



INSTITUTE OF  
OUTDOOR  
RECREATION  
AND TOURISM  
UTAH STATE UNIVERSITY



## The social-ecological system of the Kenai River Fishery

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Kenai Peninsula Fish Habitat Science Symposium  
Kenai, AK | April 20<sup>th</sup>, 2023



# Goal: Identify the social and ecological effects of fire to the Kenai River Fishery

Two parts:

- 1) We needed to inventory the social and ecological components/interactions of the Kenai River Fishery: social-ecological model
- 2) Identify if/how each component of the fishery is affected by fire, identify potential long-term impacts



# Social-ecological approach

McGinnis and Ostrom (2014) state that social-ecological frameworks are essential because:

1. “increase the chances that cumulative progress can be made”
2. By making it easier to “compare findings and to engage in mutually beneficial exchanges of information.”



**Social-ecological science is focused on integrating information from diverse fields of study**



**Salmon  
Ecology**

**Hydrology  
Water Quality**

**Invasive  
Species**

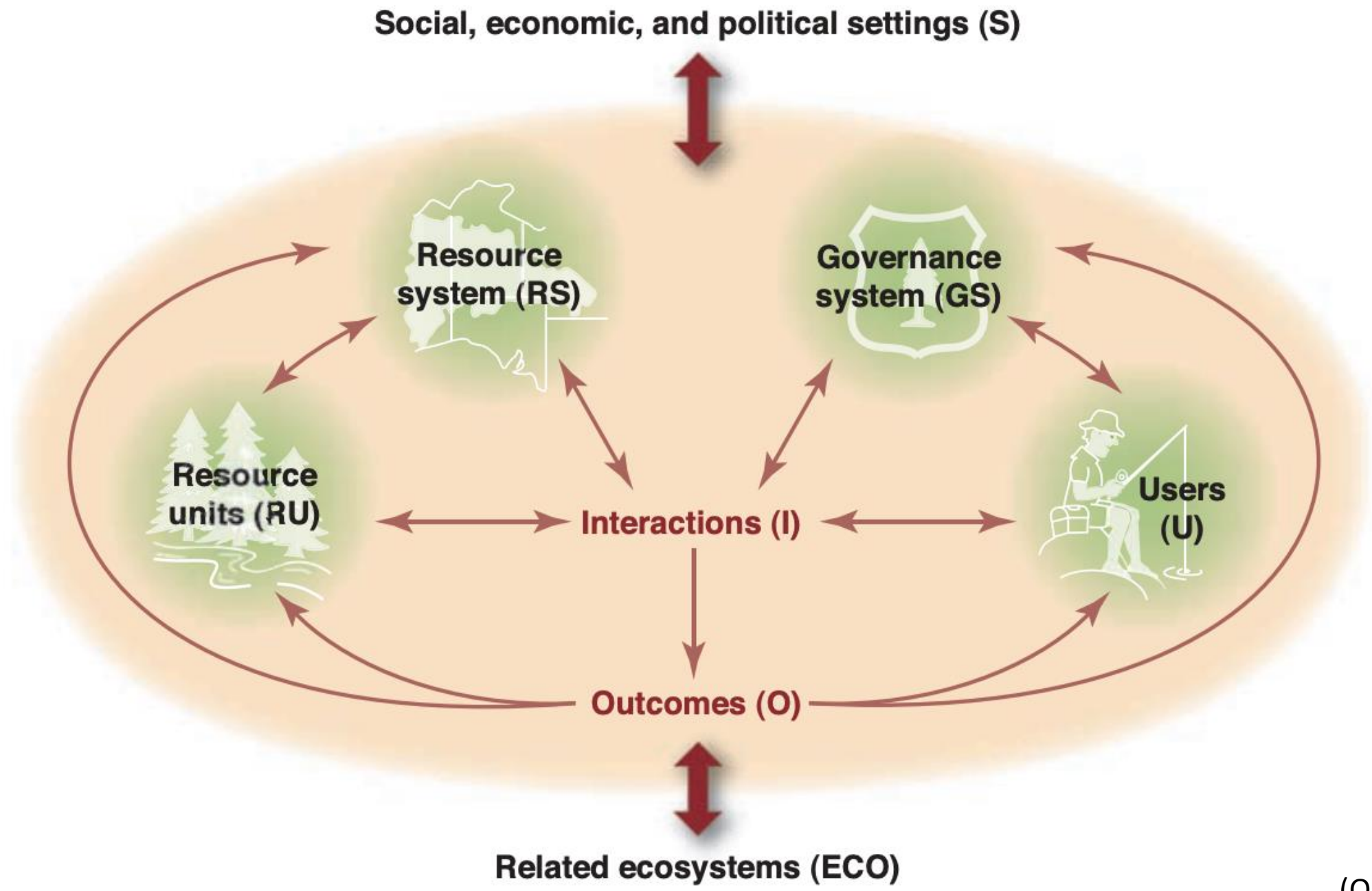
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**Etc.**

