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**NRAC FULL PROPOSAL REVIEW FORM**

Project Code/Title: 12-Byron: Quantification and Communication of Ecosystem Services of Low Trophic Level Farms

Date Due:  **Dec. 9, 2022**

Please provide the information requested below. Length and detail of responses may vary according to the nature of the proposal. We value your honest appraisal and the format allows you to be as expansive as you deem necessary (feel free to use a separate sheet if necessary). Your comments and scoring will be shared with the principal investigator but with complete anonymity.

1. **Science, Technology, and/or Extension Program Design (technical merit of all aspects of the project, 30%):** Does this proposal use top quality science and/or technology, or demonstrate extension scholarship? Is (are) the PI(s) familiar with relevant previous and contemporary investigations? Are the objectives and hypotheses explicit and clear? Is the experimental plan clear and the statistical design appropriate? Is the methodology described in the plan appropriate to meet the objectives for a research or extension project? Will this work advance understanding of the science and the contemporary problems that the industry faces? If this is an Extension-demonstration or education project do the PI(s) provide an adequate plan to evaluate the success of the effort? Are the proper metrics provided? Can the PI(s) properly assess the short-term, medium-term, long-term outcomes projected?

*Comments:*

The team proposes to use video of habitat use by mobile species to quantify the ecosystem service of habitat provisioning on both hard clam farms in NJ and mussel farms in ME (with appropriate off-farm references). This is based on prior successful video work on oyster farms. The team argues that this study will increase public acceptance of shellfish aquaculture (here clams and mussels) which helps with marketing and social license (combatting NIMBYism).

The objectives and hypothesis are clear. As noted, the hypothesis is that “[s]hellfish farms provide enhanced habitat and support higher biodiversity than nearby non-farm sites.”

As proposed, I have two concerns. First, the stated outcomes of this project are premised on the idea that consumers and/or opponents of aquaculture will change their behaviors when presented with the results of studies such as this. A study in review (Bolduc et al.) is the only supporting documentation for this statement (and that, based on the title, is about seaweed farming and only consumers). Therefore the stated benefits that would come from this work are uncertain, in my opinion. I would agree that it generally helps the image of shellfish farming to see lots of use by other organisms around these farms and I think it’s a great idea – I just don’t know that it will get the outcomes that the team indicates will come from this.

Second, the ecosystem service is typically described as habitat provisioning. A critic of this work (such as an opponent of aquaculture at a public meeting) might readily point out that the work, as proposed, quantifies use but not the actual provisioning of habitat. Rather, a critic might suggest that these shellfish farms are serving as fish attractants. Personally, I suspect that these are improving habitat but, as written, I am not convinced that the data will win over critics.

It's odd that the team did not explicitly point out (page 31) that the clams farmed in Maine are not the same species that are farmed in NJ (at least predominantly). They did note the differences in how clam harvesting/aquaculture is perceived in Maine but did not mention that Maine is working with soft shell clams, *Mya arenaria*, while NJ is working with hard clams, *Mercenaria mercenaria*.

*Rating: Maximum score = 30*

Excellent (numerical value = 30) \_\_\_\_\_\_\_

Very Good (numerical value = 27) \_\_\_\_\_\_\_

Good (numerical value = 24) \_\_\_X\_\_\_\_

Fair (numerical value = 21) \_\_\_\_\_\_\_

Poor (numerical value = 18) \_\_\_\_\_\_\_

1. **Industry Relevance and Probability of Success (30%):** Are the benefits and potential impacts related to industry utility such as increased farm-gate value or grower profitability? Will the project likely provide usable results that can be adopted by the industry in a timely manner? Alternatively, if it is a development effort toward a new technology, will this project’s results increase the team’s capacity to compete for external funds to support the next iteration of research and outreach needed to take the results to application? Will this project create an opportunity for information to be turned over to the industry for refinement and adoption that will eventually become self-sustaining?

*Comments:*

As noted above, the project is likely to be successful in collection of the data and generation of videos of habitat usage on and in shellfish farms. It is less clear, however, that these data will yield the stated benefits and potential impacts to the industry (such as increased farm-gate or grower profitability). Generally, I suspect that this work is valuable for the overall industry image and would expect that growers’ associations would utilize the products and results of this work in a general promotion of the industry.

