C O L O R A D O P A R K S & W I L D L I F E

Predation on Stocked Fish

ASSESSING THE PREDATORY THREAT OF INTRODUCED SPECIES TO MANAGED SPORT FISH

Does predation limit the survival of sport fish stocked into Colorado's lakes and reservoirs?

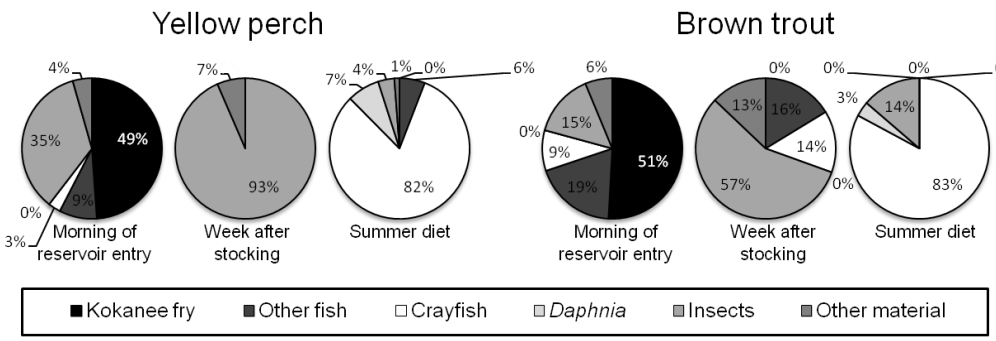
All fish are vulnerable to predation by larger fish during some phase of life. If predation is high and persistent, stocked fish may not survive long enough to grow to a size that can be caught and harvested in the numbers desired by anglers. In these situations, management actions such as stocking larger fish or adjusting harvest regulations on predators could boost survival. Determining whether different species pose a significant predatory threat to stocked sport fish, and if so, how to best manage the situation, first requires an examination of the interactions among suspected predators and stocked fish.

Recent study: threat of yellow perch to stocked kokanee salmon fry

Yellow perch were first detected by CPW in Blue Mesa Reservoir, Colorado's premier kokanee salmon fishery, in 2001. Yellow perch feed on *Daphnia* (food for kokanee), other invertebrates, but also small fish. There was growing concern and perception from the public and some angler groups that yellow perch were having a detrimental effect on the stocked kokanee fry that maintain this phenomenal fishery. CPW determined that it was important to address these concerns objectively by conducting a focused study on the subject. During 2016, researchers estimated the seasonal diet and habitat use of yellow perch and compared these to brown trout and to the habitat use and growth of kokanee fry. Brown trout have been present since the reservoir was filled in 1965 so they were a good reference species for gauging the predatory threat of yellow perch.

Key results and management implications:

Contrary to perceptions, yellow perch showed a limited predatory threat to kokanee fry. Yellow perch behaved similarly to brown trout by occupying nearshore areas away from offshore kokanee and eating mostly crayfish and insects throughout the year. Predation by yellow perch and brown trout on kokanee was brief and confined to the inlet during spring when fry stocked upstream entered the reservoir. The pie charts below show how quickly kokanee fry disappeared from the diet of each predator. Kokanee were 50% of stomach contents for each species the morning fry entered the reservoir, but dropped to 0% one week later. Because brown trout were more abundant and consumed more individual fry, their predation on kokanee in the inlet was 39-times greater than yellow perch. Kokanee fry outgrew 58% of adult yellow perch by June and 95% by October, further limiting predation. Yellow perch did not measurably affect the amount of *Daphnia* available to kokanee. This research highlights the importance of addressing uncertainties with appropriately designed studies relevant to the species and reservoir in question to guide informed management decisions.



Peer-reviewed publication: Hansen, A.G., J.S. Thompson, L.N. Hargis, D. Brauch, and B.M. Johnson. *Under review*. Predatory threat of illegally introduced yellow perch in a salmonid dominated reservoir food web. *North American Journal of Fisheries Management*.