

Jennifer Anders
Chair
Montana

Tim Baker
Montana

Guy Norman
Washington

Patrick Oshie
Washington



Northwest Power and Conservation Council

Richard Devlin
Vice Chair
Oregon

Ted Ferrioli
Oregon

Jim Yost
Idaho

Jeffery C. Allen
Idaho

Council Meeting April 9 and 10, 2019 Portland, Oregon Minutes

Tuesday, April 9

Council Vice-Chair Richard Devlin brought the meeting to order at 1:33 p.m. Council Members Guy Norman, Ted Ferrioli, Jeffery Allen, Jim Yost and Tim Baker were in attendance. Council Chair Jennifer Anders joined by phone. Washington's new Council Member, Patrick Oshie, was introduced. Member Oshie was recently appointed to the Council by Washington Governor Jay Inslee.

Reports from Fish and Wildlife, Power and Public Affairs Committees

Fish and Wildlife Committee

Fish and Wildlife Committee Chair Guy Norman said the committee held a Fish and Wildlife Program Amendment work session. They discussed a wide variety of strategies, including the estuary program. They talked about climate change and how that may impact project planning, and there is support for continuing the near shore ocean research program. Sturgeon received a lot of recommendations. There is a lot of interest in maintaining and expanding predator and non-native species control. There is support for the operations and maintenance program, especially for our hatcheries and screens projects. Lamprey was mentioned as were operations of Hungry Horse and Libby Dam, especially in relation to sturgeon.

The committee heard an overview of the Lake Roosevelt Tour, which will take place May 9 with five Council Members attending. They will view northern pike suppression efforts. There will be gill netting with the Washington Department of Fish and Wildlife, the tribes and three PUDs.

Power Committee

Power Committee Chair Tim Baker said they are putting together the building blocks for the 2021 Power Plan. It started with a climate change discussion. It's a challenge for the planning process and provides a good discussion around the mission of the Council — specifically how it can be baked into the Plan without taking us down a path that gets us off mission. There was a lot of discussion on how to deal with impacts and how to bring that into our modeling efforts.

There was a presentation from the NEEA on its residential building stock report, which was done in 2018. It provides a better understanding and how to assess the potential for energy efficiency. The last building stock assessment was in 2012, so there's a comparison on how stocks are changing in power usage. We're unique in the Northwest at the level we do it. It's costly, but valuable.

Massoud Jourabchi, economic analysis manager, provided a tutorial on the economic drivers in the next power plan, and showed how climate change could affect the drivers.

Mike Starrett, energy analyst, led a discussion of transmission and resource planning.

Chad Madron, project analyst, gave a presentation of the Power Division workplan.

Public Affairs Committee

Public Affairs Committee Chair Jeffery Allen said they met briefly to discuss a robust annual workplan and congressional tour. They will have another meeting tomorrow to discuss the congressional tour, which will take place this August 20–22.

1. Council decision on comments to DOE in response to the Notices of Proposed Rulemaking regarding (1) the “Process Rule” and (2) General Service Lamps

John Shurts, general counsel, told Council members that the U.S. Department of Energy (DOE) is proposing to revise the “Process Rule,” which is its approach to establishing new or revised energy efficiency standards for consumer appliances. The Council has long been a player in the efficiency standards-setting process. The process is important to the Council's Power Plan and the ability to realize energy savings.

The DOE also is proposing to revise its definition of general service lamps, rescinding an expanded definition that it approved in 2017.

The two actions are not related, but happen to come out at the same time. Working with the Power Committee, staff has prepared comments on the proposed changes, and is now seeking full Council approval of those comments.

DOE issued a Notice of Proposed Rulemaking outlining 12 proposed changes. Council staff agrees with or have minimal concerns with nine, and strong reservations about three aspects of the proposed changes:

1. To set a threshold level of savings that a proposed standard must meet first before it can be considered;
2. Using industry standard test procedures without modification — it shouldn't be a default that can't be changed; and
3. A proposal to abandon direct final rules.

