



NOVA SCOTIA AQUACULTURE REVIEW BOARD

IN THE MATTER OF: Applications made by TOWN POINT CONSULTING INC. for NEW MARINE SHELLFISH LICENCES/LEASES in ANTIGONISH HARBOUR, ANTIGONISH COUNTY for the SUSPENDED CULTIVATION of AMERICAN OYSTERS (AQ#1442, #1443, and #1444)

AFFIDAVIT OF EXPERT WITNESS – CHRIS KENNEDY

I, CHRIS KENNEDY, of Dartmouth, in the Province of Nova Scotia, HEREBY MAKE OATH AND SAY AS FOLLOWS:

- 1. I am a resident of Dartmouth, Nova Scotia.
- 2. I was employed with Dillon Consulting Limited as a senior biologist up to February 28, 2023. Attached to my affidavit as Exhibit “A” is a true copy of my curriculum vitae, setting out my expertise, education and training.
- 3. Attached to this affidavit as Exhibit “B” is a statement of the substance of my proposed evidence.
- 4. I make this affidavit in connection with the Applications made by Town Point Consulting Inc. for New Marine Shellfish Licences/Leases in Antigonish Harbour for the Suspended Cultivation of American Oysters and for no improper purpose.

SWORN/AFFIRMED before me at)
 Dartmouth, Nova Scotia)
 this 24 day of May, 2023)
 _____)
 Rebecca Shiels)
 A Commissioner of the Supreme Court)
 of Nova Scotia)

_____)
 CHRIS KENNEDY)

REBECCA SHIELS
 A Commissioner of the Supreme
 Court of Nova Scotia
 My Commission expires Dec. 14, 2027

This is **Exhibit "A"** referred to in the
Affidavit of CHRIS KENNEDY sworn before
me on May 24, 2023

A handwritten signature in black ink, appearing to read "Ali R. Kennedy", is written over a horizontal line. The signature is stylized and cursive.

Chris Kennedy, M.Sc., B.Sc.

BIOLOGIST

PERSONAL PROFILE

Chris has worked as an avian and terrestrial ecologist for over 10 years contributing to Environmental Assessments, Environmental Impact Assessments, regulatory applications and other environmental monitoring projects. He has worked throughout Atlantic Canada for a variety of government and private sector clients, providing expertise in terrestrial ecology, avifauna, wetland science, Species at Risk, environmental assessment, and regulatory permitting.

RELEVANT EXPERIENCE

WETLAND DELINEATIONS, FUNCTIONAL ASSESSMENTS, AND OTHER STUDIES

Biologist, Upham East Gypsum Quarry, JD Irving Limited., Nova Scotia

Assisted with the Environmental Protection Plan for various phases of the Project. Prepared both the Wetland Compensation Plan and the Fisheries Act Authorization for part of the approvals for a quarry. Specific works included wetland delineation, functional assessment, and specific examination of potential groundwater and surface water contributions. *(ongoing)*.

Biologist, Highway 107 Environmental Assessment Follow-up, Department of Transportation and Infrastructure Renewal, Burnside/Bedford, Nova Scotia

Prepared a provincial EA for a proposed ~8 km new 100-series right-of-way and 1.5 km of road widening. The project assessed the environmental impacts of highway construction and operation on species at risk/flora and fauna of special concern; fish and aquatic habitat; wetlands; migratory birds; surface water; noise; and heritage/archeological resources through respective field habitat studies and biophysical inventory. Specific works included conducted field delineations and wetland functional assessments under Nova Scotia Environment (NSE) protocols of additional wetlands of interest to assist with highway design. *2020 (completed)*.

Environmental Scientist, Maritime Link Wetland Classification Study, Emera Inc. Nova Scotia and Newfoundland

Conducted wetland assessments and botanical surveys for a large transmission line corridor study in remote locations. *2012 (completed)*.

Environmental Scientist, Mill Cove Antenna Site: Natural Resources Inventory Update, Defence Construction Canada and Department of National Defence, Atlantic Canada

Carried out several ecological programs, including wetland delineation and functional assessment. *2012 (completed)*.