*Rating: Maximum score = 30*

Excellent (numerical value = 30) \_\_\_\_\_\_\_

Very Good (numerical value = 27) \_\_\_\_\_\_\_

Good (numerical value = 24) \_\_\_X\_\_\_

Fair (numerical value = 21) \_\_\_\_\_\_\_

Poor (numerical value = 18) \_\_\_\_\_\_\_

1. **Integration with Extension (20%):** Does this work identify the key stakeholders? Stakeholders include those individuals (industries and agencies) not directly involved in the project. Is the extension plan appropriately designed to reach the targeted stakeholders? How will the results of this work address the needs of key stakeholders? Will this project extend our knowledge to all stakeholders? Are the expected outputs, outcomes, and impacts clearly described? Is the budget appropriate for effective integration?

*Comments:*

The work identifies a range of users and will deliver the results to the industry through a variety of outlets. These stakeholders could then use these results and video in their own promotion efforts, as a way to empower these efforts. This work might benefit from engaging eNGOs that are open to aquaculture as they might find a broader audience to share this work with.

*Rating: Maximum score = 20*

Excellent (numerical value = 20) \_\_\_\_\_\_\_

Very Good (numerical value = 18) \_\_\_17\_\_\_

Good (numerical value = 16) \_\_\_\_\_\_\_

Fair (numerical value = 14) \_\_\_\_\_\_\_

Poor (numerical value = 12) \_\_\_\_\_\_\_

**4. Capacity (10%):** Is (are) the principal investigator(s) and specified members of the research (extension) team qualified to conduct the research (program)? Is there industry representation as part of the team? Have the investigators clearly articulated they have adequate facilities and equipment to complete the project. Is the overall budget appropriate given the scope of the project? Is there a reasonable chance the project will be completed on-time?

*Comments:*

This is a highly capable team with the ability to succeed in the proposed work. The team has adequate facilities and equipment for this project. Budget is appropriate.

*Rating: Maximum score = 10*

Excellent (numerical value = 10) \_\_\_\_X\_\_\_

Very Good (numerical value = 9) \_\_\_\_\_\_\_

Good (numerical value = 8) \_\_\_\_\_\_\_

Fair (numerical value = 7) \_\_\_\_\_\_\_

Poor (numerical value = 6) \_\_\_\_\_\_\_

**5. Accountability (10%):** Does the investigator and her/his team have a successful track record of previous NRAC funding being adopted by the industry? Have they leveraged NRAC funding for additional resources to solve bigger problems that can be funded by NRAC alone? Is there evidence that the investigator(s) has (have) an established record indicating a high probability of success on the proposed work? Does the PI(s) have an established record of completing projects on-time meeting the objectives laid out in previous projects? Can this project integrate or be leveraged with funding from other work of the investigator(s)? Does the investigator(s) have a track record that suggests this project will be a good investment for NRAC resources?

*Comments:*

The team is accountable and productive. Work is still underway on other related projects by one co-PI so products are not available yet.

*Rating: Maximum score = 10*

Excellent (numerical value = 10) \_\_X\_\_\_\_

Very Good (numerical value = 9) \_\_\_\_\_\_\_

Good (numerical value = 8) \_\_\_\_\_\_\_

Fair (numerical value = 7) \_\_\_\_\_\_\_

Poor (numerical value = 6) \_\_\_\_\_\_\_

Non-Applicable – First Time Applicant \_\_\_\_\_\_\_

**6*.* Total score: \_\_85\_\_\_**

**Rating Excellent \_\_\_\_\_\_**

**Very Good \_\_\_\_\_\_**

**Good \_\_X\_\_\_**

**Fair \_\_\_\_\_\_**

**Poor \_\_\_\_\_\_**

**Final Recommendation: Must fund \_\_\_\_\_\_\_\_**

**Fund if resources are available \_\_\_X\_\_\_\_**

**Encourage Resubmission next year \_\_\_\_\_\_\_\_**

**Do Not Fund \_\_\_\_\_\_\_\_**

**7. Strengths:** What are the major strengths of this proposal? If you provided a rating of excellent for any of the categories above but did not comment, would you please share why you rated a particular category as “excellent”?

This work will produce video that has a ‘wow’ factor and could be an impressive tool to convey how ‘healthy’ and ‘sustainable’ shellfish farms are.

**8. Weaknesses:** Identify the weaknesses of this proposal. Are there any flaws (design, methodological, etc.) that might seriously compromise the scientific integrity, value and/or validity of the work? If you rated an evaluation area as fair or poor, how might that area of the proposal be improved?

As noted above, as written, it is not clear that these results will lead to outcomes that change behaviors (per the logic model approach). This project also has a high cost to potential benefit ratio.

There are several typos in the proposal which would have benefitted from an additional reading. This did not affect my evaluation but could affect how other reviewers read this or other proposals. For example:

“…quantify fish and invertebrate use of hard clam farm sin NJ.” On page 22

‘Paridocally’ on page 32