

# North American River Otter Management in South Dakota



SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND  
PARKS PIERRE, SOUTH DAKOTA  
**WILDLIFE DIVISION REPORT 2024-16**

**2024**



## **ACKNOWLEDGEMENTS**

This plan is a product of hours of discussion, debate, effort, and input of many wildlife professionals. In addition, comments and suggestions received from outdoor enthusiasts, and those who recognize the value of river otter, and their associated habitats were also considered.

Management Plan Coordinator— Alex Solem, South Dakota Department of Game, Fish and Parks

South Dakota Department of Game, Fish and Parks staff that provided data, edits, and reviews to the North American River Otter Management in South Dakota – Nathan Baker, Julie Lindstrom, Dan Sternhagen, Trenton Haffley, Jacob Wolfe, Rachel Gardner, Nick Markl, Nick Rossman, Brad Baumgartner, and Andrew Norton.

Cover art by Wayne Melquist, 2015. All text and data contained within this document are subject to revision from corrections, updates, and data analysis.

Recommended citation:

South Dakota Department of Game, Fish and Parks. 2024. North American River Otter Management in South Dakota. South Dakota Department of Game, Fish and Parks Wildlife Division Report Number 2024-16, Pierre, South Dakota, USA.

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	ii
<b>LIST OF TABLES</b>	v
<b>LIST OF FIGURES</b>	vi
<b>LIST OF APPENDICES</b>	vii
<b>LIST OF ACRONYMS</b>	viii
<b>EXECUTIVE SUMMARY</b>	1
<b>MANAGEMENT GOAL</b>	2
<b>INTRODUCTION</b>	2
<b>ECOLOGICAL AND LEGAL STATUS</b>	2
<b>RIVER OTTER ECOLOGY</b>	3
GENERAL ECOLOGY	3
DISTRIBUTION IN SOUTH DAKOTA	5
HABITAT REQUIREMENTS	5
INTERSPECIFIC RELATIONSHIP TO BEAVER	5
<b>RECENT RESEARCH IN SOUTH DAKOTA</b>	6
<b>RIVER OTTER MANAGEMENT</b>	9
PHILOSOPHY	9
CITES	9
REGULATED TRAPPING	10
SEASON STRUCTURE	10
<b>POPULATION MONITORING</b>	11
REPORTS OF SIGN, SIGHTINGS, AND MORTALITIES	11
<i>Report Summary</i>	12
<i>Incidental Trapping Events</i>	13
<i>Mortalities</i>	13
INFORMATION GAINED FROM NECROPSIES	13
<i>Sex Ratio and Age Structure</i>	14
<i>Reproduction</i>	14
<i>Morphology</i>	14
<i>Diet</i>	14
<i>Parasites</i>	15

LATRINE SURVEY .....	15
POPULATION BACKDATING.....	16
USE OF CAMERA TRAPS .....	16
<b>ISSUES, OPPORTUNITIES, AND CHALLENGES</b> .....	17
HABITAT LOSS AND DEGRADATION .....	17
REQUESTS FOR SERVICE.....	18
RANGE EXPANSION .....	18
ANGLER PERCEPTION .....	19
PUBLIC OUTREACH.....	20
<b>LITERATURE CITED</b> .....	21
APPENDICES .....	35

## LIST OF TABLES

Table 1. River otter harvest statistics for South Dakota, USA, 2020–2024. ....	33
Table 2. Summary of transect data for river otter latrine surveys on the Big Sioux River using non-invasive genetic sampling, South Dakota, USA, 2021–2024. ....	34

## LIST OF FIGURES

Figure 1. River otter recovery watershed basins and sub-basins. Basins are hydrological unit level six watersheds defined by the U. S. Geological Survey (USGS) National Watershed Boundary Dataset. Sub-basins are hydrological unit level eight watersheds, also defined by USGS.....	27
Figure 2. Map of South Dakota watersheds, rivers, and creeks. Watersheds are hydrological unit level two sub-regions as defined by the U.S. Geological Survey National Watershed Boundary Dataset. ....	28
Figure 3. Counties in eastern South Dakota open to the harvest of river otters through trapping and hunting (grey). Hunters/trappers are limited to one river otter per trapper/hunter per season.....	29
Figure 4. Frequency of reported river otter observations by report type, by year in South Dakota from 1979 through 2023. An observation is based on a sighting of a live animal, incidental trapping catch, otter sign, or road kills. An observation can be an individual animal or a group of animals. ....	30
Figure 5. River otter monitoring transects (n = 23) located on the Big Sioux River ranging in length from 1.3 to 3.5 km in length, South Dakota, USA... ..	31
Figure 6. Cumulative, known-aged river otter determined by cementum annuli aging from incidental catches and opportunistically acquired carcasses, South Dakota, USA. This excludes legally harvested river otters during the designated river otter hunting and trapping season. ....	32

**LIST OF APPENDICES**

Appendix A. Proposal to SDGFP Commission for a river otter trapping season in 2020. ....35

Appendix B. SDGFP Commission action to finalize a river otter trapping season in 2020. ....37

## **LIST OF ACRONYMS**

SDGFP	South Dakota Department of Game, Fish and Parks
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
NGS	Non-invasive Genetic Sampling
RFS	Request for Service
SDSU	South Dakota State University
NHP	Natural Heritage Program



## EXECUTIVE SUMMARY

The North American river otter (*Lontra canadensis*; hereafter, *river otter*) was thought to historically occur throughout South Dakota in areas of suitable habitat. By the mid-twentieth century, river otter were thought to be extirpated from South Dakota due to overexploitation, habitat degradation, and water pollution.

As a reaction to the loss of this historically native species, the Flandreau Santee Sioux Tribe released a total of 35 river otter in 1998 and 1999 to begin reintroduction efforts within the state. Additionally, river otter may have immigrated into South Dakota from neighboring states, Iowa, Nebraska, and Minnesota. The number of incidental river otter reports have increased and the geographic distribution in South Dakota has expanded since this reintroduction effort.

Age structure of the current population in South Dakota indicates a young and growing population. Delisting criteria, developed as part of a status review of state threatened and endangered species, have been met and the species has been delisted. South Dakota Department of Game, Fish and Parks (SDGFP) 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. The river otter is secretive in nature which creates difficulty surveying their populations. SDGFP is committed to implementing feasible and flexible survey methods that meet monitoring program objectives, are suited to the state's climate and landscape, and can be implemented with available resources. Providing information, assistance, and outreach to promote public awareness of river otter, reduce incidental catches, support habitat improvements, and respond to requests for service will continue to enhance river otter management in South Dakota.

This "North American River Otter Management in South Dakota" document provides a comprehensive overview of topics associated with river otter management, such as, river otter introductions and distribution, ecology and legal status, research in South Dakota, management, population monitoring, and issues, challenges, and opportunities facing river otters and wildlife managers.

Objectives and strategies have been developed to help guide river otter management in conjunction with the implementation of the plan. These objectives and strategies are outlined in a smaller, more management action focused document titled "North American River Otter Action Plan, 2025–2029" found here: <https://gfp.sd.gov/management-plans/>. The action plan outlines management objectives and associated strategies that are measurable and time bound, thus requiring careful planning, consideration, and more frequent revisions. The successful implementation of the action plan will require cooperation of the public stakeholders, private landowners, sportsmen and women, and conservation partners.

This management plan is for all constituents interested in the conservation of river otter in South Dakota. Wildlife managers are challenged to use the available tools for the

benefit and well-being of river otter. With careful coordination among all stakeholders, South Dakota's trapping and outdoor heritage will be preserved for future generations.

## **MANAGEMENT GOAL**

SDGFP 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.

## **INTRODUCTION**

Historically, river otter (*Lontra canadensis*) were considered common in many riparian areas and permanent bodies of water in the Northern Great Plains. However, overexploitation, habitat degradation and water pollution led to the extirpation of the species from much of its range by the mid-twentieth century, including South Dakota (Anderson 1977, Jones et al. 1983, Jones et al. 1985, Kiesow and Dieter 2003). Reintroduction efforts were carried out by the Flandreau Santee Sioux Tribe to re-establish a river otter population in eastern South Dakota (SDGFP 2020). Historical reports of river otter sightings and sign occurred prior to re-introduction, and SD GFP has received reports as early as 1979. However, only recently have these reports become more common indicating their distribution has steadily expanded into other river systems in South Dakota (SDGFP 2020). These reports could be a direct result of dispersals of individuals following restoration efforts in surrounding states or reestablished populations in South Dakota (Kiesow and Dieter 2003).

Prior to 2020, river otter were listed as a state threatened species in South Dakota and given a protected status (South Dakota Administrative Rule 41:10:02:04; SDGFP 2012). In December of 2010, SDGFP staff began developing a plan for the conservation and management of river otter and produced the South Dakota River Otter Management Plan (SDGFP 2012). The 5-year management plan provided general, strategic guidance to SDGFP and potential partners for the recovery and sustained management of river otter in South Dakota. Using verified reports of sightings, sign, and incidental trapping events from staff and members of the public, SDGFP developed recovery criteria to remove river otter from the state threatened species list. In 2020, delisting criteria were met, river otter were removed from the state threatened species list, and a structured hunting and trapping season was established. During this process, SDGFP outlined the need for a robust monitoring effort of the recently delisted species, an aspect critical for successful river otter management (Melquist et al. 2003, Gallant et al. 2008), to ensure delisting criteria is continually being met and the population is sustainable.

## **ECOLOGICAL AND LEGAL STATUS**

The Flandreau Santee Sioux Tribe conducted a reintroduction along the Big Sioux River near Flandreau in Moody County by releasing 35 river otter. Ten males and seven females were released on 23 May 1998; on 14 May 1999, eight males and ten females were released (SDGFP 2020). The released animals were not marked or monitored, and

subsequent information on distribution, survival, or reproduction of these released river otter was limited.

As directed in the 2012 plan (SDGFP 2012), recovery criteria were developed to recommend removing the species from the state threatened species list. Recovery criteria involved the collection of verified reports from basins (hydrological unit level six as defined by the US Geological Survey [USGS] National Watershed Boundary Dataset) and sub-basins (hydrological unit level eight as defined by the USGS National Watershed Boundary Dataset) in eastern South Dakota (Figure 1). This was done as part of the biennial status reviews conducted for all state threatened or endangered species, which included the river otter. Status reviews summarize what is known about the species in the state, identify delisting or downlisting criteria and monitoring and research needs. As per the river otter status review, delisting criteria for the river otter included:

- 1) *Verified reports of reproduction are documented in three of the five basins (60%) within the recovery area and,*
- 2) *Within each basin, the presence of river otter has been documented by verified reports in at least 40% of their sub-basins.*

Both criteria were required for at least two of the five years prior to recommended delisting. These criteria were met in 2019. On 5 March 2020, SDGFP staff recommended to the SDGFP Commission (Commission) that the river otter be removed from the list of state threatened mammals (Appendix A). The Commission approved delisting of this species on 7 May 2020.

## **RIVER OTTER ECOLOGY**

### GENERAL ECOLOGY

The river otter is a semiaquatic carnivore adapted to life in the water. The river otter is a member of the Order Carnivora, Family Mustelidae. Their cylindrical-shaped body, as an adult, ranges from 35–54 inches (89.0–137.2 cm) in length, with the tail comprising more than 1/3 of the total length. These adaptations along with webbed feet make them agile swimmers. Maximum length is reached at 3–4 years of age. Weight ranges from 7.5–34 pounds (3.4–15.4 kg). Females are 3–21% smaller than males (Melquist et al. 2003). 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 otter are brown with a tan to silvery-white chin and chest. Their sleek fur has a soft, dense, and oily underfur mixed with guard hairs, forming an effective water repellent for insulation (Higgins et al. 2000). The pelt becomes prime following an autumn molt. River otter in northern locations have the longest and densest fur (Toweill and Tabor 1982).