EDUCATION

M.Sc., Biogeography, Memorial University, 2011

B.Sc., Mount Allison University, 2008

AFFILIATIONS/ASSOCIATIONS

Nova Scotia Bird Society
(Member)

Environmental Scientist, Railroad Tank Car Unloading Facility, NuStar Energy L.P., Nova Scotia
Conducted wetland reconnaissance, delineation and functional assessment in order to optimize the railway expansion and mitigate wetland loss. 2012 (completed).

Environmental Scientist, Fales River Wetland Assessment, Municipality of the County of Kings, Nova Scotia

Provided wetland delineation and functional assessment of several wetlands in order to influence the final design of a flood control berm, and submitted regulatory applications for an alteration permit. 2012 (completed).

Environmental Scientist, Beford, Sydney and Debert Rifle Ranges: Natural Resources Inventory Update, Defence Construction Canada and Department of National Defence, Atlantic Canada
Performed wetland delineation sampling on three rifle range sites in Nova Scotia. 2011 (completed).

REGULATORY APPLICATIONS

Environmental Scientist, Cornwallis River Bridge, Nova Scotia Department of Infrastructure and Renewal

Completed an Environmental Effects Determination report and submitted permit applications associated with this crossing. 2018 (completed).

Environmental Scientist, Partridge River Bridge, Nova Scotia Department of Infrastructure and Renewal

Completed an Environmental Effects Determination report and submitted permit applications associated with this crossing. 2014 (completed).

Environmental Scientist, McNab's Brook Bridge, Nova Scotia Department of Infrastructure and Renewal

Completed an Environmental Effects Determination report and submitted permit applications associated with this crossing. 2014 (completed).

Environmental Scientist, South Shore Bridges – Varner #2, Milton and Shelburne Bridges, Nova Scotia Department of Infrastructure and Renewal

Carried out site specific surveys, including wetland identification, fish habitat assessment and terrestrial habitat assessment, and produced associated Environmental Effects Determination reports and submitted pertinent regulatory applications. 2012 (completed).

ENVIRONMENTAL IMPACT ASSESSMENTS AND BIOPHYSICAL INVENTORIES

Biologist, Environmental Impact Assessment of the Wocawson Wind Energy Project, Natural Forces, New Brunswick.

Completed natural environment surveys in support of a provincial registration of an Environmental Impact Assessment. Completed the biophysical surveys (bird monitoring, bat monitoring, watercourses, wetlands, vegetation, species at risk and terrestrial habitat), supported public engagement and consultation activities and interface, authored VEC component study reports, and interfaced with regulators. 2019 (completed).

Designed and conducted a comprehensive multi-year avian assessment program including spring and fall migratory surveys, as well as breeding bird surveys. Led wetland surveys, vegetation surveys, as well as conducted targeted rare plant surveys and active nest searches to accommodate construction crews. Co-authored registration document. 2019 (completed).

Biologist, Proposed Quarry, Confidential Mining Client, New Brunswick.

Designed and conducted a breeding bird survey program, as well as led wetland and vegetation surveys. Co-authored registration document. 2019 (completed).

Biologist, Perth Andover Highway 105 Realignment Environmental Assessment, New Brunswick Department of Transportation and Infrastructure, Perth Andover, New Brunswick.

Conducted rare plant and vegetation surveys, as well as wetland reconnaissance. 2018 (completed).

Environmental Scientist, Highway Twinning Study, Nova Scotia Department of Transportation and Infrastructure Renewal, Nova Scotia

Designed and conducted an extensive breeding bird survey program for hundreds of kilometers of potential Series 1 Highway twinning. Conducted dozens of wetland assessments and botanical surveys in order to develop a large wetland inventory and inform future design decisions. Wetland types covered the full range of inland wetlands including swamps, marshes, bogs and fens. Also carried out site specific surveys, including wetland identification, fish habitat assessment and terrestrial habitat assessment, and produced associated Environmental Effects Determination reports and submitted pertinent regulatory applications (draft and final) primarily for bridge projects. 2017 (completed).

