Review of Limiting Factors

NOAA's Factors For Decline

Habitat	Harvest	Disease & Predation	Regulatory Mechanisms	Other Natural or Human
Channel form	Marine	Disease	NW Forest Plan	Drought
Substrate	Recreational	Predation	Forest Practices	Floods
Roughness	Scientific		Dredge and Fill	Ocean Conditions
Estuaries			Water Quality	Artificial Propagation
Wetlands			Ag Practices	
Riparian Areas			Urban Growth	
Water Quality				
Streamflows				
Passage				
Habitat Elimination				

State of Oregon's Assessment

Presentations given on:

- Harvest
- Predators
- Disease
- Introduced fishes
- In-stream habitat
- Riparian area condition
- Water quality
- Water quantity
- Estuaries and wetlands
- Fish passage
- Hatchery effects

Harvest as a Factor for Decline

- Federal Register and Oregon Plan (1997)
  - Harvest, along with hatcheries and habitat degradation are the predominant factors for decline
- Oregon Plan Assessment (2004)
  - Implementation of Amendment 13 ensures protection of OCN coho from over-harvest under variable environmental conditions

Predation as a Factor for Decline

- **Relative to the effects of fishing, habitat degradation, and hatchery practices, predation is not believed to be a major factor contributing to the overall decline of coho**
- **Unabated predation by locally abundant predators on depressed fish stocks at restrictions in passage may be important for salmon recovery**
- **Learned behaviors by individual predators can be significant in some cases**
- **New, directed management actions (individual pinnipeds) may be warranted in certain cases**

Disease as a Factor for Decline

- **Federal Register (1997) — "relative to effects of fishing, habitat degradation and hatchery practices, *disease* and predation are not believed to be major factors contributing to the overall decline of coho salmon in CA and OR"**

- **2004 — Current knowledge of the impacts of disease agents on naturally produced coastal coho salmon suggests the risks to the ESU are minimal**

Introduced Fishes (IF) as a Factor for Decline

- Impacts localized within the ESU
- Overlap/potential risk with IF greater on Southern half of coast
- Poorest Coho performance--North
- Strongest Coho runs where IF impacts have highest potential--South
- Reduction or loss of summer lake-rearing life history for Coho in basins that were historically large coho production areas

Instream Habitat Status and Trend Conclusions

- **No detectable trend since 1998**
- **Significantly higher channel entrenchment**
- **Significantly less large wood**
- **Umpqua has less large wood than other areas**
- **Public lands have more large wood than private lands**

Conclusions: Riparian Conditions

- Lack of large conifer trees across all land uses and throughout the ESU
- Lower shade levels are more common on random sites
- The lower shade trend is strongest in the Umpqua monitoring unit and on agricultural, shrublands, and urban lands.
- State and Federal forested lands have shade levels better than or equal to reference sites.
- Lack of large conifers is consistent throughout the ESU and across land uses.

Conclusions: Water Quality

Based on Large River Ambient Sites

- ~ 42% of large river sites have excellent to good water quality.
- ~ 58% of large river sites have fair to poor water quality.
- ~ 39% of large river sites show improving water quality trends.
- ~ 0% of large river sites have declining water quality trends.

Based on Random Wadeable Stream Sites

- Primary stressors to biological communities are:
  temperature, fine sediment, dissolved oxygen, & total solids
- Temperature conditions at random sites are similar to reference sites across ESU, Monitoring Areas and landuses.
- Public lands have sediment levels and water quality similar to or better than reference and private lands have water quality lower than reference.

Conclusions: Water Quantity

- Consumptive use of water not widespread issue
- Consumptive use generally increases from north to south within the ESU
- Since 1997, streamflow restoration activities coincide with areas of highest consumptive use impacts on streamflow
- Consumptive use not substantially increased since 1999 or likely to increase in future

Conclusion: Estuaries and Wetlands

- Wetland loss in Tillamook and Nestucca has been minimal since 1982 with a loss of less than 2 acres/year
- Many acres of degraded habitat available for restoration and/or management
- Transitional fresh/brackish water marshes
- Lowland beaver ponds
- Upper estuarine salt marshes
- Enhance corridors linking these habitats

How significant is fish passage as a limiting factor for coho recovery?

Relatively small percent of coho streams remain inaccessible: (10 - 11%).

But, passage status is unknown for about 1/3 of coho streams.

Hatcheries as a Factor for Decline

- **Federal Register and Oregon Plan (1997)**
  - Hatcheries, along with harvest and habitat degradation are the predominant Factors for Decline for coho salmon
- **Oregon Plan Assessment (2004)**
  - Preliminary assessment
    - Likely not a significant limit on sustainability of the ESU;
      1) changes in hatchery management,
      2) reduced release numbers, and
      3) reduced proportion of hatchery adults spawning in the wild.
    - Effects limited to a few populations (Salmon R.) and localized reaches.

