

HABITAT MANAGEMENT PLAN FOR THE GRAND CODROY VALLEY ESTUARY

A Ramsar–designated Wetland of International Importance



Prepared by:
NL Department of Fisheries, Forestry and Agriculture- Wildlife Division

February 2021

Contents

Preface	- 3 -
A. The Grand Codroy Valley Estuary – A history of conservation	- 3 -
Designation as a Ramsar Wetland of International Significance	- 6 -
a. Land Management and Development	- 7 -
b. Education and Public Outreach Programing	- 8 -
c. Monitoring Programs	- 9 -
C. Future Management and Conservation Opportunities	- 11 -
1. Monitoring Programs	- 11 -
a. Waterfowl and Passerines	- 11 -
b. Eelgrass and Aquatic/Riparian Vegetation	- 12 -
c. Invasive Species	- 12 -
d. Seals	- 14 -
e. Water quality	- 14 -
2. Outreach and Education	- 15 -
a) Educational Outreach and the Wetland Centre.....	- 15 -
b. Conservation Corps Green Teams.....	- 16 -
c. Education surrounding the responsible use of ATVs.....	- 16 -
d. Landowner education, outreach, and stewardship	- 16 -
Conclusion.....	- 17 -
Appendices and Additional Information.....	- 18 -
APPENDIX A: Bird List for the Codroy Valley Estuary Area	- 18 -
APPENDIX B: Guidelines for Sustainable Use of Piping Plover Beaches	- 28 -
APPENDIX C: Monitoring data of bird populations in the Codroy Valley	- 31 -
APPENDIX D: Identifying Green Crab in Newfoundland Waters.....	- 33 -

Preface

This plan was prepared by the Newfoundland and Labrador Department of Fisheries, Forestry and Agriculture, Wildlife Division in partial fulfilment of the division's role as designated "Site Manager" of the "Grand Codroy Valley Estuary" as described by the Ramsar Convention on Wetlands of International Significance (1971). This plan represents an update on the original conservation plan drafted in 1995.

A. The Grand Codroy Valley Estuary – A history of conservation

The Grand Codroy Valley Estuary is located on the southwest coast of Newfoundland, approximately 35 km (50 km by road) northwest of Port aux Basques (Figure 1). The site is principally a broad intertidal river estuary of open water with depths to 2m and deeper waters in the meandering river channel. The mouth of the estuary is separated from the Atlantic Ocean waters of Searston Bay by a 1 km-long sandspit vegetated largely by dune grass *Ammophila* sp. The meandering river channel of the Grand Codroy occupies ~15% of the area, while the remainder is a shallow, brackish wetland with flats and sand bars exposed at low tide. Portions of the intertidal area are heavily vegetated with eel grass (*Zostera marina*.) A number of small low-lying islands occur within the wetland and the surrounding rolling upland is largely farms, residential properties and open fields.

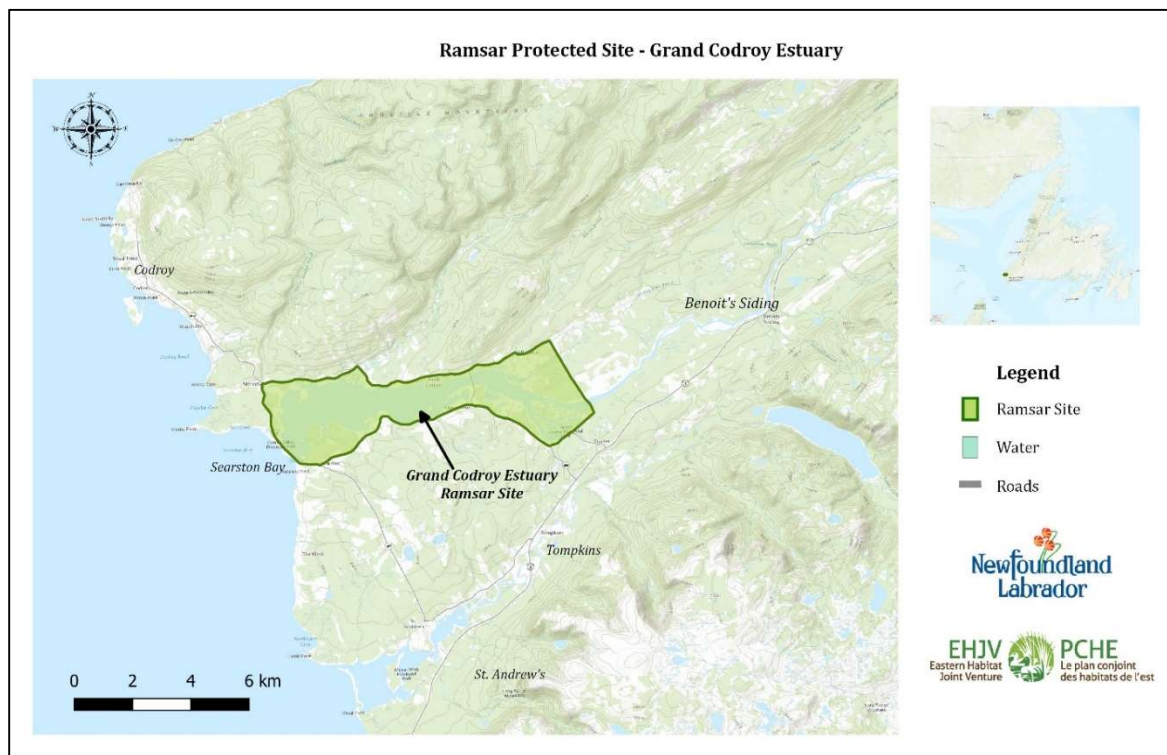


Figure 1: Location of the Grand Codroy Estuary RAMSAR Wetland of International Importance.

In addition to the abundant wildlife supported by the area, the Codroy Valley has also been home to humans for hundreds of years. The Newfoundland Beothuk Indigenous people were the original inhabitants of the area, later succeeded by Mi'kmaq groups arriving from Cape Breton and Nova Scotia during the mid 1700s. In the 1820s the area was settled by French speaking Acadian fisherman, who then used this port as a base of operation to fish the coastal waters from Cape Anguille to Cape Ray. Shortly after, the area was settled by English and Scottish settlers, who cleared the land for cultivation and established homesteads.

Today, the valley is comprised of over 700 households spread throughout a number of surrounding unincorporated small communities. The communities of O'Regan's, Great Codroy, Millville, Searston, and Upper Ferry directly surround the estuary, and South Branch, Tompkins, Codroy Pond, North Branch, St. Andrews, Loch Lomond, The Block, Shoal Point, Wesleyville, and Coal Brook extend further out into the larger valley.

The Grand Codroy River Estuary is the province's only Ramsar designated wetland of international significance (Figure 2). It is one of the most productive of Newfoundland's wetland sites for biodiversity. The Grand Codroy River and Little Codroy River which flow together into the Ramsar estuary site are scheduled Atlantic Salmon migration/breeding rivers. The wetlands of the estuary and lower river also serve as natural infrastructure protecting the surrounding communities from coastal storm surge, sea level rise and increased erosion impacts from run-off and storms.

