Landscape genetic diversity of native and invasive Northern Pike (*Esox lucius*) in Alaska

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Background

- Large-bodied, hyper-predator
- Generalist diet
- Preferred prey:
  soft-rayed fish (salmonids)
- Circumpolar distribution

Photo by Jim Lavakras, Anchorage Daily News

Background

- Native populations
  - High levels of diversity
- Invasive populations
  - Lower diversity than native populations
    - Bottleneck
  - Propagule pressure?

The role of propagule pressure in explaining species invasions

Julie L. Lockwood[1], Phillip Cassey[2] and Tim Blackburn[2]

Is There A Genetic Paradox of Biological Invasion?

Arnaud Estoup,[1] Virginie Ravigné,[2] Ruth Hufbauer,[3] Renaud Vitalis,[1] Mathieu Gautier,[1] and Benoit Facon[1,2]

Reduced genetic variation and the success of an invasive species

Neil D. Tsutsui[1], Andrew V. Suarez, David A. Holway, and Ted J. Case

Northern Pike have impacted some Chinook populations

Data from Oslund & Ivey 2010; Munro & Volk 2016

Objectives

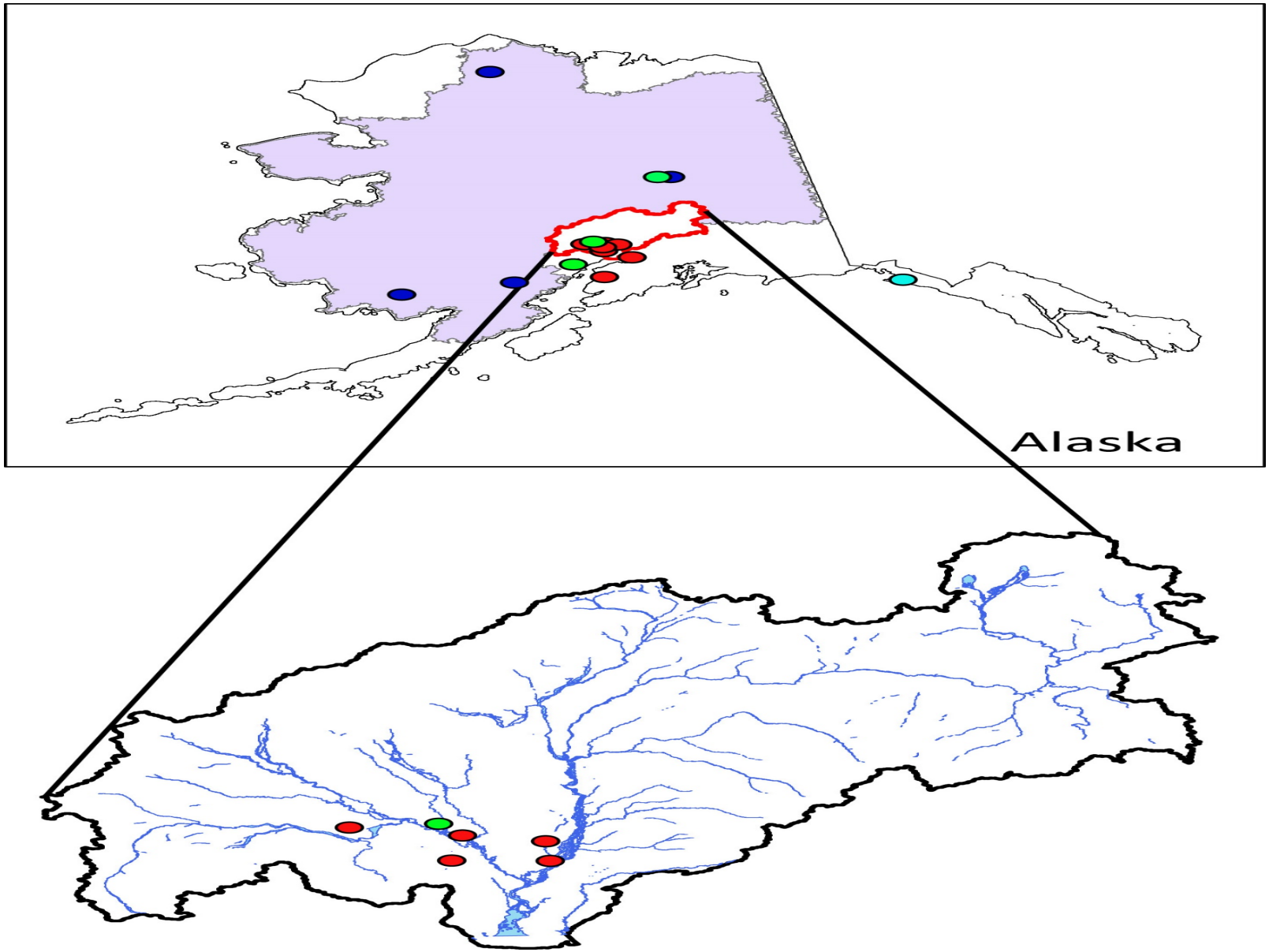
Objective 1: Determine origin of invasive populations