Council staff also doesn't support a redefinition of general service lamps. In 2017, the definition was expanded. The current DOE people have concerns about the legal basis for that decision and want to reevaluate it. Rescinding it would have a large impact on the savings that can be realized through this measure. Shurts said the comments say that what we did in 2017 was reasonable and it is unnecessary to rescind it.

Northwest Power and Conservation Council Motion to Approve Comments to the Department of Energy Regarding (1) Federal Efficiency Standards Process, and (2) General Service Lamps Notice of Proposed Rulemakings.

Member Ferrioli moved that the Council approve the comments to the U.S. Department of Energy in response to the Notice of Proposed Rulemakings regarding (1) the federal efficiency standards process or "Process Rule," and (2) the definition of General Service Lamps, as presented by staff and recommended by the Power Committee.

Member Baker second.

Motion passes without objection.

2. Update on the Fish and Wildlife Program amendment process

Patty O'Toole shared the Fish and Wildlife Committee's recommended approach to the full Council on how to amend the Fish and Wildlife Program. She said many entities recommend that the 2014 program not change significantly. The committee has two options: to amend the program via addendum; or to amend the actual text of the program. The committee recommends the addendum approach, focusing on a set of issues.

O'Toole assured the Council that all recommendations will be considered. There will be a review with the Committee in May and then they will try to wrap it up by month's end for a discussion with full Council in June.

Shurts urged Council Members to look at the recommendations: how the program gets evaluated and how to reorganize goals and objectives. Also, there is concern over how the program gets implemented. Neither have a lot to do with the actual program text.

Member Norman said staff is looking for direction to try and meet the deadline. There are arguments for going either direction. We did seem to favor having a more narrowly focused, prioritized process, he said.

Member Ferrioli said that the recommendation from the Fish and Wildlife Committee is the result of robust discussion. The addendum approach allows us to build on solid foundation of the 2014 program, as well as the emerging priorities that have risen to the top, he said.

Member Allen agreed with Members Norman and Ferrioli. He's comfortable with the addendum approach because of the quality work that was done in 2014. He noted that Member Anders worked on that process.

Member Anders said in 2014, they had a program that was substantial, but it was 30 years old. Now it's much more user friendly. They added fish strategy, climate change strategy and implementation strategy to address areas of emerging importance. What we have now is the bible by which we live, she said. Now it's better to focus on some key areas. She wants to see a sharp, focused effort on the addendum process.

Member Baker deferred to the Fish and Wildlife Committee and Shurts for having explored the issues adequately.

Member Devlin said he would save his concerns for legal counsel. I read the plan and understand it better, he said. He wondered about the relevance of portions of the plan and hopes that this provides greater clarity. He asked about dealing with an addendum item that conflicts with core of plan. Shurts replied there isn't one now.

Fish and Wildlife Division Director Tony Grover remarked that someone at BPA said he couldn't tell which way staff was leaning. The committee members came to a decision unanimously to go with the addendum process. The Council could still go either way.

O'Toole said staff has what it needs. The goal is to bring the addendum back to the full Council in June. The Council will have a couple of months to digest it, then there will be a 90-day public comment period.

3. Remarks by Crystal Ball, executive manager, Fish and Wildlife Division, Bonneville Power Administration

Crystal Ball introduced herself to Council Members as BPA's new fish and wildlife executive manager, responsible for overseeing the planning, development and administration of the agency's fish and wildlife program. She replaces Brian Mercier who transferred from the position last year.

She talked about her fondness for avoiding litigation and pointed to the recent flexible spill agreement as an ideal result of stakeholders working together. She said the Columbia River power system was developed for the good of people of the Northwest and it is unmatched in any part of country. She said the Fish and Wildlife Program is a critical part of Bonneville and they have made tremendous progress. BPA's customers need to know about the program's accomplishments and share in its success. They can be proud of programs that produce positive results. Members Norman and Anders welcomed Ball to her new position.

