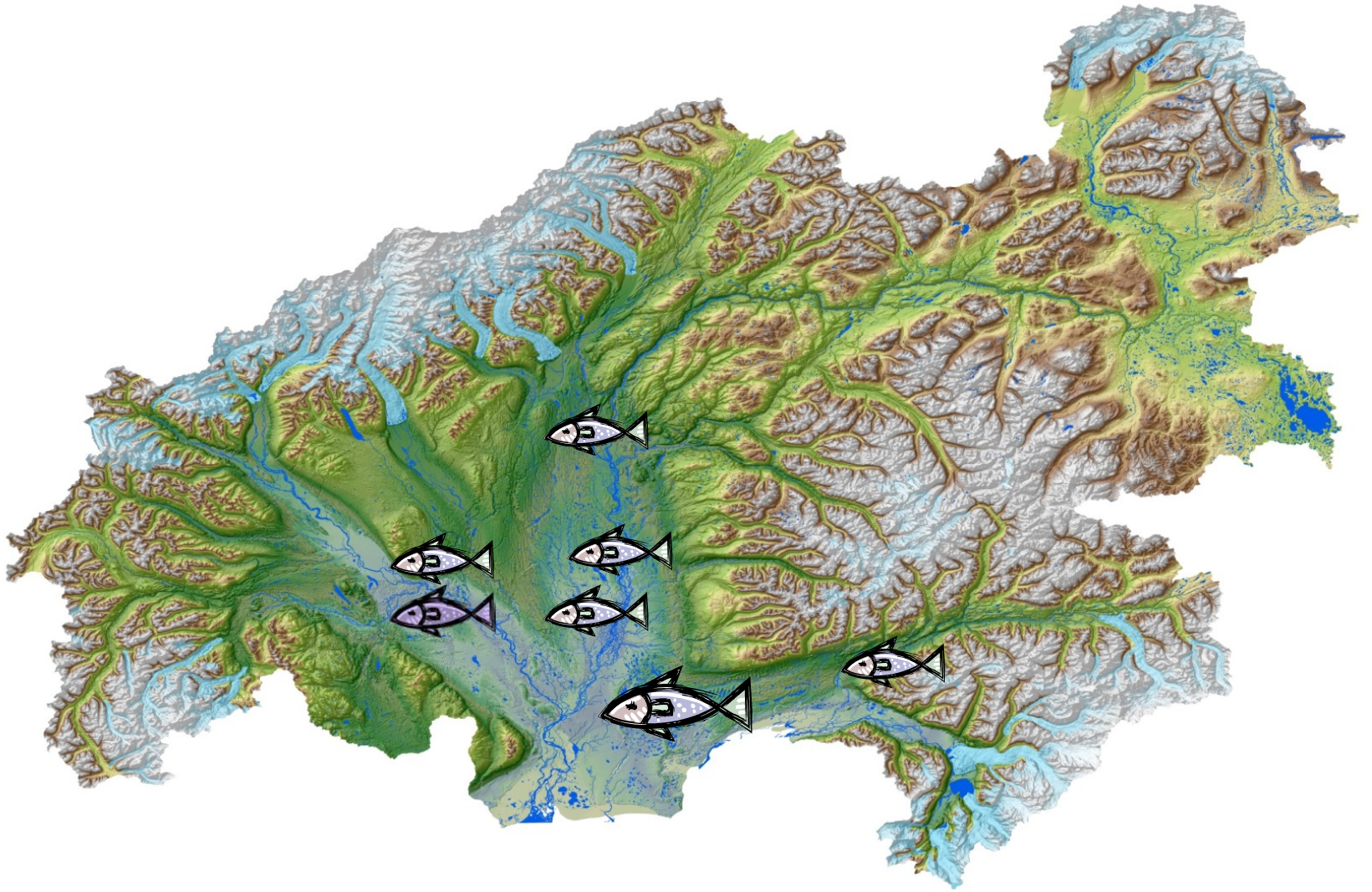
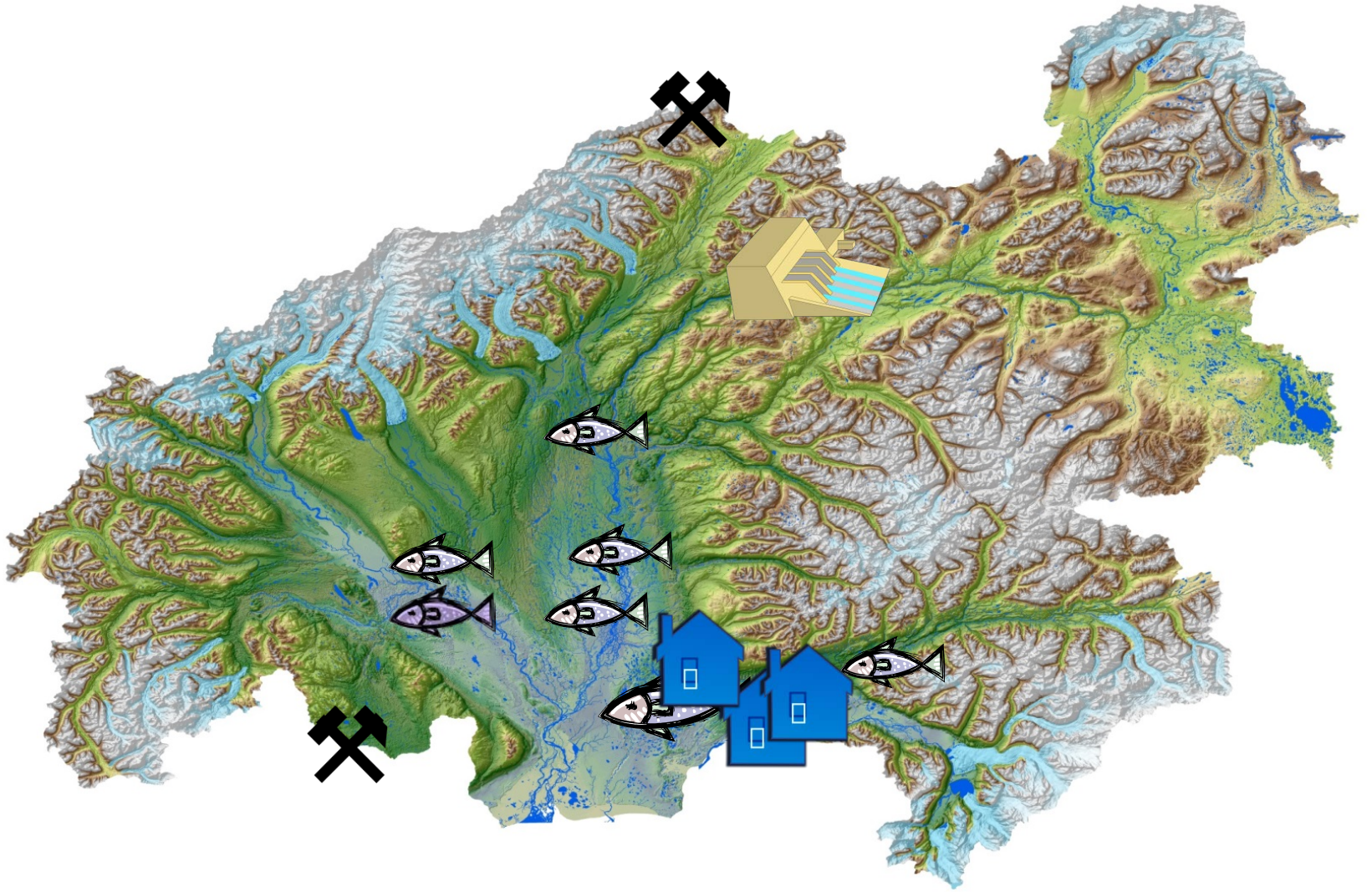
