

# **DEVELOPING AND IMPLEMENTING AN ADAPTIVE CONSERVATION STRATEGY:**

**A guide for improving adaptive management and sharing the  
learning among conservation practitioners**

*developed by PRBO Conservation Science  
with resource management partners*



By Gregg Elliott, Mary Chase, Geoff Geupel, and Ellie Cohen

## Acknowledgments

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PRBO Conservation Science wishes to thank the David and Lucile Packard Foundation for the inspiration and support necessary to develop and disseminate this Guide. We are also grateful to the National Fish and Wildlife Foundation for its generous support. We wish to thank our many partners listed in Appendix I, as well as others who may have been omitted from this list but with whom we have worked through Partners in Flight, the U.S. Shorebird Conservation Plan, the North American Waterbird Conservation Plan, the North American Waterfowl Management Plan joint ventures, and various other collaborative projects.

The authors wish to thank the following individuals for their extremely valuable contributions by participating in interviews and reviewing drafts of the case studies presented in Chapter 3:

George Buckner, Bureau of Land Management (BLM), Oregon/Washington State Office  
 Erick G. Campbell, BLM  
 Daniel Efseaff, Sacramento River Partners  
 Woody Elliott, California Department of Parks and Recreation  
 Joy Fatooh, BLM Bishop Field Office  
 Greg Golet, The Nature Conservancy  
 Amy Hutzell, California State Coastal Conservancy  
 Leah Kirk, Inyo County Water Department  
 Kent Livezey, U.S. Fish and Wildlife Service (formerly US Navy)  
 Gary Milano, Inyo National Forest (USDA Forest Service)  
 Maura Naughton, US Fish and Wildlife Service (FWS) Region I  
 Denyse Racine, California Dept. of Fish and Game, Eastern Sierra Inland Desert Region  
 Joe Silveira, Sacramento River National Wildlife Refuge (FWS)  
 Fred Taylor, BLM, Oregon, Burns District, Three Rivers Resource Area

Finally, the authors wish to thank the following individuals for providing information and/or insightful comments on portions or this entire document in draft:

John Baker, PRBO	Jennifer Wheeler, FWS
Grant Ballard, PRBO	Steve Zack, The Wildlife Conservation Society
Walter Briggs, U.S. Navy	
Ryan Burnett, PRBO	
Heather Chase, NFWF	
Alan Forkey, NRCS	
Tom Gardali, PRBO	
Catherine Hickey, PRBO	
Skip Renchler, BLM Oregon	
Sandy Scoggin, PRBO	
Nils Warnock, PRBO	

## PRBO Conservation Science

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PRBO is a non-profit, membership organization dedicated to conserving birds, other wildlife and ecosystems through innovative scientific research and outreach. Working throughout the West, over 120 staff scientists and seasonal biologists study birds and ecosystems to protect and enhance biodiversity. Founded in 1965 as Point Reyes Bird Observatory, PRBO is an active leader in several national and international initiatives working to protect birds and ecosystems, including Partners in Flight, the US Waterbird Conservation Plan, the US Shorebird Conservation Plan, the North American Waterfowl Management Plan regional Joint Ventures, and the North American Bird Conservation Initiative.

PRBO was recently honored with the 2003 Partners In Flight “Leadership Award” from the US Fish and Wildlife Service (FWS) as well as the 2002 national “Conservation Partner Award” from the USDA Forest Service (USFS) and the Bureau of Land Management (BLM).

### This Guide

This guide to *Developing and Implementing an Adaptive Conservation Strategy* is based on the collective experience of conservation scientists and land and ocean managers working in California and other places in the American West over the last 30 years (a list of more recent partners is included in Appendix 1). It will be of interest to anyone striving to achieve tangible conservation results, including conservation groups, land trusts, watershed groups, conservation science organizations, private landowners, research stations, and natural resource management agencies at the local, state, national and international levels.

