Desired Status and Measurable Criteria

- Goal for Desired Status
  - Moves significantly beyond *viable* status
- Measurable criteria defined per NFCP
  - Independent and Dependent populations
  - Considerations:
    - Scientifically defensible
    - Quantifiable and implementable
    - Easy to understand
    - Consistent results and repeatable

Desired Status Goal
(TRT Restoration Goal)

"Populations of naturally produced coho salmon are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) that the ESU as a whole (a) will be self-sustaining, and (b) will provide significant ecological, cultural, and economic benefits."

Definitions of Biological Status

Classification	Definition
Pristine	All historical populations within the ESU are healthy and adverse impacts from human activities are insignificant at the population and ESU scale.
Desired status (*aka*: broad-sense recovery/Oregon Plan goal)	Populations of naturally produced fish comprising the ESU are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) that the ESU as a whole will: a) be self-sustaining, and b) provide environmental, cultural, and economic benefits.
Viable	Populations of naturally produced fish comprising the ESU are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) that the ESU as a whole will persist into the foreseeable future.
Threatened	The ESU is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Endangered	The ESU is likely to become extinct within the foreseeable future throughout all or significant portion of its range.
Extinct	Means an ESU contains so few members that there is no chance their evolutionary legacy will ever re-establish itself within its native range.

Measurable Criteria

Developed for the following attributes:

Independent Populations
1. Population status within the ESU
2. Abundance
3. Productivity
4. Distribution
5. Diversity
6. Persistence

Dependent Populations
1. Spawner Trend
2. Habitat Conditions

Criteria for Independent Populations

Criterion 1 – Population Status within the ESU

Metric
All independent populations will pass the persistence and sustainability criteria as defined by the Oregon Coast coho TRT.

Evaluation Thresholds
Pass – all independent populations pass both persistence and sustainability criteria
Fail – One or more independent populations fail the persistence or sustainability criteria

Criteria for Independent Populations

Criterion 2 – Adult Abundance

Metric
The 3- and 12-year running average of naturally-produced spawners is equal to or greater than the ESU- and population-specific abundance goals.

Evaluation Thresholds
Pass – The observed spawner abundance is $\geq$ the *marine survival*-specific escapement target
Fail – The observed spawner abundance is < the *marine survival*-specific escapement target

