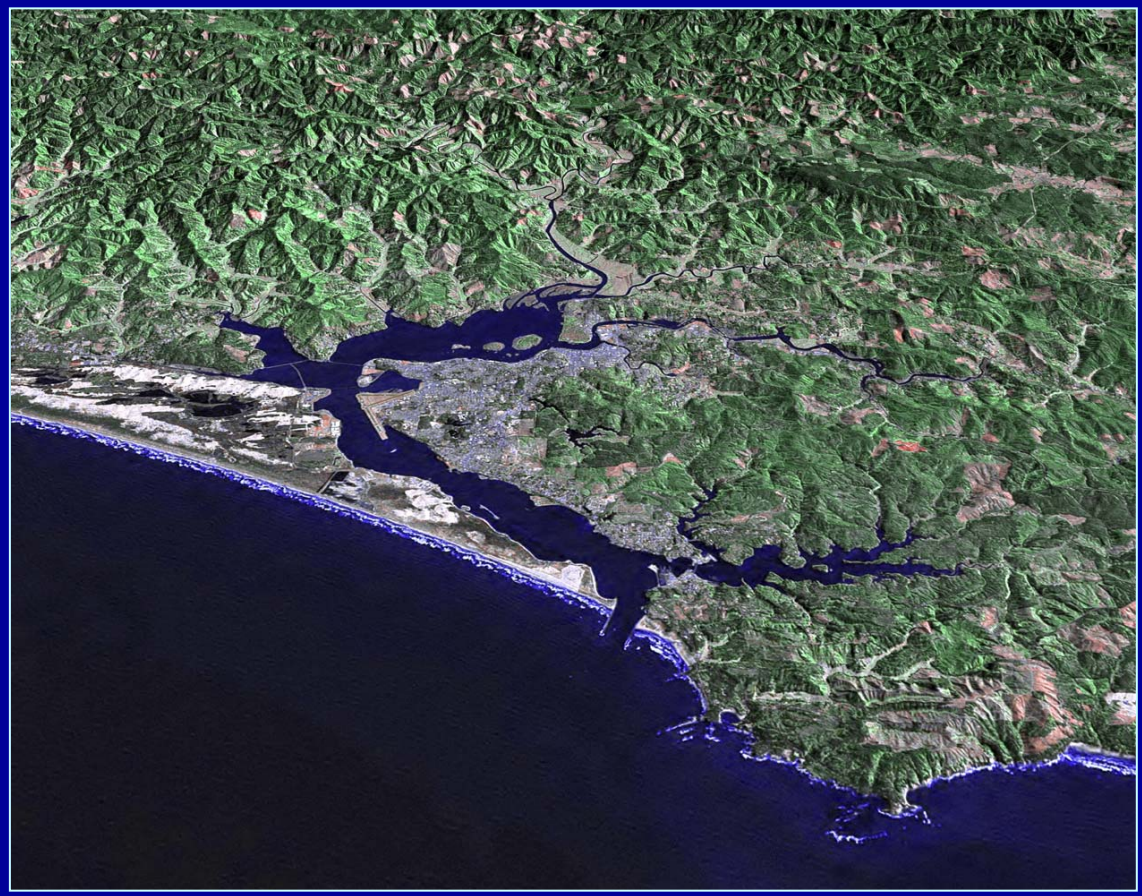
Regional Restoration Prioritization: The View From Coos Bay



Jon A. Souder, Executive Director

Coos Watershed Association

A Three Part Tale

1. Our Function Approach Similar to the Oregon Watershed Enhancement Board (OWEB) Restoration Projects Investments Prioritization

2. An Second Approach using Reeves et al. (1989) Coho Limiting Factors Technique

3. A Third Approach Being Developed as Part of a National Sea Grant Project Between Oregon Sea Grant (Dr. Guillermo Giannico) and the Coos Watershed Association using an Ecosystem Management Fuzzy Logic Decision Support System

Features of the Coos Watershed

Area: 610 Sq. Miles

Ownership: 75% Private
15% Federal
8% State

Largest Urban Area on the Oregon Coast (pop. 30,000)

