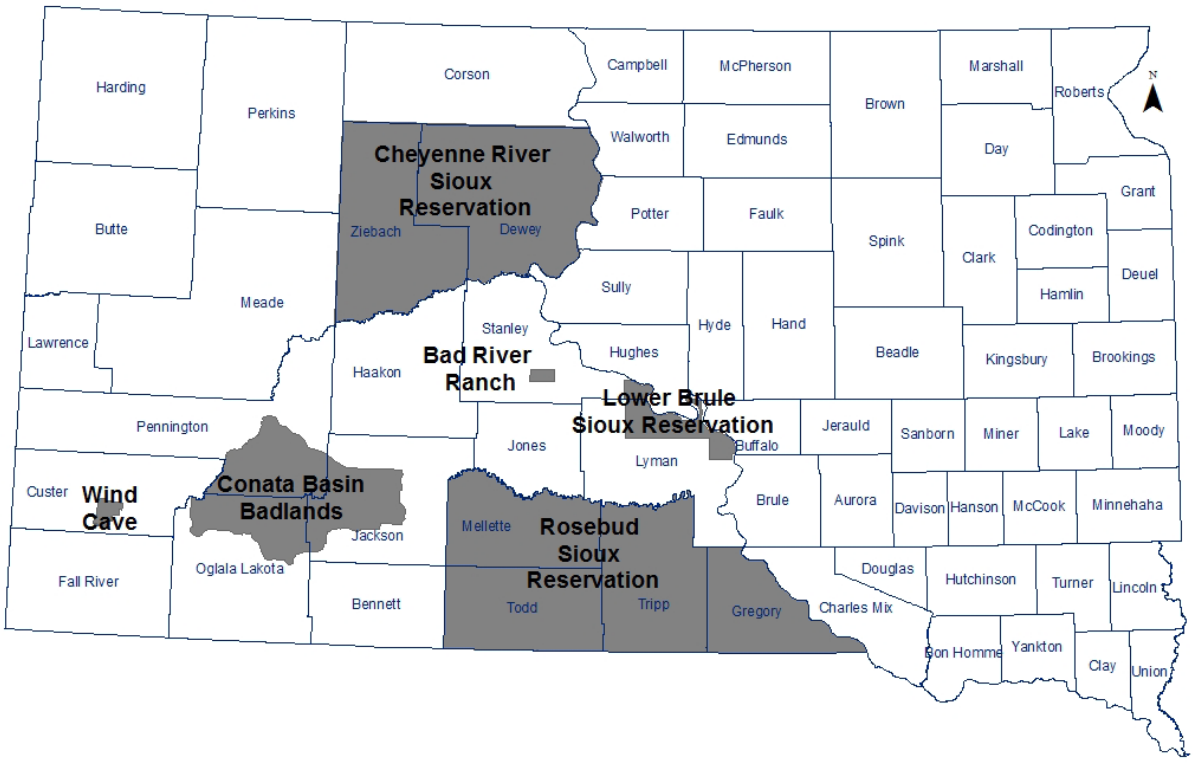

Figure 1. Black-footed ferret reintroduction areas in South Dakota.

Conservation / Management Considerations:

Historically, the close association of black-footed ferrets with prairie dogs has also been the primary reason for its decline. Up until the 1960's, the number of prairie dog colony acres and prairie dogs was in steep decline. This decrease was due to the conversion of black-footed ferret habitat to cropland, prairie dog poisoning campaigns and disease in both prairie dogs and ferrets. Some of those same conservation challenges remain today. Current threats to black-footed ferret recovery include prairie dog (maintaining colony acres of sufficient size and juxtaposition) and disease management (e.g. sylvatic plague). A minimum of approximately 1,500 acres of occupied black-tailed prairie dog habitat is required to support a population of 30 adult black-footed ferrets. Natural predation (coyote, fox, badger, great horned owl and golden eagle) also poses challenges for black-footed ferret recovery. Future research should focus on understanding sylvatic plague ecology, improving sylvatic plague mitigation methods (e.g. vaccination and insecticide application), improving reintroduction methods (e.g. captive rearing, captive release, and translocation of wild animals) as well as determining the influence of predators and prey on black-footed ferret populations. The distribution and prevalence of sylvatic plague should be monitored. Incentive programs for landowners who manage for habitat should be developed. Site specific management actions may include the development of predator control programs, where appropriate.

Conservation Efforts in South Dakota:

Past

The last known stronghold of ferrets in South Dakota occurred in Mellette County. After the discovery of this population in 1964, extensive research was conducted before the last individual in this population was observed in 1974. The species was thought extinct in South Dakota and throughout its range until another population was discovered in Wyoming in 1981.

The first recovery plan was drafted in 1978 and a second plan was finalized in 1988. The most recent recovery plan was published in 2013 (U.S. Fish and Wildlife Service 2013). The USFWS conducts Species Status Assessments (SSA) to determine the current and future status of listed species and assess their viability into the future. The SSA completed for the black-footed ferret in 2019 predicted that sylvatic plague and limited habitat will continue to effect species viability and unless management actions are intensified, viability will likely decline under all scenarios and timeframes analyzed. This SSA was used to inform the most recent 5-year review of the black-footed ferret completed in 2020. Five-year reviews are conducted by the USFWS to determine if the status of listed species should be changed or removed from the federal list. No change in species status was recommended.

Since 1996, South Dakota Department of Game, Fish and Parks (SDGFP) has been a part of the Black-footed Ferret Recovery Implementation Team (BFFRIT). The team was created under the authority of the ESA to help implement recovery plans and work towards recovery by integrating the expertise and resources of various partners. Similar, the South Dakota Recovery Implementation Team shares relevant information and resources for the recovery and conservation of the black-footed ferret in the state. SDGFP is also a member of this team.