Foundation is a Doubling in Abundance Relative to the 93-99 Poor Ocean

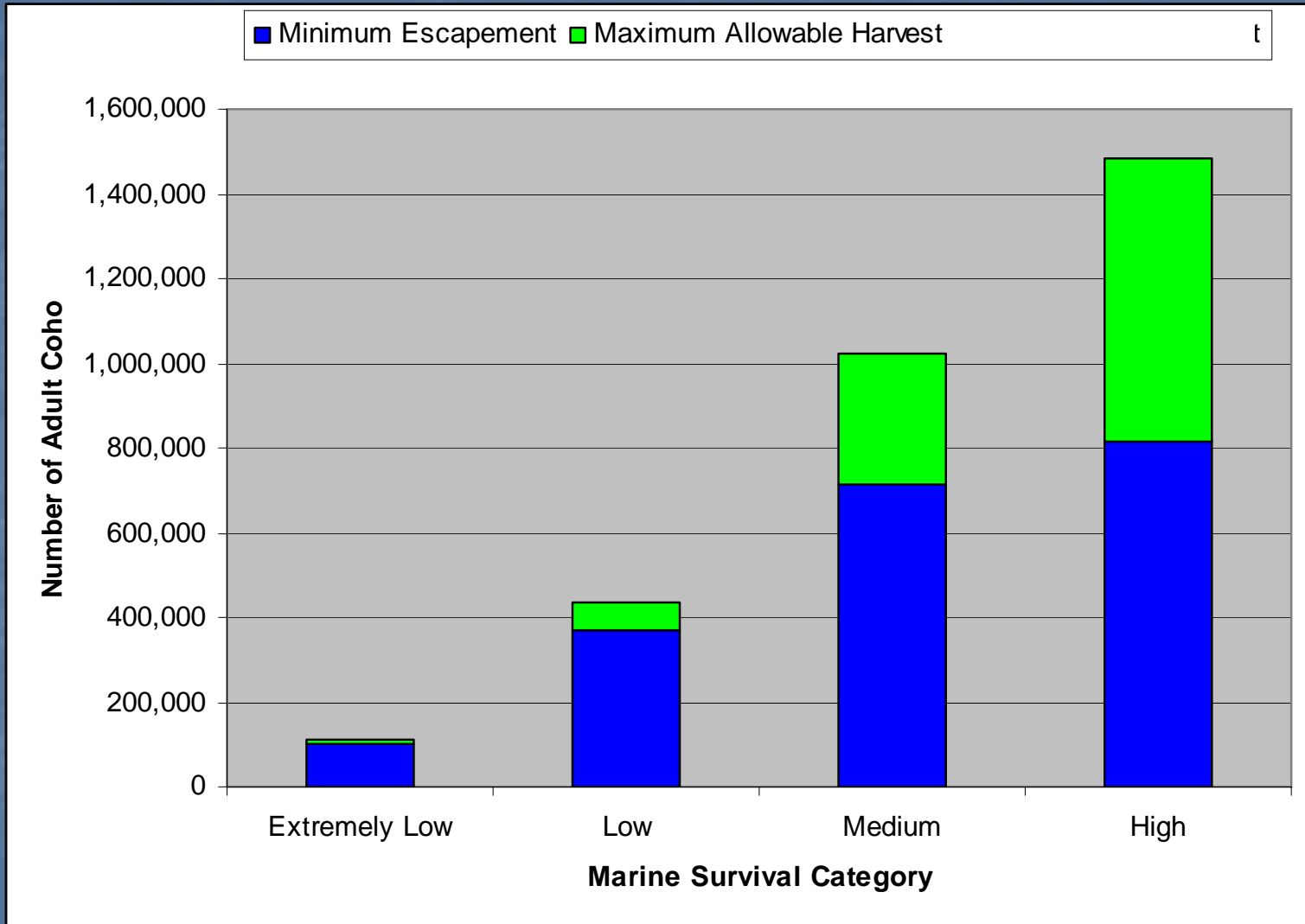# Criteria for Independent Populations

ESU-Specific Abundance Goals

Smolt to Adult Survival[1]			Maximum Allowable Harvest[2]		
Category	Average Survival	Recruits	Harvest Rate	Number	Spawners
Extremely Low	1.1%	169,000	7%	8,000	101,000
Low	4.4%	436,000	15%	65,000	371,000
Medium	10.3%	1,021,000	30%	306,000	715,000
High	15.0%	1,486,000	45%	669,000	817,000

