



Ecological Risk Assessment of Large-Scale Hydropower on Pacific Salmon Populations within the Susitna River

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Purpose of the risk assessment

Provide The Nature Conservancy with an assessment of potential risks to salmon populations from the proposed Susitna-Watana project...

- Evaluate
- Inform & communicate
- Make decisions

Risk Assessment Process

Phase 1: problem formulation



External scientific review



Phase 2: analysis & risk characterization



External scientific review



Final risk assessment

What is risk?

- Resource of interest
- Magnitude and probability
- Uncertainty
- Choice of endpoints



Severity

Magnitude	High			most significant
	Medium			
	Low	least significant		
		Low	Medium	High
		Probability		

Uncertainty (e.g., weather forecast)

Magnitude	High			
	Medium			
	Low			
		Low	Medium	High
		Probability		

Endpoints

Population-level effects:

- Abundance
- Productivity
- Spatial structure
- Diversity

The goal is to identify potential changes (\downarrow or \uparrow)

More specifically...

Looking at the propagation of risk

Project activities



Habitat process



Habitat attributes



Population parameters

Focal areas

- Project activities
- Habitat processes
- Habitat attributes
- Population parameters

$$\begin{array}{c} \Delta \text{ Flow} \\ + \\ \Delta \text{ Sediment supply} \\ + \\ \underline{\Delta \text{ Water quality}} \end{array}$$



Other focal areas—external modulation and biological feedback

- Climate change
- Marine productivity
- Marine derived nutrients



Schedule and status

- Phase 1
- Phase 2



Next steps...

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