4. Briefing on Columbia River eulachon

Lynn Palensky, program development manager, introduced Laura Heironimus from the Washington Department of Fish and Wildlife. Palensky said they have a eulachon strategy in the 2014 Fish and Wildlife program. Staff has received several comments and recommendations on eulachon came from five different entities and BPA. These recommendations included asking for a more robust strategy, including funding for spawning stock and more research. The last report on eulachon was in 2017.

Heironimus said that eulachon, also known as smelt, is an anadromous species and is among the first fish to migrate into the river to spawn. They come in November and December, but peak in February. This year, it was so cold, the peak was in March. She described the physical attributes of the fish and its spawning behavior. They spend 2-5 years in salt water before migrating back. They are an essential part of the ecosystem. They are eaten by hake, humpback whales, white sturgeon, seals and sea lions, chinook smolts and seagulls. People are another predator. Cowlitz tribe have led a lot of research on smelt. Longview had a smelt festival and crowned a smelt queen. Commercial landings data are the only way to assess historical abundance.

The fisheries declined in the mid-1990s, which prompted management action. The Washington/Oregon Eulachon Management Plan was started in 2001. In 2010, eulachon was listed under the ESA. Some of the factors in the species' decline are climate change impacts, by-catch, dams and diversions, and water quality. Laura discussed effects of the Federal Columbia River Hydro System and recovery priority actions. These actions include:

- Providing essential context for interpreting historical harvest data;
- Filling critical information gaps;
- Supporting the cultural traditions of Northwest tribes;
- Providing commercial and recreational fishery to maintain connection between people and the resource;
- Developing outreach and education strategies;
- Fostering stewardship of the marine ecosystem; and
- Expanding funding and research partnerships]Increase involvement of regional organizations.
-

Heironimus said the Eulachon Technical Recovery and Implementation Team is comprised of:

- Cowlitz Indian Tribe
- Quileute Tribe
- Yakama Nation
- Oregon Department of Fish and Wildlife
- Washington Department of Fish and Wildlife
- National Marine Fisheries Service, NOAA

Heironimus said the Fish and Wildlife Program is not currently funding any eulachon work. To date, funding has been a collaborative process of the team members and it has never been consistent.

NOAA Fisheries Pt. Adams Research Station, located near the mouth of the Columbia River, is working to develop a small research trawl capable of live-capture of adult spawners in the estuary and tidal freshwater.

There was a pilot study in 2020 to explore potential acoustic biomass. Acoustics is a proven technique for estimating biomass in many managed fish stocks, and acoustic data can provide information on run-timing, distribution, biomass and size composition of spawners.

The WDFW recommends:

- Updating the Fish and Wildlife Program measures and language to reflect NOAA's eulachon recovery plan.
- Including eulachon spawning stock biomass as the first high-level indicator for this species, and fund annual monitoring of eulachon spawning stock biomass.
- Adding eulachon in the emerging program priorities and address critical uncertainties/questions for this species.

Member Norman praised the important work the team is doing. He said he was involved in the 1978 Cowlitz sampling effort. He asked if the new acoustic study is adding to the different studies being conducted? Heironimus said there's a connection, but the lack of in-season run data makes it difficult to estimate the run size, she said. The hydro acoustics data is another piece of the puzzle.

Member Norman said in 2019, the run was late, coming in March. Do they have any idea of the magnitude of the run this year? Was there a test fishery? Heironimus replied that they have difficulty predicting a year out because they have very little quantitative data. Going into 2019, they predicted a low return, based on the low run size in 2018. We did not set a commercial fishery, she said. Only 110 pounds of smelt were landed. Going into 2019, we saw no smelt arriving, then they showed up in March. NOAA didn't get funding this year to do the hydro acoustics work. Therefore, the only resort was to get data from their plankton

tow nets. The fish that spawned a month ago are just being detected. The run is higher than we anticipated for 2019.

Member Oshie asked about the age class and what's driving those variations and influences on migration and spawning that could influence Council decisions in the future. Heironimus replied that low water levels during outmigration is thought to impact survival. Another contributing factor is the blob and the shift in diet composition off the coast.