PRBO produced this guide because we have been leaders in developing **Adaptive Conservation Strategies** through our participation in the continental bird conservation plans of North America. While PRBO’s original research efforts were focused on conserving bird populations, our research results over the years have demonstrated the value of birds as ecosystem indicators. From restoring wetlands to managing fisheries, bird science provides insights to help assess and promote effective wildlife and habitat management—management that results in and supports fully functioning ecosystems to sustain the greatest diversity and abundance of birds and other wildlife.

For example, PRBO conducted studies of birds in riparian habitat that was regenerating as a result of levee breaks in the Cosumnes floodplain/Central Valley, California, which led to a series of recommendations for riparian habitat restoration published as part of our research and the Riparian Bird Adaptive Conservation Plan in 2000 (see Appendix 2). Recommendations promote the use of natural processes, such as flooding, and planting restored sites in patches to mimic habitat structure that results from flooding. Riparian habitat created since then at Cosumnes and elsewhere (based on

recommendations from both the Riparian Plan and PRBO's research there), has now been observed to contribute critical food resources to adjacent open floodplains that help sustain native fishes, including special-status species like Chinook salmon (*Oncorhynchus tshawytscha*) and Sacramento splittail (*Pogonichthys macrolepidotus*).

## Executive Summary

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From a conservation perspective, scientific data are only as valuable as the extent to which they are applied—whether to shed new light on key questions about the environment or to guide actual conservation projects. Among resource managers, there is a growing consensus about the need to identify management/restoration successes and mistakes and to learn from them. An **Adaptive Conservation Strategy** is a two-pronged approach that can help both conservation scientists and resource managers achieve these goals: it fosters applied science through true adaptive management on-the-ground and fosters “learning organizations” through the development of Adaptive Conservation Plans.

An Adaptive Conservation Strategy consists of adaptive management at the site-specific level and, in addition, Adaptive Conservation Plans that provide a systematic means of synthesizing data, sharing learning, and influencing policy across sites and ecosystems. In other words, an Adaptive Conservation Strategy recognizes that *we all learn best by doing and by learning from the experience of others.*

$$\text{Adaptive Conservation Strategy} = \begin{array}{l} \text{adaptive management} \\ + \\ \text{Adaptive Conservation Plans} \\ \text{for sharing learning} \end{array}$$

An Adaptive Conservation Strategy emphasizes science-management teams practicing adaptive management. This approach means resource managers and scientists work together closely to identify important resource management questions and the monitoring regimes that are most likely to provide answers. Teams conduct standardized monitoring of bird species and associated habitat features to evaluate conservation practices, results, and goals at multiple sites.

Next, in a process that is more formal but nonetheless akin to the tradition of meeting face-to-face to “kick dirt,” science-management teams meet with one another and with others working on similar projects and in similar habitats. This process of systematically sharing learning includes pooling standardized data from many sites, then sharing what has been learned with an even wider circle of conservation practitioners through the creation of Adaptive Conservation Plans (ACPs). ACPs are kept “alive” by regularly updating them with new data and analyses.

### *Birds as Indicators*

PRBO’s approach to adaptive conservation planning has focused on the science and monitoring of bird populations because many bird species make excellent indicators of ecosystem health and integrity, and they are relatively easy to study. Internationally recognized protocols for measuring reproductive success and survival in birds means that bird monitoring programs can provide direct measures of the causes of population change, which can then be compared across sites. Moreover, many bird populations are still large enough to provide sufficient sample sizes for statistical analysis across sites

and/or regions. Bird monitoring in general is also cost-effective and can be conducted with low impact to birds and their habitats.

### *The Adaptive Conservation Strategy Defined*

The steps of implementing an Adaptive Conservation Strategy are:

(1) **Use adaptive management**, stressing science-management teams at multiple sites within an ecosystem or with similar natural resources across ecosystems (e.g., riparian habitat).