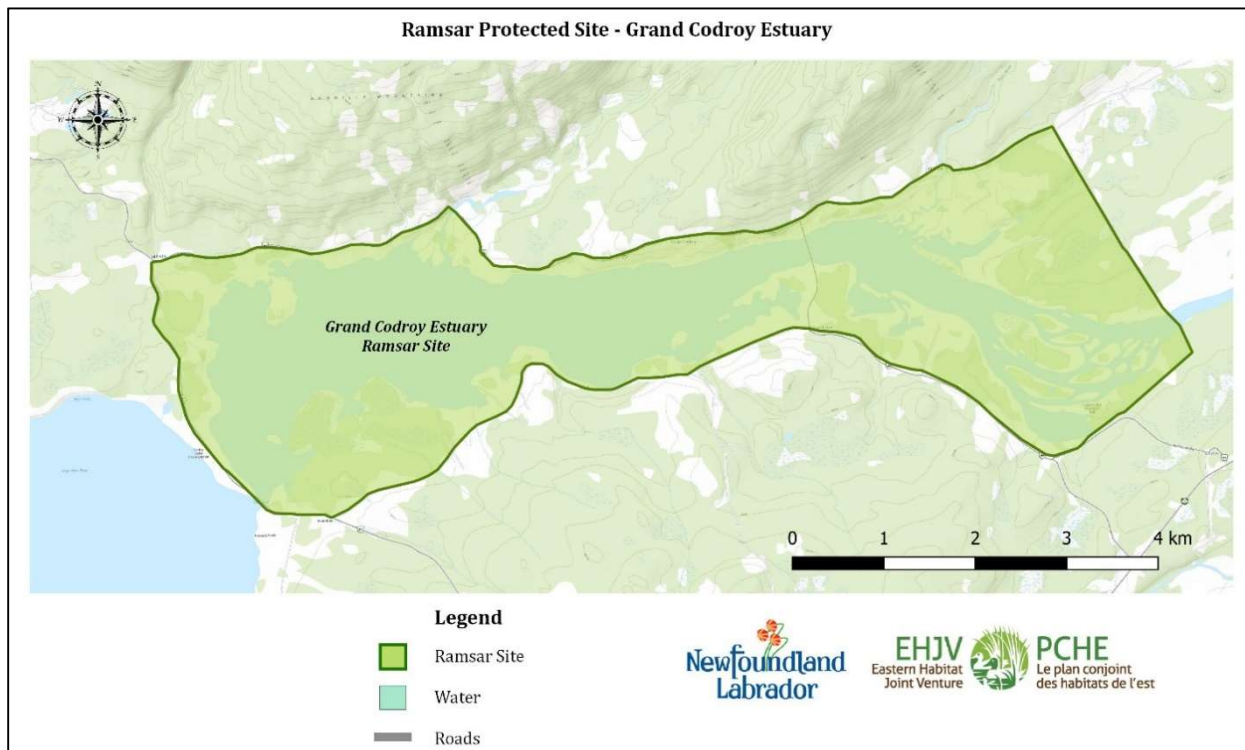


Figure 2: Map of the Grand Codroy Estuary protected Ramsar Site.

The estuary is an important staging, nesting, and brood raising area for waterfowl (geese and ducks), home for thousands of migratory birds during the fall and spring migration, and year-round habitat for bird species such as songbirds, raptors, and wading birds (Figure 3). Results from monitoring efforts show that the estuary continues to support flocks of up to 3000 Canada Geese (*Branta Canadensis*) during fall and early winter, and upwards of 1000 Black Duck (*Anas rubripes*) in late September. Pintail (*Anas acuta*), Green-winged Teal (*Anas crecca carolinensis*), American Wigeon (*Anas Americana*) and Greater Scaup (*Aythya marila*) also occur in lesser numbers. Small concentrations of shorebirds use the intertidal bars and flats at this site in late summer. The endangered Piping Plover has been documented to nest on a sand bar at the mouth of the estuary which in part forms Codroy Provincial Park.



Figure 3: Canada Geese foraging in a field along the shores of the Ramsar site. SAM staff photo.

Designation as a Ramsar Wetland of International Significance

In 1974, local residents who recognized the significance of the estuary and its importance to wildlife, and to promote public safety, requested the closure of the area to the shooting of wildlife. This prohibition on firearm use within the Ramsar site boundaries is enacted and enforced by the Department of Fisheries, Forestry and Agriculture and is published each year in the department's Hunting and Trapping Guide. Following this action, the Canadian Wildlife Service and the Newfoundland Wildlife Division made a joint request to the International Union for Conservation of Nature and Natural Resources (IUCN) on behalf of residents to declare the estuary as a site of international significance (Figure 4). On May 27, 1987 the Grand Codroy Estuary became the first wetland area in Newfoundland to be declared a Wetland of International Importance under the Ramsar Convention (1971).

The intention of the Ramsar designation is "...to support, not override, the legislation of provincial, state, or federal governments. It emphasizes a concept of "wise use", which means using wetlands only in ways that are compatible with and sustain its natural properties. For more information on the 1971 Ramsar convention or the program's current status, visit: [Wetlands of International Importance \(Ramsar Sites\) | Ramsar](#).



Figure 4: View of a portion the estuary from the Wetland Interpretation Centre in Upper Ferry. Photo credit: SAM photo.

B. Conservation of the Codroy Valley Estuary

Conservation efforts surrounding the Codroy Valley Estuary pre-date the area's designation as a Ramsar Wetland of International Significance. These efforts, and continuing efforts today, serve as an example of collaborative management between local landowners, governmental agencies, non-governmental organizations, and special interest groups. This section seeks to outline some of the central, historic and current, measures that continue to contribute to the overall management and conservation of the estuary and the wildlife that depend on it for their survival.

a. Land Management and Development

The designation of the estuary as a Ramsar site is not a direct land conservation mechanism, in the sense that it does not limit development within site boundaries. However, the designation does indirectly impact development approvals and mitigations which may be requested by regulators to be implemented on any approved developments. Centrally, the federal government (Canadian Wildlife Service) and the provincial government (Wildlife Division, Department of Fisheries, Forestry and Agriculture), agencies committed to implementing the Ramsar Convention in Canada/NL, are responsible for reviewing applicable development applications and managing approvals that are consistent with maintaining the conservation values of the estuary.

The majority of the Ramsar site is comprised, in majority, of shallow water wetlands, a provincial park forming the seaward barasway, and surrounding mostly privately owned riparian lands. The total area of the Ramsar site is 3361 hectares, of which ~1908 hectares is crown owned, comprised mostly of aquatic portions of the estuary or the Codroy Provincial Park. 1271 hectares of the surrounding riparian uplands is private property primarily comprised of individual residential dwellings, a few small farm holdings (mostly hayfields), and open lands.

The value and contributions of stewardship efforts from private landowners is important to sustainably manage the estuary in the long-term. Fortunately, there is a strong history of stewardship, and over the years, several landowners have signed voluntary Land Stewardship Agreements with the provincial Wildlife Division in which they pledge to act as good stewards of the habitats and wildlife found on their land. Additionally, the Wildlife Division, and more recently, the Nature Conservancy of Canada (NCC), have undertaken programs to purchase key properties surrounding the Ramsar site, totalling in 246 hectares. All of these property parcels (of which there are currently 182 hectares inside the boundaries of the Ramsar site), which include riparian uplands, marsh lands and low lying islands within the estuary, are now managed by the NCC, to be preserved in perpetuity as nature reserves (Figure 5).