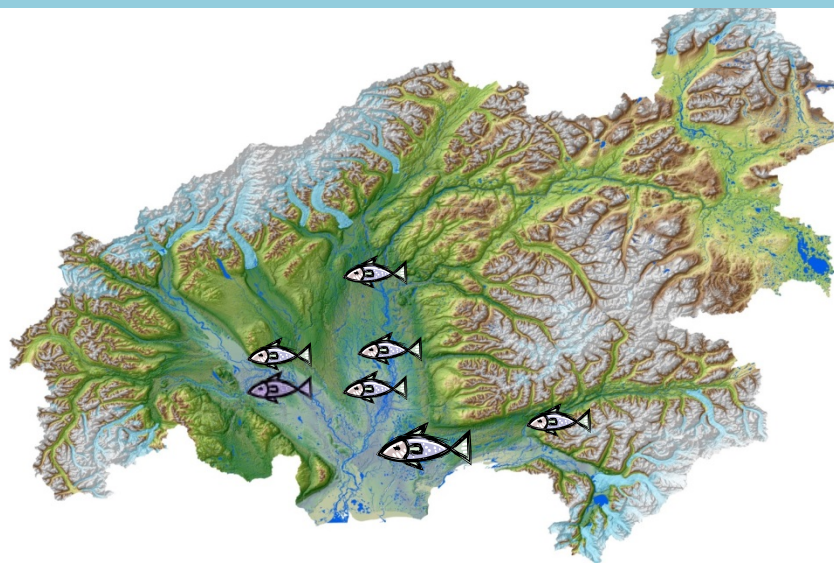


