MEMORANDUM

DATE: **July 22, 2013**

TO: **Nick Hetrick, Arcata FWO**

FROM: **Kimberly True**
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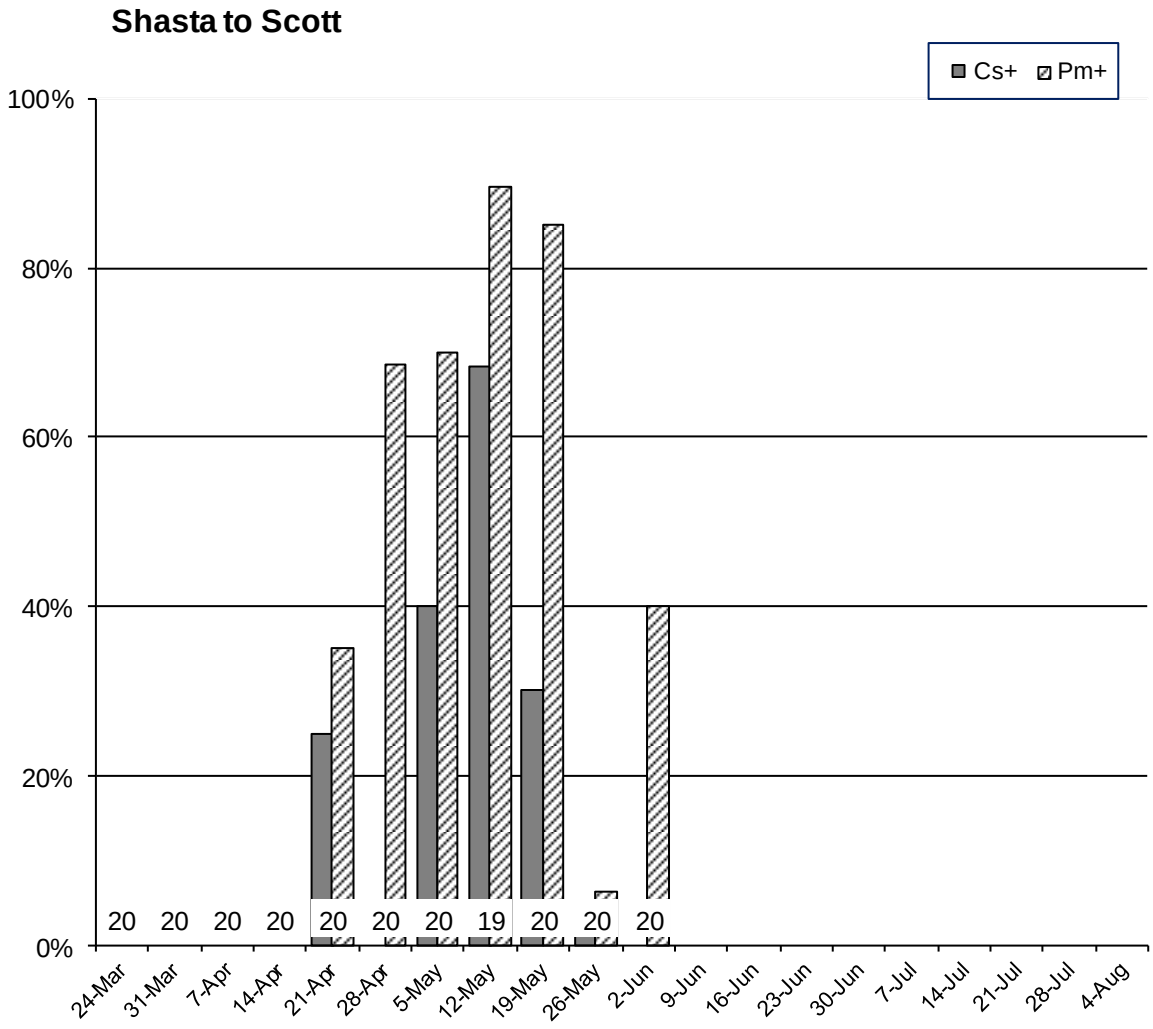
SUBJECT: **2013 Klamath River Juvenile Chinook Salmon Health Monitoring**

As a component of Klamath River fish health assessment, the California-Nevada Fish Health Center is examining juvenile Klamath River Chinook salmon to monitor the prevalence of *Ceratomyxa shasta* and *Parvicapsula minibicornis* infection. Fish are collected by biologists with the Karuk Tribe, Yurok Tribe, and US Fish and Wildlife Service. The CA-NV Fish Health Center is coordinating disease monitoring efforts and providing laboratory support for the project.

