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Intrinsic Potential: A Tool for Identifying Salmon Habitat at the Landscape Scale

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Intrinsic potential:

- Measures the inherent capacity of watersheds to provide high quality habitat
- Based on persistent landscape attributes
- Approach is adaptable
- Can be mapped over large areas
- Simplicity
- Helps prioritize management activities

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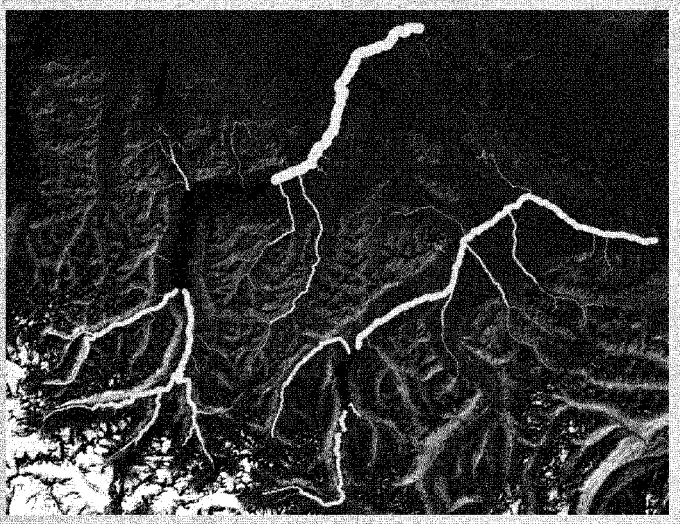
Measureable "Persistent" Attributes:

- Geomorphology
  - Gradient
  - Valley Width
  - Channel characteristics
- Flow
- Glacial influence



Flow (CFS)
2.050763 - 73.623911
73.623912 - 192.353228
192.353229 - 360.515176
360.515177 - 724.061987
724.061988 - 1277.492031
1277.492032 - 2137.330735

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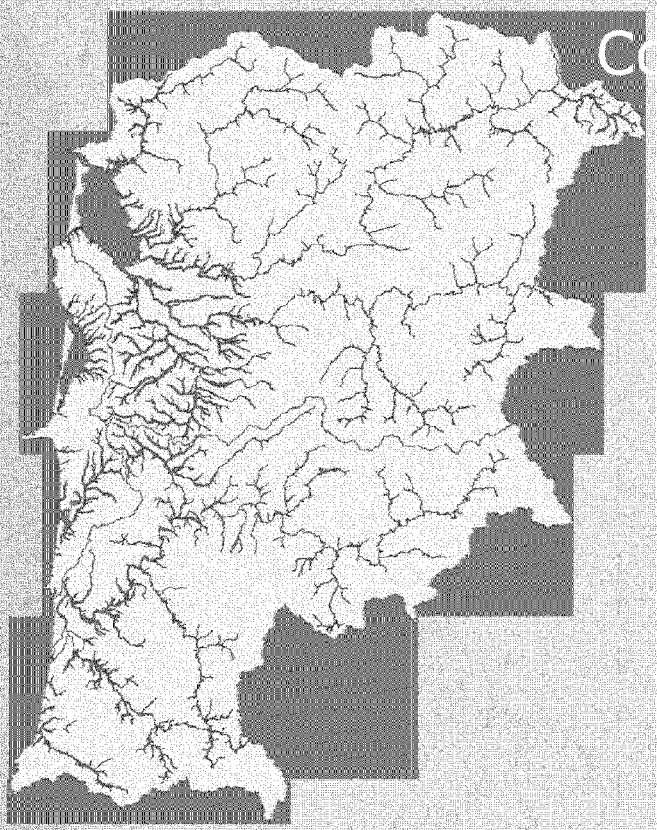
History of Intrinsic Potential

- Developed from the Oregon Coastal Landscape Analysis and Modeling Study (CLAMS) - 2003.
  - Development of tools to facilitate planning at large spatial scales.