Landscape-scale mapping of Pacific Salmon and their freshwater habitats









Ecosystem benefits of abundant salmon



**Stakeholders,
decision-makers, and
general public**



Conservation, sustainable development, social well-being, restoration, research

Objectives

- Map patterns of adult salmon abundance
- Map freshwater habitat characteristics and develop a preliminary assessment of habitat functions for juvenile salmon by species
- Identify information gaps and describe potential future research activities

Process

Draft Report



Expert review



Publish and
disseminate

Adult salmon abundance and distribution

- Anadromous Waters Catalog
- Annual catch and escapement surveys
- Annual indexes of escapement
- Periodic mark-recapture studies
- Periodic spawning surveys

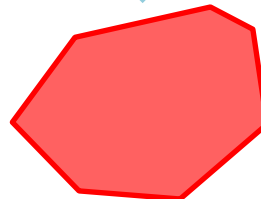


Ranking adult abundance

AWC C+ E Escapement indices M-R Spawning surveys



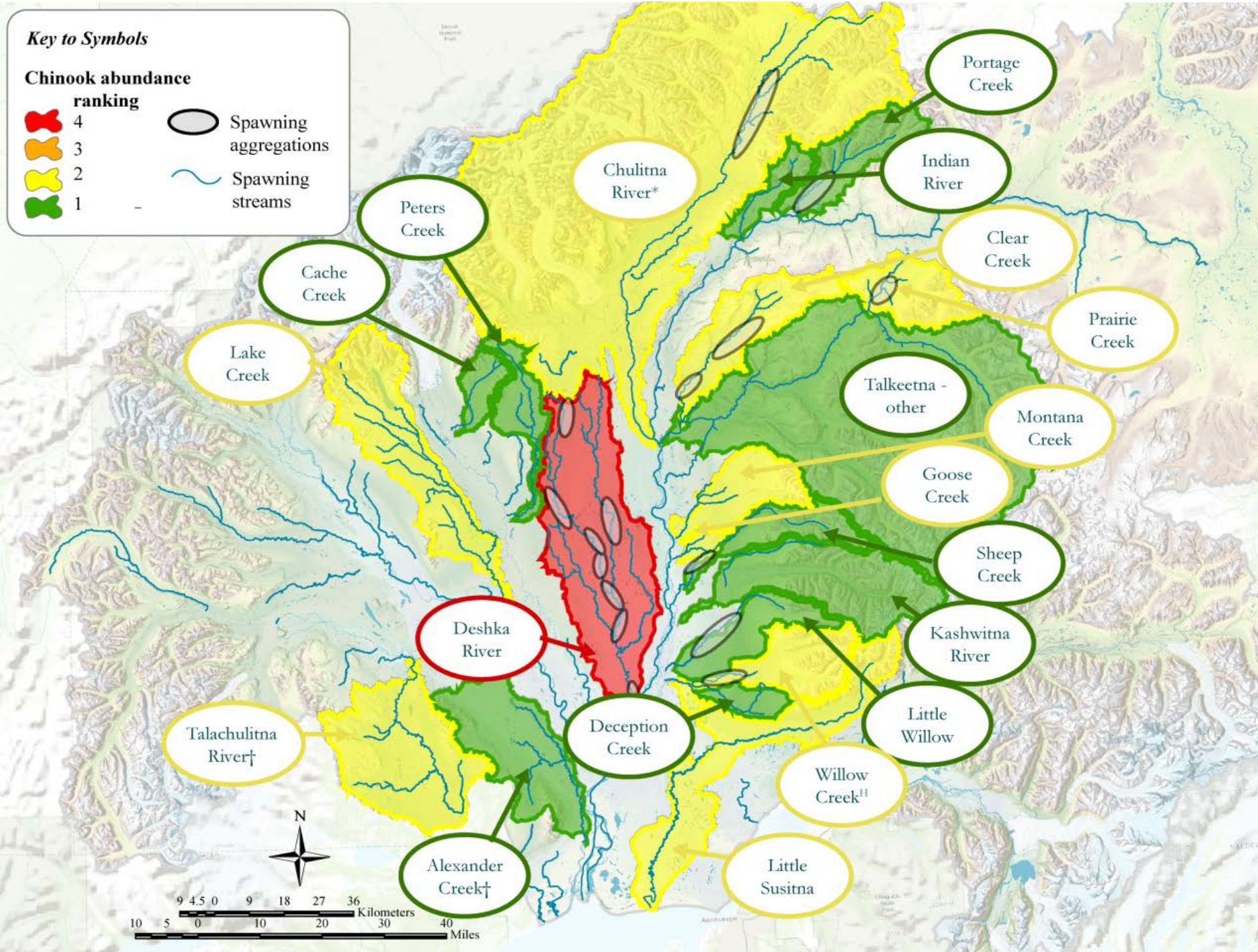
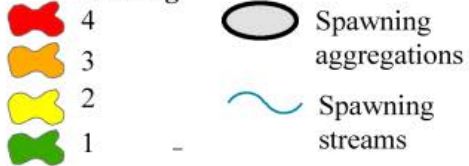
High variability or uncertainty †
< 5 years data*
Influenced by hatchery^H