**Etc.**

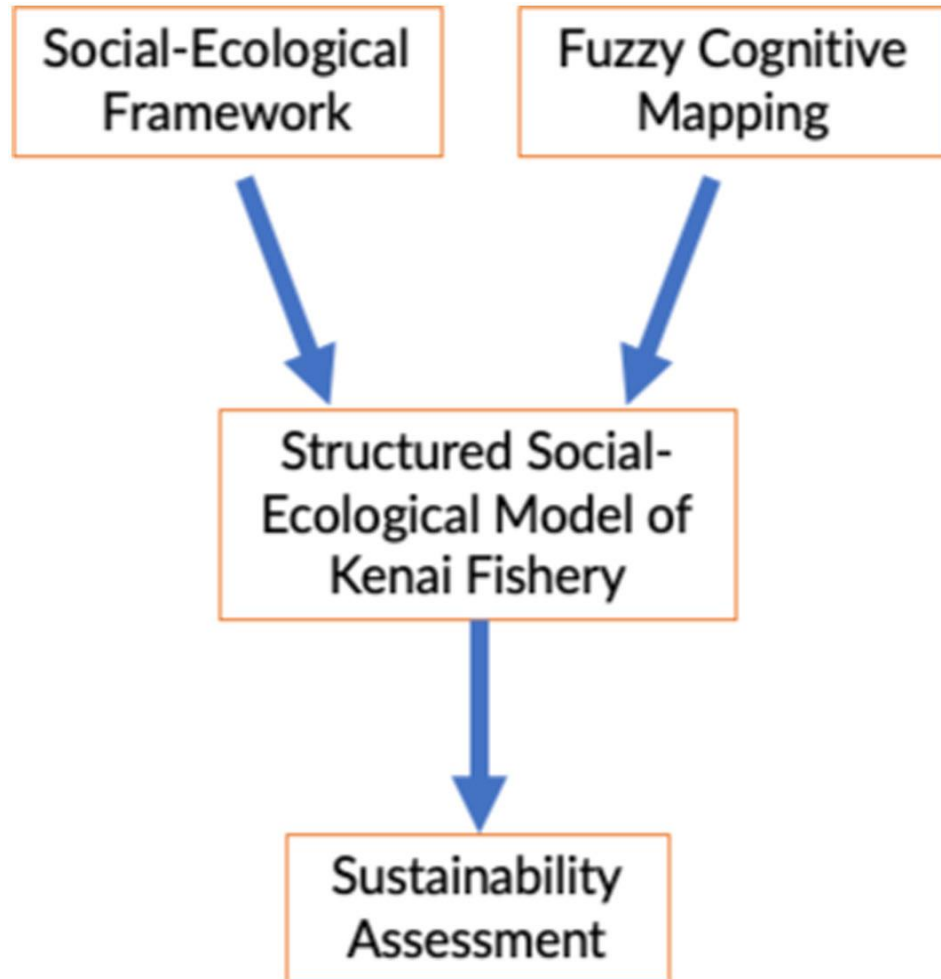
**Etc.**



(Ostrom, 2009)



