

## **FERC STANDING COMMITTEE TERMS OF REFERENCE**

### *Role of Committee:*

- Review research and monitoring studies at FERC hydro projects.
- Make recommendations at FERC Projects to improve Atlantic salmon survival, abundance, and distribution at FERC hydro projects.
- We also discuss other diadromous fish species including herring, shad, and American eels

### *Responsibilities*

- Provide input and coordination concerning priorities for the use of hatchery origin and wild Atlantic salmon for research and monitoring purposes at FERC hydro projects.
- Review and provide technical input concerning the methods, results, data analysis, and conclusions of newly issued research and monitoring study reports concerning FERC hydro projects in the GOM DPS.
- To help guide the development of opportunities to improve the survival, abundance, and distribution of Atlantic salmon at various FERC hydro projects based upon the results of research and monitoring.

### *Ways of Working*

- The Group will meet once a month as needed.
- Chair distributes newly issued research and monitoring study reports concerning FERC prior to meetings for review and discussion
- After meeting, the Chair distributes notes for review and comment.

### *Membership*

- Consists of members from State and Federal Resource Agencies, PIN, and University Researchers

In 2019 we held 6 meetings. 2 meetings in 2020. The December 2019 meeting was cancelled due to the Federal Government Shutdown. We typically take summers off as studies are being conducted and there are no reports to review.

- We reviewed:
  - 4 smolt studies at FERC dams (Milford, Orono, Stillwater, and West Enfield)
  - 1 downstream alosine study (West Enfield)
  - 1 upstream alosine study (Milford)
  - We also discussed upstream and downstream passage priorities studies for alosines on the Penobscot. We determined Brookfield should focus on downstream alosine studies at Milford, Orono, Stillwater, and West Enfield.
- UMO Presented:

- A summary of the Stich et al American shad model for the Penobscot River
- 2 on-going research activities on upstream salmon and shad studies on the Penobscot
- A Survival Simulator Lab
- Other
  - Overcrowding of alosines at the Orono Project and opportunities to reduce overcrowding. We presented options to Brookfield which they implemented in 2020 and results in a lot more alosines being trucked upstream.
  - Orono Salmon handling
  - Milford Salmon evacuation
  - FERC consultation process
  - Multiple updates on FERC relicenings in Penobscot, Kennebec and Union Rivers
  - Multiple updates on fish passage studies in these watersheds
  - Penobscot Net Pen Project
  - Browns Mills Performance Standards
  - Grand Lake Mattagamon - We determined that since the project is in critical habitat and salmon are in the project area, it was necessary to evaluate the impacts of the project on salmon restoration in the Penobscot River. We are working on scheduling a site visit for our fish passage engineers. We are also working to organize a sub-committee to develop plans to assess impacts.

## February 26, 2019 Notes

- Joe gave a presentation on the Penobscot River American shad model by Stich et al. 2018 (attached). The presentation emphasized the importance of high upstream and downstream survival rates needed at dams to achieve restoration goals. The presentation also demonstrated the importance of reducing delay at dams for shad.
- The group discussed the results of Brookfield's 2018 smolt studies at Milford, Orono, Stillwater, and West Enfield. Brookfield did not achieve a 96% survival rate at West Enfield or Stillwater. The performance standard was achieved at Milford and Orono. Due to the conditions in the Biological Opinion, the standard must be met in 3 consecutive years. Brookfield has decided to reinitiate section 7 consultation for the projects rather than restart 3 years of additional smolt studies at the projects. Brookfield will continue the spill program during the reinitiation to protect smolts.
- Jason discussed issues with overcrowding at the Orono fishlift. We suggested taking up the issue during the next meeting.
- We tabled the discussion of alosine performance standards and FERC consultation requirements.

## March 19 2019 Ad Hoc Meeting Notes

- Orono Fishlift - Jason presented data demonstrating that the Orono fishlift is not currently operating at maximum capacity for river herring. It appears that Brookfield is conducting only 2-3 lifts per day. This results in a large number of herring not being passed at the project. It was acknowledged that the Penobscot River Multi-Party Agreement limits Brookfield responsibilities to improve passage at the site. Nevertheless, it was decided that Don Dow should work with MDMR and Brookfield to update the Orono fishway operation and maintenance plan to increase the number of herring being passed at the project.
- FERC Consultation Process - Dan discussed deficiencies concerning Brookfield consultation with stakeholders on the Penobscot. For examples, Dan pointed out lack of upfront coordination on modifications to project operation during studies thus impacting baseline conditions. Dan also discussed lack of early engagement during the development of study plans. Dan plans to write a letter to FERC outlining these issues. He encourages other stakeholders to co-sign the letter.
- Erin and Sarah provided an overview of their salmon, shad, and herring upstream passage studies (attached). In 2018, river herring were released upstream of the Milford Project which resulted in enhanced detections at upstream locations. Shad studies conducted in 2018 yielded movement data at

Milford. Also, the 2018 upstream salmon studies documented a clear relationship between %fat and accumulated water temperatures. They then presented their plans for 2019.

