Alaskan fisheries and risks of mining in transboundary rivers

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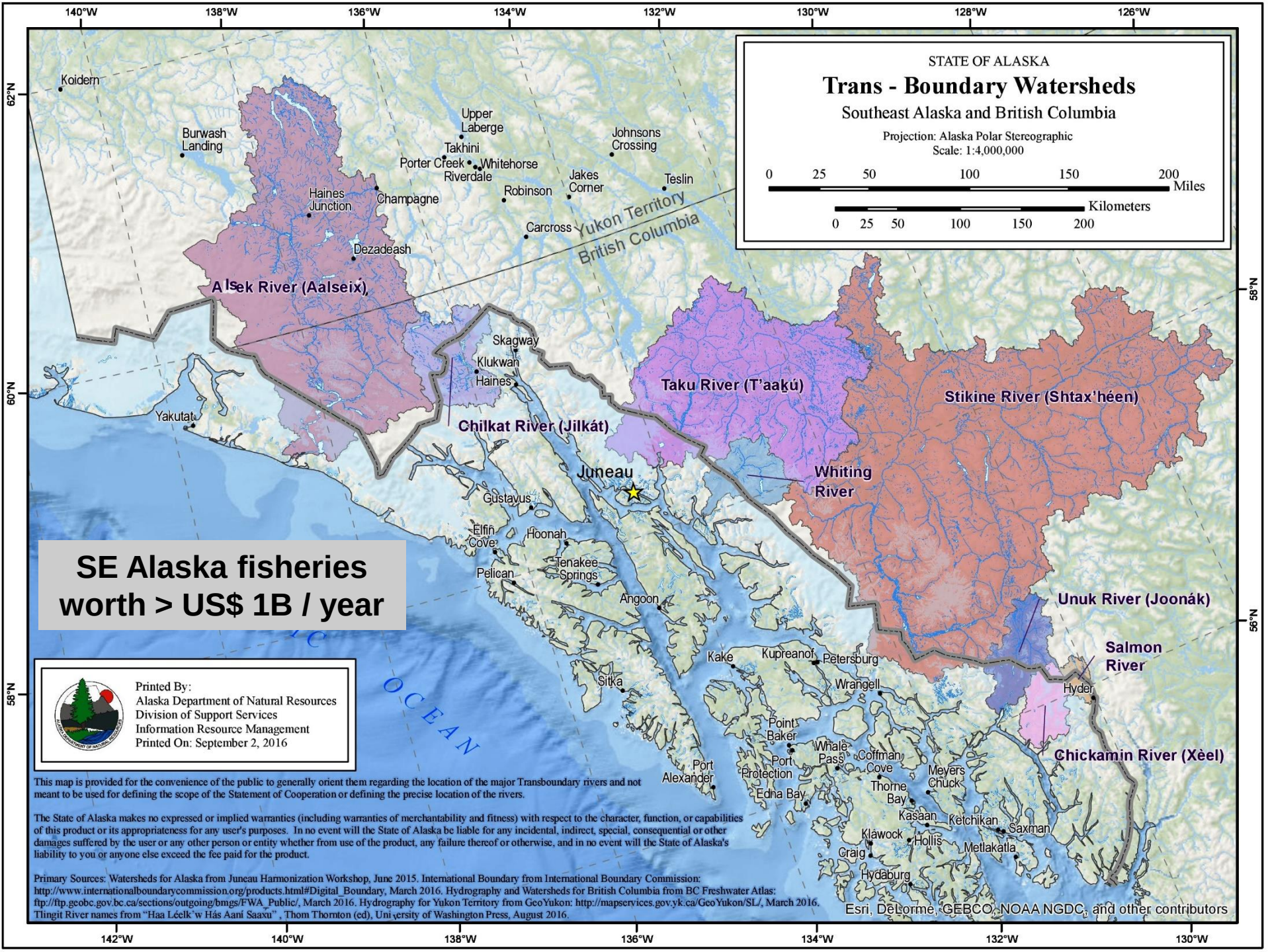
STATE OF ALASKA
Trans - Boundary Watersheds
Southeast Alaska and British Columbia
Projection: Alaska Polar Stereographic
Scale: 1:4,000,000
0 25 50 100 150 200 Miles
0 25 50 100 150 200 Kilometers
SE Alaska fisheries worth > US$ 1B / year
Alsek River (Aalseix)
Taku River (T'aakú)
Stikine River (Shtax'héen)
Chilkat River (Jilkát)
Whiting River
Unuk River (Joonák)
Salmon River
Chickamin River (Xèel)
Yukon Territory
British Columbia
Koidern
Burwash Landing
Upper Laberge
Takhini
Porter Creek
Whitehorse
Riverdale
Johnsons Crossing
Jakes Corner
Teslin
Haines Junction
Champagne
Robinson
Carcross
Dezadeash
Skagway
Klukwan
Haines
Yakutat
Juneau
Gustavus
Elfin Cove
Hoonah
Tenakee Springs
Pelican
Angoon
Kake
Kupreanof
Petersburg
Wrangell
Sitka
Hyder
Point Baker
Whale Pass
Coffman Cove
Port Protection
Meyers Chuck
Thorne Bay
Port Alexander
Edna Bay
Kasaan