Member Norman asked what's dropped off in funding. What can't you obtain? Heironimus said there's never been consistent funding for eulachon. The state had been funding low-level monitoring and NOAA provided some funding through a number of grant applications. Those petered out and eulachon is not a priority species. Getting Section 6 funding has become increasingly difficult. In 2019, we have had no expectation of being able to monitor anything at all. It's just been a collaborative process with all the groups.

5. Briefing on PGE Decarbonization Study

John Ollis, power system analyst, introduced Elysia Treanor, Portland General Electric's environmental policy manager. She said PGE commissioned Evolved Energy Research to do a study on decarbonization pathways to inform its integrated resource plan. She defined deep decarbonization as a transformation of the energy economy consistent with keeping global warming less than 2°C.

PGE is interested in decarbonization because there's a citywide, statewide and nationwide interest in reducing greenhouse gases (GHG). She mentioned that when the Trump administration pulled out of the Paris Climate Agreement, PGE joined with 2,500 others in continuing a pledge to meet its goals. The study developed economywide decarbonization pathways across PGE's service area (including transportation and nonelectric end uses). The study is applicable to PGE's area only. The goal is an 80 percent reduction in carbon emissions.

PGE commissioned the study to address key questions:

- How might energy services be met in PGE's service area in a decarbonized future?
- What are the implications for PGE's electricity demand – both magnitude and shape?
- How much renewable infrastructure will be needed to support economywide decarbonization?
- What might energy (not just electricity) costs look like for our customers?

They looked at three scenarios covering all energy types. The study looks at energy-related CO2 emissions. The study allocated a statewide budget to PGE service territory using its

share of state's population, which is about 45 percent of total. The study assumes a natural stock rollover of vehicles and appliances, no technological breakthroughs, and no structural change to the energy services demanded by PGE's customers.

The study evaluated three different pathways:

1. High electrification
2. Low electrification
3. High DER – rooftop solar/includes high electrification = 2400 MW of rooftop solar

All pathways can get you to achieving 2050 reduction targets, Treanor said. But there needs to be success across the three pillars of energy efficiency, electricity decarbonization and electrification.

Treanor said all types of energy usage must be reduced by a quarter or a third. She said that can be achieved with electrification, primarily of light-duty vehicles.

She discussed impacts to energy demand in 2050 and showed a list of key energy efficiency technologies. She discussed the potential load impacts of electrification. There will be load growth in vehicle and building electrification, but some of it is counteracted by energy efficiency. In 2050, PGE's load is forecasted to be 3,500 MW.

As electricity grows, electric generation must be increasingly carbon-free. By 2050, most energy generation would come from variable renewables, such as wind and solar, she said. There would be a large buildout of Northwest wind, Montana wind and utility-scale solar. The study assumes that the utility's natural gas fleet would just be used for capacity to balance the grid. Coal disappears over time due to state policy. Hydro remains and contracts are replaced in light kind. There is some geothermal as well.

Treanor discussed the need to keep some hydro and thermal for balancing, and the study assumes some buildout of battery storage. Also, there would be flexible charging of vehicles to help with peak hours usage. Curtailment is something else that's going to happen, as high as 10 percent a year in this study, Treanor said.

How will it be paid for? By customers, or "the energy wallet."

In 2035, customers will be paying slightly more. Upfront technology costs that need to be paid, but by 2050, they'll be saving money. People will be paying more for their electric bill, but less at the pump. Overall, the savings would be about \$35 a month.

The main study takeaways are:

- Meeting the goals is possible. A transformation of the energy economy will rely on both consumer and producer participation. It will require timely planning and coordination to reduce the barriers to implementation.
- New sources of flexibility (e.g., energy storage and flexible loads) can complement traditional sources of flexibility (hydro and thermal) to ensure that renewables are efficiently integrated.
- Flexible electric vehicle (EV) charging and flexible water heaters show particular promise under the electrification pathways.
- Electrification of the transportation sector plays a critical role in achieving GHG reduction targets.

