

KOKANEE (*Oncorhynchus nerka*)

Ecology and Life History

The Kokanee is a member of the Salmonidae family and is different from other salmon because the juvenile stages typically rear in lakes rather than streams similar to sockeye (Roberge et al., 2001; Scott and Crossman, 1973). The native fishes' range occurs along the western coast of North America, from California to Alaska and also occurs along the coast of Japan (Roberge et al., 2001; Scott and Crossman, 1973). The Kokanee is a native fish of Okanagan Lake, and populations are currently rebounding from an all time low in the mid to late 1990's (e.g., Andrusak et al., 2005).

The Kokanee has a variable diet and will forage throughout the water column on a variety of small prey items (Scott and Crossman, 1973). In general, the fishes diet consists of plankton preyed upon in the pelagic regions of lakes. However, small insect larvae such as chironomids (Scott and Crossman, 1973) and other miscellaneous insects are also eaten. A diel vertical movement pattern has been observed in this species, with fish moving to deeper regions of a lake during the day and shallower regions during at night (Roberge et al., 2001).

In Okanagan Lake there are two distinct populations of Kokanee (Andrusak et al., 2005). One population uses areas of the shoreline, with angular cobble boulder substrates for spawning. The other population is a stream spawning population that will use a variety of the larger streams in the lake. The two populations are genetically distinct and are morphologically different (Andrusak et al., 2005). Stream spawning fish tend to be larger, spawn later in life, while shore spawners tend to be smaller and spawn earlier in life (Andrusak et al., 2005). Shore spawners tend to spawn later in the year, around mid October, while stream spawners spawn in mid September. Streams used in the Kelowna region include Brandt, Bellevue, Mill, Thompson, and Mission. At this time there is a large amount of data regarding Kokanee populations, life history requirements, and other aspects of the population within Okanagan Lake. Detailed information about the limnology, plankton communities, and other physical and biological parameters are discussed in the Okanagan Lake Action Plan Reports (Year 1 through 8) (e.g., Andrusak et al., 2005). A variety of different scientists and authors have contributed to these works and they are considered to contain the most recent information about Kokanee life history in Okanagan Lake.

Okanagan Lake System

No juvenile Kokanee were sampled using beach seines and it is probable that these fish had moved to deeper waters by the time of spring sampling in June. Also, no adult fish were caught in gill nets during the spring sampling season, indicating that these fish do not commonly use nearshore shoreline areas during late spring.

Adult Kokanee were sampled in the gill nets during the summer and fall survey. The fish sampled during the summer and fall surveys were adults migrating to either shore or stream spawning areas because these fish were generally ripe and coloured. Sampled fish were found along all shore types between Bertram and McKinly Landing, although fewer fish were sampled in the Kelowna Marina area.

Kokanee populations were recently at an all time low (Andrusak et al., 2005). Based upon this survey it appears that Kokanee show relatively little use of the areas directly adjacent to the shoreline until spawning migrations begin during the late summer to early fall. During migration time periods, it appears that Kokanee are abundant along the entire shore length, with some areas having a higher densities than others. The

Kokanee is considered to be a species of significance in the system due to recreational fishing desirability and due to the recent low numbers of spawning individuals. It is recommended that work windows times be investigated because Kokanee appear to be actively using all shoreline areas during the fall period, regardless of the distance from known shore spawning areas or stream mouths.

References

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