Ketchikan
Saxman
Klawock
Hollis
Metlakatla
Craig
Hydaburg
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Information Resource Management
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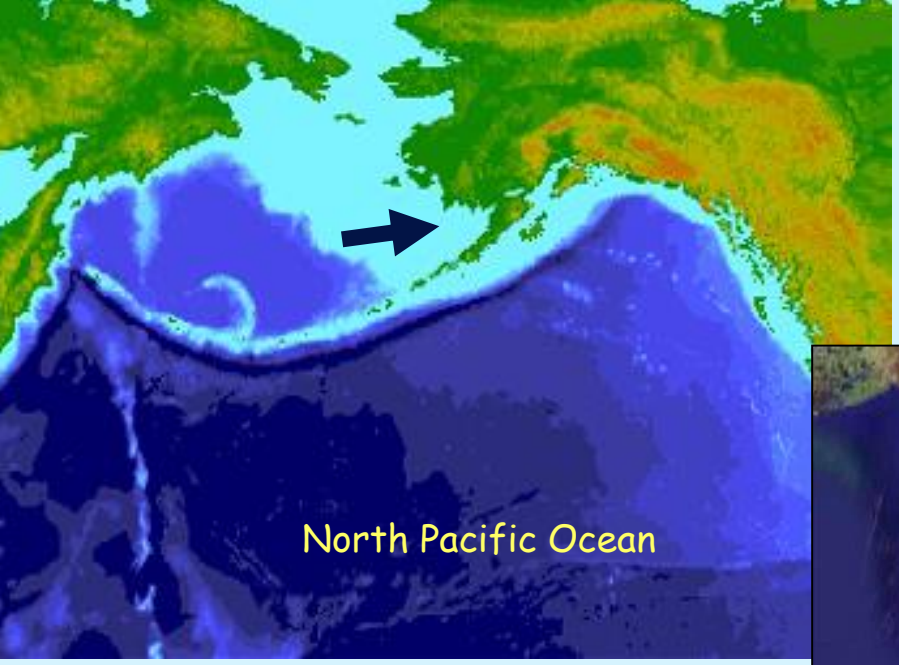
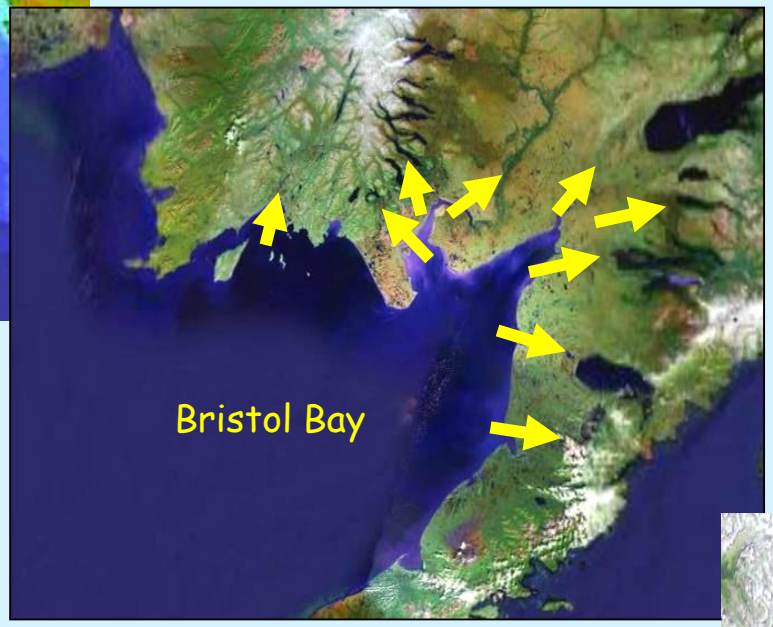
Primary Sources: Watersheds for Alaska from Juneau Harmonization Workshop, June 2015. International Boundary from International Boundary Commission: http://www.internationalboundarycommission.org/products.html#Digital_Boundary, March 2016. Hydrography and Watersheds for British Columbia from BC Freshwater Atlas: ftp://ftp.geobc.gov.bc.ca/sections/outgoing/bmgs/FWA_Public/, March 2016. Hydrography for Yukon Territory from GeoYukon: http://mapservices.gov.yk.ca/GeoYukon/SL/, March 2016. Tlingit River names from "Haa Léelk'w Hás Aaní Saaxu" , Thom Thornton (ed), University of Washington Press, August 2016.
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors
140°W
138°W
136°W
134°W
132°W
130°W
128°W
126°W
62°N
60°N
58°N
56°N
142°W