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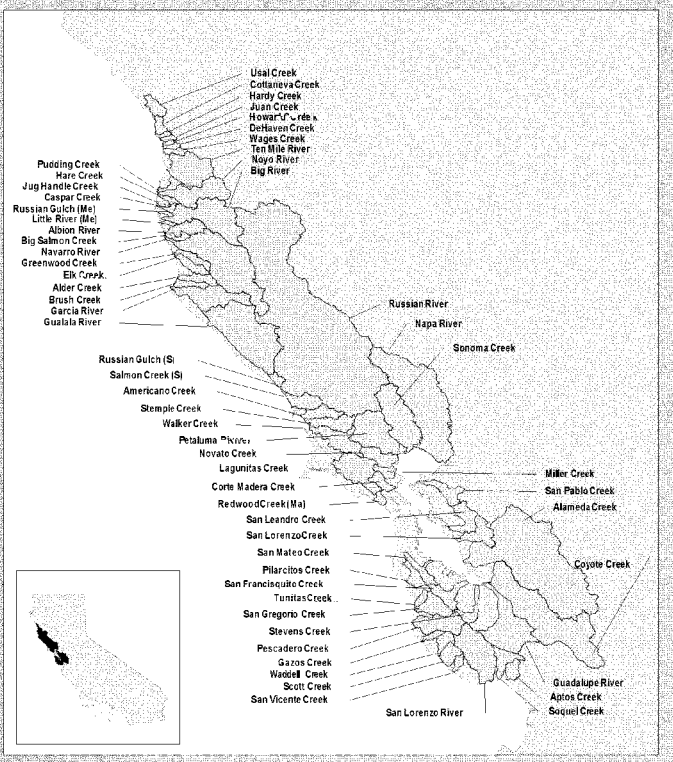
History of Intrinsic Potential

- Technical Recovery Team in California for delineating population units (2005).
- Used in areas where data was lacking.



- ….workshop in 2008.

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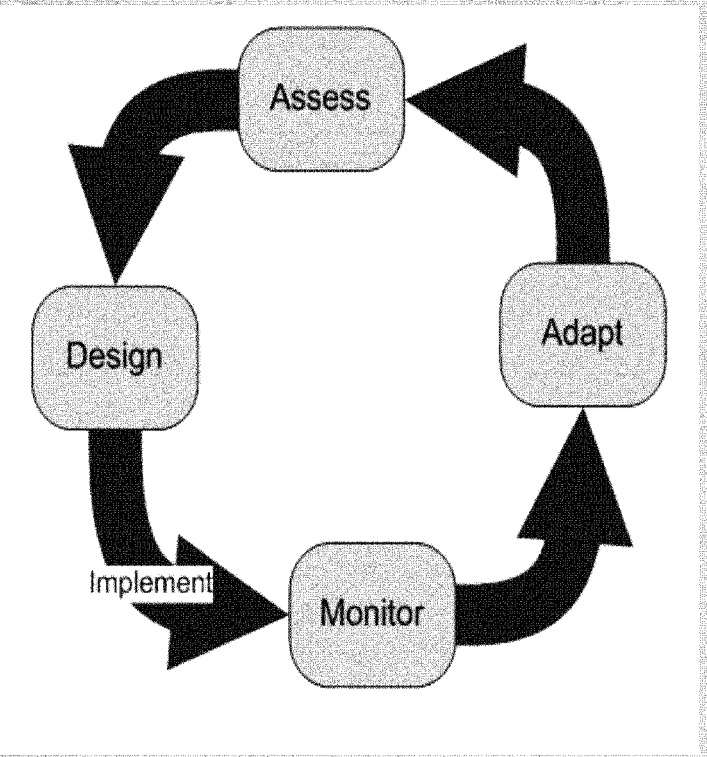
Applications of Intrinsic Potential

- Identify species-specific hotspots.
- Design landscape-scale priority areas.
- Used in designing monitoring plans.
- Estimating historical abundance.
- Proxy for data poor areas.
- Use in conjunction with current condition.