Tactile and auditory (i.e., touch and hearing) senses are acute in the river otter. Individuals presumably use their long, sensitive whiskers to locate prey while foraging in turbid water or in the dark (Melquist and Dronkert 1987). They are near-sighted, but likely

can detect movement at significant distances. The importance of their sense of smell is unknown, but their use of scent marking may indicate the value of this sense (Melquist et al. 2003). River otter take fish, their main prey species, in addition to crayfish, frogs, aquatic invertebrates, birds, and small mammals based on abundance and ease of capture. River otter can stay submerged for as long as four minutes through a process called bradycardia, a slowing of the heart rate, while underwater (Melquist and Dronkert 1987).

River otter will reproduce annually and begin their reproductive strategies at two years of age (Hamilton and Eadie 1964, Tabor and Wight 1977); however, reproduction has occurred with individuals between one and two years of age in reintroduced populations (Johnson et al. 2007, Crimmins et al. 2011). Females likely advertise their reproductive availability with scent marking. River otter females have a complicated reproductive strategy which includes induced ovulation and the delayed implantation of embryos. This means when an egg is fertilized during the breeding season in late winter or early spring, it remains unattached and undeveloped in the uterus for approximately ten months. After this delay, the fertilized egg will attach to the uterus and grow during a 50–60-day gestation period, resulting birth of young in early spring. Breeding success of a female is influenced by habitat, prey, and population density in an area, such as male dominated sex-ratios (Melquist and Dronkert 1987).

The female uses a naturally sheltered area, or a burrow excavated by another species to bear a litter that typically numbers two to three pups. She seeks a secluded area with abundant food for the birth and care of her litter. Pups may emerge from the natal den at two months and leave the natal area with the mother at three months. A typical family unit is a female with her dependent or nearly independent young (Melquist et al. 2003). Adult males are typically solitary, although bachelor groups have been observed during the nonbreeding season.

River otter are active year-round. They are most active during the evening and the hours from dawn to mid-morning. They communicate with various scent-marking strategies designed to advertise their presence in an area and to encourage transient animals to travel through the area without confrontation (Higgins et al. 2000).

River otter may live 10–15 years in the wild. They have few natural predators. Human- caused mortalities are due to legal harvest, accidental trapping, roadkill, and drowning in gill nets (Melquist et al. 2003). A study of river otter along the Mississippi River in Minnesota revealed that all accidental trapping mortalities in the study area were females (Gorman et al. 2008). They speculated that trappers concentrated in beaver (*Castor canadensis*) habitat, which may attract female river otter seeking natal den sites.

River otter territoriality has been debated. Their system of social interactions likely varies across the species' range, possibly related to food availability. Researchers in Minnesota found that river otter in their study area shared space and were neither solitary nor territorial (Gorman et al. 2006). The authors found high annual home range fidelity

for both sexes. Home ranges of males were more than three times larger than those of females in the study area.

### DISTRIBUTION IN SOUTH DAKOTA

This species is thought to have historically occurred throughout South Dakota in appropriate habitat (Toweill and Tabor 1982, Jones et al. 1983). Melquist et al. (2003) estimated that by 1977 river otter 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 otter in South Dakota from 1979 to 2001. However, a small population existed as the result of a reintroduction in Moody County in 1998. Since this known reintroduction effort, SDGFP has recorded a slow, westward expansion of verified river otter reports. It is assumed that river otter are filling suitable habitat in other parts of the state away from the Big Sioux watershed in southeastern South Dakota.

### HABITAT REQUIREMENTS

River otter can be found in a variety of aquatic environments including rivers, streams, lakes, and marshes with deep pools, all of which have abundant vegetation and prey. Good water quality, year-round access to open water and limited disturbance are often important habitat characteristics. River otter have a commensal relationship with beavers, as beaver dams may provide year-round open water and beaver bank dens and lodges can be used by river otter. As with all wildlife species, food, shelter, and water are the basic habitat needs, but this species favors areas with abundant food and limited disturbance. Pollution and other water quality threats may limit river otter presence (Melquist and Dronkert 1987).

Riparian vegetation along a wetland margin is a key habitat feature. Such vegetation may attract beavers, which enhance areas for river otter by creating foraging habitat and denning areas. River otter often use fallen trees or logjams for shelter or foraging. Melquist and Dronkert (1987) called important food sites “activity centers,” where river otter may linger if they find food and shelter, and experience limited disturbance. Water storage reservoirs often do not support river otter populations because of the annual draw down of reservoir levels, the lack of vegetative cover for river otter and prey species, and the absence of sites for denning and resting (Melquist et al. 2003). Melquist and Hornocker (1983) identified fifteen different kinds of resting sites used by radio-implanted river otter in central Idaho. They may use naturally sheltered sites or cavities or dens created by other animals’, such as beaver, as rest and natal sites (Melquist and Hornocker 1983).

### INTERSPECIFIC RELATIONSHIP TO BEAVER

Beaver and river otter are considered to have a commensal relationship, with the river otter benefiting from the presence of beaver while the beaver is neither benefited nor harmed. LeBlanc et al. (2007) found that the source–sink dynamic of beaver populations creates ponds that are occupied and later abandoned, developing a mosaic of ponds that strongly influences the use of habitat and the distribution of the river otter during summer. The authors’ work in New Brunswick showed that good otter habitat consisted of streams

and rivers with high numbers of beaver colonies (LeBlanc et al. 2007). The authors stated that “river otter exist in a commensal relationship with beaver in boreal Alberta, especially in winter” and hypothesized that “the annual carrying capacity for river otter is determined by the availability of winter habitats.” In Maine, researchers found that river otter selected watersheds with a high abundance of old and active beaver colonies (Dubuc et al. 1990). River otters do not excavate natal dens. They may use naturally sheltered sites or cavities or dens created by other animals (Melquist and Hornocker 1983). Melquist and Hornocker (1983), working in Idaho, reported that river otter used active and abandoned beaver bank dens and lodges more than any other type of den or resting site. Based on radiomarked animals, Melquist and Hornocker (1983) found that river otter rarely used lakes and reservoirs that lacked escape cover and shelter, even if food was abundant.

Beaver ponds, lodges, and bank dens provide a source of food for river otter, shelter from predators, and access to water in winter. Winter ice had a strong limiting effect on otter behavior and dispersion in a study in Alberta (Reid et al. 1994). In a region like the Northern Great Plains, with low gradient streams and harsh winters, it is probable that self-sustaining populations of river otter will be limited to streams with significant beaver populations. Beaver presence must be combined with abundant fish food sources for river otter to find the area beneficial.

Evidence that river otter were abundant on the upper Missouri River (prior to the arrival of European fur traders and the near extermination of beaver) comes from the journals of Lewis and Clark (Burroughs 1961). Their expedition first reported river otter in present-day North Dakota at the mouth of the Heart River near Bismarck. However, they did not report river otter in South Dakota during their expedition. Lewis and Clark both commented several times on the abundance of both beavers and river otter in the upper Missouri River basin in present-day Montana (Burroughs 1961).

## **RECENT RESEARCH IN SOUTH DAKOTA**

The need to collect updated information on the distribution and population of river otter in South Dakota was identified in the first river otter management plan (SDGFP 2012). As such, a State Wildlife Grant-funded project was initiated to determine current river otter distribution and evaluate habitat, in addition to identification of suitable habitat of unoccupied sites with the potential for population expansion.

In early 2001, SDGFP worked with South Dakota State University (SDSU) to determine the current distribution of river otter in the state and assess the feasibility of river otter reintroduction (Kiesow 2003). Two peer-reviewed publications followed (Kiesow and Dieter 2003, 2005). Kiesow and Dieter (2003) described the current distribution of river otter in South Dakota, while Kiesow and Dieter (2005) described the feasibility of reintroduction. SDGFP contracted with a consultant to further investigate the distribution of river otter in the state, evaluate survey methodology suitable for long-term monitoring in South Dakota, and collect biological data from incidentally caught and killed river otter. The following is a summary of those efforts and the collaborative work with SDSU.

Kiesow and Dieter (2003) assessed the distribution of river otter in South Dakota and tried to determine if there were any remnant populations in the state. Seventeen linear waterways were selected for analysis based upon three criteria: 1) water permanence, 2) gradient, and 3) stream order three to seven (orders three to seven were found to be preferable to otters in other studies). Study streams included the Big Sioux River, Missouri River, James River, Little Minnesota River, Jorgenson River, Medicine Creek, Grand River, Vermillion River, North Fork of the Whetstone River, Moreau River, Virgin Creek, Cheyenne River, Bad River, White River, Little White River, Rapid Creek, and Belle Fourche River. They measured habitat, looked for river otter sign along transects, and collected information on sightings from the South Dakota Natural Heritage Program, tribes, landowners, trappers, and conservation officers. See Figure 2 for a map of South Dakota watersheds.

Thirty-four confirmed sightings of river otter were recorded prior to and during the Kiesow and Dieter (2003) study. Approximately 75% of the sightings occurred in the eastern third of South Dakota. Half of the sightings occurred along the Big Sioux River. Most of the observations in Moody County were likely the result of a reintroduction of 35 river otter to a section of the Big Sioux River that runs through tribal land by the Flandreau Santee Sioux Tribe in 1998 and 1999 (Kiesow 2003, Kiesow and Dieter 2003). The reintroduced river otter originated from Bayou Otter Farm, in Theriot, Louisiana (Raesley 2001).

Kiesow and Dieter (2005) determined the availability of suitable habitat for potential future river otter reintroductions into South Dakota. The authors evaluated habitat on the same 17 waterways selected in Kiesow and Dieter (2003). These waterways were ranked based upon stream characteristics, watershed features, water quality, prey availability, and other factors. Riparian habitat, prey base, and water quality were the three main factors that provided suitable river otter habitat. Results showed that the Bad River, Big Sioux River, James River, North Fork of the Whetstone River, and the Little White River were the most suitable linear waterways for sustaining a population of river otter. The authors concluded that it was feasible to reintroduce river otter to South Dakota and recommended reintroduction into the five rivers selected.

In the winter of 2005-2006, SDGFP contracted with Jacquie Ermer, a biological consultant, to investigate the use of latrine site and snow track surveys for long-term monitoring of river otter. This project occurred in Roberts and Grant counties. Information on current sightings and incidental catches was collected. Interviews with wildlife professionals, information on sightings, and a review of Kiesow and Dieter (2005) provided guidance on survey site selection. Ermer concluded latrine site surveys were time consuming and limited by flood or ice conditions (Ermer 2006). Ermer (2006) urged additional data collection on population status, distribution, habitat use and availability, and natural history. Slides were easy to identify when snow was present. She also recommended aerial snow track surveys to determine distribution over a large (i.e., statewide) area and the development of a practical, long-term monitoring scheme. In addition, Ermer advised that the origin of river otter from South Dakota should be determined, and river otter awareness programs developed (Ermer 2006).

Ermer was contracted the following winter (2006–2007) to evaluate aerial snow track survey methodology and continue to investigate river otter distribution within eastern South Dakota (Ermer 2007). Surveys required at least 0.5 inches (1.27 cm) of fresh snowfall and safe flying conditions. The James River, a portion of the Elm River and Big Sioux River and the Little Vermillion River were surveyed with no observations of river otter sign. Reports of recently observed river otter sign along the Vermillion River and in Meyer Lake Waterfowl Production Area (Grant County) were further investigated by aircraft. No river otter sign was detected on the Vermillion River; sign was observed near Meyer Lake.

Despite the limited observations of river otter sign using aerial snow track surveys, Ermer recommended continued evaluation of this method and estimating detection probability. Ermer also recommended that sign surveys (aerial and ground), licensed trapper surveys, confirmed sighting reports, carcass collection, and population modeling be implemented initially for at least three years to determine the status of river otter in the state as precursors for a long-term monitoring program. A survey of all SDGFP trappers was conducted to identify beaver habitat in the state to help identify potential river otter habitat.