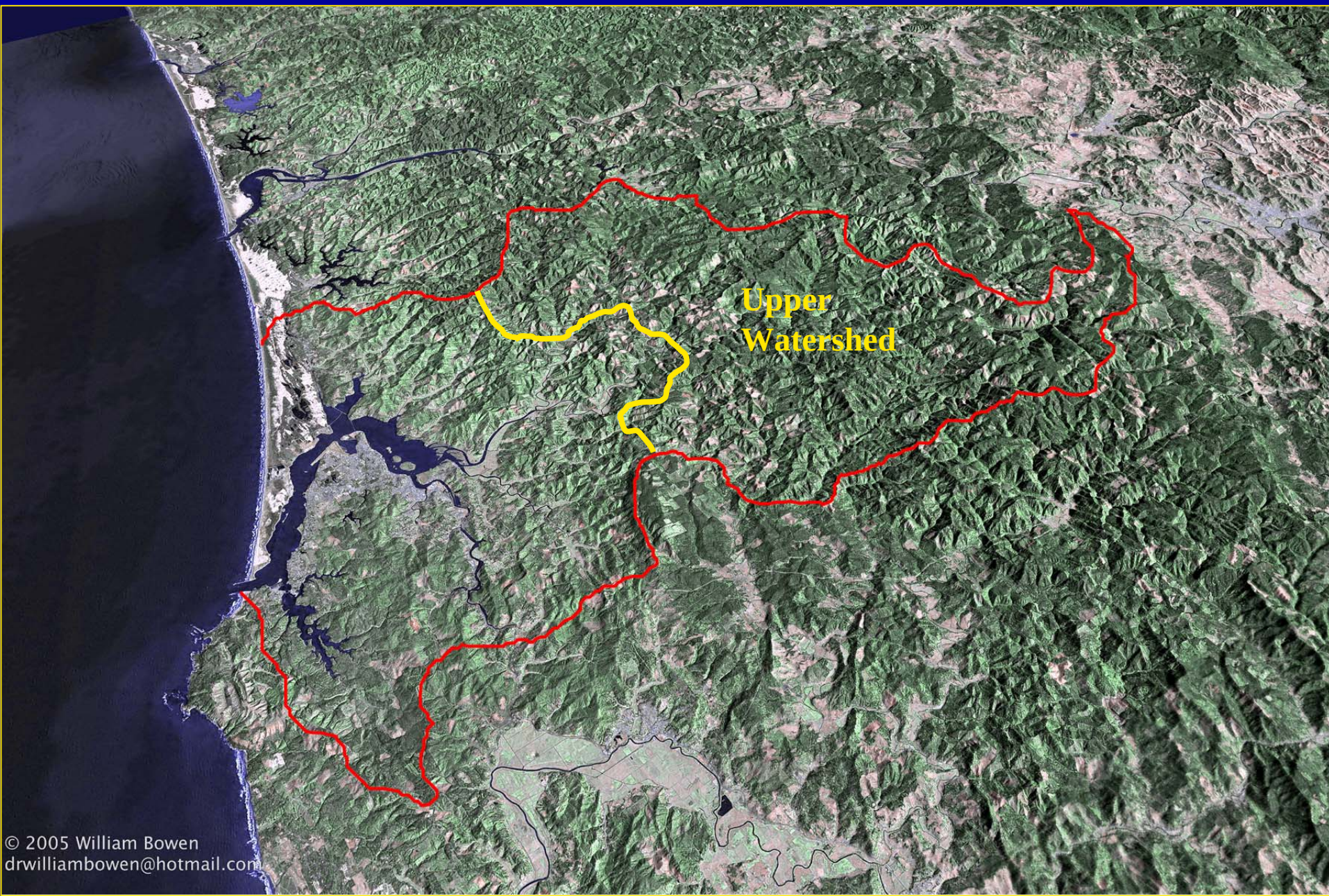
Largest Estuary on the Oregon Coast (absent Columbia River)

Largest Oyster Cultivation Industry in Oregon.

