



Environment and
Climate Change Canada

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RAVEN ISLAND NATIONAL WILDLIFE AREA



MANAGEMENT PLAN
2021

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Environment and Climate Change Canada

Public Inquiries Centre

12th Floor, Fontaine Building

200 Sacré-Coeur Boulevard

Gatineau QC K1A 0H3

Telephone: 819-938-3860

Toll Free: 1-800-668-6767 (in Canada only)

Email: enviroinfo@ec.gc.ca

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<https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html>

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About Environment and Climate Change Canada's Protected Areas and Management Plans

What are Environment and Climate Change Canada's Protected Areas?

Environment and Climate Change Canada establishes marine and terrestrial National Wildlife Areas for the purposes of conservation, research and interpretation. National Wildlife Areas are established to protect migratory birds, species at risk, and other wildlife and their habitats. National Wildlife Areas are established under the authority of the *Canada Wildlife Act* and are, first and foremost, places for wildlife. Migratory Bird Sanctuaries are established under the authority of the *Migratory Birds Convention Act, 1994* and provide a refuge for migratory birds in the marine and terrestrial environment.

How has the federal government's investment from Budget 2018 helped manage and expand Environment and Climate Change Canada's National Wildlife Areas and Migratory Bird Sanctuaries?

The Nature Legacy represents a historic investment of \$1.3 billion over five years to help Environment and Climate Change Canada expand its National Wildlife Areas and Migratory Bird Sanctuaries, pursue its biodiversity conservation objectives and increase its capacity to manage its protected areas.

According to the Budget 2018, Environment and Climate Change Canada will be conserving more areas, and have more resources to effectively manage and monitor the habitats and species found inside its protected areas

What is the size of the Environment and Climate Change Canada Protected Areas Network?

The current Protected Areas Network consists of 55 National Wildlife Areas and 92 Migratory Bird Sanctuaries, comprising more than 14 million hectares across Canada.

What is a Management Plan?

A management plan provides the framework in which management decisions are made. It is intended to be used by Environment and Climate Change Canada staff to guide decision making, notably with respect to permitting. Management is undertaken in order to maintain the ecological integrity of the protected area and to maintain the attributes for which the protected area was established. Environment and Climate Change Canada prepares a management plan for each protected area in consultation with Indigenous Peoples, the public and other stakeholders.

A management plan specifies activities that are allowed and identifies other activities that may be undertaken under the authority of a permit. It may also describe the necessary improvements needed in the habitat, and specify where and when these improvements should be made. A management plan identifies Aboriginal rights and allowable practices specified under land claims agreements. Further, measures carried out for the conservation of wildlife must be consistent with any law respecting wildlife in the province in which the protected area is situated.

What is Protected Area Management?

Management includes monitoring wildlife, maintaining and improving wildlife habitat, periodic inspections, enforcement of regulations, as well as the maintenance of facilities and infrastructure. Research is also an important activity in protected areas; hence, Environment and Climate Change Canada staff carries out or coordinates research in some sites.

The series

All of the National Wildlife Areas are to have a management plan. The management plans should be initially reviewed 5 years after the approval of the first plan, and every 10 years thereafter.

To learn more

To learn more about Environment and Climate Change Canada's protected areas, please visit our website at <https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html> or contact the Canadian Wildlife Service.

Raven Island National Wildlife Area

Raven Island National Wildlife Area (NWA) is the southernmost island of Lenore Lake in Saskatchewan. Lenore Lake, which is designated as a Migratory Bird Sanctuary (MBS) intended for migratory birds conservation, is also under ECCC's authority. Lenore Lake is around 140 kilometres northeast of Saskatoon. Lenore Lake MBS was established in 1925 as an important staging area for migratory birds. The MBS provides breeding, foraging and roosting habitat for a variety of migratory birds. Raven Island was acquired in 1982 to maintain the integrity of the Lenore Lake MBS by protecting the land within the sanctuary as habitat for waterfowl and other migratory birds.

Raven Island NWA is within Canada's Prairie Ecozone, which is among the most modified Ecozones in Canada. The Prairie Ecozone provides some of the most important habitat for North American migratory waterfowl; over half of North America's waterfowl and many other water birds breed on the Canadian Prairies and in adjacent states. Over the last 100 years, the majority of natural waterfowl habitat has been drastically altered by agriculture, with many wetlands drained and uplands plowed to produce annual crops. Droughts that cause small wetland basins to dry up exacerbate the negative consequences of changing land use on waterfowl habitat. Waterfowl conservation efforts underway at Lenore Lake MBS and Raven Island NWA strive to increase the availability of both reliable water and perennial nesting cover in the ecozone. The Lenore Lake MBS is a closed basin that persists through drought conditions and the Raven Island NWA provides shoreline, riparian and upland dense nesting cover habitat for migratory birds.

Lenore Lake MBS and Raven Island NWA support over 100 species of birds, including significant concentrations of breeding and staging migratory birds such as ducks and geese. Raven Island NWA provides excellent nesting and resting habitat for many migratory bird species. The public is encouraged to view wildlife at Raven Island NWA, from boats or from the shoreline. As the NWA exists within an MBS, hunting is not permitted.

For greater certainty, nothing in this management plan shall be construed so as to abrogate or derogate from the protection provided for existing Aboriginal or treaty rights of the Aboriginal peoples of Canada by recognition and affirmation of those rights in section 35 of the *Constitution Act, 1982*.

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1 DESCRIPTION OF THE PROTECTED AREA

Raven Island National Wildlife Area (NWA) is located approximately 140km northeast of Saskatoon, Saskatchewan (Figure 1). The NWA is an island situated in the middle of the south bay of Lenore Lake. The land for the NWA was purchased by the Federal government in February 1982, and the NWA was established to complement the Lenore Lake Migratory Bird Sanctuary (MBS). While MBSs are established across the country to protect migratory birds during critical periods of their migration, NWAs are established for the purposes of conservation of habitat, research and interpretation.

Lenore Lake MBS is the second largest Federal Migratory Bird Sanctuary in Saskatchewan. The Sanctuary was one of twelve established in Saskatchewan in 1925 (Murray 1966). Lenore Lake is considered a high priority Migratory Bird Sanctuary because it is used by many diverse waterfowl for nesting, moulting, and staging. Furthermore, the lake has been critical to the maintenance of waterfowl populations, waterbirds, and other wildlife which use the area during drought periods (Taylor et al. 1980). The Lenore Lake basin is a closed internal drainage basin and is sensitive to changes in climate and land use.

Historically, Raven Island was cultivated and accessible by a causeway. Since its initial protection in February 1982, the land has been reseeded and remains mostly idle. Occasional disturbances to this site have included prescribed fire as well as drought and flooding. The causeway is no longer functional due to increased water levels. Habitats on Raven Island include naturally vegetated upland riparian areas, water-covered areas and small islands. Dense nesting cover consists of sweet-clover, alfalfa, wheatgrasses, and a variety of native forbs. Naturally vegetated upland riparian areas support trees, shrubs, emergent aquatic vegetation along the shoreline, and low grassland. The vegetation on water-covered areas and small islands of the MBS varies depending on the water levels present in the Lenore Lake basin.

Raven Island NWA has increased the Canadian Wildlife Service's (CWS) capacity to protect migratory birds relying on the MBS conservation assets, by protecting habitat within the sanctuary and providing nesting, roosting, and staging sites for many birds. The protection of Raven Island NWA has also reduced the threat of development as a recreational area, and thereby contributes to maintaining the integrity of the Lenore Lake MBS. Raven Island will continue to provide breeding habitat for migratory birds as well as roosting and staging areas during migration.

Table 1: Information on Raven Island National Wildlife Area

Protected Area Designation	<i>National Wildlife Area (NWA)</i>
Province or Territory	<i>Saskatchewan</i>
Latitude and Longitude	<i>52.43 N -104.99 W (52°30' North / 105°00' West)</i>
Size	<i><93.5 ha</i>
Protected Area Designation Criteria (Protected Areas Manual)	<i>Criteria 1(a) The area supports a population of a species or subspecies or a group of species which is concentrated, for any portion of the year</i>
Protected Area Classification System	<i>Category B – Site connectivity</i>
International Union for Conservation of Nature (IUCN) Classification	<i>IV Habitat/Species Management</i>
Order-in-Council Number	<i>SI/88-138</i>
Directory of Federal Real Property (DFRP) Number	<i>26358</i>
Gazetted	<i>1988</i>
Additional Designations	<i>Part of Lake Lenore Migratory Bird Sanctuary Part of Lake Lenore Important Bird Area (IBA)</i>
Faunistic and Floristic Importance	<i>Breeding habitat for migratory birds Migratory Bird Concentration Site</i>
Invasive Species	<i>Smooth Brome, Kentucky Bluegrass, Sweet Clover, Quack Grass & Alfalfa</i>
Species at Risk	<i>Northern Leopard Frog</i>
Management Agency	<i>Environment & Climate Change Canada – Canadian Wildlife Service</i>
Public Access and Use	<i>No facilities on site. Access to the NWA is limited by boat or over ice. Wildlife observations from boats or the adjacent mainland is encouraged. No hunting is permitted.</i>