Member Ferrioli asked about the implications for the hydrosystem. Does its percentage drop? Treanor replied that the band of hydro remains the same. What's shrinking is our natural gas.

Member Devlin said that with the region's base of hydro and its commitment to renewables, we should get to 80 percent. Industrial is more complicated. Transportation could be the hardest to achieve. Emissions are growing. If the goal is 50,000 EVs in Oregon by 2020 and there is a nine-fold growth in EV's by 2030 as some analysts predict, only one in six vehicles will be an EV in 2030. We will still fall short in achieving emission goals in transportation. How can we meet those goals?

I don't know, Treanor replied. This study is policy neutral. It just says what's needed by this date. Now it's up to us to figure out how to get to that point.

Vice Chair Devlin recessed the meeting at 4:15 p.m.

Wednesday, April 10

Vice Chair Devlin brought the meeting to order at 9:02 a.m.

6. Remarks by Brad Sawatzke, CEO of Energy Northwest

Ben Kujala introduced Brad Sawatzke, who has been with Energy Northwest since 2010. He has been CEO for the past year and a half. Sawatzke described his background, which includes working for 30 years in Minnesota at a nuclear plant.

Sawatzke said he believes in climate science and in our responsibility to help stem the tide. Energy Northwest is a carbon-free company. All generation is carbon free. He referred to the Washington

State legislation to be carbon free by 2045 and anticipates its passage. It strengthens their position as a company, he said.

Sawatzke provided an overview of Renewable Northwest's renewable generation projects:

- Nine Canyon Wind Project
- Packwood Lake Hydroelectric Project
- White Bluffs Solar Station
- Tieton Hydroelectric Project
- Portland Hydroelectric Project
- Horn Rapids Solar, Storage & Training Project

The company is operating of a couple of hydro plants as part of its business. It's also building a 5 MW solar project and a 1 MW electric battery (which will be good for four hours) will be a part of that. It is also involved in EV infrastructure working with public utilities to put in charging stations through the Electric Vehicle Infrastructure Transportation Alliance (EVITA) program.

Sawatzke described the baseload benefits of the Columbia Generating Station (CGS). We believe in renewables, he said, but if you're anchoring a transmission system, you need baseload generation. CGS is a baseload anchor. Relatively a newer plant, CGS started in 1984 and its license lasts through 2043. Its output is 1,207 MWe. The plant has added 6 MW over the last eight years and is the third-largest generator in Washington, after Grand Coulee and Chief Joseph dams. It has set several generation records over the past eight years and has received safety awards. There is a focus on reducing the budget and in 2018-19, it will hit the estimate. This has resulted in cheaper power. Annually, there's a six-week outage period to refuel the plant.

Sawatzke compared the cost of nuclear to renewables. If you remove the federal subsidies, they're comparable, he said.

CGS supports 3,930 jobs and provides \$8.9 billion in economic benefits to the state 2018-2043.

Sawatzke said that the region moves to carbon-free generation, where is the baseload going to come from? CGS is a reliable, carbon-free baseload generation that integrates well with renewables. We can back our plant down when hydro and wind are high, he said.

President Obama's Council of Advisors on Science and Technology said nuclear should be part of the mix, Sawatzke said. He noted that other bodies who support it. NWPCC's Seventh Power Plan names CGS as a part of the picture.

Each year, CGS prevents a fossil fuel replacement equivalent of about 4.4 million metric tons of carbon dioxide from entering the atmosphere, which is about same amount of carbon released by approximately 778,000 cars each year.

“It really bothers me that our industry has allowed natural gas to bill itself as the ‘clean energy,’” Sawatzke said. “They came in and they grabbed the slogan. If you look at carbon emissions, how did we let them steal that from us? In the nuclear industry, we’ve spent the last decades saying we’re out of sight and out of mind, don’t look at us. And it’s time we started talking about what we bring to the table.”

Nationwide, nuclear makes up 20 percent of the electricity. Of the carbon-free electricity, nuclear makes up 56 percent. Looking at capacity factors, CGS is 92.5 percent, wind is 35 percent and solar is 26 percent.

