Annex A – Statement of Work

1. Title

Review of current aquaculture management and best practices in Canadian marine and coastal waters, and the Great Lakes

2. Objectives

The objectives of the contract are to gain a clear understanding of how aquaculture ventures and the harvest of wild plants are operated and regulated in marine and coastal areas of Canada, and the Great Lakes/St. Lawrence River system, including considerations and criteria that could help inform Parks Canada's policies on aquaculture within National Marine Conservation Areas. Parks Canada also seeks to develop a catalogue of aquaculture best practices for marine protected areas, to be in a position to evaluate what requirements will be needed to improve the long-term ecological sustainability of aquaculture operations in NMCAs and the wider oceans.

3. Background

Parks Canada is the lead Agency responsible for national parks, national historic sites and national marine conservation areas (NMCAs) in Canada. NMCAs are a type of marine protected area established to protect and conserve representative examples of Canada's oceans and Great Lakes for the benefit, appreciation and enjoyment of the people of Canada and the world. The *Canada National Marine Conservation Areas Act* (*CNMCA Act*) requires that NMCAs are used in an ecologically sustainable manner that meets the needs of present and future generations without compromising the structure or function of the ecosystems.

Under the CNMCA Act, Parks Canada is responsible for NMCA administration, management and control of the lands, and works with other Departments that retain responsibility for the management of certain marine activities under their authorities. For example, the Department of Fisheries and Oceans retains the responsibility for fisheries management in NMCAs, but they must do so in accordance with each site's management plan conservation objectives and zoning frameworks. As such, a range of activities and uses may occur within an NMCA, and those activities can occur in different zones based on whether they're compatible with the objectives of the zone and of the site.

Aquaculture, the cultivation (breeding, rearing and harvesting) of fish, shellfish, and plants (including marine plants as defined in *Fisheries Act*), and the harvest of wild plants, including freshwater plants in the Great Lakes, are not prohibited within NMCAs under the CNMCA Act. In Canada's three oceans, the Department of Fisheries and Oceans (DFO) is responsible for fisheries and aquaculture management in NMCAs. In freshwater Great Lakes NMCAs, fisheries and aquaculture management are the responsibility of the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry. In both cases, Parks Canada is the responsible authority for land use and occupancy in NMCAs, and would issue the land use authorization, and in some cases harvest licenses for wild plants related to any aquaculture activities. Government departments and agencies would work together to ensure aquaculture occurring in NMCA waters are managed consistent with all applicable legislation, including the CNMCA Act and with the purpose and conservation objectives of the NMCA as outlined in the site management plan.

Parks Canada is currently analyzing various marine uses and activities and revising elements of policies, guidelines and tools to ensure a consistent approach to the management of activities and uses throughout the system of NMCAs. We therefore seek to gain a clear understanding of how aquaculture ventures are operated and regulated in marine and coastal areas across Canada, and in the Great Lakes.

Much work, both international and national, has been done on mitigating the impacts of aquaculture and developing strategies to improve safety and sustainability in recent years with growth of the blue economy. For example, supporting Indigenous coastal and marine cultural practices linked to access and food security (e.g. clam garden, harvest of wild rice), integrated multi-trophic aquaculture practices, and linking seaweed aquaculture with carbon sequestration. A scan of these emerging topics and innovations in aquaculture, and how they provide best practices to improving the sustainability of aquaculture, and types of aquaculture or practices that align with protected area management (e.g. not compromising biodiversity, enhancing coastal community well-being, carbon mitigation benefits) will inform the development of considerations and criteria for aquaculture operations within NMCAs.

4. Scope of Work

NOTE: The scope of the review is limited to: (1) aquaculture and wild plant harvest occurring in marine/coastal waters of the Pacific, Atlantic (including Gulf of St. Lawrence) and Arctic Oceans; and (2) freshwater aquaculture and wild plant harvest in the Great Lakes and St. Lawrence River and Estuary. Land-based and inland aquaculture operations (if not within the Great Lakes) are outside of the scope of work.

The contractor is responsible for the following:

4.1 Providing all labour, materials, supplies, equipment and transportation required to undertake the work.
4.2 Participating in a start-up meeting with the Parks Canada Representative(s) to be held via conference call to: establish lines of communication; provide the contractor with all relevant materials.
4.3 Reviewing all relevant materials provided by Parks Canada.
4.4 Researching additional sources of information, and creating a Mendeley database with references to be shared with Parks Canada.
4.5 Direct communication with individuals or organizations may be required to gain a greater understanding of the policy/regulatory context.
4.6 Submitting deliverables on time as outlined in section 4.11
4.7 Discussion(s) with Parks Canada Representative(s) to review first draft to identify and confirm any outstanding items that need to be addressed prior to submission of final report.
4.8 Submitting one electronic version in Microsoft Word and one electronic version in PDF of the final report on or before March 31st, 2022.
4.9 Creating a report that includes:

4.9.1 Part A: *Overview of current management in Canada*

A summary of the current management regime of aquaculture and wild plant harvest in Canadian marine and coastal waters, and the Great Lakes and St. Lawrence River, including legislation, regulations and requirements (which may differ federally and by province or territory), and processes related to approval, permitting, monitoring and termination. The summary must include but is not limited to:

i. Federal legislations, regulation and roles and responsibilities for aquaculture operations in marine and coastal waters and Great Lakes waters;
ii. Provincial or territorial legislations, regulations and roles and responsibilities for aquaculture operations in marine and coastal waters and Great Lakes waters;
iii. Summary of current (last 5 years) strategies, policies or initiatives in each marine/coastal province or territory that include the various types of aquaculture, to better understand the context for aquaculture operators in Canada, including growth and development, moratoria or restrictions, and future direction on aquaculture in various jurisdictions.
iv. Illustrate (via flowchart and supporting text) the process(es) required for the phases of approval, permitting, operation, monitoring through to termination of aquaculture operations by jurisdiction, as necessary. Processes for different classes and subclasses of aquaculture operations (e.g., fish,

shellfish, marine plants, freshwater plants) must be distinguished, if variations between processes are significant. The process illustration should explain the decision making process and required steps, showing how different authorities' requirements are satisfied and in what order, particularly how does Environmental Assessment (EA) fit in, and whose EA process is applied. This should be for the entire lifecycle of an aquaculture operation from its inception to its termination. If there is variation among jurisdictions, please outline these as well.