Objective 2: Characterize genetic variability of invasive and native populations

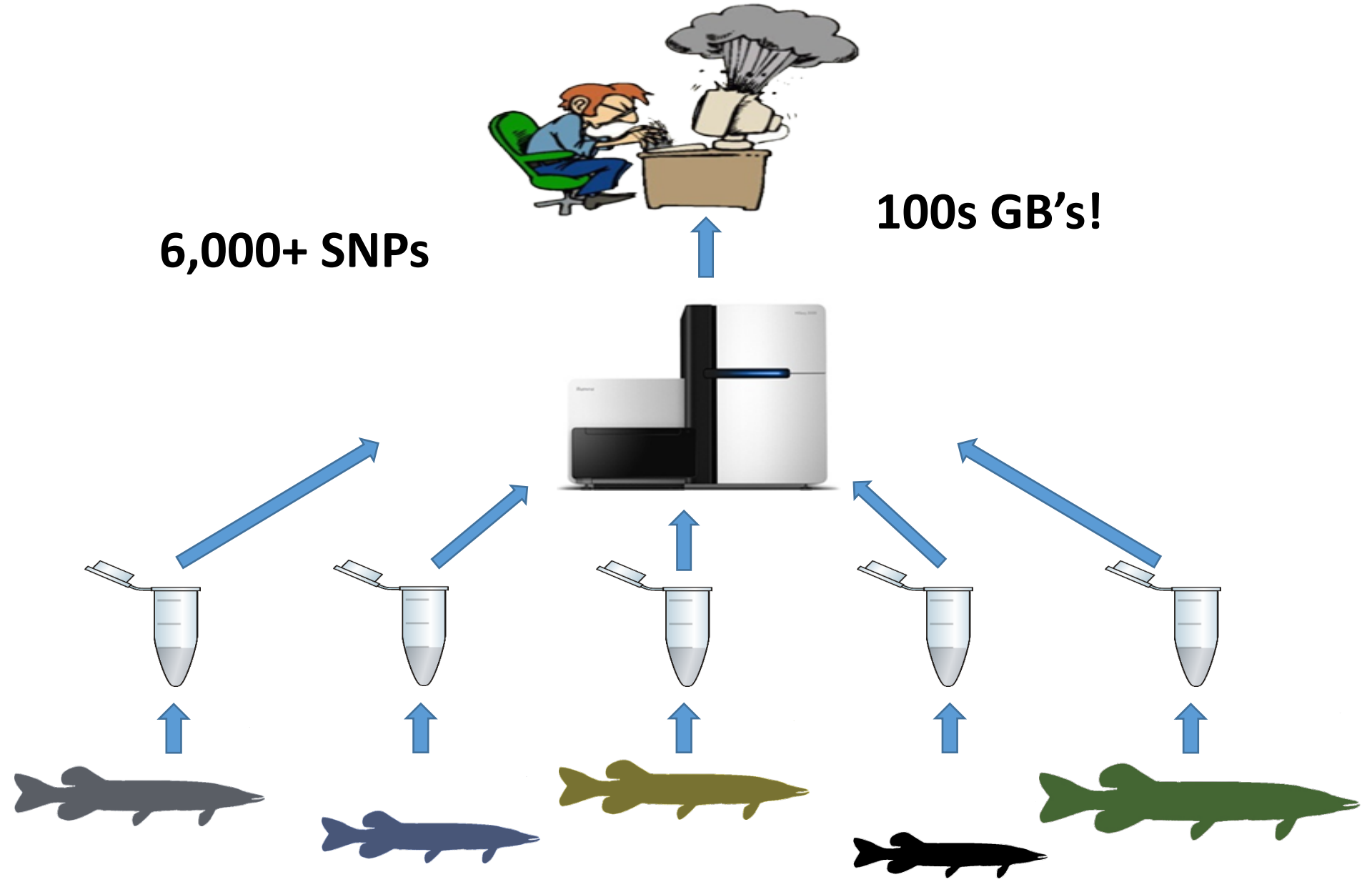
Objective 3: Infer founding population(s) size