Key to Symbols

Chinook abundance

ranking

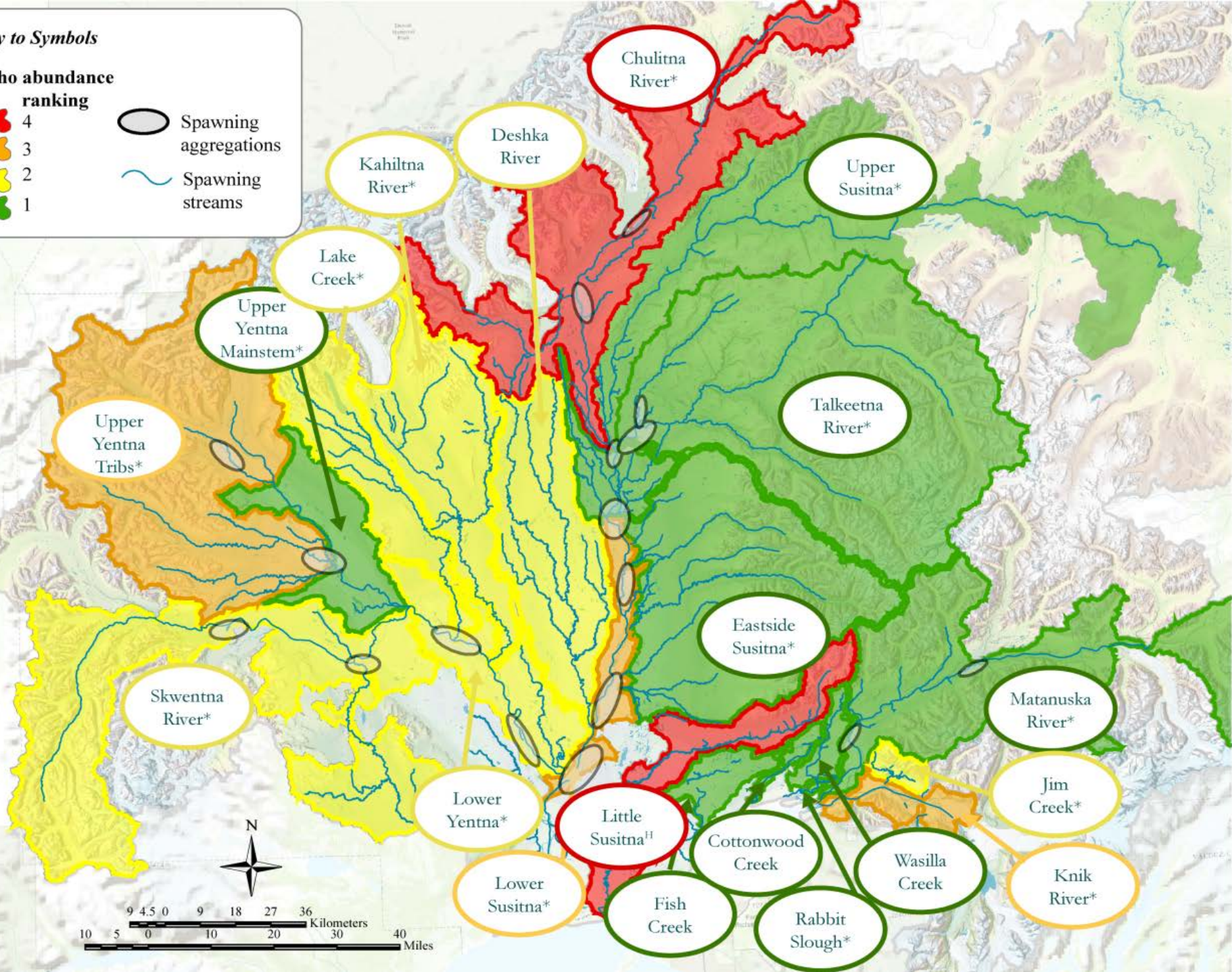


Key to Symbols

Coho abundance ranking



- Spawning aggregations
- Spawning streams



Chulitna River*

Deshka River

Kahiltna River*

Lake Creek*

Upper Yentna Mainstem*

Upper Yentna Tribs*

Skwentna River*

Lower Yentna*

Lower Susitna*

Little Susitna[†]

Fish Creek

Cottonwood Creek

Rabbit Slough*

Wasilla Creek

Matanuska River*

Jim Creek*

Knik River*

Upper Susitna*

Talkeetna River*

Eastside Susitna*

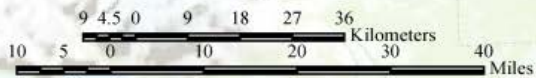
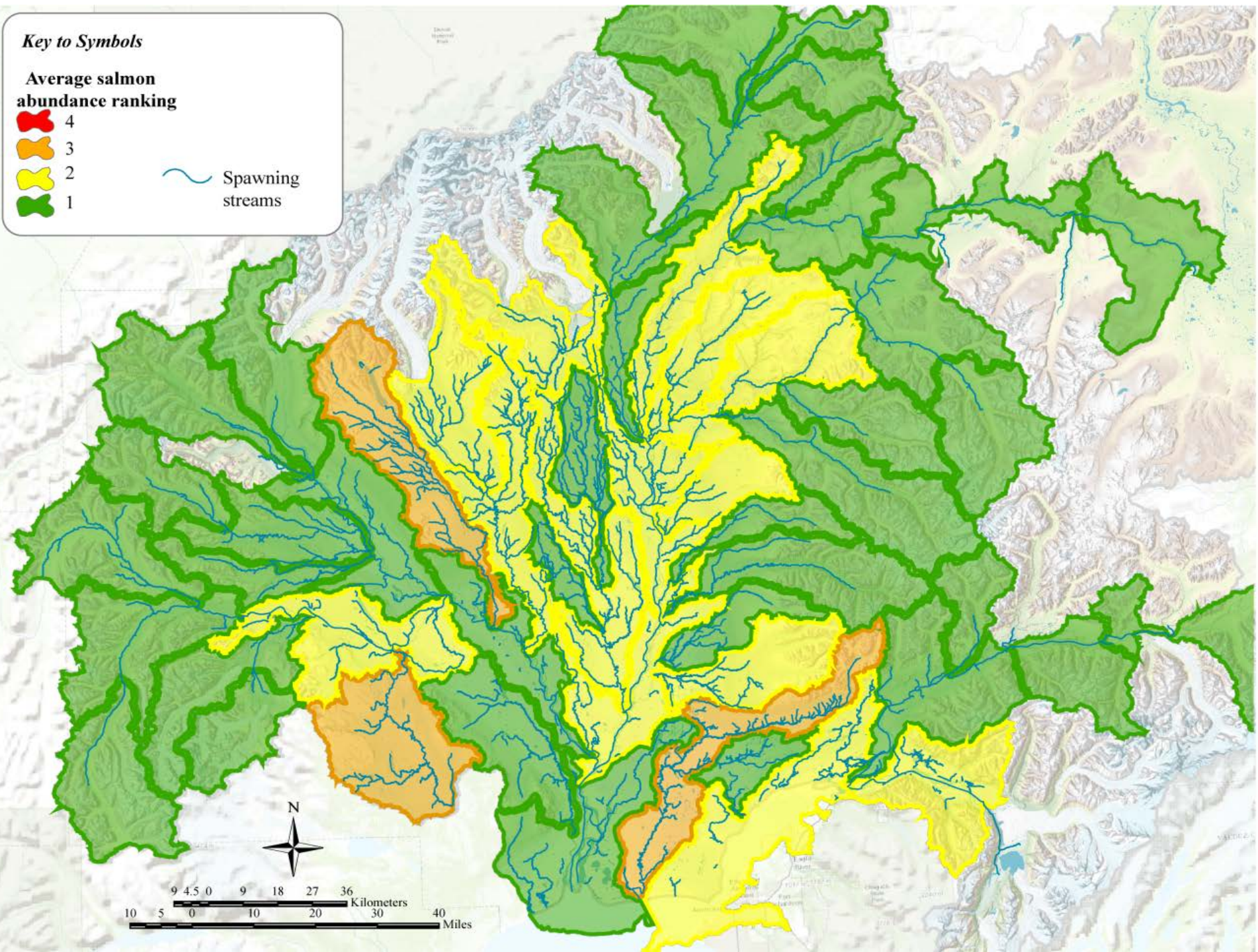