- a. Identify assumptions and set management goals (captured in site-specific adaptive resource management plans).
- b. Implement management actions.
- c. Monitor and analyze response to management.
- d. Revise management, goals, or monitoring regime as indicated, and repeat the process.

(2) Share learning through **Adaptive Conservation Plans**.

- a. Synthesize findings from multiple adaptively managed projects.
- b. Develop an Adaptive Conservation Plan focused on the species, habitat, or ecosystem of interest. The plan incorporates findings from step 1, as well as peer-reviewed literature, gray literature, and expert opinion. Conservation plans advance recommendations to guide resource management and policy and are available on-line as well as in hard copy.
- c. Disseminate and incorporate plan recommendations into resource management and/or policy by partnering with or conducting outreach to appropriate audiences.
- d. Reassess and revise both site-specific resource management plans/practices and Adaptive Conservation Plans, and repeat the process.

Adaptive management is a decades-old method of natural resource management that integrates design, management, and monitoring to systematically test assumptions in order to adapt and learn from experience (Salafsky et al 2001). True adaptive management is rarely implemented even though many resource planning documents call for it and numerous resource managers refer to it.

Adaptive Conservation Planning produces updateable web-based conservation plans and databases for wide dissemination. ACP recommendations address habitat management, restoration, protection, monitoring, research, policy, and education. Conservation practitioners are given a powerful tool that allows them to avoid making others' mistakes so they can begin generating new knowledge.

An Adaptive Conservation Strategy can also be applied as a means of evaluating the success of conservation efforts in biological terms. The goal of the relatively recent "conservation accounting" movement is to develop a process and set of measures that can be used to audit not only the financial, but also the ecological results of conservation

projects. Organizations are applying bird science to audit if and how management and restoration efforts are succeeding in their conservation goals.

### *The Adaptive Conservation Strategy Applied*

Chapter 2 presents five case studies chosen to illustrate some of the best examples of how an Adaptive Conservation Strategy has been applied in the field. They focus on illustrating science-management partnerships and conservation results at adaptively managed projects. The case studies presented include

- The Sacramento River Restoration Feedback Loop
- The Eastern Sierra – Bridging Jurisdictional Boundaries
- Shrubsteppe Habitat – Gaining a Wildlife Perspective
- San Francisco Bay – Predicting the Effects of Management
- Developing an ACP - Seabirds of the California Current System

Chapter 3 provides a list of suggestions and tips for conservation practitioners on how to maximize the benefits of implementing an Adaptive Conservation Strategy, with a focus on process and building partnerships. The material in this chapter is drawn from interviews of land management partners, PRBO project leaders, and the combined experience of the authors. Pointers cover the following topics: (1) achieving conservation results (2) the special case of long-term monitoring (3) partnership building (4) communication (5) fundraising and (6) improving the Adaptive Conservation Strategy approach. Appendix 3 provides a detailed step-by-step description of the process that has been successfully used to develop Adaptive Conservation Plans for multiple habitat types in the state of California.



Song Sparrow, a Riparian Bird Conservation Plan focal species. Photo by Eric Preston.

After more than 30 years, hundreds of partnerships, and regional leadership roles in each of the four major continental bird conservation plans, PRBO Conservation Science and partners believe we have created a novel approach to conservation planning and assessment. Development of an Adaptive Conservation Strategy is a collaborative process. While it includes an adaptive management approach, it is more than that. It synthesizes and fully integrates scientific knowledge into resource management across regions and ecosystems—from planning to monitoring measures of conservation success.

The crucial components of a successful Adaptive Conservation Strategy are collaboration, team work at the project level, keeping data current, information sharing, effective communication, flexibility (from all sides, including funders), and a results-oriented applied focus in monitoring, research, and management. The most fundamental point is that both conservation scientists and natural resource managers serve the same mission: facilitating and advancing successful, cost-effective conservation of the world's precious natural heritage. An Adaptive Conservation Strategy provides a win-win approach for achieving this mission.