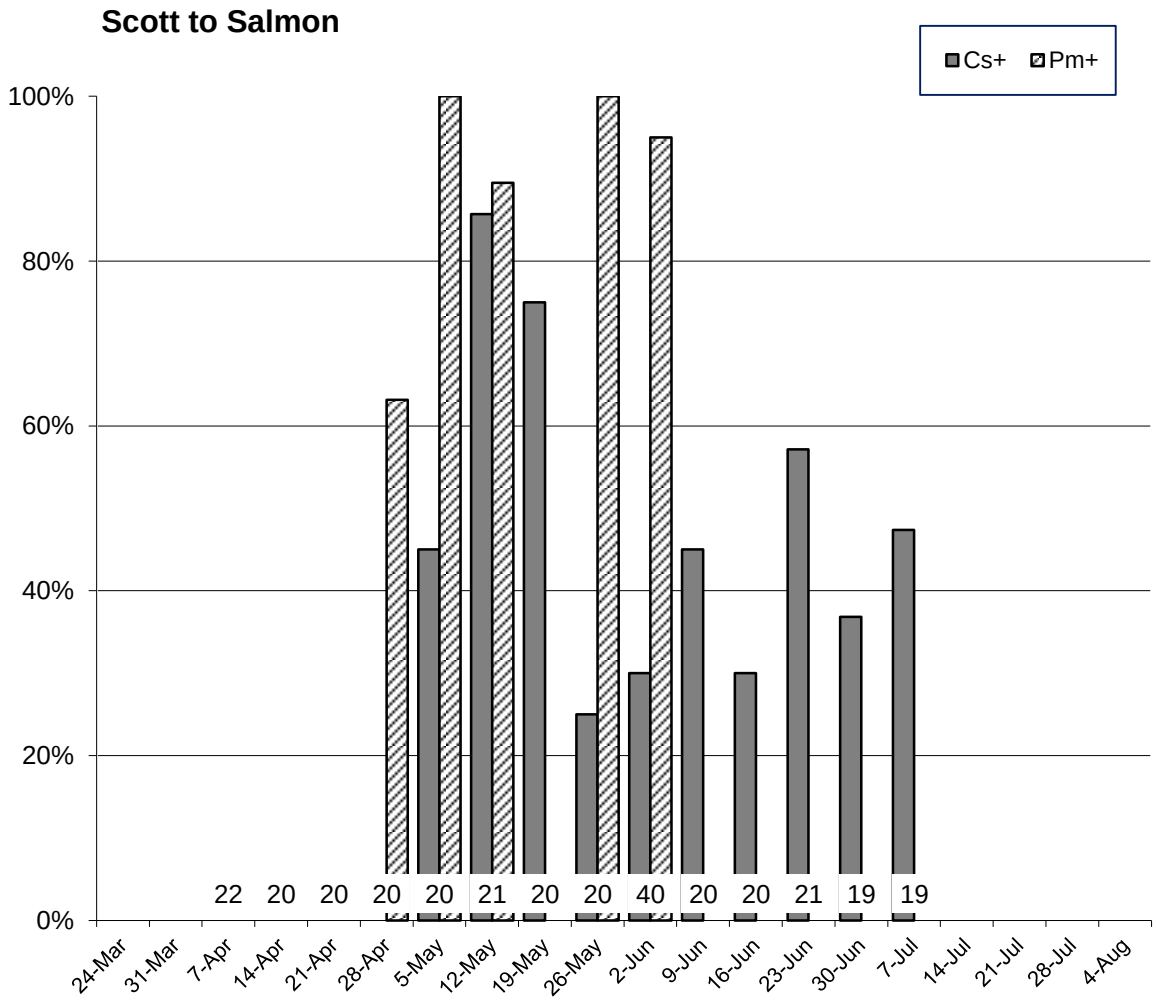
To date, QPCR testing has been performed for fish collected from March through early June for the Shasta to Scott (K4) reach, and from April through early July for the Scott to Salmon (K3), Salmon to Trinity (K2), and Trinity to Estuary (K1) reaches. Iron Gate Hatchery initiated juvenile Fall Chinook salmon releases on May 22nd.

Ceratomyxosis clinical disease signs were first observed in juvenile Chinook salmon collected from the Shasta to Scott (K4) reach in mid-May (natural fish) and in mid-June (hatchery origin). ***Ceratomyxa shasta*** **has been detected in 30.1%** (194/644) of fish tested to date. Columnaris clinical disease signs were first observed in juvenile Chinook salmon collected from the Scott to Salmon (K3) reach in early June; severity of infection was low by gross examination, histology data are pending. ***Parvicapsula minibicornis*** **has been detected in 45.3%** (164/362) of fish tested to date. Weekly myxozoan parasite prevalence of infection data are summarized by sample week in the figures below: *C. shasta* is shown in Figures and Tables 1-4, *P. minibicornis* is shown in Figures 1 and 2 (not shown in tables). All data are preliminary and subject to revision.