During the winter of 2007–2008, Ermer coupled aerial snow track surveys and bridge sign surveys to determine river otter distribution in eastern South Dakota (Ermer 2008). Surveys were conducted at bridges that were outside an 8-mile (12.87-km) buffer of known river otter locations or previously surveyed river otter areas and in watersheds with suitable habitat. Sixty-seven potential bridge sites were selected randomly; 36 bridge sites were surveyed. At least one inch (2.54 cm) of snow was required before each site was walked 300 meters upstream and downstream of the selected bridge. No river otter sign was observed from the bridge sign surveys. In addition, a Cessna aircraft was used to survey portions of the upper and lower James River, Vermillion River, mid- and lower Big Sioux River, and lower Missouri River after at least 0.5 inches (1.27 cm) of snowfall. Six 20-mile (32.2-km) long transects were flown in Day/Brown, Grant, Hamlin, Marshall, and Moody counties to survey basin wetlands for river otter sign. Sign was observed during the aerial survey on the Big Sioux River, upper James River, and in Moody County.

Ermer concluded that there was a continuing need to determine the distribution and extent of breeding of river otter in South Dakota (Ermer 2008). Ermer proposed using a combination of multiple methods described above and if feasible, conduct a small-scale study to estimate home range, fecundity, and survival.

In 2022, research began as part of a master's project with SDSU investigating the impact of land use and management practices on North American river otter distribution, habitat use, and projected recovery in South Dakota. Using camera traps, investigators plan to model current distribution of river otters and predict landscapes suitable for river otter. This project is on-going and will be completed by 2025.



## **RIVER OTTER MANAGEMENT**

### PHILOSOPHY

The recovery of river otter populations in South Dakota, facilitated in part through protection as a state threatened species, is a conservation success story. Data collected and research conducted since the turn of the century indicate river otter have re-colonized many areas of their former range in eastern South Dakota, with a growing population expected to continue to expand into remaining suitable habitat across the state. Delisting criteria developed as part of a species status review were met and the species was delisted. Management and monitoring of river otter remain important to future sustainable use and enjoyment.

A conservative and limited harvest is currently considered sustainable and allows wildlife managers to provide the opportunity for recreational trapping of river otter through a regulated harvest season while ensuring a growing river otter population. SDGFP recognizes that river otter also may be incidentally trapped by licensed trappers in pursuit of other species, particularly beaver. Allowing a conservative and limited harvest during a short season will allow better utilization of those river otter otherwise caught incidentally. Efforts are ongoing to provide information and outreach to improve awareness and minimize incidental captures. Further, data collected from harvested river otter provides information toward a monitoring effort that would be difficult to obtain otherwise. Harvested river otter provides managers with additional demographic data, such as, sex and reproductive status, and trapper effort data that can be correlated to abundance in lightly trapped populations.

### CITES

The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) regulates international trade of certain animal and plant species. Species are assigned to Appendix I, II, or III. River otter are included in the Appendix II category because this species is similar in appearance to other otter species that may be threatened; thus the U.S. Fish and Wildlife Service (USFWS) regulates and monitors river otter export.

If international trade of pelts is desired, states recommending or considering a river otter harvest season need to request approval for export of river otter pelts under the CITES Export Program. CITES authorization follows standard federal rule-making procedures (50 CFR 23.69 (b)(2)). The CITES Scientific Authority has concluded that the exportation of river otter taken in states with open harvest seasons between 2018-2019 and 2023-2024, will not be detrimental to the survival of the species. This General Advice also applies to states opening river otter harvest seasons for the first time (USFWS 2018). Because the U.S. Scientific Authority has made this range-wide nondetrimental finding for river otter, states requesting export approval need to submit only the information in (b)(1) (ii) current harvest control measures, including laws regulating harvest seasons and methods and (iv) tagging or marking requirements for fur skins, and (vi) to the Division of Management Authority. Once a state's request for an export program has been

approved, the USFWS requires that the state provide annual updates on the status of their river otter population and any regulatory changes that may be needed. SDGFP submits an annual harvest report to the USFWS and tags each harvested river otter with a unique CITES tag.

### REGULATED TRAPPING

Trapping is regulated and 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 allow 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. Biological data collected from harvested river otter and social data collected from successful trappers help inform future management, including proposed seasons and harvest limits. Trappers also 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 otter. 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 otter reporting and avoidance techniques. SDGFP also produced a video for YouTube titled “Avoiding the Incidental Trapping of River Otters” (2021). SDGFP staff respond to requests for service from the public regarding beaver causing damage to private property. These trained staff modify their methods used to minimize the potential for incidentally capturing a river otter when they remove beaver causing damage.

### SEASON STRUCTURE

Management options include total protection; adjusting opportunities to harvest animals by season length and harvest period; establishing harvest limits, management zones, and closed areas; limiting harvest by individual trappers; and restricting the size, type, and number of traps allowed (Melquist and Dronkert 1987). Melquist et al. (2003) described Canada’s long-term use of registered traplines, which helps reduce competition among trappers, particularly during times of high fur prices.

River otter are vulnerable to overharvest because of their low fecundity rate, the long interval between generations, their ability to travel extensively, and, when restricted to riparian corridors, their limited travel routes (Toweill and Tabor 1982, Melquist et al. 2003). This has led some states to regulate river otter harvest by allowing only one animal/trapper/season (Toweill and Tabor 1982). In addition, Hill (1978), as cited in Melquist and Dronkert (1987), analyzed river otter and beaver trapping in the

southeastern U.S. and found that one river otter was taken for every 6-10 beavers. However, some studies have found that river otter are often incidentally taken in beaver sets, with most catches made by a few trappers.

In May of 2020, SDGFP staff recommended an annual river otter trapping/hunting season. The SDGFP Commission approved this season beginning at sunrise on 1 November and running through 31 December or until a harvest limit of 15 river otters was reached, whichever came first. The river otter season was restricted to the eastern portion of South Dakota (Figure 3). Participation was limited to residents of South Dakota, and trappers/hunters were limited to a harvest of one river otter per individual per season. During the open season, trappers/hunters are required to report any river otter within 24 hours of harvest to SDGFP. The trapper/hunter is required to check-in the carcass and detached pelt at a designated SDGFP office for registration. Upon check-in, the hunter/trapper is issued a CITES tag for the pelt, and the carcass is obtained by SDGFP to collect biological samples. The harvest limit of 15 otter in the inaugural season of 2020 was reached in six days (Table 1). In 2021, the harvest limit was increased to 20 river otter.

## **POPULATION MONITORING**

The river otter is a difficult species to monitor, making the development of a meaningful and feasible monitoring program a continuing challenge. As with any species, clear objectives must be paired with suitable survey and monitoring tools. A monitoring program must help ensure the species status remains at least stable to demonstrate that delisting remains justified. A monitoring program can provide additional population status information, in addition to harvest or trapper effort data that are collected. Survey and monitoring tools must also be adapted to South Dakota's climate and landscape. A combination of methods best suited to South Dakota are needed, with consideration given to limited funding and staff availability, and dynamic weather and habitat conditions.

### **REPORTS OF SIGN, SIGHTINGS, AND MORTALITIES**

The SDGFP Natural Heritage Program (NHP) maintains information on rare animal and plant species and plant communities in the state. The NHP monitored river otter by soliciting and collecting incidental reports since 1979 from a variety of sources including universities, government agencies, private contractors, and the public.

Reports of river otter are categorized based on the primary method used to identify the animal as a river otter: sighting, sign, incidental trap, and vehicle kill. Sightings are based upon the actual observation of a river otter. Reports of sign are based on tracks, slides, runs, scat, latrines, and/or natal dens. Incidental trap reports are of river otter that were incidentally caught while targeting other species. Vehicle kills are reports of river otter found dead on the road or hit by a vehicle. A report can be of an individual animal or a group of animals.

Certain criteria are used to determine the reliability of each report:

- A **verified report** is one of a carcass or live-captured individual(s) 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 verified sighting. Knowledgeable reviewers may include agency staff familiar with river otter or other river otter experts.
- A **probable report** is a sighting not accompanied by a photo but is observed by someone with river otter experience and knowledge. Tracks and scats not in snow are considered probable reports in part because of the difficulty of correctly identifying them. Photos are evaluated by knowledgeable reviewers.
- An **unverified report** is a report with no evidence to support or reject the report.

### *Report Summary*

The number of reports received has steadily increased since 1998 (Figure 4). From 1979 to 2019, SDGFP received an average of 14.0 (SD = 19.3) river otter reports per year. From 1979 through 1999, an average of less than one report (SD = 1.5) was received annually. During years (2000–2019), SDGFP received an annual average of 27.9 (SD = 19.6) reports. During years 2015–2019, SDGFP received an average of 50.6 (SD = 11.7) river otter reports each year. The highest number of river otter reports occurred in 2016 (n = 65).

Although river otter have been reported in nine of the ten watersheds in South Dakota, most reports came from three watersheds: Big Sioux, Minnesota, and James. Watersheds are defined as hydrological unit level two subregions delineated by the U.S. Geological Survey National Watershed Boundary Dataset. River otter have been observed in 52 of the 66 South Dakota counties. Approximately half of all reports came from four counties: Moody, Roberts, Grant, and Minnehaha.

Sightings and incidental trap reports account for most report types. The remainder of reports are based on sign left by a river otter, river otter struck by a vehicle, and locations where river otter were detected by field cameras as part of a SDGFP project evaluating the use of cameras for monitoring river otter.

River otter reports have revealed some monthly patterns based on observation type. Most report types are received in March, April, and November. Sightings of live animals are reported throughout the year, but most frequently in March and April. Incidentally caught river otter are reported in all months of the year, but are most frequent in March, April, and November. Observations of sign were most reported in March. Reports of vehicle killed river otter occurred throughout the year with the most reported in April.

The first verified observation of a river otter was made in Hughes County in 1983. Since that time, verified reports increased from an average of less than one report per year (SD = 1.0) in the first 21 years (1979–1999) to 18.6 (SD = 14.3) reports per year during 1999–2019.

### *Incidental Trapping Events*

Most incidentally trapped river otter reports come from the Big Sioux and Minnesota watersheds. Most incidental trapping events occurred in five counties: Moody, Roberts, Grant, Brookings, and Minnehaha. A small number of river otter are occasionally incidentally trapped from west of the Missouri River. It's important to note that not all incidentally trapped river otter are killed; some are released alive with minimal to no injury.

Of the incidental trapping reports where target species was known, beaver, raccoon, fish, and mink are the most common targets. Trap types reported included body-grip, foothold, snare, and live traps. Five sizes of body-gripping conibear traps were reported, but the 330 conibear was the most reported. Live-trap types included Hancock and Havahart traps. Other trap types included fyke and hoop nets for fish sampling.

SDGFP surveyed furbearer license holders who had a 2012 license or a 2013 license that was purchased prior to May 1, 2013, to learn more about the distribution of river otters in the state (Huxoll 2013). License holders were asked if they had incidentally trapped a river otter in the previous year and if so, in what county. Huxoll (2013) reported that river otter were incidentally caught in Grant (n = 4), Moody (n = 3), Minnehaha (n = 3), Lincoln (n = 2), Clark (n = 1), Deuel (n = 1), and Roberts (n = 1) counties.

### *Mortalities*

Of the river otter mortality reports provided to SDGFP, some were of river otter found dead or killed (euthanized) due to injuries determined likely to be fatal. Causes of death included: incidental trapping, vehicle strike, drownings in fish sampling gear, cardio myopathy, and other unknown causes. SDGFP records indicate that river otters which were euthanized were done so due to trap-related injuries, vehicle strike-related injuries, and the need for a rabies test after biting an individual. The rabies test results were negative.

### INFORMATION GAINED FROM NECROPSIES

Since 2003, SDGFP has conducted necropsies on all available opportunistically obtained carcasses collected from five watersheds and 22 counties in South Dakota. Most carcasses were and still are collected from two watersheds: Big Sioux and Minnesota. A vast majority of necropsied carcasses are obtained from Moody, Roberts, and Grant counties with many of them obtained during the months of April and November. Outside the scope of the regulated harvest/season, incidental trapping is the primary cause of death for necropsied river otter.