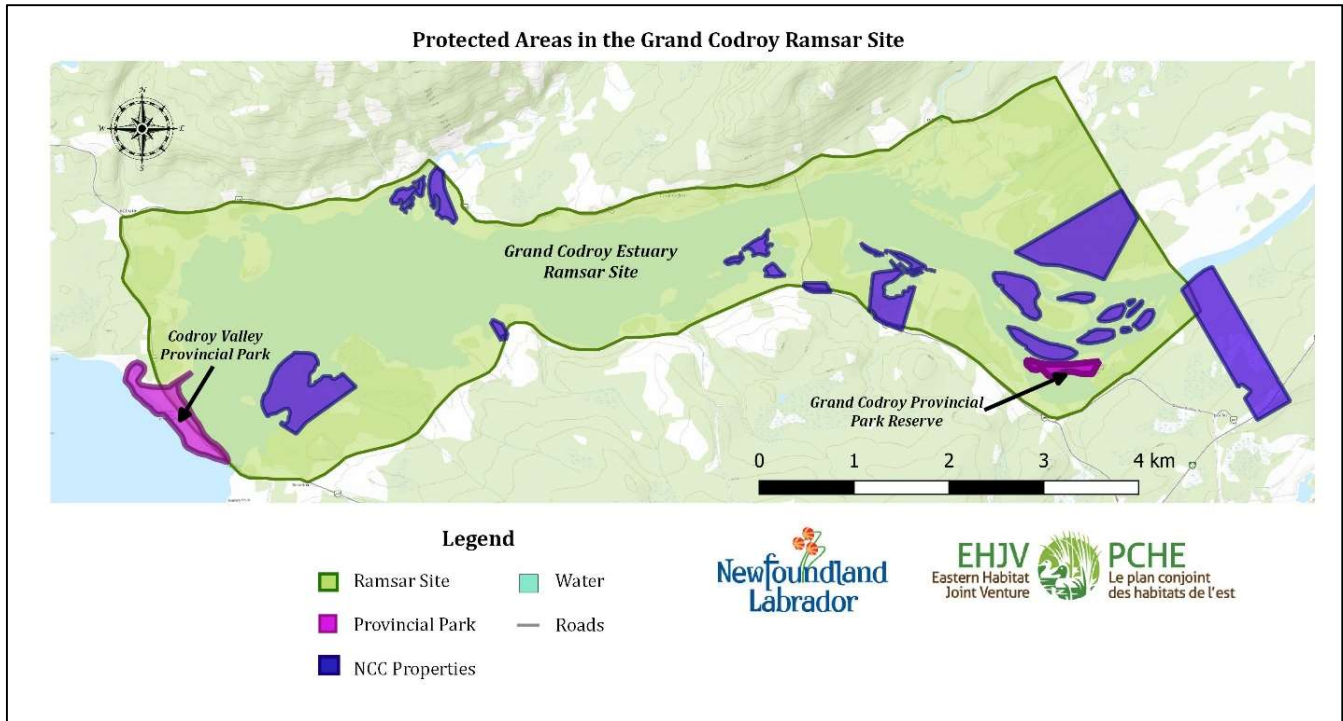


Figure 5: Map of NCC properties and Provincial Parks in the Codroy Valley Estuary.

b. Education and Public Outreach Programing

An essential element to any conservation effort is community education/outreach. There have been many diverse efforts over the years in the Codroy Valley seeking to build community awareness and support for the conservation of the Ramsar site. Central efforts include the wide numbers of partners involved in the development of the Codroy Valley Wetland Interpretation Centre (Figure 6). A number of nature and hiking trails, including in some areas, the installation of interpretive signage, has contributed to local and visitor awareness and enjoyment of the Ramsar site. Additionally, over the years since site designation, a significant number of educational talks, workshops and outreach events have occurred focused on the local school (Belanger Memorial School), at the Wetlands Interpretation Center and during community events such as the Codroy Folk Festival and the former Feather & Folk Nature Festival. Among many, the Codroy Valley Area Development Association, the Nature Conservancy of Canada, the Wildlife Division, the Humber Natural History Society, Intervale Associates, and the Stewardship Association of Municipalities Inc have all played an important role in various education outreach initiatives.

Located in Upper Ferry, the Wetland Interpretation Centre has been central to conservation outreach and community engagement efforts and remains a crowning jewel of the area. The center, and its nearby trail system, is maintained, and seasonally operated by the Codroy Valley Area Development Association. The

center serves as an educational and outreach tool, a resource for locals and visitors, and marks the access point to the nearby Wetland Trail system. In addition to being a visitors information centre, the wetland centre boasts a terminal for birders to enter their observations directly to the website eBird (for a sample bird list of the area, see Appendix A.). The Centre also maintains a checklist of known species for visitors and local residents.



Figure 6: The Wetland Interpretation Centre in Upper Ferry. SAM staff photo.

c. Monitoring Programs

There is a significant history of ecosystem monitoring efforts in the Ramsar site, many of which continue today. The NL Department of Fisheries, Forestry and Agriculture- Wildlife Division, Environment Canada- Canadian Wildlife Service (waterfowl banding), Codroy Valley Area Development Association, Memorial University, the College of the North Atlantic, the Nature Conservancy of Canada, the Humber Natural History Society, and the Stewardship Association of Municipalities Inc have all participated in or spear-headed ecosystem monitoring efforts. Many of these have been “citizen science” efforts, involving local residents, and visitors (such as birdwatchers and naturalists) (Figure 7). The primary focus of such monitoring has traditionally been on waterfowl and



Figure 7: A young birder looks out over the estuary from the viewing platform behind the Wetland Centre in Upper Ferry.

passerines associated with this wetland of international significance. More recently, monitoring efforts have sought to assess possible impacts from invasive European Green Crab and its potential detrimental effects on eelgrass populations in the estuary. Informal birdwatching and resident oversight also continues to be a major support to continual monitoring of ecosystem health and changes. In summary, the majority of monitoring efforts have shown that estuary maintains healthy waterfowl, shorebird, seabird and passerine populations.

One notable form of monitoring includes annual summer beach surveys of Searston Beach and the dunes of Codroy Provincial Park for the nationally and provincially endangered Piping Plover (*Charadrius melodus*). Piping plovers have been documented to successfully fledge young on these beaches found at the western extent of the Ramsar site. These birds are vulnerable to human disturbances along these beaches they use as staging, nesting and fledging grounds. To help protect these important birds during this delicate stage of their lifecycle, a Plover Guardian Program has been implemented every summer since 2001, as it has throughout Atlantic Canada, on Codroy Valley beaches. Guardians periodically walk beaches talking to beach users and documenting disturbances. One of the largest threats to breeding plover is nest disturbance. ATVs, off-leash pets, and even inattentive pedestrians can disturb or destroy the delicate eggs, which are laid in a simple “scratch” on sandy substrate (Figure 8). Signage is posted every year indicating when motorized vehicles (e.g. ATVs) are not to be used on the beaches (Figure 9). Respecting posted signage, keeping pets leashed, and restricting activities (e.g. walking, setting up seats or picnics) to the portions of the beach closer to the waterline where plover are less likely to nest are actions that everyone can take to help ensure the continued survival of this endangered species. For a guide of best practices to undertake in piping plover habitat, refer to Appendix C.



Figure 8. Piping plover 'scratch' nest with eggs on Searston Beach. SAM staff photo.



Figure 9. A sign installed on the beach indicating the presence of breeding plover SAM staff photo.

C. Future Management and Conservation Opportunities

The purpose of this section is to outline potential programs or initiatives which could be undertaken to add to, or refine, existing conservation efforts to enhance the long-term sustainability of the Grand Codroy Estuary Ramsar site. These initiatives were developed in consideration of known ecological issues or threats, and seek to incorporate feedback received in recent years from community residents and key stakeholder groups.

1. Monitoring Programs

The success of any management program relies on access to accurate, consistent, and meaningful data that allows managers to track wildlife populations and identify problems as they arise so that appropriate actions can be taken. To this end, there are three broad categories in which future monitoring efforts should be focused: waterfowl and passerine populations monitoring, vegetation surveys and monitoring, and invasive species monitoring.

a. Waterfowl and Passerines

Although there have been several efforts made towards bird monitoring in the Codroy throughout the years, the lack of a cohesive or collaborative approach to the planning of these monitoring sessions is a serious limitation to ongoing management planning. Perhaps most consistently, there is a Breeding Bird Survey route in the Codroy Valley area which has been run 30 times since its inaugural run in 1980, typically reporting sightings of 45-70 species and hundreds of individuals per year. Information on and data from the Breeding Bird Surveys can be found at [BBS - USGS Patuxent Wildlife Research Center](#) by entering the route name O'Reagans.

Although there have been significant efforts from various agencies to establish ongoing monitoring programs, but there has been little coordination and data sharing between the players. Moving forward, developing collaborative efforts and protocols is a priority to ensure the best understanding of the bird populations in the estuary and consequentially develop intervention plans as they become necessary.

b. Eelgrass and Aquatic/Riparian Vegetation

Eelgrass is an aquatic grass known to have significant value for waterfowl and providing habitat for many aquatic species such as juvenile salmonids (Figure 10). For decades, the management of the Codroy estuary has been based on an understanding that it is an eelgrass-dependent or driven ecosystem.

However, preliminary eelgrass surveys conducted in 2020 have shown that the eelgrass beds may not be as extensive as previously thought at least along the shorelines. A comprehensive survey of the aquatic and riparian vegetation in the estuary is

needed. Further, in parts of the Atlantic coast and in eastern Newfoundland, the spread of invasive European green crab has led to the degradation of eelgrass beds. If the same should become true in the Codroy Valley, habitat enhancement or remediation projects may become necessary.