Seven reintroductions have occurred in South Dakota:

1. Badlands National Park, Pennington County (1994).
2. Buffalo Gap National Grassland, Pennington County (1996). This and the Badlands National Park site are collectively referred to as Conata Basin/Badlands. At least 120 individuals were detected as of December 2019.
3. Cheyenne River Sioux Tribe (CRST), Dewey County (2000). No individuals are suspected to be in this area as of December 2019.
4. Rosebud Sioux Tribe, Todd County (2003). It is unknown how many individuals remain at this site as of December 2019.
5. Lower Brule Sioux Tribe, Lyman County (2006). Thirteen individuals are known to be at this site as of December 2019.
6. Wind Cave National Park, Custer County (2007). Nineteen individuals were observed December 2019.
7. Bad River Ranch, Stanley County (2017). No individuals have been observed at this site as of December 2019.

The reintroductions that occurred on Badlands National Park and Buffalo Gap National Grassland have since merged into one population (Conata Basin/Badlands). Before the outbreak of plague that occurred in the Conata Basin in 2008, this population was considered to be the result of the most successful reintroduction site in the United States so much so that

wild-born animals from this area were translocated to other reintroduction sites to augment those populations. Black-footed ferret reintroduction on the Cheyenne River Sioux Reservation has also been considered successful, producing approximately 600 kits since the first release of ferrets there in 2000. By 2006, the CRST translocated ferrets for reintroduction of the Lower Brule Sioux Tribe and Rosebud Sioux Tribe. However by 2016, plague epizootics, prairie dog shooting, over-grazing regulatory enforcement, and excellent grass growth became contributing factors to prairie dog colonies only occupying an estimated 10% of the 2000 acreage and ferrets were no longer found (Claymore 2020). Black-footed ferrets have also been documented in Corson County. The most recent report was that of a roadkill in November 2012. Genetic testing strongly suggested this individual originated from the reintroduced population on Cheyenne River Sioux Reservation. Soon after the reintroduction of black-footed ferrets in Wind Cave National Park, black-footed ferrets have been sighted annually in Custer State Park. The USFS, National Park Service, USFWS, Cheyenne River, Rosebud and Lower Brule Sioux tribes monitor the success of reintroductions in South Dakota. Results are shared annually with SDGFP through the BFFRIT.

Black-footed ferrets are highly susceptible to plague, and mortality rates are high for black-tailed prairie dogs. The first documented active outbreak (epizootic) in black-tailed prairie dogs in South Dakota occurred in 2005 in Oglala County. Based on available information (plague positive animals, flea samples or confirmed reports of prairie dog die-offs), plague has a likely distribution across much of western South Dakota (Figure 2). This does not mean that an epizootic is or has occurred in all of these areas, but that the bacterium *Yersinia pestis* that causes plague is known to be present. SDGFP collects and tests samples for plague if a landowner reports a possible colony die-off or if reports of colony die-offs come from areas that are not currently known to have plague.

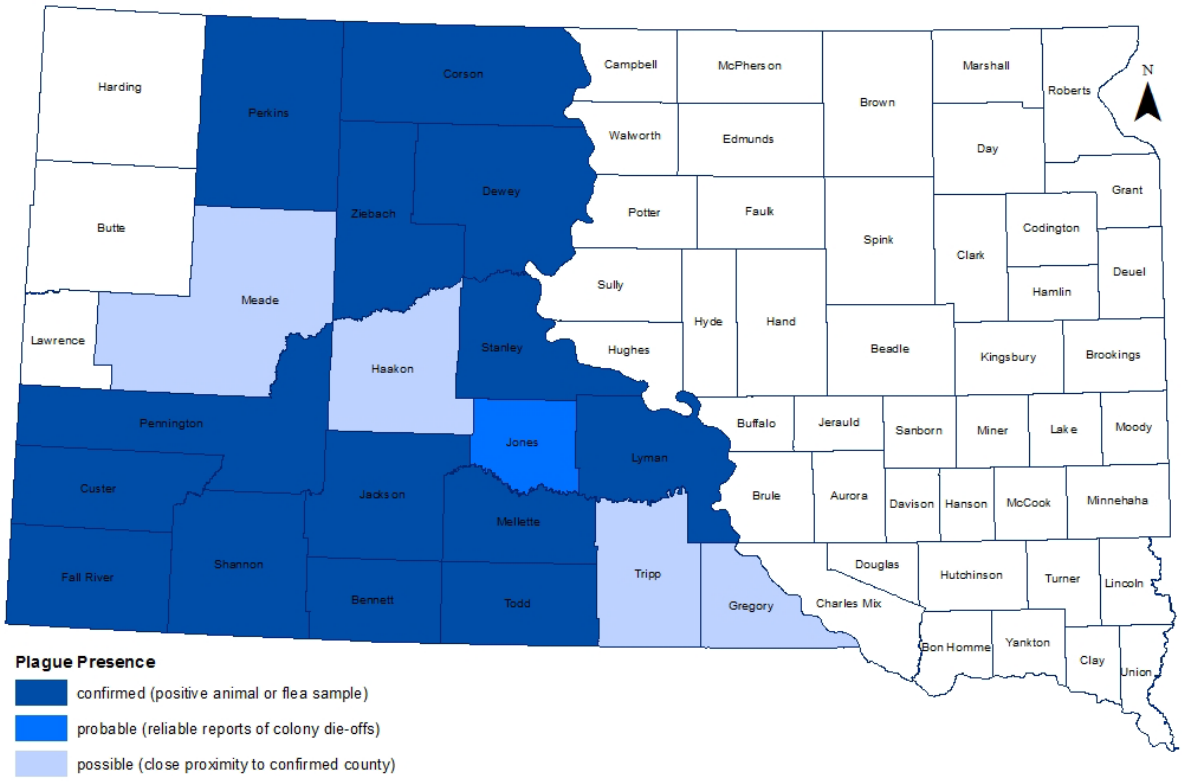

Figure 2. Known and predicted distribution of plague (*Yersinia pestis*) in South Dakota as of 2020.

