Priest Rapids Fish Forum

Wednesday, August 5, 2015
Grant PUD Wenatchee Office

PRFF Representatives

Stephen Lewis, USFWS
Bob Rose, YN
Doris Squeochs, Wanapum
Jason McLellan, CCT
Mike Clement, GCPUD
Orlene Hahn, GCPUD
Patrick Verhey, Chad Jackson, WDFW
Pat McGuire, WDOE
Aaron Jackson, Carl Merkle, CTUIR
Keith Hatch, BIA
Chris Mott, GCPUD
Tracy Hillman, Facilitator

Attendees

Patrick Verhey, WDFW
RD Nelle, USFWS
Chris Mott, Grant PUD
Mike Clement, Grant PUD
Doris Squeochs, Wanapum
Tracy Hillman, Facilitator
Pat McGuire, WDOE
Jason McLellan, CCT (Via phone)
Aaron Jackson, CTUIR (Via phone)
Chad Jackson, WDFW (Via phone)
Bob Rose, YN (Via phone)
Orlene Hahn, Grant PUD

Action Items:

1. Tracy Hillman will speak with Villy Christensen about estimation of carrying capacity using stage-structured models.
2. Tracy Hillman will prepare an agenda for the White Sturgeon Subgroup regarding sturgeon monitoring.
3. Chris Mott and Mike Clement will check with Grant PUD procurement to determine if Grant PUD can offer invited experts a stipend for travel, meals, and lodging for the White Sturgeon Workshop in October.

Meeting Minutes

I. Welcome and Introductions

II. Agenda Review – The agenda was reviewed and approved. No additions were made to the agenda.

A. Meeting Minute approval – July 1, 2015 – Reviewed and approved.

B. Review Action Items from July meeting.

1. Tracy Hillman will share the Forums' questions on the use of the Ecopath with Ecosim model with Steve McAdam and Villy Christensen. Complete. Tracy will also set up a date for a conference call with Steve and Villy. Complete

2. Tracy Hillman will share the themes (overarching questions) for the white sturgeon workshop with the policy representatives, and ask them for their feedback and specific questions to help guide the workshop. Complete. He will also ask them to identify which date for the workshop works best for them (2 Sept or 7 Oct). Complete

3. Tracy Hillman will contact each of the outside experts identified by the Forums and see if they can participate in the white sturgeon workshop. Ongoing

4. PRFF voting members will continue to seek responses from their policy representatives on the four policy-level questions from the Pacific Lamprey Subgroup. Ongoing

5. Tracy Hillman will send Pacific Lamprey Subgroup members a doodle poll to identify meeting dates over the next three months. Complete

III. Update on White Sturgeon Management Plan (WSMP)

Update on Juvenile Rearing (Mott and Miller) – Chris Mott reported that last week Grant PUD delivered 115 larvae to Wells Hatchery. These fish were from embryos collected below Rock Island Dam and incubated *in situ* within the Columbia River.

Following the meeting, Donella Miller provided an email describing the status of juvenile sturgeon rearing at Marion Drain. She noted that all is well and that they have ponded fish from the incubation room to the 10-ft tanks. The sturgeon are about three inches long and still too small to measure their weight accurately. This is consistent with past years.

A. Phase 2 Sturgeon Conservation Program (Ecopath/Ecosim) (Mott and Hillman) – Tracy Hillman stated that some members of the PRFF and RRFF had a conference call with Villy Christensen and Steve McAdam on 21 July to discuss the possibility of using the Ecopath with Ecosim model to estimate sturgeon carrying capacity within the project areas. Members discussed the questions they identified for Villy and Steve. Below is a summary of responses from Steve and Villy to the Forum's questions.

Has the Ecopath with Ecosim (EwE) model ever been used to estimate fish carrying capacity?

They are asking similar questions in the Fraser and Upper Columbia. The Forums are further along than they are. They are finding that survival is better than expected. A wrinkle for the Forum's is Pacific lamprey and their interactions with sturgeon.

Carrying capacity can be estimated, but it cannot be calculated using a bottom up approach. Estimation of carrying capacity requires good information on organization of food webs. That is, we need information on prey populations with contrast (variability). Prey data should be in the form of g/m^2. The model looks for signals in the prey data. One strategy is to focus only on sturgeon and how they function (use a bioenergetics model). The other is to understand the ecosystem. That is, how do the ecosystems function and what role do sturgeon play in the ecosystems (EwE model)?