When an incidentally killed river otter is reported to SDGFP, a river otter report form is filled out digitally and includes: date, time, county, location, SDGFP representative and reporting party. For those animals incidentally trapped, the trap type, species targeted, and whether the animal was found dead is recorded. Whole carcass weight, total length, and tail length is measured (Diggs 2013) prior to the initiation of the necropsy. Sex of the river otter is confirmed at necropsy. Sample collection includes: the lower jaw or the skull, reproductive organs (ovaries and/or uterus), and the tongue or a sample of hind quarter muscle tissue. Removal of lower canines from skulls/lower jaws is completed according to Matson's Wildlife Aging Lab protocols (Matson's Laboratory 2024).

Reproduction status is determined by presence of corpora lutea (Diggs 2013). In addition, the uterine horn is examined for blastocysts and if swollen, the uterus is examined for embryos (Diggs 2013). The caudal lobe of liver and spleen may be collected to test for the presence of heavy metals such as selenium and mercury and the presence of pesticides. Presence of wrist worms and any obvious injuries are also recorded.

#### *Sex Ratio and Age Structure*

Of the 200 river otter examined from 2003 to 2019, 60.5% were male (n = 121) and 39% were female (n = 78) resulting in a male:female ratio of 1.7:1. The sex of one otter was unknown. Age was determined for 179 river otter (111 males, 67 females and 1 unknown sex) by analysis of cementum annuli in a lower canine. Ages ranged from 0 to 12 years old. The oldest known river otter in South Dakota was a 12-year-old male collected from Grant County in 2019. The oldest known female otter was an 8-year-old collected from Brookings County in 2006. Over half of known-aged river otter were either juvenile (< 1-year old; n = 34; 19%) or yearlings (1- to 2 years old; n = 68, 38%). The age structure of both sexes reflected that of the entire sample. Juveniles and yearlings combined (subadults) comprised approximately half all known-age males (56%) and females (60%).

#### *Reproduction*

Reproduction has been documented in 21 counties and six of the ten watersheds in South Dakota. Evidence of reproduction is based on verified reports of family groups (>2 individuals), observation of corpora lutea, evidence of lactation, or presence of a juvenile river otter.

We observed corpora lutea in 39 of 51 (76.4%) females examined from 2003 to 2019. Corpora lutea are thickened, glandular tissues that form where an egg was released from the ovary. Age was known for 32 of the 39 reproductive females. Of these 32 known-age females, two (6.3%) were juveniles, 13 (40.6%) were yearlings, and 17 were adult (53.1%). Subadult and adult females averaged 1.5 (SD = 1.3) and 2.2 (SD = 1.3) corpora lutea, respectively. The most corpora lutea observed in a subadult female was three. Five corpora lutea were observed in the ovaries of a 5-year-old female. The proportion of ovulating females increased with age from 40% of juvenile, 68% of yearling to 80–100% of adult females examined.

#### *Morphology*

In a sample of 109 male and 66 female river otter from 2003 to 2019, males averaged larger weights than females (21.0 lbs [SD = 4.1] vs 17.6 lbs [SD = 2.7]; 9.5 kg [SD = 1.9] vs 8.0 kg [SD = 1.2]).

#### *Diet*

A gross examination of 192 river otter stomachs was conducted from 2003 to 2019 to determine diet composition. Fish were found in 44% of stomachs examined, including: pieces of minnow, carp, sucker, northern pike (*Esox lucius*), bullhead, catfish, green sunfish (*Lepomis cyanellus*), Johnny darter (*Etheostoma nigrum*), and sand shiner (*Notropis stramineus*). Frogs, crayfish, vegetation, black liquid, and birds were also observed. Not all items were identified to genus or species. Many stomachs were empty (56 of 192 stomachs). Eleven stomachs were too damaged to determine contents.

Fish were found in stomach contents year-round but increased in frequency during March, April, and November. Frogs were present in stomach contents all year except in June and December. Crayfish remains were observed from March through September. Bird remains were found in June, September, and November. Empty stomachs were most frequent in April and November.

### *Parasites*

During necropsies of opportunistically obtained otter in South Dakota from 2003 to 2019, 30 of the 200 (15%) carcasses had visible wrist worms. These worms are not detrimental to river otter and do not pose a human health risk.

### LATRINE SURVEY

River otter are secretive animals occurring at relatively low densities in hard-to-reach places making the use of traditional monitoring efforts difficult (Blundell et al. 1999, Melquist et al. 2003, Helon 2006, Serfass et al. 1996, Gallant et al. 2008, Bieber et al. 2018). Non-invasive genetic sampling (NGS) can be an effective tool for management and conservation (Sollmann et al. 2013, Hansen et al. 2008, Bonesi et al. 2013), especially for elusive, secretive, and hard to trap species, such as river otter (Brzeski et al. 2013, Cox and Murphy 2019). NGS provides biologists an alternative sampling technique by relying on DNA from scat, hair, or urine (Waits and Paetkau 2005, Brzeski et al. 2013, Ferreira et al. 2018). River otter regularly deposit scat and anal jellies (intestinal mucus) at communal latrine sites leaving behind genetic samples that give biologists the ability to identify the sex and unique individuals (Bonesi et al. 2013, Brzeski et al. 2013, Johnson et al. 2013, Klutsch and Thomas 2018, Cox and Murphy 2019).

SDGFP began an annual river otter monitoring program of surveying otter latrines in 2021. Twenty-three transects along the Big Sioux River ranging 2.5 to 7 km are surveyed once by kayak in September and October each year (Figure 5). River otter latrines are a social hub and are located in relatively predictable locations along a waterway such as near fallen trees, on raised banks and near beaver lodges. Once a latrine is located, its location, the level of confidence it's a river otter latrine, number of scats sampled, and the scat's subsequent freshness are recorded.

Fecal swabs are rubbed on the outside of the scat or anal jelly, and then stored in an individually marked vial containing a DNA/RNA shield. Samples are sent to a specialized laboratory where DNA is extracted from fecal swabs using DNeasy Blood and Tissue Kit (Qiagen, Inc.). Samples are amplified in duplicate using a polymerase chain reaction (PCR) multiplex containing 9 microsatellite loci (Dallas and Piertney 1998, Beheler et al. 2005, Mowry et al. 2011). Samples with an initial PCR amplification success of 40% or greater are amplified up to six times total to obtain a consensus genotype.

Samples with a consensus genotype at seven or greater loci are compared to one another and to genotypes generated for each individual detected in previous years in a matching analysis in GENALEX (Peakall and Smouse 2006, 2012). Two genotypes are considered a match if they were identical at seven or greater loci and the mismatches could be due to allelic dropout. In some cases, samples matching at five or six loci are

retained in the dataset. In these cases, the probability of identity for siblings was reported to indicate these samples are below the threshold of 0.01.

The genetic information gathered provides a conservative count of river otter within a defined sampling unit and provides an index of abundance (river otter/sampling unit [Table 2]). This index helps establish a baseline distribution of river otter in South Dakota and provides inferences to traditional abundance estimates (i.e., mark-recapture approaches) which can be monitored through time and establish population trends. An assessment will occur as needed to determine the feasibility of expanding monitoring efforts outside of the Big Sioux to other watersheds.

#### POPULATION BACKDATING

Population backdating utilizes the known age of individuals to calculate the number of individuals back to their projected birth year (e.g., Downing 1980). These individuals are combined into age specific cohorts and contribute to the cumulative number of known-aged individuals for the years they are alive. For example, an individual estimated at five years old at death would have been a member of the population for the previous five years.

Each necropsied river otter contributes to the cumulative number of known-aged river otter for the years they are alive (Figure 6). GFP biologists use this analysis to determine historical trends in abundance and produce a population trajectory to a certain point in time.

#### USE OF CAMERA TRAPS

The use of camera traps to monitor river otter is a possible survey technique and few published studies are available for river otter, although these approaches have been explored for other species (Hamel et al. 2013). Wagnon and Serfass (2016) had success capturing river otter via camera traps placed at latrine sites but failed to detect river otter at non-latrine sites. Bieber (2016) deployed 14 cameras on three different rivers in Nebraska, but experienced ‘technical and configuration problems’ and therefore discontinued their use. Findlay et al. (2020) provided technical recommendations on improving camera trapping based on their experiences from a six-year study of a Eurasian otter (*Lutra lutra*) den site. Stevens and Serfass (2008) stated their study was the first use of camera traps in a river otter study, and they reported success with detecting river otter at latrine sites. Despite the lack of published studies on camera traps surveys for river otter, the technique offers the advantages of being a noninvasive approach with continual improvements in camera traps technology and the possibility for improved efficiency over more traditional methods.

SDGFP staff conducted a small-scale camera trap survey in 2019–2020 to evaluate the effectiveness of the technique and to provide recommendations on its use for future management surveys in South Dakota. Factors evaluated included: camera traps brand and model performance, data storage, battery life, and warranties; number and location of camera traps needed; use of attractants, camera trap maintenance and security, time of year, and river otter biology and behavior.



The following recommendations were determined at the conclusion of the camera trapping study, if additional monitoring were to take place using this survey method:

- River otter were detected with camera traps set along stream banks. However, detection probabilities were less than 100%. Therefore, caution is advised when interpreting survey results if an estimate detection probability is unavailable.
- Camera traps should be operated during late summer through fall to take advantage of seasonal water lows and reduced chance of major flooding.
- Each camera trap site should be actively surveyed for at least two consecutive months; if no river otter are detected within the first month, consider small-scale movement of camera site.
- Focus survey efforts on streams of Order 3, 4, or 5.
- Camera traps should target stream sites with a ~90° bend revealing a mud flat, or alternatively streams with exposed sections of mud/sandbars that would be naturally attractive to moving river otter. Also consider junctions of multiple streams.
- Visual and olfactory attractants can be used, but priority should be placed on targeting sites that naturally funnel river otter movement.
- Camera traps should be set up to take two photos followed by a 15 second video; this results in an enhanced ability to determine species while limiting battery or storage issues.
- In preparation for potential flooding or variable water levels, attempt to keep cameras above any observable high-water marks.
- Install camera traps using fence posts to achieve maximum placement opportunity and avoid raccoon (*Procyon lotor*) issues from camera traps set on trees.

## **ISSUES, OPPORTUNITIES, AND CHALLENGES**

While not an exclusive list, important issues relevant to river otter management are described below. They are the foundation for the objectives and strategies articulated in the South Dakota Northern River Otter Action Plan and must be addressed for the plan to be successfully implemented.

### **HABITAT LOSS AND DEGRADATION**

Melquist et al. (2003) summarized various habitat destruction and degradation practices that have impacted river otter populations. Such practices may take the form of mining operation impacts to wetlands, shoreline development, pesticide residue runoff and other contamination of wetlands, accumulation of toxic substances in river otter prey, and human disturbance of river otter during sensitive periods, such as the birth and rearing times of pups.

The Rocky Mountain Region (Region 2) of the USDA Forest Service prepared a conservation assessment for the river otter (Boyle 2006). Boyle (2006) described several threats that may affect river otter sustainability in this region, including water development, fluctuating water levels in reservoirs, and riparian vegetation loss and degradation due to agricultural use, urban development, and timber harvest. Boyle

(2006) also speculated the predominant use of linear drainages by river otter in Region 2 states may make them particularly vulnerable to habitat fragmentation.

SDGFP delivers a comprehensive private lands habitat and access program, with numerous options available to private landowners for habitat management and development. Cost-share and incentive programs, as well as technical assistance, are available for woody habitat, habitat fencing, grass seedings, grazing systems, wetland creations, wetland restorations, and riparian area enhancement. SDGFP added an additional eight private lands habitat biologists to the existing four in late-2021 to increase the delivery of these habitat programs to landowners across South Dakota. Extensive descriptions of these conservation programs can be found on the Private Lands page of SDGFP's website (<https://gfp.sd.gov/landowner-programs/>).