v. A series of comparative/summary tables outlining in more detail each of the steps in the process identified below, by class/subclass of aquaculture (e.g. fish, shellfish, marine plants, freshwater plants), comparing among provinces/territories where there are differences. Great Lakes may require a separate summary. For each step and comparison, identify: (1) roles, responsibilities of parties; (2) timing/time/seasonal restrictions; and (3) requirements or conditions or restrictions (e.g., especially location, size, type etc)
   - Step 1: Land use authorization
     - ✓ What mechanism type (permit, lease, or license of occupation) is used to authorize land use in each province or territory, and who issues it, for how long, what is the renewal process, how much does it cost.
     - ✓ Any pre-conditions or pre-assessments? If Environmental Assessments are required, what is the timing in relation to other steps?
     - ✓ What are reasons an operation could lose the authority?
   - Step 2: Activity licensing (potentially by type – e.g. fish, shellfish, marine plants, freshwater plants), or harvest licensing
     - ✓ Who issues?
     - ✓ Any pre-conditions or pre-assessments? If Environmental Assessments are required, what is the timing in relation to other steps?
     - ✓ What conditions or restrictions included in licence: size (area), quota (amount), location, class (harvestable product), timing of use in each province
     - ✓ What are reasons an operation could lose the activity licence?
   - Step 3: Operation and management standards by class/subclass of aquaculture and by categories or issues related to:
     - ✓ Pollution and environmental mitigation measures (e.g. organic waste, nutrient pollution, pharmaceuticals, pesticides, antifouling, water quality, escape, disease, wild species collection, noise, predator control)
     - ✓ Restrictions/conditions placed on aquaculture (nationally, provincially/territorially, regionally etc) to inform potential restrictions/conditions that might be applied nationally to the establishment and operations within NMCAs;
   - Step 4: Ongoing monitoring and compliance for operational standards, and enforcement
   - Step 5: Terminating an operation/decommissioning

4.9.2 Part B: *Catalogue of best practices to improve ecological sustainability of aquaculture in marine and coastal protected areas*

Based on an extensive review of available information (scientific literature, reports, case studies and other publicly available information), summarize current best practices and emerging ways to better mitigate environmental impacts and improve the sustainability of aquaculture both internationally and nationally. This information will inform the development of the considerations or criteria for the types and practices of aquaculture appropriate or promoted within a marine protected area context.

The review must include (but not be limited to):

- Examples of ecologically sustainable aquaculture best practices, as well as best practices specific to

the context of marine protected areas if they are available, and a short list of the most promising options. Any key challenges or lessons learned from aquaculture operations, especially in marine protected areas should be included.

- Indigenous and local community coastal and marine cultural practices that relate to assess and harvest and food security (e.g. clam garden on Pacific Coast, wild rice harvest in Great Lakes)
- Integrated multi-trophic aquaculture practices– concept on by-products from one type of aquaculture supporting other species etc.
- Recent research and information on the links between seaweed aquaculture with carbon sequestration

Based on a synthesis of the scan, the report should include a section with a discussion or recommended list of considerations or criteria for ecologically sustainable aquaculture in protected areas.

4.10 Deliverables and Timelines

The Contractor must develop a series of deliverables as described in the table below. The project must be completed by March 31, 2022.

Deliverable	Deadline
1. Initial meeting	Within 5 working days of contract award.
2. Draft outline of report with preliminary table of contents for Part A and Part B	No later than 1 month prior to the submission of the final report.
3. Draft of Part A – review and discussion	Late February
4. Draft Report (including detailed analysis and conclusions) and draft Power Point presentation summarizing key findings	No later than 2 weeks prior to the submission of the final report.
Final full report and executive summary	No later than March 31st, 2022

All draft and final reports must be comprehensive and written in a clear, understandable and concise fashion. The Contractor must provide an executive summary of no more than 2 pages and a Microsoft Power Point presentation that summarize the key findings of the project. These should include professional quality graphic materials and be written as stand-alone documents that can be used to brief senior administration. All deliverables must be provided in English in electronic format (Microsoft Word and PDF).

The Departmental Representative will provide comments to the Contractor within 2 weeks of receiving a deliverable. The Contractor must provide feedback on comments received within 1 week thereafter.

In addition to the final report, the Contractor will provide the Departmental Representative, upon request, with electronic copies (Microsoft Word) of all notes, text, graphics, surveys, and records of discussion used for the delivery of this Contract. This material must be stored in a secure manner and destroyed by the Contractor after 5 years.

5 Parks Canada Responsibilities

Parks Canada will provide any information (literature, reports, summaries) identified through preliminary scan related to the regulatory and policy context for aquaculture.

Parks Canada will provide information on NMCA Policy and Zoning, and the current state/thinking with respect to the NMCA Policy revision, especially as it pertains to aquaculture, and harvest of aquatic plants.

Parks Canada will arrange for the start-up meeting via conference call with the Contractor to establish lines of communication and provide the contractor with all relevant materials.

Parks Canada will review and provide comments on drafts within 3 weeks of receiving them from the Contractor.

6. Official Language Obligations

All written material to be provided in English (Parks Canada will arrange translation afterwards).