



## Klamath Network Featured Creature

April 2015

### Kokanee Salmon

(*Oncorhynchus nerka*)

#### General Information:

Kokanee salmon are the nonanadromous (not ocean-going) form of sockeye salmon; they may co-exist with the species' anadromous form in the same lakes and streams. Like other salmon, kokanee return to their natal streams or lakes to spawn. Sockeye and kokanee can be distinguished from other pacific salmon because they have more than 30 gill rakers on their first gill arch, reflecting their zooplankton feeding specialization. The natural distribution of kokanee is associated with the distribution of sockeye, from California to Alaska and in northeast Asia. They have been widely introduced in other areas of North America.

#### Habitat and Ecology:

Because kokanee do not migrate to the ocean where there is a richer zooplankton food source, they are smaller in size than sockeye. They are generally 7-9 inches and about 1 pound although the size of kokanee varies considerably from system to system. They are a prey source to larger predators such as trout, plus mammals and birds. Generally kokanee mature, spawn, and die at four years of age.

They have bluish backs and silver sides but when ready to spawn, they turn red, and changes in the males include a hooked snout, long jaw, large teeth, and a slight hump behind the head. Kokanee generally spawn in lake tributaries, but also in lake bottoms along the shoreline. Spawning occurs in the fall, with young emerging in late winter or early spring. Fry feed mainly on crustacean zooplankton, especially

*Daphnia*. They may also eat insect larvae and pupae.



Top: adult male kokanee; Bottom: adult female kokanee:

From:

<http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/identification/kokanee.aspx>

#### Did you know?

- Of all the pacific salmon, the sockeye and kokanee exhibit the most striking color change, with green heads and brilliant red bodies during spawning.
- Sockeye and native kokanee within lakes are more closely related to each other than to sockeye and kokanee in other lakes. They are considered to be polyphyletic meaning they are a form of sockeye salmon that has arisen many times independently; this has occurred many times in many different lakes and streams.
- Kokanee can tolerate the transition to seawater.
- Offspring of kokanee occasionally become anadromous, and sockeye offspring occasionally remain in freshwater.
- Sockeye populations occur together with kokanee but hybridization is uncommon because the populations spawn at

different times and/or at different spawning areas.

- Landlocked kunimasu salmon (black kokanee) was thought to be extinct but was discovered in 2010 in one lake in Japan. This was earlier called *Oncorhynchus nerka kawamurae* but is now considered *O. kawamurae*.
- Kokanee is very popular for game fishing and is stocked widely, but can be a challenge to catch due to their preference for zooplankton.

#### Where to Find in the Klamath Network Parks:

- Redwoods NP (sockeye)
- Crater Lake NP (introduced)
- Whiskeytown NRA (introduced)

#### References and Further Reading:

- Behnke, Robert J. *Trout and Salmon of North America*. New York: The Free Press. 2002. Print.
- *Pacific Salmon Life Histories*. Edited by Cornelis Groot, L. Margolis. Vancouver: University of British Columbia Press 1991.
- <http://news.nationalgeographic.com/news/2011/01/110131-extinct-fish-discovered-japan-mount-fuji-salmon-animals-science/>



Photo by Roger Tabor USFWS;  
<http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/kokanee/pictures.aspx>