



Privately-owned wetland, San Joaquin Basin - Ryan DiGaudio

The Central Valley Joint Venture uses a variety of methods to ensure success in its bird conservation work. This chapter looks at the three methods the CVJV uses to guide conservation planning: Strategic Habitat Conservation, scenario planning, and Joint Venture planning at the national level. It highlights successful delivery of conservation actions since the adoption of CVJV's first Implementation Plan in 1990, the Central Valley Habitat Joint Venture Implementation Plan (CVHJV 1990).

Finally, the chapter shares research and monitoring activities undertaken by CVJV partners to evaluate and improve conservation planning.

FRAMEWORK

Strategic Habitat Conservation

The CVJV has adopted a strategic, science-based philosophy toward bird habitat conservation and uses a framework called Strategic Habitat Conservation (SHC) to maximize benefits to bird populations while minimizing costs of conservation investments.

Strategic Habitat Conservation (Figure 2.1) is a specific form of adaptive resource management (Walters 1986; Walters and Holling 1990; Williams 2003) that uses an iterative process to evaluate the effectiveness of habitat management actions. It encompasses four broad elements: biological planning, conservation design, delivery of conservation actions, and monitoring and research. Strategic Habitat Conservation moves wildlife conservation beyond the opportunistic and into the strategic realm, using an adaptive framework to ensure that learning and enhancements to conservation strategy occur.

Scenario Planning

Natural resource managers today face unprecedented challenges arising from changes in factors such as land use, drought, climate patterns and invasive species. These challenges introduce numerous uncertainties that can complicate decision-making. Scenario planning is a structured way of developing a narrative about potential futures based on key uncertainties.

The 2006 Implementation Plan assumed that environmental conditions and conservation opportunities that had characterized the previous decade would continue, but that was not the case. In just ten years, wetland restoration opportunities declined due to such things as unanticipated high commodity and land prices and changes to regulatory requirements. Further, multiple years of severe drought resulted in curtailed water supplies to existing wetland and agricultural habitats. This shift in conditions illustrates the importance of identifying strategies that are robust across a variety of potential future conditions (Cook et al. 2014). Scenario planning is one tool that can be used to develop such strategies (Peterson et al. 2003).

The CVJV used scenario planning as a tool to develop this Implementation Plan, with the goal of identifying actions that would achieve the CVJV bird population and habitat objectives under a range of possible futures. The CVJV developed future scenarios by hosting four workshops that engaged a variety of CVJV partners. Each workshop encouraged team building and creative, solution-oriented thinking and followed a process of (1) identifying key drivers of the system (those critical elements that can contribute to conservation success or failure);

(2) exploring drivers with the greatest uncertainty over a 10-year time horizon; and (3) integrating the uncertainty in these drivers into narratives that define four scenarios of future conditions. The workshops included identifying conservation strategies to use in a particular scenario or in multiple scenarios. The Conservation Delivery chapter discusses the strategies that were identified as being robust under multiple scenarios.

The two key drivers of the system, identified during the scenario planning exercise, are water availability and conservation opportunity. Wetland water supplies are clearly a critical driver of the amount and quality of flooded habitat in the Central Valley. The workshop groups expressed the uncertainty in water supply over the next 10 years as a gradient from high water supply to low water supply.

The groups quantified this gradient from High to Low as:

- 1) Full Level 4 Central Valley Project Improvement Act (CVPIA) refuge water supplies, sufficient surface water supplies for existing and future restored wetlands, sufficient water supplies for rice producers wanting to winter-flood.
- 2) Recent water supplies in an average water year (i.e., typical water supplies).
- 3) 25% reduction in average water supplies.
- 4) 50% reduction in average water supplies.
- 5) 75% reduction in average water supplies.

In defining conservation opportunity, the workshop groups identified three main aspects:

1. The cost of purchasing land for conservation. Commodity prices, patterns of urban development, and other factors will all drive the cost of land. When land prices are low, there are more numerous traditional conservation opportunities than when land prices are high (e.g., there is little interest in converting rice fields to wetlands when commodity prices are high).
2. Public support and funding for conservation. When public policies support conservation, funding is readily available and there are more conservation opportunities than when support is low.
3. Hunter numbers. If hunter numbers go up, there will be more conservation opportunities. If hunter numbers decline, it could erode support for waterfowl conservation in general (e.g., annual public land expenditures that benefit waterfowl), and reduce current and future investments in waterfowl hunting clubs and leases.

