

# ***Conservation of Lake Sammamish Kokanee An Update on Current Science***

*A Briefing for the City of Bellevue Planning Commission*

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# Kokanee Science

## To Date:

- Spawning ground surveys (annually since 1996)
- Food web research within the lake (2002-2005)
- Fry trapping on Lewis Creek (annually since 2007)

## Current:

- Supplementation (Fall 2009)
- Tagging study (2009-2010)

## Future:

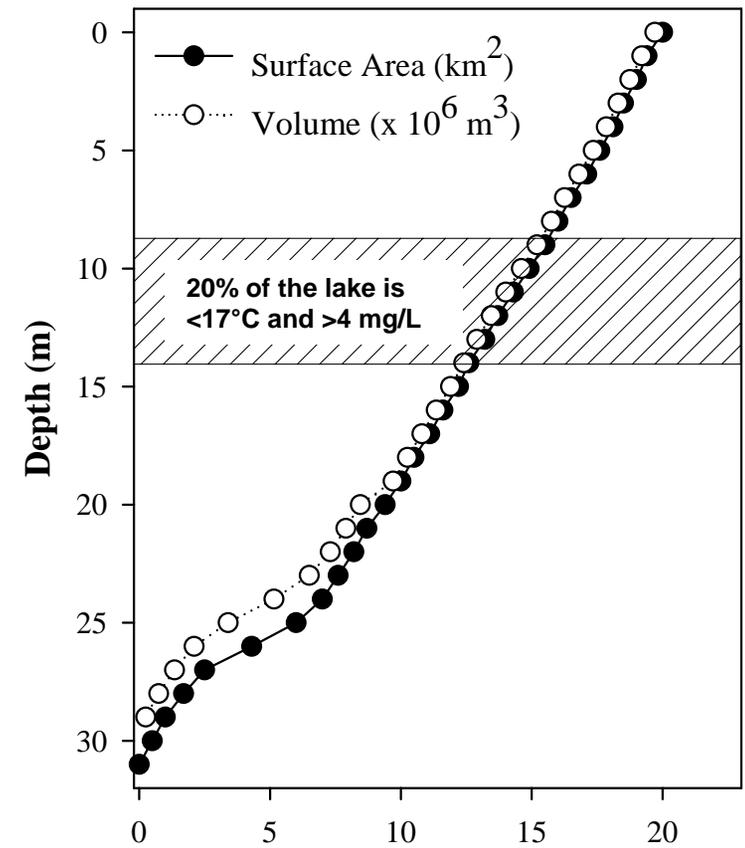
- Stream habitat assessment
- Project prioritization
- Release strategies
- Colonization in other spawning streams
- Effects of hatchery releases from Issaquah Creek

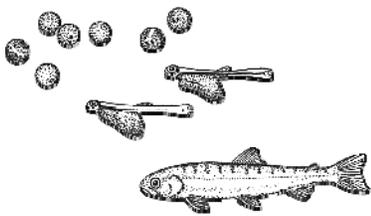


# Kokanee growth is reduced in the summer

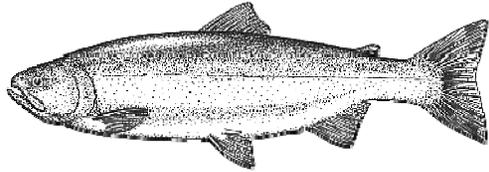
- Relative weight ( $Wr$ ) used to measure condition
- Species specific values for cutthroat and kokanee (Hyatt and Hubert 2000)
- Cutthroat trout  $Wr$  was greater during stratification (t-test,  $p < 0.002$ )
- Kokanee  $Wr$  was lower during stratification and the DO squeeze (t-test,  $p < 0.001$ )

# Optimal habitat is reduced by temp-DO squeeze

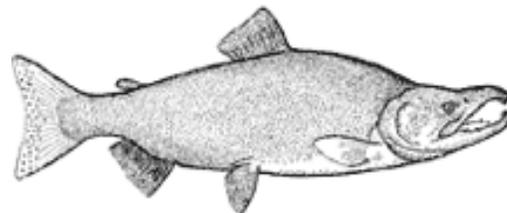




# Important Habitats



- Streams (spawning and incubation)
  - Lewis
  - Vasa
- Shoreline of Lake Sammamish (early rearing, upstream migration)
  - Deltas
    - Early rearing of fry
    - Predation
- Lake Sammamish (rearing and maturation)
  - Water Quality
    - Phosphorous
    - Nitrogen



# Lewis Creek Example

- High flows
  - Bed stability/mobility
  - Infrastructure risk
- Floodplain connectivity
  - Flood refuge
  - Pool formation
  - Energy dissipation



