

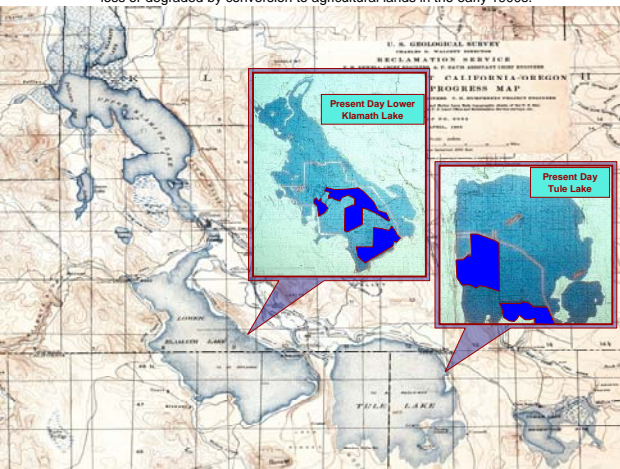


FACTORS AFFECTING CURRENT SUCKER DISTRIBUTION AND STATUS

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HABITAT LOSS/DEGRADATION

Thousands of acres of lake and wetland habitat used by suckers were lost or degraded by conversion to agricultural lands in the early 1900s.



WETLAND LOSS



STREAM CHANNEL STRAIGHTENING

Many miles of river habitat used for sucker spawning and rearing were degraded by channelization and natural flow regimes were altered by water management.

FISH PASSAGE



GERBER DAM

Most irrigation dams in the Upper Klamath Basin do not have fish ladders isolating sucker populations and preventing upstream passage to spawning and rearing habitat.

Most irrigation diversions are unscreened in the Upper Klamath Basin and juvenile and adult suckers are vulnerable to entrainment.

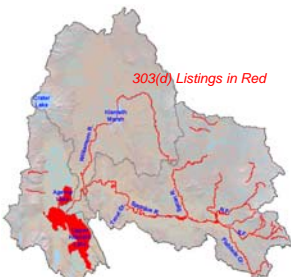
ENTRAINMENT



Larval suckers are less than 1/2 inch long and are weak swimmers and are readily carried by currents in lakes and rivers. There are no practical means of screening them out of diversions.



WATER QUALITY DEGRADATION



Water Quality Limited Water Bodies (Nutrients, DO, temperature, pH)



Excessive Blue-green algae blooms Upper Klamath Lake

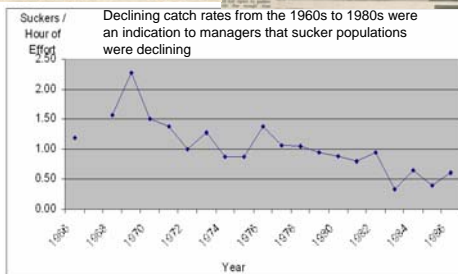
Fish Die-off Upper Klamath Lake



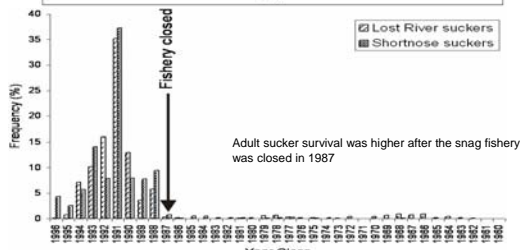
Historic land use practices including wetland conversion to agricultural lands, livestock grazing, logging, and road construction led to major increases in sediment and plant nutrients entering Upper Klamath Lake. Large blue-green algae blooms have resulted in poor water quality conditions during the summer, fish stress, disease and fish die-offs leading to low survival rates and recruitment

OVERHARVEST

Adult suckers were intensively harvested in the Sprague and Williamson Rivers and Upper Klamath Lake from the 1960s until 1987 when fishing was banned.



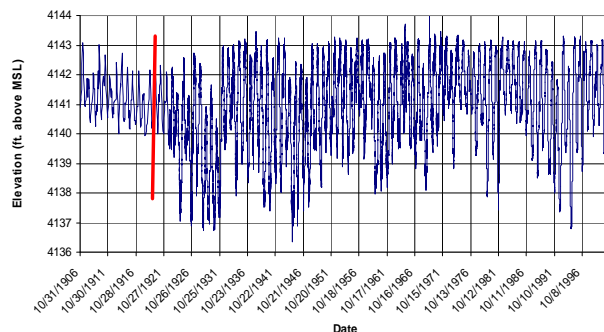
Declining catch rates from the 1960s to 1980s were an indication to managers that sucker populations were declining



Adult sucker survival was higher after the snag fishery was closed in 1987

WATER MANAGEMENT/DROUGHT

Upper Klamath Lake Elevations - WY's 1905-2000



With construction of Link River Dam in 1921 and intensive water management UKL levels fluctuate 3-6 feet per year compared to 1-2 feet pre-dam. Lake levels affect the amount and quality of shoreline spawning areas, wetlands used by larval and juvenile suckers, amount of open water habitat for juveniles and adults, and access to water quality refuge areas.

PREDATION/COMPETITION



Yellow Perch



Fathead Minnow

Non-native fishes are common throughout the Upper Klamath Basin and compete with and prey on suckers. In UKL fathead minnows are extremely abundant and may be negatively impacting larval sucker survival.

HYBRIDIZATION

Hybridization was identified at the time of listing as a threat. New data suggest that hybridization among four Klamath Basin suckers probably does occur. Recent genetic studies appear to indicate that Clear Lake and Gerber populations of SNS may have experienced extensive hybridization. The evidence indicates that hybridization has been common throughout the evolutionary history of suckers. The specific impact, if any, of this hybridization upon species conservation is unclear and warrants further analysis.