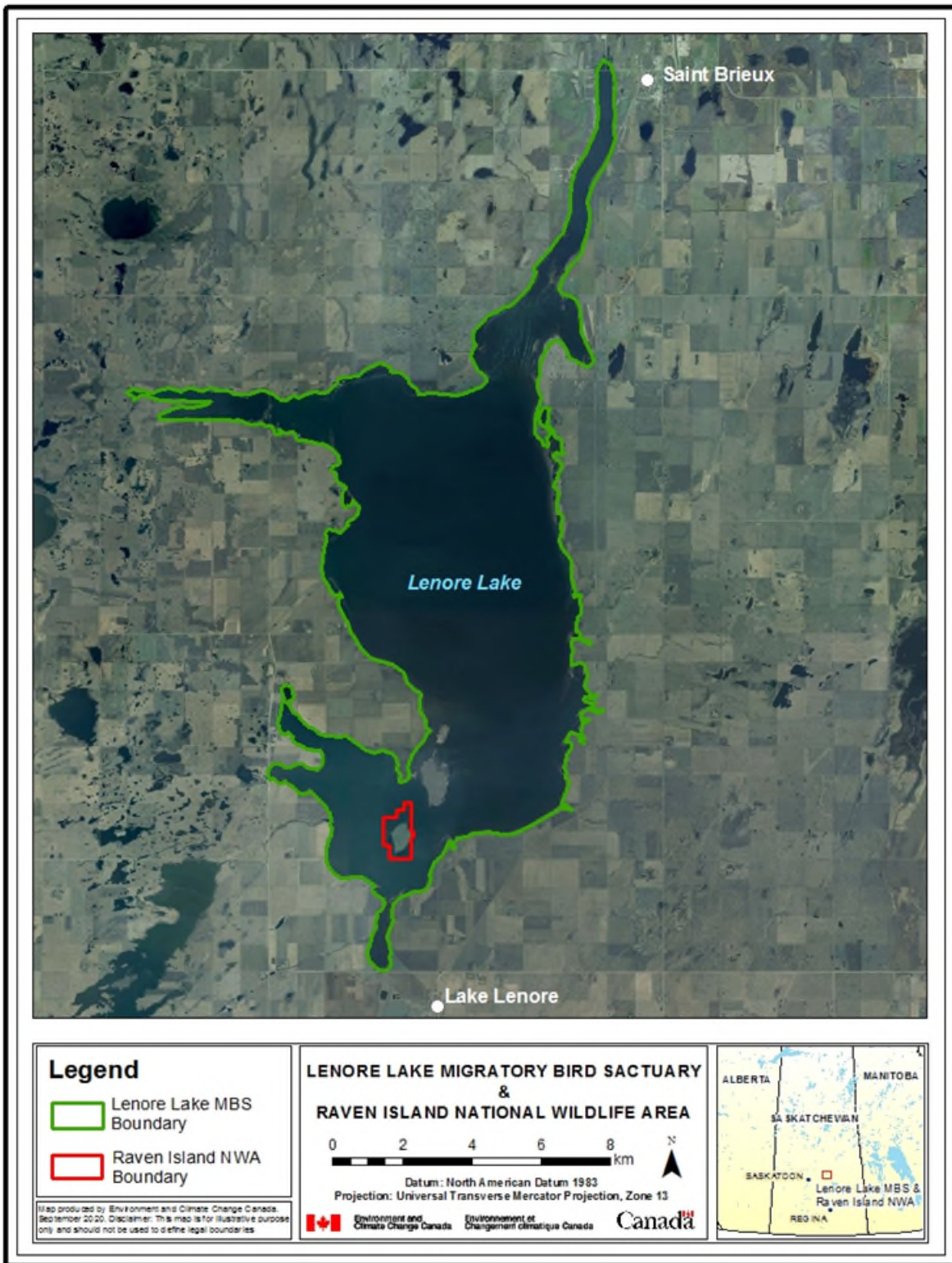


Figure 1: Raven Island National Wildlife Area location in the Lenore Lake MBS

1.1 REGIONAL CONTEXT

The Raven Island NWA and the Lenore Lake MBS are located in the Aspen Parkland Eco-region, south of the Boreal Transition and north of the Moist Mixed Grassland Eco-regions. Lenore Lake is located in the Carrot River Watershed and is characterized by moderate rolling to hilly terrain. The Lenore Lake basin is a closed internal drainage basin with several saline water bodies including Lenore, Basin, Houghton, Middle, Deadmoose, Waldsea, and Ranch Lakes. The climate typically consists of short, warm summers and long, cold winters with continuous snow cover. Climate normals for the eco-region have an annual precipitation of 400-500mm, with a mean July temperature of 18°C and the mean January temperature of -18.9°C.

Agricultural land use and private land ownership dominate the region, leading to frequent changes in land cover and land use driven by changes in global demand and commodity prices. As a result, many native species and natural processes that depend upon large and stable expanses of natural land cover (i.e., migratory bison herds or wildfire) are now missing from the ecosystem. Altering the landscape also alters local drainage and may have an impact on habitat on the NWA. Prior to cultivation, surrounding upland vegetation was fescue prairie intermixed with Aspen Parkland communities (Coupland 1950, Coupland & Brayshaw 1953). Most of that vegetation and underlying Black Chernozemic soil was plowed and converted to cropland over the last century. Many wetlands were also drained or filled to further increase the area of arable cropland (Millar 1976; Bartzen *et al.* 2010). During the last decade, natural habitats in the Raven Island area, including native grasslands, aspen woodlands and wetlands have been altered or lost due to invasive species, annual agricultural crop production, and recreational development .

1.2 HISTORICAL BACKGROUND

Prior to European settlement, the surrounding area was occupied by First Nations of Plains Cree (Nahathaway), Assiniboine (Nakota) and Saulteaux (Anishnabe) background. Through most of the 1700s and 1800s, the primary land uses were trapping for the fur trade, and hunting and gathering for subsistence. The fur trade caused depletions in the populations of some wildlife, like beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), bison (*Bison bison*), and elk (*Cervus elaphus*) during this period. By the end of the 1800s, settlers began to arrive in the surrounding region. Today, Lenore Lake MBS and Raven Island NWA are located on and recognized as Treaty 6 lands.

In 1906, Section 17, in Township 40, Range 21, west of the 2nd Meridian, (including the land that is now Raven Island) was granted to the Order of St. Benedict (St. Peter's College) as a

recreational area (see Figure 3). In 1915, Lenore Lake was one of twelve lakes reserved by the Federal Minister of the Interior for Migratory Bird Sanctuary purposes. The reserved area at Lenore Lake included the lake and all government-owned quarter sections immediately adjacent to the lake. In 1917-18, Dr. R.M. Andersen, a zoologist with the Zoological Society and a member of the Advisory Board in Wildlife Protection, approved of Lenore Lake as a good breeding habitat for waterfowl and a good waterfowl staging area if protected from hunters (Hewitt 1921). In 1925, Lenore Lake was declared one of the twelve migratory bird sanctuaries in Saskatchewan by an Order-in-Council (Government of Canada 1925). Raven Island was excluded from the Sanctuary at the time.

In 1950, Section 17 was purchased by the Haeusler Family, the first individual owners of the land. In 1973, Clarence Haeusler purchased the land. Cultivation was practiced on 110 acres of land of present day Raven Island up until its sale to the Federal government in 1982, when it became the Raven Island National Wildlife Area (Myrah 1981).

Birds Canada and Nature Canada designated Lenore Lake as an Important Bird and Biodiversity Area (IBA) in 2000.

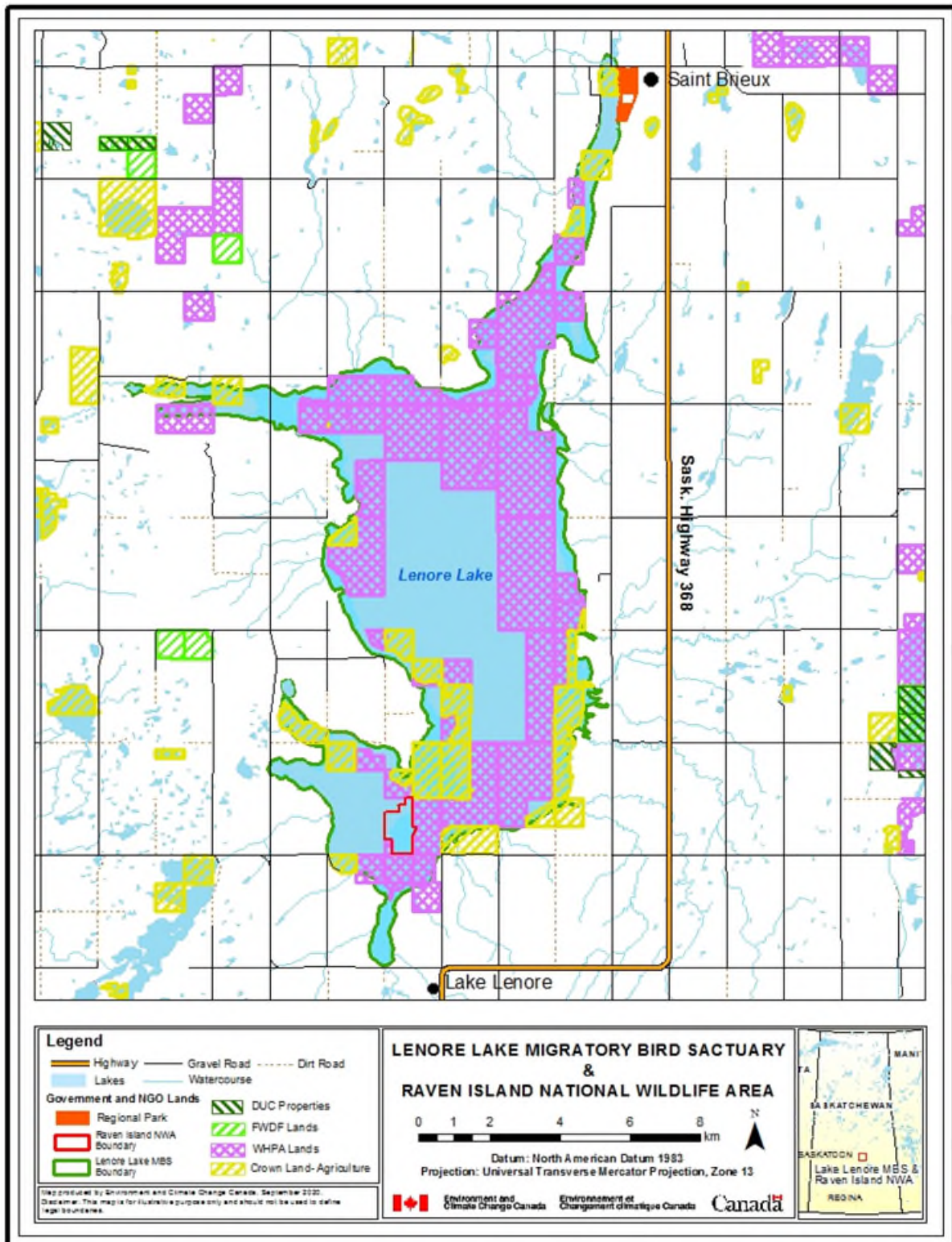


Figure 2. Mosaic of landownership within and around Lenore Lake Migratory Bird Sanctuary
(DUC = Ducks Unlimited Canada; FWDF = Fish and Wildlife Development Fund; WHPA = Wildlife Habitat Protection Act)

