

GOAL AND OBJECTIVES PYRAMID EXAMPLES FOR SELECTED SPECIES AND VIABILITY ATTRIBUTES

This handout presents two examples that “drill down” through the hierarchical pyramid presented in G&O Handout #1—one for Sacramento Basin spring-run Chinook salmon and one for delta smelt. Each example selects one viability attribute; identifies one species stressor that affects the viability attribute and is addressed by the objectives and conservation measure provided in the example; identifies an example species biological goal; identifies example biological objectives that apply from among ecosystem-, natural community-, and species-level objectives that address the viability attribute; and an example conservation measure that, when implemented, would improve the viability attribute for the species. The biological goals and objectives included in these examples are hypothetical for the purpose of illustrating the hierarchical goals and objectives framework and how BDCP conservation measures relate to the larger species conservation goals. Two example adaptive management and monitoring indicators are also provided that, if implemented, would provide the BDCP Implementing Entity with the information necessary to adaptively manage implementation of conservation measures.

EXAMPLE 1: SACRAMENTO BASIN SPRING-RUN CHINOOK SALMON

Recovery Plan Goal

Viability Attribute: Abundance

Stressor Addressed: Predation by non-native fish

Biological Goal: Improve the survival of juvenile spring-run Chinook salmon passing through the Delta.

Species-Level Biological Objective: Increase the survival of juvenile Sacramento Basin spring-run Chinook salmon passing Chippis Island in the BDCP near-term implementation period by [redacted] percent from mean survival rates observed from 200[redacted] - 200[redacted].

Ecosystem-Level Biological Objective: Manage the distribution and abundance of established non-native invasive species in the Delta to minimize their effects on covered species.

Other Stressors Conservation Measure: Remove non-native submerged and floating aquatic vegetation from [redacted] miles of Delta waterways.

Adaptive Management Monitoring Indicators:

- Change in non-native fish predator abundance in treated waterways.
- Change in survival of juvenile spring-run Chinook salmon passing through treated waterways.

EXAMPLE 2: DELTA SMELT

Recovery Plan Goal

Viability Attribute: Abundance

Stressor Addressed: Reduced food abundance

Biological Goal: Improve the production (reproduction, growth, survival), abundance, and distribution delta smelt in the Delta and Suisun Bay.

Ecosystem-Level Biological Objective: Over the term of the BDCP, during any [] consecutive years, achieve a mean load of organic carbon exported into Delta waterways and Suisun Bay produced from BDCP restored intertidal marshes and shallow subtidal aquatic habitats and from restored and enhanced floodplains by [unit of measure].

Natural Community-Level Biological Objective: Restore, manage, and protect at least [] acres of freshwater intertidal marsh in the Delta that provides habitat and ecosystem functions in support of covered species.

Habitat Restoration Conservation Measure: Restore a mosaic of [] to [] acres of intertidal marsh, shallow subtidal aquatic, and transitional grassland habitat within the South Delta Conservation Opportunity Area.

Adaptive Management Monitoring Indicators:

- Organic carbon exported from restored marshes into Delta waterways
- Zooplankton abundance in waterways adjacent to restored marshes