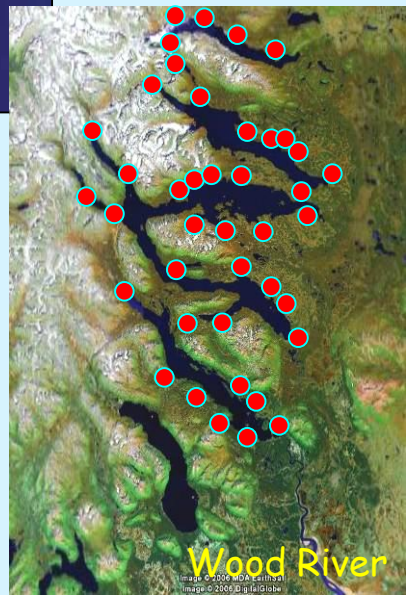
Salmon habitat in Bristol Bay



9 major rivers



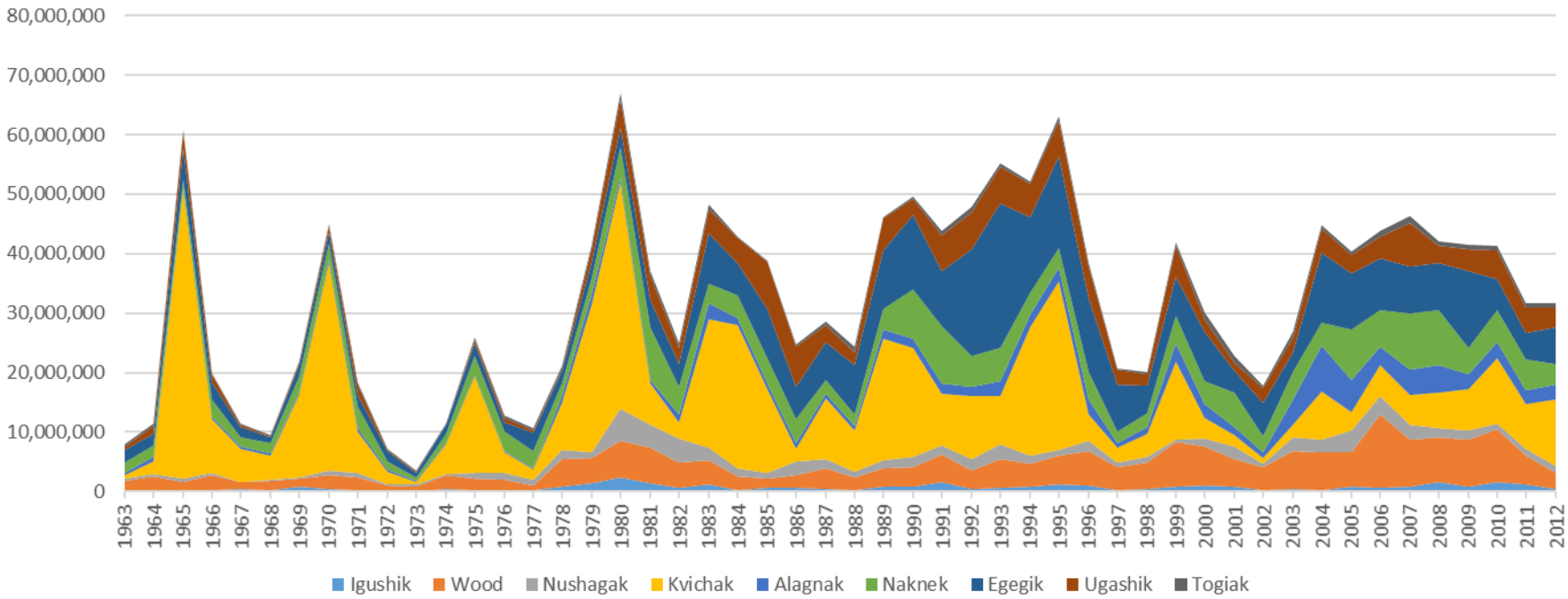
each with many populations



UW Fisheries Research Institute has monitored salmon and habitat in western Alaska continuously since 1946

Sockeye salmon returns to Bristol Bay

