

August 7th, 2018

Observations on the Eel River from the mouth of the Van Duzen to Fernbridge

Rose Foundation Grant with Eel River Recovery Project, Friends of the Van Duzen, and Loleta Eric's Guide Service

Eric Stockwell and Sal Steinberg observing and reporting

The Van Duzen River was not flowing into the Eel River at its confluence. The channel had changed and was moving along a different channel on the left side of a curve and stopping about 200 yards from the confluence.



Eureka Sand and Gravel along with the California Department of Fish and Game have been working together following a fish kill in 2002 in which 56 chinook adults were unable to get up the Van Duzen River and subsequently died. An aluminum culvert was placed in the channel and a blockade was constructed at the confluence until it was safe for salmon passage.

In 2017 upon relicensing, the Eureka Sand and Gravel worked with NOAA – National Oceanic and Atmospheric Administration's Matt Goldsworthy to develop a new system for safe passage.

Prior to the salmon migration, it was agreed that the Eureka Sand and Gravel Company would dig a channel tapping into the underground water to insure safe passage. This appears to be a successful strategy and both industry and environmental agencies should be highly commended for their ingenuity and hard work to make this possible.

Now, much more needs to be done to assure safe holding water and passage for migrating adult salmonids in other areas of the lower eel especially below Fernbridge.

Moving from the Van Duzen confluence with the Eel River, Eric stood on his kayak and saw a school of sucker fish on three different occasions. The run from here was five feet for about 70 yards with luxuriant algae. Air temperature at 9:00 AM was 67.1 degrees and water temperature was 69.7 degrees. Eric then paddled to the riffle entering the hole and spotted three adult summer steelhead.

Moving toward Fortuna, there was significant algae along the banks. Depth of the pools was good and up to 8.2 feet. At Hanson's hole there was significant bank erosion including trash piles. Swallow nest were part of the silted bank. Run was from 3-7.5/8 feet deep.

Next by the right channel it was deep about 6 feet by the woody debris and increasing to 7 feet with a high of 8.5 feet. Riparian zone and the Hansen access was 4 feet.

The next run was at the top of the East Ferry access with very good 7 to 7.7 foot runs followed by Grizzly Bluff with runs from 8.1-8.9. A very beautiful area with herons, ospreys, and turkey vultures. The Eel began to shallow out to 4-5 feet, and then down to 2 feet.

At Miranda's Rescue, the run went from 2.6ft -3.4 ft, and then under 2 feet til we came up to a stump which was in 5 feet of water. There was a significant amount of algae in this area.

Moving north, there was a deep channel with rocks along the banks. This was the deepest hole so far with depths beginning at 5.5 at the base of the levy and increasing to 9 feet, 11.5 feet, 12.5 ft at the base of the rocks with a deep hole at 14 feet. Eric saw crawdads eating a dead shad.

At the River Lodge the run continued to be good from 11.5-12.5 feet.

Passing the River Lodge it moved to 10.5 feet. The banks of the river were held with rocks from the levee. These barriers also create an impediment for viewing salmon as it is difficult to move from the trail to the river and find a comfortable spot for seeing the migrating fish.

This is part of our Rose grant and a proposed Humboldt Area Foundation grant to find and create access areas for viewing. What Eric and I found was that with added complexity to the existing banks, bringing in more woody debris, and building up the habitat would be beneficial for the salmon run. This area from the mouth of the Van Duzen toward the levee at Fortuna was the healthiest section of the river.

Past 12th street at the Mercer Frazier and Sewer Maintenance locations, Eric and I again discussed access points. There has been a possibility of a John Campbell Trail in this area. As the biggest city on the Eel River, we are looking forward to working with the city of Fortuna to help define trails and salmon access areas.

From here the Eel began to get shallower from 4 feet to 2 feet and then less. Through this section at and below the gravel mining area, the channel began to get significantly impacted with algae, and the riffles were difficult to maneuver due to the lack of typical river formation that should consist of holes, run, and focused riffles.





At one area of last years gravel extraction activities conducted by Mercer Frasier, a small lake had formed separate from the river channel indicating that digging “impoundments” next to the existing channel is not always a successful strategy for assisting in the formation of holes that run through mining activities. Eric strongly believes that the mining focus must move into the river channel in order to immediately deepen holes and concentrate riffles. In this photo the newly formed lake is on the right and the main stem Eel is on the left.



Due to heavy rains last year and significant deposits of sediment, the main river channel for the Eel and the salmon migration now moves along the west side of the island at the north end of Fortuna. Large deposits of sediment have significantly filled in the deep holes of the Boxcar. Additionally, the Drake Hole is predominantly filled in and not usable by migrating adult fish.

The Boxcar and Drake holes have for many years been established as the main holding water for salmon that stage in the late summer and early fall between the top of tidewater at Fernbridge and the large hole at Fortuna along the levee. Over the past several years Eric Stockwell has seen first-hand how the holes have become filled in, losing the depth that can support stratification which provides cold water and also losing volume that has in the past allowed hundreds and even thousands of adult salmonids to occupy the space at one time, free of stress or the higher danger of disease and pests that comes with shallow, low volume pools that currently exist throughout the area of concern.

A strong fact supporting the advisory that fish could soon be in danger due to these conditions is Eric's observation last fall that about 500 large adult Chinook and even a 6' long sturgeon were holding at the Drake hole in no more than 8' of water and almost exclusively in about 5' of water prior to significant increases in flows from rain, and gravel mining was occurring at the same time less than a mile upstream and at the head of where the worst habitat problems now exist. The call here is to see if there is a way that the mining can be done that will benefit the fish. The fact that mining occurs at the very same time that significant numbers of migrating adults are holding in inadequate pools just below the mining operation should certainly lead to questions about why and how the mining schedule can be changed to acknowledge the importance of unhindered migration for the fish.

