

Field Memo

Location: Lower Jacoby Creek, Bayside & Arcata, CA

Date: December 27-30, 2021; January 4, 2022

Project: Jacoby Creek Water Sustainability and Anadromous Fish Habitat Enhancement Feasibility Study

Objective(s): Fisheries sampling in over-bank flood prone locations; documentation of adult coho stranding from over-bank flows

Comments:

The Jacoby Creek watershed received greater than 3.5 inches of rain between 12/21 and 12/27/2021 (<https://www.weather.gov/wrh/Climate?wfo=eka>). On 12/27/21, the creek began to flood and flows went over bank in multiple locations upstream and downstream of Old Arcata Road, flooding many properties in lower Jacoby Creek, including at Carol Anderson's residence. TGAEC measured stream discharge of 226 cubic feet per second (CFS) at the Old Arcata Road Bridge. At the time of the discharge measurement, flood waters were flowing across OA Road, and also flowing through Carol Anderson's property via multiple flow paths, including from Ms. Anderson's adjacent neighbor Ash Tree's property. Flooding receded and ceased over the course of the following 48 hours. An additional 1.25 inches of rain fell in the area between 1/3/2022 and 1/4/2022, and resulted in additional out of bank flooding.

1. Overbank Fish sampling 12/29/2021

On 12/29/2021, TGAEC conducted fish sampling with the assistance of Katherine Stonecypher, a Humboldt State Fisheries Department Graduate Student, in the remaining wetted areas at Carol Anderson's residence and adjoining pastures, and also in lower Jacoby Creek on the City of Arcata's property (Figure 1; Plates 1-8). Ambient water quality was taken at each sampling location with a YSI Pro2030 handheld water quality meter (Table 1). Cold water temperatures, high levels of dissolved oxygen, and very low salinity values were observed at each sampling location.

Multiple beach seine hauls were completed at each location, using a 30 ft x 4 ft beach seine with sampling focused on slow water habitats (Table 2). Seven total seine hauls (different distances) were completed at the Anderson property (Plates 1 -4); six seine hauls were conducted at the City of Arcata's property (Plates 5-8). One juvenile age 0+ coho salmon (*Oncorhynchus kisutch*) and 5 three-spined stickleback (*Gasterosteus aculeatus*) were captured during the cumulative seine net sampling conducted at both locations on Carol Anderson's property (Table 2). Only three-spined stickleback (n= 12 fish) were observed in seine net hauls conducted at the City of Arcata's properties.



Figure 1. Lower Jacoby Creek locations for fish sampling following overbank flooding, 29-December-2021, Bayside and Arcata, California.

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Table 1. Water Quality parameters observed at Lower Jacoby Creek over-bank flood fish sampling locations, Bayside and Arcata, CA, 29- December-2021.

Lower Jacoby Creek Overbank Flood Location	Time	Water Temp. (°C)	Dissolved Oxygen (mg/l)	Dissolved Oxygen (% Sat.)	Conductivity (µS/cm)	Salinity (ppt)
1. Carol Anderson’s property, ~100 ft d/s from channel avulsion	0955 hrs.	8.2	10.74	91.5	73.5	0.1
2. Carol Anderson’s property, ~500 ft d/s from channel avulsion	1015 hrs.	8.2	10.63	90.6	74.5	0.1
3. “Malfunction Junction”, City of Arcata property at first farm road crossing d/s of barn parking area	1050 hrs.	8.3	10.86	92.7	92.8	0.1

Table 2. Summary for Seine net sampling, Lower Jacoby Creek over-bank flood locations, Bayside and Arcata, CA, 29-December-2021.

Location (#’s from Table 1)	Number of Seine Hauls	Species/age class captured	Number fish captured
1. Anderson	4	Coho (age 0+)	1
1. Anderson	“	Three-spined stickleback	1
2. Anderson	3	Three-spined stickleback	4
3. City of Arcata	7	Three-spined stickleback	12

Table 3. Summary for Minnow trap sampling, Lower Jacoby Creek over-bank flood locations, Bayside and Arcata, CA, 29-December-2021

Location (#’s from Table 1)	Number of Traps Deployed	Deployment Time (minutes)	Species captured	Number fish captured
1. Anderson	4	135-150	none	n/a
3. City of Arcata	5	120-140	Three-spined Stickleback	8

Four minnow traps baited with frozen salmon roe were deployed at Carol Anderson's property, and additionally, five baited minnow traps were deployed at the City of Arcata's properties in the vicinity of "Malfunction Junction" on 29-December-2021 (Table 3). Soak times ranged between 135 and 150 minutes per trap set at the Anderson property, and 120-140 minutes per trap set on the City of Arcata's property. Zero fish were captured using minnow traps at the Anderson property (Table 3). Three-spined stickleback were the only fish species captured in minnow traps on the City of Arcata's property.