A landowner incentive program was developed in May of 2006 using a Cooperative Endangered Species Grant from the USFWS. Money from this match-grant (25% state funds: 75% federal funds) was used to provide monetary incentives to private landowners to maintain black-tailed prairie dog colonies in areas occupied by black-footed ferrets. This incentive program was targeted towards private landowners within the Conata Basin/Badlands black-footed ferret reintroduction area (Figure 1). A total of $317, 787 was allocated for use during a five-year period. Willing landowners agreed to a minimum $12.20 per acre annual payment in exchange for their cooperation in carrying out actions to improve, enhance, or maintain black-footed ferret habitat (at a minimum no shooting or poisoning prairie dogs). This minimum payment reflected the 3-year average pastureland rental rates of the counties involved. Over time, the payment per acre changed to reflect changes in average pastureland rental rates and the conservation value of properties enrolled. Over $35,000 in payments were made to two landowners. Given the changing environmental conditions, the presence of plague in the reintroduction area, limited interest in the program and the amount of remaining funds, we extended the scope of the grant to cover other black-footed ferret conservation activities. After a request for proposals was advertised in late 2011, we selected and worked with the World Wildlife Fund to purchase over 15,000 lbs. of delatamethrin insecticide and other dusting supplies to help manage plague in the Conata Basin. The last of these supplies was used during dusting efforts in the Basin in 2015 (Griebel 2015).

The U. S. Geological Survey (USGS) National Wildlife Heath Center and other cooperators have developed a sylvatic plague vaccine (SPV) for prairie dogs that is delivered through an oral bait. The efficacy of this vaccine was tested in field trials at 29 sites in seven states from 2013 to 2015 (Rocke et al. 2017). Three test sites were located in South Dakota: Wind Cave National Park, Buffalo Gap National Grassland and Lower Brule Sioux Reservation. The vaccine had a positive effect on prairie dog abundance and increased survival rates for both adult and juvenile prairie dogs. The Western Association of Fish and Wildlife Agencies (WAFWA) supported the development of such a vaccine and efforts to reduce the occurrence of plague. This oral vaccine was applied at Conata Basin/Badlands, Wind Cave National Park and Bad River Ranch reintroduction sites in 2017-2019.

Studies to determine the efficacy, resistance and effect on non-target arthropods of deltamethrin and two additional pulicides (fipronil and cyfluthrin) are being conducted at the Conata Basin/Badlands site under the direction of David Eads, U. S. Geological Survey.

Plague management using deltamethrin, SPV or fipronil occurs at Bad River, Conata Basin/Badlands, Lower Brule Sioux Reservation, and Wind Cave National Park reintroduction sites.

SDGFP has funded research projects through South Dakota State Wildlife Grants (SWG). "Understanding the relationship between prairie dog ecology and black-footed ferret resource selection" (SWG T-35-R-1) has resulted in the following publications:

Eads, D. A. 2009. Evaluation and development of black-footed ferret resource selection models. M.S. Thesis, University of Missouri, Columbia.

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. Ethology, Ecology & Evolution 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. Journal of Wildlife Management 75:1155-1163.

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. Journal of Mammalogy 92:760-770.

Eads, D. A., D. E. Biggins, D. Marsh, J. J. Millspaugh, and T. M. Livieri. 2012. Black-footed ferret digging activity in summer. Western North American Naturalist 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. Western North American Naturalist 72:206-215.

Eads, D. A., D. S. Jachowski, J. J. Millspaugh, and D. E. Biggins. 2012. Importance of lunar and temporal conditions for spotlight surveys of adult black-footed ferrets. Western North American Naturalist 72:179-190.

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. Natural Areas Journal 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 Mustela nigripes in South Dakota, USA. Wildlife Biology. 16:66-76.

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. Natural Areas Journal 31:218-225.

A research project investigating the factors that affect territoriality and productivity of black-footed ferrets (SWG T-38-R-1) resulted in the following publications:

Grassel, S. M. 2015. Ecological relationships of black-footed ferrets, American badgers, and black-tailed prairie dogs in South Dakota. Ph.D. Dissertation, University of Idaho, Moscow.

Grassel, S. M., J. L. Rachlow, and C. J. Williams. 2016. Reproduction by black-tailed prairie dogs and black-footed ferrets: Effects of weather and food availability. Western North American Naturalist 76:405-416.

A preliminary investigation into the role of small mammals in the maintenance of plague (SWG T-60-R-1) resulted in the following publications.

Maestas, L. P. and H. B. Britten 2017. Flea and Small Mammal Species Composition in Mixed-Grass Prairies: Implications for the Maintenance of *Yersinia pestis*. Vector-Borne and Zoonotic Diseases 17: 467-474.

Maestas, L. P. 2018. The vector chronicles: The implications of plague management on ectoparasite and host ecology, and the search for *Ixodes scapularis* and *Borrella burgdorferin* in South Dakota. Ph.D. Dissertation, University of South Dakota, Vermillion.

Maestas, L. P. and H. B. Britten. 2019. Effects of deltamethrin treatment on small mammal and ectoparasite population dynamics and plague prevalence in a North American mixed-grass prairie system. Journal of Vector-Borne and Zoonotic Diseases 19:274-283.

SDGFP also funds projects through the Wildlife Diversity's Small Grants Program. The following reports or publications have

Livieri, T. L. 2013. Assessing the risk of plague to black-footed ferrets in Conata Basin, South Dakota. Final Report to South Dakota Department of Game, Fish and Parks 28 April 2013. Prairie Wildlife Research, Wellington, Colorado. 12 pages.

Mize, E. L. and H. B. Britten. 2013. Yersinia pestis prevalence in fleas collected from South Dakota swift fox and black-footed ferrets. Final Report to South Dakota Department of Game, Fish and Parks 20 March 2013. University of South Dakota, Vermillion. 11 pages.

Mize, E. L., S. M. Grassel and H. B. Britten. 2017. Fleas of black-footed ferrets (*Mustela nigripes*) and their potential role in the movement of plague. Journal of Wildlife Diseases 53: 521-531.