[1] For wild fish as indexed at Life Cycle Monitoring Sites
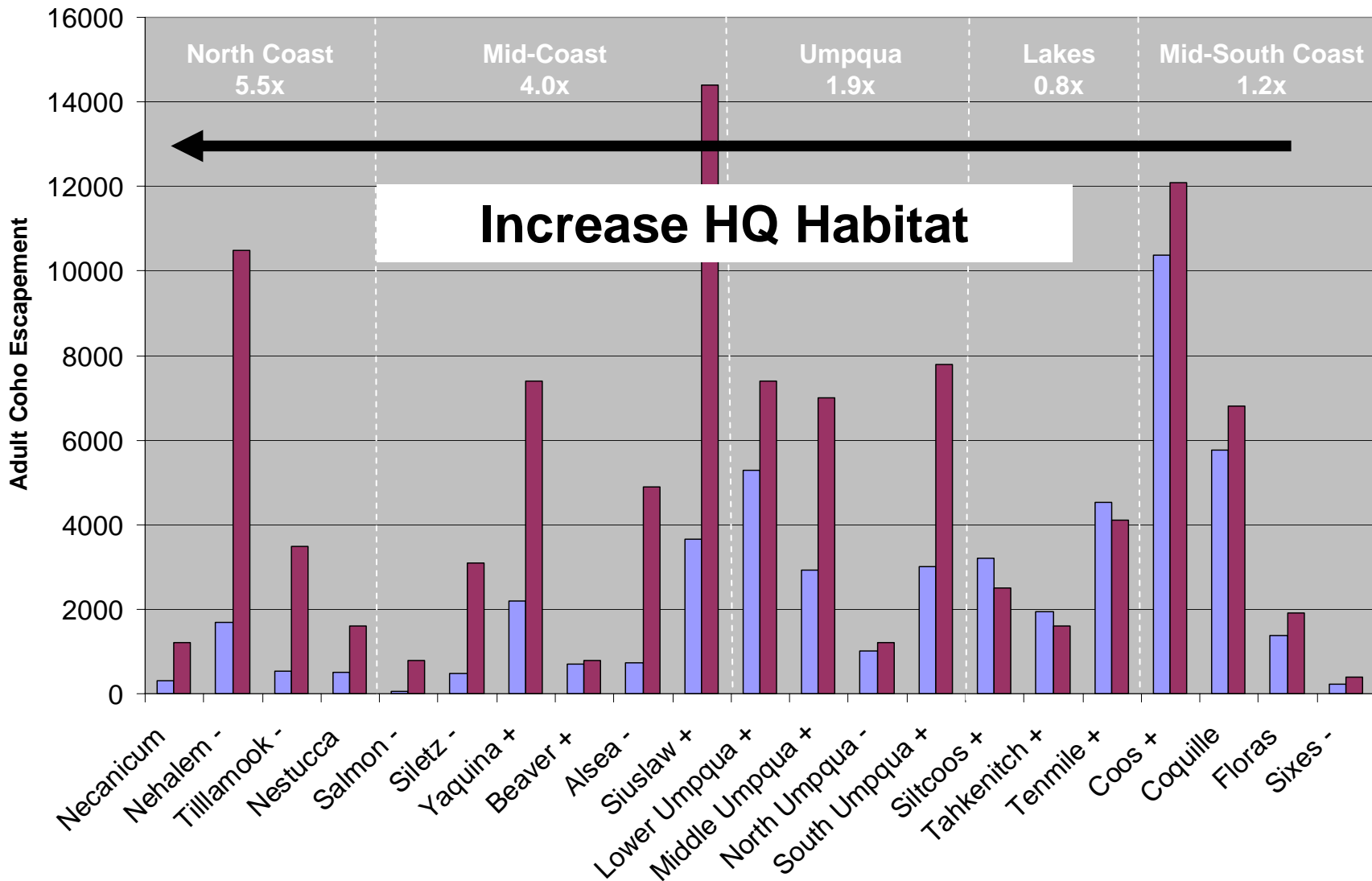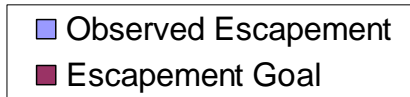[2] Based on Amendment 13
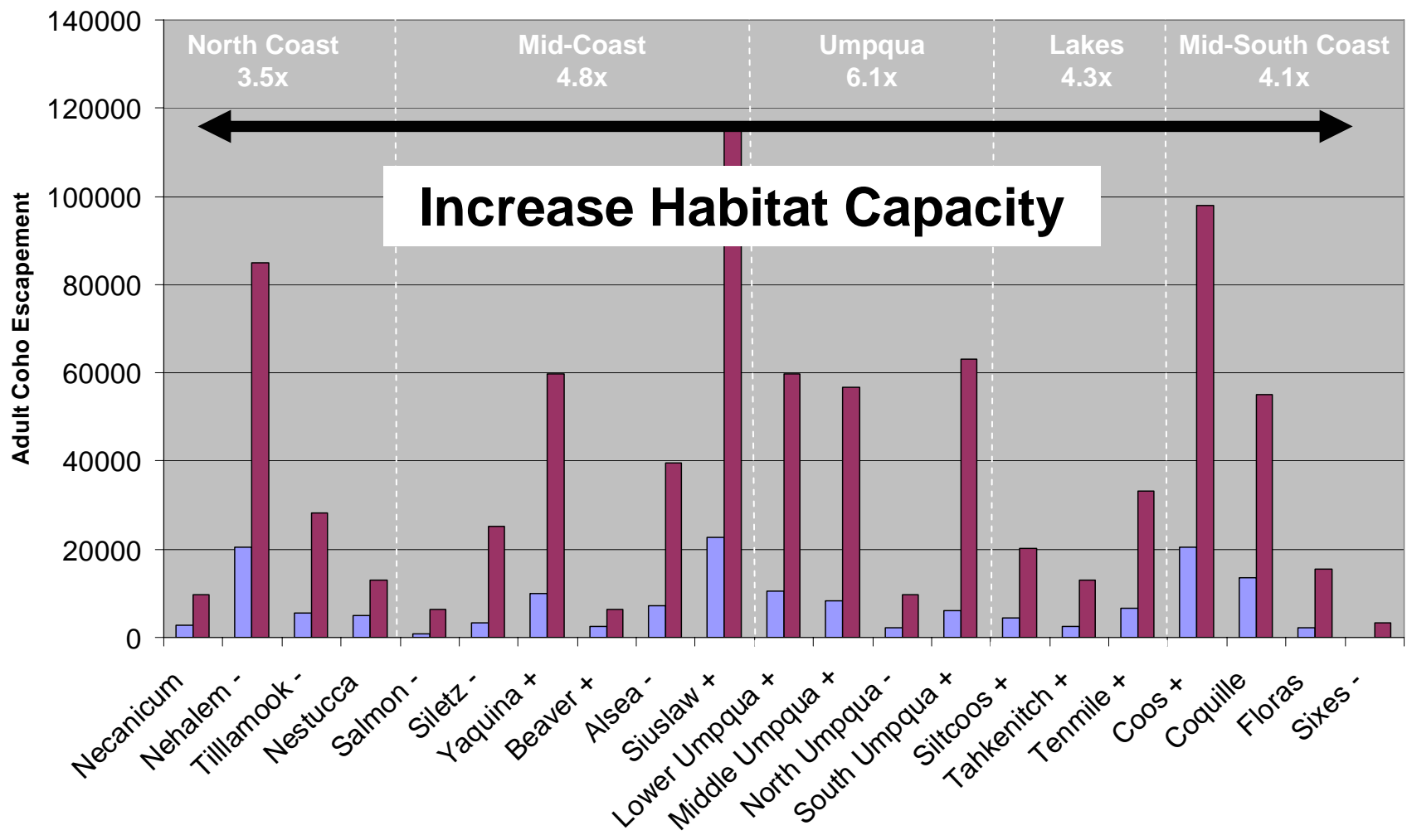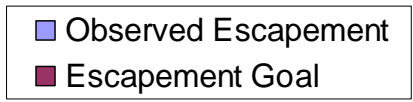
2X 93-99 return years