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

### REQUESTS FOR SERVICE

River otter requests for service (RFS) will continue to be reviewed and SDGFP response will be updated as needed.

When SDGFP receives a RFS regarding depredating river otters, those calls will be forwarded directly on to the Regional Wildlife Manager and the respective Wildlife Damage Specialist (WDS). Staff knowledge and discretion will dictate how specific incidences are addressed. In general, GFP staff will respond to river otter RFS by first investigating, either by phone or with an on-site visit. After investigation, SDGFP staff will provide technical assistance to alleviate river otter depredation issues. Most RFS regarding river otter on public lands and public waters will result in no further action taken by SDGFP staff.

If additional assistance is necessary, SDGFP staff will suggest utilizing a licensed trapper when applicable in counties that are open to river otter harvest.

### RANGE EXPANSION

Reintroductions are typically conducted with very rare species that are unlikely to expand on their own resulting in large investments of time and funding (SDGFP 2020). This is particularly true for species that have a poor ability to immigrate to new areas on their

own. Reintroductions have successfully restored river otter in states where they were extirpated and bolstered small or remnant populations (Melquist et al. 2003).

Results from Kiesow and Dieter (2005) showed that the Bad River, Big Sioux River, James River, North Fork of the Whetstone River, and the Little White River were the most suitable linear waterways of those evaluated for sustaining a population of river otter. The authors concluded that it was feasible to reintroduce river otter to South Dakota and recommended reintroduction into the five rivers selected. However, only portions of western South Dakota rivers have what biologists deem as suitable otter habitat. Reintroduction efforts to these rivers may have limited success due to the marginal and localized habitat, and limited water flow during certain times of the year in these rivers.

Melquist (2015) suspected there is not an adequate supply of otter East River to augment and establish a viable population west of the Missouri River and purchasing river otter from an outside source would be required. However, as the population has increased in eastern South Dakota, individuals are available for relocations in certain cases. Some relocations have occurred within the Big Sioux watershed in response to depredation issues. However, the trap and transfer of in-state river otter for reintroductions in western South Dakota would require a large time and financial commitment from SDGFP and is not a current SDGFP priority.

SDGFP expects river otter to continue their natural expansion into areas of suitable habitat, starting from their original reintroduction location along the Big Sioux River. This expansion of otter distribution is evident from the collection of opportunistic reports moving westward of otter sign, sightings, incidental trapping events, and mortality events collected by SDGFP.

#### ANGLER PERCEPTION

River otter are considered apex predators in aquatic systems (Melquist and Dronkert 1987) that prey on a variety of fish species and other aquatic species (Anderson and Woolf 1987, Crait and Ben-David 2006, Cote et al. 2008, Barding and Lacki 2012, Feltrop et al. 2016). River otter generally follow an optimal feeding strategy (Thompson and Stelle 2014) where they select large, slow-moving prey that reflects prey availability across the water bodies they are located and seasons (Stearns and Serfass 2010).

Because of their predominantly piscivore diet, river otter are often seen as competition by anglers, commercial fisherman, and fish hatcheries (Johnson 1982, Václavíková et al. 2011, Barbieri et al. 2012, Rosas-Ribeiro et al. 2012). Although damage caused by river otter in areas where fish are stocked are generally less consequential than those caused by other piscivore predators, fisherman often overestimate their threat to fish populations (Václavíková et al. 2011, Scordino et al. 2016, Heekenda et al. 2024). For this reason, there may be contention between anglers and river otter. However, river otter can cause damage in fisheries, especially in small ponds or hatcheries. In the larger and wild fisheries, it is assumed this damage is generally limited to specific areas and to species less desirable to anglers. The presence of river otter generally indicates a healthy, functioning aquatic system.

## PUBLIC OUTREACH

Information on techniques to avoid incidental trapping of river otter while targeting other species is shared with the public and specific audiences. “River Otter in South Dakota” is a brochure that provides information on river otter identification and distribution, avoidance techniques to use when trapping, and requests for reports of river otter. This brochure is distributed by staff and through targeted mailings to trapping organizations. It has also been mailed directly to furbearer license holders. It is available at SDGFP regional offices and on the SDGFP website (<https://gfp.sd.gov/userdocs/docs/RiverOtter-online.pdf> ). SDGFP also produced a video for YouTube titled “Avoiding the Incidental Trapping of River Otters” (2021).

## LITERATURE CITED

- Anderson S. 1977. Geographic ranges of North American terrestrial mammals. *American Museum Novitates* 2629: 1–15.
- Anderson, E. A., and A. Woolf. 1987. River otter food habits in northwestern Illinois. *Transactions of the Illinois Academy of Science* 80:115–118.
- Barbieri, F., R. Machado, C. A. Zappes, and L. R. de Oliveira. 2012. Interactions between the neotropical otter (*Lontra longicaudis*) and gillnet fishery in the southern Brazilian coast. *Ocean & Coastal Management* 63:16–23.
- Barding, E. E., and M. J. Lacki. 2012. Winter diet of river otters in Kentucky. *Northeastern Naturalist* 19:157–164.
- Beheler, A. S., J. A. Fike, G. Dharmarajan, O. E. Rhodes Jr., and T. L. Serfass. 2005. Ten new polymorphic microsatellite loci for North American river otters (*Lontra canadensis*) and their utility in related mustelids. *Molecular Ecology Notes* 3:602–604.
- Beiber, N. R., S. P. Wilson, and C. R. Allen. 2018. River otter distribution in Nebraska. *Wildlife Society Bulletin* 42:10.1002/wsb.843.
- Blundell, G. M., J. W. Kern, R. T. Bowyer, and L. K. Duffy. 1999. Capturing River Otters: A Comparison of Hancock and Leg-Hold Traps. *Wildlife Society Bulletin* 27:184–192.
- Bonesi, L., M. Hale, and D. W. Macdonald. 2013. Lessons from the use of non-invasive genetic sampling as a way to estimate Eurasian otter population size and sex ratio. *Acta Theriologica* 58:157–168.
- Boyle, S. 2006. North American River Otter (*Lontra canadensis*): a technical conservation assessment [Online]. USDA Forest Service, Rocky Mountain Region Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northamericanriverotter.pdf>. Accessed 15 March 2010.
- Brzeski, K. E., M. Szykman-Gunther, and J. M. Black. 2013. Evaluating river otter demography using noninvasive genetic methods. *Journal of Wildlife Management* 77:1523–1531.
- Burroughs, R. D., editor. 1961. Natural history of the Lewis and Clark expedition. Michigan State University Press, East Lansing, Michigan.
- Cox, J. J., and S. M. Murphy. 2019. Demographic and genetic status of a reintroduced river otter population in north-central New Mexico. New Mexico Department of Game and Fish Share with Wildlife Program Project 171012 Final Report.
- Cote, D., H. M. J. Stewart, R. S. Gregory, J. Gosse, J. J. Reynolds, G. B. Stenson, and E. H. Miller. 2008. Prey selection by marine-coastal river otters (*Lontra canadensis*) in Newland, Canada. *Journal of Mammalogy* 89:1001–1011.

- Crait, J. R., and M. Ben-David. 2006. River otters in Yellowstone Lake depend on a declining cutthroat trout population. *Journal of Mammalogy* 87:485–494.
- Crimmins, S. M., N. M. Roberts, and D. A. Hamilton. 2011. Age-specific reproductive rates of river otters in southern Missouri. *Southeastern Naturalist* 10:501–508.
- Dallas, J. F., and S. B. Piertney. 1998. Microsatellite primers for the Eurasian otter. *Molecular Ecology* 7:1248–1251.
- Diggs, G. 2013. The river otter in Idaho: reproductive and population parameters and liver concentrations of environmental contaminants. Thesis, Boise State University, Idaho, USA.
- Downing, R. L. 1980. Vital statistics of animal populations. Pages 247–267 in S. D. Schemnitz, editor. *Wildlife techniques manual*. The Wildlife Society, Washington, D.C., USA.
- Dubuc, L. J., W. B. Krohn, and R. B. Owen, Jr. 1990. Predicting Occurrence of River Otters by Habitat on Mount Desert Island, Maine. *The Journal of Wildlife Management* 54:594–599.
- Ermer, J. 2006. Preliminary investigation to determine presence or absence of river otters in northeastern South Dakota. South Dakota Department of Game, Fish and Parks, Wildlife Division Final Report, Pierre, SD.
- Ermer, J. 2007. Investigation to determine presence/absence of river otters (*Lontra canadensis*) in eastern South Dakota. South Dakota Department of Game, Fish and Parks, Wildlife Division Final Report, Pierre, SD.
- Ermer, J. 2008. Investigation to determine presence/absence of river otters (*Lontra canadensis*) in eastern South Dakota. South Dakota Department of Game, Fish and Parks, Wildlife Division Final Report, Pierre, SD.
- Feltrop, P. D., C. K. Nielsen, and E. M. Schaubert. 2016. Asian carp in the diet of river otters in Illinois. *The American Midland Naturalist* 176:298–305.
- Ferreira, C. M., H. Sabino-Marques, S. Barbosa, P. Costa, C. Encarnacao, R. Aplizar-Jara, R. Pita, P. Beja, A. Mira, J. B. Searle, J. Pauperio, and P. C. Alves. 2018. Genetic non-invasive sampling (gNIS) as a cost-effective tool for monitoring elusive small mammals. *European Journal Wildlife Research* 64:10.1007/s10344-018-1188-8.
- Findlay, M.A., R. A. Briers, and P. J. C. White. 2020. Component processes of detection probability in camera-trap studies: understanding the occurrence of false-negatives. *Mammal Research* 65:167–180.
- Gallant, D., L. Vasseur, and C. H. Berube. 2008. Evaluating bridge survey ability to detect river otter *Lontra canadensis* presence: a comparative study. *Wildlife Biology* 14:61–69.