1.3 LAND OWNERSHIP

There are a total of nine land titles owned by the Government of Canada and administered by the Canadian Wildlife Service. These titles make up 93.5 ha and are comprised of upland habitat on the island. The east side of Raven Island NWA (E ½ 17-40-21-2), has never been surveyed and is a shared boundary between the Government of Canada and the Province of Saskatchewan (Figure 3). These shared boundaries fluctuate depending on the water levels. The federal government does not hold the subsurface mineral rights for the Raven Island NWA.

1.4 FACILITIES & INFRASTRUCTURE

There are no buildings, facilities or other infrastructure within the Raven Island NWA. The NWA is joined to the mainland by a causeway to the south of the Island; however, the causeway and mainland access to the causeway are privately owned and the causeway has been submerged for many years due to high water levels at Lake Lenore. There are four property boundary signs that are inspected and/or replaced on reoccurring site visits as time and priorities permit (Table 2).

Table 2: Facilities and infrastructure in Raven Island National Wildlife Area

Type of facility of infrastructure	Approximate Size (m, m ² , km, km ² or m lin.) or number	Location	Responsibility holder or owner
Boundary signs	4	North, east, south, west sides of island	ECCC-CWS

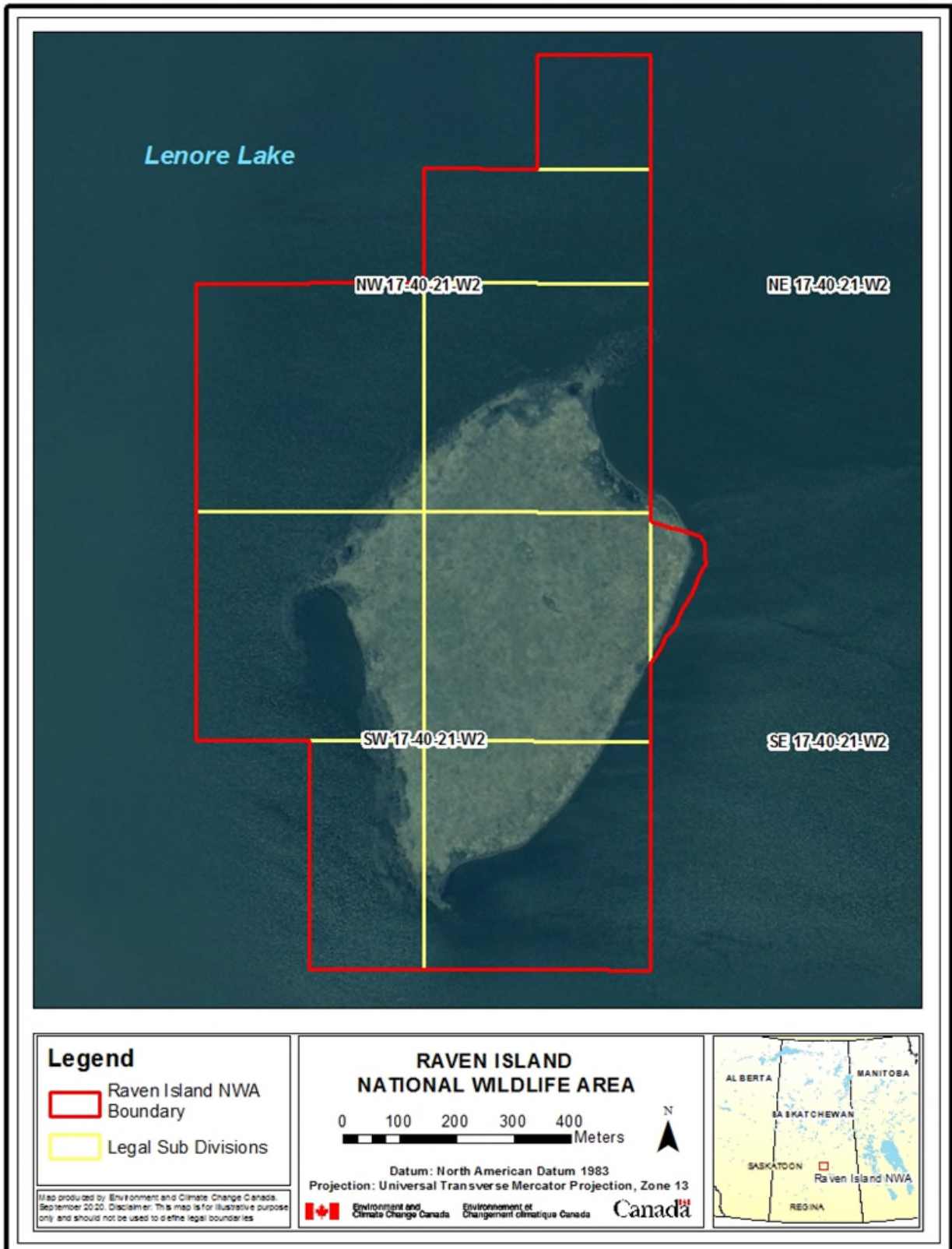


Figure 3. Titled Land ownership of Raven Island NWA.

2 ECOLOGICAL RESOURCES

2.1 TERRESTRIAL AND AQUATIC HABITATS

Raven Island NWA contains modified components of Moist Mixed Grassland and Aspen Parkland Eco-regions of the Prairie Ecozone (Figure 4). It is within the black soil zone and has approximately 30 hectares (74 acres) of Hoodoo Orthic Black soils, from loam to silty loam soils. Expected upland vegetative reference communities of the loam ecosites of the black soil zone include plains rough fescue (*Festuca hallii*), northern wheatgrass (*Elymus lanceolatus*) and western porcupine-grass (*Hesperostipa curtiseta*) (Thorpe 2014).

Upland ecosites have been modified by deliberate and unintended human activity over the last century. Two-thirds of the upland was cultivated for agricultural crop production at some point prior to 1982 (Carlisle 1984). In 1982, 110 acres of cultivated land were reseeded to dense nesting cover consisting of tall and intermediate wheat grass (*Agropyron elongatum* and *A. intermedium*), alfalfa (*Medicago sativa*) and sweet-clover (*Melilotus* sp). Subsequent reseeded has led to dense and well established nesting cover (Carlisle 1984). Historically, trees and shrubs have grown along the west and north side of Raven Island. Trees include trembling aspen (*Populus tremuloides*) and balsam poplar trees (*P. balsamifera*). Shrubs include willow (*Salix* spp.), chokecherry (*Prunus virginiana*), gooseberry (*Ribes* spp.), Saskatoon (*Amelanchier alnifolia*), and raspberry (*Rubus strigosus*) (Carlisle 1984). Rising water levels over the last two decades have flooded out the trees and shrubs along the north and west edges of Raven Island NWA, leaving most trees dead.

Another dominant soil type of the area is the Marsh Saline Gleysolic soils, found around the perimeter and shorelines of the Island. These soils generally produce a variety of wetland and riparian vegetation including bulrush (*Scirpus*), cattail (*Typha* spp), and sedge (*Carex*). The location of emergent riparian vegetation can vary with water levels. Currently, between the water or mudflats and uplands, sedges and grasses are present. In shallow water, bulrush (*Scirpus* spp), cattail (*Typha latifolia*) and spangle top (*Scolchloa festuacea*) are present (Carlisle 1984).

Lenore Lake has experienced rising water levels from the 1960's onward (van der Kamp 2008). Fluctuations of water levels lead to periodic stages of flooding, erosion and redeposition along the riparian areas. The rise in water levels has reduced the area of terrestrial upland habitat and simultaneously decreased the perimeter riparian area. Concurrently, the rise in water levels has reduced the salinity of Lenore Lake. As less saline waters generally have higher water

bird production and diversity (Carlisle 1984; Rawson and Moore 1944), the water level rise may have indirectly increased the value of the lake as a migratory bird sanctuary. Similarly, as the salinity of Lenore Lake has declined, a viable sport and commercial fishery has been established (Saskatchewan Ministry of Environment 2017).