Danger to the salmon migration has been a pressing problem the last few years.

The Worswick is an area right above Fernbridge, and being the first piece of water above the tidal and salt influence, it has historically been the first stopping point for adult Fall Chinook as they stage for their spawning run that will come when flows increase substantially. Having fished adults and half-pounder salmonids and done a great deal of recreational paddling at the Worswick hole over the past couple of decades, Eric has seen how the river has changed rather dramatically for the worse. While the Drake and Boxcar holes are now basically useless to migrating salmon, the Worswick is still very much in play - the fish WILL arrive there within a few weeks. The conditions at Worswick right now appear very similar to the fall of 2015 when several hundred large Chinook lingered in 4' and less of algae-ridden water there, and a significant number of them went blind. **Fish disease precedes a fish kill, and that is ultimately what we're trying to stave off through documentation and communication.**



The situation is now at a critical moment as the soon to arrive fall chinook run has very little holding water right above tidewater at Fernbridge. If the lower Eel River between Fortuna and Fernbridge does not see a focused effort to deepen existing holes, then the likelihood of a fish kill involving adult anadromous fish will be high in the coming weeks. It is imperative that we find a solution to protect the migration of the salmon and insure that the holding area from Fernbridge to Fortuna have adequate habitat!

The loss of holding water in these critical holes where the Fall Chinook stage for their spawning run is far more than just a problem for the adult fish. These lower river holes represent very important habitat features in an otherwise pretty sparse gravel flood plane. For every section of the river where we allow the cumulative effects of human activity to reduce volume and carrying capacity, we are limiting the ability of our entire local ecology to thrive - this is especially true along the banks of the Eel at Fortuna. This community - largest on the entire Eel River - should be absolutely based on the health of the Eel and its fisheries instead of basically separate from any such consideration. When we consider the importance of the adult Fall Chinook staging area, overall deep water habitat and cold water through stratification, AND we also envision how much benefit could come from healthy fisheries and strong connections to the stream through trails and a commitment to well supported natural interpretive media... The sky's the limit for what could happen here!

The start to this process shouldn't be an emergency measure to stave off a fish kill, but that may well happen. My hope is that we can begin to take actions to improve habitat, and through observation and continued focus we should end up helping the situation before it gets even worse and has dire consequences for fish as well as our way of life here.

This current Rose grant: Restoration, Recreation, and Education along a Key Migratory Route in the Eel River/Van Duzen Watersheds will develop a plan to restore critical salmon habitat. It is a collaborative endeavor to engage cities, agencies, environmental groups, the Wiyot and Bear River tribes, private businesses, and community members in dialogue, meetings, proposals, and actions to protect the critical habitat of the Eel River, home to the endangered chinook and coho. If you are reading this you are part of the team, and it is imperative that we find a solution to this critical problem!

The Eel River channel from Fortuna to Fernbridge has changed with the main channel on the west island side. With the Boxcar and the Drake filled with sedimentary deposits where will the salmon go? Where will they hold? Will they know to take the channel toward the island and not take their usually journey to Drake and Boxcar and then be stranded?

Let's take a look at a report from Thomas E. Lisle reminded us of the uniqueness of the Eel River and its movement of sediment.

THE EEL RIVER, NORTHWESTERN CALIFORNIA; HIGH SEDIMENT YIELDS FROM A DYNAMIC LANDSCAPE Thomas E. Lisle

The Eel River, Northwestern California: High Sediment Yields form a Dynamic Landscape: **The Eel River draining the Coast Range of northwestern California has the highest recorded average suspended sediment yield per drainage area of any river of its size or larger unaffected by volcanic eruptions or active glaciers in the conterminous United States** (1,720 t/km² yr from 9,390 km² ; Brown and Ritter, 1971). These high rates of erosion and sediment transport result from a combination of widespread tectonic deformation of the

underlying rocks, recent rapid uplift of the landscape, high seasonal rainfall, and widespread disruption of the ground surface by man in the last century. Not surprisingly, the basin has some unusual geomorphologic characteristics. Sediment-transporting processes on hillslopes and in channels are closely linked, and as a result, high-magnitude, low-frequency climatic events are more responsible for forming channels than in most other areas.

So, how do we find a solution to this predicament. Lets also remember that last year in September, a meeting was held with all the stakeholders of the Eel at the Wiyot headquarters. Eric gave a poignant presentation as to the state of the salmon at that moment, a critical juncture in time, a dangerous moment for the fish, and key players to find solutions.

There are two major elements to preserving our environment: the human and the natural. At that time, there was no definitive answer to the question of what to do to improve the habitat. Fortunately for the fish and for the humans, rains came early and continued, and the fish had a successful migration.

And now we are faced with another year of concern and possible tragedy. One possible solution would be to utilize private industry with permits from the regulatory agencies, NOAA Fisheries and the California Department of Fish and Wildlife, to dig out the channels and deepen them. Dig it Out!

Use the model of the Eureka Sand and Gravel Company in Fortuna and create the channels so that the salmon can move safely in their migratory journey. Before they arrive, which is soon, have Mercer Frasier go into the river channel and remove the dry gravel bars in the middle of the Drake hole, making them 10-12 feet deep, provide a safe holding pool, and connecting that to the confluence of flows from around the west island, the new Eel River channel. This would be most beneficial for this migration and future migrations of the magical and mystical salmon.