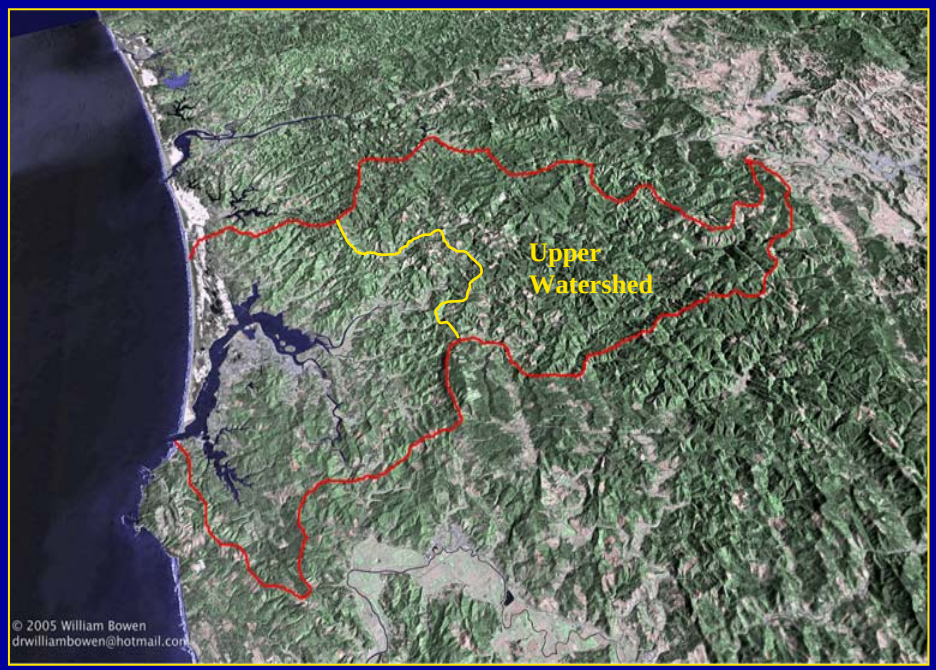
Aquatic Species of Concern: Coho Salmon, Chinook Salmon, Chum Salmon, Winter Steelhead, Lamprey, Larval & Juvenile Dungeness Crab, Larval Rockfish

Water Quality Concerns: Summer Water Temperatures at Base Flows
Heavy Sediment Loads
High Bacteria Loads in Bay and Smaller Tributaries