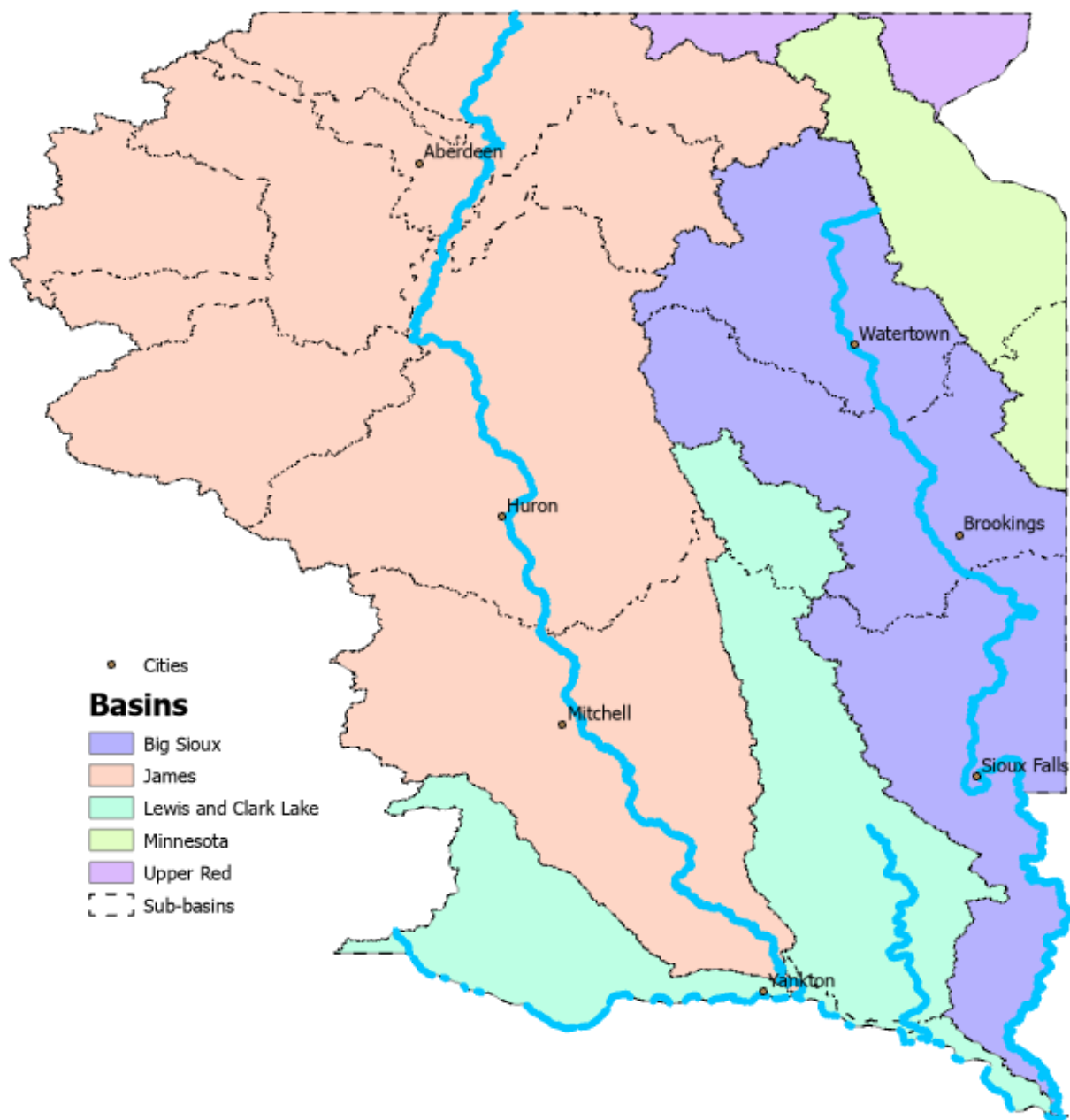
- Gorman, T. A., J. D. Erb, B. R. McMillan, and D. J. Martin. 2006. Space use and sociality of river otters (*Lontra canadensis*) in Minnesota. *Journal of Mammalogy* 87:740–747.
- Gorman, T. A., B. R. McMillan, J. D. Erb, C. S. Deperno, and D. J. Martin. 2008. Survival and cause-specific mortality of a protected population of river otters in Minnesota. *American Midland Naturalist* 159:98–109.
- Hamel, S., S. T. Killengreen, J. A. Henden, N. E. Eide, L. Roed-Eriksen, R. A. Ims, N. G. Yoccoz. 2013. Towards good practice guidance in using camera-traps in ecology: influence of sampling design on validity of ecological inferences. *Methods in Ecology and Evolution* 4: 105–113.
- Hamilton, W. J., and W. R. Eadie. 1964. Reproduction in the otter, *Lutra canadensis*. *Journal of Mammalogy* 45:242–252.
- Hansen, H., M. Ben-David, and D. B. McDonald. 2008. Technological advances: Effects of genotyping protocols on success and errors in identifying individual river otters (*Lontra canadensis*) from their faeces. *Molecular Ecology Resources* 8:282–289.
- Heekenda, E. J., A. C. Heniff, B. E. Fisher, G. Alber, Jr., and J. A. DeWoody. 2024. A DNA-based evaluation of North American river otter diet with respect of fishes: implications for the conservation of aquatic predators and their prey. *Aquatic Conservation Marine and Freshwater Ecosystems* 34:e4078.
- Helon, D. A. 2006. Summer home range, habitat use, movements, and activity patterns of river otters (*Lontra canadensis*) in the Killbuck watershed, northeastern Ohio. Thesis, West Virginia University, Morgantown, USA.
- Higgins, K. F., E. Dowd Stukel, J. M. Goulet, and D. C. Backlund. 2000. Wild mammals of South Dakota. SD Department of Game, Fish and Parks, Pierre, South Dakota.
- Huxoll, C. 2013. Furbearer harvest projections: 2010 annual report. South Dakota Department of Game, Fish and Parks. Game Report 2013–06.
- Johnson, A. M. 1982. Status of Alaska sea otter populations and developing conflicts with fisheries. Transactions of the 47th North American Wildlife and Natural Resources Conference, Washington, D.C., USA, 42:293–299.
- Johnson, S. A., H. D. Walker, C. M. Hudson, T. R. Hewitt, and J. S. Thompson. 2007. Prospects for restoring river otters in Indiana. *Proceedings of the Indiana Academy of Science* 116:71–83.
- Johnson, C. J., D. P. Hodder, and S. Crowley. 2013. Assessing noninvasive hair and fecal sampling for monitoring the distribution and abundance of river otter. *Ecological Research* 28:881–892.
- Jones, J. K., Jr., D. M. Armstrong, R. S. Hoffmann, and C. Jones. 1983. Mammals of the Northern Great Plains. University of Nebraska Press, Lincoln, Nebraska.

- Jones, J.K., Jr., D. M. Armstrong, and J. R. Choate. 1985. Guide to Mammals of the Plains States. Lincoln: University of Nebraska Press.
- Klutsch, C., and Thomas, P. J. 2018. Improved genotyping and sequencing success rates for North American river otter (*Lontra canadensis*). European Journal of Wildlife Research 64:16.
- Kiesow, A. M. 2003. Feasibility of reintroducing the river otter (*Lontra canadensis*) in South Dakota. South Dakota State University, Brookings, South Dakota.
- Kiesow, A. M., and C. D. Dieter. 2003. Status and distribution of river otters, *Lontra canadensis*, in South Dakota. Proceedings of South Dakota Academy of Science 82:79–87.
- Kiesow, A. M., and C. D. Dieter. 2005. Availability of suitable habitat for northern river otters in South Dakota. Great Plains Research 15:31–43.
- LeBlanc, F. A., D. Gallant, L. Vasseur, and L. Léger. 2007. Unequal summer use of beaver ponds by river otters: influence of beaver activity, pond size, and vegetation cover. Canadian Journal of Zoology 85:774–782.
- Matson's Laboratory. 2024. Age your game. Available: <https://matsonslab.com/hunters-outfitters/>.
- Melquist, W. E., and A. E. Dronkert. 1987. River otter. Pages 625-641 in M. Novak, J. A. Baker, M. E. Obbard, and B. Malloh, editors. Wild furbearer management and conservation in North America. Ontario Trappers Association, North Bay, Canada.
- Melquist, W. E., and M. G. Hornocker. 1983. Ecology of river otters in west central Idaho. Wildlife Monographs 83:3–60.
- Melquist, W. E., J. Polechla, Jr., and D. Toweill. 2003. River otter. Pages 708–734 in G. A. Feldhamer, Bruce C. Thompson, and Joseph A. Chapman, editor. Wild mammals of North America: biology, management, and conservation. The Johns Hopkins University Press, Baltimore and London.
- 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 State Wildlife Grant T-55-R-1 Final Report. Available: <https://gfp.sd.gov/images/WebMaps/Viewer/WAP/Website/SWGSummaries/FINAL%20REPORT%20Melquist%20River%20Otter%20T-55.pdf>. Accessed 30 May 2024.
- Mowry, R. A., M. E. Gompper, J. Beringer, and L. S. Eggert. 2011. River Otter Population Size Estimation Using Noninvasive Latrine Surveys. Journal of Wildlife Management 75:1625–1636.
- Peakall, R., and P. E. Smouse. 2006. GENALEX 6: genetic analysis in Excel. Population genetic software for teaching and research. Molecular Ecology Notes 6:288–295.