Key to Symbols

Average salmon abundance ranking

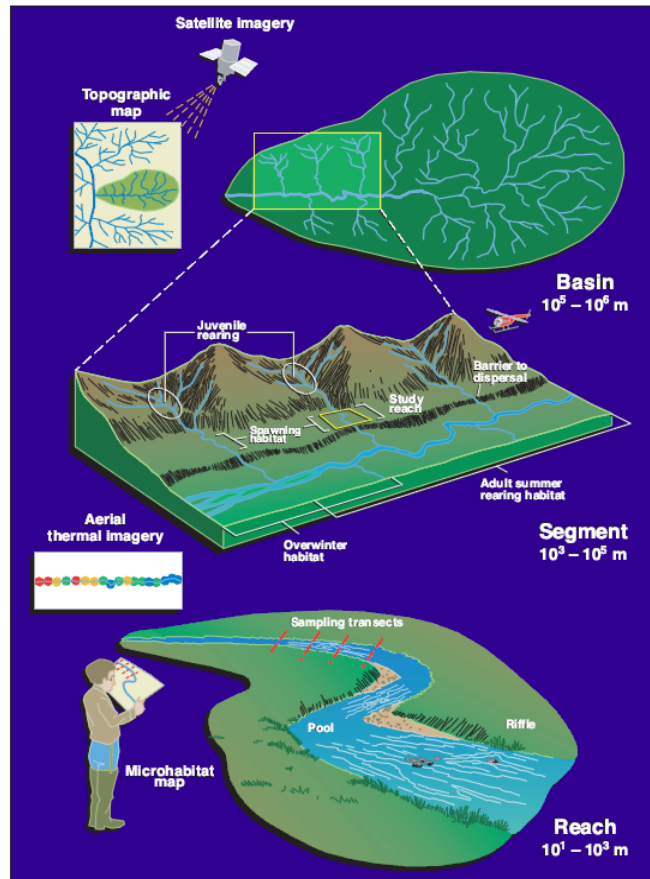


Spawning streams

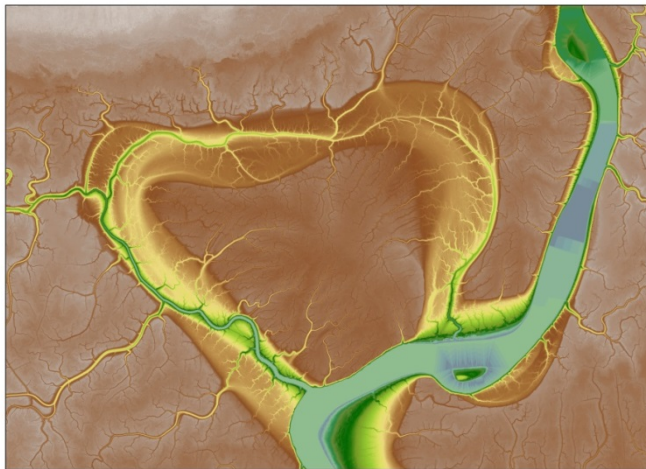




Map freshwater habitat characteristics and develop a preliminary assessment of habitat functions for juvenile salmon by species



Fausch et al 2002



Conduct Your Own Science: A Living Analysis

Analysis Tools (80)

