Northwest Power and Conservation Council

January 11, 2005

MEMORANDUM

TO: Fish and Wildlife Committee
FROM: Bruce Suzumoto
Manager, Special Projects

SUBJECT: Development of integrated fish production plans in the Columbia Basin

The Council has received numerous comments on the need to aggregate subbasin plan objectives at a provincial and basinwide scale and adopt population and habitat objectives at these higher program levels. People see this higher level "roll-up" of objectives as a way to help define the priorities of the program, to guide the allocation of Bonneville funding, and to help define the next project selection process. Unfortunately, an aggregation of objectives is not currently feasible using most subbasin plans. An earlier review of subbasin plans indicated that many plans lacked measurable objectives for natural escapement, hatchery returns and harvest needs and did not adequately describe how artificial production programs would integrate with existing habitat and future rehabilitation activities.

A possible solution to this difficulty could be to undertake a technical exercise that would integrate subbasin plans with artificial production and harvest needs and quantify population objectives at the subbasin, provincial, ESU and basin levels. A test of this type of technical exercise has been successfully completed at workshops in the Kalama and Yakima subbasins. These workshops involved facilitators and fish and wildlife managers using the All-H Analyzer (AHA) model.

Staff will present possible applications of a broader integration process and discuss approaches for developing and expanding a technical exercise for anadromous stocks in the Columbia Basin. Lars Mobrand from Mobrand Biometrics will explain the characteristics of the AHA model.

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Development of Integrated Fish Production Plans in the Columbia Basin

Vancouver, WA

January 18, 2005

Northwest Power Planning Council

Goals of the project

- Promote consistency of artificial production programs with subbasin plans
- Integrate production across the “4-Hs”
- Develop objectives for fish stocks
- Provide basis for prioritizing actions
- Support recovery planning and NEPA process

Applications

- NWPCC Fish and Wildlife Program planning
  - Program objectives
  - Subbasin roll-up to provinces and basin
  - Prioritization
- ESA Recovery planning
- NEPA Analysis
- Regional fish production/harvest planning

What will the project do?

- Develop tools to integrate across 4-H's
  - Assist in production of integrated plans
- Develop biological objectives for each stock and watershed
- Provide assistance for "roll-up"
  - Objectives at subbasin, province and basin scales
  - Prioritize efforts
- Basis for monitoring and evaluation
  - Biological performance
  - Environmental characteristics