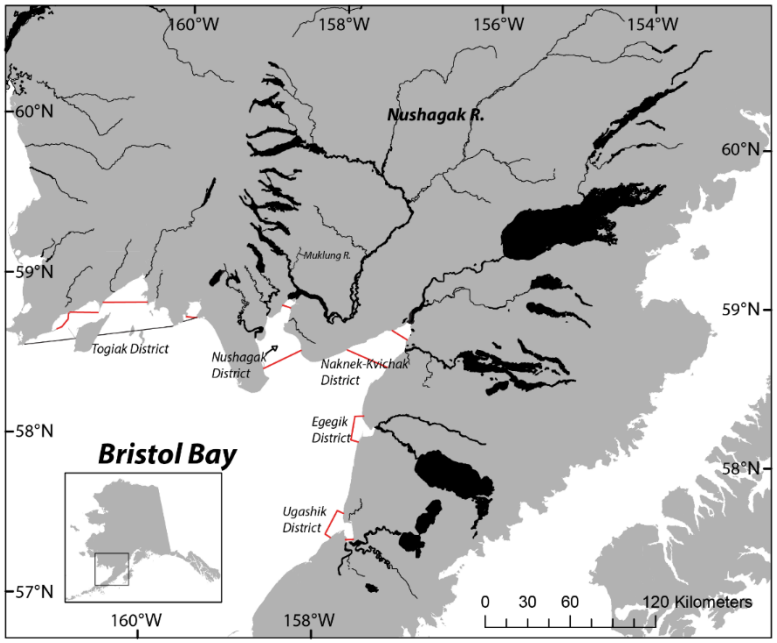
Data from ADFG



http://www.absc.usgs.gov/research/Fisheries/Lake_Clark/subsistence.htm

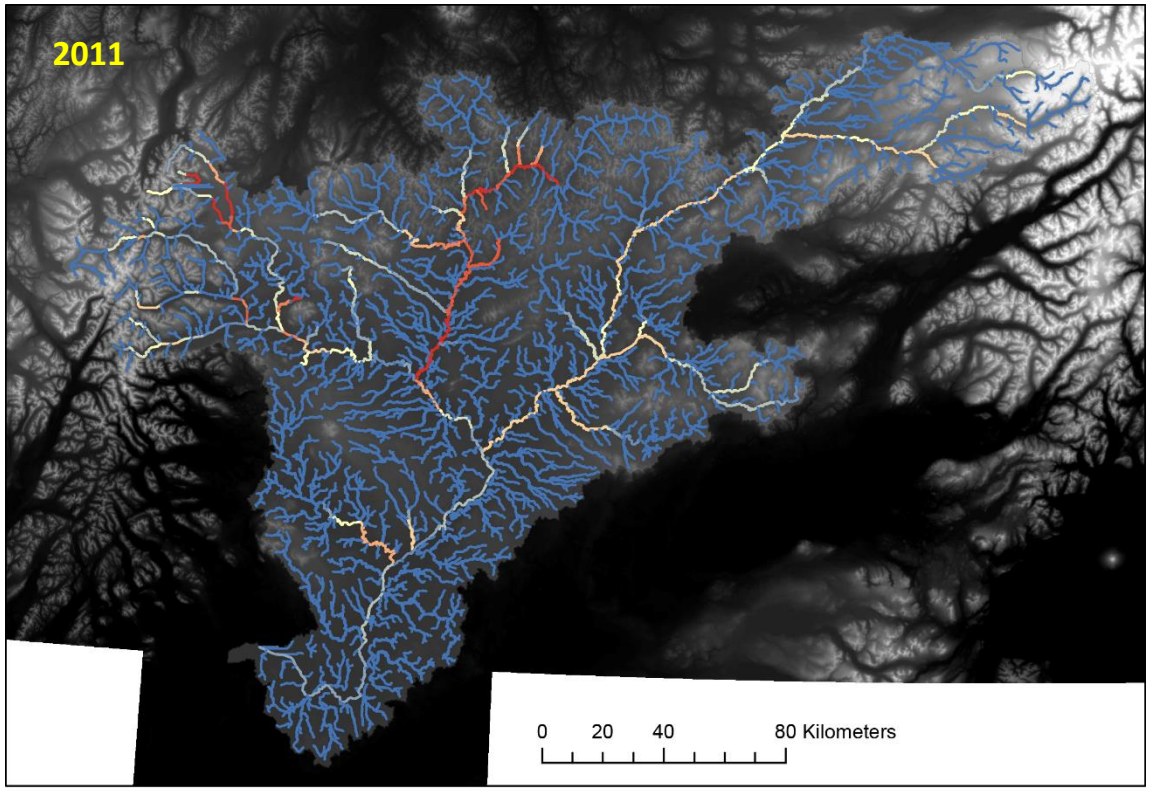
Chinook salmon – habitat use within watersheds (how consistent is production within individual tributaries?)