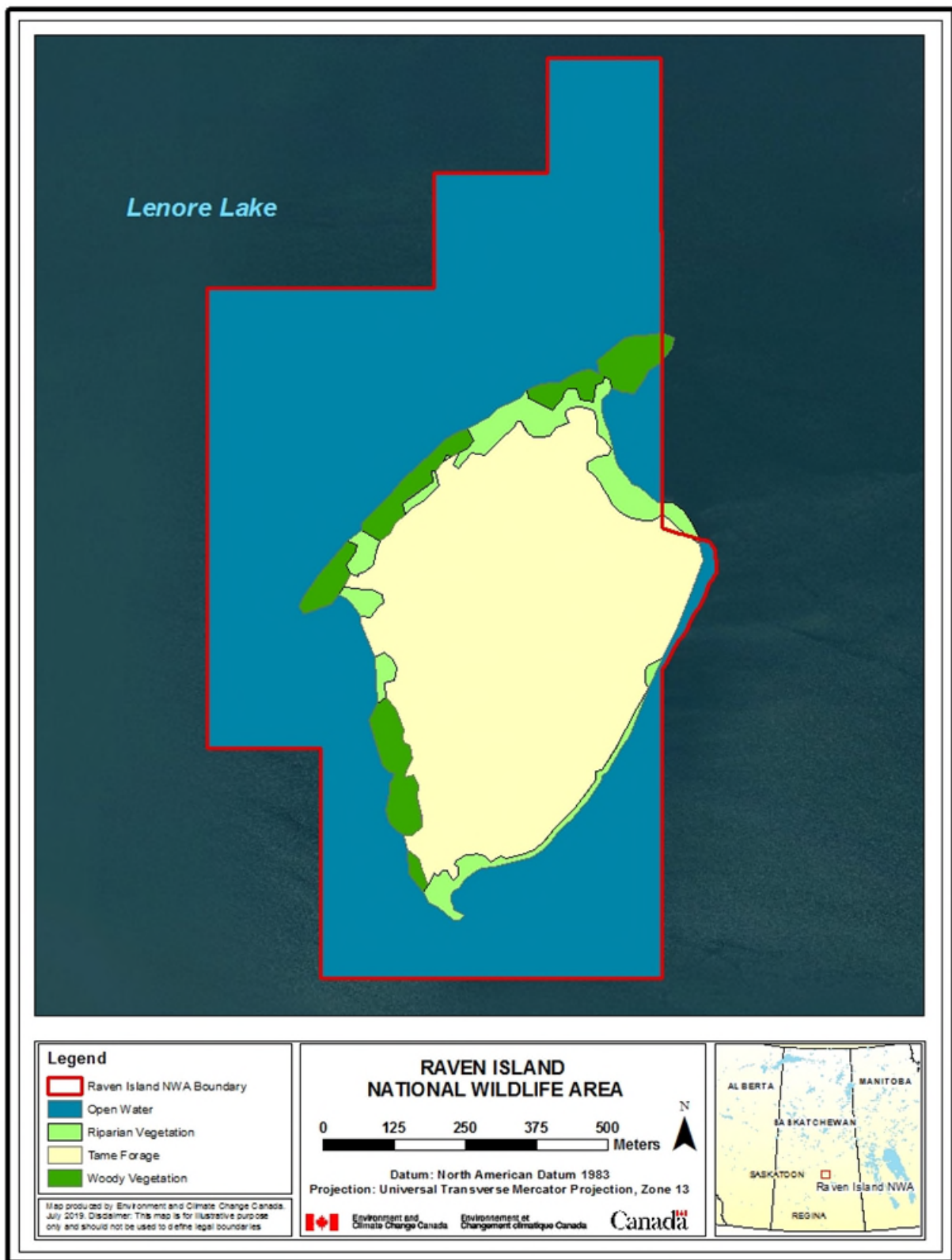


Figure 4. Habitat types found within the Raven Island NWA boundaries.

2.2 WILDLIFE SPECIES

In 1989, waterfowl production surveys were conducted in the seeded cover on Raven Island. During the three surveys, 380 nests were located. Mallard (*Anas platyrhynchos*) was the most abundant species nesting in the dense nesting cover followed by gadwall (*Mareca strepera*) and lesser scaup (*Aythya affinis*). Additional species were American widgeon (*Mareca americana*), northern pintail (*Anas acuta*), blue-winged teal (*Anas discors*), northern shoveler (*Spatula clypeata*), white-winged scoter (*Melanitta deglandi*) and Canada goose (*Branta canadensis*).

The most recent point count bird survey was conducted in 2016 and there were 23 bird species observed within the Raven Island NWA. The most commonly detected species at the three sampling locations were red-winged blackbird (*Agelaius phoeniceus*), and clay-coloured sparrow (*Spizella pallida*). Wilson's phalarope (*Phalaropus tricolor*), gadwall, American white pelican (*Pelecanus erythrorhynchos*), Franklin's gull (*Leucophaeus pipixcan*), song sparrow (*Melospiza melodia*), and tree swallow (*Tachycineta bicolor*) were detected at two of the three sites on Raven Island NWA. Savannah sparrow (*Passerculus sandwichensis*), blue-winged teal, brown-headed cowbird (*Molothrus ater*), lesser scaup, mallard, ring-billed gull (*Larus delawarensis*), yellow warber (*Setophaga petechia*) and yellow-headed blackbird (*Xanthocephalus xanthocephalus*) were detected at one of the three sites. Other species observed in Raven Island NWA, but not detected during the survey were American coot (*Fulica americana*), double-crested cormorant (*Phalacrocorax auritus*), green-winged teal (*Anas carolinensis*), Nelson's sparrow (*Ammodramus nelsoni*), northern pintail, ruddy duck (*Oxyura jamaicensis*), and sora (*Porzana carolina*).

In 2019, the Saskatchewan Breeding Bird Atlas project conducted surveys on Lenore Lake MBS during summer and fall. As the Lenore Lake MBS surrounds the Raven Island NWA, it is likely that species which were observed in the MBS could also be observed in the NWA. The survey indicated the presence of 28 water bird species, of which 16 were waterfowl. Further, there were 25 other bird species observed, most of which use the wetland ecosystem as a habitat.

White-tailed deer (*Odocoileus virginianus*) activity on Raven Island NWA has been reported as far back as 1984. In 2004 a young mule deer (*Odocoileus hemionus*) was observed on the island, and evidence of deer beds could be found on the grass upland habitat in 2007. Muskrat (*Ondatra zibethicus*) activity has been observed on Raven Island NWA in the form of

domed lodges made from reeds and mud. Although there is no identified record of small mammals such as meadow voles (*Microtus pennsylvanicus*), deer mice (*Peromyscus maniculatus*) and northern pocket gophers (*Thamopsis talpoides*) inhabiting Raven Island NWA, the grass upland habitat is likely a habitable area for these animals. Coyotes (*Canis latrans*), skunks (*Mephitis mephitis*), weasels (*Mustela spp.*), and foxes (*Vulpes vulpes*) may inhabit the island at different times of the year. Population exchanges between the island and mainland could easily occur through movement across the ice or swimming across the open lake.

Northern leopard frogs (*Lithobates pipiens*) have been observed inhabiting Raven Island NWA and could potentially be breeding on the site. Boreal chorus frogs (*Pseudacris maculata*), wood frogs (*Lithobates sylvaticus*) and Canadian toads (*Bufo hemiophrys*) are currently known to have breeding habitat on the shores of Lenore Lake MBS. These species could inhabit Raven Island as the features of the littoral zone around the island are quite similar to that of the rest of the lake. Amphibian populations on Lake Lenore have become pressured as abundant fish populations in the lake prey on mature adult amphibians and their eggs. Although not reported, Raven Island NWA is potential habitat for grey tiger salamanders (*Ambystoma mavortium diaboli*). Possible reptiles on the island include the western painted turtle (*Chrysemys picta*) and the plains garter snake (*Thamnophis radix*).

2.3 SPECIES AT RISK

There are no records of specific surveys for flora and fauna species at risk conducted for Raven Island NWA. As such, data is currently insufficient to determine the definitive presence of species at risk as listed in the Federal *Species at Risk Act* (SARA) and Saskatchewan's provincial reports (Table 3). The only species at risk confirmed to inhabit Raven Island is the northern leopard frog (*Lithobates pipiens*, *Special Concern*). Species range data from the grey tiger salamander (*Ambystoma mavortium diaboli*, *Special Concern*) suggests it is present locally around Lake Lenore. The Saskatchewan Breeding Bird Atlas documented western grebes (*Aechmophorus occidentalis*, *Special Concern*) and barn swallows (*Hirundo rustica*, *Threatened*) in the MBS. The province of Saskatchewan report (2019) indicates potential for piping plover (*Charadrius melodus circumcinctus*, *Endangered*) to occur on the island.

