Competitive Science Research Fund (CSRF) **Letter of Intent**

This form is to be used to submit a Letter of Intent (LOI) to seek funding from the CSRF.

ALL sections must be completed, except where noted “if applicable”.

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| **1. Research Area:** | | Fisheries Science stock Assessment Science | | | | | | | | |
| **2. Research Focus:** | | Ecosystem Approach to Fisheries Management | | | | | | | | |
| **3. Research Priority:** | | Multi-species Fisheries Science: Investigating principles and approaches for multi-species stock assessment and science advice, such as predators and prey. | | | | | | | | **4. PIN** |
| FS-22-05 |
| **5. Project Identification** | | | | | | | | | | |
| **5.1 Project Title:** | | Using the Maritimes Food Habits Database to Inform on Predator-Prey Dynamics of the main fish species of commercial interest feeding on forage species (i.e. northern shrimp) | | | | | | | | |
| **5.2 Amount of requested funding** - Enter total funding requested for the project [last cell of section 11.4] | | | | | | | | | $213,600 | |
| **5.3 Duration of requested funding** - Enter 1, 2, or 3 years | | | | | | | | | 3 | |
| **5.4** If the project will take longer than 3 years, specify the expected total duration (if applicable) | | | | | | | | |  | |
| **5.5 Principal Investigator (PI)** | | Name: Manon Cassista-Da Ros  Email: Manon.cassista-DaRos@dfo-mpo.gc.ca | | | **Lead Region:** | **Maritimes** | | | | |
| **5.6 Co-PI:**  (if applicable) | | Name:  Email: | | | **Co-PI Region:**  (if applicable) |  | | | | |
| **6. Research team** (list all key collaborators/partners, provide % of identified FTE time going towards project)**:** | | | | | | | | | | |
| **Name** | | **Role in the project**  (estimated % FTE time, and key expertise) | | | **Region**  (enter ‘external’ if not from DFO) | If partner / collaborator is external, identify the institution: | | | | |
| Manon Cassista-Da Ros | | Project Lead; 25% FTE, prey-predator dynamics and stock assessment | | | DFO-MAR |  | | | | |
| Jessica Cosham | | Project support; 20% FTE, spatial analysis | | | DFO-MAR |  | | | | |
| Carissa Wilson EG-03, term extension | | Project support; 100% FTE, diet and meta-analyses | | | DFO-MAR |  | | | | |
| Allan Debertin | | Collaborator; Time: 1% Yr1, 3% Yr2, 5% Yr3; expertise: Atlantic Herring fishery | | | DFO-MAR |  | | | | |
| Monica Finley | | Collaborator; Time: 1% Yr1, 3% Yr2, 5% Yr3; expertise: Haddock fishery | | | DFO-MAR |  | | | | |
| Yanjun Wang | | Collaborator; Time: 1% Yr1, 3% Yr2, 5% Yr3; expertise: Groundfish research scientist | | | DFO-MAR |  | | | | |
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| **7. Client Engagement** – Identify the client colleague with whom you are discussing this proposal (Name and client sector, region) and briefly explain discussions had to date (number of conversations, nature of discussion [ex/ agreement on deliverables, clarification of research question, etc.]) **(100 words max).** | | | | | | | | | | |
| **Client Name(s) and client sector** | | Suzuette Soomai (DFO-RM)  Penney Doherty (DFO-RM)  Jeffrey Reader (DFO-RM) | | | **Region** | **Maritimes** | | | | |
| **Brief explanation of discussions:** Discussions of interest in and use of predator-prey dynamics products with RMs associated with collaborative assessment leads were enthusiastically received. There is much interest in this project since this has been an identified knowledge gap for all involved. The herring and groundfish leads will be collaborating on this project as noted above. Since northern shrimp is an important part of the marine food chain, we anticipate interest from other groups whose stock species predate on shrimp. | | | | | | | | | | |
| **8. Project Summary** – Clearly (i) describe how the project specifically addresses the priority; (ii) List the primary objective(s) of the project; and (iii) outline the methods to be applied to achieve those objectives **(300 words max).** | | | | | | | | | | |
| **Summary Description:**   1. Food habits data has been collected annually from the Summer Research Vessel Ecosystem Survey (SRVES) since the late 1990s. With limited departmental resources, the data had become uninformative without updates to its time-series. In the last few years, a relational database was developed, the existing data was validated, and more importantly, new data is now available with the processing of accumulated samples. Predator-prey dynamics play a vital role in understanding the ecosystem dynamics of our commercial fisheries, and directly address the research priority (FS-22-05) of investigating these dynamics to provide substantial insight into multi-species stock assessments and science advice. An analysis of spatio-temporal changes in predator-prey dynamics will also inform on a long-standing knowledge gap in our region. 