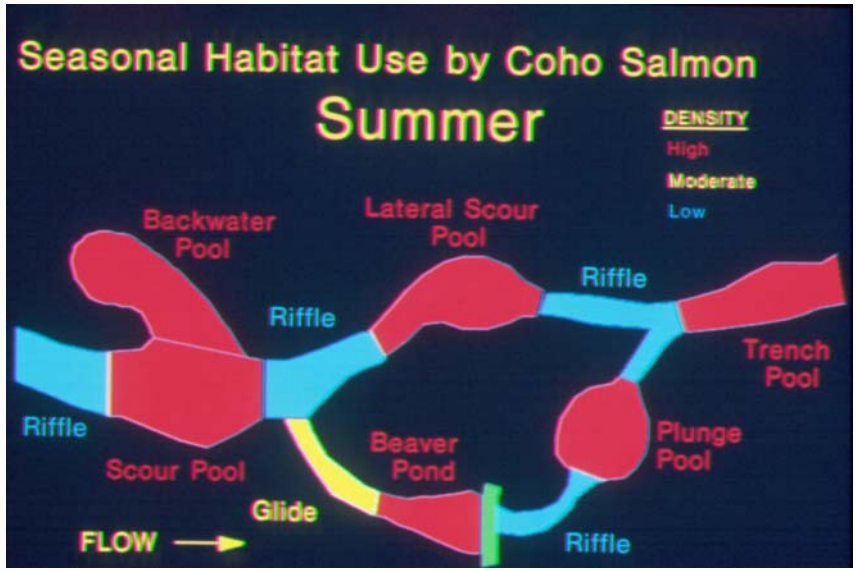
Identifying Key Limiting Factors

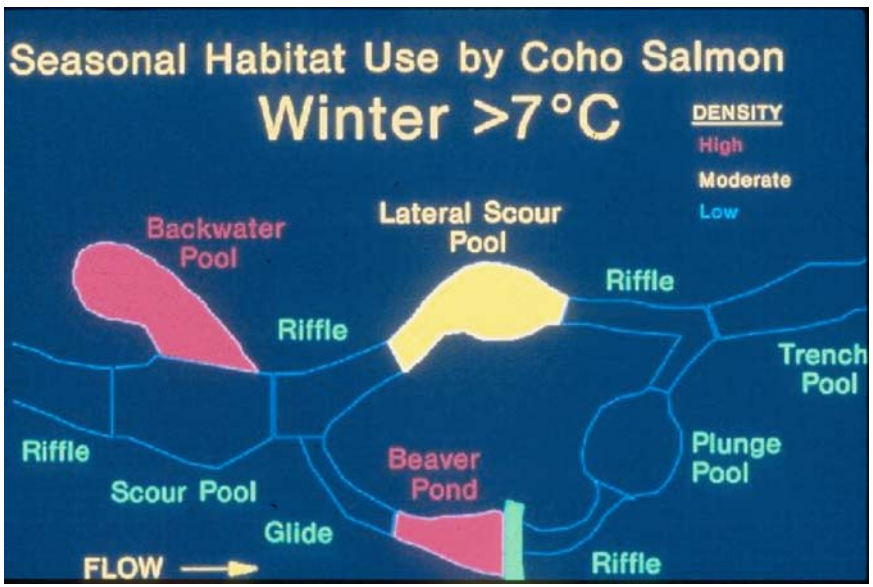
- Expert panel of ODFW staff convened.
  - District Fish Biologists
  - Watershed District Managers
  - Researchers
  - Other staff with significant career experience
  - Experts had from 15 to 25 years of experience
- Panel considered published research, data on fish and habitat, and personal field observations.
- Decisions made by consensus.
- Primary and secondary ***bottlenecks*** identified for most populations.

Population	Primary Bottleneck	Secondary Bottleneck	Viability Status
Necanicum	Stream Complexity	--	Pass
Nehalem	Stream Complexity	Water Quality	**Fail**
Tillamook	Stream Complexity	Water Quality	**Fail**
Nestucca	Stream Complexity	--	Pass
Salmon	Hatchery Impacts	Stream Complexity	**Fail**
Siletz	Stream Complexity	--	**Fail**
Yaquina	Stream Complexity	Water Quality	Pass+
Beaver	Spawning Gravel	Stream Complexity	Pass+
Alsea	Stream Complexity	Water Quality	**Fail**
Siuslaw	Stream Complexity	Water Quality	Pass+
Lower Umpqua	Stream Complexity	Water Quality	Pass+
Middle Umpqua	Water Quantity	Stream Complexity Water Quality	Pass+
North Umpqua	Hatchery Impacts	Stream Complexity	**Fail**
South Umpqua	Water Quantity	Stream Complexity Water Quality	Pass+
Siltcoos	Exotic Fish Species	Stream Complexity Water Quality	Pass+
Tahkenitch	Exotic Fish Species	Stream Complexity Water Quality	Pass+
Tenmile	Exotic Fish Species	Stream Complexity Water Quality	Pass+
Coos	Stream Complexity	Water Quality	Pass+
Coquille	Stream Complexity	Water Quality	Pass
Floras	Stream Complexity	Water Quality	Pass
Sixes	Stream Complexity	Water Quality	**Fail**

