



United States Department of the Interior

FISH AND WILDLIFE SERVICE

CA-NV Fish Health Center
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Memorandum

DATE: May 14, 2021

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* and *Parvicapsula minibicornis* 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 2021 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	3/23/2021 3/24/2021	30	0	0%	n/a	n/a
2	3/30/2021	30	1	3%	1.1	0%
3	4/06/2021	60	0	0%	n/a	n/a
4	4/13/2021	60	9	15%	0.7 - 1.5	0%
5	4/20/2021	60	26	43%	0.8 – 2.3	0%
6	4/27/2021	60	47	78%	0.7 – 4.3	15%
7	5/04/2021	60	58	97%	0.9 – 6.2	63%
8	5/11/2021	41	40	98%	1.4 – 5.9	60%