- multi functional
- user friendly
- online technical help

Digital Landscapes

- geographically consistent
- multi functional
- advanced capabilities

Online TerrainViewers

- BigPictureViewer
- FireViewer

Universal Platform

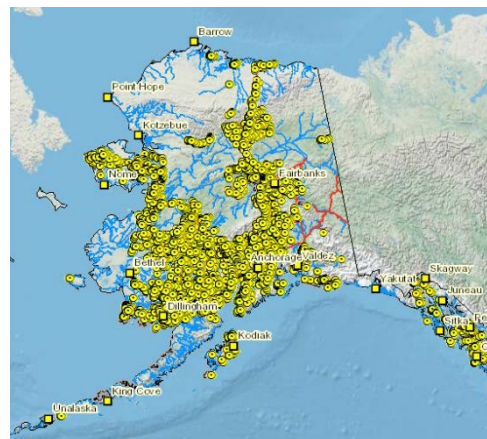
- other applications
- 3rd party developers

Hybrid Open Source

Interdisciplinary

- physical processes
- biological processes
- human activities

Supported & Maintained: Continuously Updated



USGS
United States Geological Survey

Prepared in cooperation with U.S. Fish and Wildlife Service

Baseline Channel Geometry and Aquatic Habitat Data for Selected Streams in the Matanuska-Susitna Valley, Alaska

Three photographs showing different stream habitats: a wide, shallow stream with grassy banks; a stream with large rocks and fallen branches; and a stream with dense vegetation and a rocky bed.

Scientific Investigations Report 2009-5084

U.S. Department of the Interior
U.S. Geological Survey

Juvenile salmon habitat

Basic characteristics and size

Distance and length

Gradient

Lakes and Glaciers

Stream Order

Drainage Area

Mean Annual Flow

Bankfull Width

Bankfull Depth



Juvenile salmon habitat

Other fluvial processes

Substrate size

Sinuosity

Floodplain width

Valley width

Channel confinement

Tributary effects



Juvenile salmon habitat

Human impacts

Road density
Road crossings
Red pipes



Juvenile salmon habitat

Other habitat characteristics

Glacial influence
Large woody debris
Natural barriers
Wetlands
Pike coverage
Beaver habitat



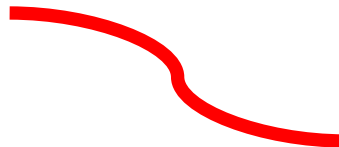
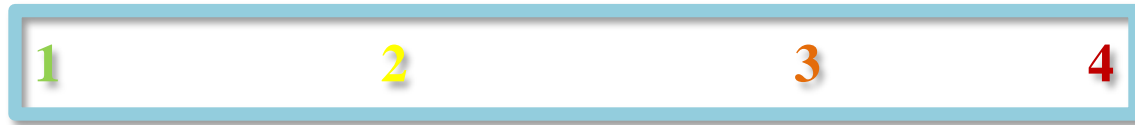
Ranking juvenile rearing reaches