Another approach is to compile information on age structure and numbers per age group. In this case, one can use an age-structured model. However, aging older fish is difficult given the current M&E program. We need to break the population into stanzas or stages (age or life-stage groups). For example, subyearlings, juveniles (to 100 cm), sub-adults (100-150 cm), and adults (>150 cm). We then need to understand survival rates and consumption rates for each stanza. General recruitment patterns would also be needed. For each stanza, we need to identify what they eat. We have some of this information.

Growth rates are needed for larger, older fish. Diets of older fish are lacking and will be difficult to get in the project areas.

It may be possible to do a comparative approach, using information from the upper and lower Columbia River. For example, one could compare size structure to historical data or information from other areas. It is important to understand not only intraspecific effects of stocking, but interspecific effects also. That is, the stocking of 6,500 juvenile sturgeon per year may not only affect sturgeon, but other species as well. Thus, an ecosystem approach is appropriate.

Steve McAdam agreed that the current stocking level is too high in the project areas. However, he does not know what the level should be. He and Jason summarized what factors were considered in reducing stocking levels in the upper Columbia (transboundary area). Initially, the goal was to get sturgeon into the system. They then adjusted stocking levels based on genetic concerns, ecosystem concerns, and survival rates. They have about 30,000 sturgeon in the system and these fish are surviving well. Post release survival is estimated at just under 30%, survival to age-5 and 6 is about 80%, and survival to adult is over 90%. Given these survival rates, the number of fish in the system, and a target abundance, they significantly reduced stocking rates in the upper Columbia. Steve noted that survival rates in the upper Columbia and in the Kootenai are very different.

What data are needed to populate the model?

Prey data are needed. What they eat is necessary, but you also need contrast in the prey data. The Forum's currently have information on movement, growth, and survival of sturgeon from juvenile and adult monitoring efforts, but they have no (or very limited) diet information. These data will be difficult to acquire under the existing monitoring programs.

What level of certainty can we expect in estimates of carrying capacity?

It is easy to estimate levels of uncertainty; however, the degree of certainty will be based on the quality of the data, especially the diet information.

How many years of data are needed to increase the precision of estimates?

It would be nice to have several years of prey data collected before sturgeon were released into the project areas and additional data collected after the release of sturgeon (this is needed to capture contrast in the prey data). On the other hand, spatial analyses can be used in place of temporal analyses. That is, prey data collected in areas with different densities of sturgeon may replace the temporal data. Thus, the contrast in prey data comes from spatial distributions, not temporal distributions.

Can carrying capacity be identified before monitoring detects density-dependent effects?

Yes, it is possible to estimate carrying capacity before one detects density-dependent effects. The age-structured models could do this if we have the appropriate data to populate the model.

Can the model highlight Pacific lamprey and sturgeon interactions?

Yes. We would need more information on the consumption of lamprey by sturgeon.

Are there examples where the results from the model have resulted in management decisions?

Yes. Villy provided an example where the model was used to estimate the effects of terminals on the lower Fraser River ecosystem. This was a very contentious project and the model was heavily scrutinized.

Tracy described matrix models (stage-structured models) and the need to estimate birth rates (fecundities) and transition probabilities (survival from one life stage to the next). Tracy noted that to the best of his knowledge, these models require information on density dependence and carrying capacity. That is, stage-structured models will not estimate capacity. Rather, capacity must already be known and then included in the model. Tracy described the process by which capacity can be included in the model to estimate future population sizes. Tracy will contact Villy to discuss how matrix models can be used to estimate carrying capacity.

Bob Rose raised questions about the current monitoring program. He asked if the current monitoring program is providing the information needed to populate models and if there are monitoring gaps. Mike Clement said that the current program provides abundance, growth, movement, survival, and fish condition. Mike noted that during the first year, gillnets were ineffective at sampling sturgeon. Last year, setlines had great success. Next year Grant PUD will start juvenile indexing.

