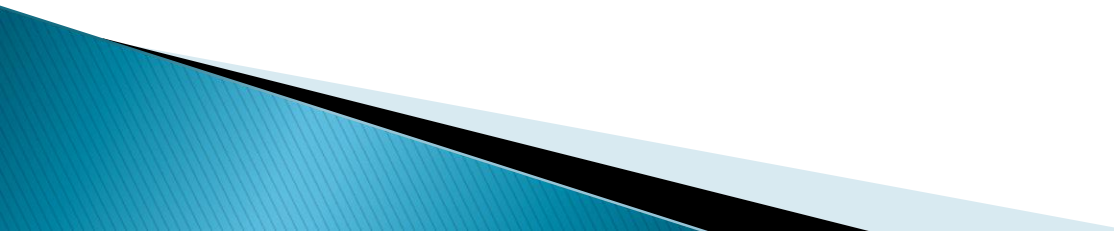


Salmon Die-Off on Kobuk River, August 2014



by Susan Georgette
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Selawik National Wildlife Refuge
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TIMELINE: 2014

- Aug 12–13: First local sightings of dead salmon
 - Aug 14–15: First reports to agencies
 - Aug 18: Flight along 200 miles of Kobuk River
 - Aug 20: Fish sample sent to ADF&G Fish Pathology Lab
 - Aug 21: Boat ride above Kiana to collect water samples
 - Aug 28: Water samples sent to Institute of Marine Science
 - No estimate of number of salmon killed, but likely tens of thousands
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Kobuk River Villages and Sampling Sites





Dead chum salmon on Kobuk River near
Kiana, Aug 21, 2014

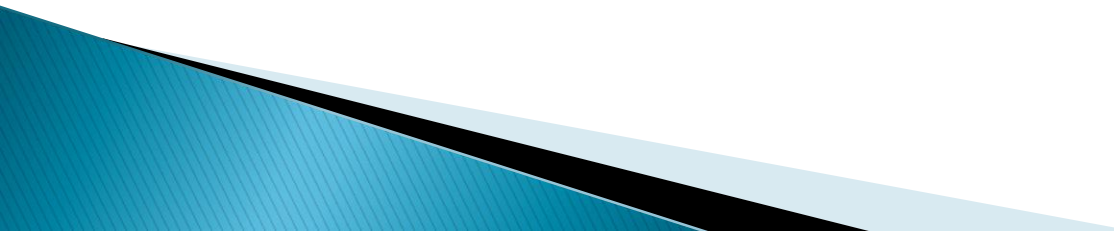


Dead salmon on Kobuk River above Kiana
Aug 21, 2014

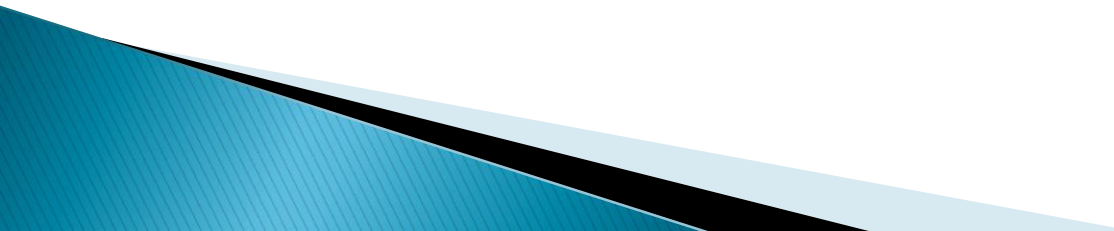


Dead salmon at mouth of Coal Mine Creek,
Aug 21, 2014

LAB RESULTS: Mostly Normal

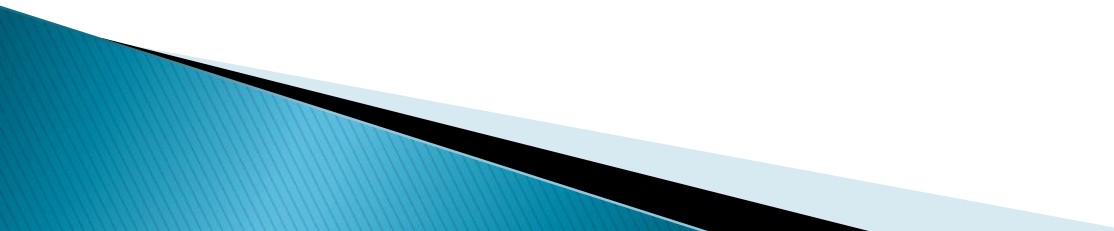
- Healthy fish overall, close to spawning.
 - No external abnormalities.
 - Variety of algae found on skin and gills.
 - No bacterial growth or viruses.
 - No Ichthyophonus from heart cells.
 - Very little living material in water samples.
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ENVIRONMENTAL CONDITIONS: Warm and Crowded

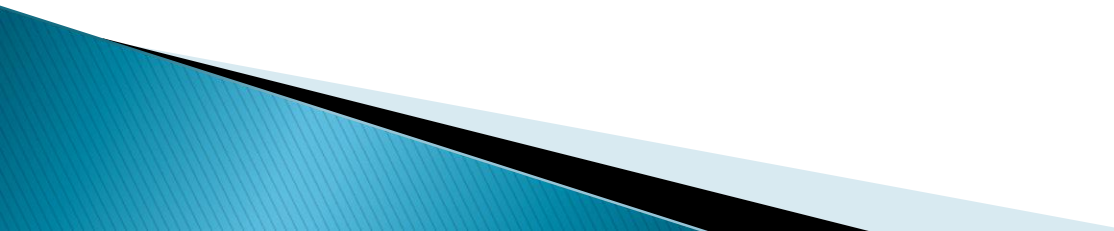
- Huge return of chum salmon in Kobuk River this year.
 - Sunny hot weather in mid–August.
 - Algae blooms consume lots of oxygen in the water.
 - Spawning salmon more susceptible to low oxygen than other fish.
 - No confirmation that other fish species were affected.
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CONCLUSIONS:

“A Perfect Storm”

- Fish sample was disease-free.
 - Cause of salmon kill most likely from “perfect storm” of environmental conditions.
 - Algae on fish sample indicate a possible algae bloom.
 - Record salmon return and warm weather alone could be enough to kill fish.
 - “Low dissolved oxygen” in the water most likely cause of salmon kill.
- 

LESSONS LEARNED

- Local people are best “first responders.”
 - Important to quickly test water and collect samples with any fish kill.
 - Basic water testing equipment and training should be available in the villages.
 - Experts in scientific fields are happy to help.
 - Scientists depend on “eyes and ears” of local people.
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MANY THANKS to:

- Native Villages of Kotzebue, Noorvik, Kiana, Ambler, Shungnak, and Kobuk (especially Alex Whiting, Dale Stotts, Dan Douglas, Virginia Commack, Billy Lee, Agnes Bernhardt)
 - Northwest Arctic Borough (Fred Smith)
 - Alaska Native Tribal Health Consortium (Michael Brubaker)
 - Alaska Department of Fish & Game (Jayde Ferguson, Esther Henry, Jim Menard, and Brendan Scanlon)
 - National Park Service (Dan Shelden)
 - U.S. Fish & Wildlife Service (Angela Matz and Ray Hander)
 - Institute of Marine Science, UAF (Dean Stockwell)
 - Maniilaq Association (Chris Dankmeyer and Maija Lukin)
 - Arctic Sounder and Nome Nugget
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