- Alejandro presented the UMO River Survival Simulator Lab. This is a very useful tool for evaluating biological and statistical thresholds for reviewing survival standards. The lab is now available for public use (<https://umainezlab.shinyapps.io/sims/>) . Alejandro has submitted a manuscript for publication for the lab.
- Alejandro was prepared to present his plans for 2019 Atlantic salmon smolt studies (attached). Unfortunately, we ran out of time. It was also noted that there are no funds currently in place to support smolt studies in the Penobscot for 2020

May 21, 2019 meeting

**Orono Fishlift** - Jason provided an update concerning trucking issues at the Orono fishlift. He noted that Brookfield convened a meeting with the signatories of the Penobscot Multi-Party Agreement on May 15. The signatories would like to see improvements to trap and truck operations (e.g., bigger tanks, more personnel). Brookfield will hold another meeting with some preliminary proposals to address over-crowding at the fishlift.

**Atlantic salmon Performance Standards** - Tabled.

**Orono Salmon Handling** - At the request of Richard Dill, I asked if there are any concerns with the current trap and truck protocols for salmon captured at Orono. Richard suggested that transporting salmon from Orono to Milford may result in unnecessary handling of the fish. Currently, if a salmon is captured at Orono and needed for broodstock, Brookfield crews transport the fish to Milford where MDMR processes (measure, weigh, take scale sample, and PIT tag) the fish. If a salmon captured at Orono is not needed for broodstock, Brookfield crews have been instructed to process the fish and release it at the Milford boat launch. It seems as though Brookfield crews are somewhat apprehensive handling Atlantic salmon. If a salmon cannot be used for broodstock, Richard would rather simply classify the fish as 1SW or MSW and then release it at the Milford boat launch without collecting any data or implanting PIT tags. DMR will hold their annual salmon handling training with Brookfield crews and continue with the same protocols.

**Milford Salmon Evacuations** - I mentioned that spill conditions will likely subside soon at the Milford Project. As in previous years, its very likely that salmon will be isolated below the dam. Until such time as a permanent solution is identified in the upcoming reinitation at Milford, Brookfield would appreciate any assistant with

relocating salmon again this spring. *NOTE: I expect this will occur next week. I will send out an email looking for help.*

#### Oct. 8th meeting

- Murphy provided an update on the Mattaceunk Project relicensing. FERC is waiting for NOAA's BiOp and MDEP's 401 to issue a new license. The new license could be issued in early 2020.
- Murphy provided an update on the West Enfield Project relicensing. FERC issued the Pre-Application Document, Scoping Document 1, and a request for studies. In response, NOAA, MDEP, PIN, and USFWS submitted study requests for upstream and downstream passage studies for salmon and alosines. Other requested studies included: downstream fish passage alternative study; eel passage studies, woody debris study, downstream passage trash removal study, habitat studies, CFD study; headpond predation study; sediment storage and mobility study; Unimpaired Hydrology Study; and project acoustic effect study.
- Murphy provided an update on the Ellsworth Project relicensing. NOAA is working on drafting the BiOp for the project.
- Murphy provided an update on anticipated passage studies for the Penobscot River in 2019. Upstream and downstream alosine passage studies are expected at the West Enfield Project and perhaps other projects. No Atlantic salmon studies are expected to be performed by Brookfield.
- Buhyoff provided an update on anticipated passage studies for the Kennebec/Androscoggin Rivers in 2019. Upstream and downstream alosine passage studies are expected at the Pejepscot Project.
- McCaw lead a discussion of establishing alosine performance standards for the Orono and Stillwater Projects. The group agreed to pursue a performance standard approach for the lower Penobscot River Projects. Available information including Stich et al. 2018 and Barber 2018 could be used to establish numerical standards for shad and alewives. PIN, MDMR, and UMO will have a meeting to discuss standards.
- The group discussed the Grand Lake Matagamom Dam.
  - The dam is owned by the Matagamom Lake Association, a small, non-profit group consisting mainly of camp owners on the lake. The dam does not generate power nor is it a FERC licensed dam. The dam is located in designated critical habitat for Atlantic salmon. Salmon are likely to occur in the vicinity of the dam.
  - Effective upstream and downstream passage for Atlantic salmon is necessary at the dam to restore Atlantic salmon to the Penobscot River. Operation of the dam should also be assessed to understand its' effects on Atlantic salmon critical habitat upstream and downstream of the project.
  - We presently have no data concerning the effectiveness of the upstream fishway. We have no data concerning downstream survival of smolts or

kelts through the lake or over the dam. We also don't know how operation of the dam affects critical habitat throughout the East Branch or mainstem river itself. It is unlikely that the dam owners could fund any studies for Atlantic salmon.