# How did *we* do this?



**Contribution 1:** Integrating a social-ecological framework and Fuzzy Cognitive Mapping

**Contribution 2:** Developing a social-ecological model of the Kenai River fishery

**Contribution 3:** Assessing the variables affecting the sustainability of the Kenai River fishery.

▼ Notes

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▼ Unit of measurement

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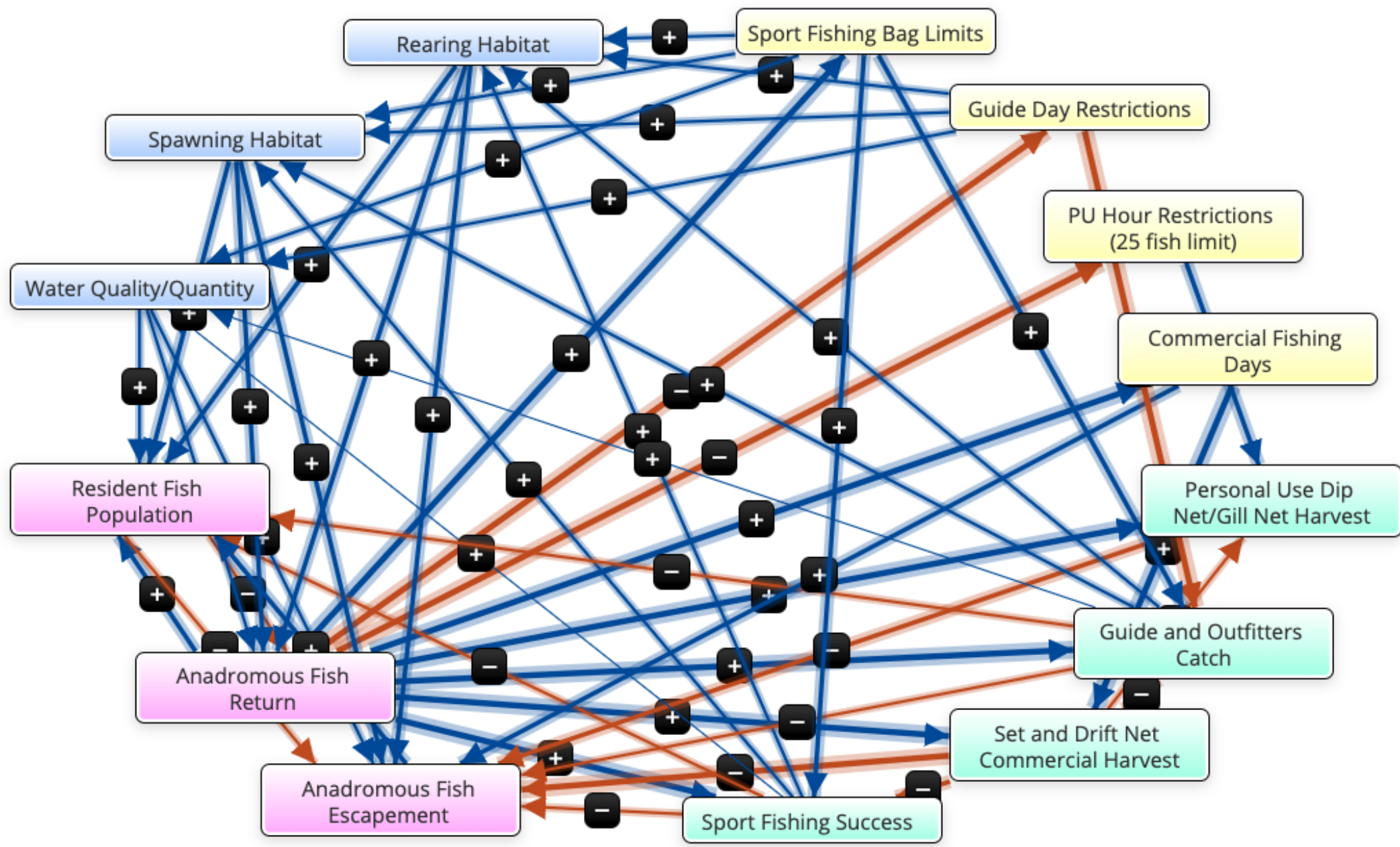
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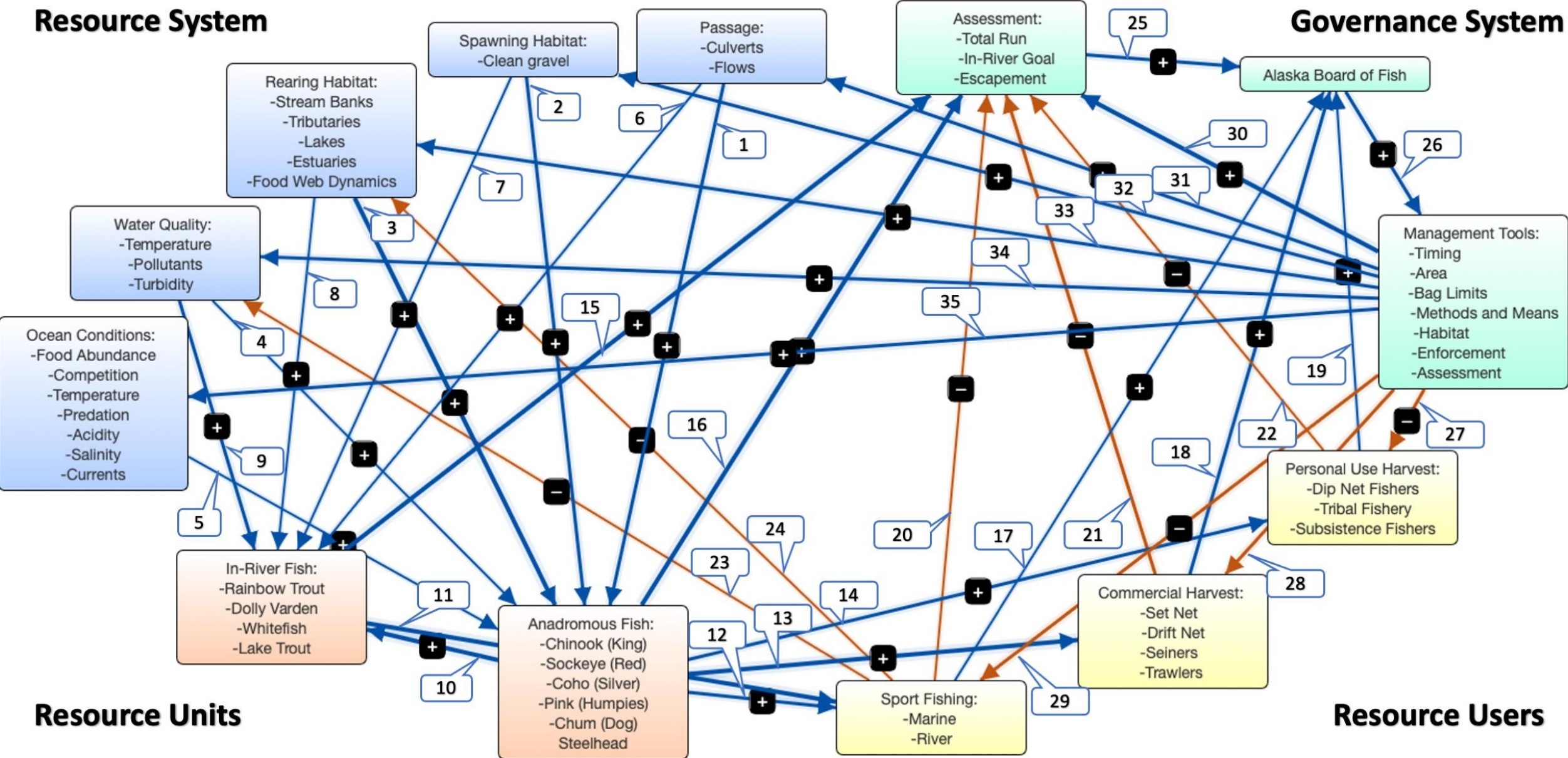
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# Resource System