The three worst-producing wind months of the year are July, August and January, Sawatzke said. He talked about the recent situation where solar and wind wasn’t available, and natural gas went to homes, instead of to peaking plants. He talked about the long process of getting nuclear plants sited in the U.S. The rest of the world is getting them built, why is there such a lag in the U.S.?

The discussed NuScale’s small modular reactor, which they want to site in Idaho. Energy Northwest has an agreement to be the operator and maintainer.

Member Allen asked why the Indian Point plant was closed. Sawatzke said the plant has been under siege due to its location and the politics of New York State. The good news is that it’s not closed yet and hopefully, people will realize the need for it. Economics comes into it but it not everything. It needs to be part of the mix for solving some of the environmental challenges. Illinois kept one open for the jobs and the need for baseload.

Member Devlin said he will defer his questions for a later date due to time.

6. White sturgeon status report for the Columbia River Basin

Lynn Palensky introduced the panel:

- Peter Stevens, Oregon Department of Fish and Wildlife (on behalf of both ODFW and Washington Department of Fish and Wildlife)
- Blaine Parker, Columbia River Inter-Tribal Fish Commission
- Laura Heironimus, Washington Department of Fish and Wildlife
- Andy Miller, Spokane Tribe of Indians
- Jason McLellan, Colville Confederated Tribes (who joined by phone)
- Shawn Young, Kootenai Tribe of Idaho
- Ryan Hardy, Idaho Department of Fish and Game

Palensky said a lot of recommendations came in from our sturgeon managers. The program funding is 12.7 percent of budget.

Stevens discussed the Lower Columbia white sturgeon population. Their work is funded by the states, not BPA. He talked about brood stock numbers, which are above conservation status with 7,100 individuals on a 3-year average. It was 6,100.

Stevens then talked about projected abundance. Over the past 10 years, juvenile stock has been on a downward trend. There's an aging population. He discussed recruitment, which has been low in the Columbia River mainstem over past 10 years. The Willamette River has been on an upward trend. 2018 was a phenomenal year. However, it won't be enough for lower recruitment in the mainstem.

Stellar sea lions are a major challenge as they deliberately target sturgeon. This predation accounts for 70 percent of variable in the recruitment numbers. Pinnipeds are a growing issue in the Willamette. They are more active in the winter than in the spring.

In summary:

- Legal abundance has decreased from 2016 and 2017.
- Adult abundance: The 2018 three-year estimate is above conservation status, but not at desired status level.
- Population structure shows continued low relative abundance of juvenile and sub-legal sized fish.
- Recruitment index is mixed. Columbia River lower in recent years but Willamette by far highest since monitoring began in 2010.

Parker talked about sturgeon from Bonneville to McNary Dams and CRITFC's sturgeon research.

In the mid-2000, Bonneville went from 200,000 fish to 300,000, Parker said. There were major water years that contributed to high spawning. Populations declined significantly after that.

He said at The Dalles, the population doesn't peak as dramatically and the harvestable range is quite small. John Day is our problem child, he said. It's a huge reservoir without a lot of fish. Recruitment is poor, but there is a lot of broodstock.

Conclusions:

Bonneville – maybe they are finding equilibrium with available habitat and current population size.

The Dalles – uncertain status, we'll know more starting in the winter of 2019-2020.

John Day – continues to decline and based upon our monitoring, it will continue to do so for the near future (~ 8-10 years) even if recruitment improves. This is likely due to 14 years of

no detectable recruitment (21 consecutive years of sampling). John Day is a strong candidate for supplementation from the CRITFC sturgeon supplementation master plan.

Future – monitoring, supplementation, research are key elements to ensuring white sturgeon thrive in the Columbia Basin for the next seven generations.

