



United States Department of the Interior

FISH AND WILDLIFE SERVICE

CA-NV Fish Health Center
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Memorandum

DATE: June 2, 2023

TO: Nicholas Som, Statistician – 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 2023 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 11 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	03/23/2023	18	0	0%	n/a	n/a
2	03/28/2023	30	0	0%	n/a	n/a
3	04/04/2023 04/05/2023	59	0	0%	n/a	n/a
4	04/11/2023 04/12/2023	43	0	0%	n/a	n/a
5	04/18/2023	60	0	0%	n/a	n/a
6	04/26/2023	58	0	0%	n/a	n/a
7	05/04/2023	60	22	37%	0.7 – 1.7	0%
8	05/08/2023	60	11	18%	0.7 – 2.1	0%
9	05/14/2023 05/16/2023	60	26	43%	0.7 – 2.7	0%
10	05/23/2023	30	28	93%	0.8 – 5.7	23%
11	05/31/2023	59	56	95%	0.7 – 6.1	29%