A migratory bird count conducted in 2016 at Raven Island NWA did not find any species at risk; however, a count conducted for the Lenore Lake MBS in 2019 did yield indications of species at risk. As Raven Island NWA is situated within the Lenore Lake MBS, it could be assumed that birds which were spotted on the MBS could also inhabit the NWA. In total, two

species of birds with a SARA and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status were observed on Raven Island NWA in 2019: Barn swallow (*Hirundo rustica*) and Western Grebe (*Aechmophorus occidentalis*). I

Table 3: Species at Risk on Raven Island National Wildlife Area

Common and scientific names of species	Status			Presence or Potential of Presence ⁴
	Canada		Saskatchewan	
	SARA ¹	COSEWIC ²	Provincial ranking ³	
Birds				
Piping plover (<i>Charadrius melodus circumcinctus</i>)	Endangered	Endangered	S3B	Potential
Barn swallow (<i>Hirundo rustica</i>)	Threatened	Threatened	S5B, S5M	Present at Lenore Lake MBS
Western grebe (<i>Aechmophorus occidentalis</i>)	Special Concern	Special Concern	S3B, S3M	Present at Lenore Lake MBS
Amphibians				
Northern leopard frog (Prairie population) (<i>Lithobates pipiens</i>)	Special Concern	Special Concern	S3	Confirmed
Grey tiger salamander (<i>Ambystoma mavortium diaboli</i>)	Special Concern	Special Concern	S4	Potential

1. *Species at Risk Act*: Extinct, extirpated, endangered, threatened, special concern, not at risk (assessed and deemed not at risk of extinction) or no status (not rated)
2. Committee on the Status of Endangered Wildlife in Canada: the same status names as the SARA status
3. Provincial ranking using provincial codes, if applicable
4. List as 'confirmed', 'probable', or 'potential'

2.4 INVASIVE SPECIES

Raven Island was cultivated for agriculture crop production in the past and the upland habitat is largely inhabited by remnant non-native agronomic forage species (Table 4). These include smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), intermediate wheatgrass (*Thinopyrum intermedium*), slender wheat grass (*Elymus trachycaulus*), and sweet clover (*Melilotus spp.*). As water levels have risen, the vegetation communities have shifted and new riparian communities have developed. This rapid disturbance in terrestrial conditions has enabled many invasive species such as Canada thistle (*Cirsium arvense*) and perennial sow-thistle (*Sonchus arvensis*) to inhabit large areas of semisaturated soil. A 2016 assessment of the dominant ground cover on Raven Island NWA indicated that reed grasses were abundant along the shoreline. The specific species of reed grasses need to be further assessed; however, it is

possible there is an occurrence of the invasive reed canary grass (*Phalaris arundinacea*) on Raven Island NWA. Seasonal water fluctuations have created a series of mud flats which are being invaded by species such as foxtail barley (*Hordeum jubatum*) and perennial sow-thistle (*Sonchus arvensis*). There is a risk these species could displace native riparian grasses such as fowl bluegrass (*Poa palustris*).

Table 4: Invasive species in Raven Island National Wildlife Area

Common Name	Scientific Name
Noxious	
Absinthe	<i>Artemisia absinthium</i>
Canada thistle	<i>Cirsium arvense</i>
Narrow-leaved hawk's beard	<i>Crepis tectorum</i>
Perennial sow-thistle	<i>Sonchus arvensis</i>
Nuisance	
Dandelion	<i>Taraxacum officinale</i>
Canada fleabane (Horsetail)	<i>Erigeron Canadensis</i>
Foxtail barley	<i>Hordeum jubatum</i>
Poverty weed	<i>Iva axillaris</i>
Quack grass	<i>Elymus repens</i>
Non-native/agricultural	
Alfalfa	<i>Medicago sativa</i>
Intermediate wheatgrass	<i>Thinopyrum intermedium</i>
Reed canary grass (potential)	<i>Phalaris arundinacea</i>
Slender wheatgrass	<i>Elymus trachycaulus</i>
Smooth brome	<i>Bromus inermis</i>
White Sweet clover	<i>Melilotus albus</i>
Yellow Sweet clover	<i>Melilotus officinalis</i>

3 MANAGEMENT CHALLENGES & THREATS

The natural and regional conditions of the Raven Island NWA pose some challenges in terms of management. Lenore Lake is within the closed basin of the Carrot River Watershed and the surrounding landscape primarily consists of cropland with pasture and hardwood forest. While land use in the area is a challenge for the NWA, the natural condition of the watershed is also of importance. The Carrot River Watershed is determined by the Saskatchewan Watershed Authority in their State of the Watershed Report (Davies and Hanley 2010), to be “Stressed.” A stressed watershed indicates that there is no degradation in ecosystem services and functions, but that the watershed has lost its resistance to change.

Little is documented about the landscape threats and their interactions with the ecological health and functionality of Raven Island NWA. However, CWS has identified four management challenges and threats that could affect the future ecological condition of the Raven Island NWA: recreational activities, water level management, invasive species, and agricultural effluents. These threats are mostly due to regional activities that occur at a scale which could have direct or indirect impacts on the NWA’s conservation objectives.

3.1 RECREATIONAL ACTIVITIES

Raven Island is located on the southern portion of Lenore Lake. Recreational activities that occur around Lenore Lake that could result in impact to the NWA include seasonal activities such as off-road vehicle use, recreational watercraft use, bird watching, and angling. Management surveys of nine lakes in southern Saskatchewan including Lenore Lake and a recent survey of lake-use, indicate that the most common recreational uses are angling, swimming, and boating (Nanayakkara and Wissel 2017). Recreational users often participate in one or more of these activities and make multiple trips per season (Nanayakkara and Wissel 2017). Development of recreational areas around the Lenore Lake basin and related on-lake activities lead to shoreline alterations through increased wave action and erosion. These on-lake activities may directly or indirectly disturb breeding, feeding roosting, and/or staging migratory birds.

Other activities such as snowmobiling could alter, damage or destroy the shoreline or upland habitats of Raven Island NWA.

3.2 WATER MANAGEMENT

Increased water levels in Lenore Lake have both direct and indirect effects on Raven Island NWA. Fluctuations in water levels of closed-basin lakes are a function of the balance between three processes: precipitation on the lake, runoff to the lake from the watershed and evaporation from the lake (van der Kamp 2008). Small scale agricultural wetland drainage contributes to higher water levels in surrounding basins and Lenore Lake is often the recipient of excess water.

Ranch Lake, or the Ducks Unlimited Canada Range Slough Project, is a small shallow lake just east of Lenore Lake that contains a natural drainage channel to Lenore Lake (Ducks Unlimited Canada 1982). The Ranch Lake drainage was estimated to raise the level of Lenore Lake by 7.5cm annually (Carlisle 1984). Ducks Unlimited has no current estimate of water released annually into Lenore Lake over the last 50+ years of operation. The initial drainage had many effects, including the gradual rise in water levels. Rising water levels have made the causeway linking to Raven Island to the mainland inaccessible.

In 2010, record flooding and above average precipitation for Houghton Lake and Deadmoose Lake, both situated south-west of Lenore Lake, resulted in the natural flow from Houghton Lake being drained into Lenore Lake (Figure 5). The Department of Fisheries and Oceans took measures in 2010 to block the natural flow of saline waters from Houghton to Lenore Lake to prevent impacts to fish populations.

The input of fresh water from Ranch Lake has reduced the salinity of Lenore Lake while improving fisheries and waterfowl habitat (Carlisle 1984). Conversely, drainage of saline water from Houghton Lake could potentially degrade fisheries and waterfowl habitat. These water inputs may alter water quality and have the potential to indirectly impact habitat quality of Raven Island NWA for birds and fish in the lake. The indirect impacts to terrestrial habitat quality may include a decrease in bank stability through temporal changes in vegetation cover, increase in the cover and distribution of invasive/noxious species, modification of existing tree/shrub communities, and an increase in bare ground (Saskatchewan Prairie Conservation Action Plan Greecover Committee 2008). The indirect impacts to aquatic habitats may be degradation of water quality with increase in erosion and sedimentation (Saskatchewan Prairie Conservation Action Plan Greecover Committee 2008).

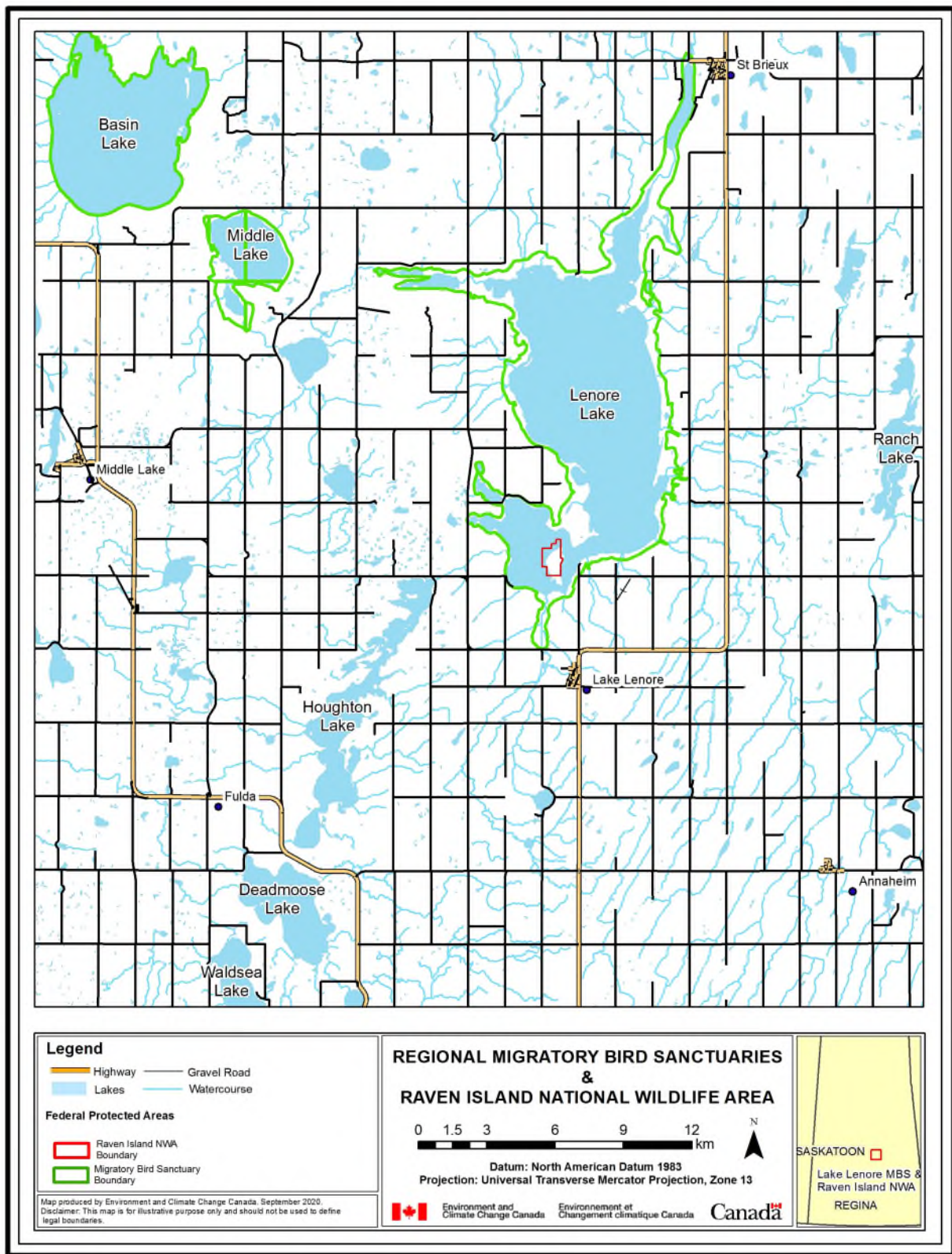


Figure 5. Regional lakes and hydrology of the Carrot River Watershed Lenore Lake basin

