

Process and Guidelines for Refining Covered Fish Species Goals and Objectives

A. Background

Preliminary BDCP goals and objectives (G&Os) for covered fish species were developed in 2007. These G&Os were refined in 2010 in accordance with the Logic Chain approach through extensive Logic Chain workgroup meetings, two independent science review panel reviews and a two-day workshop in October 2010. An incomplete set of revised draft G&Os reflecting this work were presented in the November 18, 2010, BDCP Working Draft. In April 2011, a group of science advisors was convened to help in completing G&Os for covered fish species. The advisors produced draft recommendations for three species (Sacramento splittail, winter-run Chinook salmon, and Delta smelt) in June 2011. Based on the science advisor's recommendations, we have initiated a focused effort to finalize G&Os for covered fish species by October 31, 2011.

This document outlines: (1) a process to finalize fish species G&Os; (2) guidance on how the G&Os should be drafted (including a template format and example); and (3) a schedule for their review. The guidance provided below draws heavily on the recommendations from the science advisors, as outlined in their June 2011 report.

B. Process

The following outlines the process that will be used to finalize covered fish species G&Os. A schedule for the process, including technical reviews is provided in Section C.

1. Prepare Working Drafts – The BDCP consultant team, working with the science advisors and other technical experts will develop working draft goals and objectives for each covered fish species based on previous G&O work and the recent advisor report. Working drafts will be prepared in accordance with the guidance provided in Section D of this document and will be coordinated with the ongoing refinement of landscape, natural community, and terrestrial G&Os. Drafts will be prepared in a consistent format (as outlined in Section D) for insertion directly into Chapter 3.
2. Circulate for Technical Review – Working drafts will be circulated to the fish and wildlife agencies, other technical experts, and the public for review and comment. Drafts for all 11 covered fish species will be circulated together as a package at the same time. Technical reviews will be conducted remotely with occasional conference calls or meetings as needed.
3. Revise Drafts - Based on agency and other expert reviews, the consultant team will revise the working drafts and document how comments were addressed.
4. Circulate for Workgroup Review – A complete set of covered fish species goals and objectives will be circulated to the G&O Workgroup for review and comment.

C. Schedule

Review	Schedule
Working Draft Development G&Os for all 11 covered fish species	8/15/11 – 9/28/11
Technical and Public Review	9/30/11 – 10/14/11
Workgroup Review	10/21/11 – 10/31/11

D. Guidelines for Refining G&Os

The following provides guidance on how species-level goals and objectives for covered fish should be refined drawing on previous drafts and the approach recommended by the science advisors. The guidance is intended to promote consistency in the approach, level of detail, and format across species.

As outlined in the science advisor’s report, BDCP objectives should be developed that are:

“... (a) achievable by some combination of conservation measures; (b) measureable, for the most part, in terms of key processes (growth, reproduction, survival, migration) which relate to population effects; and (c) likely to promote the continued survival of the species in the Delta.”

The advisors also note that:

“While goals and objectives can, and should be informed by science, they should reflect a mutually agreed upon vision for the future that can not necessarily be defined by technical analyses.”

“Biological goals and objectives do not constitute permit conditions. Rather, the purpose of biological goals and objectives is to help guide the development of conservation measures, which the permit holder is then obligated to implement.”

“Where we did not feel there was enough existing knowledge, or tools to establish numeric objectives, we recommend a benchmarking approach that looks to establish a first order of approximation for objectives based on historic or existing conditions. ... such objectives can show how the conservation measures are intended to mitigate the intensity of the identified stressors on life stages that use the BDCP area; this is in keeping with the intention of the Logic Chain process.”

As an example of the benchmarking approach noted above, the advisors recommended using historic data on Delta smelt size and zooplankton densities as a means of developing a delta smelt growth objective. Field data and analyses using an individual-based population model showed that old food conditions resulted in juvenile delta smelt in late fall that were on average about 5 mm longer than under present day food conditions (about

65 mm versus 60 mm in December). The model was used to estimate that historical food conditions (for larvae, juveniles, and adults) would increase the finite population growth rate of delta smelt (λ , per year) by about 20-40% over the rates predicted for 1995 to 2005 with recent food conditions. See Advisor Report for details. The goal is to complete refinement of all the aquatic species objectives in a similar fashion.

The biological objectives should be refined with the monitoring and adaptive management program in mind. Because the biological objectives represent key elements of the conservation strategy, they will be used to assess the success of the BDCP. With this in mind, biological objectives should reflect outcomes that the BDCP can reasonably be expected to achieve by direct influence. As described by the science advisors, goals and objectives “...should realistically reflect the expected outcomes of the Plan, based on current understanding of system dynamics.” For example, for some covered fish BDCP may reasonably be able to increase food availability (e.g., through habitat enhancement measures) but it is much less certain whether this increase in food will result in an increase in average body length or weight because of other factors that influence growth. In this instance, it is reasonable to develop a measurable objective based on increasing food availability and identify growth measures as part of the monitoring program. Measuring species health or population status directly may be more appropriate in the monitoring program to measure the *effectiveness* of the conservation measures, rather than as a specific biological objective.