Bristol Bay salmon



Chinook salmon production in the Nushagak River

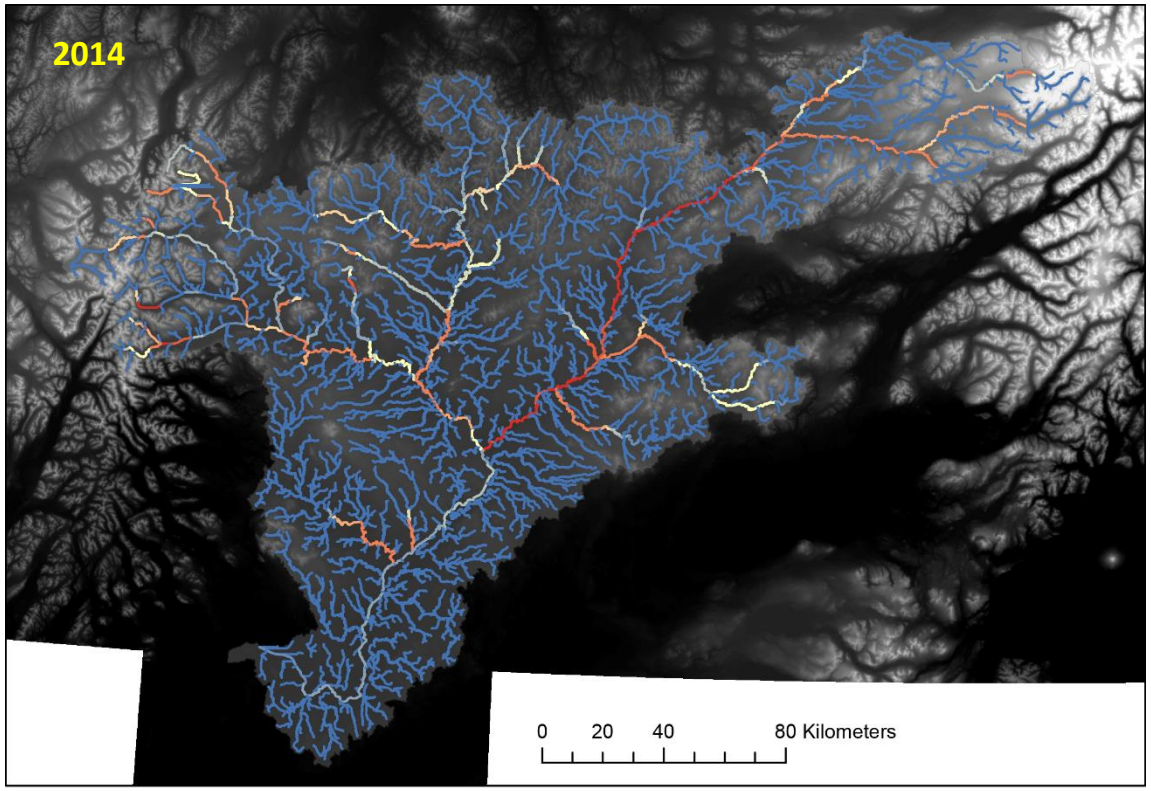
Nushagak R.
2011 (n=255)