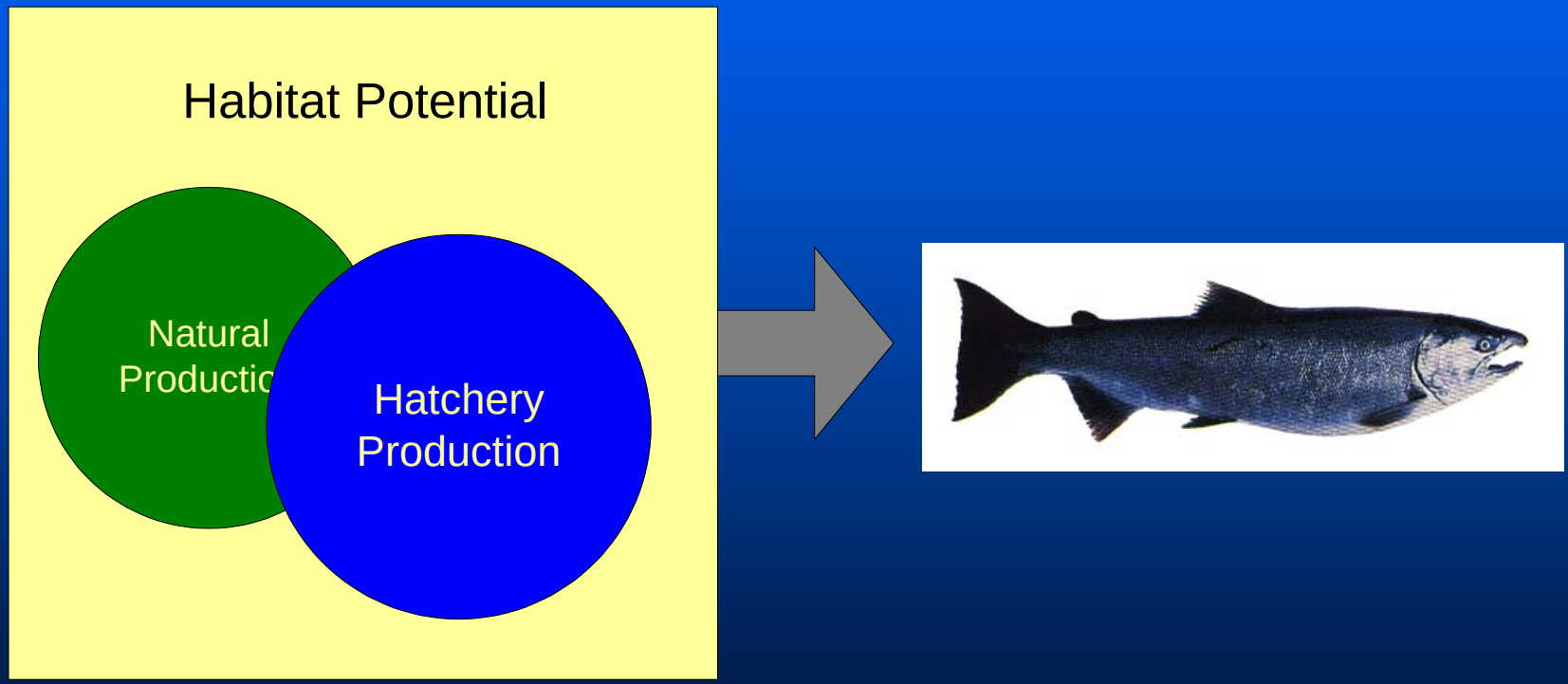
Supports ESA recovery planning

- Provide tools to integrate natural and artificial production in recovery plans
- Assist roll-up to ESUs
- Provide objectives for tracking progress
- Support NEPA coverage for hatcheries
- Help implement NOAA hatchery policy

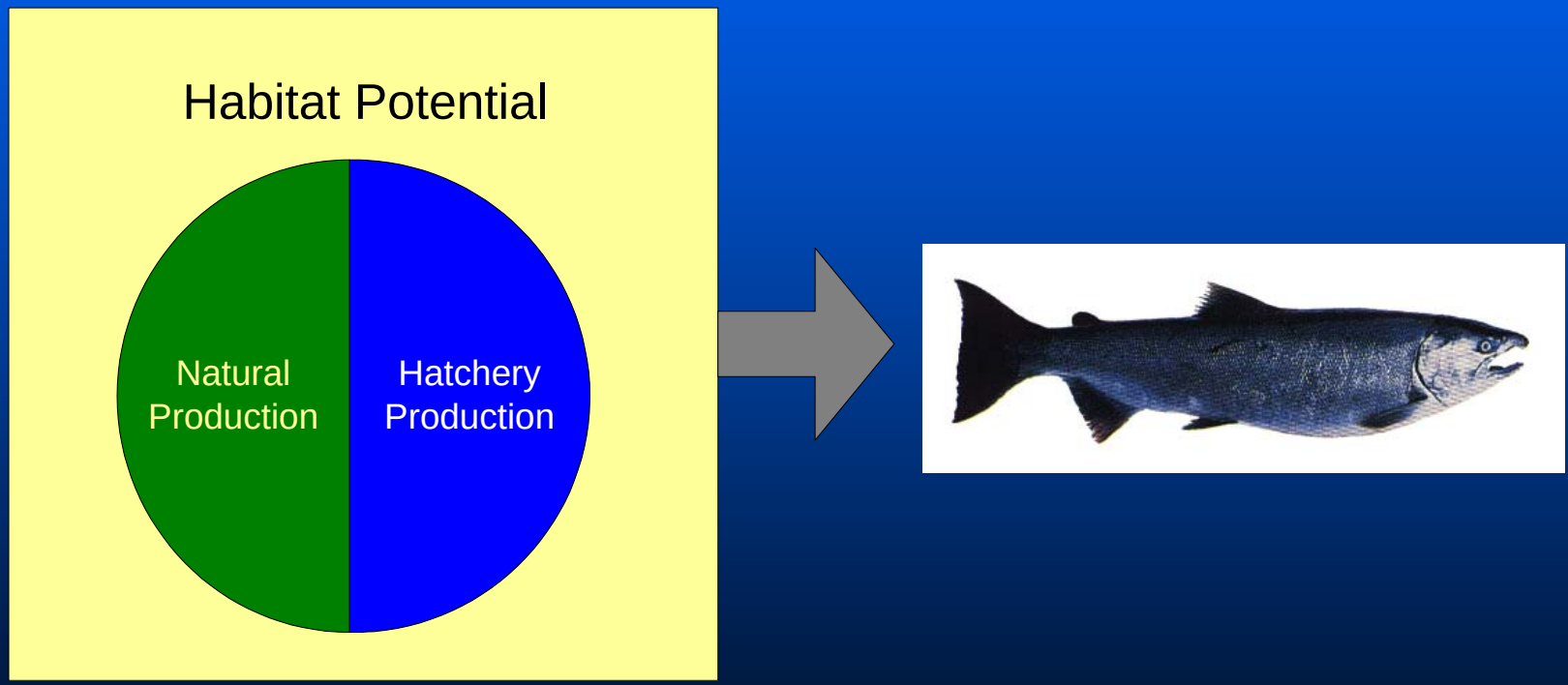
Subbasin planning estimated natural habitat potential

