

Blue Mesa Lake Trout



ACHIEVING LAKE TROUT AND KOKANEE FISHERY OBJECTIVES THROUGH LAKE TROUT HARVEST

Can trophy lake trout and kokanee be maintained through increased harvest of small lake trout?

Kokanee fry survival has declined since lake trout began naturally reproducing within Blue Mesa Reservoir beginning in the early 1990's. This decline was due to higher predation from the expanding and now larger population of predatory-sized lake trout (**Figure 1**). Anglers value opportunities to fish for both kokanee and lake trout. Kokanee provide the greatest draw for overall catch and harvest while lake trout provide the greatest draw for their trophy potential. Lake trout over 50 pounds and 44 inches in length have been caught. However, lake trout require plentiful kokanee as prey to achieve such large size (**Figure 2**). Improving kokanee fry survival by reducing predation from small lake trout is necessary for maintaining abundant kokanee and associated benefits to anglers seeking to catch and eat kokanee or seeking trophy lake trout.



Recent study: managing for coexistence of kokanee and trophy lake trout

Unsustainable levels of predation by lake trout can lead to rapid declines in kokanee abundance and in lake trout growth and body condition. Immediately following a 90% decline in kokanee abundance during the 2000's, CPW initiated fall netting efforts for lake trout in 2009 to recover kokanee while still providing for a trophy lake trout fishery. Additional harvest of lake trout is needed to achieve these management objectives. Recent research demonstrated that increased removal of primarily small, young lake trout could improve kokanee fry survival, the overall abundance of kokanee, and produce more trophy lake trout. It is possible that this increased harvest could be achieved through a lake trout harvest incentive program, but may require additional netting if angler harvest is not sufficient.

A harvest incentive tournament can lead to improved angler involvement and efficient fisheries management:

Fall netting by CPW supplemented angler harvest by removing ~1,200 lake trout annually from 2009 through 2017 while returning trophy-sized lake trout to the water. Angler harvest averaged ~6,000 lake trout annually over this period (**Figure 3**). As a result of these joint efforts, the abundance of predatory-sized lake trout has decreased recently (**Figure 1**) and kokanee survival and abundance has improved. However, recent lake trout monitoring surveys indicate that numerous small lake trout are now growing larger and expected to switch to preying on fish. CPW feels there is an opportunity to further encourage angler harvest through a lake trout harvest incentive program which could more efficiently remove enough small lake trout such that netting would not be required. Ninety-six percent of lake trout harvested by anglers and netted by CPW were smaller than 24 inches in length.

Lake trout harvest incentive tournament details:

- Only heads from lake trout less than 24 inches will be accepted.
- Tournament dates: February 1st through July 31st, 2020.
- Prizes for most heads turned in: \$1,000 for most, \$500 second most, \$250 third most.
- Prize for each tagged fish turned in: \$250 (tags are not visible).
- Twenty \$200 prizes randomly selected with one chance for each head turned in.
- Head drop off locations: Iola, Elk Creek, and Lake Fork Marinas; Gunnison and Montrose CPW offices.
- Call (970) 641-7070 or email dan.brauch@state.co.us for more information.

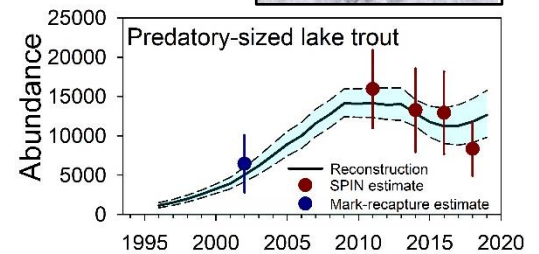


Figure 1. Reconstructed population trajectory of predatory-sized lake trout over time (years) based on abundance estimates from netting (SPIN) and mark-recapture surveys.

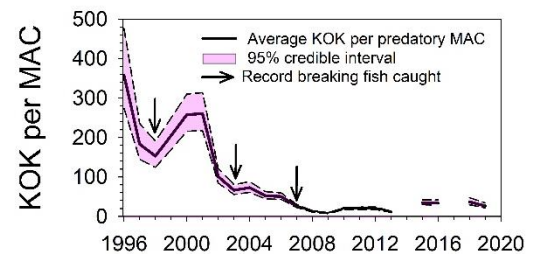


Figure 2. Average number of kokanee (KOK) per predatory-sized lake trout (MAC) present in Blue Mesa Reservoir over time (years) in relation to when state-record fish were caught.

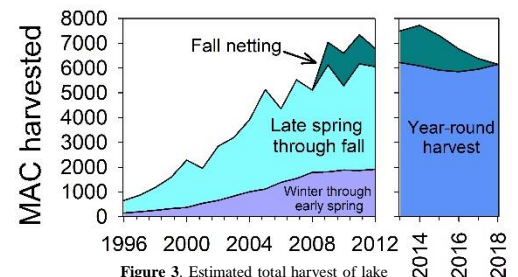


Figure 3. Estimated total harvest of lake trout (MAC) during different periods by anglers over time (years) in relation to CPW fall netting.

References:

- Hansen, A.G., and D. Brauch. *In review*. Long-term population dynamics of lake trout in Blue Mesa Reservoir, Colorado: guidance for an angler harvest incentive program. CPW report.
- Pate, W.M., B.M. Johnson, J.M. Lepak, and D. Brauch. 2014. Managing for coexistence of kokanee and trophy lake trout in a montane reservoir. *North American Journal of Fisheries Management* 34:908-922.