

Effects of turbidity on predation vulnerability of juvenile humpback chub to rainbow trout and brown trout

David Ward and Rylan Morton-Starner
 Grand Canyon Monitoring and Research Center
 dlward@usgs.gov

Methods



4 trout predators per tank
 12 juvenile chub per tank
 24 hour trial

Brown trout
 mean TL = 261 mm

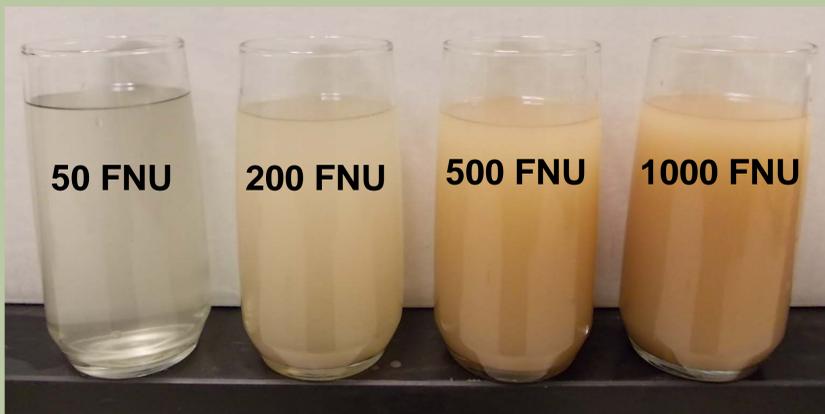
Rainbow trout
 mean TL = 285 mm



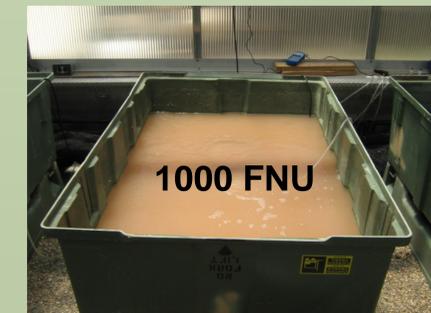
Humpback chub
 mean TL = 56 mm

Humpback chub
 mean TL = 55 mm

Four Turbidity Treatments



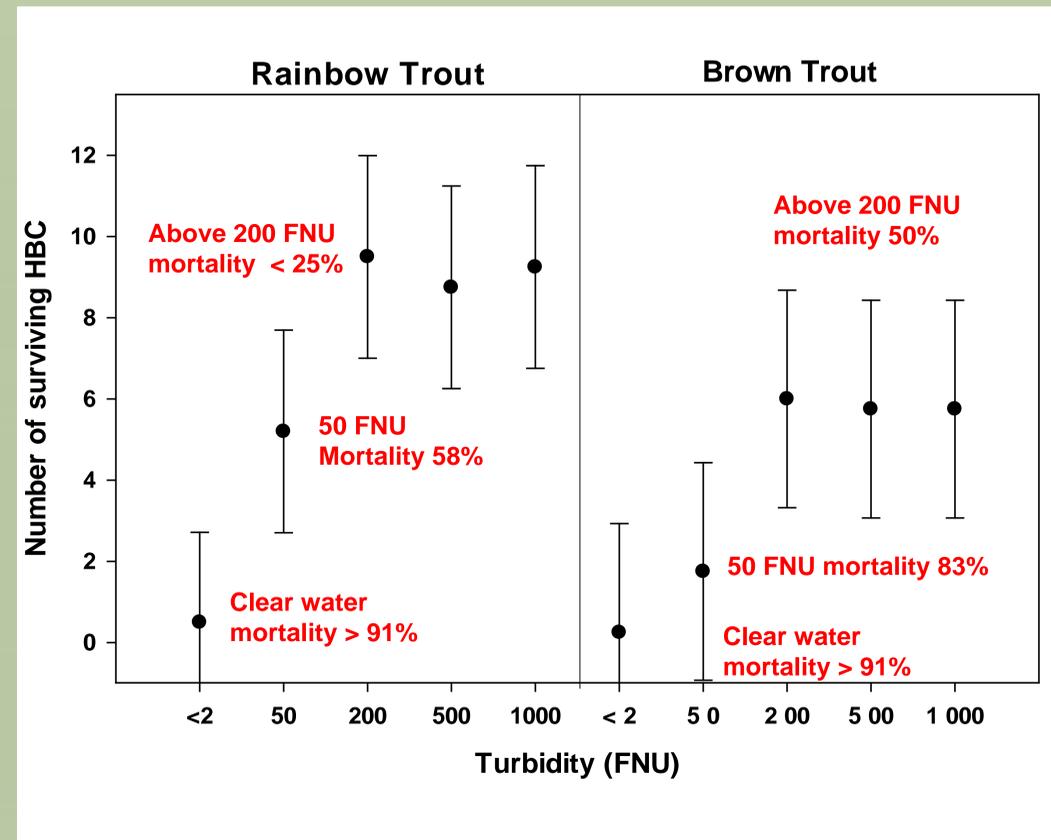
Abstract
 Predation of juvenile fish by trout is considered a significant threat to the persistence of humpback in Grand Canyon. Diet studies of rainbow and brown trout, collected from the confluence of the Little Colorado and Colorado rivers, indicate there are differences in the incidence of piscivory with changes in turbidity. In overnight laboratory trials, we exposed hatchery-reared, juvenile humpback chub to adult rainbow and brown trout at turbidities ranging from 0 to 1000 FNU mixed from Little Colorado River mud. Relatively small changes in turbidity may be sufficient to alter predation dynamics in the mainstem Colorado and may warrants further evaluation as a management tool.



The Colorado River pre-dam was >1,000 FNU 50% of the year



The Colorado River post-dam is < 26 FNU 50% of the year



Each point = 4 overnight trials, error bars represent 95% confidence intervals

Preliminary Data – Do Not Cite