Environmental Scientist, Chebucto Terence Bay Wind Farm Environmental Assessment, Renewable Energy Services Ltd., Terence Bay, Nova Scotia

Designed and executed Overwintering, Spring & Autumn migration and breeding bird surveys. 2013 (completed).

Environmental Scientist, Pre-Construction Avian Assessment, RES Canada, Wentworth Valley, Nova Scotia

Designed and executed overwintering, spring migration and breeding bird surveys and produced associated reports. 2012 (completed).

Environmental Scientist, Pre-Construction Avian Assessment, Pugwash Wind Farm Inc., Pugwash, Nova Scotia

Designed and executed an Overwintering bird survey and produced associated reports. 2012 (completed).

NESTING SURVEYS

Biologist, Pre-Construction Nesting Surveys: Ash Landfill Capping Project, Nova Scotia Power Inc. Abercrombie, Nova Scotia

Performed pre-clearing nesting survey in a shrub and grassland habitat in advance of grubbing for permanent capping of an established fly-ash landfill, as well as the development of a perimeter road. Two shorebird (killdeer) nests were detected and successfully buffered. 2015 (completed).

Biologist, Access Road Development, City of Saint John, New Brunswick

Performed pre-clearing nesting survey in semi-treed, shrubland-type habitat in advance of tree-clearing and grubbing for the development of a short, ~ 600 m access road. Several small passerine nests were detected and successfully buffered. 2014 (completed).

RARE FLORA STUDIES

Environmental Scientist, Maritime Link Rare Flora Surveys, EMERA, Newfoundland and Nova Scotia

Carried out rare flora surveys and compiled a botanical inventory for 2,260 km square transmission line corridor study in remote locations. 2012 (completed).

Environmental Scientist, Species at Risk Reconnaissance, Nova Scotia Power

Carried out rare flora surveys and compiled a botanical inventory for a medium-sized wind energy development which included more than 15 turbines. 2011 (completed).

ENVIRONMENTAL MONITORING

Environmental Scientist, Post-Construction Avian Mortality Monitoring Program, Defence Construction Canada and Department of National Defence, Hartlen Point, Nova Scotia

Designed, conducted and reported on a one-year avian mortality study associated with collision risk at a High-Frequency Short Wave Radio Array. 2014 (completed).

Environmental Scientist, Marine Water Quality Monitoring Program, Environment Canada, Nova Scotia

Conducted shoreline sanitary surveys and marine water quality sampling of coastal waters off of mainland Nova Scotia as part of the Marine Water Quality Monitoring Program. Specific works included the coordination and completion of data collection, interpretation and reporting. 2013 (completed).

EMPLOYMENT HISTORY

DILLON CONSULTING LIMITED

2018 - Present Biologist

CBCL LIMITED

2012 – 2018 Environmental Scientist

PROFESSIONAL DEVELOPMENT

CERTIFICATIONS

Nova Scotia Recognized Environment Wetland Delineator

TRAINING AND WORKSHOPS

NSE Wetland Ecosystem Services Protocol for Atlantic Canada Training (WESPAC), Aulac, New Brunswick, 2016

NSE/DFO Erosion Prevention and Sediment Control Certification, Dartmouth, Nova Scotia, 2016

DFO Freshwater Fish Habitat Restoration and Offsetting Workshop, Dartmouth, Nova Scotia, 2015

Backpack Electrofishing Certification, Canadian Rivers Institute, Saint John, New Brunswick, 2014

Landbird Species at Risk Workshop, Mersey Tobeatic Research Institute, Kempt, Nova Scotia, 2013

Introduction to Water Quality Monitoring, Clean Nova Scotia, Dartmouth, Nova Scotia, 2012

Shorebird Identification Workshop, Bird Studies Canada, Barrington, Nova Scotia, 2012

Raptor Identification Workshop, St. John Naturalists Society, St. John, New Brunswick, 2012
Small Vessel Operator Proficiency (SVOP), NSCC School of Fisheries, Dartmouth, Nova Scotia, 2012

Small Vessel Basic Safety (MED-A3), NSCC School of Fisheries, Dartmouth, Nova Scotia, 2012

Restricted Operator's Certificate (DSC), Canadian Power and Sail Squadrons, Halifax, Nova Scotia, 2012

Urban Wetland Restoration: A Watershed Approach, Fernhill Institute, Halifax, Nova Scotia, 2012

Nova Scotia Wetland Delineation Course, Fernhill Institute, Wolfville, Nova Scotia, 2011

Nova Scotia Wetland Plant Adaptations and Identification, Fernhill Institute, Wolfville, Nova Scotia, 2011

PUBLICATIONS

Post-deposit Monitoring of Drugs and Antibiotics used in Atlantic Salmon Aquaculture (In press), Fisheries and Oceans Canada, 2018.

