

Response to ISRP on Project

ID: 35004

Harvest Model Development

Sponsor: UW

Response Needed? No, Not Fundable (but response welcome)

ISRP Preliminary Comments:

Not Fundable but see comments and respond if appropriate. This proposal caused some confusion among ISRP review team. The PI began his presentation by stating, “do not fund this proposal”, because apparently the managers (the Chinook Technical Committee - CTC) who would use the products of this proposal aren’t ready for the proposal; consequently, the proposal won’t be effective. However, on paper, the proposal looks generally acceptable and the development of new models to reflect new management needs for selective fisheries as expressed in the BiOp RPAs appears to be a reasonable need. The proposal makes an effective argument for the benefit of models that will provide managers with information they need to minimize catch of protected stocks. The proposal explains how existing data will be used to model the new questions about harvest management. The description of steps to model reconfiguration is adequate.

RESPONSE

From my tangential involvement in building harvest models for a decade I believe that coordinating harvest management across species, regions, and governments is a massive and difficult undertaking. I also believe that it will be difficult for harvest managers and technicians to develop such an integrated tool in addition to fulfilling their ongoing year-to-year harvest management responsibilities. My experience also suggests that independent contractors, working without assistance, will not be successful in developing a model suitable for harvest managers. I wholly agree with the ISRP’s comment to “fund one model if it is possible for involved organizations to work together with cohesive effort.” I would add that the cohesive efforts should consist of a small team: two or three members from the harvest technical committees assisted by one or two professional programmers. The team should be released from their other duties and allowed at least a full year to develop the model. Finally, I would add that the COAST model is a good starting point from which to develop the “one model.”

The ISRP review raised several issues:

1. The rationale for producing two basically similar (but not identical) models seems to be based on whether one organization has the technical ability to deal with the C++ model code.

My experience is that harvest managers are reticent to learn new languages and my specific understanding was that the CTC was not willing to learn C++.

This calls into question whether harvest managers are either duplicating each others work, or running different models and computing different harvest scenarios that later create conflict over management decisions.

Managers have several models: FRAM, the Quick Basic CTC model, the COAST model, and now Visual Basic CTC model to name a few. I also understand Alaska has its own version. The models used for ocean harvest are separate from the models used for

terminal harvest. On top of all these different models, harvest managers tinker with the code during their workshops.

How did the issue of two models develop and what model specifications have been used in developing this proposal?

My proposal to develop two models was in response to the strong signal that the CTC will not accept a C++ model. Period. I used information in a CTC memo as a basis for the specifications of the proposed models. Basically, I had hoped to simplify the COAST model to the point where it would be useable and understandable by the CTC but if that was unacceptable, we would have attempted to meet some of their needs in a Visual Basis model realizing it would not be extensible.

2. We have been informed that the task of re-coding the CTC model has already been assigned to two CTC committee members

Yes, the CTC did assign two members to re-coding the model.

and advancements in the capabilities of the model are being addressed through a separate contract.

I am unaware of any separate contract to advance the model

Who requested the CTC work?

I do not know who requested the CTC work.

and have you the support of that committee to submit this request?

I was not able to obtain the CTC's support for the proposal. That was a primary reason for my statement to not fund my proposal.

3. The needs of the BiOp model were not described in the proposal but ISRP understanding is that they are very similar to the CTC model and that NMFS has proceeded with an RFP for this work. Is this proposal in response to a request from NMFS and if so, why has it been submitted to the Council?

The BiOp and the CTC have similar needs but there are differences. Whether or not the CTC, with its diverse membership and perspective, will address the needs of the BiOp remains to be seen. I suspect that they are more interested in harvesting fish than recovering endangered species.

I heard that NMFS had an RFP for model development, but I have not seen an official announcement. Again, my proposal was not in response to a NMFS RFP. It was submitted to the Council because it addresses a specific RPA.

4. The point is made about accessibility of the code: why do managers need to understand the code? Please explain why option 2 is not selected: models developed in a simplified C++ format and harvest managers learn to use C++? Why shouldn't harvest organizations be fluent in the tools of harvest management? The CTC is not a committee of managers but rather technical experts from each management agency associated with the Pacific Salmon Treaty. The issue of coding languages has been a trade-off in the committee since

the committee frequently must modify code at meetings to complete an assessment and cannot have 3rd party software or advanced languages that CTC staff is not fully proficient in. Further, transparency of the model and the ability for others to use is an important consideration when agencies coastwide use one model for assessment of important harvest management decisions.

As you point out, managers need to understand code so they can modify it at meetings and have a confidence in what the model does. The ESSA version of the COAST model was insufficient because of the reliance on 3rd party software. Clearly the model must be simple to install and operate. Part of our effort would be devoted to simplifying the code into a single framework. The CTC believes it can meet these needs with its own members programming in Visual Basic. The programmers I work with disagree. They believe, and I have no reason to doubt them, that Visual Basic code will become unmanageable. While the upfront cost of object-oriented code is larger, down the line the code will be more robust, easier to maintain, and less prone to errors than a Visual Basic code.

5. Problems developing harvest model: The main question relates to the availability of data on by-catch and incidental mortalities resulting from that by-catch. What data exist on gear selectivity, incidental catch, and incidental catch mortality?

Certainty, availability of data limits the value of a complex model and one of our goals was to simplify the COAST model to better match the level of data. This is a relatively easy task in the C++ code. However, a complex model has value as a tool to explore what can be gained from more and different types of data. In an ideal world, the model would be structured so the model could be made more complex to explore potential scenarios and future data needs and then simplified and calibrated for management decisions. In an object-oriented code structure simple and complex forms of the model would share many objects, as well auxiliary services such as input and output objects and a database. In Visual Basic, it is probably best to make the model as simple as possible.

Concerning your specific question as to gear selectivity, incidental catch and incidental catch mortality; I do not know what exists. That was exactly why the modeling team must include a harvest fisheries biologist as well as a programmer.

Summary

The proposal is reasonably clear in its goals but it implies some conflict in the modeling/harvest management community on how to proceed. It appears that the level of effort and hence cost may be doubled due differences in preferences for coding languages. Further, the ISRP is uncertain of the necessity for this proposal since the CTC is proceeding with modifications of their model and the basis of the request for a BiOp model is not presented. The ISRP has no intention of generating a potential problem of alternative models and should not consider this proposal unless the proponent can clearly demonstrate support of the user community for this proposal and the ability to develop one model for useful in the Basin for assessment of harvest alternatives as an effective recovery tool. Further, the proposal does not comment adequately if the data is available to support the developments suggested.

Finally, a programmatic note: some connection to enforcement goals of the region should be coordinated with harvest management tools. Previous M&E (Peters et al, 1997) have shown enforcement is most effective when harvest rules are simple and easy to enforce. Suggest funding one model if it is possible for involved organizations to work together with cohesive effort.