Local and regional habitat relationships

Adult abundance

Habitat characteristics



Juvenile salmon habitat

Chinook salmon

Distance from spawning

Gradient

Barriers

Glacial influence

Mean Annual Flow

Tributary effects

Channel confinement



Juvenile salmon habitat

Coho salmon

Gradient

Barriers

Mean Annual Flow

Wetlands

Channel confinement



Juvenile salmon habitat

Sockeye salmon

Gradient

Barriers

Lake Size

Wetlands

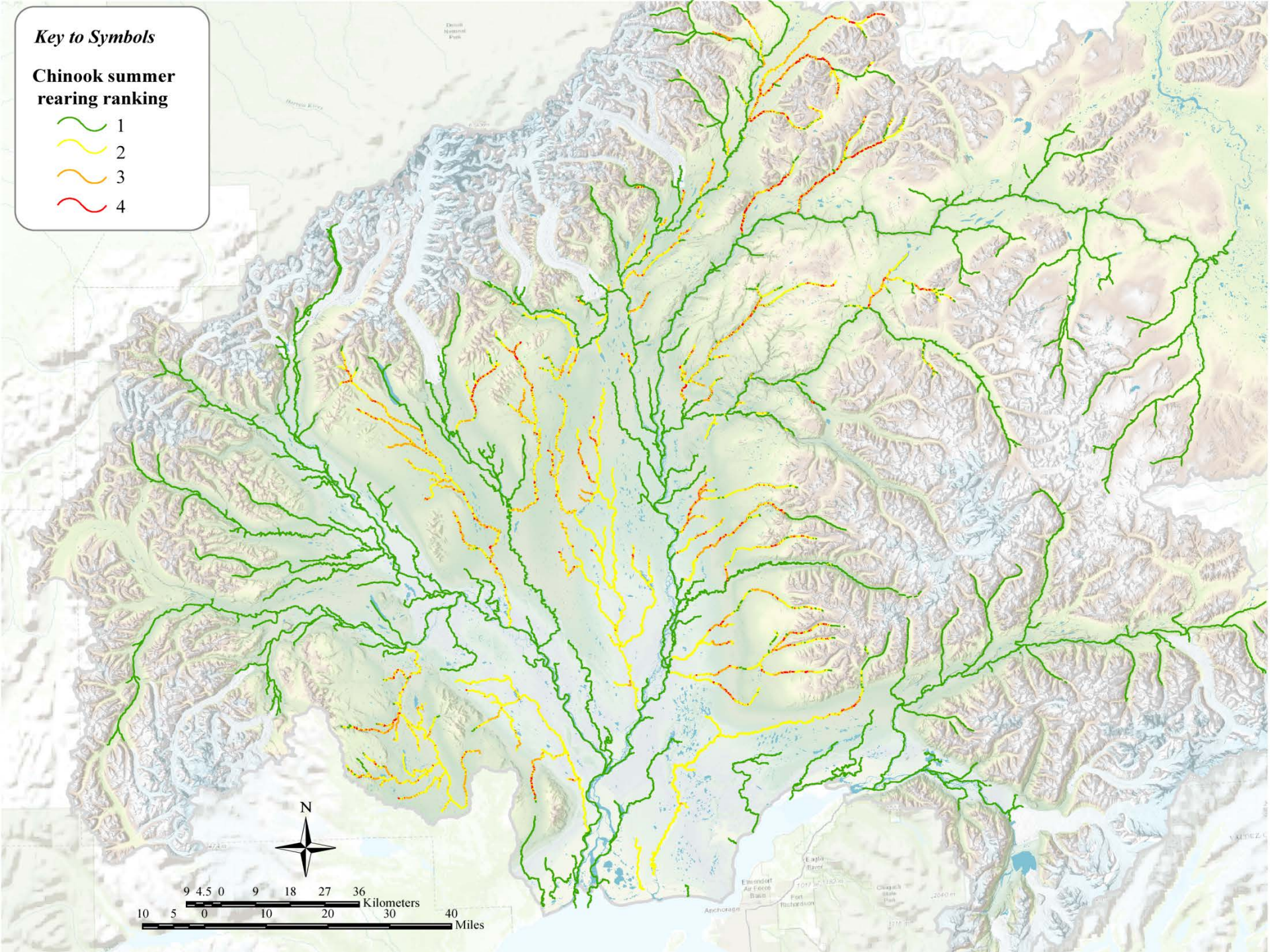
Glacial Influence



Key to Symbols





Chinook summer rearing ranking

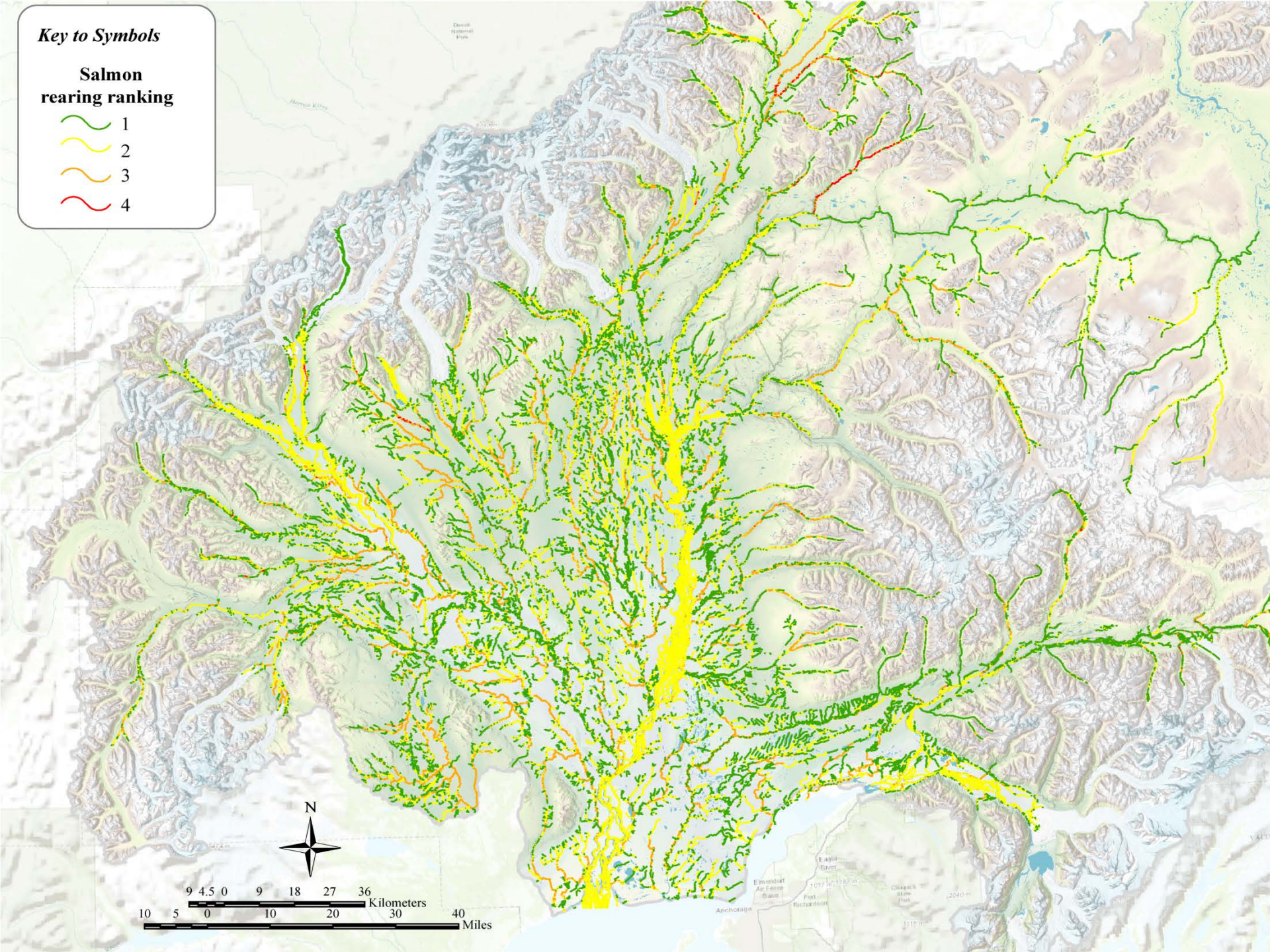
- 1
- 2
- 3
- 4



Key to Symbols

Salmon rearing ranking

- 1 
- 2 
- 3 
- 4 



Data gaps and need for research

Transactions of the American Fisheries Society 122:550-559, 1993
© Copyright by the American Fisheries Society 1993