Post-deposit Monitoring of Drugs and Pesticides used in the Canadian Aquaculture Industry. – Co-authored a comprehensive review article on behalf of Fisheries and Oceans Canada, 2016.

HMC Dockyard Bird Control Measures – Conducted surveys and authored technical report regarding possible mitigation measures and potential costs, Defence Construction Canada, Department of National Defence, 2015.

"Dendroclimatology of *Picea glauca* at tree line in northern Labrador, Canada", M. Sc. Thesis, Memorial University, 2011.

This is **Exhibit "B"** referred to in the
Affidavit of CHRIS KENNEDY sworn before
me on May 24, 2023



A handwritten signature in black ink, appearing to read "Chris Kennedy", is written over a horizontal line. The signature is stylized and extends to the right of the line.



TOWN POINT CONSULTING INC.

Piping Plovers and Marine Shellfish Aquaculture

An assessment of potential impacts to nesting Piping Plovers as a result of a proposed marine shellfish aquaculture lease site in Antigonish Harbour, Nova Scotia.



January 16, 2020

Town Point Consulting Inc.
370 Seabright Road
Antigonish, Nova Scotia
B2G 2L2

Attention: Mr. Ernie Porter
President, Town Point Consulting Inc.

Assessment of Potential Impacts to Nesting Piping Plovers as a Result of a Proposed Marine Shellfish Aquaculture Lease Site in Antigonish Harbour, Nova Scotia.

Based on discussions held in December 2019, Dillon Consulting Limited (Dillon) was retained by Town Point Consulting Incorporated (Town Point Inc.) on January 3, 2020 to prepare and deliver an assessment of potential impacts to piping plover (*Charadrius melodus melodus*) as a result of oyster aquaculture operations proposed by Town Point Inc. The following is a technical report detailing the findings of that assessment.

Sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in blue ink, appearing to read "Chris Kennedy".

Christopher J. Kennedy, M.Sc.
Biologist

CJK:jes

Our file: 20-2069-1000

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Canada
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1. Introduction

Town Point Consulting Inc. (TPC) proposes to construct and operate a marine shellfish aquaculture operation on three potential lease areas near the mouth of the Antigonish Harbour. One proposed lease area (Site 3) falls within the protected beach area of Dunn's and Monks Head, whose boundaries extend into open water (see Figure 1), and is protected pursuant to the *Beaches Act* (R.S. 1989, c. 32, s.1.).

Dunn's Beach is also designated as critical habitat for the Piping Plover (*Charadrius melodus melodus*) (EC 2012), which is listed as 'Endangered' both provincially pursuant to the *Nova Scotia Endangered Species Act* (S.N.S. 1998, c. 11) and federally pursuant to the *Species at Risk Act* (S.C. 2002, c. 2). However, unlike the protected beach area mentioned above, the critical habitat for the Piping Plover is limited to the portion of Dunn's Beach suitable for nesting, feeding and cover which includes the terrestrial area of beach from the low water mark to the upper beach and dune crest (EC 2012). That said, there have been no observations of Piping Plover at Dunn's Beach reported to eBird (2020) for the past 10 years (see Figure 2). eBird is a collaborative database, with over 100 million bird sightings contributed annually and represents the world's largest citizen science project.

The following technical report will present an assessment of possible impacts that could result from the proposed marine shellfish aquaculture operation to Piping Plovers that may use the protected beach area of Dunn's and Monks Head to breed and raise their young. Additionally, similar nearby marine shellfish aquaculture operations are examined to provide context for the current proposed works. Lastly, current and possible future activities, including the proposed shellfish aquaculture operation, that occur on or around Dunn's and Monks Head Beach are discussed in terms of threats to breeding Piping Plovers and compliance with the *Beaches Act*.