Habitat Potential

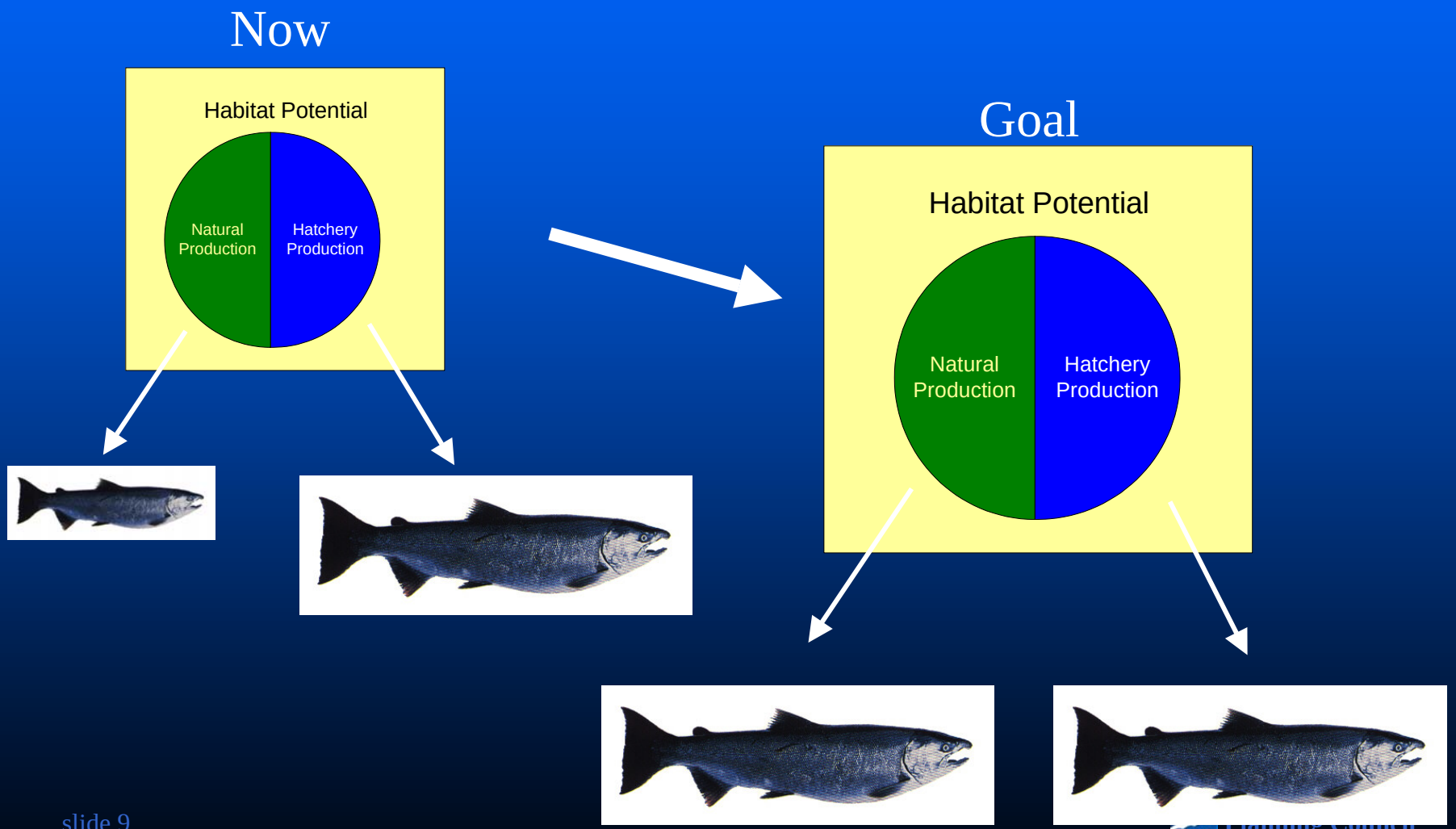
Hatchery and natural production treated separately