Together, these variables describe a conservation opportunity axis that varies from high (available funds and low land prices) to low (little funding and high land prices).

These drivers are both important, and they span a continuum of environmental and social conditions with inherent uncertainty. To capture the uncertainty, the workshop groups defined four scenarios based on the continuum of identified drivers (Figure 2.2): Build Resilience (high water availability and high conservation opportunity), High and Dry (high conservation opportunity but low water availability), Catch Your Breath (high water availability but low conservation opportunity), and Crisis Management (low water availability and low conservation opportunity). The groups then created qualitative narratives that described the situations under each of these scenarios.

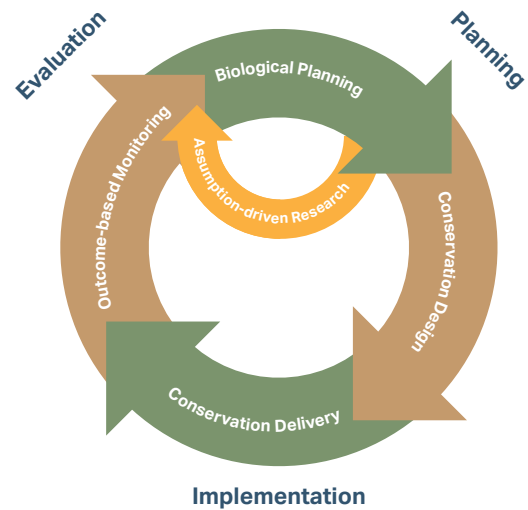


FIGURE 2.1 The elements of Strategic Habitat Conservation.

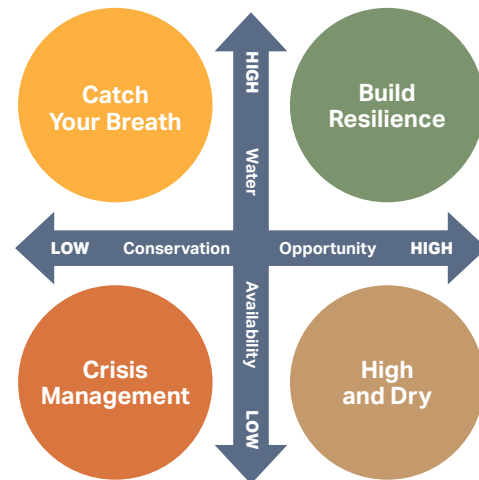


FIGURE 2.2 Conservation opportunity and water availability interact to drive scenario planning.

Joint Venture Planning at the National Level

At a national level, the Migratory Bird Joint Venture Program defines technical expectations for Joint Ventures in the broad categories of biological planning; conservation design; habitat delivery; monitoring; research; and communication, education and outreach. As one of the original Joint Ventures, the CVJV continues to be successful in meeting many of these expectations as they relate to the ability to deliver waterfowl conservation, and, to a slightly lesser degree, shorebird conservation. The CVJV is also making progress in the area of landbird conservation, including riparian birds and, more recently, grassland and oak savannah birds. However, there is considerable work to be done to enhance the CVJV's ability to coordinate, implement, and evaluate the progress of bird habitat conservation. This updated Implementation Plan addresses these deficiencies.

DELIVERY OF CONSERVATION ACTIONS

The CVJV's efforts to protect, restore, and enhance migratory bird habitats, first guided by the 1990 Central Valley Habitat Joint Venture Implementation Plan (CVHJV 1990) and later by the 2006 CVJV Implementation Plan, significantly increased migratory bird habitat in the Central Valley, benefitting a variety of birds and other wildlife. People also continue to benefit through improved water quality, more effective flood control, and increased recreational opportunities. Using a collaborative, voluntary approach and guided by this updated Plan, CVJV partners will work to ensure that the benefits of habitat conservation continue to expand for both wildlife and people.

The CVJV gauges conservation success by gains in habitat quality and quantity, accomplished through habitat protection, restoration, and enhancement projects aligned to achieve bird conservation objectives. Strong partnerships within the CVJV have generated considerable conservation successes by utilizing federal, state, and non-governmental conservation programs and funding.

Since the 2006 plan, the CVJV and its partners have delivered numerous bird habitat conservation achievements (see "Bird Habitat Conservation Successes" sidebar). These are just a few of the programs in the CVJV "toolbox" that have proven successful in achieving CVJV habitat objectives over the last decade. By broadening bird habitat conservation goals with this 2020 Plan, CVJV partners will make additional contributions toward the long-term goal of ensuring vital populations of birds into the future.