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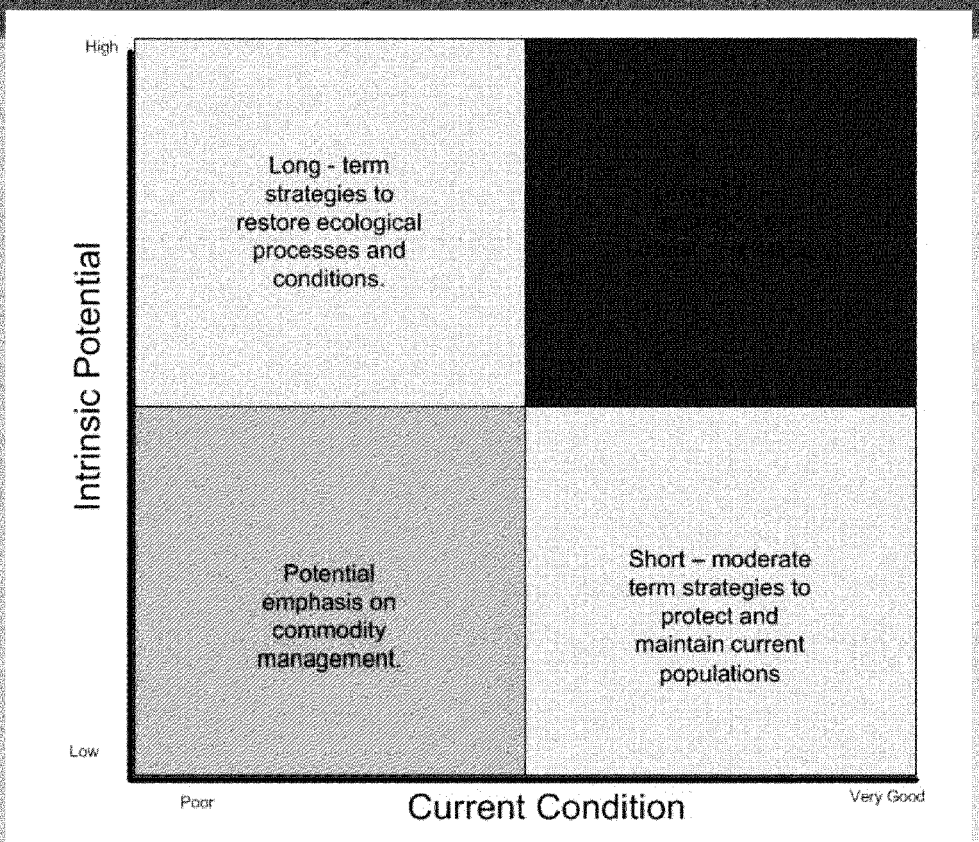

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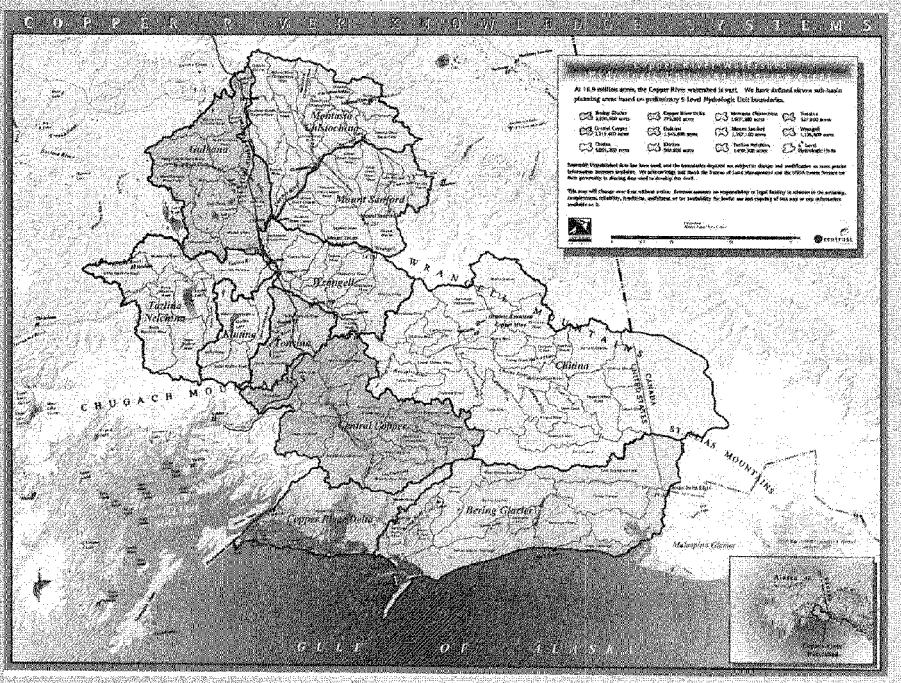
Copper River Intrinsic Potential