Stream Complexity

Seasonal Change in Habitat Character





HABITAT VARIABLES

Geomorphic context - habitat potential

Valley and channel morphology

Spawning and Incubation success

Distribution & quality of substrate

Juvenile rearing

Habitat complexity - 2nd channels, LWD pools
Pool distribution & depth
Substrate, Undercut banks
Temperature - shade, water flow

Adults migration and holding

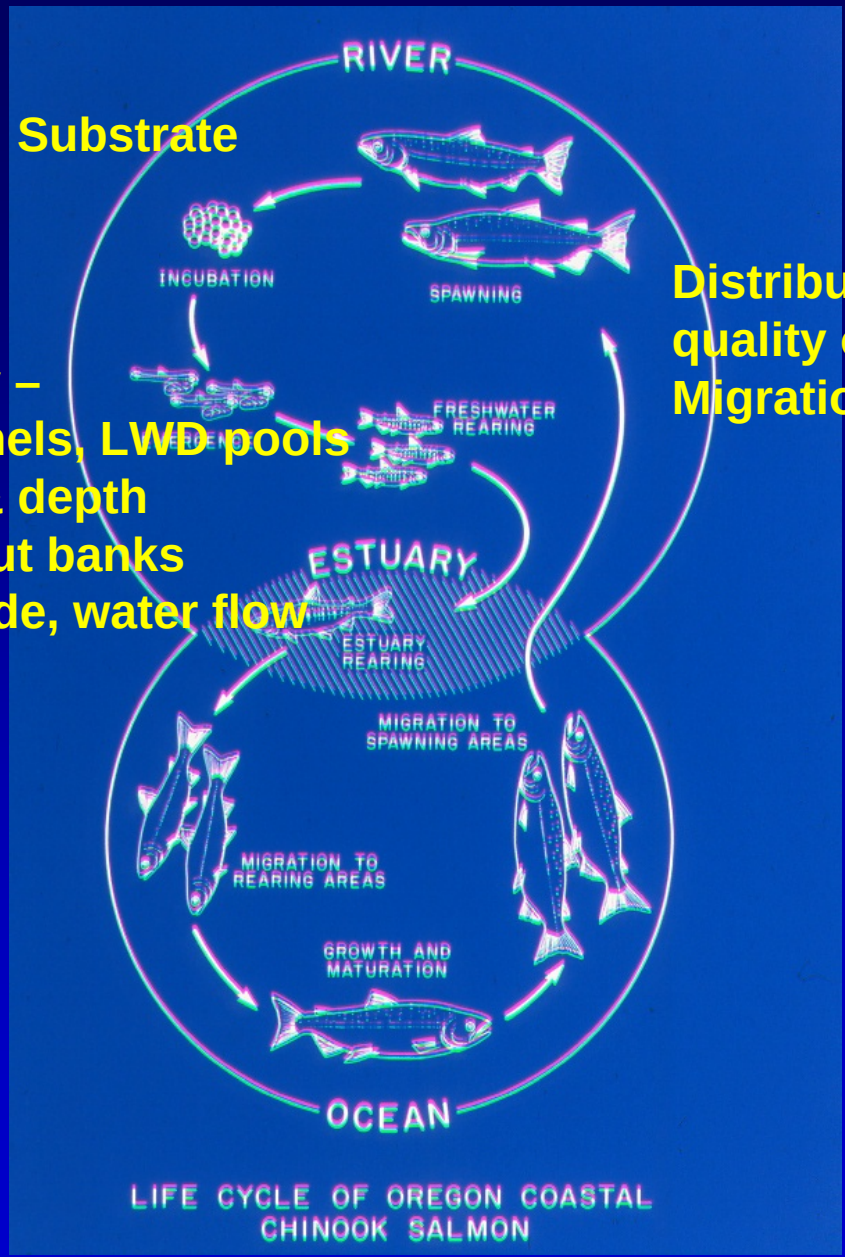
Distribution and quality of pools
Migration barriers - physical, water quality

Terrestrial input

Riparian structure, shade

Substrate

Habitat complexity –
2nd channels, LWD pools
Pool distribution & depth
Substrate, Undercut banks
Temperature - shade, water flow



Distribution and
quality of pools
Migration barriers –
physical, water quality