

HABITAT COMMITTEE REPORT ON HABITAT MATTERS

Progress Toward Klamath Dam Removal

The Klamath four-dam removal project continues to advance toward final approval by the Federal Energy Regulatory Program (FERC), with the physical drawdown and removal start date still planned to begin in January 2023.

The Klamath River Renewal Corporation (KRRC) and PacifiCorp submitted their joint Final Definite Decommissioning Plan to FERC in March 2021, with 17 detailed implementation and mitigation plans. On June 17, 2021, FERC approved the license transfer from PacifiCorp to the KRRC (with the states of California and Oregon as co-licensees) as the first step of a two-step FERC approval process. Toward the final review step, FERC also formally began its National Environmental Policy Act process on June 17th. FERC anticipates issuing a draft environmental impact statement (EIS) by February 2022, with what is likely to be a 60-day comment period. The permitting processes for the U.S. Army Corps of Engineers fill and removal permits, and Biological Opinions from U.S. Fish and Wildlife Service and National Marine Fisheries Service (NMFS) regarding impacts on species listed under the Endangered Species Act (ESA), are also ongoing in parallel with the FERC process. The HC recommends that the Council comment on the dam removal draft EIS once it is published.

Klamath Juvenile Fish Mortality Event

This year's record drought coupled with a record heat wave caused water quality conditions within the Klamath River to deteriorate dramatically this spring and summer. Due to drought, there were unfortunately no additional flushing or dilution flows available to prevent *Ceratanova shasta* from rapidly spreading throughout the already stressed juvenile salmon populations (both Chinook and ESA-listed Southern Oregon/Northern California Coho). Out-migrating juvenile salmonid *C. shasta* infection rates climbed to as high as 97 percent for several weeks, with spore counts at levels that are nearly always fatal. Many dead juveniles showed up in sampling screw traps. This is the first year-class of Chinook that will return to the river as spawners after dam removal, assuming it goes forward in 2023 as planned, underscoring their importance in jumpstarting reintroduction. The Klamath rebuilding plan is also still in effect, making poor 2021 habitat conditions and near total loss of this year-class a severe setback to rebuilding efforts. This rebuilding plan may have to be adjusted to help mitigate for this year's very poor in-river conditions and juvenile losses, which will have impacts on future fisheries.

Drought Emergency Hatchery Measures

Given emergency drought conditions, heat, and extremely high inriver *C. shasta* infection rates in the Klamath throughout the summer, Iron Gate Hatchery staff and California Dept. of Fish and Wildlife (CDFW) made a first-ever decision in 2021 not to release its hatchery-raised juvenile salmonids directly into the Klamath river as usual, instead opting to retain and raise these smolts until release at the end of September or later, when river conditions will hopefully be improved. About 1.3 million juveniles were moved by truck from Iron Gate Hatchery to the Trinity River Hatchery to be raised for that purpose, with another 0.75 million smolts trucked to Fall Creek Hatchery. However, some of these fish must be released by the end of September or their continued care will exceed hatchery capacity. These fish will then be trucked back to Iron Gate Hatchery for release to minimize straying.

Sacramento Water Issues Update

The HC received a presentation from Stephen Maurano of the NMFS Sacramento Central Valley Office on the status of Sacramento River conditions and the status of salmon stocks of interest. Conditions in the system are dire. Shasta reservoir storage levels are currently at 42 percent and projected for 27 percent. The anticipated carry over storage for Shasta in 2022 is expected to be very poor, with only 730,000 acre-feet by the end of November. This will be the lowest carry over in over 40 years, compared to the originally projected 1.25 million acre-feet. Other reservoirs are in a similar poor condition. The Oroville reservoir is at a historic low and power generation has been turned off.

Ninety-six percent of California is now in severe drought status. The period from 2000-2018 is the driest on record. Chinook salmon are particularly vulnerable based on their habitat utilization and timing, and particular sensitivity. For Central Valley Spring Run Chinook, some watersheds had good returns with improved flow that allowed fish to stray into other watersheds. Butte Creek, which is not dam controlled, had some of the highest returns in a long time, around 16-20,000 fish. However, fish were crowded into thermal refugia pools and this led to a drop in dissolved oxygen and a spike in disease. As of last month, an estimated 90 percent of pre-spawning Spring-run fish were lost.

