

## CHAPTER 3. “Pointers for Practitioners”

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This chapter provides a list of suggestions and tips for how to maximize the benefits of using an Adaptive Conservation Strategy. The emphasis here is on process, particularly the development of partnerships and teamwork between science organizations and natural resource managers. The material in this chapter is drawn from the observations of land management partners and PRBO project leaders interviewed for the case studies, combined with the experience of the authors. The terms “practitioner” and “partner” are used to refer to both natural resource managers and scientists.

Pointers for practitioners are provided in the following categories:

- Achieving Conservation Results
- The Special Case of Long-term Monitoring
- Partnership Building
- Communication
- Fundraising
- Improving the ACS Approach

### I. Achieving Conservation Results

#### 1. Maintain objectivity<sup>1,2</sup>.

This applies to everyone, but in particular to conservation science organizations and scientists. There is a fine line between interpretation of data for use in management, and advocacy. By maintaining objectivity in reporting results; limiting management recommendations to those supported by data; and making clear the assumptions inherent in extrapolating results, science organizations will attract more partners and ultimately ensure conservation based on the best available information.

#### 2. Standardize data collection<sup>1,2</sup>!

For resources concerning internationally standardized bird monitoring methodologies see [www.prbo.org/tools](http://www.prbo.org/tools). The references listed there include PRBO instructions, field data forms, database structures, links to online data entry and query tools, and other resources for people collecting data on songbirds<sup>9</sup>. The methods follow Partners In Flight standards as described in [Field Methods for Monitoring Landbirds<sup>11</sup>](#). A resource on internationally accepted standards for waterbird monitoring should also be available soon.

#### 3. Collect data at multiple sites in a region whenever possible, developing, if necessary, discrete projects with multiple landowners<sup>1,2</sup>.

Collecting data from multiple sites creates more statistical power in analyses for everyone. All participating practitioners are benefiting by getting a larger dataset, which can provide a broader, landscape scale perspective to locally managed issues. The key

to greater statistical power, overall landscape perspective, and ability to compare results across projects is standardized methodology.

4. Initiate coordinated outreach to federal and state agencies with the goal of incorporating ACP goals and management recommendations into the resource management plans that govern public lands and oceans<sup>1,2</sup>.

The integration of regional conservation plan recommendations developed under the continental bird conservation initiatives into natural resource management plans and Joint Venture work plans has been identified as a priority by (a) Executive Order 13186 mandating greater federal coordination to meet the requirements of the Migratory Bird Treaty Act<sup>10</sup> and (b) the draft *Partners in Flight U.S. Strategic Plan 2002-2012*. A consensus among California Partners in Flight and other practitioners in California is emerging that the most effective means of expanding the use of adaptive conservation plans and their underlying data in conservation planning and management will be a concerted campaign of outreach to appropriate audiences, whether local, state or federal government, conservation grant programs, or private landowners. Outreach should be tailored to deadlines for the development of specific land, ocean, or species management plans and funding programs.

*Background*

For each federal agency that governs a particular portion of public trust resources, there is at least one federal statute that defines the legal and procedural requirements for developing natural resource management plans. For example, the Bureau of Land Management (BLM) is governed by the Federal Land Policy and Management Act of 1976. The U.S. Forest Service (USFS) is governed by the National Forest Management Act of 1976. Statutorily required management plans lay the foundation for all permitted and required resource management activities on federal lands. Similar state statutes guide natural resource management of publicly held state lands.

5. Seek to share Adaptive Conservation Planning results with trustee agencies—at both the local level and higher up the echelon<sup>1</sup>(this applies to everyone, but particularly science organizations).