- Ecotrust led partnership
  - Wild Salmon Center
  - US Forest Service
  - Alaska Department of Fish and Game
- Chinook
- Sockeye



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EPA-7609-0004574-0008

Model Development

Meet with regional experts

Develop stream network & key persistent attributes

Develop relationships between persistent attributes and species of interest

Index key persistent attributes to a scale of 0 -1

Develop IP Model

Validation

- Expert Opinion
- Existing field data
- Field validation

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Meet with Regional Experts

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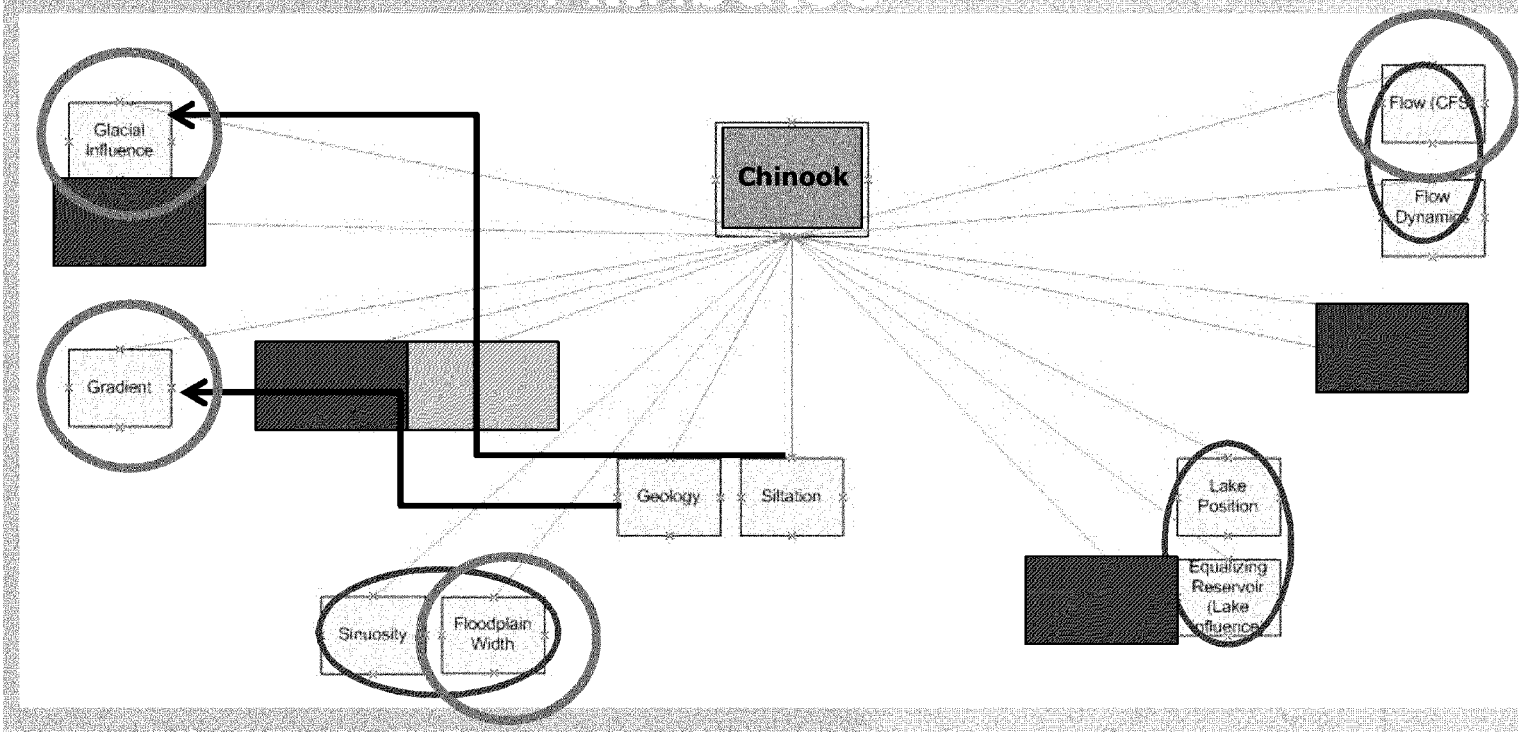
Potential Persistent Attributes