For Sacramento River Winter Chinook, the plan is to remove warm water off the surface and use the power bypass to retain cold water for later in the season as temperatures have been exceedingly warm into late fall. A number of recurrent issues are affecting these fish; large schools of salmon are clustering at tributaries to access the cold water and females are exhibiting a concerning moribund behavior of floating upside down and bumping into structures/vessels. Many of these fish are carrying a heavy fungus load.

Ocean conditions were also discussed. NMFS estimates that 50 percent of returning salmon were severely impacted by ocean conditions that also contribute to high egg mortality. Salmon were also consuming higher than normal amounts of anchovy and this change in diet has caused a

thiamine deficiency. The full repercussions of salmonid thiamine deficiency are not yet known, but NMFS believes this will impact survival for migrating adults, and fry have already exhibited severe spinal deformity and mortality.

Temperature management measures under the current drought conditions can only protect about five miles downstream of the Shasta dam, whereas under normal conditions, they can regulate temperature for up to 10 miles downstream. As a result, fish are crowded into very small cold-water pools directly below the dam. The agencies have exhausted all ability to regulate temperature as the reservoirs are now too low to regulate. Temperature-dependent mortality for Winter-run Chinook juveniles is predicted at above 80 percent but may be much greater. Warm water bypass measures and power bypass measures are being used where possible, but there are a number of factors impeding those efforts.

For Central Valley Fall Run Chinook, escapement above Battle Creek is forecasted to be low. Spawning below Keswick dam is at 10 percent of the typical spawning run as water temperatures remain warm. Water deliveries and pent-up water demands will continue into next year. NMFS expects that demand for urban water deliveries will call on Shasta reservoir to release additional water and may politically outcompete the needs of water for fish.

Looking ahead, it appears a slight La Niña is setting up, and the likelihood of reservoir refill is about a 50 percent chance. Ocean conditions might also improve somewhat next year.

Nordic Aquafarms Update

The HC received an update on the proposed Nordic Aquafarms Humboldt Bay Aquaculture project from Matt Goldsworthy (NMFS), Pete McHugh (CDFW), and Corianna Flannery (CDFW). Nordic Aquafarms is proposing to build a land-based Atlantic salmon farm on the Samoa Peninsula near Eureka. A Draft Environmental Impact Report (EIR) under the California Environmental Quality Act is anticipated to be released by Humboldt County for review and comment in October 2021.

The project is expected to include intakes of 10 to 12 million gallons per day of seawater from Humboldt Bay and at least 2.5 million gallons per day of freshwater from the Mad River. There is a proposed discharge of filtered effluent containing approximately 1 ton of nitrates per day (from fish culture activities) into state waters approximately 1¼ mile offshore in approximately 80 feet of water using an existing outfall pipe that discharges directly into Humboldt Bay. This discharge may impact essential fish habitat. More details on the water treatment and discharge should be in the upcoming permitting documents.

The HC discussed a number of environmental concerns about the proposed project including larval fish entrainment at the saltwater intake (e.g. northern anchovy), nutrient loading in the shallow photic zone and the associated increased risk of harmful algal blooms, freshwater removals from

the Mad River in light of the extended and severe drought, and escape of non-native Atlantic salmon.

Because the outfall is in state waters, the [National Pollutant Discharge Elimination System](#) (NPDES) permitting of Nordic Aquafarms California's discharge into the Pacific Ocean will be permitted through the California North Coast Regional Water Quality Control Board. Because this removes any nexus to Federal action, the project will not trigger an essential fish habitat consultation. However, NMFS has previously provided comments on the proposal (see NMFS letter appended to [Agenda Item D.1.a, Supplemental HC Report 1](#), June 2021) and will continue to engage.

The HC also received testimony from representatives of the Humboldt Fishermen's Marketing Association (HFMA) who noted that they have been concerned with the outfall discharge from the start. They also clarified that the HFMA never signed a memorandum of understanding with the company on the proposed aquaculture installation; they did have a signed statement of concerns that was eventually retracted. There was also concern expressed about plans for a testing regimen to detect any fish diseases that might be present in salmon eggs being brought into the facility and concerns about the disposal of materials associated with fish processing. The HC will continue to track this issue and **is prepared to draft a comment letter on the draft EIR and draft NPDES permit proposal if and when it becomes necessary.**

Habitat Committee Staff Officer Change

The Habitat Committee is disappointed to lose Jennifer Gilden as our staff officer. Jennifer has staffed the HC for many years and we will miss her guidance and her joyful presence. We wish her well in her future endeavors. While we will miss Jennifer on the HC, we welcome Kerry Griffin as our staff officer and hope that he will enjoy working with us.

PFMC
9/13/2021