Methods: Field

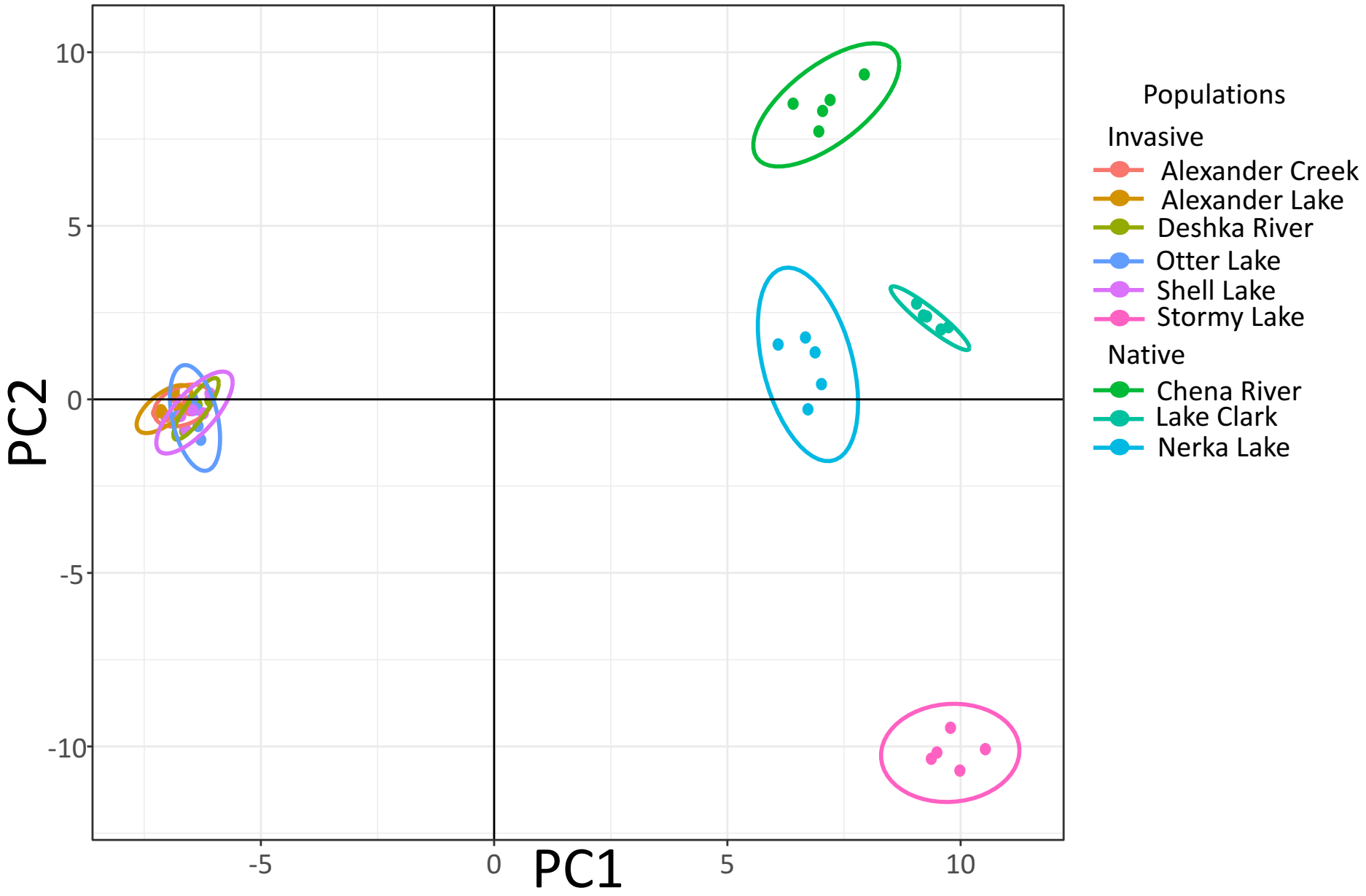
Methods: Collection sites



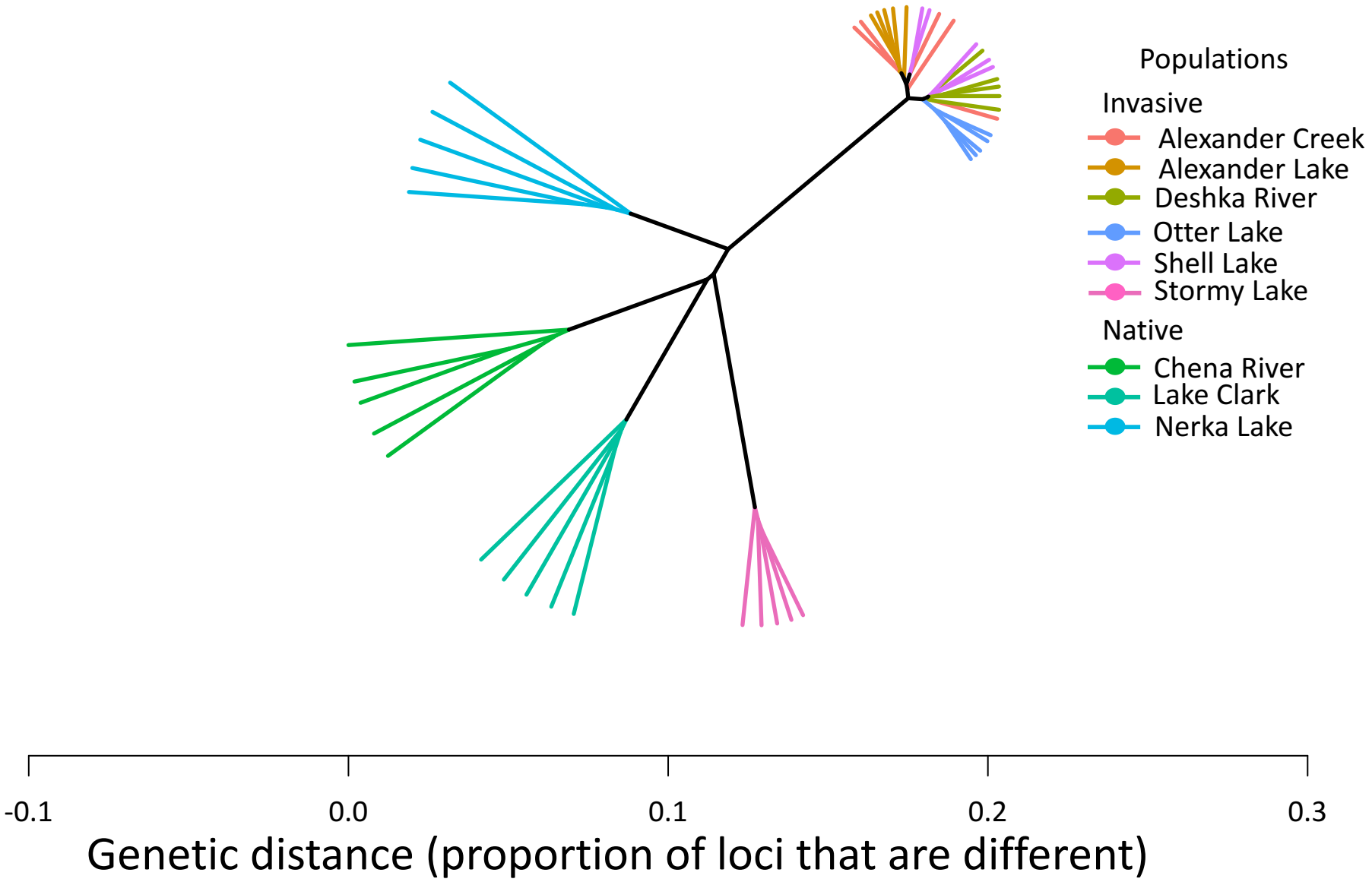
Data analysis



Diversity of native and invasive pike



Genetic distance



Conclusions

- Native populations
  - Higher diversity than invasive populations
- Stormy Lake (Invasive)
  - Diversity similar to native populations
  - Different source
- Invasive populations
  - Show population structure