# Governance System



# Resource Units

# Resource Users





Contents lists available at [ScienceDirect](#)

# Journal of Environmental Management

journal homepage: [www.elsevier.com/locate/jenvman](http://www.elsevier.com/locate/jenvman)



Research article

## The social-ecological system of the Kenai River Fishery (Alaska, USA)

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# Application

Understanding fire's impact on fisheries





# Fire: *Objectives*

- Using our S-E model of the Kenai fishery
  1. Systematically identify the social and ecological effects of fire
  2. Identify potential scenarios that may result in long-term impacts



# Fire: *Methods*

- Using the Kenai model as a guide...
  1. Stakeholder interviews
    - How has fire impacted the Kenai fishery?
  2. Model-guided literature review



# Is the Kenai vulnerable to long-term impacts?

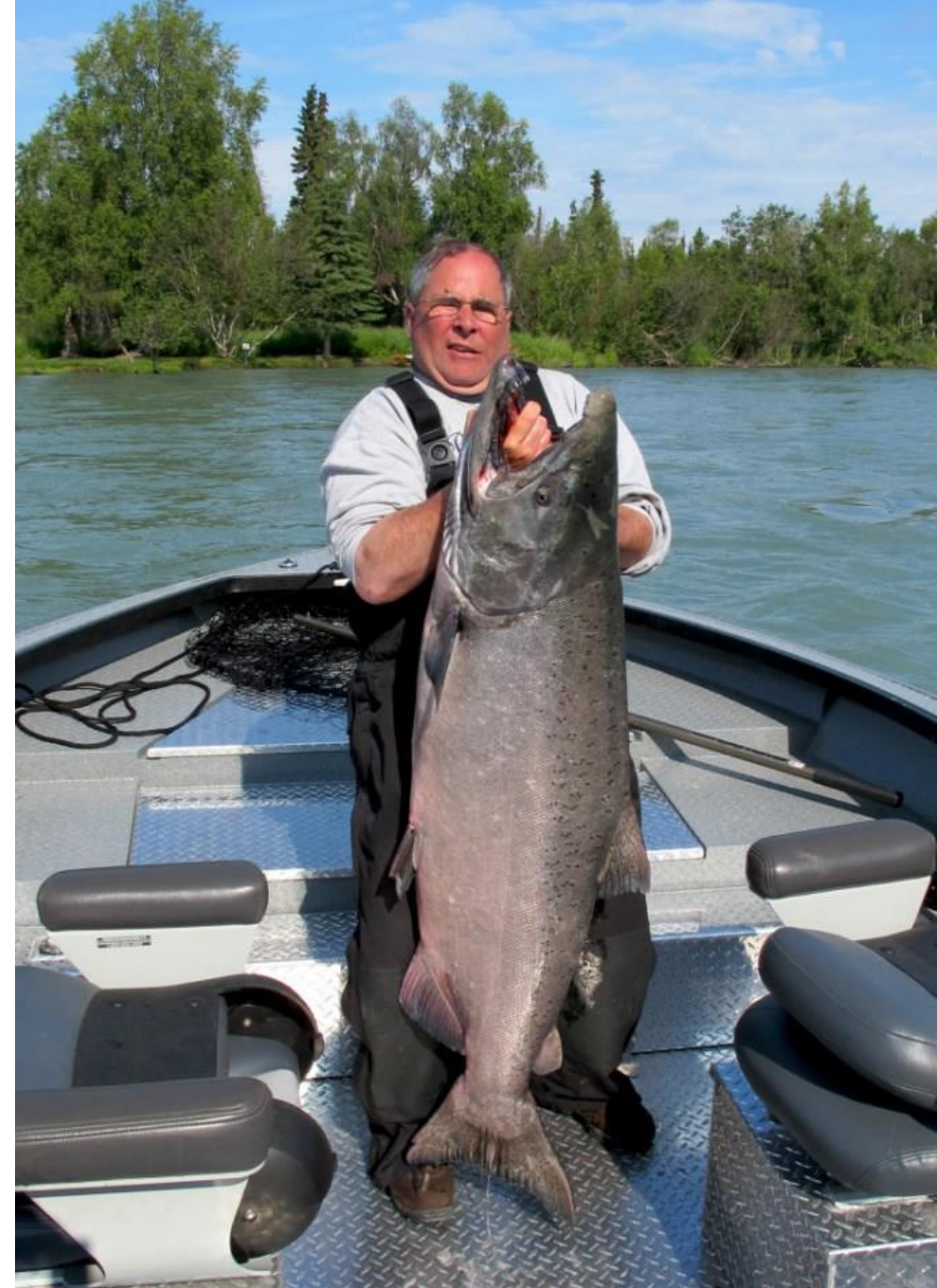
...no, not really...

...however...