Coos Watershed Regions – Limiting Factors



Coos Watershed Regions – Upper Watershed

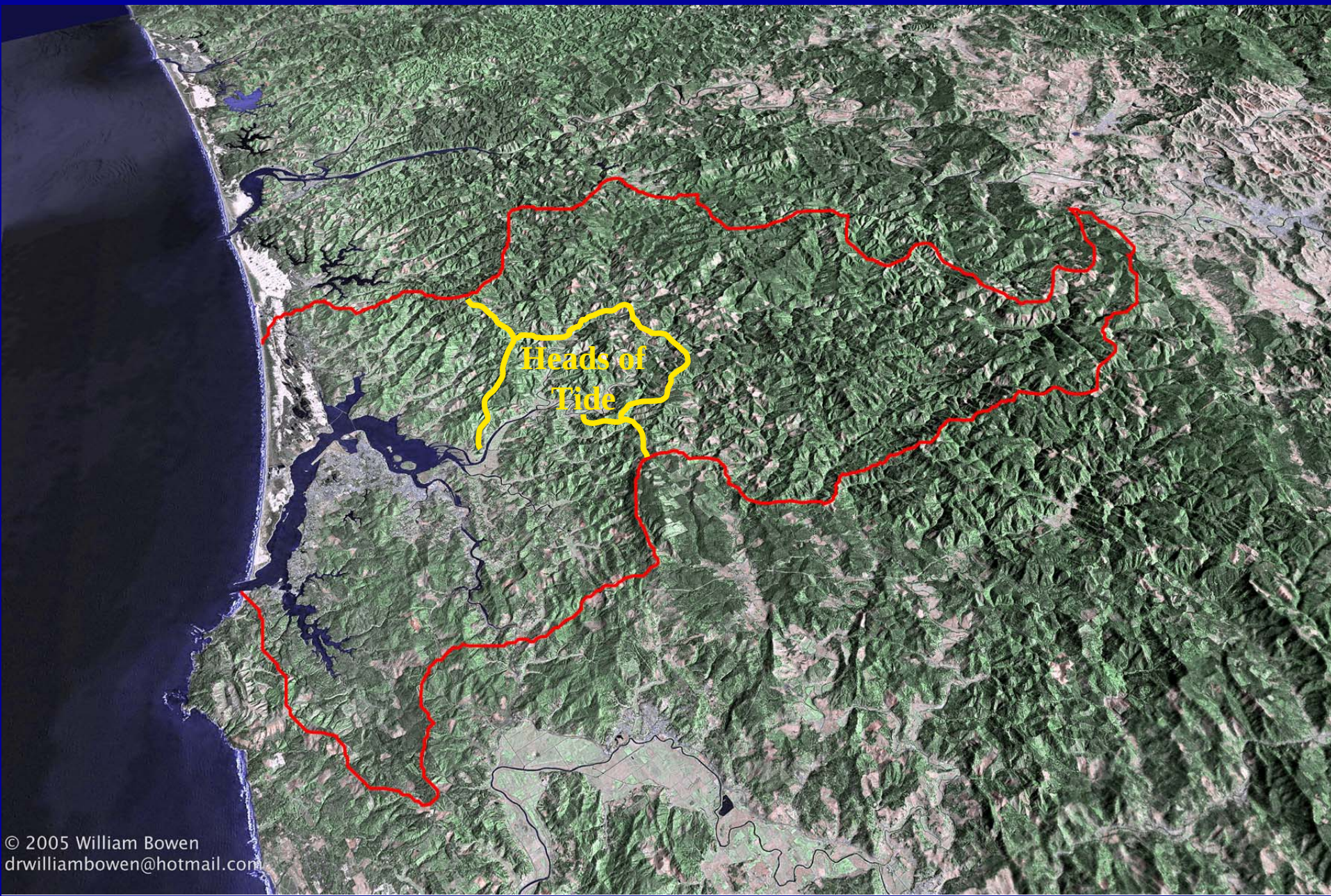


- Forested
- Public Ownership
- Private Timberlands
- Core Coho Areas

Primary Limiting Factor: **Stream Complexity**

Secondary Limiting Factor: **Sediment Inputs**