Trustee agencies are those, such as the U.S. Fish and Wildlife Service (FWS) and California Department of Fish and Game (CDFG), who have a role as trustee of public resources that crosses all jurisdictional lines (including federal and state land management agencies, water districts, and county and city planning departments that affect private landowners and developers, etc.). Sharing monitoring data and resource management recommendations with trustee agency biologists will thus increase the potential for affecting a broad range of management activities throughout the region. The best way to ensure that agencies are aware of such data and making use of it is to contact regional biologists directly by calling the local or regional field office of the appropriate agency, and asking to speak to the wildlife biologist. Building these relationships should be a standard outreach component at the field level for all scientific monitoring/research projects.

### *Background*

As trustee agencies, the FWS and the National Marine Fisheries Service (NMFS) at the federal level, and fish and game agencies at the state level provide input to other land/ocean management agencies on their management practices. For example, CDFG issues streambed alteration permits, reviews conditional use permits (required under the National Environmental Policy Act, or NEPA) on federal lands, and comments on proposed hydrological projects. For private projects on federal lands in California, CDFG also issues Incidental Take Permits for state-listed species pursuant to the California Endangered Species Act. Science-based management recommendations can be invaluable for designing "avoidance and/or mitigation measures" for such projects.

Under section 7 of the federal Endangered Species Act, the FWS and NMFS have authority to request amendments to projects proposed by other federal agencies that could have a detrimental impact to listed species. In the FWS, the greatest difficulty in writing Biological Opinions is to fill in the blanks concerning what is not known or immediately available to FWS biologists. The FWS constantly needs more information to assess the effects of projects on listed species, and how to minimize these effects. Standardized data that cover key habitats across a region can be invaluable in informing federal and state review of projects

### 6. Use focal species to obtain agreement among diverse partners concerning habitat management and conservation goals<sup>1</sup>.

A vivid example of how focal species helped disparate partners overcome differences is the Memorandum of Understanding (MOU) between the City of Los Angeles Dept. of Water and Power, CDFG, Inyo County, the State Lands Commission, the Owens Valley Committee, and the Sierra Club concerning the Lower Owens River Project<sup>8</sup>. This project has a goal of rewatering fully 60 miles of a stream notorious for having all but disappeared in California's water wars of the early 1900's. While negotiating the MOU, the parties could not agree on acre or habitat objectives, but instead agreed to focus on a list of indicator species<sup>16</sup>.

"...The goal is to create and maintain through flow and land management, to the extent feasible, diverse natural habitats consistent with the needs of the 'habitat indicator species'. These habitats will be as self-sustaining as possible<sup>8</sup>." The list of 24 indicator species for the Owens River Riverine-Riparian System includes 18 species or groups of birds, 7 of which are also focal species of the CalPIF Riparian Bird Conservation Plan.

### 7. Incorporate recorded wildlife response to ACP-recommended management actions into routine analyses of monitoring data<sup>1,2</sup>.

This is "closing the feedback loop" of adaptive management, i.e., reassessing wildlife response, once initial data has been used to guide management actions. This does not

always happen because such analyses often require a change/expansion in the scope of monitoring programs (because management actions are not always implemented at existing study sites) and additional funding. Therefore, partners should seek to build these future costs into their project budgets. For example, the National Park Service “Vital Signs Monitoring Program” recommends 30% of funding is used on data management and reporting.

8. Refer to the appropriate regional conservation plan developed under the auspices of one of the four continental bird conservation movements to increase the legitimacy and weight of project management recommendations based on bird monitoring data<sup>2</sup>.

The continental conservation plans are:

Partners in Flight: <http://www.partnersinflight.org/>;

the U.S. Shorebird Conservation Plan: <http://www.manomet.org/USSCP/>;

the North American Waterbird Conservation Plan: <http://www.nacwcp.org/>;

and the North American Waterfowl Management Plan:

[http://www.nawmp.ca/eng/index\\_e.html](http://www.nawmp.ca/eng/index_e.html).

See Appendix 2 for a complete list of bird conservation plans developed for California habitats.

## **II. The Special Case of Long-term Monitoring**

I. Designate strategically placed long-term monitoring sites for every major habitat or ecosystem type that requires stewardship or conservation<sup>2</sup>.