2. The primary objectives are to: **1)** Complete processing of SRVES samples, **2)** Establish a spatio-temporal predator-prey relationship for various groundfish species, **3)** Incorporate environmental variables to further inform on the predator-prey relationships, **4)** Create a technical report summarizing diet analyses among species across the Scotian Shelf bioregion, **5)** Include this information in groundfish and forage species stock assessments to contribute to environmentally-conditioned science advice, and incorporate in productivity processes to compare against results of existing assessments, **6)**  Incorporate yearly consumption variation of northern shrimp as a productivity index for the Eastern Scotian Shelf northern shrimp assessment. 3. The methods to achieve these objectives include **1)** Dissect stomach samples for analysis, **2)** Developand validate a methodology to derive key predator-prey relationships from the SRVES data, **3)** Generate a time-series, including a consumption index of important forage species of different commercially important stocks, **4)** Perform spatial analyses of diet information relative to environmental variables (i.e. temperature and depth) across the Scotian Shelf bioregion, **5)** Update predator species cumulative curves to ensure sampling strategies are adequate to report on future predator-prey dynamics. | | | | | | | | | | |
| **9. Deliverables / Project Outputs –** Clearly (i) describe the expected deliverables (be sure to include the mandatory ***final report*** on the results/outcomes for clients); and (ii) explain their relevance/usefulness to clients **(250 words max).** | | | | | | | | | | |
| **(i) The expected deliverables** are a technical report on predator-prey dynamics including data products that can be incorporated into stock assessments. A primary paper reporting on trends in consumption of northern shrimp by specific predator species, and a spatio-temporal predator distribution with the inclusion of environmental factors. Depending on the breadth of the results a second paper may be a possibility.  **(ii) The final deliverables will be useful to the clients** as sources of information for their decision processes; depending on what predator-prey relationships are observed, it may be of interest to include shrimp stock health as a species in different assessments (e.g. where shrimp stock health may directly impact another commercially important species). Indices informing predator-prey dynamics will be made available to our clients for a variety of commercially important fisheries. We will also prepare a final technical report for the specific interests of our clients. | | | | | | | | | | |
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| **10. Data Management Plan** – Identify the SDM-SC data manager for your region and the expected data steward for the life of the project and afterward | | | | | | | | | | |
| **10.1 SDM-SC data manager in your region:** | | | | Mike McMahon | | | | | | |
| **10.2 Data Steward for the project:** | | | | Manon Cassista-Da Ros | | | | | | |
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| **11. Budget** – Outline funding requested from the CSRF for the applicable years. Use the ‘Budget Spreadsheet’ template on the CSRF website to assist with these calculations. *\*\*****Round to the nearest dollar.*** | | | | | | | | | | |
| **11.1 Salary requested** | **Year 1** | | **Year 2** | | **Year 3** | | | **Salary Total** | | |
|  | $65,500 | | $68,000 | | $71,000 | | | $204,500 | | |
| **Outline salary costs**  Briefly identify what salary funding will be used for | | | | | | | | | | |
| Year 1   * FTE EG-03 salary (step 2) | | | | | | | | | | |
| Year 2   * FTE EG-03 salary (step 3) | | | | | | | | | | |
| Year 3   * FTE EG-03 salary (step 4) | | | | | | | | | | |
| **11.2 O&M requested** | **Year 1** | | **Year 2** | | **Year 3** | | | **O&M Total** | | |
|  | $ 3,000 | | $1,000 | | $5,100 | | | $9,100 | | |
| **Outline O&M costs**  Briefly identify what O&M funding will be used for. Ex./ contract(s), equipment, publishing, etc. | | | | | | | | | | |
| Year 1   * Single user licence for Surfer software 1.5K * Lab consumables 1.5K | | | | | | | | | | |
| Year 2   * Lab consumables 1.0K | | | | | | | | | | |
| Year 3   * Publication submission and publishing fees (if necessary) est. $5.0 K * Poster printing fees (if necessary) est. $100.00 | | | | | | | | | | |
| **11.4 Total Funding Requested –** Sum of Salary and O&M Totals | | | | | | | | $213,600 | | |
| **11.5 Other sources of funding** - Identify possible other sources of funding (program or institution), type (cash/in kind) and amount of additional funding/support you would need (if applicable). | | | | | | | | | | |
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| **Total amount from other funding sources:** | | | | | | | |  | | |
| **Definitions:**  Cash contribution: Funding received by accountable project manager to finance the activity. The funding can come from within DFO or may be transferred from external partners.  In-kind contribution: A contribution of goods/supplies, services, and/or time (from external collaborators) that does not involve the transfer of money. | | | | | | | | | | |
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