Further discussion took place regarding the current monitoring program. Jason McLellan noted that more effort is needed to recapture marked fish. This will improve the estimation and precision of survival rates. Mike Clement suggested that the Sturgeon Subgroup meet to evaluate the current monitoring program, identify any data gaps, and propose ways to fill the gaps. Members agreed to cancel the September PRFF meeting and use that date and time (2 September; 9:00 am-noon) for the Subgroup to meet and discuss sturgeon monitoring. The PRFF identified Larry Hildebrand, Paul Grutter, Jim Powell, and Matt Howell as important participants in the Subgroup meeting. Tracy Hillman will prepare an agenda for the Subgroup meeting.

B. Proposed White Sturgeon Workshop (Hillman) – Tracy Hillman reported that he heard from most of the PRFF Policy Representatives regarding the White Sturgeon Workshop. Nearly all indicated that they were available on 7 October 2015 for the workshop. The workshop will be held in the Chelan PUD Auditorium in Wenatchee from 9:00 am to 4:00 pm. Discussion took place regarding who should speak at the workshop. Tracy indicated that he will start the workshop by describing the current WSMPs, what the issues are, and what we expect to accomplish during the workshop. Mike Clement recommended that Larry Hildebrand describe the current results from monitoring within the Project Area. James Crossman, Steve McAdam, or Jason McLellan would describe why the stocking program in the Upper Columbia changed and what information was used to support the change. Ray Beamesderfer would talk about the Kootenay River program and Andrea Schreier or Scott Blankenship would discuss the importance of population genetics and effective population size. Finally, Brad James (or someone from WDFW) would address the following two questions from Steve Parker (Yakama Nation): (1) What can the Forum learn about detecting density dependence and its consequences from the 30 years of information obtained by the White Sturgeon Stock Assessment project in the lower Columbia and Snake rivers and (2) What has been the Sturgeon Management Task Force's response to density dependence in its management of Zone 6 populations?

Tracy indicated that he needs confirmation from the PUDs that they will provide a stipend for the invited experts to attend the workshop. Once Tracy has confirmation from the PUDs, he will contact the experts to see if they can attend the workshop. Chris Mott and Mike Clement said they will contact their procurement department to see if they can offer the invited experts a stipend.

C. Other White Sturgeon Items – None

IV. Update on Pacific Lamprey Management Plan (PLMP)

A. NNI (No Net Impact) Update (Hillman) – Tracy Hillman asked if members had received any additional feedback from their Policy Representatives regarding the four questions identified by the Pacific Lamprey Subgroup. Members indicated that they had not received any additional feedback from their Policy Representatives.

Tracy Hillman said that he sent members a doodle poll asking them to identify meeting dates for the Pacific Lamprey Subgroup. Tracy indicated that most members are able to meet on 11 August (at Grant PUD office in Wenatchee; 10:00 am – 4:00 pm) and 29 September (at Chelan PUD Second Floor Conference Room in Wenatchee; 9:00 am – 4:00 pm). The purpose of the meetings is to discuss the technical details of proposed NNI actions. Because the objectives are identical in both the PRFF and RRFF, both subgroups will meet jointly.

B. Update on Priest Rapids and Wanapum Adult Lamprey HDX-PIT Study (Clement) – Mike Clement reported that Grant PUD has been following the Bonneville Dam daytime counts, which are approaching 30,000 adult lamprey. Corrected counts may be close to 60,000, but corrected counts are not yet available. Mike said that Grant PUD gave 300 HDX PIT tags to the Warm Spring Tribes to continue regional monitoring. He also noted that about 15 "new" PIT tags were detected at Priest Rapids and Wanapum dams. These fish were tagged at Bonneville Dam. About 13 of them were tagged in 2014; the others were tagged in 2015.

Mike reported that as of yesterday, Grant PUD has trapped, tagged, and released 84 adult lamprey in the left-bank ladder at Priest Rapids Dam. The goal is to tag and release 125 adult lamprey with HDX PIT and additional fish with FDX PIT to determine passage efficiency in the left-bank ladder. Mike said that of the 84 lamprey tagged and released, 80% have ascended the ladder and half of those were detected at Wanapum Dam. Mike commented that sturgeon have been observed routinely in the ladder and that water temperatures within the ladders have not been an issue. Mike indicated that collection and tagging of adult lamprey should be completed by the end of next week.

V. Next Meeting – Sturgeon Monitoring Discussion – 2 September 2015 at Grant PUD in Wenatchee. White Sturgeon Workshop – 7 October 2015 in the Chelan PUD Auditorium in Wenatchee. The next regular meeting of the RRFF will be on 4 November 2015.