3.3 INVASIVE NON-NATIVE / ALIEN SPECIES

The majority of the upland grassland vegetation in the NWA is comprised of three tame perennial grasses (smooth brome, quack grass, Kentucky bluegrass). Seeding of perennial tame grasses has provided dense nesting cover for waterfowl and other wildlife; however, the lack of management interventions such as grazing, haying, or prescribed fire has left several invasive species to thrive on the upland habitat. There are three common invasive noxious weeds present: absinthe, Canada thistle, and perennial sow-thistle. Other invasive noxious plants in the Lenore Lake basin are common tansy (*Tanacetum vulgare*) and purpleloostripe (*Lythrum salicaria*) near St. Brieux which is located on the north end of Lenore Lake. Invasive species create competition with native plants for lights and nutrients. Problems may arise with more aggressive plant species that have the ability to rapidly spread, limit growth of native species, reduce plant community diversity, and reduce the habitat quality for wildlife.

Invasive aquatic invertebrates, such as zebra (*Dreissena polymorpha*) and quagga mussels (*Dreissena bugensis*) are of increasing concern for Saskatchewan freshwater lakes. zebra and quagga mussels can be brought in on boats or other water vessels that have travelled to locations with the aquatic invasive species. Both aquatic invasive species can take over fish habitat and the effects on wildlife habitat are currently unknown. There are currently no feasible methods to stop the spread of zebra and quagga mussels once established.

3.4 AGRICULTURAL EFFLUENTS

Agricultural activities can have direct and indirect negative effects on aquatic and terrestrial habitats. Agricultural influences such as cropping practices and livestock grazing, manure applications and other agricultural inputs such as chemical fertilizers and pesticides can lead to stresses on the condition of these environments. The 2010 Saskatchewan State of the Watershed Report identified the Carrot River Watershed as “Stressed” (Davies and Hanley, 2010). Agricultural influences are only one of nine indicators that determine this rating.

Increasing numbers of livestock and management of those livestock have the potential to impact water quality with increased nutrient and pathogen loading. Nutrient loading can contribute to the eutrophication of surface waters and pathogen loading can increase nitrates in surficial ground water. The State of the Watersheds Report identifies the Carrot River Watershed's livestock density as low intensity, and livestock operations within 300 meters of stream course as moderate intensity (Davies and Hanley, 2010).

Agricultural inputs such as fertilizers and pesticides are commonly used to increase crop quality and yield. Use of nutrients such as nitrogen and phosphorus, and run-off of these nutrients into water can lead to eutrophication. Even small amounts of nutrients can result in ecological changes in surface water. Similarly, pesticides and some of their compounds can persist in the environment. These can enter an aquatic ecosystem through leaching, surface runoff and/or atmospheric deposition through spray drift or wind erosion (Davies and Hanley, 2010). Pesticides can produce toxic effects on aquatic species by altering reproduction, behaviour, physiology, biochemical functions, and survival of young and other sensitive life stages (Davies and Hanley, 2010). The State of the Watershed Report identifies the Carrot River Watershed as having moderate intensity for fertilizer applications and pesticide inputs (Davies and Hanley, 2010).

4 GOALS & OBJECTIVES

4.1 VISION

The vision for Raven Island NWA is wildlife conservation and research. The NWA provides terrestrial habitat for the many migratory birds that use the Lenore Lake Migratory Bird Sanctuary for staging, nesting, brood rearing, or moulting. Opportunities for research of island biogeography, habitat management and wildlife habitat exist at Raven Island NWA.

4.2 GOALS & OBJECTIVES

Management of the Raven Island NWA requires baseline information on upland wildlife habitat and recreational activities on Lenore Lake MBS and their impact (real or potential) on the NWA. A secondary focus is related to the establishment of partnerships and collaboration for management of wildlife habitat in the surrounding area of the Lenore Lake Migratory Bird Sanctuary, including the NWA.

Goal 1. Establish baseline ecological data for the Raven Island NWA including Species At Risk, Migratory bird use and current habitat conditions.

- a) Objective. Use new or recent remote sensing data to classify vegetation communities (by 2022).
- b) Objective. Complete field sampling to inventory vegetation species and quantify the distribution and abundance of noxious weeds (by 2023).
- c) Objective. Complete representative range health assessments and riparian health assessment (by 2024).
- d) Objective. Complete Breeding Bird Surveys, Migratory Bird Surveys, and Species At Risk surveys (by 2025).

Goal 2. Enhance opportunities for collaboration and/or partnerships on management activities related to Lenore Lake MBS and Raven Island NWA

- a) Objective. Identify land use practices and their positive or negative effects on Lenore Lake MBS and Raven Island NWA (by 2025).
- b) Objective. Create opportunities for collaboration on agricultural best management practices to benefit Lenore Lake MBS and Raven Island NWA (by 2025)

Goal 3: Evaluate and minimize disturbance to Raven Island NWA and migratory birds.

- a) Objective. Qualify and quantify recreational activities resulting in disturbance of Raven Island NWA using trail cameras, and shoreline surveys (by 2025).
- b) Objective. Evaluate and initiate implementation of disturbance mitigation measures related to recreational activities impact on Raven Island NWA (by 2025).

Goal 4. Enhance upland grassland vegetation habitat at Raven Island NWA for migratory bird nesting cover and other wildlife.

- a) Objective: Complete options analysis for enhancing upland grassland vegetation on the NWA to benefit nesting and foraging habitat for migratory birds (by 2023).
- b) Objective: Select and initiate implementation of preferred option for enhancing upland grassland vegetation on the NWA to benefit nesting and foraging habitat for migratory birds (by 2025).

4.3 EVALUATION

Regular monitoring will be performed within the limits imposed by the availability of financial and human resources. The management plan will be reviewed five years after its initial approval, and reviewed and updated every ten years thereafter. The evaluation will take the form of regular review of monitoring data obtained from monitoring and research projects outlined below. This monitoring will be used to establish priorities for actions and to allocate resources.

5 MANAGEMENT APPROACHES

This section and the following table contain a description of the possible approaches that could be employed in the management of the Raven Island NWA (Table 5). Management actions will be determined during the annual work planning process and will be implemented as human and financial resources allow.

Currently, the most immediate threat to Raven Island NWA is the potential impact of increasing density and distribution of non-native/alien species on the idle agricultural land. The second immediate threat is general flooding or flooding because of storms.

Table 5: Management Approaches for Raven Island NWA

Management challenge and/or threat	Goal and objective(s)	Management approaches (actions, including level of priority) ¹
Increased Recreational Activities	<p>Goal 2 : Enhance opportunities for collaboration and/or partnerships on management activities related to Lenore Lake MBS and Raven Island NWA</p> <p>Objective 2.a: Identify land use practices and their positive or negative effects on Lenore Lake MBS and Raven Island NWA (by 2025).</p> <p>Objective 2.b: Create opportunities for collaboration on agricultural best management practices to benefit Lenore Lake MBS and Raven Island NWA (by 2025)</p> <p>Goal 3: Evaluate and minimize disturbance to Raven Island NWA and migratory birds.</p> <p>Objective 3.a: Quantify recreational activities providing disturbance of Raven Island NWA using trail cameras, and shoreline surveys (by 2025).</p> <p>Objective 3.b: Evaluate and initiate implementation of disturbance mitigation measures related to recreational activities impact on Raven Island NWA (by 2025).</p>	<p>Engage discussion with the Carrot River Valley Watershed Association – Lenore Lake advisory committee. (1)</p> <p>Evaluate recreational activities and assess their impact on wildlife and wildlife habitat using direct, indirect observations and motion detecting cameras. Summarize as a report for a baseline. (2)</p> <p>Use outreach and communication to inform the general public of the importance of Migratory Bird Sanctuaries and National Wildlife Areas. (2)</p>

