

New Understanding: The Baylands and Climate Change

Appendix A: Process for Updating the Baylands Goals

ORGANIZATIONAL STRUCTURE

The success of the 1999 Baylands Goals motivated a similar process and organizational structure for this Update. Principal participants from the 1999 Goals Project, the Subtidal Goals (REF), and the Upland Goals (formally the Conservation Lands Network; REF) were interviewed to determine lessons learned from those projects.

From these interviews, the following organizational elements were identified as important to emulate: 1) a Steering Committee of resource management organizations, 2) collaborative and open participation by science contributors, 3) independent science reviewers, and 4) a core administrative team including a science coordinator to keep the work moving forward. Planning for the update began several years prior to the launch of the Project in early 2012 when a Steering Committee was formed. The project was completed in early 2015.

Steering Committee

The Steering Committee was composed primarily of national, state, and local regulatory and management entities that have an interest in the wetland ecology of San Francisco Bay. The criteria for organizations to be invited to join the Steering Committee were regional scope, previous participation in the original Baylands Goals process, or membership on the Bay Area Ecosystem Climate Change Consortium (BAECCC) steering committee. The following organizations were represented on the Steering Committee:

- United States Environmental Protection Agency
- National Oceanic and Atmospheric Administration
- United States Army Corps of Engineers (USACE)
- United States Fish and Wildlife Service
- California State Coastal Conservancy (SCC)
- California Department of Fish and Wildlife
- Regional Water Quality Control Board
- San Francisco Bay Conservation and Development Commission (BCDC)
- Delta Stewardship Council
- East Bay Regional Park District
- San Francisco Estuary Institute
- San Francisco Estuary Partnership (SFEP)
- San Francisco Bay Joint Venture

- PRBO Conservation Science
- Suisun Resource Conservation District
- URS Corporation

The Steering Committee provided guidance to ensure that the Update would effectively support management decisions related to climate change adaptation. Their charge was to provide management context for the science synthesis to ensure its relevance to decisions facing their respective constituencies, and to ensure that its findings were communicated effectively to the public. The Steering Committee were also the final arbiters of any outstanding technical issues that could be resolved by the Science Contributor Work Groups or the independent Science Review Panel. The Steering Committee met quarterly over two years.

Science Contributors

Science Contributors were invited based on being knowledgeable in the science and management of the Baylands. Science contributors were recommended by the Science Coordinator, Steering Committee, Science Review Panel, and other Science Contributors. No one who asked was denied participation in the Update process. Science Contributors came from federal, state, and local government agencies; non-profit research and restoration groups; academia; and private consulting entities.

Science Contributors were organized into five workgroup to develop chapters on the evolution of Baylands habitats, how climate change in the Bay would affect the Baylands, the transition zone between the baylands and adjacent terrestrial areas, risks to wildlife, and carbon sequestration and greenhouse gas flux. Each workgroup had two co-chairs invited by the Implementation Team or nominated from within the group. The workgroups met regularly over the course of a year to produce their own chapters and coordinate with each other to produce or review the other content in the report.

Science Review Panel

The Science Review Panel consisted of six known experts in the scientific fields relevant to the chapter topics of the Update. Panel members were independent from the rest of the science process; they were familiar with Baylands science but were not currently carrying out research projects in San Francisco Bay. The Panel reviewed the outline and drafts of the Update report, providing feedback and technical guidance to the workgroup chairs. The Panel was also available for answering questions and resolving technical disagreements that could not be resolved within the workgroups. The Panel operated independently from the Science Contributors and the Steering Committee.

Implementation Team

The Implementation Team had three people responsible for day-to-day running of the project – a Science Coordinator, Project Manager, and SCC Deputy Bay Program Manager – and two people responsible for oversight at a higher level – the BAEECC Executive Coordinator and SCC Deputy Executive Officer. The Implementation Team kept the project moving forward, including convening and supporting the groups described above, establishing work plans and timelines, communicating and coordinating among all the Project entities, securing funding, coordinating the writing and production of the final report. The Science

Coordinator was also responsible for drafting the introductory chapter and leading the writing of the final chapter on recommended actions.