2. Known Threats and Limiting Factors to Piping Plover Recovery with Respect to Marine Shellfish Aquaculture

Current estimates suggest that hatching success for Piping Plover pairs in eastern Canada is less than 55% and that predation, along with habitat loss and degradation, are the primary factors limiting Piping Plover populations across their North American breeding range (EC 2012).

There are many predators of Piping Plover adults, chicks, and eggs, including avian predators such as the American Crow (*Corvus brachyrhynchos*), Common Raven (*Corvus corax*) and many species of gull (*Larus* spp.), as well as mammalian predators including Raccoon (*Procyon lotor*), Red Fox (*Vulpes vulpes*), American Mink (*Neovison vison*), domestic dogs, and even feral cats. Anthropogenic activities and associated land use practices can result in artificially high predator populations and that these predators may opportunistically prey on adult Piping Plovers, chicks, or eggs. However, the species most commonly associated with congregating at marine shellfish aquaculture facilities in eastern Canada is

the double-crested cormorant (*Phalacrocorax auritus*) (Comeau et al. 2009), a piscivorous bird not considered to be a predator of Piping Plovers.

Piping Plover habitat loss and degradation are primarily related to direct human disturbance and coastal development, but also natural processes such as sea-level rise, coastal erosion, vegetation encroachment, etc. According to Environment Canada (2012), any anthropogenic activity which alters or disturbs critical habitat is likely to result in the destruction of that critical habitat. EC identifies a number of activities likely to result in the destruction of critical habitat:

- Off-road, all-terrain, or motorized vehicle use;
- Coastal development occurring in plover habitat or in other habitats closely associated with plover habitat, including the construction of cottages, homes, or tourist accommodations, boardwalks, and trails;
- Beach nourishment;
- Beach stabilization;
- Sand mining and extraction;
- Beach cleaning or raking activities that remove elements of natural habitat; and
- Deliberate or accidental discharge of oil and toxic chemicals.

Many recreational activities can also result in disturbance to Piping Plovers which can cause changes in normal nesting or feeding behaviour and may lead to lowered hatching success rates. These human-related disturbance factors generally include all recreational uses of a beach, such as pedestrian traffic; unleashed pets; camping and campfires; sunbathing; collection of driftwood, shells or wrack; horseback riding; fishing; kite flying; and motorized vehicle traffic on the beach (EC 2012).

While an operational marine shellfish aquaculture lease may be considered “coastal development...in habitats closely associated with plover habitat”, it should be noted that unlike the examples given by Environment Canada (2012), a marine shellfish aquaculture lease has no terrestrial footprint and therefore cannot overlap with critical habitat for Piping Plover, which by definition is terrestrial (EC 2012). Although no direct destruction of Piping Plover habitat will occur as a result of the proposed project, it is important to assess whether or not the operations of an active marine shellfish aquaculture operation will result in disturbance to nesting Piping Plovers on Dunn’s and Monks Head Beach?

3. **Environment and Climate Change Canada (ECCC) Guidance, Setback Distances and Buffer Zones for Piping Plover**

Environment and Climate Change Canada (ECCC) offers guidance on establishing buffer zones and setback distances for migratory bird nests, including the Piping Plover, which are intended to ensure the successful fledging of young birds from the nest. According to ECCC (2019), buffer zones are determined by a setback distance which can vary according to the:

- i) degree of tolerance of the species;
- ii) previous exposure of birds to disturbance;
- iii) level of disturbance; and
- iv) landscape context.

Appropriate 'setback distances' are determined on a case-by-case basis based on the distance at which nesting birds react to human disturbance (flight initiation distance or FID) along with expert opinion. A higher minimum 'setback distance' is often required for natural habitats (compared to urban areas), most waterfowl nests (as compared to songbirds) and the presence of a sensitive species or species at risk (ECCC 2019).