Figure 10: Eelgrass (*Zostera marina*.)

c. Invasive Species

Invasive species are species that are not native to a specific habitat but are able to establish significant populations in that habitat and displace or destroy native species. They often pose significant threats to ecosystems, and habitats should be closely monitored for invasive species so that appropriate management decisions can be made.

1) Invasive Species- European Green Crab

An emerging possible threat to Newfoundland wetland habitats is the increased presence, activity, and expanding range of the European Green Crab (*Carcinus maenas*). An invasive species in North America, Green Crab is native to European coastal areas and was first found in North America in the early 1800s. The presence of Green Crab in Newfoundland was confirmed in the Northern regions of Placentia Bay in August of 2007, and confirmed on the west coast of Newfoundland in St-George's Bay (near Stephenville) in 2008. Further surveys conducted by the Qalipu First Nation in 2016 confirmed the presence of Green Crab outside the Codroy Valley estuary on the ocean north of the estuary.

The ecological disturbance caused by invasive Green Crab is two-fold. Firstly, they displace native rock crab and prey upon shellfish, crustaceans, and small and juvenile finfish that are found in eelgrass beds. Second, Green Crab foraging in eelgrass beds also

causes mechanical damage to eelgrass roots and shoots, degrading and potentially destroying grass populations.

The current scope of Green Crab invasion in the Codroy Valley Estuary is not well understood. Beginning in 2018, the Wildlife Division, the Stewardship Association of Municipalities Inc, in partnership with the College of the North Atlantic, and with assistance from the Department of Fisheries and Oceans, began a small-scale Green crab monitoring program in the estuary. Should the ongoing monitoring show an increase in the number of green crab present in the estuary, a more proactive management plan will need to be developed.

Anyone wishing to report a green crab sighting can contact federal fisheries authorities at 1-855-862-1815 (Appendix D describes the key features for green crab identification.)

2) Invasive species -*Phragmites australis*

Throughout North America, the invasive grass *Phragmites australis* has devastated wetland habitats. Dubbed the country's worst invasive plant by Agriculture and Agri-Food Canada in 2005, *Phragmites* is an aggressively invasive grass capable of rapidly outcompeting native populations and rapidly, radically changing the habitats and species assemblages in an area by outcompeting native vegetation.

There is thought to be an endemic, less aggressively growing, species of *Phragmites* found in the province which has not seemed to be spreading much in the province. As such, the estimated risk of invasive *Phragmites* in the Codroy Valley estuary, is currently considered low. However, continued monitoring is advised to ensure that it does not become a more important problem in the future.

3) Invasive Species – Other species of possible concern

The Newfoundland and Labrador Wildlife Division has identified the possible presence of the following invasive species in the Grand Codroy Estuary:

- Purple loosestrife (*Lythrum salicaria*)- known occurrences
- Giant Hogweed (*Heracleum mantegazzianum*)- possible indications
- Garter snake (*Thamnophis sirtalis*) – known to occur and breed in small numbers

As of the time of writing, none of these species are considered to be a significant threat to the ecosystem of the Codroy Valley estuary, and are not at a stage of requiring intervention or management. Ongoing monitoring is recommended, so that future issues that may arise can be rapidly identified and resolved.

d. Seals

Reported sightings of seals in the waters/shorelines of the communities surrounding, and within, the Codroy Valley estuary, have been said to be increasing since the early 2000s. Residents of the area have raised concerns that this increased presence of seals could lead to an increased predation risk on the salmon and trout populations in the lakes and rivers of the Codroy Valley.

Department of Fisheries and Oceans (DFO) biologists have been able to identify the local seals as primarily harbour seals, a widespread species that is nevertheless the least commonly seen species of seal seen in Canada. Despite a depressed population in Atlantic Canada, the population is believed to be stable, and is formally classified provincially as “Not at Risk”.

Though harbour seals are known predators of various fish species, including salmon and trout, the effect of their increased presence in the Grand Codroy Estuary is unknown. Currently, there are no planned management actions unless further information dictates.

e. Water quality

The Codroy Valley estuary is a rich estuarine system whose diversity relies on the brackish to freshwater, vegetation rich, environment that provides feeding, breeding and staging grounds for dozens of waterfowl, shorebird and passerine bird species, as well as large numbers of aquatic and terrestrial animals. In many ways, the health of the system relies on clean and healthy waters. Although not currently believed to be a conservation issue, given the industrial, residential & agricultural development surrounding the estuary there is the potential for detrimental runoff of sewage, grey water, fertilizers, pesticides or other agricultural waste products into the surface waters. It is recommended that baseline water quality testing be undertaken following existing protocols in order to compare those levels to possible changes monitored over time.

2. Outreach and Education

Ongoing and emerging conservation projects in the Codroy Valley estuary have created the opportunity for economic growth and job creation in the past, and continue to present such opportunities.

a) Educational Outreach and the Wetland Centre

The Wetland Interpretation Centre provides an invaluable resource for education, as well as an opportunity for future endeavors (Figure 11). Efforts are needed to support the Codroy Valley Area Development Association secure annual or continuing funding to ensure its maintenance and staffing including extending into the spring and fall shoulder seasons. More consistent funding could allow for an expansion in programming offered through the Centre. Some ideas, which have been previously implemented or discussed as future possibilities, include:

-
- Employing a local biologist to undertake ongoing birds monitoring and maintain an updated birding checklist for the area.
- Providing birding tours upon booking/request to residents, visitors or school class/groups utilizing previously developed local birding hotspot maps and a comprehensive birding checklist.
- Offering educational and interactive programming to students at Belanger Memorial School (indoor/outdoor) on the ecology of the local area.
- Updating and developing new educational materials such as posters, signage, and handouts for visitors to the centre and the trails.
- Assessing flora populations and health along the estuary
- Assessing flora along the Wetland Trail to allow for the development of interpretive signage and outreach materials on local flora to be housed in the wetland centre.
- Development of car “pull-offs” with appropriate interpretive signage along the road encircling the Ramsar site where residents and visitors can observe/monitor wildlife and views of the estuary habitat.



Figure 11: A special visitor at the Codroy Feather and Folk Festival. SAM staff photo.

b. Conservation Corps Green Teams

The Newfoundland and Labrador Conservation Corps annually sponsors summer “Green Teams” and “Interns”, generally comprised of university and high school students, to work within communities on worthwhile environmental projects. There have been locally sponsored Green Teams which have completed projects in the past. For example, in 2008, a Codroy Green Team focused spread information to residents and local landowners about the value of the estuary and to encourage a stewardship ethic (Figure 12). Future partnerships should be encouraged to work towards Green Team project applications. Examples of potential projects could include constructing and installing waterfowl or swallow nest boxes and nesting platforms followed by subsequent monitoring throughout summer waterfowl breeding/brood-rearing seasons.



Figure 12: A Conservation Corps Green Team in the Estuary. Photo by SAM staff.

c. Education surrounding the responsible use of ATVs

The irresponsible use of all-terrain vehicles (ATVs) can be damaging to ecosystems, and they are especially damaging when used during the breeding season on piping plover beaches. Diligently respecting restrictions on the use of ATVs on piping plover beaches during the breeding season is one of the most important things that residents of the estuary can do to help protect these vulnerable birds. More generally, ATV users can contribute to habitat integrity of wetlands by sticking to existing approved trails.

d. Landowner education, outreach, and stewardship

One of the major action points that emerged from a 2015 community workshop seeking feedback on possible conservation actions was a need and desire for there to be a greater focus on private land stewardship. To this end, there needs to be a greater emphasis on the education of landowners on the importance of their land to wildlife species. Similar projects in other jurisdictions take a multi-pronged approach to landowner stewardship, including creating individual landowner handbooks with good stewardship practices outlined. This approach empowers landowners to best manage their land for wildlife as well as for themselves.