FUNDING

Much of the effort contributed to the Update was provided in-kind by the participating organization and by individuals who donated their personal time. A collaborative process of this magnitude required thousands of hours of unpaid work, and so the success of the report is in great part due to the commitment and generosity of the contributors and their organizations. A few positions received compensation directly from the Project: the Science Coordinator, Project Manager, one workgroup Co-chair per workgroup, eligible Science Review Panel Members (non-Federal employees), and the principal author of the conceptual model chapter (Science Foundation Chapter 1). The project also funded the habitat change analysis. The State Coastal Conservancy was the principal project funder, and the Gordon and Betty Moore Foundation, USACE, and BCDC also provided financial support.

GUIDING PRINCIPLES

This Update is founded upon several guiding principles that were the outcome of discussions with the Steering Committee and workgroup chairs

- This report is a synthesis of the scientific knowledge to date. Currently available data and findings were summarized, but new fieldwork and analyses were not expected. This constraint was due to the limited and time and funds available for completing the update. Information gaps are documented as part of the recommended actions. Scientific synthesis is part of the adaptive management cycle as originally envisioned in the 1999 Goals Report.
- Uncertainties and assumptions are clearly documented to provide the fullest picture of scientific understanding. Planning for future change requires addressing uncertainty. Uncertainty arises because of unpredictability of the future and our limited knowledge. Our knowledge will increase, but there will always be unpredictability in both environmental variables and in the response of biological communities to environmental change.

Although there is uncertainty in the rate of future change, like sea-level rise, the direction of that change and the general shape of the trend are often known. Therefore planning for a range of possible futures is possible and necessary. Our approach is to focus on a multidimensional solution space – what management actions will be useful under a variety of different future scenarios?

Assumptions underlie all science. Here we document the assumptions of the models and analyses presented, so that the reader can evaluate the results. Assumptions underlying models often have a greater effect than input data on the results of a modeling exercise. Therefore, as our knowledge evolves, understanding the assumptions of previous findings is particularly important.

- Dissenting opinions are documented in the report. A process was laid out in the Steering Committee charter by which technical disagreements should be resolved first within workgroups, then should rise to the Science Review Panel as necessary, and finally should rise to the Steering Committee.
- Peer-reviewed literature is preferred, and gray literature is also acceptable for citations in this update. References from peer-reviewed journal articles are the first choice for backing-up the statements herein. However, so much knowledge about the Baylands is documented only in gray literature that gray literature is also acceptable. Peer-reviewed reports are preferred to those that are not.
- Natural processes are preferred to engineered solutions when considering actions to improve Baylands resiliency. Natural processes are the means by which the Baylands maintain themselves and evolve in the absence of human interference. Therefore, natural processes require little to no maintenance, making them relatively less expensive in the long run in many cases. Furthermore, given the complexity of biological systems, engineered solutions are rarely, if ever, able to provide the same level of ecological services as natural habitats.
- New approaches are welcomed in the recommended actions of this report. Recognizing the magnitude of the challenges ahead in order to achieve the Goals in the face of future change, experimentation leading to new information is needed. Barriers that seem insurmountable now may be overcome in the future as circumstances evolve. The scientists contributing recommended actions were invited to think outside the box and not be constrained by previous thinking, current limitations, and present-day policies.
- The Goals should be implemented within an adaptive management framework. This framework should include an adaptive management process that identifies goals, monitors to achieve those goals, incorporates new information as it becomes available, and revises approaches based on the new information. The process from the original Goals report until now is essentially a very loose adaptive management cycle. Goals were set. The Baylands community worked toward those goals for 15 years. This report both summarizes progress toward those goals (acreage targets at the regional scale) and provides a synthesis of new information resulting in new recommendations for decision makers. Future updates to the Goals will be necessary to continue the adaptive management cycle and regularly calibrate the Goals with change in the environment and in scientific understanding. A tighter adaptive management process is recommended to more efficiently and rapidly keep pace with change. This idea is discussed more fully in the recommended actions.

SIMILAR EFFORTS

In the past decade, several other regions in the United States and the arctic have completed similar efforts to plan for climate change adaptation at a large spatial scale, across complex ecosystems, and for many decades into the future (WWF RACER, ISAB 2007-2, Kling et al. 2003, Frumhoff et al. 2007). The Baylands Goals stands out from these other efforts in its process and participation. The Goals Project appears to be unique in that scientists, regulators, resource managers and restoration practitioners all

worked together to develop the goals. Also the focus of the Goals Project is clearly on goals and recommended actions and less on documenting likely impacts.