# Early-Run Chinook

- Genetically unique population
- Low numbers and declining
  - 3,000-4,000 spawning adults
- Spawn in Killey tributary
- Further decline will threaten
  - Biological sustainability
  - Impose additional regulations





# Contributions

- Provided a thorough review of how fire affects the social and ecological components of salmon fisheries
- Illustrated the utility of a S-E approach in understanding a 'pressure' (i.e., fire)
- Illustrated how this process can be used to navigate complexity and identify potential long-term impacts

Marine and Coastal Fisheries

## Social and ecological impacts of fire to coastal fisheries: A study of the Kenai River Fishery (Alaska, USA)

Full-text available

Article

January 2023 · Marine and Coastal Fisheries



Chase Christopher Lamborn ·



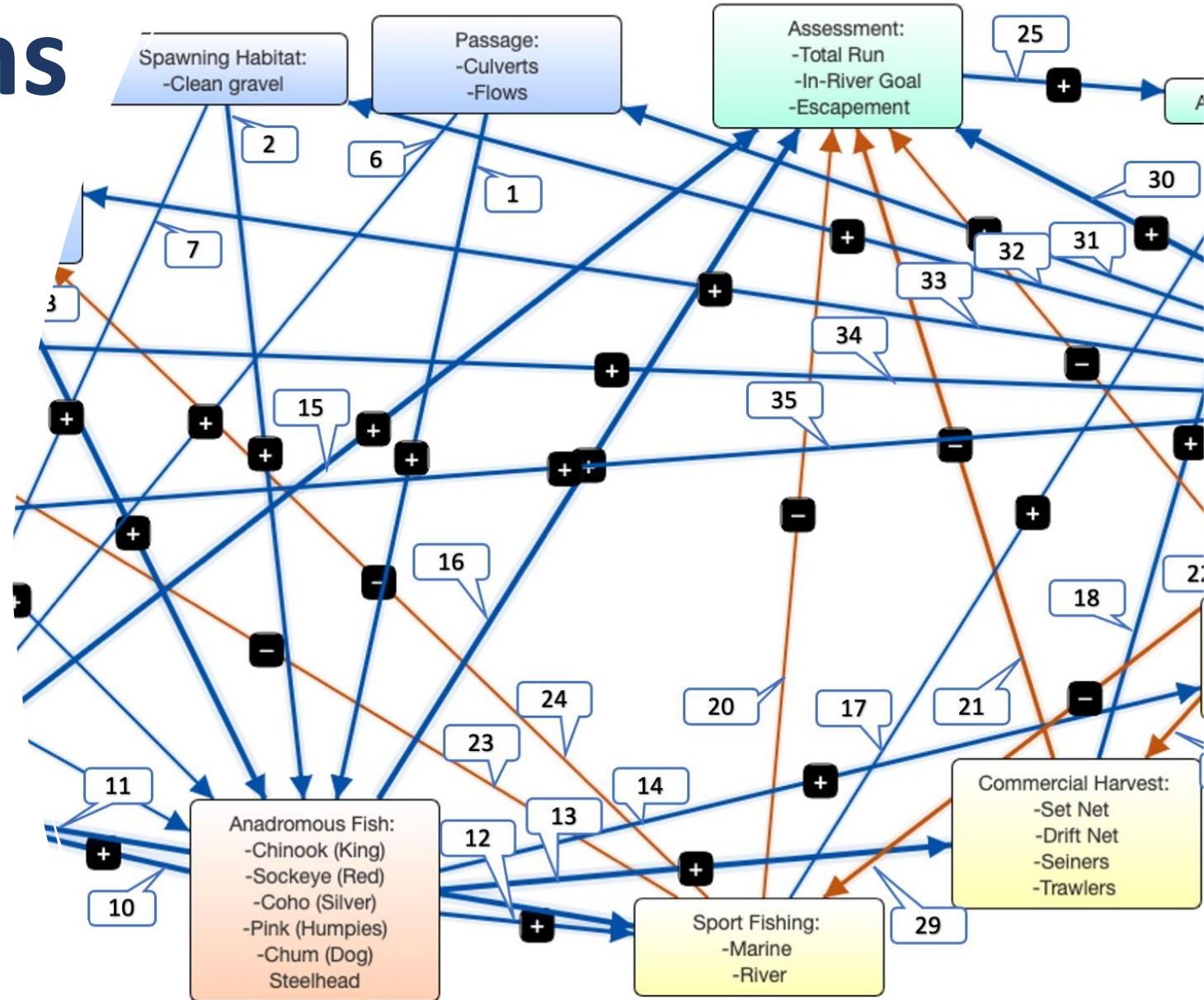
Jordan W. Smith



Source

# Future Applications

- Management
- Planning
- Policy
- Priority identification
- Bottlenecks
- Threats
- Grant writing







# Questions?

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