Ongoing

Given the dependence of black-footed ferrets on prairie dogs, conservation of this species facilitates black-footed ferret recovery. Since 2002, SDGFP has been monitoring colony acreage and distribution of black-tailed prairie dogs in the state. This information is collected as part of the state conservation and management plan for the black-tailed prairie dog (Cooper and Gabriel 2005). These data are used not only for determining changes in state management actions related to black-tailed prairie dogs but have proven beneficial for the conservation and management of other wildlife species.

In an effort to encourage private and tribal landowners to become willing participants in black-footed ferret reintroductions on their property, the USFWS established a Programmatic Black-footed Ferret Safe Harbor Agreement (SHA) in 2013. This agreement provides participating landowners assurances that they will not be subject to additional future regulatory restrictions or commitments. This SHA is applicable across the 12-state historical range of the black-footed ferret, including South Dakota. As part of the SHA, the Natural Resources Conservation Service (NRCS) has made technical and financial assistance available to landowners to help recover the black-footed ferret. The development of the SHA and the NRCS landowner incentive program is supported by a Memorandum of Understanding (MOU) among the USFWS, NRCS, USGS, U.S. Animal and Plant Inspection Service and WAFWA, of which SDGFP is a member. The reintroduction site on Bad River Ranch in Stanley County is the first reintroduction site in the state located on privately-owned land. This reintroduction was made possible by landowner enrollment in the SHA. The Bad River Ranch is owned by Turner Enterprises, Inc.

The Association of Zoos and Aquariums (AZA) and the USFWS are currently conducting a review of the black-footed ferret recovery and reintroduction programs to identify challenges, solutions, and actions needed to improve recovery of the species.

Recovery Criteria/Goals

SDGFP will cooperate with the USFWS in meeting downlisting and delisting goals detailed in the recovery plan (U.S. Fish and Wildlife Service 2013). State-specific delisting guidelines are suggested in the USFWS recovery plan for the species. The recommended contribution from South Dakota is 204 adult ferrets that would require 30,000 colony acres.

Primary Reviewer: Silka Kempema, wildlife biologist

Other Staff or Experts Involved in the Review: Eileen Dowd Stukel, Senior Wildlife Biologist

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6.

References or Information Sources:

Cooper, J., and L. Gabriel. 2005. South Dakota black-tailed prairie dog conservation and management plan.

Griebel, R. L. 2015. Conata Basin/Badlands Area 2015 Plague Management Report. Buffalo Gap National Grassland, Wall Ranger District.

Higgins, K. F., E. D. Stukel, J. M. Goulet, and D. C. Backlund. 2000. Wild Mammals of South Dakota. South Dakota Department of Game, Fish and Parks, Pierre, SD.

Rocke, T. E., D. W. Tripp, R. E. Russell, R. C. Abbott, K. L. D. Richgels, M. R. Matchett, D. E. Biggins, R. Griebel, G. Schroeder, S. M. Grassel, D. R. Pipkin, J. Cordova, A. Kavalunas, B. Maxfield, J. Boulerice, M. W. Miller. 2017. Sylvatic Plague Vaccine Partially Protects Prairie Dogs (Cynomys spp.) in Field Trials. EcoHealth. DOI: 10.1007/s10393-017-1253-x.

U.S. Fish and Wildlife Service. 2013. Recovery plan for the black-footed ferret (*Mustela nigripes*).

SUMMARY OF UPDATES IN 2020:

- A Species Status Assessment (SSA) was completed by the USFWS in 2019. This SSA was used to complete the 5-year status review of the black-footed ferret. This review recommended the species remain listed as endangered.

- A plague outbreak at Bad River Ranch has impacted the most recent reintroduction on Bad River Ranch.

- A State Wildlife Grant-funded research project investigating the effects of flea control on population dynamics of ectoparasites and their small mammalian hosts resulted in two new publications.

- The U. S. Geological Survey is conducting research on the efficacy, resistance and secondary effects of three pulicides: deltamethrin, fipronil and cyfluthrin.

- The USFWS and American Zoological Association is conducting a review of the reintroduction and recovery program.

STATE T&E SPECIES STATUS REVIEW

Species Name: Swift Fox, *Vulpes velox*

South Dakota Status, including legal status and special listings:

- State threatened (SD Administrative Rule 41:10:02:04, List of threatened mammals)
- Monitored by South Dakota Natural Heritage Program
- State Heritage rank S3 (vulnerable; state species rank last reviewed 2020)
- Included as a Species of Greatest Conservation Need in the South Dakota Wildlife Action Plan
- Classified in South Dakota statute as a fur-bearing animal (SD Codified Law 41-1-1). Due to its state threatened designation by South Dakota Game, Fish and Parks (SDGFP) Commission, no harvest by trapping or shooting is allowed. Take is allowed only through a permitting process for certain authorized purposes.

Federal Status:

- NatureServe global rank G3 (vulnerable); last reviewed 5 April 2016
- Considered a sensitive species in Region 2 of the U.S. Forest Service
- Considered a sensitive species by the Bureau of Land Management in South Dakota
- A candidate species under the Endangered Species Act from 1995 through 2001

Basis for new listing, status change (T to E, or E to T), or continued listing with same status:

Specific justifications for original state listing are unknown. This is likely the result of inadequate documentation. By the early 1900's swift fox populations were considered severely depleted due to habitat conversion, unregulated trapping, and poisoning programs. Secondary poisoning from strychnine-laced carcasses used for controlling wolves was considered the primary cause of decline. The species is easily trapped, and early unregulated harvest may have also contributed to early declines. Continued listing as a state threatened species is recommended.

Description, biology and life history:

A small, tan, long-legged fox that stands about 12" at the shoulder and is 2-3' long. Fur is yellowish to buff-gray above, white below. Legs are tan to orange. Tail is bushy and black tipped. Black markings on either side of the snout will differentiate this species from young coyotes. Unlike red fox, swift fox do not have black on their legs.

Breeding begins in February or March. After a 7.5 week gestation period, an average litter of four young is born in April or May. Pups will appear above ground at 4 to 5 weeks old and disperse from their natal den in early fall.

Swift fox are opportunistic foragers traveling long distances during the night in search of prey (jackrabbits, cottontails, prairie dogs, ground squirrels, mice, insects, birds and carrion). Diet contains species that humans often consider pests.