Integration brings natural and hatchery production together



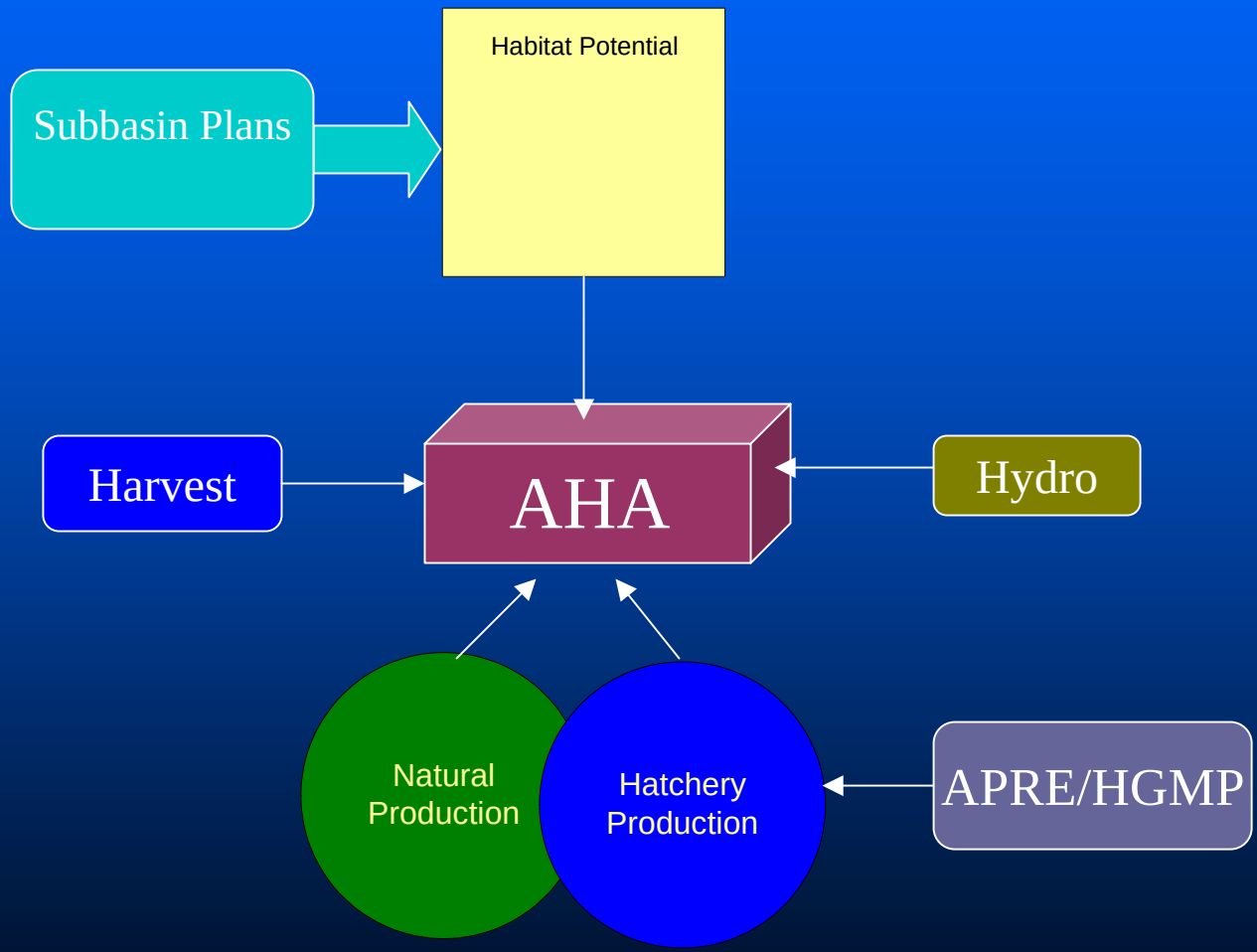
Objectives for each stock result from improved habitat potential & hatchery management



