Independent Economic Analysis Board Meeting Notes

May 31, 2013

Members Present	Members Absent	Guests
Roger Mann		Tony Grover
Bill Jaeger		Jim Ruff
Noelwah Netusil		
JunJie Wu		
Dan Huppert		

1. ***Greetings and Introductions***.

Chair Roger Mann welcomed everyone to today's meeting of the Independent Economic Analysis Board, held May 31, 2013. This was a face-to-face meeting. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Tony Grover at 503-222-5161.

Mann led a review of today's agenda. The minutes from the IEAB's March 7 meeting were amended and approved.

2. ***Discussion of Fish Tagging Economics Report.*** .

Mann said the goal today is to decide how to finalize the draft Fish Tagging Economics report. This is by far the most complex project the IEAB has ever undertaken, he said, but there are a few things I would like to be able accomplish with this report. The first thing is to make sure we provide as many useful insights as we can for the Council. The second is to be sure that whatever conclusions we draw are robustly supported by the evidence.

Grover said that, prior to today's meeting, he had emailed out the Fish Tagging Forum's final recommendations to the Fish & Wildlife Committee. The report includes a bar chart of 117 key management questions showing which tagging technologies supported those management questions. The bottom line is that the current tagging program does match up well with the Council's management priorities. The use of coded wire tags was the only question on which the FTF was unable to reach consensus – instead, they offered a series of four alternatives, Grover said.

The question, of course, is, what's the fair share for BPA to contribute to the tagging program, said Ruff. There is concern, on Bonneville's part, that many of the coded-wire tagging programs currently being implemented constitute an in-lieu use of BPA funds, which, if true, would not be allowed under the NW Power Act. The four proposed alternatives for the coded-wire-tag program range from cutting CWT funding in part to increased funding for coded-wire tags in an effort to boost the percentage of tagged fish

recovered, Grover noted. He added that he has had several conversations with Council members, all of whom have expressed significant interest in the IEAB's report on this topic. Some are talking about carrying this approach forward as a decision-making tool in the future, he said.

The group devoted a few minutes of discussion to recovery rates, especially for coded-wire tags. In 2011, they released 30 million coded-wire-tagged fish in the Columbia Basin, and recovered just over 9,000 of those fish, so it was never clear what the FTF mean by a 20 percent recovery rate, Grover and Ruff said the subject matter experts in the Fish Tagging Forum were not clear – 20 percent of the population? The tagged fish? In either case, they're nowhere near recovering 20 percent of the tagged fish.

It sounds as though there may be an opportunity to save some money based on the fair share argument, Mann observed. The argument made by BPA and the BPA customer group was that it has never been legal for Bonneville ratepayers to contribute funding to support the Mitchell Act hatcheries, which is where a lot of the coded-wire tags are used, Grover observed. The key question, to me, is how do we validate the model we've used for this report? Wu asked. To make it really useful, we have to be able to convince people that this is a valid tool. In response to a question, Huppert made the point that the purpose of the Fish Tagging Economics report is to extract maximum value from available funding, not to minimize cost.

Wu asked Jaeger to provide an overview of the model structure and its objective function and constants. The group discussed how best to present the model to the Council, including areas where more information is needed. It's important not to undersell it, but we also need to be honest about areas of weakness, Huppert said. And a couple of paragraphs describing how the model was validated will add significant value to the tool, Wu said.

Jaeger noted that much of the model structure is laid out in the appendix of the report. We looked at incremental cost as the driver for the optimization of the tool, Jaeger said; we talk about the information that was available, detection requirements, constraints. In terms of validation, in other contexts, if you're looking at a model that maximizes profit for, say, and area of land, you can validate it against what we observe in the real world, said Jaeger – this is a little different. We know how much is spent on tagging – we have per-tag costs for various technologies, Wu said. The management question, then, is which technologies allow us to achieve our management goals at the lowest cost? We don't know how decisions were made in the past, but we can look at what happened in the past, and we can plug those numbers into the model. We have data available on the number of fish tagged, by technology, and the number of tags recovered each year. That allows us to at least characterize the costs correctly, in the model, Jaeger said. Basically we want to be able to show that the model was set up correctly, and the data was entered correctly – it's a complex model, Wu said.

In response to a question, Jaeger said that the cost information he used in the model came from multiple sources – there is no single source for the kinds of cost information

this model needs. He added that the only direct comparison he was able to do in the model, in terms of cost effectiveness, was the question of coded wire tags vs. genetics in harvest.

Ruff suggested that, in the conclusions section of the report, if there was a way to expand this a little more, and talk about how this model can be used as a decision support tool in the future, that would be very useful. One question you can expect from the full Council is, is there some way the model can help us understand the deployment of PIT tags, because we understand there are inefficiencies in that program, Grover said. There is a wide variation in marginal costs in different locations, that may or may not be justified, Jaeger replied. The question, from a management perspective, is, are these detections in this one area worth ten times the cost of detections in another area? Jaeger observed.

One of the difficulties of the model is that I'm trying to base the populations in a subbasin on data, Jaeger said – in some cases the model would crash because there weren't enough detections, or a large enough population in a given subbasin to tag enough fish to satisfy the 100-fish detection minimum. It's a fascinating management question, because in some populations, you would have to tag, and handle, every single fish in order to obtain the required number of detections, and NMFS would never allow that, Grover said.