Natural sources of mortality include predation by coyotes, badgers, bobcats, red fox and golden eagles. Swift fox are susceptible to vehicle collisions, shooting, and poisoning. Conversion of grasslands to croplands has affected swift fox populations in some areas. Also, a shift from wolf- to coyote-dominated canine communities may be preventing swift fox recovery due to interspecific competition.

Habitat:

Open, level or gently rolling landscapes with short-stature land cover (< 12") providing good mobility and visibility are preferred. Swift fox use the modified burrows of other animals or dig their own burrows for use as year-round dens. Dens may be in a variety of places including hilltops, slopes, ridges, level pastures, ditches, cultivated fields, rangeland or prairie dog colonies.

Distribution within the state:

Historically, the range of this species is thought to have coincided with the shortgrass and mixed-grass prairies of North America. South Dakota, excluding the extreme eastern portion, is often depicted in reference documents as occurring within the historical range of this species. However, the easternmost historical record of swift fox in South Dakota is from Hughes County (Sovada et al. 2009). A small population in southern Fall River County continues to persist. See Figure 1 for confirmed reports and reintroduction sites.

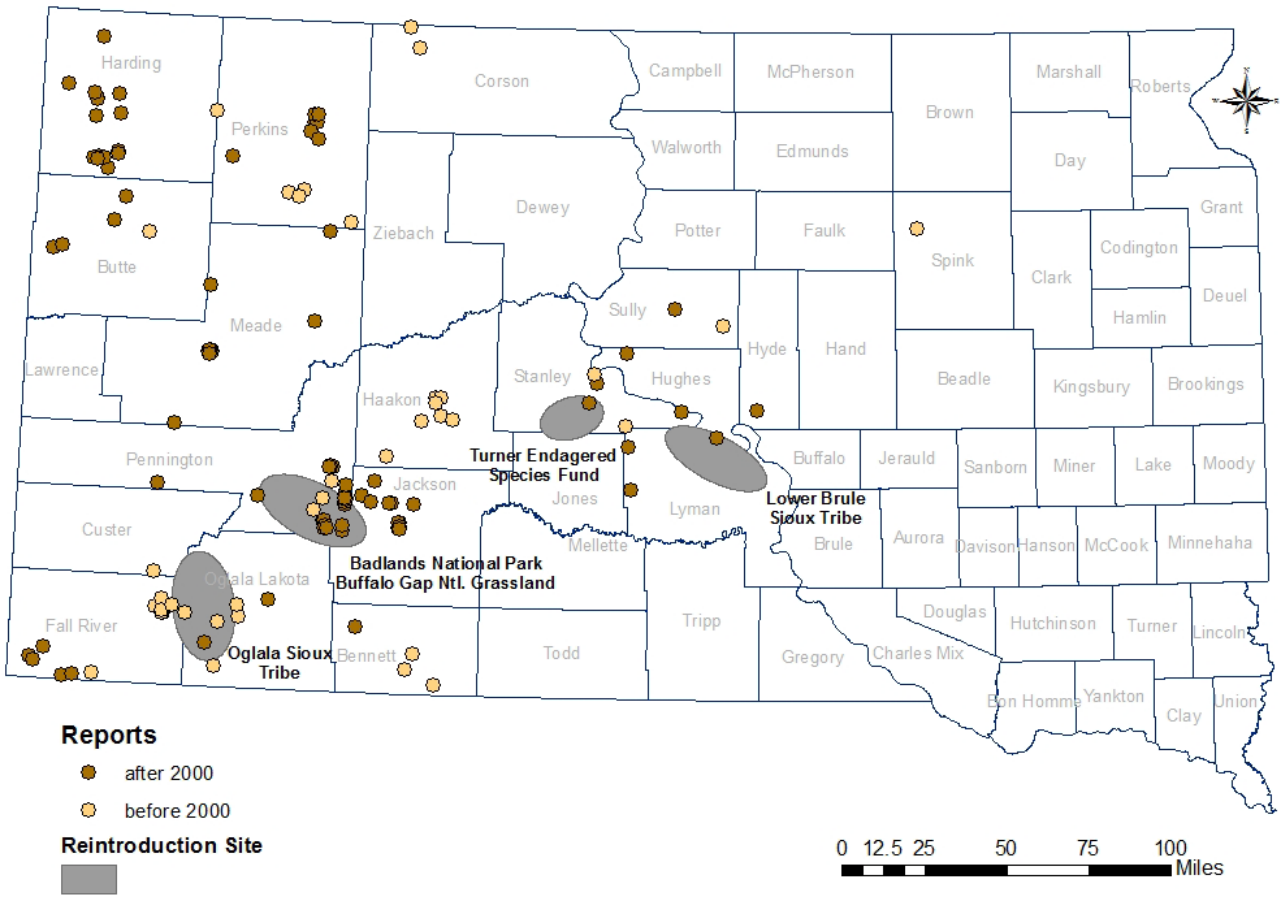

Figure 1. Location of confirmed swift fox reports (1963 through 2018) and general location of reintroduction sites in South Dakota. Reports are comprised of sightings, incidental take, road kill, den sites and one location of a radio collar.

Conservation / Management Considerations:

Predation and interspecific competition with coyote and red fox are known to be limiting factors to swift fox population growth (Stukel 2011). Grassland conversion is also a threat to species recovery. Human activities continue to pose a threat to swift fox recovery in South Dakota. This species is vulnerable to vehicle collisions, shooting, trapping and poisoning. Secondary poisonings can occur from anticoagulant rodenticides used to control prairie dogs. The presence of plague in western South Dakota and the impact on black-tailed prairie dogs, rabbits and other small mammals may also affect swift fox by reducing prey availability and increasing vegetation structure on prairie dog colonies. Years of above average precipitation and the resulting growth of vegetation (absent grazing) may limit this species at the eastern edge of its range, including South Dakota.