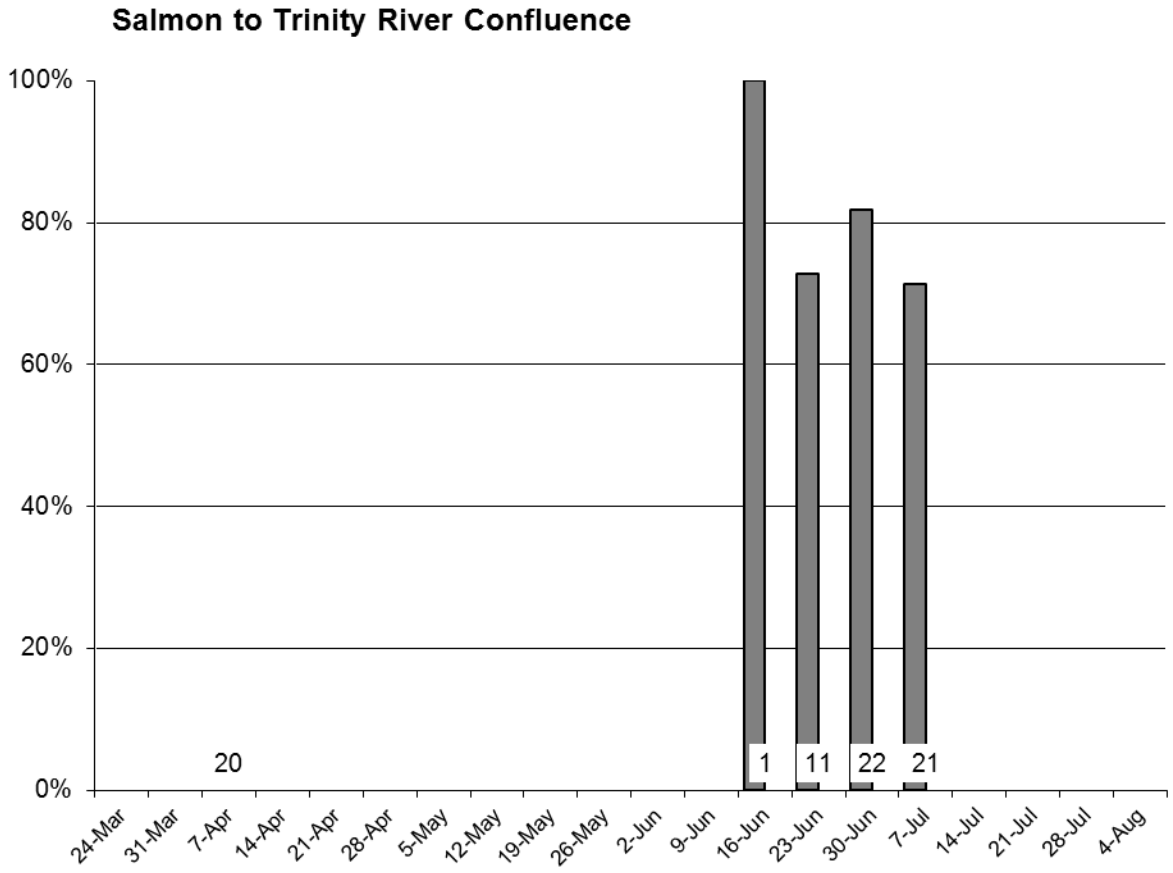
Weekly Date	Total Number of Samples (N)	Number *Cs* Positive
24 Mar	20	0
31 Mar	20	0
7 Apr	20	0
14 Apr	20	0
21 Apr	20	5
28 Apr	20	0
5 May	20	8
12 May	19	13
19 May	20	6
26 May	20	1
2 Jun	20	0

Figure 1/Table 1. Weekly prevalence of *Ceratomyxa shasta* and *Parvicapsula minibicornis* infection (Figure 1 only) in juvenile Chinook salmon captured in the Shasta to Scott (K4) reach on the Klamath River.