Coos Watershed Regions – Limiting Factors



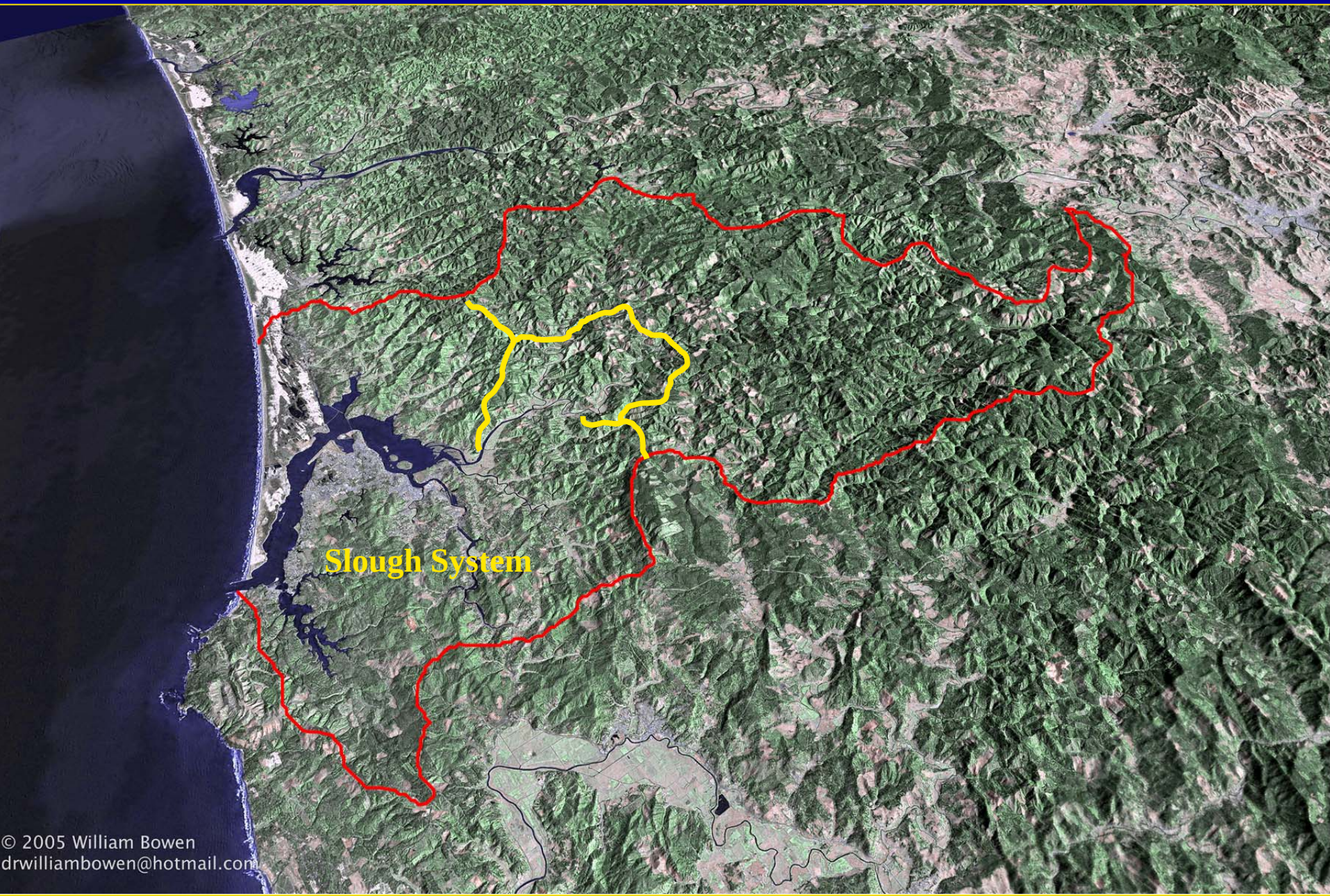
Coos Watershed Regions – Heads of Tide

- Forested Uplands
- Agricultural Lowlands
- Limited Spawning
- Rearing Refugia

Primary Limiting Factor: **Bank Stability & Shade**

Secondary Limiting Factor: **Stream Complexity**