The Stewardship Association of Municipalities has already signed a number of Private Stewardship Agreements with landowners in the Codroy Valley Estuary, in which landowners pledge to maintain and manage their lands to ensure continued conservation (Figure 13). The continued commitment of these and other landowners has played an integral role in the ongoing management and stewardship of the estuary.



Figure 11: A Codroy Valley resident signs a Landowner Stewardship Agreement. SAM staff photo.

Conclusion

The Codroy Valley Estuary is the province's only Ramsar Wetland of International Significance, and it holds a place of tremendous ecological, cultural, and economic value for residents and visitors alike (Figure 14). There is a significant history of effective conservation measures and projects in the estuary and several groups and institutions remain committed to the continued stewardship of the area. The opportunity exists to build on these efforts to ensure the long-term sustainability of the estuary.



Figure 12: The Codroy Valley Estuary on a beautiful day. SAM staff photo.

Appendices and Additional Information

APPENDIX A: Bird List for the Codroy Valley Estuary Area

Birding Checklist for the Grand Codroy Valley Estuary (adapted from eBird, the Breeding Bird Survey and the *Checklist (1999) of Birds of Insular Newfoundland and its Continental Shelf Waters*)

Waterfowl

Common Name	Scientific Name
Snow Goose	<i>Anser caerulescens</i>
Canada goose	<i>Branta canadensis</i>
Goose sp. (unspecified)	
Wood duck	<i>Aix sponsa</i>
Blue-winged Teal	<i>Spatula discors</i>
Northern Shoveler	<i>Spatula clypeata</i>
Eurasian Wigeon	<i>Mareca penelope</i>
American Wigeon	<i>Mareca americana</i>
Mallard	<i>Anas platyrhynchos</i>
Mallard (domestic type)	
American Black Duck	<i>Anas rubripes</i>
Northern Pintail	<i>Anas acuta</i>
Green-winged Teal	<i>Anas carolinensis</i>
Ring-necked Duck	<i>Aythya collaris</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
White-winged Scoter	<i>Melanitta deglandi</i>
Bufflehead	<i>Bucephala albeola</i>
Common Goldeneye	<i>Bucephala clangula</i>
Barrow's Goldeneye	<i>Bucephala islandica</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Common/Red-breasted Merganser	
Gadwall	<i>Mareca strepera</i>
Common Eider	<i>Somateria mollissima</i>
King Eider	<i>Somateria spectabilis</i>
Oldsquaw/Long-tailed duck	<i>Clangula hyemalis</i>

Black Scoter
White-winged Scoter
Surf Scoter
Ruddy Duck
Duck sp.

Melanitta americana
Melanitta deglandi
Melanitta perspicillata
Oxyura jamaicensis

Grouse, Quail, and Allies

Common name

Ruffed Grouse
Willow Ptarmigan
Rock Ptarmigan

Scientific name

Bonasa umbellus
Lagopus lagopus
Lagopus muta

Grebes

Common name

Pied-billed Grebe
Horned Grebe
Red-necked Grebe

Scientific name

Podilymbus podiceps
Podiceps auritus
Podiceps grisegena

Pigeons and Doves

Common name

Common Pigeon/Rock Dove
Mourning Dove

Scientific name

Columba livia
Zenaida macroura

Cuckoos

Common name

Black-billed Cuckoo

Scientific name

Coccyzus erythrophthalmus

Creepers

Common name

Brown Creeper

Scientific name

Certhia americana

Swifts

Common name

Chimney swift

Scientific name

Chaetura pelagica

Shrikes

Common name

Northern Shrike

Scientific name

Lanius borealis

Hummingbirds

Common name

Ruby-throated Hummingbird

Scientific name

Archilochus colubris

Rails, Gallinules, and Allies

Common name

American Coot

Sora

Scientific name

Fulica americana

Porzana carolina

Cranes

Common name

Sandhill Crane

Scientific name

Antigone canadensis

Shorebirds

Common name

Black-bellied Plover

American Golden Plover

Semipalmated Plover

Piping Plover

Killdeer

Sanderling

White-rumped Sandpiper

Semipalmated Sandpiper

Solitary Sandpiper

Least Sandpiper

Pectoral Sandpiper

Purple Sandpiper

Curlew Sandpiper

Red-necked Phalarope

Red Phalarope

Dunlin

Whimbrel

Hudsonian Godwit

Ruddy Turnstone

Red Knot

Short-billed Dowitcher

American Woodcock

Wilson's Snipe

Spotted Sandpiper

Greater Yellowlegs

Scientific name

Pluvialis squatarola

Pluvialis dominica

Charadrius semipalmatus

Charadrius melodus

Charadrius vociferus

Calidris alba

Calidris fuscicollis

Calidris pusilla

Tringa Sandpiper

Calidris minutilla

Calidris melanotos

Calidris maritima

Calidris ferruginea

Phalaropus lobatus

Phalaropus fulicarius

Calidris alpina

Numenius phaeopus

Limosa haemastica

Arenaria interpres

Calidris canutus

Limnodromus griseus

Scolopax minor

Gallinago delicata

Actitis macularius

Tringa melanoleuca

Willet
Lesser Yellowlegs

Tringa semipalmata
Tringa flavipes

Alcids

Common name
Common Murre
Thick-billed Murre
Black Guillemot
Dovekie
Razorbill
Atlantic Puffin

Scientific name
Uria aalge
Uria lomvia
Cephus grylle
Alle alle
Alca torda
Fratercula arctica

Gulls, Terns, and Skimmers

Common name
Ring-billed Gull
Herring Gull
Glaucous Gull
Great Black-backed Gull
Black-headed Gull
Iceland Gull
Thayer's Gull
Gull sp.
Caspian Tern
Common Tern
Arctic Tern
Black-legged Kittiwake
Great Skua

Scientific name
Larus delawarensis
Larus argentatus
Larus hyperboreus
Larus marinus
Chroicocephalus ridibundus
Larus glaucoides
Larus glaucoides thayeri

Hydroprogne caspia
Sterna hirundo
Sterna paradisaea
Rissa tridactyla
Stercorarius skua

Loons

Common name
Red-throated Loon
Common Loon

Scientific name
Gavia stellata
Gavia immer

Frigatebirds, Boobies, and Gannets

Common name
Northern Gannet

Scientific name
Morus bassanus

Cormorants and Anhingas

Common name

Double-crested Cormorant
Great/Double-crested Cormorant

Scientific name

Phalacrocorax auritus

Fulmars and Shearwaters

Common name

Northern Fulmar
Great Shearwater
Sooty Shearwater

Scientific name

Fulmarus glacialis
Ardenna gravis
Ardenna grisea

Hérons, Ibis, and Allies

Common name

American Bittern
Great Blue Heron
Great Egret
Little Blue Heron

Scientific name

Botaurus lentiginosus
Ardea herodias
Ardea alba
Egretta caerulea

Vultures, Hawks, and Allies

Common name

Turkey Vulture
Osprey
Northern Harrier
Sharp-shinned Hawk
Bald Eagle
Northern Goshawk
Rough-legged Hawk

Scientific name

Cathartes aura
Pandion haliaetus
Circus hudsonius
Accipiter striatus
Haliaeetus leucocephalus
Accipiter gentilis
Buteo lagopus

Owls

Common name

Great Horned Owl
Northern Saw-whet Owl
Snowy Owl
Northern Hawk Owl
Short-eared Owl
Boreal Owl

Scientific name

Bubo virginianus
Aegolius acadicus
Bubo scandiacus
Surnia ulula
Asio flammeus
Aegolius funereus