ESU-Specific Abundance Goals

Extremely Low Marine Survival

Legend: ■ Observed Escapement   ■ Escapement Goal

Y-axis: Adult Coho Escapement (0 to 16000)

Regions:
- North Coast 5.5x
- Mid-Coast 4.0x
- Umpqua 1.9x
- Lakes 0.8x
- Mid-South Coast 1.2x

Increase HQ Habitat

X-axis labels: Necanicum, Nehalem -, Tilllamook -, Nestucca, Salmon -, Siletz -, Yaquina +, Beaver +, Alsea -, Siuslaw +, Lower Umpqua +, Middle Umpqua +, North Umpqua -, South Umpqua +, Siltcoos +, Tahkenitch +, Tenmile +, Coos +, Coquille, Floras, Sixes -

Medium Marine Survival

Criteria for Independent Populations

Criterion 3 - Productivity

Metric
The annual estimates of recruits per spawner values with respect to the thresholds described in Table 4 exceed these thresholds at least four times over a 12-year period.

Evaluation Thresholds
Pass - Annual estimates of R/S meet or exceed productivity thresholds at least four times in a 12–year period.
Fail – Within a 12 year period, the number of years where annual estimates of R/S meet or exceed the productivity thresholds is three or less.

Smax Fraction	Marine Survival			
	Very Low	**Low**	**Medium**	**High**
2.00 Smax	0.4	0.4	0.5	0.7
1.50 Smax	0.7	0.7	0.9	1.1
1.00 Smax	1.1	1.2	1.4	1.8
0.75 Smax	1.4	1.5	1.8	2.3
0.50 Smax	1.8	1.9	2.4	3.0
0.20 Smax	2.4	2.6	3.2	4.0
0.10 Smax	2.7	2.9	3.5	4.5

Table 4. Productivity criterion threshold values for different combinations of marine survival and spawner density, expressed as fraction of full seeding (Smax).

Criteria for Independent Populations

Criterion 4 - Persistence

Metric
The forecast probability of extinction based on results from population viability simulation models (currently 4 TRT models).

Evaluation Thresholds
Pass – If the average probability of extinction from the models is less than 0.01
Fail – If the average probability of extinction from the models is greater than or equal to 0.01

Criteria for Independent Populations

Criterion 5 – Within Population Distribution

Metric
The 12-year running average of the percentage of 5th field HUCs with available spawning habitat that are occupied by spawning fish.

Evaluation Thresholds
Pass – More than 50% of 5th field HUCs with available spawning habitat in each independent population have spawning densities $\geq$ 4 adult spawners/mile

Fail – Less than or equal to 50% of 5th field HUCs with available spawning habitat in each independent population have spawning densities $\geq$ 4 adult spawners/mile

Criteria for Independent Populations

Criterion 6 - Diversity

Metric
The average of the100-year harmonic means of spawner abundance as forecast from a population viability model is greater than the critical threshold of 1200.

Evaluation Thresholds
Pass – If 100-year harmonic mean is greater than 1200.
Fail – If 100-year harmonic mean is less or equal to than 1200.

Criteria for Dependent Populations

Criterion 1 – Spawner trend

Metric
Comparison of trend lines for the three-year running average of total adult escapement for independent populations within a population stratum, and adult escapement for dependent populations with the same population stratum.

Evaluation Thresholds
Pass – No significant difference in trend lines
Fail – Significant difference in trend lines

Criteria for Dependent Populations

Criterion 2 – Habitat Conditions

Metric
The amount of available high quality habitat.

Evaluation Thresholds
Pass – The amount of high quality habitat for dependent populations aggregated by strata remains stable or increases as measured at five year increments.

Fail - The amount of high quality habitat for dependent populations aggregated by strata declines.