Coos Watershed Regions – Limiting Factors



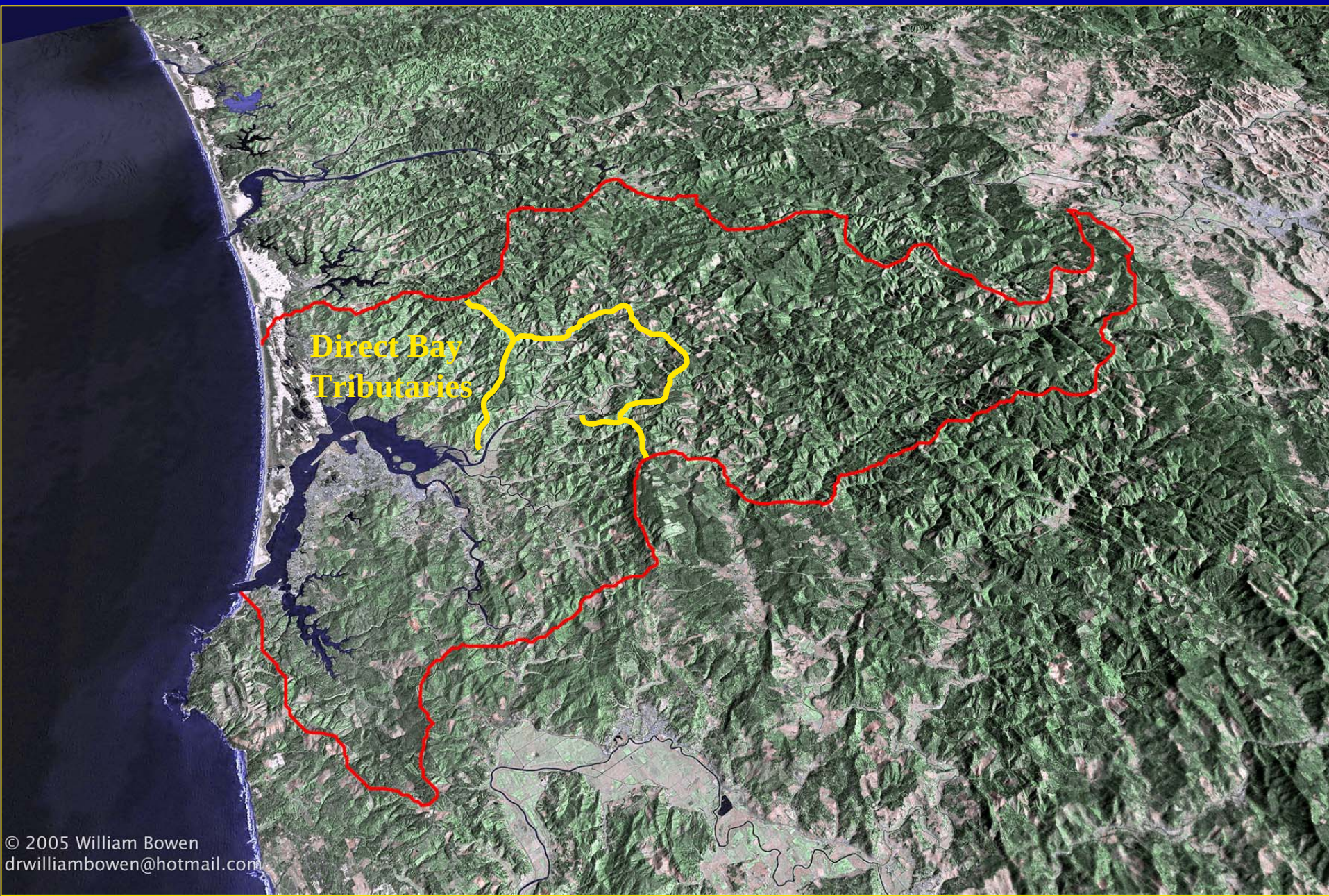
Coos Watershed Regions – Slough System

- Forested Uplands
- Urban/Rural Residential
- Developmental Pressures
- Coho Rearing Areas

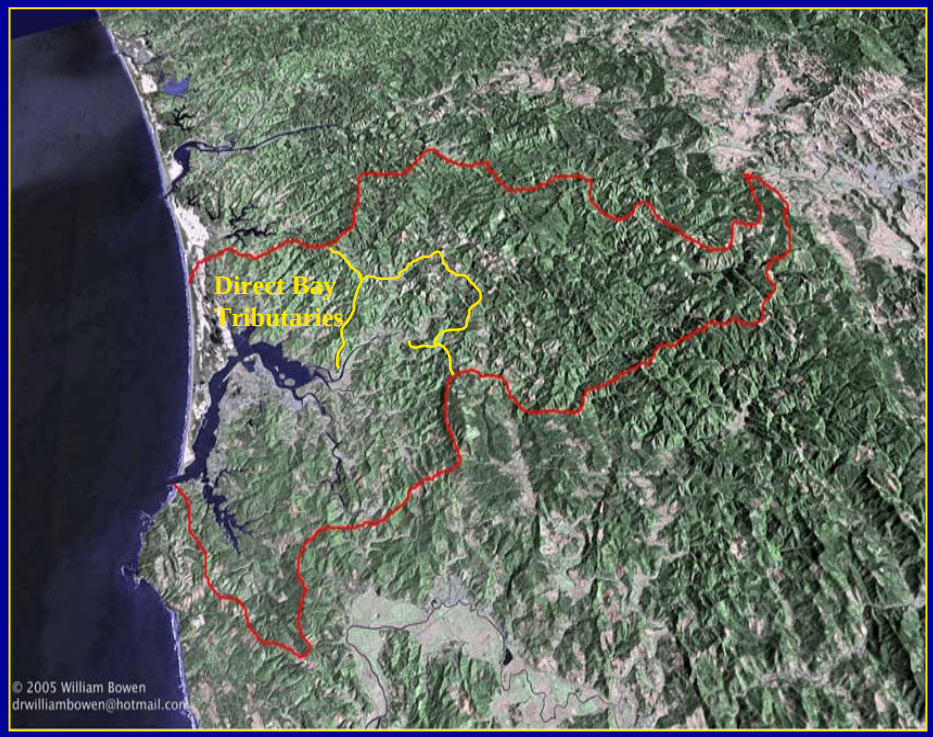
Primary Limiting Factor: **Connectivity**