Brennan and Schindler, in review

Chinook salmon production in the Nushagak River

Nushagak R.
2014 (n=279)



Brennan and Schindler, in review


Habitat variation is also important within individual streams
7˚C
12˚C

Jonny Armstrong

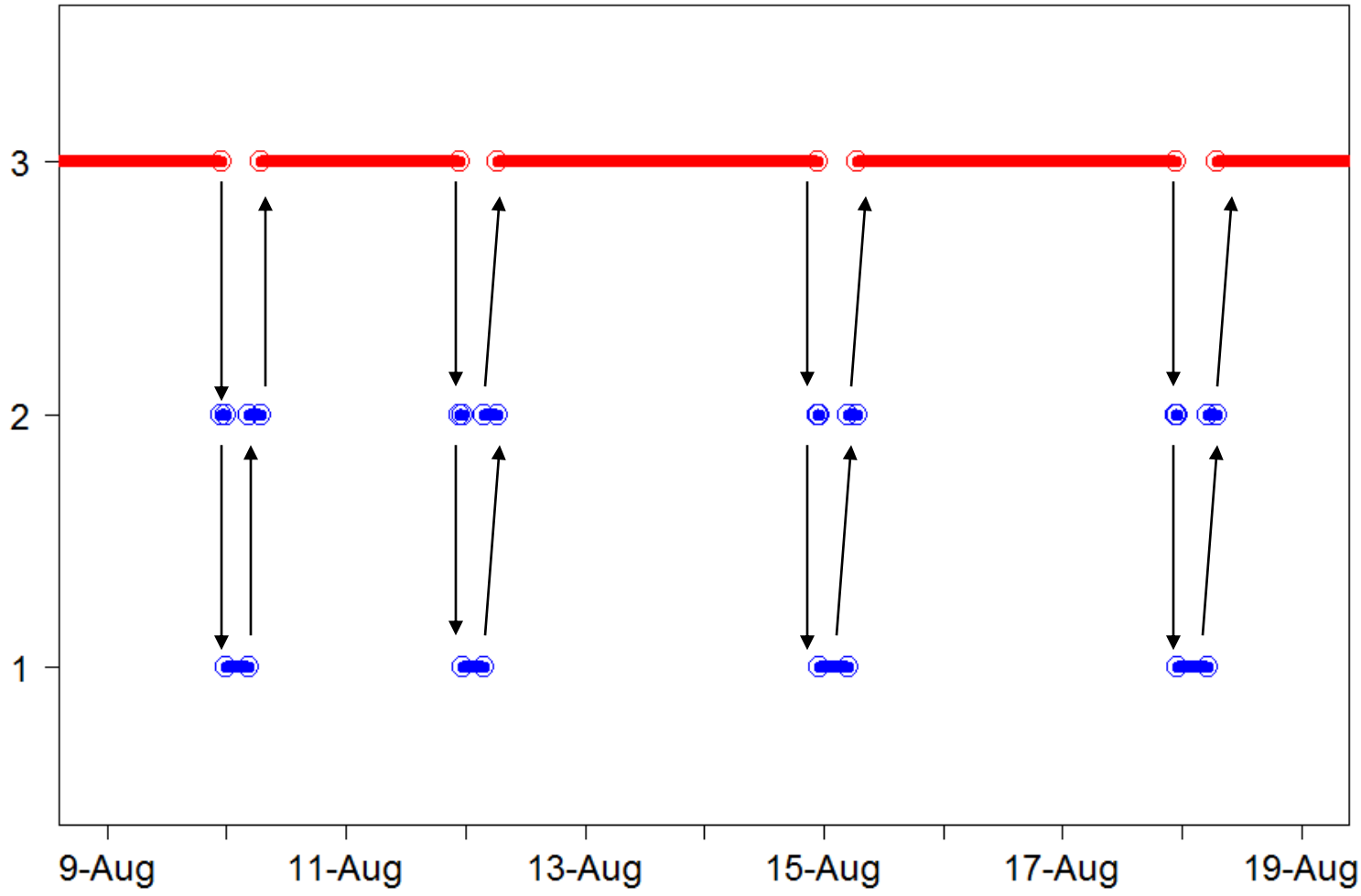
