

**California Wildlife Habitat Relationships System
California Department of Fish and Game
California Interagency Wildlife Task Group**

Lacustrine

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General Description

Structure-- Lacustrine habitats are inland depressions or dammed riverine channels containing standing water (Cowardin 1979). They may vary from small ponds less than one hectare to large areas covering several square kilometers. Depth can vary from a few centimeters to hundreds of meters. Typical lacustrine habitats include permanently flooded lakes and reservoirs (e.g., Lake Tahoe and Shasta Lake), intermittent lakes (e.g., playa lakes) and ponds (including vernal pools) so shallow that rooted plants can grow over the bottom. Most permanent lacustrine systems support fish life; intermittent types usually do not.

Aquatic Environment

Suspended organisms such as plankton are found in the open water of lacustrine habitats. Dominant are the phytoplankton, including diatoms, desmids and filamentous green algae. Because these tiny plants alone carry on photosynthesis in open water, they are the base upon which the rest of limnetic life depends. Suspended with the phytoplankton are animal or zooplankton organisms which graze upon the minute plants. Most characteristic are rotifers, copepods and cladocerans (Smith 1974).

The plants and animals found in the littoral zone vary with water depth, and a distant zonation of life exists from deeper water to shore. A blanket of duckweed may cover the surface of shallow water. Desmids and diatoms, protozoans and minute crustaceans, hydras and snails live on the under-surface of the blanket; mosquitoes and collembolans live on top. Submerged plants such as algae and pondweeds serve as supports for smaller algae and as cover for swarms of minute aquatic animals. As sedimentation and accumulation of organic matter increases toward the shore, floating rooted aquatics such as water lillies and smartweeds often appear. Floating plants offer food and support for numerous herbivorous animals that feed both on phytoplankton and the floating plants (Smith 1974).

Other Classifications-- Other names of lacustrine habitats include Lacustrine (Cowardin et al. 1979), Lakes - 10.41, Manmade Reservoirs - 10.42 and Ponds -10.43 (Cheatham and Haller 1975). The U.S. Fish and Wildlife Service summarizes several lacustrine habitats according to their occurrence in certain terrestrial habitats (Proctor et al. 1980).

Aquatic Zones and Substrates

The lacustrine habitat may exist in any of the structural classes 1:2 4:O~B. The limnetic or open water zone extends from the deepest part to the depth of effective light penetration. The submerged (littoral) zone is shallow enough to permit light penetration and occurs at the edges of lakes and throughout most ponds. Periodically flooded lacustrine habitats should be evaluated only when water is present. This stage usually cannot support fish populations, and therefore will not attract fish predators. To qualify as shoreline, there must be a water border and less than 2 percent vegetation. Shoreline vegetation exceeding 2 percent would fall into the riparian category.

Lakes and ponds are more or less temporary features of the landscape because of a slow siltation process. The time it takes depends on size, rate of sedimentation and the increase of organic matter.

Biological Setting

Habitat-- Lacustrine habitats may occur in association with any terrestrial habitats, Riverine (RIV) and Fresh Emergent Wetlands (FEW).

Wildlife Considerations-- Lacustrine habitats are used by 18 mammals, 101 birds, 9 reptiles and 22 amphibians for reproduction, food, water and cover. This represents about 23 percent of the species in the Wildlife Habitat Relationships data base. The endangered Santa Cruz long-toed salamander and rare black toad require ponds for breeding. The endangered bald eagle feeds on fish and some birds taken from lakes.

Physical Setting

The relatively calm waters of lakes and ponds offer environmental conditions that contrast sharply with those of running water. Light penetration is dependent on turbidity. Temperatures vary seasonally and with depth. Because only a small proportion of the water is in direct contact with the air and because decomposition is taking place on the bottom, the oxygen content of lake water is relatively low compared to that of running water. In some lakes, oxygen may decrease with depth, but there are many exceptions. These gradations of oxygen, light and temperature along with the currents and seiches, profoundly influence the vertical distribution of lake organisms (Smith 1974).

Distribution

Lacustrine habitats are found throughout California at virtually all elevations, but are less abundant in arid regions.

Literature Cited

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