Conservation Efforts in South Dakota:

Past

Since 1994, SDGFP has been an active participant in the Swift Fox Conservation Team (SFCT). The SFCT is comprised of 10 state wildlife management agencies and other interested cooperators within the species' range. The SFCT developed and updated *A Conservation Assessment and Conservation Strategy for Swift Fox in the United States* (Kahn et al. 1997, Stukel 2011). The goal of this assessment and strategy is to maintain or restore swift fox populations in each state to provide spatial, genetic and demographic structure of the U.S. swift fox population to ensure long-term viability, provide species management flexibility and encourage population connectivity.

Four reintroductions have occurred in South Dakota:

1. Turner Endangered Species Fund released 180 wild-caught foxes and 46 captive-born pups onto their Bad River Ranches in Stanley County from 1999 through 2007. Observations of swift fox occur in this area (Stratman 2015). However, swift fox have not become established at this site.

2. Badlands National Park and Buffalo Gap National Grassland released 114 wild-caught foxes from 2003-2006 in Pennington County. Swift fox are present in this area. Levels of genetic diversity in this population indicate a successful reintroduction (Sasmal et al. 2012). However, Nevison (2017) expressed concern regarding the status of this population and recommended that no additional reintroductions be conducted until factors limiting success are addressed.

3. The Lower Brule Sioux Tribe released 119 wild-caught swift fox from 2006 through 2008 on the Lower Brule Sioux Reservation in Lyman and Stanley counties. Swift fox have not become established at this site.

4. Oglala Sioux Parks and Recreation Authority released 79 wild-caught swift fox onto Pine Ridge Reservation from 2009 through 2010 in Oglala Lakota County. Swift fox are present on the reservation. Camera and live-trapping efforts in 2013 and 2014 documented 4 dens and at least six individuals (Stratman 2015).

One of the intents of multiple reintroductions is to provide connectivity among those sites and with a small naturally occurring population near Ardmore, SD. There has been evidence that this has occurred.

A State Wildlife Grant-funded project (SWG T-78-R1) associating species presence with the distribution of coyotes and red fox in western South Dakota resulted in the following report and thesis:

Mitchell, E.L. 2018a. Associating swift fox presence with the distribution of other carnivores in western South Dakota. Final Report to SD Game, Fish and Parks. May 2018. South Dakota State University, Brookings. 59 pages and,

Mitchell, E.L. 2018b. Distribution, ecology, disease risk, and genetic diversity of swift fox (*Vulpes velox*) in the Dakotas. M.S. Thesis, South Dakota State University, Brookings.

The Bad River Ranch introduction was funded, in part, by State Wildlife Grant funds (SWG T-25). The following publications were produced:

Jenks, J. 2010. Assessing Swift Fox (*Vulpes velox*) habitat use and resource selection in the pup-rearing period in the mixed grass prairie of west-central South Dakota. Final Report to South Dakota Department of Game, Fish and Parks. South Dakota State University, Brookings.

Sasmal. I. 2011. Population viability analysis of swift fox (*Vulpes velox*) at the Badlands National Park. Ph.D. Dissertation, South Dakota State University, Brookings.

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 (*Vulpes velox*) during the pup-rearing season. Prairie Naturalist 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. Conservation Genetics 14:93-102.

SDGFP also funds projects through the Wildlife Diversity's Small Grants Program including the following:

Mize, E. L. and H. B. Britten. 2013. *Yersinia pestis* prevalence in fleas collected from South Dakota swift fox and black-footed ferrets. Final Report to South Dakota Department of Game, Fish and Parks 20 March 2013. University of South Dakota, Vermillion. 11 pages.

SDGFP provided monetary support to assess the status of the reintroduced population in and around Badlands National Park. The following thesis was produced:

Nevison, Sarah A. 2017. Swift foxes in southwestern South Dakota: Assessing the current status of a reintroduced population. M.S. Thesis, South Dakota State University, Brookings.

Additional research on swift fox conducted in South Dakota:

Russell, T. A. 2006. Habitat selection by swift foxes in Badlands National Park and the surrounding area in South Dakota. M.S. Thesis. South Dakota State University, Brookings.

Schroeder, G. M. 2007. Effect of coyotes and release site selection on survival and movement of translocated swift foxes in the Badlands ecosystem of South Dakota. M.S. Thesis. South Dakota State University, Brookings.

SDGFP has funded a number of swift fox monitoring efforts that are summarized in reports of the SFCT and available for viewing at the team's website: http://cpw.state.co.us/learn/Pages/SwiftFoxConservationTeam.aspx.

Present

A Memorandum of Agreement exists among SDGFP and the U.S. Fish and Wildlife Service with the Lower Brule Sioux Tribe and with the Oglala Sioux Tribe to designate roles and responsibilities, promote and facilitate coordination and communication with regards to swift fox conservation on and near respective tribal properties.

Recovery Criteria/Goals

Recovery criteria are not proposed at this time because of the need for additional information.

Recovery Criteria Considerations

Nevison (2017) and Mitchel (2018b) have provided insights into the status of the swift fox populations in southwestern and northwestern South Dakota, respectively. Reduced distribution, decreasing population numbers as well as low survival rates around Badlands National Park suggest that factors are limiting success at this reintroduction site (Nevison 2017) and those factors should be addressed before additional reintroductions are conducted.

The small swift fox population in northwestern South Dakota is unique from other populations with high estimated annual survival rates and selection of dens sites far from roads (~600 m) (Mitchell 2018b). Coyote predation was the primary cause of mortality. Swift fox presence in this part of the state was negatively correlated with both red fox and coyote. One of 31 swift fox tested positive for antibodies for plague, but with no obvious direct effects on the species. Indirect effects of plague may include reduced prey availability (prairie dogs, rabbits, etc.). This population is small and viable, but genetic diversity is low, and the population is at risk of inbreeding and loss of diversity over time.

There are areas in the state where the species may be present, although surveys have not yet been conducted and incidental reports are lacking. We recommend continuing to monitor species distribution through surveys and incidental reports as well as mapping, monitoring and assessing the quality of remaining native prairie to help identify areas suitable for expansion, reintroduction and conservation. Follow-up to Nevison (2017) and Mitchell (2018b) to address limiting factors and ensure long-term viability of existing populations should be conducted.