Kingfishers

Common name

Belted Kingfisher

Scientific name

Megaceryle alcyon

Woodpeckers

Common name

Red-bellied Woodpecker

Downy Woodpecker

Hairy Woodpecker

Yellow-bellied Sapsucker

Three-toed Woodpecker

Black-backed Woodpecker

Northern Flicker

Scientific name

Melanerpes carolinus

Dryobates pubescens

Leuconotopicus villosus

Sphyrapicus varius

Picoides dorsalis

Picoides arcticus

Colaptes auratus

Falcons and Caracaras

Common name

Merlin

American Kestrel

Peregrine Falcon

Gyr Falcon

Scientific name

Falco columbarius

Falco sparverius

Falco peregrinus

Falco rusticolus

Tyrant Flycatchers: Pewees, Kingbirds, and Allies

Common name

Olive-sided Flycatcher

Eastern Wood-Pewee

Yellow-bellied Flycatcher

Alder Flycatcher

Least Flycatcher

Eastern Phoebe

Eastern Kingbird

Scientific name

Contopus cooperi

Contopus virens

Empidonax flaviventris

Empidonax alnorum

Empidonax minimus

Sayornis phoebe

Tyrannus tyrannus

Vireos

Common name

Blue-headed Vireo

Philadelphia Vireo

Red-eyed Vireo

Scientific name

Vireo solitarius

Vireo philadelphicus

Vireo olivaceus

Jays, Magpies, Crows, and Ravens

Common name

Canada Jay
Blue Jay
American Crow
Common Raven

Scientific name

Perisoreus canadensis
Cyanocitta cristata
Corvus brachyrhynchos
Corvus corax

Larks

Common name

Horned Lark

Scientific name

Eremophila alpestris

Martins and Swallows

Common name

Purple Martin
Tree Swallow
Bank Swallow
Barn Swallow
Cliff Swallow

Scientific name

Progne subis
Tachycineta bicolor
Riparia riparia
Hirundo rustica
Petrochelidon pyrrhonota

Tits, Chickadees, and Titmice

Common name

Black-capped Chickadee
Boreal Chickadee

Scientific name

Poecile atricapillus
Poecile hudsonicus

Nuthatches

Common name

Red-breasted Nuthatch

Scientific name

Sitta canadensis

Wrens

Common name

Winter Wren

Scientific name

Troglodytes hiemalis

Kinglets

Common name

Golden-crowned Kinglet
Ruby-crowned Kinglet

Scientific name

Regulus satrapa
Regulus calendula

Thrushes

Common name

Veery
Swainson's Thrush
Hermit Thrush
American Robin
Gray-cheeked Thrush

Scientific name

Catharus fuscescens
Catharus ustulatus
Catharus guttatus
Turdus migratorius
Catharus minimus

Catbirds, Mockingbirds, and Thrashers

Common name

Gray Catbird

Scientific name

Dumetella carolinensis

Starlings and Mynas

Common name

European Starling

Scientific name

Sturnus vulgaris

Wagtails and Pipits

Common name

American Pipit

Scientific name

Anthus rubescens

Waxwings

Common name

Cedar Waxwing
Bohemian Waxwing

Scientific name

Bombycilla cedrorum
Bombycilla garrulus

Finches, Euphonias, and Allies

Common name

Evening Grosbeak
Pine Grosbeak
Red Crossbill
White-winged Crossbill
Common Redpoll
Purple Finch
Pine Siskin
American Goldfinch

Scientific name

Coccothraustes vespertinus
Pinicola enucleator
Loxia curvirostra
Loxia leucoptera
Acanthis flammea
Haemorhous purpureus
Spinus pinus
Spinus tristis

Storm-petrels

Common name

Leach's storm petrel

Scientific name

Oceanodroma leucorhoa

Longspurs and Snow Buntings

Common name

Snow Bunting

Scientific name

Plectrophenax nivalis

New World Sparrows

Common name

Chipping Sparrow

Clay-colored Sparrow

Fox Sparrow

American Tree Sparrow

Dark-eyed Junco

White-throated Sparrow

White-crowned Sparrow

Nelson's Sparrow

Savannah Sparrow

Song Sparrow

Lincoln's Sparrow

Swamp Sparrow

Rose-breasted Grosbeak

Lapland Longspur

Scientific name

Spizella passerina

Spizella pallida

Passerella iliaca

Spizelloides arborea

Junco hyemalis

Zonotrichia albicollis

Zonotrichia leucophrys

Ammodramus nelsoni

Passerculus sandwichensis

Melospiza melodia

Melospiza lincolnii

Melospiza georgiana

Pheucticus ludovicianus

Calcarius lapponicus

Blackbirds

Common name

Bobolink

Red-winged Blackbird

Rusty Blackbird

Brown-headed Cowbird

Common Grackle

Scientific name

Dolichonyx oryzivorus

Agelaius phoeniceus

Euphagus carolinus

Molothrus ater

Quiscalus quiscula

Wood-Warblers

Common name

Ovenbird

Northern Waterthrush

Black-and-white Warbler

Tennessee Warbler

Mourning Warbler

Common Yellowthroat

American Redstart

Cape May Warbler

Northern Parula

Scientific name

Seiurus aurocapilla

Parkesia noveboracensis

Mniotilta varia

Oreothlypis peregrina

Geothlypis philadelphia

Geothlypis trichas

Setophaga ruticilla

Setophaga tigrine

Setophaga americana

Magnolia Warbler
Bay-breasted Warbler
Blackburnian Warbler
Yellow Warbler
Chestnut-sided Warbler
Blackpoll Warbler
Yellow-rumped Warbler
Black-throated Green Warbler
Wilson's Warbler
Orange-crowned Warbler

Setophaga magnolia
Setophaga castanea
Setophaga fusca
Setophaga petechia
Setophaga pensylvanica
Setophaga striata
Setophaga coronata
Setophaga virens
Cardellina pusilla
Oreothlypis celata

Old World Sparrows

Common name

House Sparrow

Scientific name

Passer domesticus

APPENDIX B: Guidelines for Sustainable Use of Piping Plover Beaches

1. Obey signs restricting use of motorized vehicles on beaches during the breeding season (May 1 to August 31).

A central factor confronting Plovers in the Codroy Valley is the use of all-terrain vehicles/dirt bikes on nesting beaches. Inappropriate use of these vehicles on critical beaches used for breeding and chick-rearing by the Plover has been documented to result in destruction and/or abandonment of nests and eggs and has possibly caused the death of chicks and adult birds.

Piping Plover are very hard to see in their natural habitat, and the nests are even harder to see. An ATV or dirt bike rider could crush a nest and/or chick and not even be aware of it. Even if the nests and birds are spared, motorized vehicles on Plover beaches can alarm the birds and prevent them from returning to their nests, consequently putting the nests in danger. Riders need to be made aware of the existence of Piping Plover in the Codroy Valley Estuary and understand that the loss of one bird or one nest can have implications for the entire provincial population of birds.

Each year, around the first of May, signs will be placed on the beaches prohibiting the use of ATV/dirt bikes in these specific areas during the Plover breeding season. Signs will be located at major entrances to the beaches and numerous signs will be placed nearby possible nesting locations. Conservation officers will conduct patrols of the beaches and will be able to issue summary conviction tickets to vehicle operators inside the signed areas as per Sections 5 and 14 of the Motorized Snow Vehicles and All-Terrain Vehicles Regulations. If individuals are observed directly impacting Plovers and/or their residence (nest site) they could also be charged under the Endangered Species Act(s) which would have even more significant consequences up to and including jail time. At the end of the breeding season (~August 31st), or should a formal census (~mid-June) indicate that no breeding birds are present, the signs will be removed.

2. Observe and photograph Piping Plovers from a distance, walk at the water's edge, and conduct all activities away from nesting or feeding areas.

Piping Plovers are easily disturbed. Even someone hanging around the beaches trying to get a picture can prevent a Plover from feeding and resting, putting the nest in danger. When a Plover nest is approached, the incubating adult will be forced to leave the nest, causing a break in incubation. When this occurs, the eggs can become overheated or chilled which could kill the embryo. Disturbed adults may even abandon the eggs completely.

Codroy Valley Estuary beaches are a popular place for recreation, especially during the summer. Studies show that fewer young are raised on beaches that are popular for recreation than on less-disturbed beaches. Therefore, to be sure no Plovers are affected by beach users, all human activities should be conducted far from nesting or feeding areas. To ensure that this happens symbolic fencing can be used to outline Plover nesting areas during the breeding season. Symbolic fencing consists of cordoning off an area surrounding a nest in an effort to prevent foot and vehicle traffic. This type of fencing increases Plover productivity by indicating to beach users to avoid these areas, thereby minimizing disturbance created by human activities around nests and occasionally unfledged young. Symbolic fences may only be erected with the written permission of the Canadian Wildlife Service.