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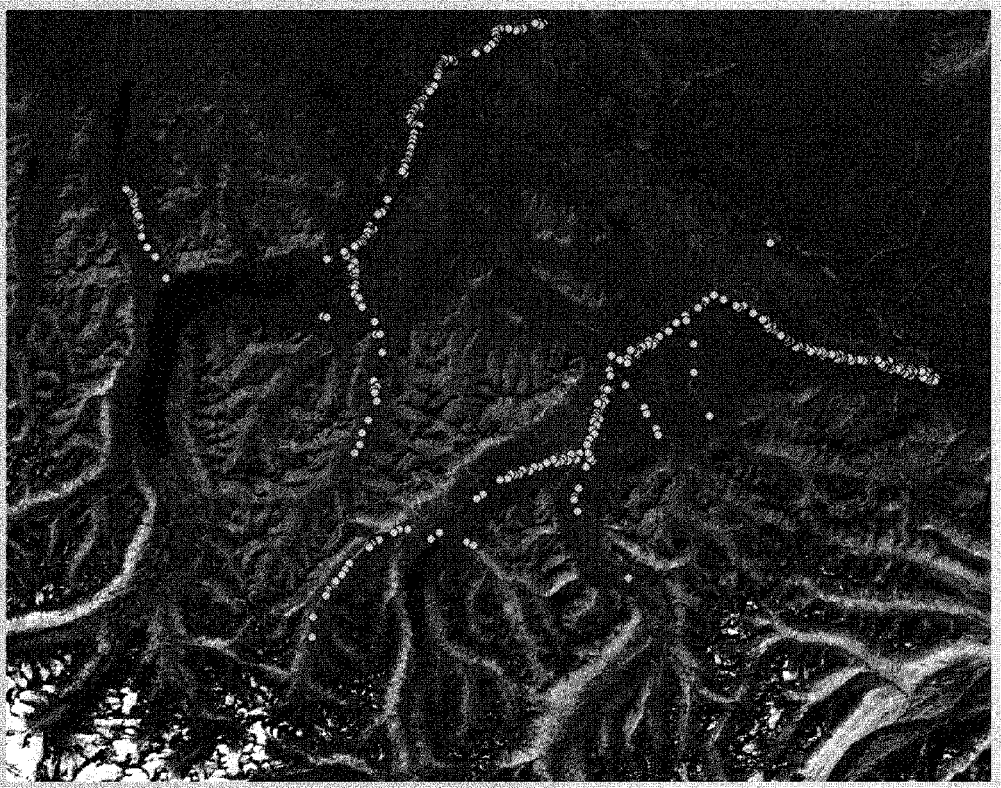
Chinook Telemetry Points in the Klutina and Tonsina Drainages



