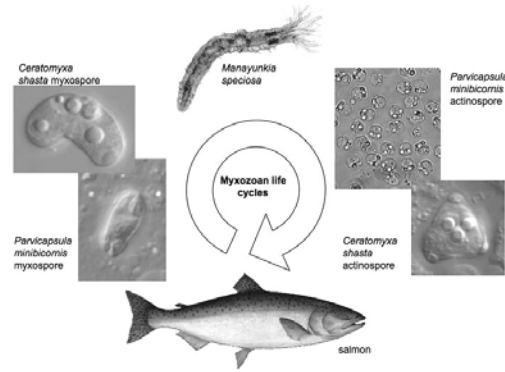


**CERATOMYXA SHASTA:
PRELIMINARY FISH EXPOSURE
RESULTS**

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SENTINEL FISH EXPOSURES:

Sentinel exposures are being conducted to determine:

1. How infection levels this year compare with levels in previous years.
2. How temperature affects disease rate.
3. If the distribution of the parasite has changed.
4. The relative susceptibility of Chinook and coho salmon
5. The relationship between parasite numbers measured in water samples and biological effects in the different fish species.

Exposures were conducted May 15-18, June 18-21 and Sept 22-14, 2007 for ~72 hrs at locations in the upper and lower river (**Figure 1**). Rainbow trout and Chinook salmon (IGH stock) were held at all sites; coho salmon (IGH stock) were held only at the site above Beaver Creek. In June, Trinity River steelhead were also held at the Beaver Creek site. **Difference in protocol in 2007: fish were held at average Klamath River temperature as well as at the normal laboratory water temperature of 13°C. In May ambient water temperatures averaged 18°C, 20°C in June, and 18°C in Sept. Data for September is still preliminary as surviving fish are still being tested by PCR.**

Rainbow trout (*C. shasta*-susceptible strain) were held at all sites at both temperatures to provide a baseline for between-year comparison. Similar to previous years, the general pattern of mortality in rainbow trout during May shows the Williamson River, Beaver Creek and Seiad Valley exposure groups having similarly high mortality (**Figure 2**). Mortality in the group held at Orleans was also high, but the mean time to death was decreased, indicating a lower exposure dose. As in previous years, mortality was low among fish held at R-Ranch and Keno Eddy. In June, there continued to be decreased mortality in the groups held at R-Ranch and Keno Eddy compared with other exposure sites, and mortality increased at Tully Creek compared with the May exposure. In September, rainbow trout were exposed at all locations but were held at 18°C, the average river temperature, when returned to the laboratory. This contributes to the overall increased mortality for this exposure. However, mortality at Keno Eddy continued to be low and mortality at R-Ranch was lower than at all sites below Iron Gate Dam.

The cumulative mortality from *C. shasta* for all groups exposed at Beaver Creek in May, June and Sept and held at two temperatures, 13°C and 18°C, is compared in **Figure 3**. For rainbow trout, although mortality was nearly 100% at either temperature each month, the mean day to death was lower for the fish held at 18°C (e.g. 22 d versus 37 d at 13°C

in May). For the May and June exposures, mortality in coho salmon was approximately 80% when fish were held at average ambient river temperatures and decreased to approximately 30% in September. Mortality in Chinook salmon increased from 27% in May to 40% in June, then decreased to less than 5% in September.

Chinook salmon were held at two temperatures at all sites, with mortality predictably higher in the cohorts held at ambient river temperature. There was no mortality in Chinook salmon held in the upper Klamath River, despite the high infection prevalence among rainbow trout held at the Williamson River site. Mortality in Chinook salmon groups held at 13°C was less than 5% at all exposure sites. Comparison of cumulative mortality for groups held at 18°C for each month is shown in **Figure 4**. Mortality occurred in Chinook salmon held at Seiad Valley and Beaver Creek during each exposure period, with the highest mortality occurring in June: Seiad Valley - 40%; Beaver Creek - 30%. At Orleans, mortality was below 5% in May and June and no fish were lost in September. There was no Chinook salmon mortality at any other sites.

