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### **Eagle Lake Winter Kill: due to depleted oxygen levels in shallow ice-covered bays**

Heavy ice cover and resulting oxygen depletion in shallow basins of Eagle Lake has resulted in winter kill of an estimated 500 Eagle Lake rainbow trout, as determined by an investigation of the California Department of Fish and Game (DFG).

Paul Divine, a DFG Environmental Scientist, said the first reports of dead trout at the north end of Eagle Lake were received on Feb. 4. Subsequent checks from boat and shore revealed just over 300 dead trout in Stone's Lagoon with smaller numbers found near Bucks Bay, Rocky Point and Half Moon Bay near Spalding.

All the trout carcasses examined had their mouths open and gills flared, indicating death due to lack of oxygen, the DFG stated.

Divine said winter kill of fish can occur when shallow waters are covered by ice for long periods, reducing the amount of available oxygen for the fish. Eagle Lake's northern bays are particularly susceptible to winter kill because they are shallow and ice begins to form in late fall, extending the period of ice cover.

Winter kills related to oxygen depletion occur because long periods of ice cover effectively seal off the lake from the atmosphere preventing the water from being recharged with oxygenated air. Additionally, the oxygen produced by algae and plants in the lake is reduced due to cold water and lower exposure to sunlight.

Meanwhile, fish, aquatic organisms and decomposing organic matter continue consuming oxygen, further depleting the supply needed for the fish. The fish suffocate and then float to the surface as the water warms and ice melts.

Shallow, productive waters, such as the northern bays of Eagle Lake, can be particularly hard hit because they have low oxygen storage capacities and high rates of oxygen consumption.

The winter kill does concern DFG with respect to the health of fishery and Eagle Lake. However, the kill is a small portion of the population of Eagle Lake rainbow trout within the lake and should not have a negative impact upon the recreational fishery. Also, due to the deep water of the south basin fish holding there were unaffected. Annual trout stocking will resume in May and June, replenishing any loss of fish. Additionally 5,000 trout averaging 2 pounds each will be planted (2,500 in the spring and 2,500 in the fall).