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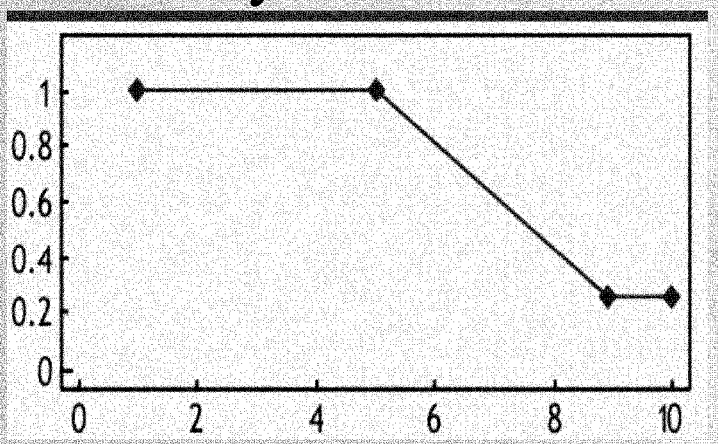
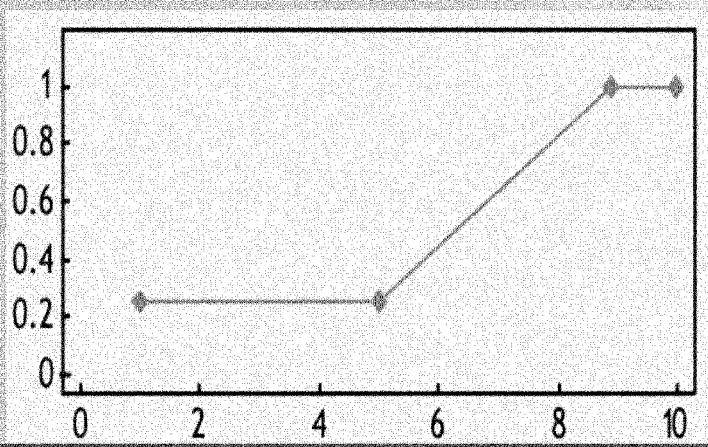
Valley Constraint