Invasive Non-native/Alien Species	<p>Goal 1. Establish baseline ecological data for the Raven Island NWA including Species At Risk, Migratory bird use and current habitat conditions.</p> <p>Objective 1.b.:Complete field sampling to inventory vegetation species and quantify the distribution and abundance of noxious weeds (by 2023).</p> <p>Objective 1.c: Complete representative range health assessments and riparian health assessment (by 2024).</p> <p>Objective 1.d: Complete Breeding Bird Surveys, Migratory Bird Surveys, and Species At Risk surveys (by 2025).</p> <p>Goal 4. Enhance upland grassland vegetation at Raven Island NWA for migratory bird nesting cover and other wildlife.</p> <p>Objective 4.a: Complete options analysis for enhancing upland grassland vegetation on the NWA to benefit nesting and foraging habitat for migratory birds (by 2023).</p> <p>Objective 4.b: Select and initiate preferred option for enhancing upland grassland vegetation on the NWA to benefit nesting and foraging habitat for migratory birds (by 2025).</p>	<p>Establish baseline inventory of native, non-native and invasive species (1)</p> <p>Conduct surveys of breeding and migratory birds to assess habitat needs to support nesting and staging birds. (1)</p> <p>Conduct surveys of other wildlife to assess habitat needs to support nesting and staging birds. (1)</p> <p>Conduct habitat assessments (i.e. riparian and upland habitats). (1)</p> <p>Assess cost/benefit analysis of restoration, weed management, grazing and prescribed fire to enhance grassland vegetation for migratory birds and other wildlife. (2)</p> <p>Select and initiate implementation of preferred option to enhance vegetation for nesting and foraging habitat for migratory birds. (3)</p>
Water Management	<p>Goal 2. Enhance opportunities for collaboration and/or partnerships on management activities related to Lenore Lake MBS and Raven Island NWA</p> <p>Objective 2.a: Identify land use practices and their positive or negative effects on Lenore Lake MBS and Raven Island NWA (by 2025).</p> <p>Objective 2.b: Create opportunities for collaboration on agricultural best management practices to benefit Lenore Lake MBS and Raven Island NWA (by 2025)</p>	<p>ECCC – CWS will request a role within the Carrot River Valley Watershed Association – Lenore Lake advisory committee (1)</p> <p>Evaluate the land use and land cover around Lenore Lake sub-watershed basin using geo-spatial analysis. (2)</p> <p>Collaborate with the Carrot River Valley Watershed Association to provide extension opportunities for best management practices for agricultural activities around Lenore Lake. (3)</p>

Agricultural Effluents	<p>Goal 2. Enhance opportunities for collaboration and/or partnerships on management activities related to Lenore Lake MBS and Raven Island NWA</p> <p>Objective 2.a: Identify land use practices and their positive or negative effects on Lenore Lake MBS and Raven Island NWA (by 2025).</p> <p>Objective 2.b: Create opportunities for collaboration on agricultural best management practices to benefit Lenore Lake MBS and Raven Island NWA (by 2025)</p>	<p>Engage discussion with the Carrot River Valley Watershed Association – Lenore Lake advisory committee. (1)</p> <p>Evaluate the land use and land cover around Lenore Lake sub-watershed basin using geo-spatial analysis. (2)</p> <p>Collaborate with the Carrot River Valley Watershed Association to provide extension opportunities for best management practices for agricultural activities around Lenore Lake. (3)</p>
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Level of Priority: 1 (from 0 to 3 years); 2 (from 4 to 6 years); 3 (from 7 to 10 years)

5.1 HABITAT MANAGEMENT

The Raven Island NWA will be managed primarily as a waterfowl staging area and nesting site for other migratory birds. After planting of dense nesting cover onto agricultural lands of Raven Island, natural processes have been allowed to occur unimpeded. There has been minimal active habitat management on Raven Island NWA since rising water levels made the island inaccessible. Broadcast seeding with native forbs and prescribed fire have occurred occasionally over the last 20 years. Better knowledge on the use and state of habitat to enhance its management is a key component of our planning.

5.1.1 Biological and Habitat Inventories

An inventory of the flora and fauna of Raven Island NWA is necessary to identify current species. An ecological assessment of grasslands used for dense nesting cover and riparian areas of Raven Island NWA will be conducted to establish baseline information on vegetation community structure, hydrologic functions, non-native and invasive species occurrence, and wildlife use. Autonomous Recording Units will be used to collect further evidence of breeding and migratory birds. This information will inform an options analysis for the habitat improvement and wildlife management of Raven Island NWA.

5.1.2 Options Analysis

Raven Island NWA will undergo an options analysis on approaches for enhancing upland grassland vegetation as nesting and foraging habitat for migratory birds. The options analysis will

include invasive species treatments, grazing, prescribed fire and/or revegetation. Greater variety in the structure and composition of perennial upland cover supports a greater diversity of species related to a monoculture or uniform harvest system (Askins et al. 2007, Rotenberry and Wiens 1980). Waterfowl nest density and success tends to increase on landscapes with many small wetlands and a patchwork of idled and managed perennial hay and annual cropland (Arnold et al. 2007). Some species like northern pintail, may benefit from haying or other management of perennial cover (McMaster et al 2006). Management interventions such as grazing, prescribed fire and revegetation could be used to improve wildlife habitats (Goal 4).

5.1.3 Implementation of Option Analysis

Management of Raven Island NWA will proceed with implementation of the preferred option that is the most cost effective and beneficial for staging and breeding migratory birds.

5.2 SPECIES AT RISK

Species at risk will be surveyed to assess population size and distribution, and to identify existing threats. Particular interest will be taken in the northern leopard frog population and it's interaction with Raven Island NWA during different stages of the frog's life cycle. The information gathered will also inform best management practices to enhance habitat and support species at risk conservation and recovery.

5.3 MULTI-AGENCY PARTNERSHIPS FOR CONSERVATION

The primary function of the Raven Island NWA is to protect breeding and staging migratory birds. Similarly, Lenore Lake MBS protects large concentrations of staging migratory birds. When considered together, Raven Island NWA and Lenore Lake MBS provide important habitat for a nationally significant concentration of migratory waterfowl species. The majority of the surrounding lands of Lenore Lake are provincial crown lands owned by the Saskatchewan Ministry of Agriculture and private lands. The health of the Lenore Lake basin depends largely on the collaborative management of the surrounding lands and water in the Carrot River Watershed.

The Carrot River Valley Watershed Association (CRVWA) is a non-profit, non-governmental watershed stewardship organization that is dedicated to protecting and preserving the Carrot River Watershed through education and awareness. The Lenore Lake basin is within

the Carrot River Watershed and supports several other saline basins, including Basin and Middle Lakes MBS. The CRVWA includes representatives from rural and urban municipalities, First Nations, Conservation and development area authorities, wildlife federations, resort villages, and regional parks (Saskatchewan Watershed Authority 2012). In 2012, the CRVWA developed a Source Water Protection Plan to identify water management issues and make recommendations and key actions for protection of water quality and quantity. The Plan was informed by technical committees comprised of several environmental non-government organizations, provincial and federal departments.

Water management issues in Saskatchewan are complex and must balance the needs of people, agriculture and wildlife. Multi-agency partnerships provide opportunities to find common interests and to leverage resources for improved water and ecosystem conservation. ECCC partnership with the CRVWA could provide long-term opportunities for stress and threat reduction, and enable management actions within the Lenore Lake sub watershed and the greater Carrot River Watershed, reducing impacts on the Raven Island NWA.

ECCC – CWS will seek opportunities to work with the CRVWA, environment non-government organizations, relevant provincial government agencies, private landowners, and other federal government agencies to develop and implement actions that contribute to the long-term conservation of Raven Island NWA, Lenore Lake Basin, and the broader Carrot River Watershed. This partnership will allow ECCC-CWS to ensure that the wildlife values at Raven Island NWA are considered in water management decisions.

5.4 MONITORING

An Ecological and Conservation Monitoring Plan (ECOMaP) is under development for Canadian Wildlife Service protected and conserved areas. There are three components to the monitoring program; these include Key Ecological Attributes, threats and human impacts, and management activities. The intersection of these three elements provides the greatest opportunity to steward and manage wildlife and protected areas. Building on this process, the conservation of migratory birds and species at risk with their habitats in the Raven Island NWA will be enhanced.

The monitoring framework under ECOMaP relies on national, regional and local data. Using regional and local sites to inform the ECOMaP will be the priority to inform national

indicators for the protected and conserved areas network. Lessons learned from ECOMaP processes on priority sites amongst ECCC's protected areas will be informing Raven Island NWA and Lenore Lake MBS monitoring, undertaken as part of this management plan. Baseline information like habitat condition, threats, biodiversity, and partnerships will be collected and integrated over time in the global monitoring process undertaken under the ECOMaP umbrella.

5.5 RESEARCH

Research activities may be permitted when the research:

- Addresses one or more of the management goals or objectives
- Does not interfere with the conservation of wildlife; and
- Is not be likely to cause significant adverse environmental effects

To obtain a permit to conduct research in Raven Island NWA and to receive instructions concerning guidelines for a research proposal, please contact:

Protected Areas Specialist
c/o Environment and Climate Change Canada
Canadian Wildlife Service
Prairie Region
115 Perimeter Road
Saskatoon, Saskatchewan S7N 0X4
306-975-4087
cwsnwapermitprairie@ec.gc.ca

6 AUTHORIZATIONS AND PROHIBITIONS

In the interests of wildlife and their environment, human activities are minimized and controlled in NWAs through the implementation of the *Wildlife Area Regulations*. These regulations outline activities that are prohibited (subsection 3(1)) in the wildlife area and provide mechanisms with which the Minister of the Environment and Climate Change can authorize certain activities to take place in NWAs that would otherwise be prohibited. The regulations also allow the Minister to prohibit entry into NWAs.

All activities in an NWA are prohibited unless a notice has been posted or published authorizing the activity to take place. However, in addition to notices, certain activities may be authorized by obtaining a permit from the Minister of the Environment and Climate Change Canada.

6.1 PROHIBITION OF ENTRY

Under the *Wildlife Area Regulations*, the Minister may publish a notice in a local newspaper or post notices at the entrance of any wildlife area or on the boundary of any part thereof prohibiting entry to any wildlife area or part thereof. These notices can be posted when the Minister is of the opinion that entry is a public health and safety concern or when entry may disturb wildlife and their habitat.

For the Raven Island NWA, entry is not prohibited. Some activities are authorized without a permit and other activities may be allowed with a valid permit, as described below.

6.2 AUTHORISED ACTIVITIES

For Raven Island NWA, notices authorising the following activities will be posted and/or published in local newspapers, or on information signs located along the area boundary.