Kokanee redd

# Upper Lewis Creek (above I-90)



Erosion, high flows, good riparian condition

# Lower Lewis Creek (below I-90)

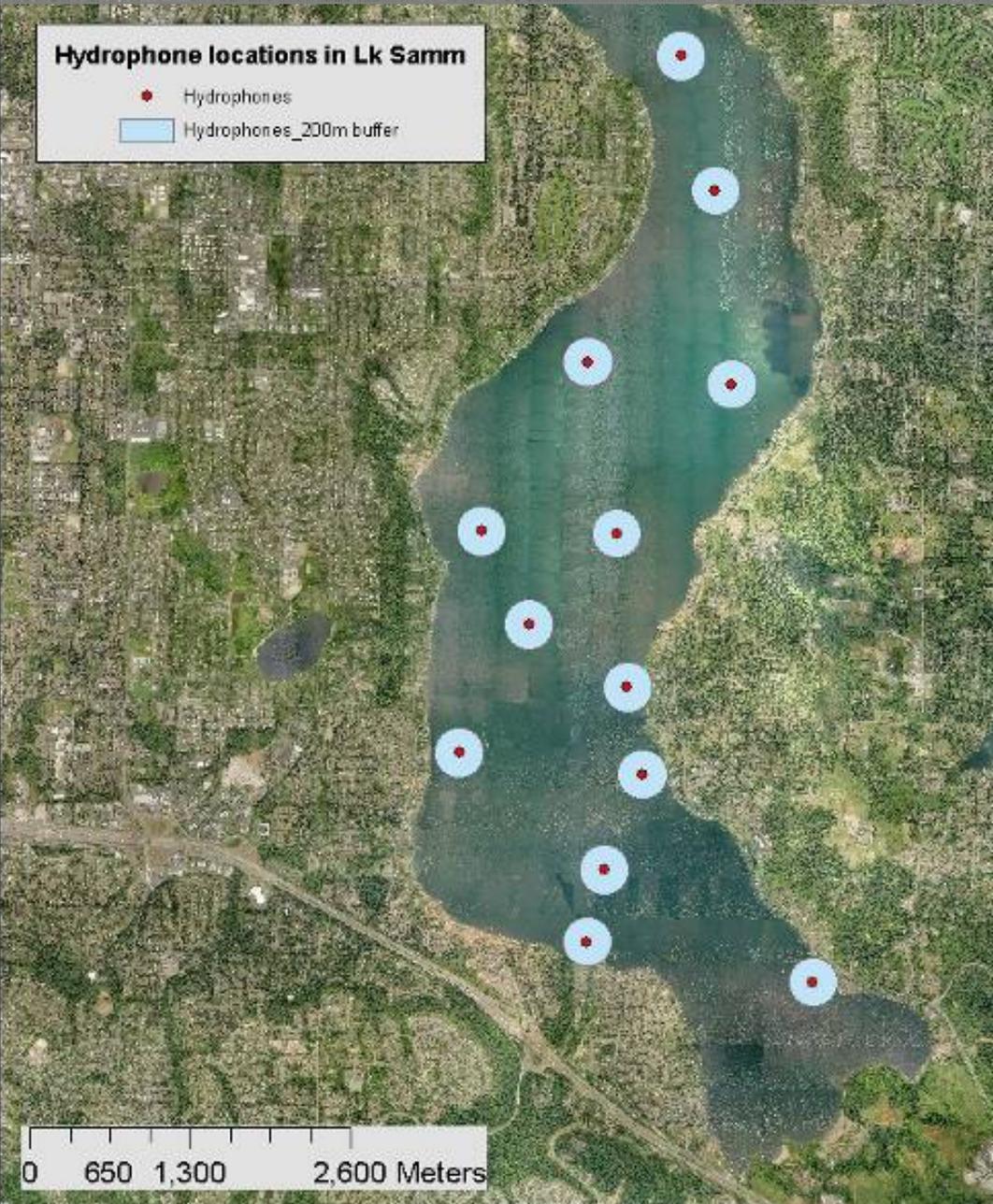


# Acoustic Telemetry Project

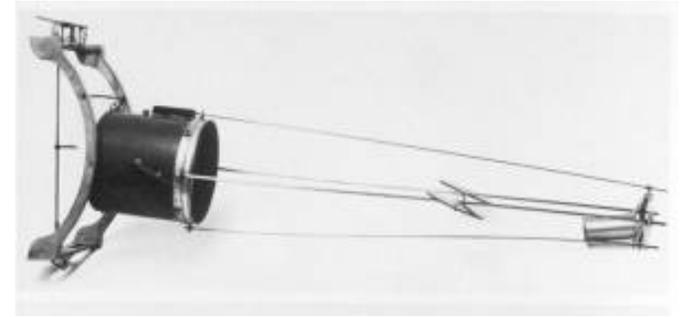
## Project Goals:

- Understand seasonal movement of kokanee in Lake Sammamish
- Monitor spatial and temporal overlap of limnetic predators and prey
- Investigate the effects of thermal stratification, zooplankton density, and diel period on movement of kokanee

# Hydrophone Deployment



# Limnology



Clarke-Bumpus zooplankton sampler

- Limnological Measurements
  - Temperature, DO
  - Light and turbidity
  - Secchi Depth
  - Monthly zooplankton



SCAMP (Temp and Light)



Secchi (transparency))



Monitoring Buoys (Temp, DO)

# Fish Collection



TU anglers helped catch fish



Transferred to livewell



Careful handling

# Acoustic Tagging



Boat



Processing Table



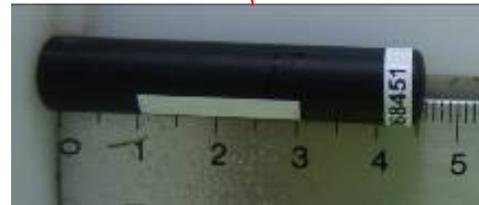
Anesthetic



Length and Weight



Sutures to close incision



Tag inserted



Recovery in insulated tank and released

# Results to Date

- Analysis in progress...
- 35 tagged fish
- Downloaded data every other month beginning in August
- Have heard from 33 fish
- Detections at all 4 stations near Bellevue shoreline (and all but one other station)
- Kokanee adults found in littoral and limnetic zone of Lake Sammamish