found the geographical and seasonal pattern of abundance of *C. shasta* largely consistent during our monitoring program, although parasite levels fluctuate between years. The parasite increases in abundance in the spring from less than 1 spore/L to peak in June at over 100 spores/L (at Beaver Creek, Rkm 259; 45 Rkm below Iron Gate Dam). Above Beaver Creek, levels are low (around 1 spore/L), and below Beaver Creek abundance decreases westward, likely a combination of dilution from the tributaries and disintegration of the fragile actinospore stage. Only small quantities of parasite (less than 1 spore/L) are detected in the tributaries. Generally, mortalities in sentinel Chinook attributable to *C. shasta* occur once parasite abundance exceeds 10 spores/L. Inconsistencies in dose and mortality (i.e. lower and upper Klamath River) appear to be explained by the presence of two different strains of parasite that differ in host preference. We have now accumulated sufficient data to begin looking for patterns in parasite abundance associated with variables including water flow and temperature.

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Effects of Myxozoa Disease on Population Dynamics of Klamath Fall Chinook Salmon

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Animal populations are frequently infected by pathogens, but it is not always easy to determine their significance on overall population dynamics. One of the difficulties in detecting disease effects in population time-series data originates from the fact that the hosts are also affected by many other environmental factors. In this study, we investigated the effect of *Ceratomyxa shasta* (a myxozoa) disease on the population dynamics of fall-run Chinook salmon spawning within the Klamath River basin (California, USA). We analyzed existing spatially structured abundance data for naturally spawning salmon and survival data on hatchery-released salmon, and examined the effect of *C. shasta* disease. The results from this analysis were supplemented with previous results from a field experimental study monitoring fish survival and a field sampling of *C. shasta* infection rates among migrating juvenile salmon. Based on this synthesis of the results, we conclude that *C. shasta* disease significantly affects the survival of fish that migrate through the location where the pathogen is concentrated, and that this effect is detectable in both survival and spawning-abundance estimates.

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