2008:
PIT tag
antenna arrays

1. 0-850m: cold w/ sockeye

3. 1300m and up: warm w/o sockeye

2. 850-1300m: cold w/o sockeye

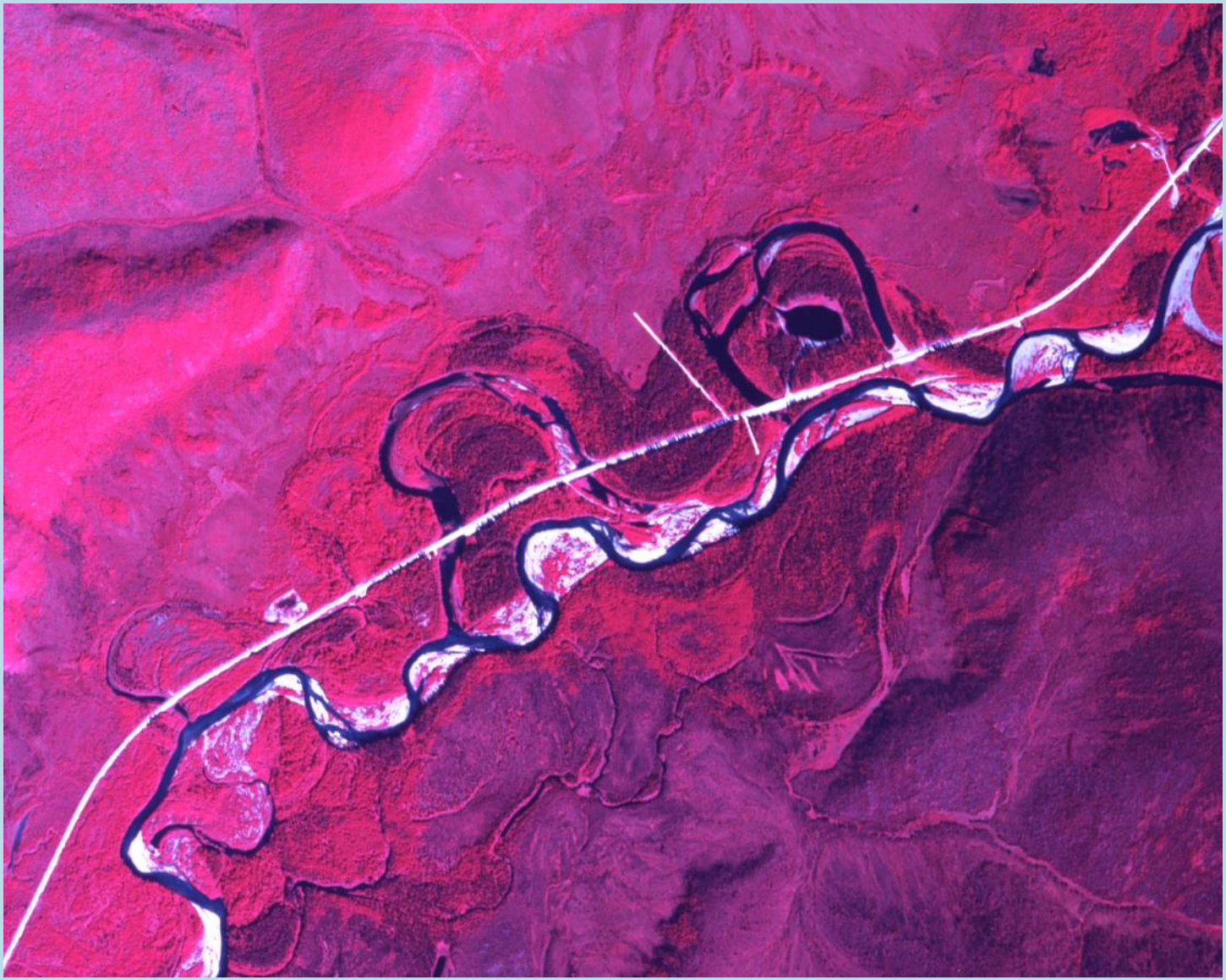
Juvenile coho salmon move between warm and cold sections of stream