Coho salmon were only held at the Beaver Creek site (**Figure 3**). Mortality in the groups held at 13°C after exposure was low for all exposure periods. However, mortality in groups held at ambient river temperature (18 – 20°C) was greater than 80% in May and June, and 35% in September. At the higher temperature, mortality in coho salmon was greater and mean day to death lower than for Chinook salmon in all exposures.

Trinity River steelhead exposed at Beaver Creek during June and held at either temperature did not become infected.

Figure 1. Map of sites for exposures of sentinel fish in 2007.

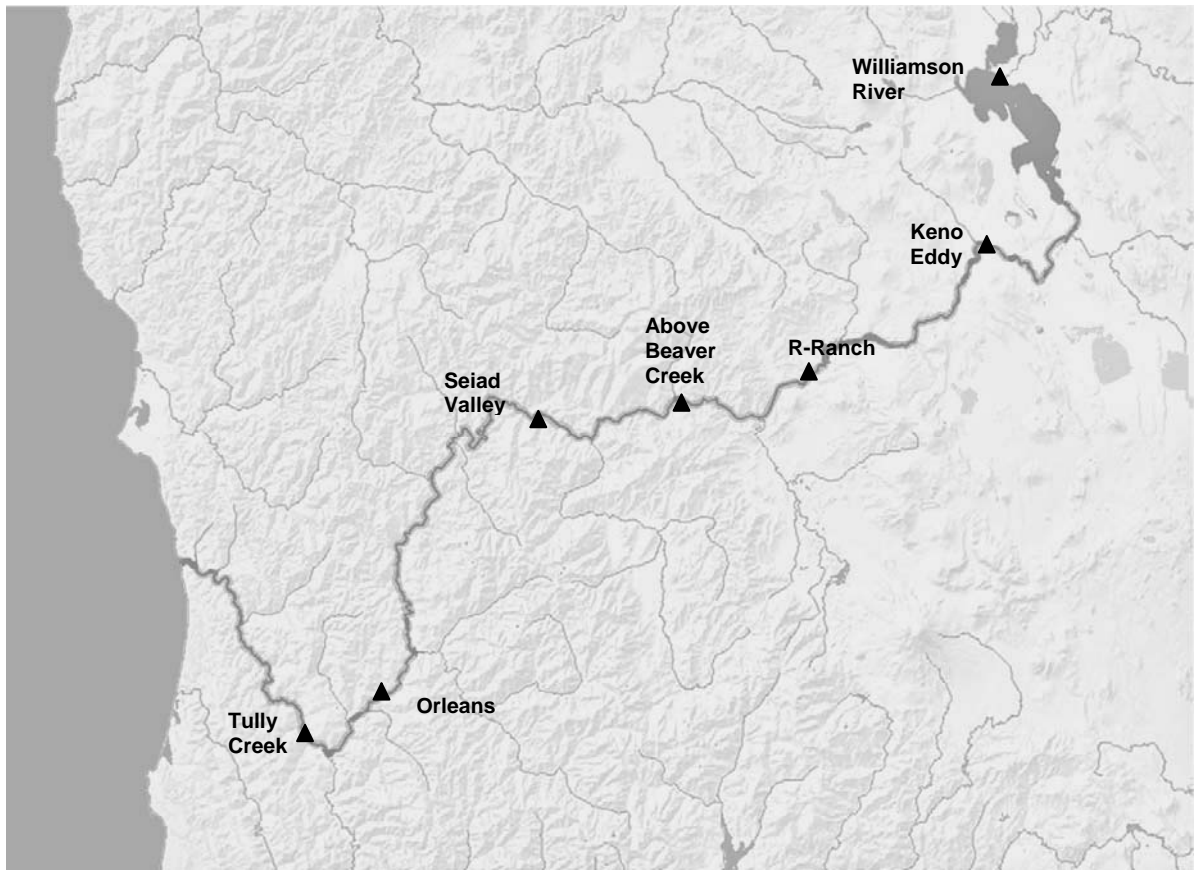


Figure 2. Mortality curves for susceptible rainbow trout held at all Klamath River sites.