With respect to the 'degree of tolerance' of Piping Plovers and 'previous exposure of birds to disturbance', it should be noted that Piping Plovers regularly nest in areas impacted by human activities, such as recreational (beach use) or industrial settings (aggregate mining) and that recent research (Jorgensen et al. 2016) suggests that Piping Plovers do appear capable of becoming habituated to stimuli associated with human activity over time.

Along the Atlantic Coast of the United States, the U.S. Fish and Wildlife Service (USFWS 1994; 1996) recommends 50 m diameter buffer zones be placed around active Piping Plover nests, but also suggests the buffer zone should be increased when 50 m is found to be inadequate. This recommended 50 m buffer zone was based on studies in which Piping Plover 'Flight Initiation Distance' (FID) in response to human disturbances were quite variable, ranging from less than 5 m to 210 m (Flemming et al. 1990, Cross 1990, Loegering 1992, Hoopes 1993, Cross and Terwilliger 1993, all cited in USFWS 1994) depending on the context of the interaction. This variability in FID exhibited by Piping Plover in these different studies suggests a number of variables affect these birds' responses to human activity (Jorgensen et al. 2016).

It has been demonstrated that nesting Piping Plovers respond differently to different types of stimuli, flushing more readily to passing pedestrians and dogs than to motorized vehicles (Jorgensen et al. 2016; McLeod et al., 2013). In a recent study using a 100 m buffer zone, nesting Piping Plovers flushed most readily to off-leash dog(s) (75% of the time) or a human(s) with a dog (70%) compared to only human pedestrian(s) (35%) and motorized vehicles (5.9%) (Jorgensen et al. 2016). Return times to the nest by flushed plovers was also greatest for off-leash dog(s) and a human(s) with a dog compared to only human pedestrian(s), and lowest for passing motorized vehicles.

In Canada, the only published literature available on recommended Piping Plover setback distances comes from the Alberta Ministry of Environment and Parks (AMEP 2011) and Environment Canada (EC 2009) and are primarily intended for use by the petroleum industry in the Prairie and Northern regions of Canada. In apparent recognition of the variability in response distances exhibited by Piping Plovers in previous studies, both documents recommend a range of setback distances for Piping Plover depending

on time of year and level of anticipated disturbance. Both documents recommend a lower limit setback distance of 50 m for 'low impact' activities, such as surveying, monitoring, or vehicular drive-by. However, for 'high impact' activities, such as pipeline construction, operating oil or gas wells or pump stations, the AMEP 2011 document recommends an upper limit setback distance of 200 m, while the EC 2009 document recommends an upper limit of 250 m.

If we assume that the 'level of disturbance' caused by the routine operations of a marine shellfish aquaculture operation is similar to 'high impact' activities of the petroleum industry, than by the most stringent guideline available in Canada (EC 2009) an appropriate setback from Piping Plover critical habitat would be 250 m.

The proposed lease site (Site 3) is setback approximately 230 m from its nearest point to Dunn's Beach. However, as the routine operation of a marine shellfish aquaculture site would most appropriately be classified as having a lower overall impact than that of 'high impact' activities of the petroleum industry, the current setback of ~230 m is very likely to be sufficient to prevent the disturbance of any nesting Piping Plovers that may breed on Dunn's Beach.

Given that recent research indicates that nesting Piping Plovers respond to and are more readily disturbed from their nest by off-leash pets and humans' on-foot, than they are by passing terrestrial motorized vehicles, the disturbance impact to nesting Piping Plovers resulting from the routine operations of a neighbouring 'on-water' shellfish aquaculture lease are likely to be negligible.

4. Reference Marine Shellfish Aquaculture Sites in Nova Scotia

There are currently a number of marine shellfish aquaculture sites in operation (NSDFA 2019) that are located immediately adjacent Provincial Parks or other important ecological areas in Nova Scotia, including critical habitat for Piping Plover. While Provincial Parks and Protected Beaches are not the same, they do share some important similarities with respect to their stated purpose. The Acts governing both Provincial Parks (*Provincial Parks Act* R.S., 1989, c. 367, s. 1.) and Protected Beaches (*Beaches Act*) broadly state their purpose is to provide opportunities for outdoor recreation and to preserve significant and sensitive elements of the natural environment of Nova Scotia. In fact, Dunn's Beach (see Figure 3) is currently listed as a site for designation as a Provincial Park by the Province of Nova Scotia (NS 2013), however, the designation has not yet been made official.