BIRD HABITAT CONSERVATION SUCCESSES

Since the 2006 Implementation Plan...

- Through the North American Wetlands Conservation Act grant program, from 2006 to 2018, CVJV partners leveraged almost \$50 million in grant funding with more than two and a half times this amount in other funding. This effort has resulted in protection of more than 26,000 acres of habitat, restoration of more than 42,000 acres, and enhancement of 250,000 acres.
- Working with private landowners, the USFWS Partners for Fish and Wildlife Program has provided \$4.8 million dollars in federal funds and leveraged an additional \$19 million in matching funds to restore and/or enhance 24,300 acres of wetlands, 7,000 acres of associated uplands, and 104 miles of stream/shoreline within the Central Valley.
- The Inland Wetlands Conservation Program of the California Wildlife Conservation Board was created in 1990 specifically to assist the CVJV in its mission. Using a wide range of options to accomplish wetland conservation, the program restored and enhanced more than 65,000 acres of wetland habitat in the Central Valley between 2006 and 2018.
- The USDA Natural Resources Conservation Service (NRCS) has protected and restored 32,825 acres of wetlands and associated uplands in California's Central Valley under the Wetland Reserve Program and has enrolled 20 percent of rice-growing acres in habitat-enhancing practices under the Waterbird Habitat Enhancement Program.

EVALUATING CONSERVATION SUCCESS

CVJV partners continue to make considerable investments in the priorities outlined in the CVJV Monitoring and Evaluation Plan (CVJV 2010), which refined the ecological and biological assumptions used for this Plan.

These investments are critical to strengthen the science-based foundations of CVJV planning. For example, our understanding of the abundance and distribution of wetlands in the Central Valley improved since 1990 as the accuracy and precision of remote sensing tools improved. The 1990 Plan estimated that there were roughly 300,000 acres of managed wetlands remaining at that time, but later satellite imagery showed that the number was closer to 150,000 acres. Thus, the CVJV modified habitat objectives in the 2006 Plan. Due to improved technology and to conservation successes, the CVJV estimate was further refined for this Plan to show that there are now more than 220,000 acres of managed wetlands in the Central Valley.

Examples of how CVJV investments in research have paid off since publication of the 2006 Plan include:

- CVJV partners can now quantify in “near-real time” the amount of open surface water on the landscape, and that information is publicly available to land managers and decision-makers.
- A non-breeding shorebird survey is up and running to assess changes in numbers and distribution. Already scientists are using this survey’s dataset to assess shorebird response to the most recent drought. Results from this study will also allow scientists to assess long-term trends in shorebird populations and habitat use.
- A riparian landbird survey on the Sacramento and San Joaquin Rivers and in the Delta provides baseline data that can assess long-term changes in populations. This survey helped inform the development of the latest riparian bird population objectives.
- All known waterbird colonies are catalogued. This baseline dataset will soon be archived online and available to the scientific community to assess changes in the future distribution of colonies, as well as for local or regional planning purposes such as the state’s high-speed rail project.
- Data from nearly 30,000 dabbling duck nest records in California were archived into a computer database for secure long-term storage and retrieval. This archive of historical nesting information allows scientists to study

long-term trends in habitat use and reproductive success, and it provides guidance to improve programs for locally nesting ducks.

- Comparative studies demonstrate a clear link between improved winter habitat conditions and increased waterfowl body condition and survival in the Central Valley. Results from these long-term studies support the original CVJV premise that restoring and enhancing habitat (including flooded agriculture) is an essential activity for restoring waterfowl populations.
- CVJV organizations are leading studies that identify where and when instream flows or reservoir releases can benefit both fish and birds.

The development and release of the Monitoring and Evaluation Plan followed the release of the 2006 Implementation Plan. In the spirit of innovation and adaptive management, the CVJV has now elected to develop a more comprehensive science and monitoring needs assessment. During the assessment, which will begin in 2020, the CVJV will develop methods to evaluate progress toward the biological objectives and to test whether the conservation strategies and actions yield the intended ecological and social outcomes. The iterative process of testing biological assumptions to improve conservation planning and delivery is germane to the Strategic Habitat Conservation process, and it bridges the gap between managers and researchers.

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