As noted by the science advisors:

“It is useful to have specific objectives, including quantified objectives where such objectives can be supported as relevant and attainable, but the objectives should not be confused with actions or performance measures, which serve a different, but related purpose.”

Biological objectives should also be able to be measured using existing, practical monitoring methods. A quantified biological objective is only of use if there exists a monitoring protocol or method by which to measure it on a reasonable schedule and with reasonable effort. For example, if it is infeasible using current methods to measure the population dynamics of a covered fish species, an objective that defines a population target is probably inappropriate. Instead, surrogates of population health that can be measured with reasonable effort would be more appropriate as targets in a biological objective.

E. Format/Template

The following provides a template for refining the covered fish species goals and objectives. The template is consistent with the template developed in consultation with the fish and wildlife agencies for terrestrial species and the Logic Chain process developed for aquatic species, including the listing of agency developed global goals and objectives and key stressors that the objectives are intended to address. Information on applicable landscape and natural community measures has also been added to show how species specific needs are also addressed by the broader conservation strategy as a whole. Details on metrics and monitoring to assess progress toward meeting the various goals are covered in Chapter XX of the Plan.

3.1.1.1.X Species Name

Provide background information for the conservation strategy: historic and current range-wide distribution of the species; to the extent known, historic and current distribution in the Plan Area; threats and reasons for decline; and a brief description of the conservation approach. This should

not be a detailed species account, but rather a summary of key information relevant to the establishment of goals and objectives. The purpose of this section is to provide context for understanding the goals and objectives.

Species-specific Goals and Objectives

Present species-level goals and objectives consistent with logic chain approach and guidance from science advisors.

Goals and objectives should be refined within the context of agency global goals and objectives and BDCP landscape-level and natural community-level goals and objectives that are expected to benefit the species. The table format presented below is intended to help in demonstrating linkages within the logic chain and to provide a transparent display of how the BDCP species-level G&Os will contribute to broader species recovery goals.

Goal statements should be one to two sentences and framed as a desired future state for the species relative to the Delta - for example: "Suitable habitat to support increased abundance of Sacramento splittail in the Plan Area."

Objective statements should address specific species life stages and key stressors/limiting factors and should relate to key processes (i.e. growth, reproduction, survival, migration) which relate to population effects. Objectives should be measurable and attainable. Objectives should be specific in terms of time frames and locations, as appropriate, and should be quantified to the extent possible where there are available data and tools to do so. As applicable, a historical benchmarking approach can be used.

Template for Listing Covered Fish Species Goals and Objectives

Species life stage and process	List species name	List species life stage and key process
Relevant Global Goals and Objectives (as provided) ¹	List Global Goals as provided by agencies	List Global Objectives as provided by agencies
Stressor(s)/Limiting Factor(s)	List stressors or factors that BDCP will address	List stressors or factors that BDCP will <u>not</u> address
Applicable Landscape and Natural Community-level Goals and Objectives	List applicable landscape and natural community-level goals	List applicable landscape and natural community-level objectives
BDCP Goals and Objectives	List BDCP goal	List BDCP objective(s)

¹ Global goals and global objectives presented in the tables are as provided by the National Marine Fisheries Service, US Fish and Wildlife Service, and CA Department of Fish and Game. These do not represent BDCP work products and are provided for reference only.

Rationale for Species-specific Goals and Objectives

Explain why the species specific G&Os are included. What are the benefits to the species? Why is this sufficient? Tie the rationale back very closely with the G&Os (focus the discussion around the G&Os). Describe the rationale for how the goals and objective were arrived at, including documentation of supporting evidence (1-2 pages). The rationale should clearly articulate any assumptions made and any analytical work or tools used. Items to consider in the description may include:

- *Identifying key stressors, or limiting factors influencing the population based on previous work on goals and objectives and available literature.*
- *Relating key stressors/factors to population dynamic processes (i.e. reproduction, growth, survival, and migration), including when and where (i.e. temporal and spatial variables) these factors affect the population and how they relate to Delta habitats and processes, including interactions between stressors/factors.*
- *Noting any known relationships between key stressors/factors and population processes. For example, there is a known relationship between temperature and growth for many species. Describe the nature of these relationships, including any known thresholds quantitatively if possible.*
- *Identifying any known historical benchmarks. Such benchmarks may be useful in quantifying objectives relative to some past condition.*