3. Do not remove natural debris such as driftwood.

Not only can the Piping Plovers be disturbed when individuals walk along the beach to remove the debris but beach cleaning removes important components of Plover habitat. Things such as wrack and other natural debris provide feeding areas and shelter from inclement weather for the Plover.

4. Remove trash and food scraps.

Predation has been identified as one of the most important factors limiting populations of Piping Plovers across the North American breeding range. Trash, food scraps, and dead fish attract predators. These predators will also hunt or opportunistically take adult Piping Plovers, chicks, or eggs. Therefore, it is important for beach users to not litter in the first place and to remove any trash they may see lying on the beach.

5. Keep pets leashed.

Domestic pets, specifically cats and dogs, pose a serious threat to Piping Plover eggs, chicks, and adults. While domestic cats are not suspected to be a great threat on sandy beaches, cats are natural born hunters and even well-fed cats chase and kill birds. Domestic dogs are more likely to pose a threat and unleashed dogs have been known to chase adult Plovers, destroy their nests, as well as kill chicks. Even when these pets are on leashes, they can frighten Piping Plover, who see them as predators, which keeps the birds from feeding.

All pets, dogs in particular, should be kept on a leash (less than 6 feet) and walked at the water's edge to prevent them from disturbing Piping Plovers or their habitat. Furthermore, under Wildlife Regulation 40(3), it is illegal to allow your dog to chase or harass wildlife

6. Do not pick up Piping Plover chicks or eggs.

Although this is an uncommon occurrence, there have been several confirmed instances of children removing chicks from nesting beaches. Young children should be supervised at all times while on Piping Plover beaches and it is important to make them aware of the importance of avoiding Piping Plover nests.

7. Protect the dune systems by limiting ATV/dirt bike activity to designated trails and by not burning beach grasses.

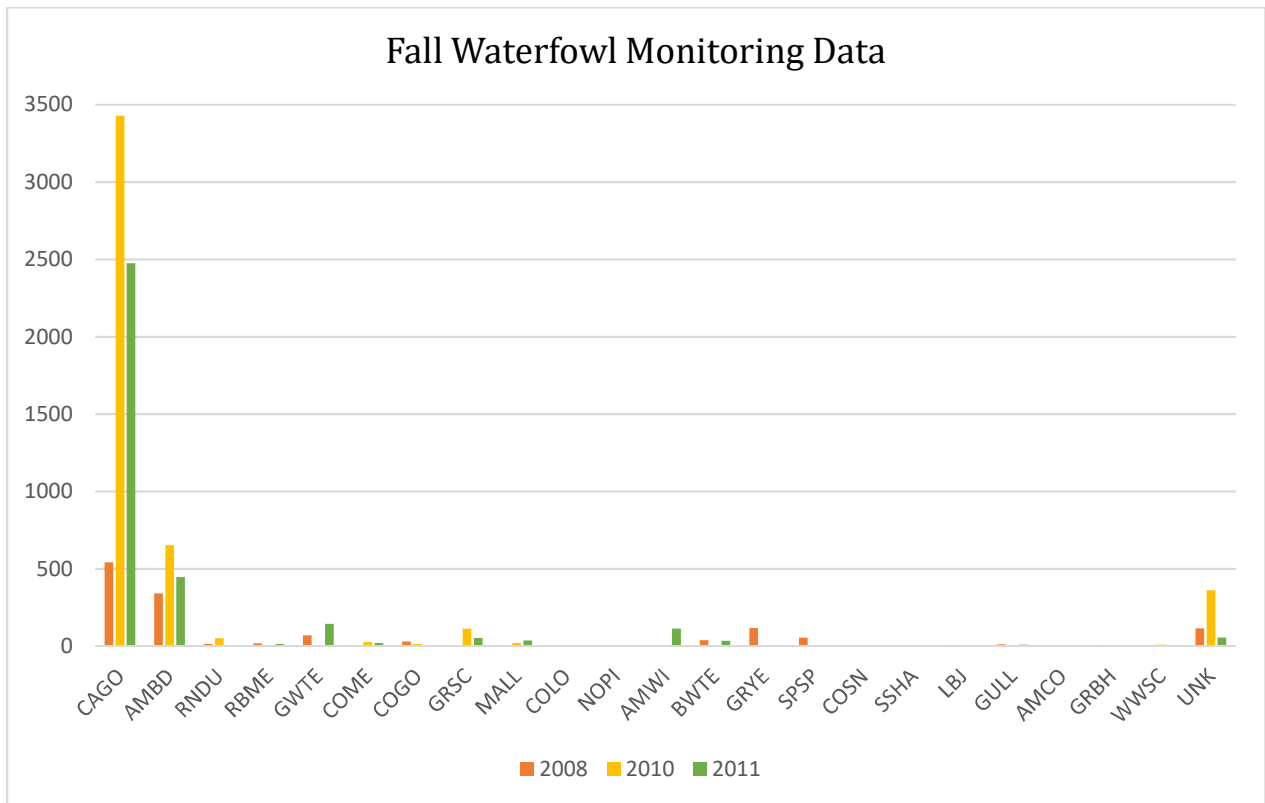
Beaches and dunes are important feeding, breeding, and nesting grounds for Piping Plover. These beaches and dunes are also a popular place for human recreation and this popularity means that many sand dunes are at risk of sustaining irreparable damage. Grasses create wildlife habitat and help hold the dunes in place. The loss of dune vegetation due to vehicular traffic and fires is a major trigger for dune erosion. When vegetation is lost, the exposed, dry sand is easily mobilised by high winds and large volumes of sand can be rapidly transported, sometimes forming large depressions in the dunes resulting in loss of important Piping Plover habitat.

8. Promote public education and awareness

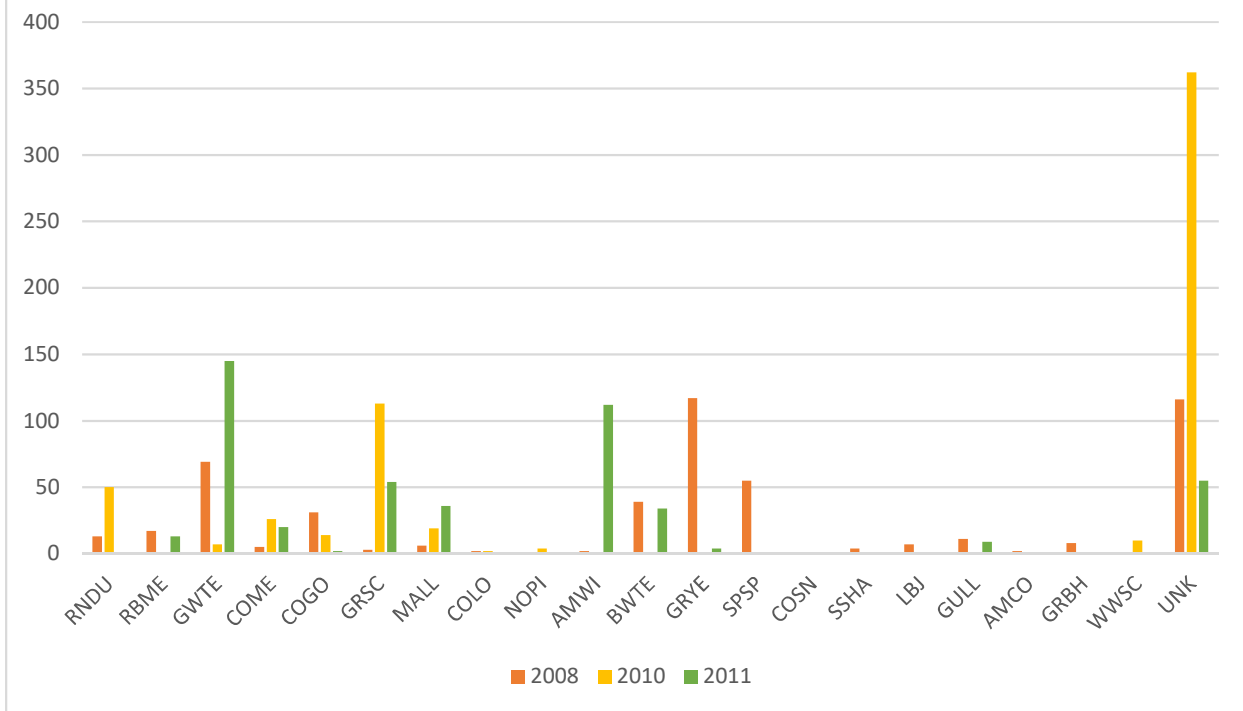
Residents of the Codroy Valley estuary should do their best to spread the word about the endangered Piping Plover and the difficulties they face on local beaches. Residents should also be aware and supportive of the work of Beach Guardians. Piping Plover Beach Guardians have been hired in recent years on the southwest coast of Newfoundland and work during the summer breeding season, primarily in an educational capacity aiming to reduce levels of human disturbance around nest sites or broods. Guardians will intercept beach users who appear to be intruding upon Piping Plover territory.

