Mammalian predators of Lake Ozette sockeye salmon

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Introduction

- **Objectives**
  - **Provide overview of research at LOW from 1998-2003.**
  - **Sea lions, harbor seals, river otters.**
  - **Summary**


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Assessment of predator abundance, distribution, and diet

- Aerial surveys, vessel surveys, river and lake surveys- 1998-2002.
- Collection of seal, sea lion, and otter scat.
- Visual observations of predation.
- Weir cameras.

FIGURE 1.
NORTHERN WASHINGTON COAST
PINNIPED HAUL-OUT SITES


7/18/2002

Assessment of sockeye scarring and predator scarring rates

- Sockeye capture experiment- 2000
- Measure scarring in river and lake
- Access where/when and who causes scarring

METHODS

- Sockeye capture experiment- sockeye were captured in the lower Ozette River, tagged, scars recorded, photographed and released.
- Sockeye were re-captured in the upper Ozette River, 7 km upstream and re-examined. Scars were evaluated.
- Scarring rates were compared from lower to upper river.
- Intensive surveys were conducted in Lake Ozette at the 3 main spawning areas.
- Sockeye fish carcasses found on spawning beaches were examined for predator marks.


Haul no.
Species
6/8/20

RESULTS

- 82 sockeye were captured in the lower Ozette River.
- 28 sockeye were re-captured at upper river.
- Mean transit time from lower to upper = 65.2 hrs.
- Scarring rate lower river = 32.9% (52% new marks)
- Lower river scars attributed to harbor seals (60%), sea lions (both ZC&EJ 25%) and river otters (15%)
- Harbor seals observed preying on sockeye in lower river on one day (possibly aided by capture weir?).
- Scarring rate increased 14% between lower and upper river. (4 of 28 fish obtained new scars)

RESULTS-CONTINUED

- Spawning ground surveys- 20 days for 188 hours- daylight
- Single harbor seals observed 9 days, single otters once.
- One predation was observed by a harbor seal.
- Examination of sockeye carcasses collected on spawning grounds during Makah dive surveys.
- 43 collected (31 from 2000, 12 from 2001)
- 42 showed evidence of mammalian predation.
- 84% attributed to river otters, 14% seals, 2% eagles.

Summary of primary results

- Potential predators very abundant within 5 nm of Ozette River, Sea lions > 2,000, seals> 1,000.
- Only harbor seals entered Ozette River and lake.
- Scat sampling indicated low frequency of sockeye consumption for all pinnipeds.
- River observations documented predation by harbor seals and river otters.
- Weir cameras-predation and frequent transits.

Summary-continued

- Sockeye capture experiment showed high scarring rate (33%) and increased.
- Long transit time (65 hrs.) increased predation probability.
- Scars in river attributed to seals (60%) sea lions (25%) and river otters (15%).
- Scars at spawning grounds attributed to river otters (84%) and seals (14%).

SUMMARY

- Both river otters and harbor seals are known to prey on Lake Ozette sockeye.
- Since daylight observations recorded few predations, most of the predation probably occurs at night.
- We have been unable to quantify total losses.
- High scarring rates in upper and lower river indicate a larger problem.
- Otter and seal predation on spawning grounds a concern.
- Average run size is small- From 1977-1998 only about 1,000. Potential for significant impact is high.

Considerations for Recovery

- Do otters predate sockeye during holding period? (collect more summer scat)
- Abundance of otters in lake and river? (need comprehensive estimate) and distribution data (i.e. denning sites, latrine sites etc.)
- Continue monitoring on spawning grounds, especially at night, using remote camera video
- Continue collections of sockeye carcasses for examination
- Collect more detailed data on predator scarring
- Consider option of translocation of seals and otters from specified locations
- Derive methods for estimating annual predation losses.