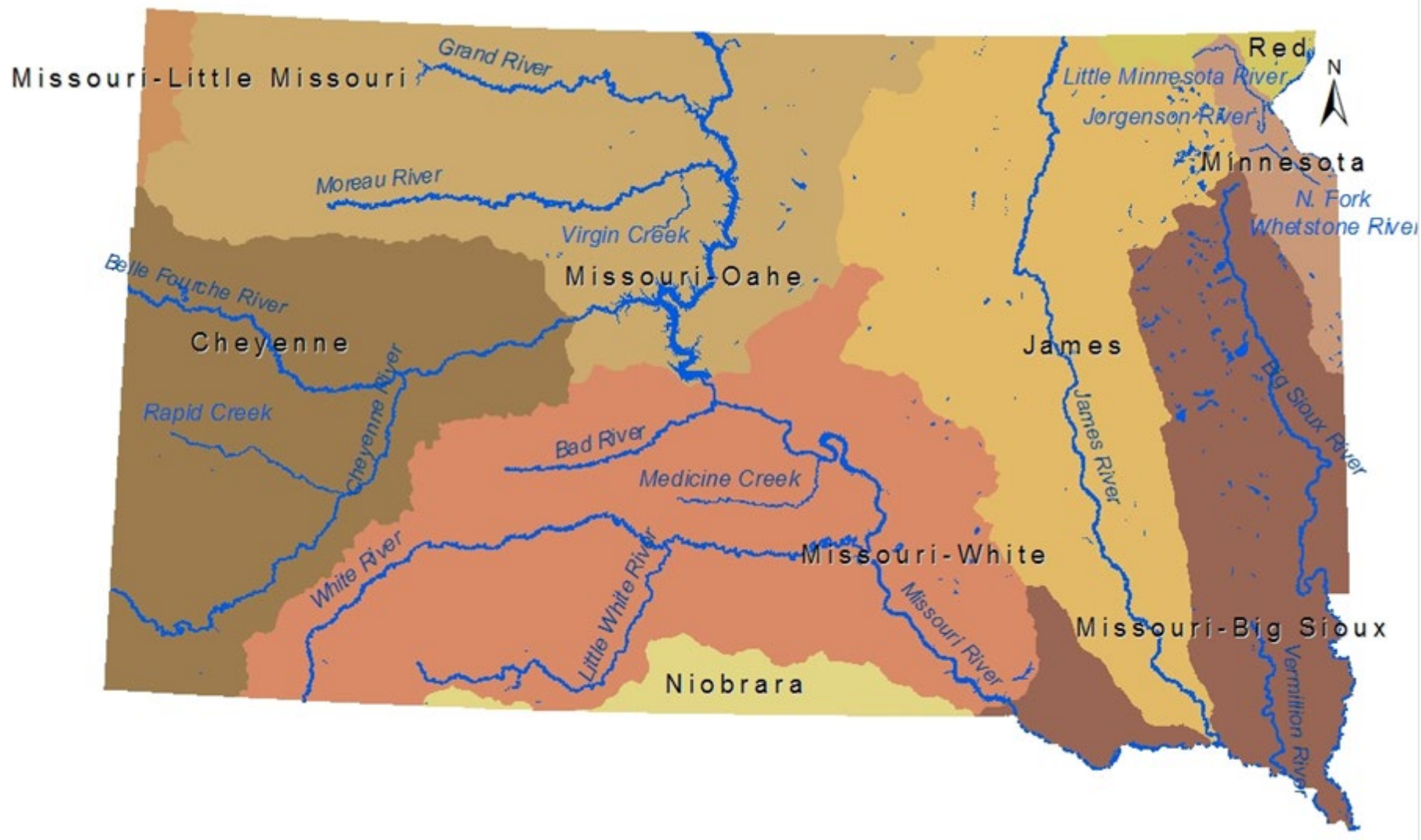


- Peakall, R., and P. E. Smouse. 2012. GenAIEx 6.5: genetic analysis in Excel. Population genetic software for teaching and research — an update. *Bioinformatics* 28:2537–2539.
- Reid, D. G., T. E. Code, A. C. H. Reid, and S. M. Herrero. 1994. Spacing, movements, and habitat selection of the river otter in boreal Alberta. *Canadian Journal of Zoology* 72:1314–1324.
- Rosas-Ribeiro, P. F., F. C. W. Rosas, and J. Zuanon. 2012. Conflict between Fishermen and Giant Otters *Pteronura brasiliensis* in Western Brazilian Amazon. *Biotropica* 44:437–444.
- Scordino, J. J., P. J. Gearin, S. D. Reimer, and E. M. Iwamoto. 2016. River otter (*Lontra canadensis*) food habits in a Washington coast watershed: implications for a threatened species. *Northwestern Naturalist* 97:36–47.
- Serfass, T. L., R. P. Brooks, T. J. Swimley, L. M. Rymon, and A. H. Hayden. 1996. Considerations for Capturing, Handling, and Translocating River Otters. *Wildlife Society Bulletin* 24:25–31.
- Sollmann, R., N. M. Tôrres, M. M. Furtado, A. T. Almeida, F. Palomares, S. Roques, L. Silveira. 2013. Combining camera-trapping and noninvasive genetic data in a spatial capture–recapture framework improves density estimates for the jaguar. *Biological Conservation* 167:242–247.
- South Dakota Department of Game, Fish and Parks [SDGFP]. 2012. South Dakota River Otter Management Plan. South Dakota Department of Game, Fish and Parks Wildlife Division Report Number 2012-07, Pierre, South Dakota, USA. <https://gfp.sd.gov/UserDocs/nav/OtterPlan2012.pdf>. Accessed 30 May 2024.
- South Dakota Department of Game, Fish and Parks [SDGFP]. 2020. South Dakota River Otter Management Plan. South Dakota Department of Game, Fish and Parks Wildlife Division Report Number 2020-02, Pierre, South Dakota, USA.
- Stevens, S. S., and T. L. Serfass. 2008. Visitation patterns and behavior of nearctic river otter (*Lontra canadensis*) at latrines. *Northeastern Naturalist* 15:1–12.
- Tabor, J. E., and H. M. Wight. 1977. Population status of river otter in western Oregon. *Journal of Wildlife Management* 41: 692–699.
- Thompson, L., and L. L. Stelle. 2014. Prey preference of the North American river otter (*Lontra canadensis*) evaluated based on optimal foraging theory. *IUCN Otter Specialist Group Bulletin* 31:15–29.
- Toweill, D. E., and J. E. Tabor. 1982. River otter. Pages 688-703 in J. A. Chapman, and G. A. Feldhamer, editors. *Wild mammals of North America*. Johns Hopkins University, Baltimore, MD.
- U.S. Fish and Wildlife Service [USFWS]. 2018. General advice for the export of North American river otter (*Lontra canadensis*) from the United States, (2018-2019 through 2023-2024 harvest seasons). Memorandum. Branch of Consultation and Monitoring, Division of Scientific Authority.

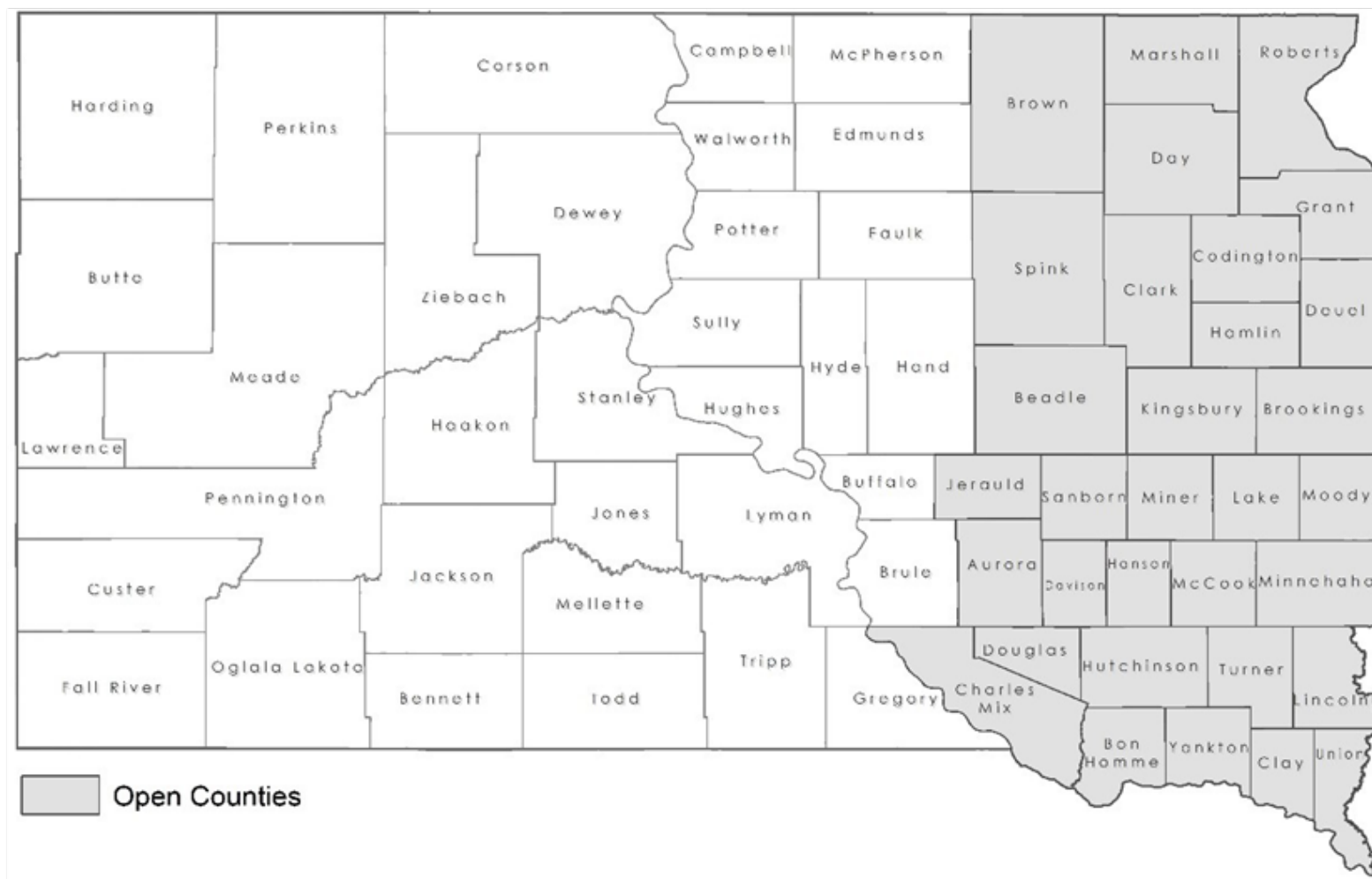
- Václavíková, M., T. Václavík, and V. Kostkan. 2011. Otters vs. fishermen: Stakeholders' perceptions of otter predation and damage compensation in the Czech Republic. *Journal for Nature Conservation* 19:95–102.
- Wagnon, C. J., and T. L. Serfass. 2016. Camera traps at northern river otter latrines enhance carnivore detectability along riparian areas in eastern North America. *Global Ecology and Conservation* 8: 138–143.
- Waits, L. P., and D. Paetkau. 2005. Noninvasive Genetic Sampling Tools for Wildlife Biologists: A Review of Applications and Recommendations for Accurate Data Collection. *The Journal of Wildlife Management* 69:1419–1433.



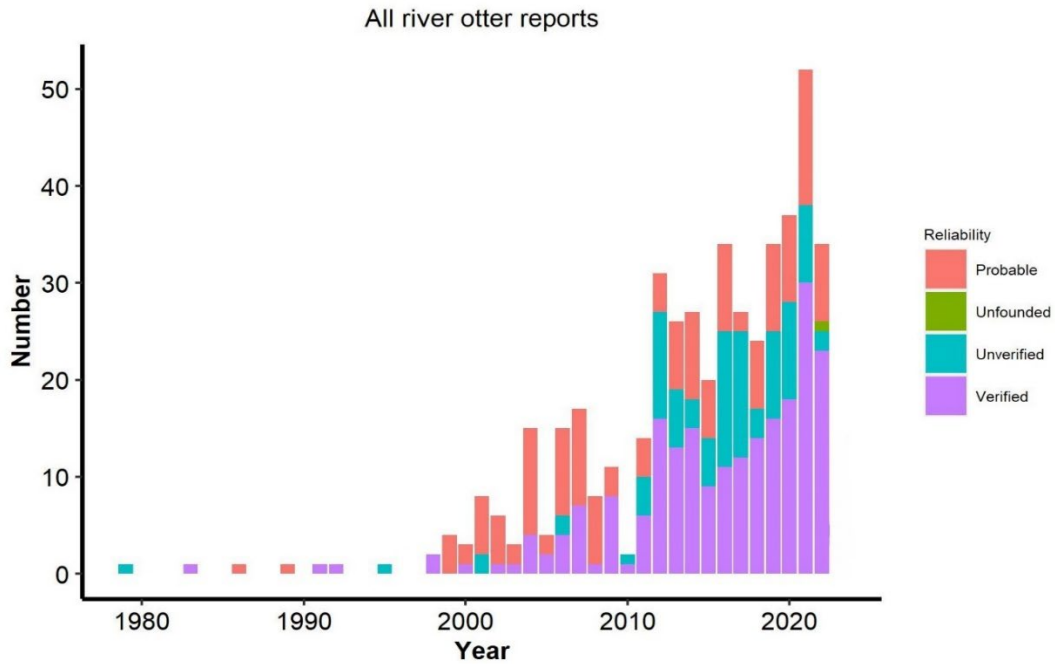
**Figure 1.** River otter recovery watershed basins and sub-basins. Basins are hydrological unit level six defined by the U.S. Geological Survey (USGS) National Watershed Boundary Dataset. Sub-basins are hydrological unit level eight watersheds, also defined by USGS.



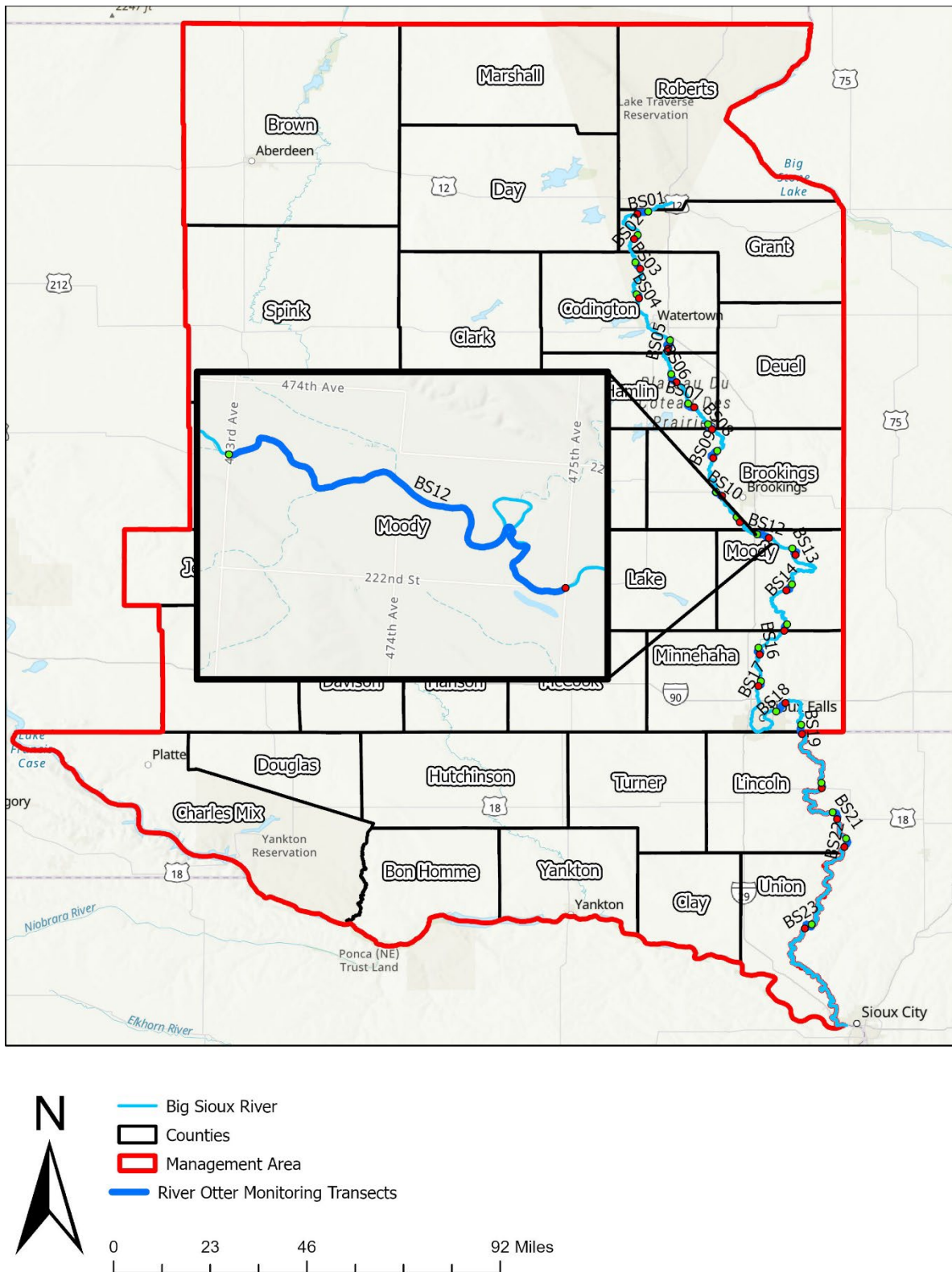
**Figure 2.** Map of South Dakota watersheds, rivers and creeks. Watersheds are hydrological unit level two sub-regions as defined by the U.S. Geological Survey National Watershed Boundary Dataset.