Laura Heironimus discussed Lower Snake sturgeon populations. The decline in stock triggered management to close all three reservoirs to retention in 2015. From 1997–2014, the estimated recreational harvest rate was 10 percent in Ice Harbor Reservoir. The 2018 Ice Harbor stock assessment is the first time they've been able to get in there. She described the sampling effort and analysis method. There are 2,000–4,000 fish in Ice Harbor, which is not that many. Recruitment in Ice Harbor is only happening once a decade, during high-flow years.

Conclusions:

- Concerns of slow growth and recruitment failure.
- Inconsistent and sparse monitoring.
- Difficulty assessing adaptive management actions.

Next steps:

1. Sample the Lower Monumental Pool in 2019 to see what changes might have occurred.
2. To evaluate conservation and management actions, baseline tracking of population structure is needed:
 - Monitoring on three-year rotating basis
 - Consistent sampling effort — 20 years between data points is too far.

Andy Miller said the transboundary reach has been experiencing persistent recruitment failure since the 1970s. He discussed the UCWSRI's mission. The recovery plan implementation in the Washington portion is led by Spokane Tribe and Colville Tribes.

Conservation aquaculture: they released 153,000 juveniles since 2002. There's a recruitment bottleneck just past this larval stage. They are in the process of stock assessment. There is a wild abundance of 2,500 adults. There is a continued lack of recruitment. He discussed hatchery survival, which is high with a hatchery abundance of about 53,000.

They opened a white sturgeon fishery in Lake Roosevelt. A total of 3,500 fish were harvested in 2017, but only 150 in 2018 due to limits imposed.

The tribal harvest is around 200 fish/year. About 250 were harvested during the 2018 stock assessment.

Summary:

- About 2,500 wild adults – recruitment limited
- Successful aquaculture program
- Fishery established – going on for two years
- Identified recruitment bottleneck at the larval stage
- Investigating causes of recruitment failure

Ryan Hardy covered Kootenai River sturgeon populations. He said the drainage starts in Northeast British Columbia. White sturgeon face obstacles such as agriculture and construction of Libby Dam. Then there are impacts to the floodplain.

They looked at 15 years of movement data. Spring flow shape and habitat restoration had largest motivating effect to move them upstream. They are evaluating how to get them to spawn. A change in flow as best predictor in initiating spawning.

Shawn Young talked about 100 years of degradation. The tribe started aquaculture 31 years ago. They upgraded facilities and built new one at Twin Rivers Resort area. Major mechanical upgrades at the tribal sturgeon hatchery were listed.

Hatchery-reared juvenile sturgeon released to date: 298,000 from the 24-year class. Current hatchery-reared juvenile abundance estimate is 15,000.

The fish have dispersed widely. In the short term, we can ward off extinction. We have balanced aquaculture production with genetic management and ecosystem carrying capacity, he said. We have not been able to get sustainable natural recruitment. They population is listed as endangered in U.S. and Canada. Habitat is the key to the future.

Member Norman thanked the panel and said it's valuable to have a view of the lower to the upper reaches of the river.

8. The International Gulf of Alaska Expedition: Using a Russian research ship to study salmon on the high seas

Laurie Weitkamp, NOAA, chief U.S. scientist, spoke about her trip on the International Gulf of Alaska High Seas Winter Expedition.

Weitkamp discussed her expedition, the ship conditions, fellow crewmembers and the science involved. She said ocean studies are important in better understanding salmon since the majority of a Chinook's life is spent in the ocean. The expedition sought to test the hypothesis that adult salmon abundance is determined by the end of the first ocean winter. She said they also wanted to see if an international team could work effectively together to make the discoveries needed to be responsible stewards in a future of rapidly changing ocean ecosystems.

The science team had five countries represented: Russia, Canada, U.S., South Korea and Japan. There were eight nationalities: Russia, Canada, U.S., South Korea, Japan, South Africa, Germany and India. Also, there is a huge shore team analyzing the samples we brought back. The results won't be known for a while.