- As part of the adult stocking project, ~5,000 adult salmon will be stocked in the East Branch downstream of Matagamon Dam over the next couple of years. All of these fish will be PIT tagged; some number of fish will also be radio tagged. Currently, the dam does not have either PIT or telemetry monitoring equipment. As adult project could contribute significantly to assessing upstream passage at Matagamon Dam, the group decided it was important to pursue passage monitoring at the dam.
- The Dam will be discussed at future meetings.
- Murphy and Buhyoff expect study reports will be issued by Brookfield concerning alosine passage in the Penobscot and Androscoggin Rivers. These reports will be forwarded to the group.
- The group decided to cancel the November meeting.

Dec 17, 2019 Notes

### • Penobscot River Adult Relocation Project

C. Clark provided an overview of the Penobscot River adult relocation program. Following successes with the Fundy Salmon Recovery Project, the Penobscot River Project is designed to jumpstart Atlantic salmon recovery by using smolt-to-adult supplementation to release thousands of pre-spawn adults into the upper Penobscot River. The project, which is funded by NOAA, will stock from 4,000 to 5,000 net pen reared adult Atlantic salmon in the upper reaches of the Penobscot River over the course of at least 3 years (2021-2023). All fish will be PIT tagged and a subset will be radio-tagged to monitoring progress. The project will require a permit from the Maine DEP as well as a Section 10 ESA Permit from USFWS.

M. Simpson suggested all Atlantic salmon stocked in the Penobscot River going forward will need to be marked in order to identify wild returns produced from the project. The Committee agreed while recognizing constraints.

It was acknowledged that PIT tag/telemetry receivers would need to be installed at the Matagamon Dam upstream fishway to monitor movement of stocked adults.

J. Murphy suggested sharing telemetry codes with Brookfield to facilitate downstream kelt survival studies at the Weldon, Orono, Stillwater, and Milford Projects. It was suggested that Brookfield should provide additional radio tags to MDMR (~100/year) to enhance kelt studies and that Brookfield would be responsible for monitoring at the projects.

### **• Matagamon Dam**

The Committee agreed that it is important to understand the effects of Matagamon Dam on Atlantic salmon. Habitat upstream of the dam is designated as Critical Habitat for Atlantic salmon therefore safe and effective access to it is necessary for recovery.

It was agreed that a sub-committee should be formed to scope out passage/habitat issues with the dam.

MDMR will check with Don Dudley (Dam Operator) to see if Don Dow can inspect the upstream fishway during the spring 2020 GOM DPS fishway inspections.

### **• Milford 2019 Adult Alosine Upstream Passage Study Report**

The Committee discussed the results of Brookfield's 2019 adult alosine upstream passage study at the Milford Project. The study was extremely well conducted with the majority of tagged adult alewives resuming upstream movements post tagging. The study revealed high near-field attraction to the Milford fishlift. The study also revealed low internal efficiency for adults in the fishway likely due to AWS, v-gate, or the 90 degree bend. It was agreed that further investigations are needed to improve internal efficiency.

### **• West Enfield 2019 Juvenile Alosine Downstream Passage Report**

The Committee discussed the results of Brookfield's 2019 downstream route selection study of juvenile herring at the West Enfield Project. The study was extremely well conducted with the passage routes determined for all tagged fish. The study revealed the downstream fishway at the West Enfield Project is completely ineffective at passing downstream migrants. 99% of all tagged juvenile herring passed the project via turbine entrainment during the study.

It was agreed that Brookfield should immediately commence a downstream passage alternative study and CFD model as part of the West Enfield Project relicensing.

### **• Priorities for alosine passage studies in the lower Penobscot River in 2020**

The Committee discussed priorities for alosine passage studies for 2020 at the West Enfield, Orono, Stillwater, and Milford Projects in light of the successes learned during the pilot upstream and downstream passage studies conducted in 2019. MDMR, USFWS, and NOAA will convene a separate meeting to outline priorities.

Jan. 21 meeting

### Penobscot River American Eel Studies

Matt presented an overview of his multi-year research project on American eel downstream passage in the Penobscot River (presentation is attached). Very interesting project!! Congratulations Matt!!

### Piscataquis Smolt Studies

Alejandro presented an overview of his multi-year research project on downstream Atlantic salmon smolt passage in the Piscataquis River (presentation is attached). Sadly, this is Alejandro's last year at UMO. We will certainly miss Alejandro and his work on the Penobscot River but wish him all the best going forward!! Thanks and congratulations Alejandro!!!

### Browns Mills Performance Standards

Jeff lead a discussion on whether we can consider the downstream performance standard of 96% passage survival within 24 hrs at Browns Mills achieved. Based upon UMO studies, the project has achieved 100% smolt survival over the last four years. However, studies have documented significant delay for smolts at the project. The 2019 UMO smolt studies suggest that smolt delay is occurring downstream of the project. UMO will investigate the 2019 data more to see if passage choice effects delay.

### Penobscot River Adult Relocation Program Updates

Casey provided an update on the Penobscot River adult relocation program. Some adjustments on smolt sources have been made (hatchery vs. wild).

### Matagamon Dam Flow Management Plan

This topic was tabled.

### 2020 Penobscot River Alosine Studies Priorities Update

This topic was tabled.