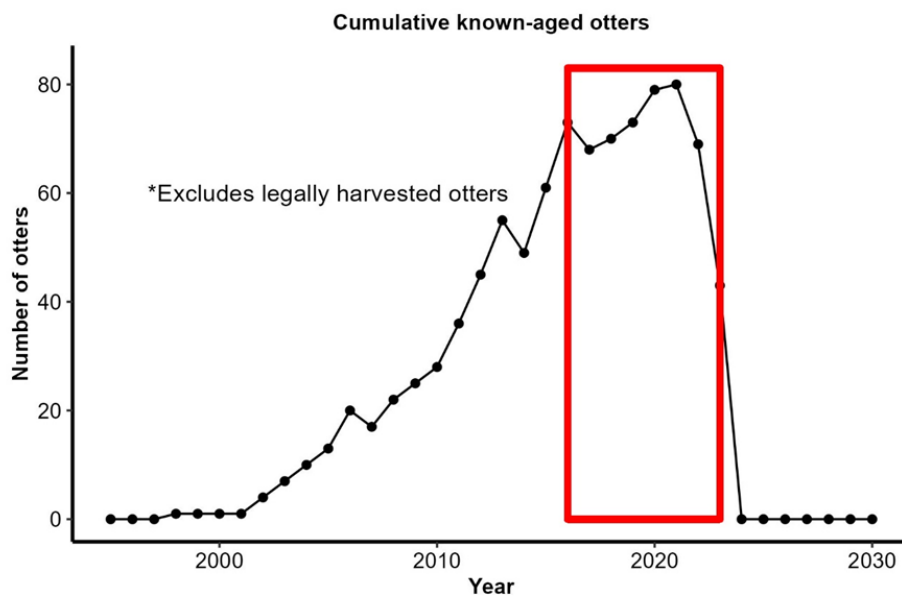
**Figure 3.** Counties in eastern South Dakota open to the harvest of river otters through trapping and hunting (grey). Hunters/trappers are limited to one river otter per trapper/hunter per season.



**Figure 4.** Frequency of reported river otter observations by report type, by year in South Dakota from 1979 through 2023. An observation is based on a sighting of a live animal, incidental trapping catch, otter sign, or road kills. An observation can be an individual animal or a group of animals.



**Figure 5.** River otter monitoring transects ( $n = 23$ ) located on the Big Sioux River ranging in length from 1.3 to 3.5 km in length, South Dakota, USA.



**Figure 6.** Cumulative, known-aged river otter determined by cementum annuli aging from incidental catches and opportunistically acquired carcasses, South Dakota, USA. This excludes legally harvested river otters during the designated river otter hunting and trapping season. Red box indicates years where future collected data will substantially contribute to data set.



**Table 1.** River otter harvest statistics for South Dakota, USA, 2020–2024.

Year	Harvest Limit	Season Length (days)	Male	Female	Adult <sup>a</sup> (>2)	Sub-Adult <sup>b</sup> (1)	Juvenile <sup>c</sup> (<1)	Total Trapped	Traps <sup>d</sup> set	Trap nights <sup>e</sup>	CPUE <sup>f</sup>	Targeted Otters <sup>g</sup>
2020	15	6	9	6	5	5	5	15	9.60	27.1	0.0	11
2021	20	10	9	12	8	6	7	21	7.31	17.5	0.1	13
2022	20	13	11	10	7	6	8	21	7.63	40.3	0.1	14
2023	20	18	14	4	11	8	1	20	8.09	53.5	0.1	11
2024	20	13	TBD	TBD	TBD	TBD	TBD	20	TBD	TBD	TBD	TBD

<sup>a</sup> River otter greater than 2 years of age at harvest determined through analysis of cementum annuli

<sup>b</sup> River otter 1 year of age at harvest determined through analysis of cementum annuli

<sup>c</sup> River otter less than 1 year of age at harvest determined through analysis of cementum annuli

<sup>d</sup> Average number of traps set per trapper with the intent of catch river otter

<sup>e</sup> Average number of trap nights (traps\*nights) for trappers targeting river otter

<sup>f</sup> Average catch per unit effort of trappers targeting river otter

<sup>g</sup> Number of river otter harvested which were targeted by hunter/trappers

**Table 2.** Summary of transect data for river otter latrine surveys on the Big Sioux River using non-invasive genetic sampling, South Dakota, USA, 2021–2024.

<b>Year</b>	<b>Transects with a latrine</b>	<b>Total latrines found</b>	<b>Total samples collected</b>	<b>Total unique river otter determined</b>	<b>Total stream length surveyed (km)</b>	<b>Index of abundance (river otter/km surveyed)</b>
2021	14	36	101	31	107.52	0.29
2022	14	43	172	26	107.52	0.24
2023	13	52	186	16	107.52	0.24
2024	15	46	124	TBD	107.52	TBD

## Appendices

Appendix A. 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

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

#### 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 B. SDGFP Commission action to finalize a river otter trapping season in 2020.

**GAME, FISH AND PARKS COMMISSION ACTION  
FINALIZATION**

**River Otter Trapping Season**

<b>Commission Meeting Dates:</b>	<b>Proposal</b>	<b>May 7, 2020</b>	<b>Teleconference</b>
	<b>Public Hearing</b>	<b>July 16, 2020</b>	<b>Teleconference</b>
	<b>Finalization</b>	<b>July 16-17, 2020</b>	<b>Teleconference</b>

**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 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 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).

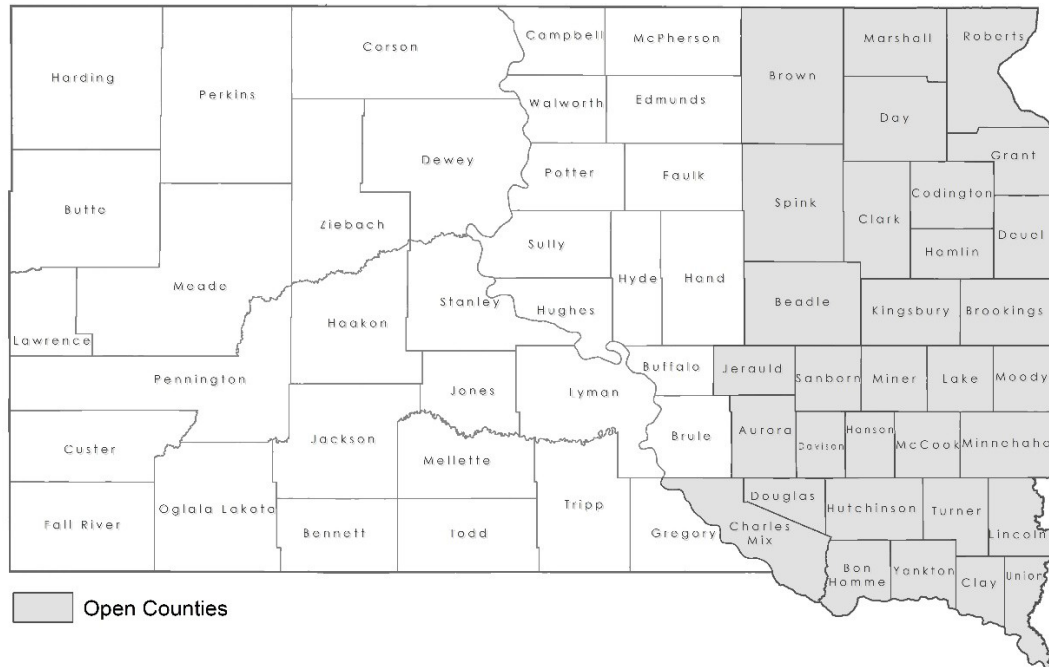


Figure 1. Recommended open area for river otter trapping season.

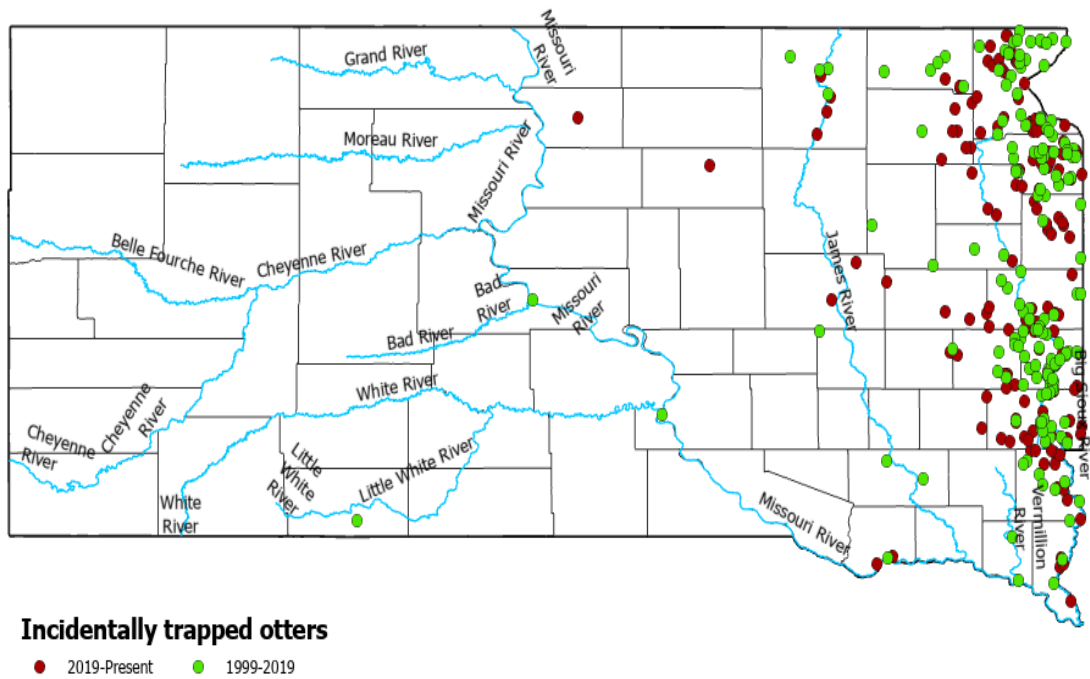


Figure 2. Reports of incidentally trapped river otters, 1998-2019.

## **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.