Steelhead

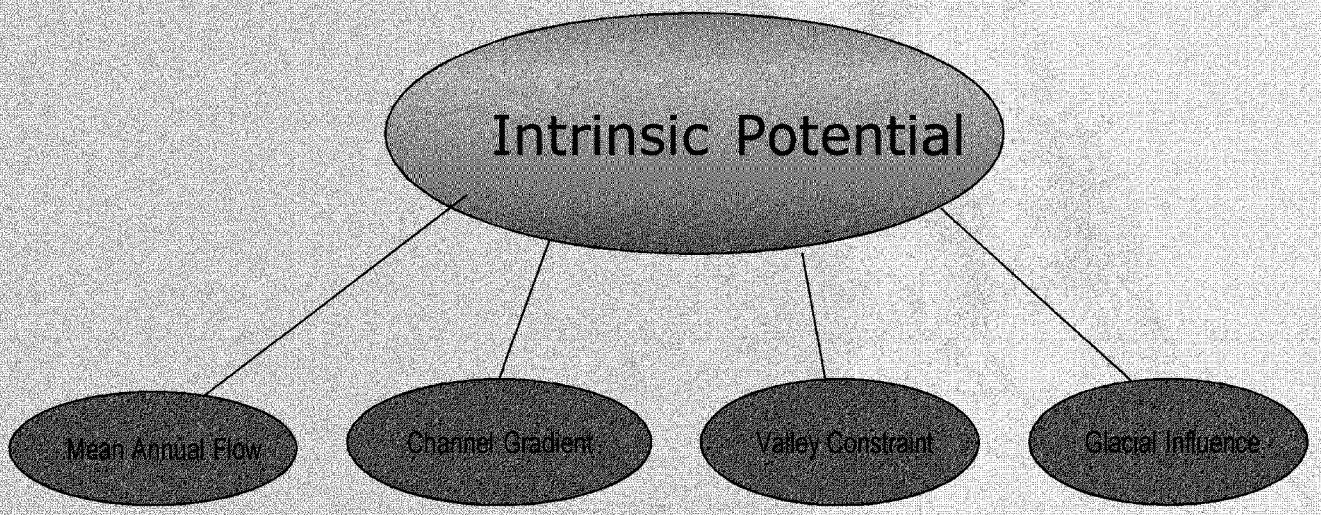


Coho Salmon

Index Value

Valley Width Index ecotrust KNOWLEDGE SYSTEMS

$$IP_S = (I_F * I_G * I_C * I_{GI})^{1/4}$$



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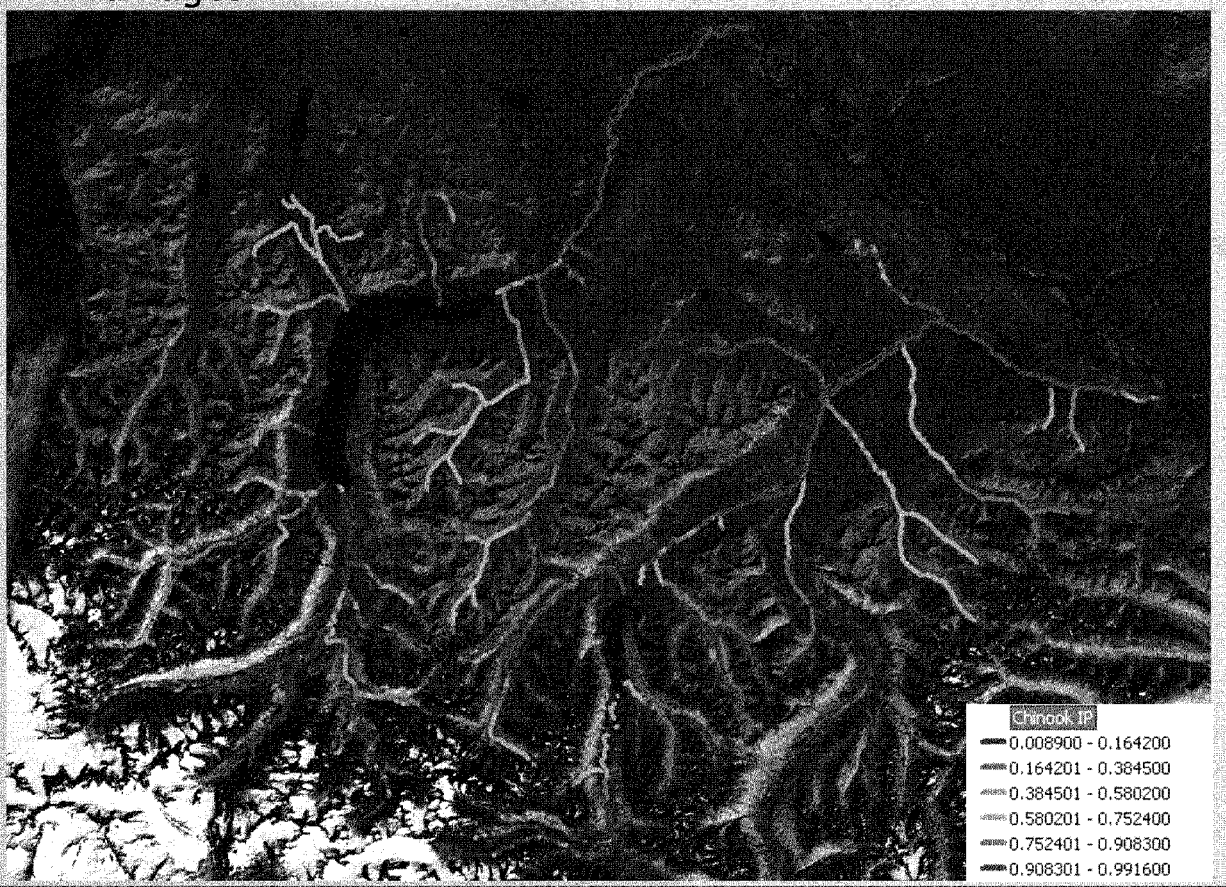
Draft Output for Chinook in the Klutina and Tonsina Drainages