Authorized Activities without special restrictions:

1. Hiking
2. Recreational boating along the shore
3. Wildlife viewing from offshore

Authorized Activities with special restrictions:

1. Photography and wildlife viewing (on foot only)
2. Berry picking (for non-commercial purposes only)

Hunting is not permitted on or from Raven Island NWA.

Note: If there is a discrepancy between the information presented in this document and the notice, the notice prevails, as it is the legal instrument authorising the activity.

6.3 AUTHORISATIONS

Permits and notices authorizing an activity may be issued only if the Minister is of the opinion that the activity is:

- 1) scientific research relating to wildlife or habitat conservation, or
- 2) the activity benefits wildlife and their habitats or will contribute to wildlife conservation,
or
- 3) the activity is not inconsistent with the purpose for which the NWA was established
and is aligned with the most recent management plan.

The Minister may also add terms and conditions to permits in order to minimize the impact of an activity on wildlife and wildlife habitat.

All requests for permits or authorizations must be made in writing to the following address:

Protected Areas Ecologist
c/o Environment and Climate Change Canada,
Canadian Wildlife Service
115 Perimeter Road
Saskatoon, Saskatchewan S7N 0X4
cwsnwapermitprairie@ec.gc.ca

For further information, please consult the Policy when Considering Permitting or Authorizing Prohibited Activities in Protected Areas Designated under the *Canada Wildlife Act* and *Migratory Bird Convention Act, 1994* (December 2011). This Environment and Climate Change Canada policy document is available on the Protected Areas website at <https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas.html>.

6.4 EXCEPTIONS

The following activities will be exempt from the requirements for permitting and authorizations:

- Activities related to public safety, health or national security, that are authorized by or under another Act of Parliament or activities that are authorized under the *Health of Animals Act* and the *Plant Protection Act* to protect the health of animals and plants;
- Activities related to routine maintenance of NWAs, to the implementation of management plans, and enforcement activities conducted by an officer or employee of Environment and Climate Change Canada.

6.5 OTHER FEDERAL AND PROVINCIAL AUTHORIZATIONS

Depending on the type of activity, other federal or provincial permits or authorisations may be required to undertake an activity in the Raven Island NWA, MBS or adjacent lands and waters. It is the responsibility of the permit applicant to obtain all additional permits, authorizations as required by federal legislation (e.g., *Migratory Birds Convention Act, 1994*, *Migratory Bird Regulations*, *Migratory Bird Sanctuary Regulations*, *Species at Risk Act*, *Fisheries Act*), provincial legislation (e.g., *The Fisheries Act (Saskatchewan), 1994*, *The Wildlife Act, 1998*, *The Wildlife Habitat Protection Act*), and landowners (e.g., permission to access private land), prior to commencement of the activity.

Contact your regional federal and provincial permitting office for more information.

National Wildlife Area – Permit Request
c/o Environment and Climate Change Canada
115 Perimeter Road
Saskatoon, Saskatchewan S7N 0X4
cwsnwapermitprairie@ec.gc.ca

Province of Saskatchewan
Ministry of Environment
3211 Albert Street
Regina, Saskatchewan S4S 5W6

7 HEALTH & SAFETY

There is currently no infrastructure on Raven Island NWA and therefore no associated risks. Risks to health and safety are most likely associated with travel by motorized and non-motorized conveyances over water or ice, as well as severe weather such as thunderstorms, wind, and cold.

A Phase I Environmental Site Assessment (ESA) identified no significant Areas of Potential Environmental Contamination (Franz Environmental 2006). Recommendations to remove a 5-gallon pail of herbicide, scrap metal (remnant cars, farm equipment and 200L drum) were identified; however, the aforementioned items can no longer be located on Raven Island NWA.

There are no other known health and safety issues for Raven Island NWA. Non-emergency issues related to security or health and safety issues for Raven Island should be reported to:

National Wildlife Area Program
Environment and Climate Change Canada
Canadian Wildlife Service – Prairie Region
115 Perimeter Road
Saskatoon, SK S7N 0X4
Telephone: 306-975-4087

In the case of environmental emergencies, contact will be made with the Canadian Environmental Emergencies Notification System at the following address:

Saskatchewan Ministry of the Environment
1-800-667-7525

All reasonable efforts will be made to protect the health and safety of the public including adequately informing visitors of any known or anticipated hazards or risks. Further, Environment and Climate Change Canada staff will take all reasonable and necessary precautions to protect their own health and safety, as well as that of their co-workers. However, visitors (including researchers and contractors) must make all reasonable efforts to inform themselves of risks and hazards and must be prepared and self-sufficient. Natural areas contain some inherent dangers and proper precautions must be taken by visitors, recognising that Environment and Climate Change Canada staff neither regularly patrol nor offer services for visitor safety in NWAs.

Emergency Contacts for Raven Island NWA	
Any life-threatening emergencies	911
Police/Fire/Ambulance	911
Royal Canadian Mounted Police (RCMP) Wakaw Detachment	306-233-5810
Environment & Climate Change Canada – Wildlife Enforcement Division	306-975-4087
Saskatchewan Ministry of the Environment	1-800-667-TIPS
Saskatchewan Ministry of the Environment – Melfort Conservation Officer	306-752-6214
Rural Municipality of Lake Lenore No. 399	306-275-2066
Rural Municipality of Three Lakes No. 400	306-367-2172

8 ENFORCEMENT

No cooperative agreements for enforcement and surveillance exist with other competent authorities, such as other government departments and agencies (Royal Canadian Mounted Police, National Defence, etc.), provinces or territories, or any local or municipal authorities.

Informally, regional Wildlife Enforcement Directorate are provided a list of NWAs where permits have been issued for agricultural or research activities each year. This helps them plan their work with responses to complaints or regular inspections of properties.

The management of NWAs is based on three acts and the regulations thereunder:

- *Migratory Birds Convention Act, 1994, and Migratory Birds Regulations*
- *Canada Wildlife Act and Wildlife Area Regulations*
- *Species at Risk Act*

For the purposes of the administration of the *Canada Wildlife Act* and *Regulations*, wildlife area officers possess the powers of a police constable. Those federal and provincial officers so designated and the CWS Enforcement Coordinator are authorized to enforce federal legislation. *Wildlife Area Regulations* will be universally enforced and charges will be laid for violations when necessary.

9 PLAN IMPLEMENTATION

The management plan will be implemented over a ten-year period. Annual work plans will be developed in accordance with priorities and budgets, and the details of management plan implementation will be developed through Environment and Climate Change Canada's annual work planning process. The plan will be implemented as human and financial resources allow. An adaptive management approach will be favoured for the implementation of the management plan. The implementation of the plan will be evaluated five years after its publication, based on the actions identified in Table 6.

The Raven Island NWA is managed under the *Canada Wildlife Act*. However, given its location, liaison with government agencies and non-governmental wildlife organizations is essential for the effective long-term management of the NWA and its surrounding environment. Topics of mutual interest to the federal and provincial governments include management of game and non-game wildlife, rare and endangered species, recreation, and production of special publications relevant to the NWA.

Table 6: Implementation Strategy timeline for Raven Island National Wildlife Area

Activity	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Baseline inventory of native, non-native and invasive species	X	X								
Surveys of breeding and migratory birds numbers		X	X							
Surveys of other wildlife to assess habitat		X	X							
Habitat assessments (i.e. riparian and upland habitats).	X	X								
Engage discussions with the CRVWA– Lenore Lake advisory committee	X	X	X	X						
Be involved with the CRVWA – Lenore Lake advisory committee				X	X					
Cost/benefit analysis of habitat management options				X						
Assessment of recreational activities and impact on wildlife		X	X							

and wildlife habitat and baseline report.										
Land use and land coverage in the surrounding of Lenore Lake sub-watershed basin					X					
Develop partnership for best management practices for agricultural activities around Lenore Lake.				X						
Implement vegetation management for nesting and foraging habitat for migratory birds.							X	X	X	X

9.1 MANAGEMENT AUTHORITIES & MANDATES

Environment and Climate Change Canada, Canadian Wildlife Service, Prairie Region is responsible for the site management of Raven Island NWA. Its role includes Ecological Conservation Monitoring Program (ECOMaP), habitat and land use management, permits and licensing, public information and outreach, enforcement, site maintenance, boundary and information signs.

The Saskatchewan Ministry of the Environment and Agriculture is responsible for the Lenore Lake MBS, in accordance with the *Migratory Birds Convention Act, 1994*, and with the *Migratory Birds Regulations* that apply to the area.

9.2 MANAGEMENT PLAN REVIEW

Management plans will be reviewed five years after initial acceptance and every ten years after that. Although CWS is solely responsible for management of Raven Island NWA, given that the Lenore Lake MBS surrounds the NWA, it is recommended that the Ministry of Agriculture, the Ministry of Environment and the Carrot River Valley Watershed Association be involved in the review of the management plan. Joint public consultation with the Carrot River Valley Watershed Association other specialist groups and concerned individuals will be held, where possible, on topics related to the conservation of habitat and wildlife on Raven Island NWA. Submission for plan revisions will be invited at that time.

10 COLLABORATORS

Collaboration with local agencies and sector organizations to contribute to the protection and conservation of wildlife species and their habitats in the NWA will be favoured.

For instance, collaborations could be developed or pursued with universities and research centres to fill scientific knowledge gaps, with the province to implement species at risk recovery measures, particularly for species under provincial jurisdiction, with non-governmental organizations and municipal authorities to increase public awareness of the objectives of the NWA. The main organizations likely to collaborate or to have a stake in the management of Raven Island NWA include:

- Saskatchewan Ministry of Agriculture
- Saskatchewan Ministry of Environment
- Ducks Unlimited Canada
- Carrot River Valley Watershed Association
- Local fish and wildlife clubs
- Interested Indigenous Peoples

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