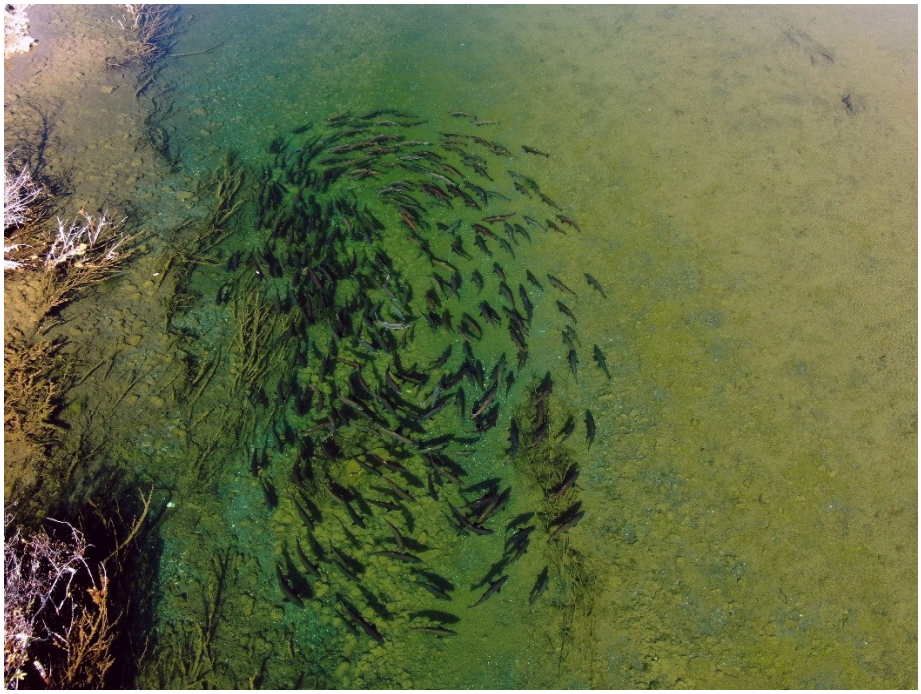
Eel River Fall Chinook Runs Drop in Response to Ocean Conditions

The 2019-2020 Eel River fall Chinook salmon run was the lowest since the Eel River Recovery Project (ERRP) began assessing runs in 2012, with an estimated 7,500–12,000 adults and jacks. This makes the second year of weak and declining returns, and evidence is pointing towards erratic ocean productivity as a causal mechanism.

Eric Stockwell and David Sopjes, who were formerly key members of the ERRP lower Eel River team, went off on their own in the fall of 2019. Eric did daily surveys from his stand-up paddleboard (SUP) or kayak of the pools and runs from Fortuna to Fernbridge from early September until late in November. He also coordinated group surveys of the 12th Street Pool where up to a dozen people paddled downstream counting fish as they swim under them on October 13 and October 27. Among the Chinook salmon were adult steelhead, half pounder steelhead, and 100-200 striped bass, opportunistic seasonal marauders.

ERRP has always been mindful of minimize stress on the salmon from counting efforts, and the continuing evolution of citizen-science in the lower Eel has helped achieve that goal. Whereas before 2015, ERRP put divers in the water that may have caused some stress in shallow pools, SUP and kayak surveys are now the standard counting method resulting in less stress to fish. David Sopjes is a retired Ferndale High School teacher who has been a core dive team member and more recently a SUP fish counter. In fall 2019, he mastered the use of the photographic drone that captured stunning still photos and videos of salmon in shallow water. He then downloaded Dot-Dot Goose software and was able to get an automated precise fish count from pictures! Remote photography also poses less stress than SUP surveys. The total early run before Thanksgiving rains was 2500 Chinook salmon, the lowest ever early count.



Chinook salmon school holding in shallow water in the lower Eel River. Photo by Dave Sopjes. 11/13/20.

Data were collected on fall Chinook salmon migrations on the main Eel River above Dyerville by the California Department of Fish and Wildlife and on the South Fork Eel River below Bull Creek by Cal Trout using Dual Frequency Identification Sonar (DIDSON) devices. These entities collected similar data in 2018, with runs of about 4000 on each branch. CDFW recently reported their 2019-2020 main Eel River estimate of 4,110 and, while Cal Trout has not yet published data, a similar level of return is likely this year. Up to 2,000 Chinook salmon likely entered the Van Duzen River, which has productive mainstem and tributary spawning gravels. Because of late rains, there was also a high amount of spawning in the lower Eel River below Dyerville. Also, smaller jack salmon can run in shallow water and may have passed DIDSON locations prior to their operation. These two groups may have numbered as many as 2,000, which totals 12,000 Chinook salmon in aggregate.

Rain did not happen until Thanksgiving in 2019 for the second year in a row, which creates a lot of stress on holding fish, since Chinook want to start spawning around November 7. Migration was further challenged as the early storms turned cold and flows dropped as snow blanketed the watershed. Fish were migrating in very little water, and many salmon spawned in main river environments, not in the headwater tributaries they would use if access was better. This may still produce a good brood of young fish, if no really intense rainfall and flow events occur.

Chinook migrating at Piercy on the South Fork Eel. Photo by Ann Constantino. 11/28/19.

So, what happened to cause a decline when signs of juvenile Chinook survival were good, at least in some years like 2015-2016? It turns out evidence is increasing pointing towards variability of ocean productivity as the reason for reduced salmon survival and recruitment. The warm water phenomenon called the Blob in 2015 was associated with an El Nino event that diminished food for salmon. However, studies by the National Oceanic and Atmospheric Administration of the California Current show that productivity remained impaired in years since. Fat shrimp-like organisms, the cold water krill, have been replaced at least temporarily by warm-water krill that provide much less nutrition for salmon juveniles and adults. There are some signs the nearshore ocean off the North Coast may be righting itself, but it is clear that recent conditions have compromised salmon survival.

This new challenge should lead us to redouble our efforts to improve freshwater habitat for Eel River salmon. ERRP will continue to work with the Wiyot Tribe and the City of Fortuna on the Lower Eel Salmon Parkway so that early fish don't have to sit in shallow water and risk stranding. We also need to repair habitat between the Potter Valley Project Dams and will be working with folks in Mendocino on the Upper Eel River Salmon Parkway implementation as part of decommission and/or relicensing. In Tenmile Creek and Outlet Creek, ERRP is targeting sediment pollution in cooperation with the Tenmile Creek Watershed Council and the Mendocino County Resource Conservation District through work on roads and gullies. ERRP has also just been awarded a Department of Water Resource Urban Stream Restoration Program grant to fix Town Creek near Covelo using bioengineering, which will also help improve conditions for salmon spawning in Round Valley.

Check out www.eelriverrecovery.org for more, follow us on Facebook to see pictures, or call Pat Higgins at 707 223-7200.