Next steps: pike habitat suitability

Attributes

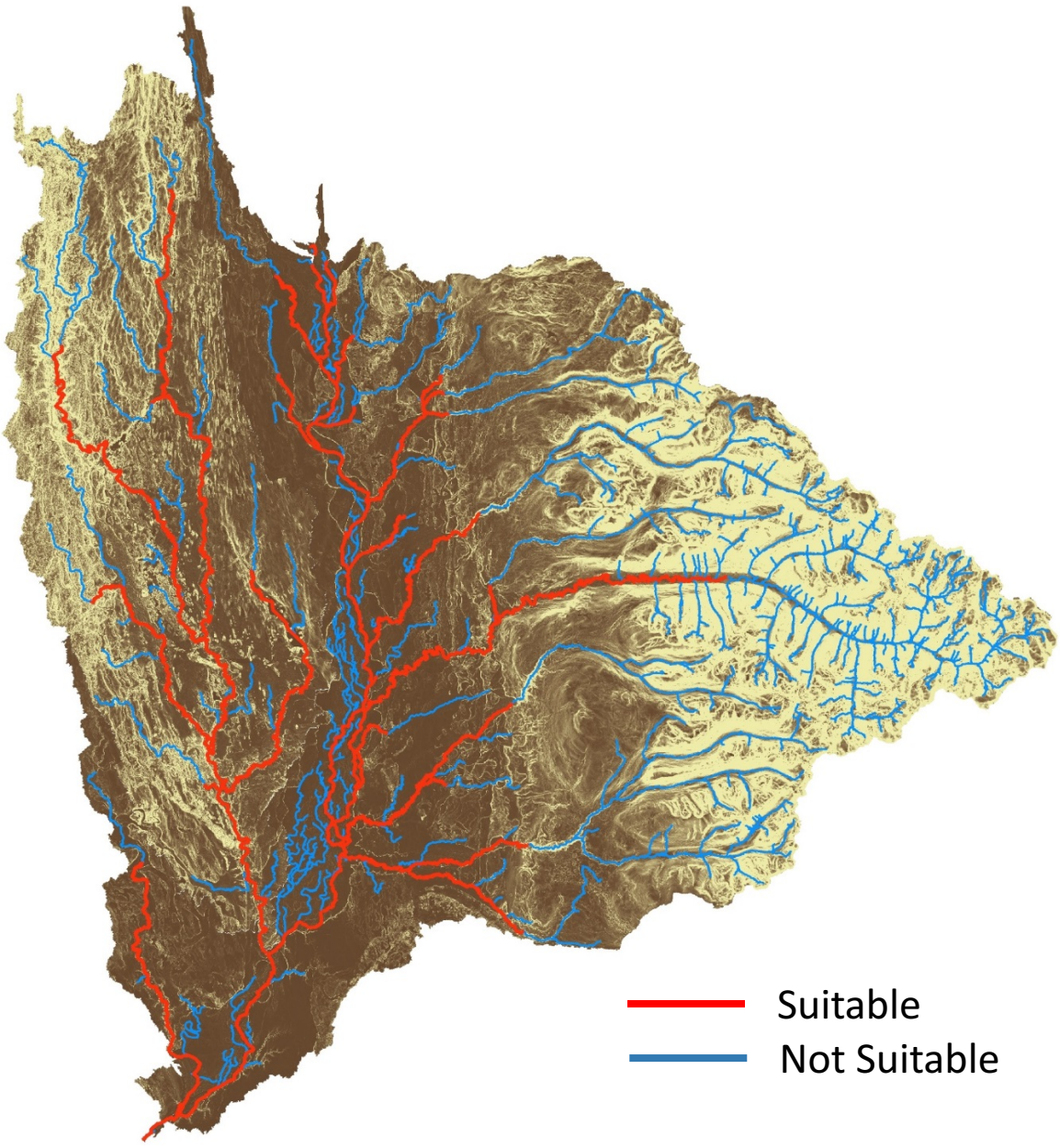
- Elevation
- Stream order
- Watershed lake area
- Floodplain presence