Study area objectives:

1. Identify Pacific salmon distributions in the Gulf of Alaska in winter.
2. Conduct the first abundance estimates of Pacific salmon in GOA in winter.
3. Document health and condition of salmon.
4. Test key hypothesis regulating salmon production including
 - a) Critical size and period
 - b) Temperature based distributions
 - c) Competition between species

At all 60 stations they performed physical/chemical oceanography. They sent down a CTD to collect water samples and towed for an hour near the surface. Everything caught was identified counted and measured. They collected salmon stomachs, fin clips, scales and muscle.

The total salmon catch numbers were lower than expected. The biggest catch was during the daytime, blowing their theory there are more numbers at night.

Most of the fish caught was chum, followed by coho and sockeye. Very few pink were caught, which was strange. Only three chinook were caught since they tend to be fairly deep. We were closer to the surface, she said.

Looking at Coho, they match the abundance of squid and pteropods. They did some onboard genetic stock identification and evaluated what salmon were eating.

Member Norman said he hoped to hear about the results.

Weitkamp said the North Pacific Anadromous Fish Commission is holding the Second International Year of the Salmon Workshop on Salmon Ocean Ecology in a Changing Climate on May 18–20, 2019, at the Embassy Suite in downtown Portland, Oregon. Some Council members will be involved in the activities.

9. Council [decision](#) on project review: Step 2 review of Klickitat River Spring Chinook Master Plan *YKFP-Klickitat Design and Construction*, Project #1988-115-35.

Mark Fritsch, project implementation manager, said there's a decision before the Council. He introduced Bill Sharp and Chris Frederiksen, Yakama Nation; and Mary Todd Haight, Bonneville Power Administration.

Sharp described the elements of the spring chinook master plan. They had many facilities identified, but they settled on Lyle and Castile facilities. Lyle will be the primary broodstock facility and he described capital actions to modernize it.

Frederiksen talked about the spring chinook program. There are harvest goals with most programs, but they also have conservation goals to increase viability. He described hatchery reform measures. The stock status was reviewed. There is a lot more variability in hatchery returns, compared to wild runs that have flatlined. The numbers are fairly concerning as they are well below viability standards. They aren't ESA-listed, but they are a depressed stock.

In recent years, hatchery fish comprise 30 percent of escapement on natural spawning grounds. There is a need for hatchery reform because of documented introgression with upper Columbia summer Chinook. We believe that historical hatchery practices have contributed to low returns in Klickitat.

The future program looks to incorporate greater proportion of natural origin fish. He outlined other steps to take to increase the spawning and rearing distribution of the stock to improve viability. We just don't have a lot of wild fish to work with yet, Frederiksen said.

There is a four-phased approach:

1. Implement collection of NOR adults for new hatchery stock (N1 line)
2. Propagate new hatchery line (H2 line)
3. Complete hatchery stock conversion
4. Final increase in production for both N1 and H2 lines

This is going to take some time, he said. It will be 2037 to 2041 before we get results from Phase 4.

Sharp shared input from the ISRP review, which meets scientific review criteria (qualified). They also are looking at Klickitat Delta.

Haight said this was phase two of the bigger program with the Accords.

Northwest Power and Conservation Council Motion to Support Implementation of the YKFP Klickitat River Spring Chinook Master Plan (Project No. 1998-115-35) to Final Design and Construction

Ferrioli moved that the Council recommend to Bonneville implementation of the YKFP Klickitat River Spring Chinook Master Plan (Project No. 1998-115-35), conditioned on the Yakama Nation presenting the final design and out-year costs to the Council prior to construction, as presented by staff and recommended by the Fish and Wildlife Committee.

Member Norman second.
Motion passes without objection.

10. Council Business

Northwest Power and Conservation Council Motion to Approve the Minutes of the March 12-13, 2019, Council Meeting

Member Ferrioli moved that the Council approve for the signature of the Vice-Chair the minutes of the March 12-13, 2019, Council Meeting held in Portland, Oregon.

Member Baker second.
Motion passes without objection.

Public comment

There was none.

Vice-Chair Devlin adjourned the meeting at 11:50 p.m.

Approved May _____, 2019

Richard Devlin
Vice Chair