Information on the requirements of intact habitat blocks for swift fox within the state is needed. Current modeling efforts to identify and qualify swift fox habitat in portions of Montana, the Dakotas and Wyoming (Moehrenschlager et al. 2006, Olimb et al. 2010) may be useful if coupled with results from recent and thorough survey efforts.

The role of interspecific interactions with other canines and apparent preference for areas along roads may have stronger influence than availability or quality of habitat. Research studies obtaining information on interspecific interactions may be needed. A range-wide population estimate, and a minimum viable population estimate for South Dakota would enhance our knowledge of species status. However, obtaining an accurate wildlife population estimates for species that are rare or hard to survey requires a significant investment. Use of a population index, measured over time to inform species status is recommended. Population monitoring through surveys and incidental reports should continue if species is delisted.

Primary Reviewer: Silka Kempema, wildlife biologist

Other Staff or Experts Involved in the Review: Eileen Dowd Stukel, SDGFP; Kristy Bly, World Wildlife Fund; Shaun Grassel, Lower Brule Sioux Tribe

Date Review Finalized: 2020

Dates of Other Reviews, if appropriate: 2018; approved by SDGFP Commission on April 5-6.

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Mitchell, E.L. 2018b. Distribution, ecology, disease risk, and genetic diversity of swift fox (*Vulpes velox*) in the Dakotas. M.S. Thesis, South Dakota State University, Brookings.

Moehrenschlager, A., S. Alexander, and T. Brichieri-Colombi. 2006. Habitat suitability and population viability analysis for reintroduced swift foxes in Canada and northern Montana. Centre for Conservation Research Report No. 2, Calgary, Alberta, Canada.

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Stukel, E. D., editor. 2017 Swift fox conservation team: Report for 2015–2016. Wildlife Division Report No. 2017-04, SD Department of Game, Fish and Parks, Pierre, South Dakota.

SUMMARY OF UPDATES IN 2020:

- An assessment of the reintroduced population of swift fox in southeastern South Dakota was completed (Nevison 2017).
- Also, information on the distribution, ecology, disease, genetics and relationship between other canids and swift fox in northwestern South Dakota was collected (Mitchell 2018).

Appendix B. South Dakota Endangered Species Law

CHAPTER 34A-8 - ENDANGERED AND THREATENED SPECIES

34A-8-1. Definition of terms. Terms as used in this chapter, unless the context otherwise requires, mean:

(1) "Endangered species," any species of wildlife or plants which is in danger of extinction throughout all or a significant part of its range other than a species of insects determined by the Game, Fish and Parks Commission or the secretary of the United States Department of Interior to constitute a pest whose protection under this chapter would present an overwhelming and overriding risk to man;

(2) "Nongame species," any wildlife species not legally classified a game species, fur-bearer, threatened species, or as endangered by statute or regulations of this state;

(3) "Threatened species," any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range;

(4) "Wildlife," any nondomesticated animal, whether reared in captivity or not, and includes any part, product, egg, or offspring thereof, or the dead body or parts thereof.

34A-8-2. Investigation of wildlife by secretary--Information developed. The game, fish and parks secretary shall conduct investigation on nongame, endangered, or threatened wildlife to develop information relating to population, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary to ensure their perpetuation as viable components of their ecosystem and for human enjoyment.

34A-8-3. Lists of endangered and threatened species promulgated--Basis for determination. On the basis of determinations pursuant to § 34A-8-2 the Game, Fish and Parks Commission shall promulgate a list of those species of wildlife which are determined to be endangered or threatened within the state. The Game, Fish and Parks Commission shall make these determinations on the basis of the best scientific, commercial, and other data available to them and after consultation, as appropriate, with federal agencies, other interested state agencies, other states having a common interest in the species and interested persons and organizations.

34A-8-4. Biennial review of lists of endangered and threatened species--Amendments. The Game, Fish and Parks Commission shall conduct a review of the state list of endangered and threatened species within the period ending July 3, 1979, and every two years thereafter and may amend the list by appropriate additions or deletions.

34A-8-5. Notice by commission of proposed actions--Time allowed for comment. The Game, Fish and Parks Commission may not add a species to nor remove a species from any list pursuant to § 34A-8-3 or 34A-8-4, until it has:

(1) Published a public notice of such proposed action;

(2) Notified the Governor of any state sharing a common border with this state and in which the subject species is known to exist that such action is being proposed;

(3) Allowed at least thirty days following publication for comment from public and other interested parties.

34A-8-6. Departments to manage, protect, and restore endangered and threatened species. The Department of Game, Fish and Parks and the Department of Agriculture shall perform those acts necessary for the conservation, management, protection, restoration, and propagation of endangered, threatened, and nongame species of wildlife.

34A-8-7. Programs and agreements for management of endangered species--Prairie dog control on private lands. The secretary of agriculture and the secretary of game, fish and parks shall establish programs, with legislative approval and may enter into cooperative agreements with federal and state agencies or with private persons as deemed necessary for the management of nongame, endangered, or threatened species. The secretaries shall establish and conduct control programs at state expense on private lands that are encroached upon by prairie dogs from contiguous public lands.

34A-8-8. Permitting capture of endangered and threatened species--Authorized purposes. The secretary of agriculture and the secretary of game, fish and parks may permit the taking, possession, purchase, sale, transportation, exportation, or shipment of species of plants or wildlife which appear on the state list of endangered or threatened species for scientific, zoological, or educational purposes, for propagation in captivity of such fish or wildlife to insure their survival.

34A-8-9. Possession, transportation and sale of endangered and threatened species prohibited--Violation as misdemeanor. Except as otherwise provided in this chapter, no person may take, possess, transport, import, export, process, sell, or offer for sale, buy or offer to buy, nor may a common or contract carrier transport or receive for shipment, any species of wildlife or plants appearing on the following lists:
(1) The list of wildlife and plants indigenous to the state determined to be endangered or threatened within the state pursuant to §§ 34A-8-3 and 34A-8-4.
(2) The United States list of endangered or threatened native wildlife effective on January 1, 1977.
(3) The United States list of endangered or threatened foreign wildlife effective on January 1, 1977.
(4) The United States list of endangered or threatened plants effective on January 1, 1977.
A violation of this section is a Class 2 misdemeanor.

