



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Procurement Hub – Fredericton
301 Bishop Drive
Fredericton, NB E3C 2M6

29 January, 2021

F5211-200652

ADVANCED CONTRACT AWARD NOTICE

TITLE: Develop new statistical methods for using the groundfish data from the International Pacific Halibut Commission longline survey in British Columbia.

ACAN

The purpose of this Advance Contract Award Notice (ACAN) is to signal the government's intention to award a contract for these services to the University of British Columbia, 3182 Earth Sciences Building, 2207 Main Mall, Vancouver, BC Canada V6T 1Z4.

Before awarding a contract, however, the government would like to provide other suppliers with the opportunity to demonstrate that they are capable of satisfying the requirements set out in this Notice, by submitting a statement of capabilities during the ACAN posting period.

If other potential suppliers submit a statement of capabilities during this ACAN posting period that meets the requirements set out in the ACAN, the government will proceed to a full tendering process on either GETS or through traditional means, in order to award the contract.

If no other supplier submits, on or before the closing date, a statement of capabilities meeting the requirements set out in the ACAN, a contract will be awarded to the pre-selected supplier.

INTRODUCTION AND BACKGROUND

The International Pacific Halibut Commission (IPHC) conducts an annual stock assessment longline survey in waters from California to Alaska, including British Columbia (BC). The survey's main goal is to provide data on Pacific Halibut for stock assessment purposes.

At each station, the fishing gear consists of a set of skates each of about 100 hooks. Up to eight skates are on each set, with the number of skates per set varying between years. For BC waters, the survey has enumerated non-halibut species since 1995 (to varying degrees of species identification), and is the longest running annual groundfish survey. For each species, the catch rate of a set is the number of individuals caught per effective skate (where an effective skate of one represents a skate of 100 circle hooks with 18-foot spacing).

However, complications arise because of differing data collection protocols in different years. These have been resolved in stock assessments for Redbanded Rockfish (Edwards et al. 2017) and Yelloweye Rockfish (Yamanaka et al. 2018) and a synopsis of all the data for over 100 species of groundfish in BC (Anderson et al. 2019). The issue of hook competition, whereby the hooks that have already caught a fish are no longer actively fishing, has only been examined in a preliminary fashion and requires further investigation.

OBJECTIVES

There are two objectives of this work:

Objective 1 - Develop a method to account for hook competition when generating coastwide indices of abundance from the IPHC annual longline survey in BC waters. The method will be used in the future by DFO scientists to generate coastwide indices for future groundfish stock assessments.

Objective 2 - Apply the method from Objective 1 to generate indices of abundance for groundfish predators of Haida Gwaii Pacific Herring, with the data restricted to the herring feeding grounds in Hecate Strait. Also develop more advanced spatio-temporal models that utilise information from groundfish trawl surveys and commercial fisheries data, and compare the resulting indices.

Incorporating ecosystem information into science advice is a current priority for DFO. One of the Case Studies that will help develop DFO's Ecosystem Approach to Fisheries Management (EAFM) framework is focussed on Haida Gwaii Pacific Herring. The Case Study investigates how to incorporate supplemental ecosystem information into science advice (to fisheries managers) for this stock. One component is describing trends of predators, which include Lingcod, Spiny Dogfish, Arrowtooth Flounder and Pacific Halibut (Godefroid et al. 2019). These species are all caught in the IPHC survey in Hecate Strait, the largest feeding area for Haida Gwaii Pacific Herring. Given Hecate Strait only contains some of the IPHC longline stations, the IPHC data set alone will likely prove too noisy to be useful in determining trends of groundfish predators in this area. Therefore, more advanced statistical methods are likely required to combine further types of data. The two approaches will be compared and one of them recommended as input for the EAFM Case Study.

Thus the work fulfills two DFO needs – Objective 1 will directly support future groundfish stock assessments, and Objective 2 will directly feed into a Pacific EAFM Case Study.