References

Casselman 1996

R. Shaftel, unpublished

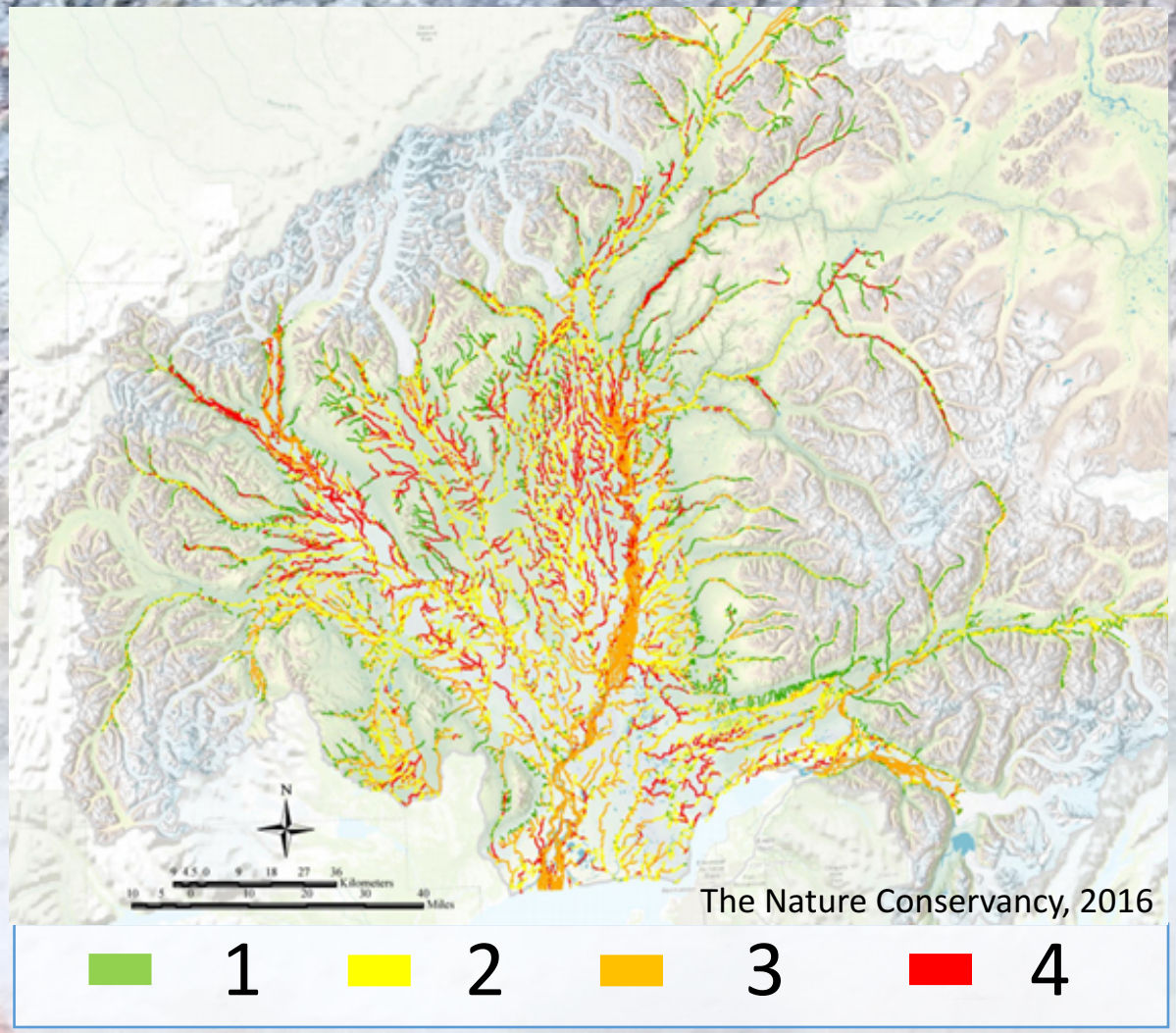
Spens et al. 2007



Juvenile salmon vulnerability

- Rearing habitat potential
- Overlap and connectivity
- Life - history

Coho rearing habitat potential



Acknowledgements

Project assistance or data collection

Laboratory: Issac Firesmith

Sample collection:

- NPS – Dan Young
- UAF – Many!
- CIAA – Andy Wizik
- TTCD – Nicole Swenson, John Hagan

Questions?