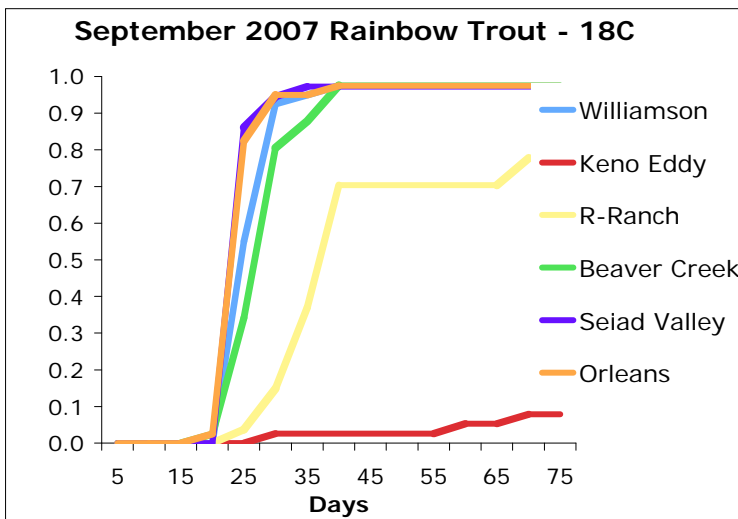
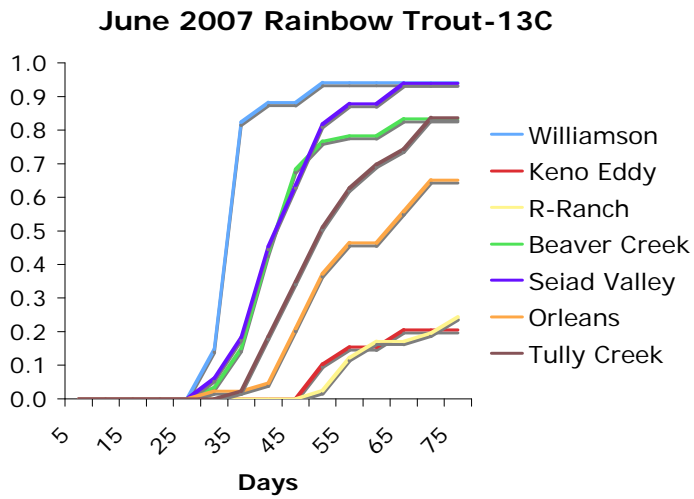
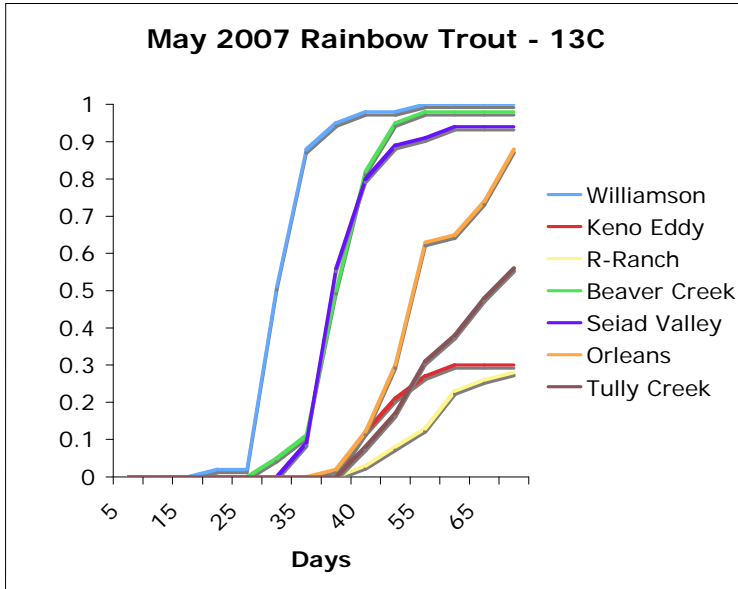