34A-8-10. Importation, possession, sale, or purchase of endangered or threatened species under permit, license, or other documentation--Violation as misdemeanor. A species of wildlife appearing on any of the lists enumerated in § 34A-8-9 may enter South Dakota from another state or from a point outside the territorial limits of the United States and may be transported, possessed, sold, and purchased in accordance with the terms of a permit issued pursuant to rules promulgated by the Game, Fish and Parks Commission pursuant to chapter 1-26. However, a person may transport into South Dakota or otherwise possess, sell, or purchase within the state any animal or parts thereof appearing on any of the lists enumerated in § 34A-8-9 that were lawfully taken or acquired in another state or lawfully taken or acquired from a point outside the territorial limits of the United States if the items are accompanied by the appropriate license, documentation, Convention on International Trade in Endangered Species (CITES) permit, or CITES tag. It is a Class 2 misdemeanor to transport, possess, sell or purchase a species of wildlife appearing on any of the lists enumerated in § 34A-8-9 in violation of the conditions of a permit, or to transport, possess, sell, or purchase any part thereof, in violation of the provisions of this section. The provisions of this section do not apply to any captive nondomestic animal of

the mammalia class and the products thereof regulated by the Animal Industry Board under Title 40.

34A-8-11. Permits for capture or destruction of, wildlife to protect life or property--Violation of permit--Emergency protection of human life. Upon good cause shown and where necessary to alleviate damage to property or to protect human health, endangered or threatened species found on the state list may be removed, captured, or destroyed pursuant to a permit issued by the secretary of game, fish and parks. A violation of the terms of the permit is a Class 2 misdemeanor.

Carnivorous animals found on the state list may be removed, captured, or destroyed by any person in emergency situations involving an immediate threat to human life, provided that the removal, capture, or destruction shall be reported to the secretary or his representative within twenty-four hours of the act.

34A-8-12. Repealed by SL 1992, ch 158, § 50.

34A-8-13. Legislative approval required for reintroduction of species. No species that is currently extinct in this state and that has been placed on the threatened or endangered species list pursuant to the federal "Endangered Species Act of 1973," as amended to January 1, 1995, may be reintroduced into this state through action by any federal, state, or local governmental entity, unless the Legislature has specifically enacted legislation naming the species and specifying the manner of reintroduction.

License Sales Totals

(as of Aug 30)

date updated: 31 Aug 2020

Resident	2016	2017	2018	2019	2020	+/- Licenses	+/- Revenue
Combination	43,851	43,410	41,620	39,738	43,801	4,063	$ 223,465
Junior Combination	6,617	6,472	5,793	5,523	7,580	2,057	$ 55,539
Senior Combination	7,877	8,431	8,836	8,995	9,921	926	$ 37,040
Small Game	2,590	2,234	2,402	2,078	2,032	-46	$ (1,518)
Youth Small Game	1,231	1,239	1,339	1,109	1,141	32	$ 160
1-Day Small Game	236	189	178	258	226	-32	$ (384)
Migratory Bird Certificate	15,796	15,965	15,978	14,467	14,637	170	$ 850
Predator/Varmint	1,464	1,186	1,241	1,205	1,286	81	$ 405
Furbearer	2,423	2,371	2,684	2,963	2,964	1	$ 30
Annual Fishing	60,960	59,848	55,484	50,834	65,927	15,093	$ 422,604
Senior Fishing	12,484	12,873	12,609	12,326	14,223	1,897	$ 22,764
1-Day Fishing	5,139	5,175	4,565	4,710	5,863	1,153	$ 9,224
Gamefish Spearing/Archery	2,651	2,842	2,915	0	0	0	$ -
Habitat Stamp	0	0	0	0	29,865	29,865	$ 298,650
RESIDENT TOTALS =	**163,319**	**162,235**	**155,644**	**144,206**	**199,466**	**55,260**	**$ 1,068,829**

Nonresident	2016	2017	2018	2019	2020	+/- Licenses	+/- Revenue
Small Game	3,822	2,935	3,128	3,440	3,573	133	$ 16,093
Youth Small Game	286	229	209	167	171	4	$ 40
Annual Shooting Preserve	81	83	82	62	52	-10	$ (1,210)
5-day Shooting Preserve	655	693	740	741	834	93	$ 7,068
1-day Shooting Preserve	312	225	225	183	177	-6	$ (276)
Spring Light Goose	3,965	4,494	4,714	2,810	2,961	151	$ 7,550
Youth Spring Light Goose	138	159	179	94	122	28	$ 728
Migratory Bird Certificate	428	516	537	562	796	234	$ 1,170
Predator/Varmint	4,114	4,176	4,346	3,992	3,467	-525	$ (21,000)
Furbearer	3	2	4	6	6	0	$ -
Annual Fishing	26,721	25,011	24,980	21,683	25,981	4,298	$ 287,966
Family Fishing	9,348	9,017	8,459	7,734	9,436	1,702	$ 114,034
Youth Annual Fishing	1,572	1,299	1,208	1,083	1,415	332	$ 8,300
3-Day Fishing	21,325	20,437	20,880	19,057	18,258	-799	$ (29,563)
1-Day Fishing	19,607	18,772	16,736	16,390	23,906	7,516	$ 120,256
Gamefish Spearing/Archery	668	653	710	0	0	0	$ -
Habitat Stamp	0	0	0	0	18,068	18,068	$ 451,700
NONRESIDENT TOTALS =	**93,045**	**88,701**	**87,137**	**78,004**	**109,223**	**31,219**	**$ 962,856**
GRAND TOTALS =	**256,364**	**250,936**	**242,781**	**222,210**	**308,689**	**86,479**	**$ 2,031,685**