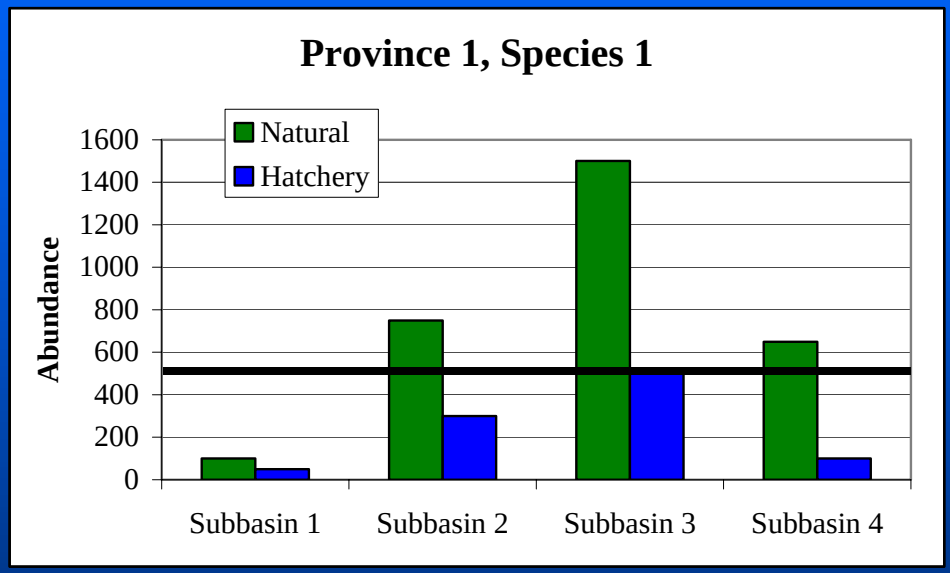
Integration leads to draft objectives

- Natural escapement (natural:hatchery)
- Adult harvest (natural:hatchery)
- Hatchery brood (natural:hatchery)
- Productivity
- Diversity
- Spatial structure

Tools for Integration

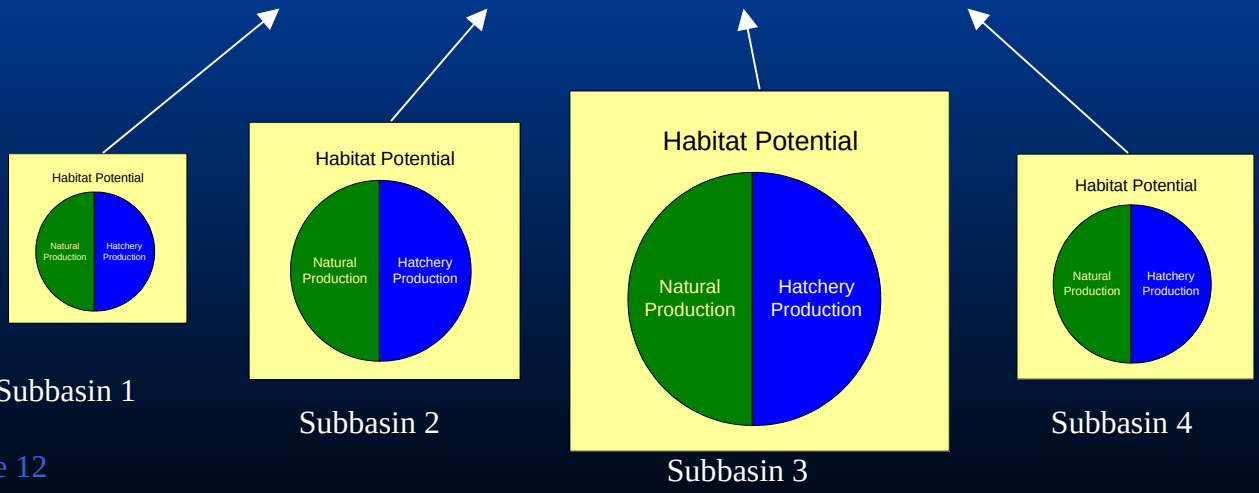


Subbasin Roll-up



Province, ESU, or basin objectives:

- Abundance
- Productivity
- Diversity
- Spatial Structure



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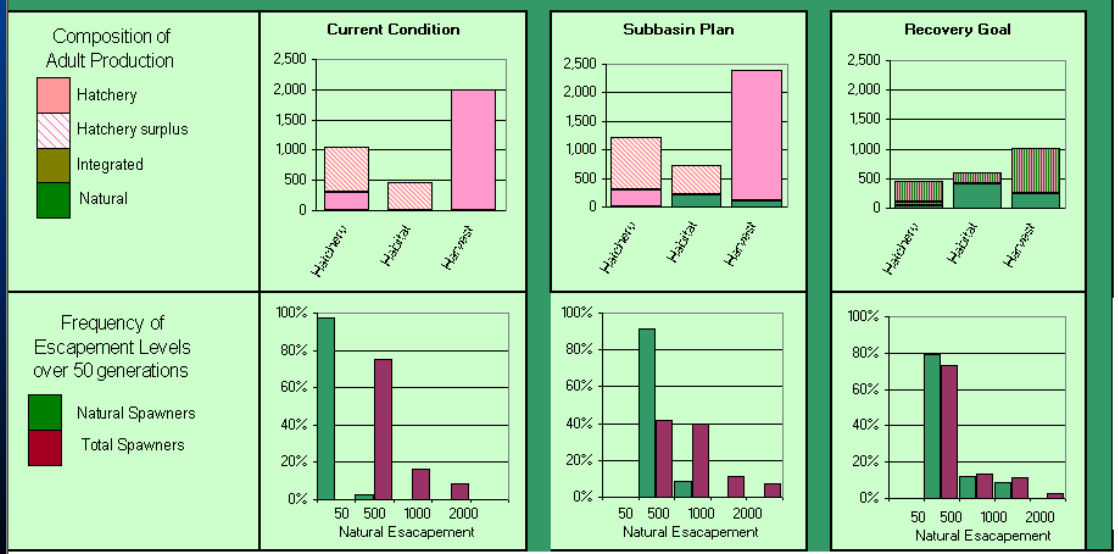
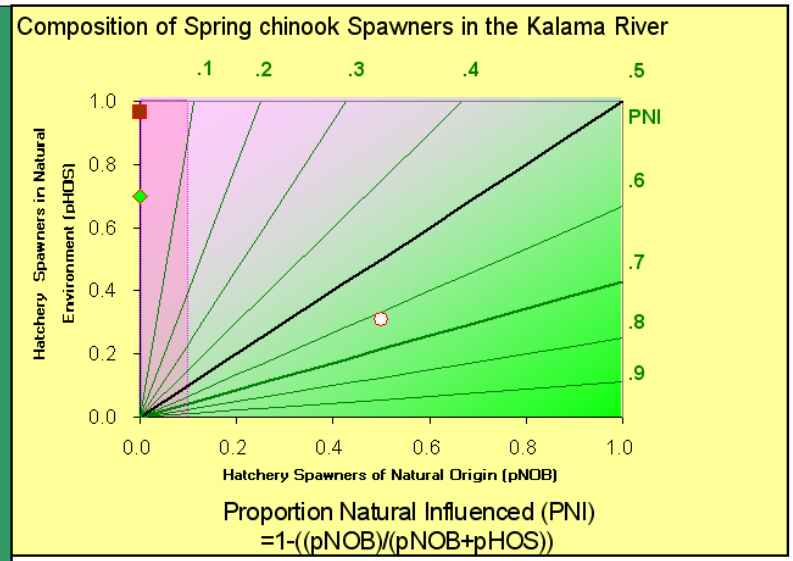
All-H Analyzer (AHA) Example

	Current Condition		Subbasin Plan		Recovery Goal	
Habitat						
Capacity of environment	950	Fish	1,279	Fish	1,279	Fish
Productivity of environment	1.8	Recruits/ Spawner	3.8	Recruits/ Spawner	3.8	Recruits/ Spawner
Hydroelectric						
Smolt to Adult Survival						
Harvest						
	Rate on Natural	Rate on Hatchery	Rate on Natural	Rate on Hatchery	Rate on Natural	Rate on Hatchery
Total Exploitation Rate	34%	57%	34%	57%	34%	57%
Hatcheries						
	Broodstock	Smolts Released	Broodstock	Smolts Released	Broodstock	Smolts Released
Capacity of hatchery	300	504,900	300	532,950	100	229,093
Productivity of hatchery	10.4	Recruits/Spawner	12	Recruits/Spawner	12	Recruits/Spawner
	Natural Spawners	Hatchery Broodstock	Natural Spawners	Hatchery Broodstock	Natural Spawners	Hatchery Broodstock
Intended Composition of Spawners	0% came from hatchery origin	0% came from natural spawned parents	0% came from hatchery origin	0% came from natural spawned parents	50% came from hatchery origin	50% came from natural spawned parents
Destination of Hatchery returns	30% Enter natural environment	70% Return to the hatchery	30% Enter natural environment	70% Return to the hatchery	30% Enter natural environment	70% Return to the hatchery





Analysis of Spring chinook in the Kalama River

Date: 1/7/2005