Figure 3. Percent mortality for all species exposed at Beaver Creek in May, June and September 2007

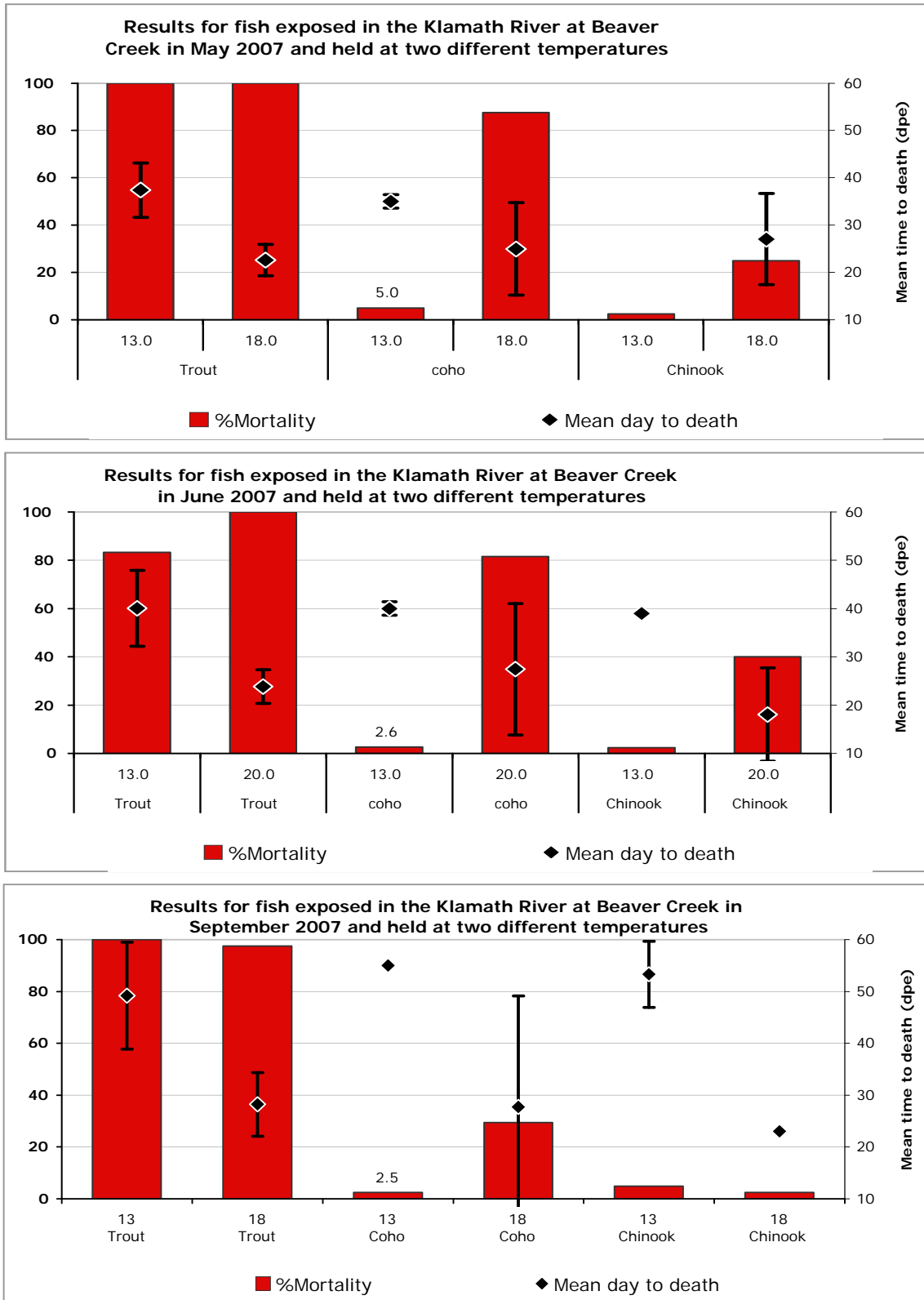


Figure 4. Cumulative mortality for Chinook salmon held at all exposures sites