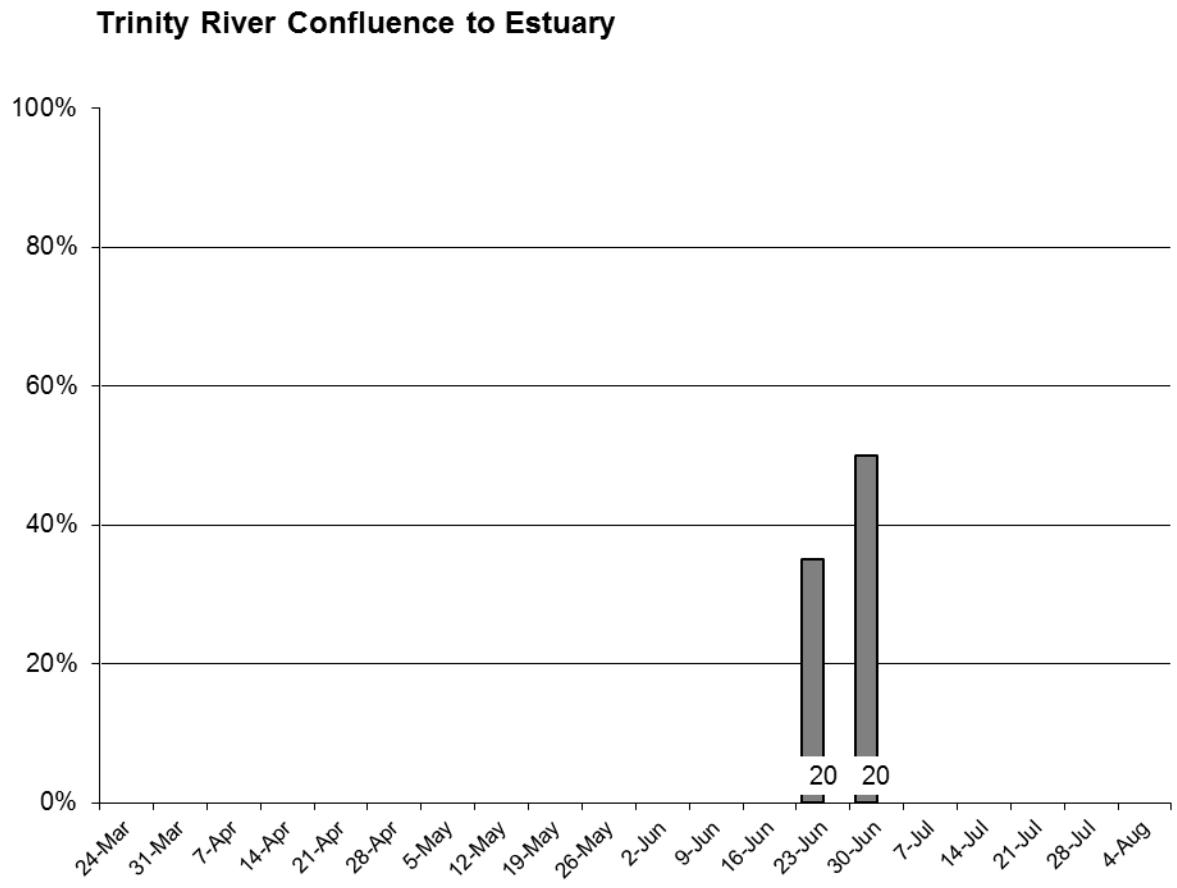
Weekly Date	Total Number of Samples (N)	Number *Cs* Positive
7 Apr	22	0
14 Apr	20	0
21 Apr	20	0
28 Apr	20	0
5 May	20	9
12 May	21	18
19 May	20	15
26 May	20	5
2-Jun	40	12
9-Jun	20	9
16-Jun	20	6
23-Jun	21	12
30 Jun	19	7
7 Jul	19	9

Figure 2/Table 2. Weekly prevalence of *Ceratomyxa shasta* infection and *Parvicapsula minibicornis* infection (Figure 2 only) in juvenile Fall Chinook salmon captured in the Scott to Salmon (K3) reach on the Klamath River.



Weekly Date	Total Number of Samples (N)	Number *Cs* Positive
7 Apr	20	0
16-Jun	1	1
23-Jun	11	8
30 Jun	22	18
7 Jul	21	15

Figure 3/Table 3. Weekly prevalence of *Ceratomyxa shasta* infection in juvenile Fall Chinook salmon captured in the Salmon to Trinity River (K2) reach on the Klamath River.



Weekly Date	Total Number of Samples (N)	Number *Cs* Positive
23 Jun	20	7
30 Jun	20	10

Figure 4/Table 4. Weekly prevalence of *Ceratomyxa shasta* infection in juvenile Fall Chinook salmon captured in the Trinity River to Estuary (K1) reach on the Klamath River.