Managing salmon for wildlife: Does harvest limit salmon consumption by brown bears?

> Alex Lincoln, Ray Hilborn, Aaron Wirsing, Tom Quinn

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Susan Johnson

Ecosystem-based Management is complex

Nutrient Cycling

Harvest

Wildlife

Salmon as a resource for bears

Body size





Low % salmon



Salmon as a resource for bears



Reproductive Success







Salmon as a resource for bears



"Bear diets would respond considerably to increases in salmon abundance ... [with] corresponding increases in bear densities"

— Levi et al. 2012, PLoS Biology

But does more salmon = more eaten?



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But does more salmon = more eaten?

- How does consumption change with fish density?
- Would decreased harvest increase consumption?







A Creek Average Run: 457 CV: 0.48

C Creek Average Run: 438 CV: 0.45

Katie McElroy





Bristol Bay

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C Creek Average Run: 438 CV: 0.45

Katie McElroy





Less eaten per fish at high fish density



Less eaten per fish at high fish density



Biomass eaten saturates at high fish density



Biomass eaten saturates at high fish density



Biomass eaten saturates at high fish density





Hansen Average Run: 9,567









Salmon availability is high enough every 2-4 years



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