2. Documentation of Adult Coho stranding and mortality from overbank flooding

On 12/27/2021, at approximately 1100 hours, Carol Anderson reported that she visually observed an adult salmon swimming in her flooded front yard and that she also observed several smaller fish in her flooded yard (Figure 2, Plates 9 & 10). Ms. Anderson reported that she observed the adult salmon swim under her neighbor's fence shortly after taking these pictures, and did not see the fish again.

On 30-December-2021, after flood waters had receded, Ms. Anderson informed me that a salmon carcass had been discovered under brushy vegetation on her neighbor Ash Tree's property, immediately adjacent to where Ms. Anderson had last seen the fish swimming through a fence on 27 December 2021 (Plates 11-13). After retrieving and inspecting the carcass, I determined the fish was an unspawned female adult coho, 27 centimeters fork length.

Additional rainfall occurred in the area during January 3-4, 2022, and resulted in additional over-bank flooding in Lower Jacoby Creek and specifically on the Anderson/Tree properties in Bayside. On the morning of January 4th, Ms. Anderson called to report an adult salmon was stranded "swimming around in her flooded yard." A senior fisheries biologist from the California Department of Fish and Wildlife responded to the Anderson property, where he was able to locate one adult coho from flood waters near Ms. Anderson's barn, and using a dip-net was able to capture and release the fish back into the mainstem of Jacoby Creek (Plates 14 & 15).



Plate 1. View downstream from channel avulsion of flooded pasturelands at Carol Anderson's property, 29-December-2021, Bayside, California.



Plate 2. Location of juvenile coho salmon captured with a beach seine, in flooded pasturelands at Carol Anderson's property, 29-December-2021, Bayside, California.



Plate 3. Juvenile coho salmon captured with a beach seine, in flooded pasturelands at Carol Anderson's property, 29-December-2021, Bayside, California.



Plate 4. Flooded pasturelands and seine net sampling location, on Carol Anderson's property, 29-December-2021, Bayside, California.



Plate 5. Minnow trap and seine net sampling location, in vicinity of "Malfunction Junction", City of Arcata property, 29-December-2021, Arcata, California.



Plate 6. Minnow trap and seine net sampling location, in vicinity of "Malfunction Junction", City of Arcata property, 29-December-2021, Arcata, California.



Plate 7. Minnow trap sampling location, ~200 ft upstream of "Malfunction Junction", City of Arcata property, 29-December-2021, Arcata, California.



Plate 8. Minnow trap sampling location, ~250 ft upstream of "Malfunction Junction", City of Arcata property, 29-December-2021, Arcata, California.



Plate 9. View of adult salmon stranded in flooded driveway at Carol Anderson's residence, 27-December-2021, Bayside, CA. Photo by Carol Anderson.



Plate 10. Closeup view of adult salmon stranded in over-bank flooding, Carol Anderson's property, 27-December-2021, Bayside, CA. Photo by Carol Anderson.



Figure 2. Locations where adult coho were observed stranded following over-bank flooding in Jacoby Creek, late December 2021- early January 2022, Bayside, CA



Plate 11. Carcass of adult Coho recovered after flooding 30-December-2021, Ash Tree's residence, Bayside, CA.



Plate 12. Additional view of Coho carcass recovered after flooding, 30-December-2021, Ash Tree's residence, Bayside, CA.



Plate 13. Photo-documentation that recovered coho carcass was an unspawned female, 30-December-2021, Ash Tree's residence, Bayside, CA.



Plate 14. Adult coho stranded in Carol Anderson's flooded yard, 04-January-2022, Bayside, CA.



Plate 15. Adult coho rescued from Carol Anderson's flooded yard being released back into mainstem Jacoby Creek, 04-January-2022, Bayside, CA.