TASKS AND DELIVERABLES

Tasks:

1. For objective 1:
 - (a) Develop hook competition methods, extending those described in Appendix G of Anderson et al. (2019). Provide a written description of the methods.
 - (b) Write documented R code that runs the new methods. To be incorporated into DFO's `gfiphc` R package that is available on GitHub. Include explanatory vignettes so that future users can apply the methods.
2. For objective 2:
 - (c) Develop and test new statistical methods for combining the IPHC data together with other data sources (groundfish trawls surveys and commercial fisheries data). Provide a written description of the methods plus the resulting R code.
 - (d) Quantitatively evaluate whether the IPHC data alone can provide useful indices of abundance for the key groundfish predators of Pacific Herring in Hecate Strait, or the newer statistical approaches should be used. Provide written documentation of the evaluation plus the R code used (can be combined using Rmarkdown or knitr).

3. The write-ups for (a), (c) and (d) can be combined into a single report, which should be suitable for publication as either a DFO Technical Report or a primary scientific paper.
4. The resulting R code for (b) is to be written as part of DFO's gfiphc R package. The code for (c) and (d) is to be written as a new stand-alone R package.

Deliverables:

1. Scientific write-up of all work such that the methods, results and conclusions can be clearly understood (as a pdf file built using Rmarkdown, knitr or latex as appropriate), delivered electronically to the Project Authority.
2. R code for (b) incorporated into existing gfiphc R package, including vignettes to guide users through the new methods, delivered via GitHub
3. R code for (c) and (d) developed in a new R package, including vignettes to guide users through the new methods, delivered via GitHub.

*Note that all deliverables are to be in English.

RESOURCES AND LEVEL OF EFFORT

Model construction, data collection, data analysis and reporting will be carried out between the period of contract award to March 22, 2021. The contractor can choose to employ a secondary resource to assist with the work. The contractor will schedule remote meeting with DFO every three weeks to provide an update and receive feedbacks, ongoing emails will address any questions.

MANDATORY CRITERIA

- The primary resource must have worked on a minimum of one project developing novel spatiotemporal models for analyzing marine ecological data.
- The primary resource must have a minimum of three years of experience in writing R code and a minimum of one project using via GitHub.
- The primary resource must have a minimum of ten papers published in relevant fields (statistical ecology and marine ecology).

If the contractor chooses to hire a secondary resource, the resource must meet the following criteria:

- The secondary resource must have worked on a minimum of one project developing novel spatiotemporal models for analyzing marine ecological data.
- The secondary resource must have a minimum of three years of experience in writing R code and a minimum of one project using GitHub.

ESTIMATED VALUE

The total value of the contract must not exceed \$39,000.00 CAD before applicable taxes for the period of the contract.

TRADE AGREEMENTS APPLICABILITY OR OTHER OBLIGATIONS:

N/A

GOVERNMENT CONTRACTS REGULATIONS EXCEPTION AND LIMITED TENDERING REASONS:

The following policy requirements are applicable to this ACAN process:

Applicable Exceptions to Soliciting Bids under the Government Contracting Regulations (GCRs) (Section 6):

Section 10.2.1 Section 6 (d) only one person or firm is capable of performing the work applies to this ACAN for the following reasons:

-There are no known alternative sources of supply. It is feasible and affordable to compete the requirement.

INTELLECTUAL PROPERTY:

The Contractor will own IP - intended for normal use where a contractor will be building on a substantial body of the contractor's background, but is not creating what amounts to a completely new product for the Crown. An alternative, broader background is available for use in appropriate circumstances.

CONTRACT PERIOD:

The period of the contract is from contract award date to March 22 2021.

SUPPLIER'S RIGHT TO SUBMIT A STATEMENT OF CAPABILITIES:

Suppliers who consider themselves fully qualified and available to provide the services described herein, **must submit a Statement of Capabilities in writing to the Contracting Officer identified in this Notice on or before closing date. The Statement of Capabilities must clearly demonstrate how the supplier meets the advertised requirements.**

CLOSING DATE FOR SUBMITTING STATEMENT OF CAPABILITIES:

February 12, 2021 at 2:00 p.m. (AST)

Inquiries and statements of capabilities are to be directed to:

Karen Dolan
Contracting Officer
Procurement Hub – Fredericton
Telephone: (506) 429-6073

Email: DFOtenders-soumissionsMPO@dfo-mpo.gc.ca