Variation in Life History Characteristics and Morphology of Sockeye Salmon in the Kvichak River System, Bristol Bay, Alaska

GREGORY R. BLAIR,¹ DONALD E. ROGERS, AND THOMAS P. QUINN

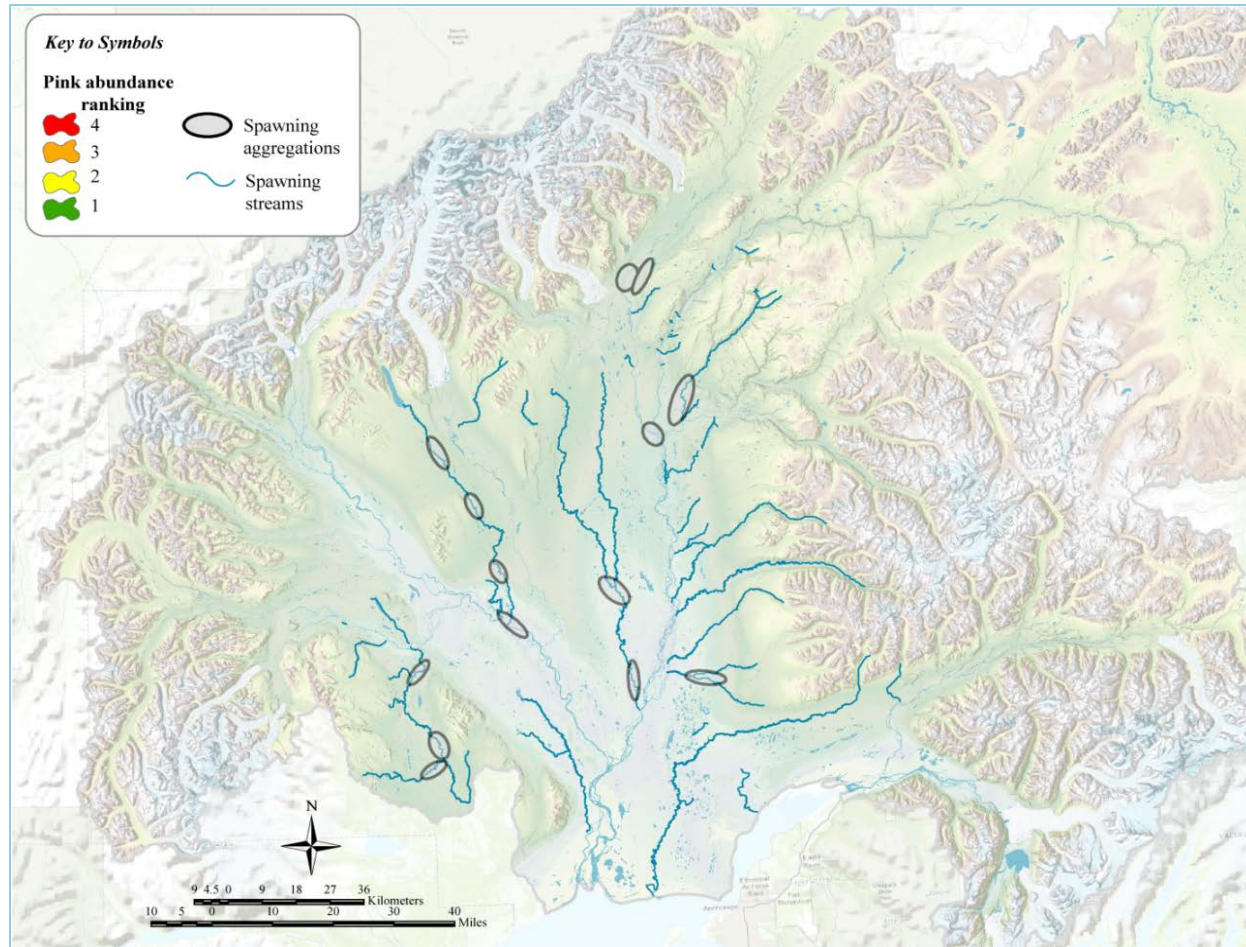
*Fisheries Research Institute, School of Fisheries, WH-10
University of Washington, S*

LETTERS

Population diversity and the portfolio effect in an exploited species

Daniel E. Schindler¹, Ray Hilborn¹, Brandon Chasco¹, Christopher P. Boatright¹, Thomas P. Quinn¹, Lauren A. Rogers¹
& Michael S. Webster²

Data gaps and need for research



Data gaps and need for research



Data gaps and need for research



Questions?

Draft Report



Expert review
cwoll@tnc.org



**Publish and
disseminate**