Listed below are examples of marine shellfish aquaculture operations currently co-existing with neighbouring Provincial Parks and other important ecological areas in Nova Scotia:

- i) Melmerby Beach Provincial Park
 - a. Commercial Marine Shellfish Licence No.: #0177, #1224 and #1112
 - b. Size of leased area: ~83.35 hectares
 - c. Species: American Oyster, Bay Quahaug, Surf Clam and Bay Scallop
 - d. Significant Habitat for Piping Plover?: Yes

- ii) Powell's Point Provincial Park
 - a. Commercial Marine Shellfish Licence No. #1350
 - b. Size of leased area: ~17.33 hectares
 - c. Species: American Oyster and Bay Quahaug
 - d. Significant Habitat for Piping Plover?: No

- iii) Caribou-Munroes Island Provincial Park
 - a. Commercial Marine Shellfish Licence No. #1347 and #1380
 - b. Size of leased area: ~12.77 hectares
 - c. Species: American Oyster
 - d. Significant Habitat for Piping Plover?: No

- iv) Waterside Beach Provincial Park
 - a. Commercial Marine Shellfish Licence No. #1347 and #1380
 - b. Size of leased area: ~17.26 hectares
 - c. Species: American Oyster
 - d. Significant Habitat for Piping Plover?: Yes

- v) Wallace Bay National Wildlife Area
 - a. Commercial Marine Shellfish Licence No.: #0331
 - b. Size of leased area: ~2.17 hectares
 - c. Species: American Oyster
 - d. Significant Habitat for Piping Plover?: No

Although not within Nova Scotia, another comparable shellfish aquaculture arrangement occurs in a neighbouring jurisdiction, within the Darnley Basin of Malpeque Bay, Prince Edward Island. The Darnley Basin is approximately 536.3 hectares and is occupied by 39 marine shellfish aquaculture leases totalling approximately 229.0 hectares, or about 42.7% of the total area of the basin (see Figure 4). Similar to the mouth of the Antigonish Harbour, the mouth of Darnley Basin is protected by sandspits, one of which forms part of Cabot Beach Provincial Park. Both sandspits are known to be breeding beaches for Piping Plover (see Figure 5). Similar to Antigonish Harbour, there is a commercial fishing wharf within the Darnley Basin that supports lobster boats, among other vessels, that must traverse the narrow channel alongside the sandspit beaches daily. Despite the density of aquaculture-related activities within the basin and the numerous passing fishing vessels, Piping Plovers continue to show site fidelity and a pair of Piping Plovers were recorded to have successfully hatched three young at these beaches in 2019 (Kelly 2019).

5. Proposed Shellfish Aquaculture Lease Area and Site-specific Context

There currently exists a commercial fishing wharf within the boundaries of the Protected Beach Area of Dunn's and Monks Head located at the northern end of Southside Harbour Road, immediately northwest from the mouth to Captain's Pond (see Figure 1). Vessels from this wharf must currently pass the proposed location of the proposed 'Site 3' lease area and navigate the channel into St. George's Bay. These vessels are predominantly powered by inboard or outboard motors (hundreds of horsepower (HP)) and the noise generated by their passing would be considerable. In contrast, the vessels proposed for the routine operations of the marine shellfish aquaculture lease would be powered by a 12 HP inboard motor with an additional muffling device installed to further mitigate any noise generated. Since the boundaries of the protected beach area extend between 800 and 1,700 m into St. George's Bay, it is probable that lobster pots are deployed and retrieved regularly within this protected area. This suggests that the noise disturbance caused by passing lobster vessels would not be limited to their departure and return to the harbour, but would be more persistent throughout the day. This is also in contrast to the proposed 'Site 3' aquaculture lease area, which is proposed to be located ~230 m behind the dune crest of Dunn's Beach.

