

# 2015 Supplement to the 2013 Conservation Supplementation Plan for Lake Sammamish Late-run (Winter Run) Kokanee

## October 21, 2015

This Supplement to the 2013 Conservation Supplementation Plan for Lake Sammamish Late-run (Winter Run) Kokanee (the “Plan”) provides guidance for the implementation of the program for return years 2015-2016 and 2016-2017. It is intended to nest within the conceptual framework provided by the 2013 Plan and provide more specific and timely direction for these two return years. If the guidance provided in this Supplement is in conflict with guidance provided in the Plan the guidance from this Supplement prevails.

### Key Considerations for Return Year 2015-2016

- Data from recent returns indicate that the population is exhibiting a strong tendency toward a three year (i.e., rearing in Lake Sammamish for three summers) cycle.
- The 2012-2013 return – the predominant parent cohort for the 2015-2016 return year assuming a three year cycle – numbered approximately 15,000 fish, more than twice the next largest run and ten times the size of most other runs since the 1996-1997 return. While there remains uncertainty about the productivity/recruitment of Lake Sammamish kokanee, this level of abundance in the parent cohort may indicate potential for a resultant spawner abundance that is likely to occupy the spawning area available in the three main spawning creeks: Ebright, Laughing Jacobs, and Lewis. Barring catastrophic events that cause significant or total loss of production in a creek or creeks, the anticipated level of spawner abundance and resultant wild origin production should ensure significant levels of successful fry production in each main creek and for the population as a whole.
- Given the ongoing fluctuation of the annual population abundance around levels verging on functional extinction (500 spawners) and/or at low average levels relative to historic abundance, maintaining production through the hatchery program will continue to be an important and necessary risk management measure. This includes years when the potential exists for a return of spawners of sufficient abundance to occupy available spawning area in the three main creeks.
- From 2011-2012 through 2014-2015 in-hatchery RSIs using natal stream water were used to rear fry before return to their natal stream. Budget constraints preclude the use of the in-hatchery RSIs in the 2015-2016 program. Given the potential for significant wild origin production in the three main creeks in the 2015-2016 return year the temporary suspension of the use of in-hatchery RSIs is considered by the managing agencies to be an acceptable management strategy. This management approach may not be appropriate for use in other return years.

### Hatchery Operations

The target egg-take goal for each creek and the annual maximum egg take for the late-run kokanee supplementation program are as follows:

Brood year	Ebright Creek	Laughing Jacobs Creek	Lewis Creek	Issaquah Creek	Maximum Egg Take
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2015-2016	15,000	15,000	15,000	100,000	145,000
2016-2017	15,000	15,000	15,000	15,000	60,000

To maintain genetic diversity, a portion of kokanee fry from Ebright, Laughing Jacobs, and Lewis creeks will be returned to the stream of origin. However, because Issaquah Creek does not have an established run, broodstock for use in producing the 100,000 fry for that stream may come from other creeks including Ebright, Laughing Jacobs, Lewis, Zaccuse and possibly other streams depending on the number of spawners available. If spawner returns are low in one or more of the primary streams, the target egg-take goal can be increased in the other tributaries to make up the difference. However, the maximum egg-take amount should not be exceeded.

Broodstock will be collected periodically by King County personnel from November through January and brought to the hatchery. Once at the Issaquah Creek Fish Hatchery, fish will be held until ripe and gametes (milt and eggs) can be collected. Separate holding chambers will be provided for fish from each stream and for each sex. Generally, eggs from one female will be placed into a small bucket and milt from one male will be immediately added. At the time of spawning, length and weight information will be taken. Additionally otoliths and a genetic sample will also be collected from each fish.

Eggs will be incubated in the Issaquah Creek State Hatchery. Incubation of eggs will occur in baskets in deep troughs or stacked trays until the emergent stage. Prior to the eyed-egg stage, eggs will be thermally marked by changing water temperature during incubation, which triggers the formation of dark rings on the offspring's otoliths (fish ear bones). Typically, the otolith is marked by a ring when temperatures during incubation declines at least 3 degrees Celsius followed by a cold interval of 24 to 48 hours. By planning a sequence of temperature changes, the hatchery can produce a pattern of dark rings in the otoliths of all fish exposed to those temperature changes. The temperature changes are best accomplished with "Darigold" well water that is currently provided free of charge. If the well water is no longer available or no funds are available to pay for the well water, the thermal marking program will be discontinued.

Emergent fry will be reared, including feeding, for a few days to a few weeks in shallow troughs to increase their size and fitness before release. The hatchery will aim for a size of 1,500 fry to the pound at release. Based on the timeframe of the broodstock collection events, kokanee fry will be released as several groups over the outmigration period to the appropriate creek systems. Fry will all be released at night to mimic the natural situation.

#### Otolith processing

To assess the performance of previous supplementation efforts, otoliths will be examined for age and thermal marks. The WDFW otolith and aging labs will process up to 400 samples each year of adult kokanee collected during the 2015/2016 and 2016/2017 brood years. Otoliths will be from a combination of broodstock fish and carcasses collected during spawner surveys. Otoliths from carcasses will be collected primarily by King County personnel.