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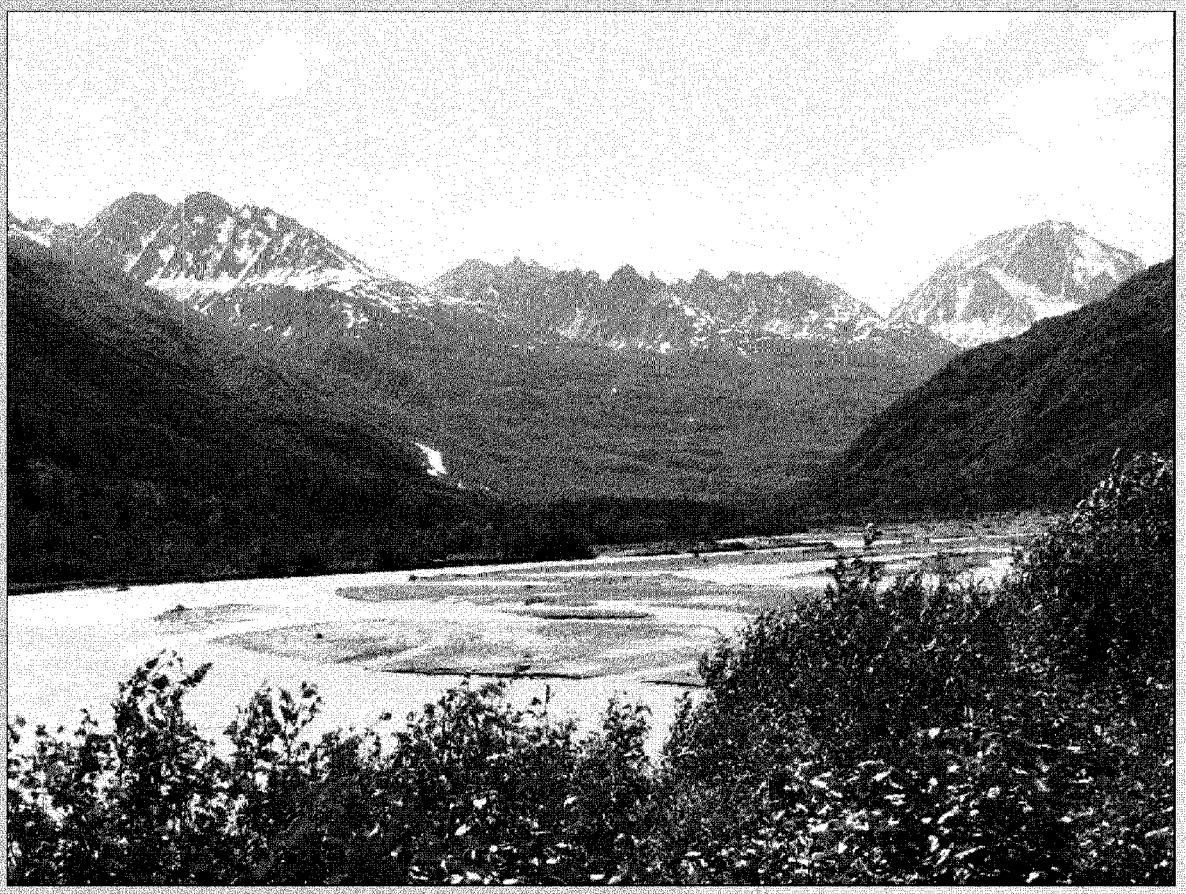

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Future Applications

- Use in conservation planning
- Anadromous waters catalog
- Climate change

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Conclusion

- Intrinsic Potential Models
  - Used in a variety of applications
- Broadening modeling approach to an Alaskan context.
  - First sockeye IP model
- Thank you

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Intrinsic Potential: Oregon Coastal Province
Steelhead
IP ≥ 0.75
IP < 0.75
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