The bottom line is that the question of validation – what we can do vs. what's appropriate – is still up in the air, Mann said. The real question is, how much confidence can we put in the numbers generated by the model? said Wu. The model at least gives us marginal costs for various technologies and populations, which is valuable, Jaeger replied. It also gives us a sense of how the model can benefit management decision-making through further refinement in the future.

Netusil observed that the point of this analysis wasn't how much money can be saved – it was, which technology or combination of technologies can meet key management needs at the lowest cost.

The discussion then returned to detection rates. Ruff noted that there are two ways to boost detections – you can either tag more fish, or you can improve detection rates by installing more or better detectors. And that's the kind of sensitivity analysis this model can do – we can look at what happens if we increase detection efficiency at, say, Bonneville, by 20 percent. And that would be extremely useful, Ruff said.

Jaeger demonstrated a spreadsheet of optimal tagging solutions by tagging technology that he had developed in support of his model. He noted that recovery costs stay the same, even as tagging numbers change. He noted that while the spreadsheet is valuable because it provides some sensitivity analysis, introducing factors such as doubling recovery costs or increasing the percentage of non-target fish makes it less realistic than the model.

The group devoted the remainder of this agenda item to a page-by-page review of the draft Fish Tagging Economics report, offering a variety of comments, questions and clarifying remarks. Among the highlights:

- In response to a question from Netusil, Jaeger said M (the number of fish marked) is not defined
- The fact that tagging costs for many technologies are non-linear.
- Netusil suggested that Jaeger add a standard disclaimer to the effect that any errors or omissions of fact are inadvertent and solely the responsibility of the IEAB.
- With respect to the first bullet point, on CWT and genetics, Mann suggested that this bullet be moved farther down the list.
- The group devoted an extensive discussion to the data used to develop he model, discussing many aspects of its validity and provenance.
- Wu characterized the model as "exploratory," potentially useful now but capable of much more useful analysis in the future, with additional work and sensitivity analysis.
- One thing hampering the analysis is the fact that it has been impossible, to date, to get fish managers to prioritize their list of 117 management criteria.
- It was agreed to add three or four sentences to the conclusion, discussing potential future refinements and uses for the model.

Ultimately, Mann said he will work with Jaeger to fine-tune the Fish Tagging Economics report, Grover thanked Jaeger for his hard work, noting that, in his opinion, the report is exceptionally good work.

3. Discussion of Invasive Mussels Update Task

Mann said he had received comments on the draft report from Netusil and Wu, to date. The presentation of the 2010 IEAB report findings was very well-received at both the American Fisheries Society-Western Division meeting in Boise, Idaho and at the Council, PNWER and PMFMC's jointly sponsored workshop on quagga mussel prevention, said Ruff. The main response I got for both groups was that it would be very helpful if the cost estimates could be refined in the updated report, said Ruff. He noted that he has been sharing as many science papers as he can on this topic with Mann, and noted that this issue is very high on the list of priorities for both Montana Council members and the new Montana governor. It would also be helpful if the updated report could include water quality information of western Montana waters, Ruff said – thanks to the USGS, we now have the water quality data to fill that hole, but the bad news is that the waters in western Montana are very high in calcium.

Also, Portland State University researchers are just completing a study, funded by BPA, testing mussel growth in water taken from both the Columbia and the Willamette, Ruff continued. They found that mussels can indeed grow in the samples of lower Columbia River water, but the Willamette River water sample likely provides marginal habitat – the mussels can survive in it but aren't flourishing.

Since the original IEAB report, all four states have stepped up their boat inspection programs, adding more stations and lengthening their inspection periods, Ruff said. Every year we keep the mussels out is a year we save money, he added. In response to a question from Mann, Ruff said the Council is very interested in the updated report. Mann said he isn't sure how much there is to add to the draft update he has already produced. Ruff said he will review it closely and provide comments, and suggested the names of two biologists who could be asked to review the scientific conclusions in the report. We will incorporate your comments and redistribute the draft update, Mann said.

Netusil asked whether there is any additional economic information available about the potential impacts of a mussel invasion. Ruff noted that there is detailed information on what the Bureau of Reclamation and various municipal water districts are having to spend on chlorination and other measures to fight invasive mussels in Southern California and the Great Lakes. Beyond that, the group was unaware of any new vulnerability assessments or economic studies. The group devoted a few minutes of discussion to additional information that could be included in the update, noting that it will be very difficult to quantify the monetary damage to the ecosystem if mussels become established here. We're spending a billion dollars a year on salmon restoration, one participant noted; if the mussels become established, the effectiveness of that spending will be greatly diminished.

It was decided that Mann will attempt to finalize his update by the end of July, in time for presentation at the August Council meeting. Netusil said she is willing to help him with the literature review portion of the task. Ruff said he will provide Mann with cost information for the other areas of which he is aware, as well as a careful review of the draft report.

4. ***Future Meetings and Other Items***.

The next meeting of the Independent Economics Analysis Board was set for September 3, 2013. Meeting summary prepared by Jeff Kuechle, NWPPC contractor.

These minutes are an accurate and complete summary of the matters discussed and conclusions reached at the Independent Economic Analysis Board meeting held on May 31, 2013.

Certified by:_____
Roger Mann, Chair

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