Secondary Limiting Factor: **Hatchery Releases**

Coos Watershed Regions – Limiting Factors



Coos Watershed Regions – Direct Bay Tributaries



- Forested Uplands
- Agricultural/Rural Residential
- Highly Productive for Coho
- Tide Gated Stream Mouths

Primary Limiting Factor: Floodplain **Connectivity**

Secondary Limiting Factor: **Temperature**

Functional Restoration Priorities

A. Restore Watershed Connectivity

- Passage at Culverts & Tide Gates
- Connectivity Between Stream & Floodplain
- Restore Natural Streamflows

B. Restore Watershed Processes

- Control Sediment Inputs
- Riparian Planting
- Rip-rap Removal

C. Reduce Human Watershed Inputs

- Irrigation Improvements, Low Till, IPM

D. Restore Symptoms of Disturbance

- Large Wood Placement
- Create Natural Channels & Banks
- Install Water/Sediment Control Basins

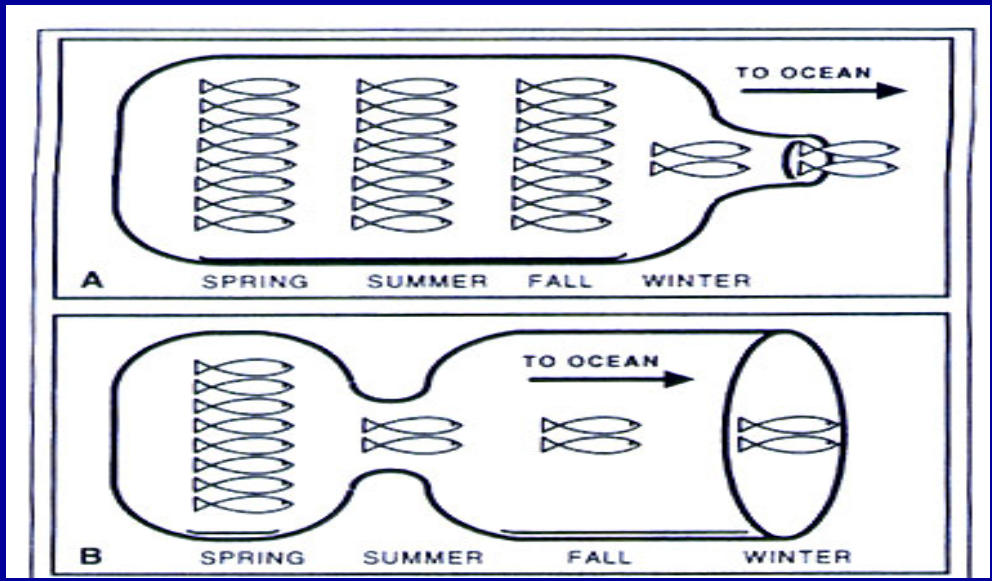
Coos Estuary Lowland Direct Bay Tributaries

Restoration Prioritization Project

Lowland Sub-basin Characteristics

- Sub-basin Sizes: 2,000 – 9,000 acres
- Stream lengths: 2 – 12 miles
- Some are Highly Productive for Coho
- Earliest Euro-American Settlement 1870’s
- Predominantly Private Ownership
- Mixed Land Uses: Timber, Pasture, & Rural Residential
- Most Diking Begun in 1920’s thru 1950’s
- All Streams Are Currently Tide Gated

