



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

CA-NV Fish Health Center  
24411 Coleman Hatchery Road  
Anderson, CA 96007



Memorandum

DATE: May 12, 2022

TO: Nicholas Hetrick, FAC Program Lead – Arcata Fish and Wildlife Office

FROM: Anne Voss, Fish Biologist – CA-NV Fish Health Center

The California-Nevada Fish Health Center (Center) works collaboratively with the Service's Arcata Fish and Wildlife Office (AFWO) and the Karuk and Yurok tribes to monitor the prevalence of *Ceratonova shasta* infections in juvenile salmon in the Klamath River. The Center coordinates this annual monitoring project, provides laboratory support, and generates an annual summary report for the study. AFWO and tribal biologists are responsible for collecting fish samples for the Center.

For the 2022 outmigration season, the Center will strive to provide Quantitative Polymerase Chain Reaction (QPCR) testing of juvenile Chinook salmon collected from the Shasta River to Scott River (K4 or "Kinsman") reach in a time-sensitive manner. The goal is to provide weekly-stratified estimates of *C. shasta* prevalence of infection (POI) and DNA copy number to managers on a weekly basis during the outmigration season.

Prevalence of infection is the measure used in medicine and epidemiology to define individuals affected by a disease at a particular point in time, within a given sample set. Also known as Point Prevalence, it describes the proportion (percentage) of a group that has the condition (infection) at a specific point in time. The quantity of parasite DNA (*C. shasta* DNA copy number) is provided, when applicable, to evaluate the parasite load within the fish.

To date, QPCR testing has been performed for juvenile Chinook salmon collected in the K4 reach through week 8 of the study, as presented in Table 1.

Table 1. Weekly-stratified prevalence of infection (POI) of *Ceratonova shasta* in juvenile Chinook salmon captured in the Shasta River to Scott River reach (K4) of the Klamath River.

Sample Week	Collection Date	Number of Fish Collected	Number of Fish Positive	<i>C. shasta</i> POI	DNA copy number range (log scale)	DNA copy number over 3 logs
1	3/22/2022	29	0	0%	n/a	n/a
2	3/29/2022	30	0	0%	n/a	n/a
3	4/05/2022	60	0	0%	n/a	n/a
4	4/12/2022	60	10	17%	0.8 – 3.3	2%
5	4/20/2022	57	38	67%	0.7 – 2.9	0%
6	4/26/2022	30	14	47%	0.8 – 2.9	0%
7	5/02/2022	60	33	55%	0.7 – 3.8	12%
8	5/09/2022	60	38	63%	0.9 – 5.2	5%

\*Note: Fish collected in week 1 through 4 were of natural origin.

Iron Gate Hatchery released Chinook Salmon smolts into the Klamath River on April 12, 2022 therefore fish in week 5 through 8 were collected from the combined natural and hatchery population.