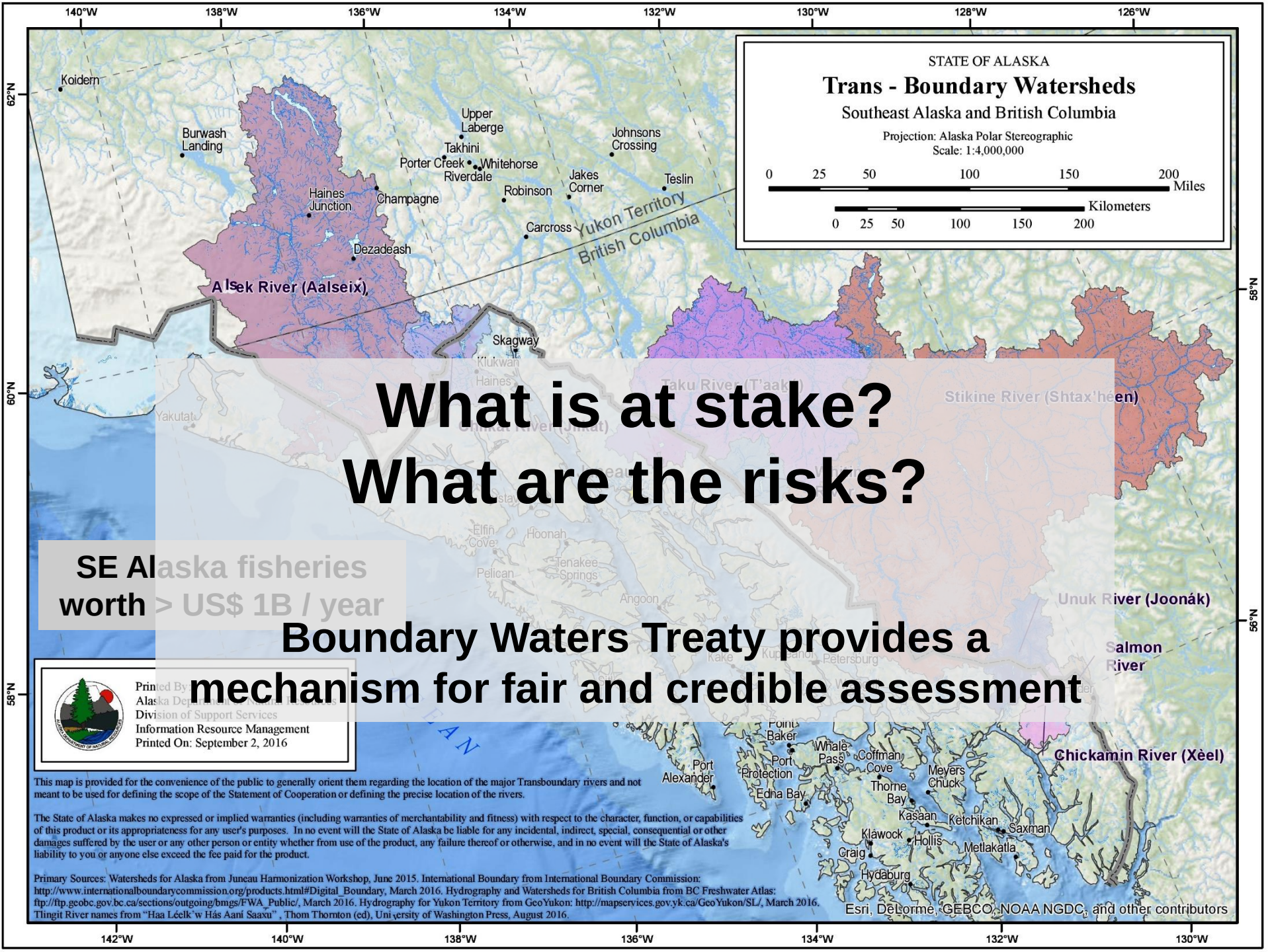

Habitat variation within watersheds is what ultimately produces productive and reliable salmon returns

It is easy to focus only on the risks of big catastrophes. Need to be wary of death by a thousand cuts…

Chena River, Alaska



Courtesy of Chris Stark, UAF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What is at stake?
What are the risks?
SE Alaska fisheries worth > US$ 1B / year
Boundary Waters Treaty provides a mechanism for fair and credible assessment
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Port Protection
Meyers Chuck
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