Lowlands Coho Limiting Factors Analysis (Based on Reeves et al., 1989)



Stream-wide Applicability

- Spawning Habitat
- Summer Rearing Habitat
- Winter Rearing Habitat

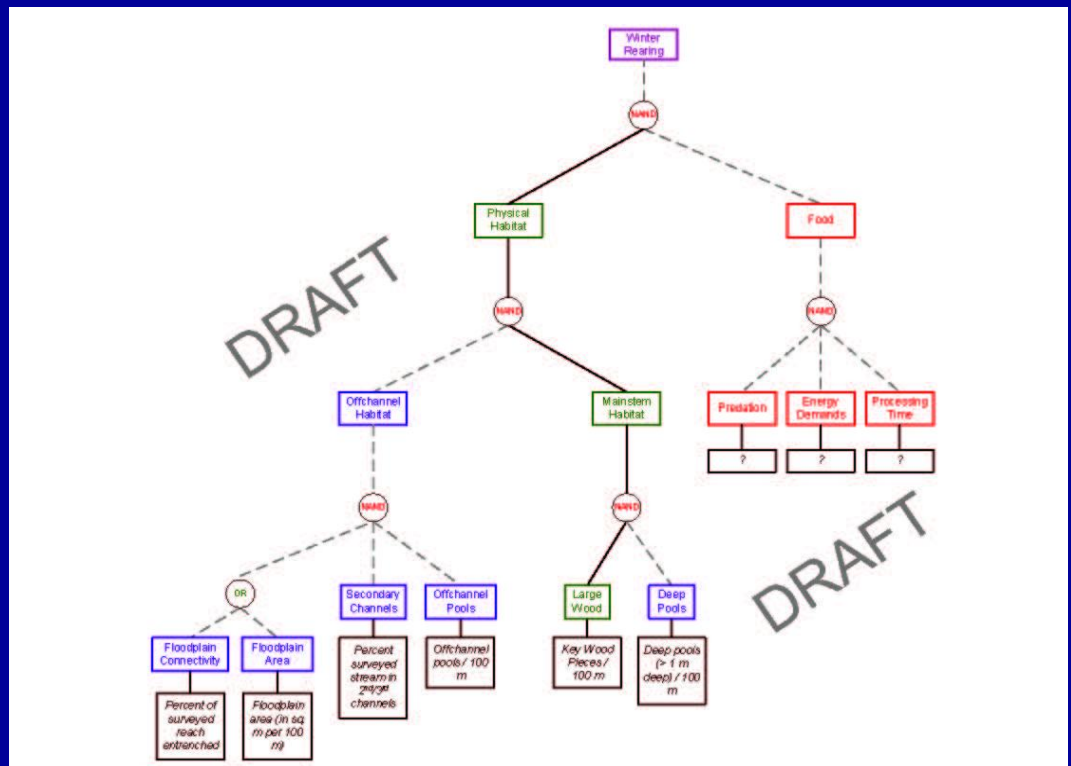
Direct Bay Tributary Results:

1. Spawning Habitat Not Limiting
2. Summer Habitat Structure and Temperature Limited
3. Winter Habitat Off-Channel Areas Limited

Lowlands Coho Limiting Factors Analysis

Ecosystem Management Decision Support System (EMDSS)

Winter Coho Rearing Habitat Example



The logic network to evaluate the winter rearing topic. This network evaluates the proposition "winter rearing is limiting."

Advantages:

1. Spatially-explicit, Reach-based
2. Deals Well With Uncertainty
3. Can Explicitly Incorporate Responses To Restoration Actions

Restoration Prioritization Principles

1. ***Founded Upon Good Data & Scientific Literature***
2. ***Seeks to Leverage Past Restoration Investments***
3. ***Demonstrates Active Landowner/Manager Involvement***
4. ***Addresses Limiting Factors For Fish & Water Quality***
5. ***Ability to Monitor Project and Program Effectiveness***