APPENDIX C: Monitoring data of bird populations in the Codroy Valley

The Wildlife Division, in partnership with the College of the North Atlantic- Fish and Wildlife Technician program, has in recent years conducted fall annual waterfowl counts in the Codroy Valley. A subset of the data collected then is presented below. It is not intended to demonstrate abundance of the respective species listed below, nor is it meant to be a comprehensive list of all bird species known to use the Codroy Valley Estuary. Rather, it is intended to show the rough breakdowns of the comparative relative abundance of the waterfowl species that use aquatic portions of the estuary during the fall migrations. We can quickly see that the system seems to be dominated by Canada Goose and American Black Duck, though the long list of waterfowl beyond these two species shows the waterfowl diversity of the area.



Waterfowl Monitoring Data (Canada Goose and American Black Duck Excluded)



Bird code legend:

AMBD	American Black Duck	GULL	Gull species (unspecified)
AMCO	American Coot	GWTE	Green-wing teal
AMWI	American Wigeon	LBJ	Unspecified songbird
BWTE	Blue-winged Teal	MALL	Mallard
CAGO	Canada Goose	NOPI	Northern Pintail
COGO	Common Goldeneye	RBME	Red-breasted Merganser
COLO	Common Loon	RNDU	Ring-necked Duck
COME	Common Merganser	SSHA	
COSN		SPSP	Spotted sandpiper
GRBH	Great Blue Heron	UNK	Unknown bird species
GRSC	Greater Scaup	WWSC	White-winged Scoter
GRYE	Greater Yellowlegs		

APPENDIX D: Identifying Green Crab in Newfoundland Waters



Green crab molts found on Searston beach in fall 2019. SAM staff photo.



Green crab (top), native Rock crab (below). Note the distinctive spines on the Green crab main body shell/carapace. DFO Photo.

Green crab are often mistaken for the native Rock crab, but once you learn some key differences they are easy to distinguish. Green crab tend to be smaller with a maximum carapace width of 10 centimetres and are often greenish in colour (though this can vary to brown and orange-red depending on how recently the crab has moulted), but their most distinctive characteristic is the prominent spines at the front of the carapace. There are five on either side of their eyes, and three between. If you run your finger over these spines, it hurts. Rock crab have comparatively smaller and smoother spines, and the number of them is far greater. Lightly running your finger over these spines does not hurt. Report any sightings to the Department of Fisheries and Oceans at 1-855-862-1815 or by email at aiseae.xnfl@dfo-mpo-gc.ca.

For more information on invasive Green Crab in Newfoundland and Labrador, check out the information sheet below. Note that this is an embedded DFO document – to view the entire document, right click on the image below, scroll to Adobe Document Object, and click on “Open.”

Discovery and Survey Findings

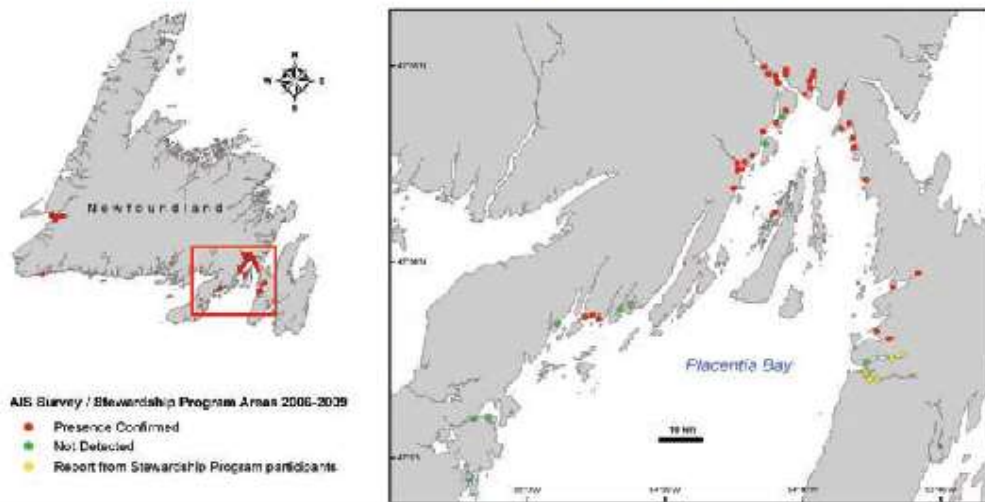
In August 2007, European green crab was confirmed in the northern regions of Placentia Bay. This discovery raised significant concerns because of the potential negative impact of this species on biodiversity and habitat in these regions. Following the initial discovery of European green crab in North Harbour, Placentia Bay, the Science Branch of Fisheries and Oceans Canada in collaboration with Memorial University of Newfoundland and the provincial Department of Fisheries and Aquaculture, conducted several rapid assessment surveys for aquatic invasive species in Placentia Bay. The largest green crab population was observed in North Harbour. It was also found in smaller numbers in surrounding areas and along the west and southwest coasts of Placentia Bay. This raised concern as small populations may expand rapidly. Green crab was also found on the west coast of Newfoundland in St. George's Bay near Stephenville in 2008.

Mitigation Methods to Control the Spread of Green Crab and Decrease its Impact

Ballast water is an identified source for the introduction of this aquatic invasive species and may be responsible for the introduction of European green crab in Newfoundland. Green crab has a long larval phase and can survive for extended periods in ballast water tanks. Adult green crab can also survive for long periods out of the water or in freshwater. Other pathways of introduction may include the movement of gear from one area to another and the unintentional release of by-catch species outside the area of capture. To control the spread of green crab, it is important to check and clean fishing gear and boats.

In 2008 and 2009, Fisheries and Oceans Canada worked with fish harvesters, the Fish, Food and Allied Workers Union, Memorial University of Newfoundland and the Department of Fisheries and Aquaculture to test various mitigation methods including trapping and removal. The results indicated that where sustained collection of green crab took place, the catch rate decreased significantly and the native species, rock crab, returned to the area.

Aquatic Invasive Species (AIS): Green Crab Distribution in Newfoundland Waters



References

Klassen, G. and A. Loefer. 2007. A biological synopsis of the European Green Crab, *Carcinus maenas*. Canadian Manuscript Reports of Fisheries and Aquatic Sciences, no. 2818. vii + 47pp.

McKerzie, C. H., T. Barnes, E. Best, E. Boland, E. Dore, D. Duford, D. Dwyer, E. Johnson, S. Kenny, S. Marshall, D. Moulard, E. O'Donnell, L. Park, P. Sargent, C. Vickers, A. Vickerson. 2007. The European Green Crab, *Carcinus maenas*, in Placentia Bay Newfoundland. Aquatic Invasive Species Survey 2007. Aquatic Invasive Species Newfoundland Workshop. St. John's, NL, November 16, 2007.

Disponibile in français.

For further information, please contact your nearest DFO office or visit www.dfo-mpo.gc.ca