Although lobster fishing occurs in near-shore coastal waters across much of the Maritime Provinces, there has been no suggestion or research that implicates passing lobster vessels with disturbing nesting Piping Plovers. Therefore, it would seem highly unlikely that the operation of a slower, quieter vessel behind the dune crest of Dunn's Beach would be considered a significant disturbance to nesting Piping Plovers.

6. Conclusions

Based on the research and associated assessment presented in this report, Dillon has concluded that the operation of a marine shellfish aquaculture lease in proximity to critical habitat for Piping Plover, located on Dunn's Beach, is highly unlikely to cause destruction of that habitat or cause a significant disturbance to any Piping Plovers that may breed at Dunn's Beach in the future. Furthermore, since there are many marine shellfish aquaculture leases currently in operation in proximity to Provincial Parks and other important ecological sites in Nova Scotia, the proposed lease site (Site 3) within the boundaries of the Protected Beach Area of Dunn's and Monks Head does not appear to be in conflict with the *Beaches Act*.

Figure 1. Overview of the Protected Beach Area and the Proposed Site 3 Lease Area



Proposed Lease Area - Site 3
 (~13.2 hectares)



Protected Beach Area of
 Dunn's and Monks Head



*All locations are approximate



Figure 2. Observations of Piping Plover, as reported to eBird, in the Vicinity of the Protected Beach Area of Dunn’s and Monks Head over the Last Ten Years (January 2010 – January 2020)

Image provided by eBird (www.ebird.org) and created January 7, 2020.



Figure 3. Overview of Dunn's Beach Indicating the Area in Consideration for Development as a Provincial Park

NOVA SCOTIA

Dunns Beach

Provincial Park and Park Reserve Series

U.S. Universal Transverse Mercator (UTM) Projection, Zone 20, Central Meridian 63°00' West, North American Datum (NAD) 1983.
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- | | |
|---------------------------------------|--------------------|
| Fire Station | Trans Canada |
| Hospital | Arterial Highway |
| Police Station | Collector Highway |
| School | Trunk Highway |
| Church | Paved Road |
| Building | Unpaved Road |
| Water Body | Track (2m & wider) |
| River / Stream | Trail / Footpath |
| County Boundary | Railway |
| Abandoned Railway | Camping Park |
| Mahoneys Beach | Day Use Park |
| Dunns Beach | Park Reserve |
| Wilderness Area | Crown Land |
| Nature Reserve | Wilderness Area |
| National Historic Site, National Park | |



Data Sources:
Nova Scotia Topographic Database 2010; Service Nova Scotia and Municipal Relations
Wilderness Areas and Nature Reserves 2012; NS Department of Environment
Crown Land, Provincial Parks and Park Reserves 2012;
Restricted and Limited
Use Lands 2007; NS Department of Natural Resources

Produced by the Nova Scotia Department of Natural Resources, 2012.
The Province of Nova Scotia accepts no liability for any errors, omissions, or faults on this map.



**Figure 4. Overview of the Darnley Basin,
Malpeque, PEI, Illustrating the Density of
Marine Shellfish Aquaculture Operations**



Figure 5. Observations of Piping Plover, as Reported to eBird, in the Vicinity of the Darnley Basin Over the Last Ten Years (January 2010 – January 2020)



Image provided by eBird (www.ebird.org) and created January 7, 2020.



References

- Alberta Ministry of Environment and Parks (AMEP). 2011. Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta. Government of Alberta. [Accessed January 2020]
<https://open.alberta.ca/dataset/e269aad8-3664-402a-b7cb-77abe89e9617/resource/6195d2d4-9f7d-43e5-ada5-81a8210fae38/download/3054250-2011-recommended-land-use-guidelines-protection-wildlife-species-habitat.pdf>
- Beaches Act*. Province of Nova Scotia. R.S. 1989, c. 32, s. 1.
- Comeau, L.A., P. St-Onge., F. Pernet., L. Lanteigne. 2009. Deterring coastal birds from roosting on oyster culture gear in eastern New Brunswick, Canada. *Aquacultural Engineering*. Vol. 40., Issue 2, pp 87-94.
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