Long-term wildlife monitoring is almost always undertaken as a partnership between scientists and resource managers. PRBO’s 30+ year dataset from the Palomarin field station owes its existence to a long-term partnership with the National Park Service and Point Reyes National Seashore, and a similar partnership with the U.S. Fish and Wildlife Service at the Farallon National Wildlife Refuge has supported our 30+ year marine bird and mammal monitoring program, as well as a newer program monitoring the Farallon’s white shark population. The advantages of long-term monitoring to science and to effective conservation are numerous and sometime subtle.

- Without long-term monitoring, one cannot answer most questions relating to long-term events such as possible effects of climate change, long-term effects of human activities, long-term effects of shifts in habitats and habitat types, or the cumulative effects of such changes.
- Long-term datasets capture both short-term fluctuations in wildlife populations and associated habitat parameters from year to year, while also helping to characterize variability over longer time scales (such as the Pacific Decadal Oscillation, which affects the Pacific Ocean and associated weather cycles).

- Monitoring is the only way to answer the frequently asked question “what is the status/health of wildlife populations?” (At least 10 years’ worth of data are often required to calculate species population trends).
- By providing a picture of long-term natural variability in an ecosystem, long-term datasets help scientists to distinguish the effects of discrete or short-term human activities (such as pollution events) on the environment.
- Long-term datasets provide a baseline against which to measure future change over time. Such datasets are critical to distinguishing between anthropogenic and natural causes of change. They also eliminate any further “shifting of baselines.” (The idea of shifting baselines is that if starting conditions, or baselines, against which ecologists measure environmental change have already shifted—usually in a negative direction due to human action—prior to their measurement, then society may ultimately accept a degraded environmental situation as “normal.”<sup>15</sup>).
- Ongoing monitoring provides a greater opportunity for focus on in-depth research to answer specific questions that seek to illuminate the causes (and thus potential solutions) of important issues, such as low reproductive success. The research is strengthened when it is conducted within the context of a long-term dataset that shows trends or demographic status.
- Ongoing monitoring provides the opportunity to combine wildlife data (e.g., birds) with data on other taxa (e.g., aquatic invertebrates, fish, or mammals).
- A regular monitoring presence “on the ground” means more eyes to assist resource managers with compliance relative to, for example, grazing and recreational guidelines.

### **III. Partnership Building**

#### I. Use training programs and/or workshops as excellent vehicles for relationship-building<sup>2</sup>.

Training and workshops can be used to start relationships and to identify conservation objectives, data needs, and personnel needs. This approach has worked particularly well for PRBO in Latin America, where we have identified partners and begun new projects as a result of workshops convened for the purpose of training biologists. Local conferences and workshops are often the best venues for the dissemination of Adaptive Conservation Plans (ACPs) or project results. Regional membership organizations are also an excellent means for reaching local organizations and individuals (for example, the Sacramento River Conservation Area for the lower Sacramento region or the Bay-Delta Science Consortium for San Francisco Bay and Delta).

2. Foster the incorporation of scientific monitoring results into ongoing land or ocean management programs by organizing multi-state or regional meetings including scientific organizations, agency biologists, and public land/ocean managers<sup>1</sup>.

The goals of such a meeting (held annually or at least regularly) would be to (a) provide an overview of what new monitoring data says about the resource; (b) get feedback from natural resource managers on how scientific data have been used; and (c) discuss “where to go from here.” Such a meeting would generate enthusiasm for more scientific monitoring. An indirect benefit to agency managers would be to help chart an integrated regional path for conservation science and management. For example, consistency for special status species management needs to be maintained across states within any given federal agency.

3. Ensure consistent, timely submission of site-specific reports by science organizations, which include both data and qualitative observations<sup>1,2</sup>.

The use of standardized methods and web-based data entry greatly speeds up analyses and interpretability of results, and thus reporting. In some cases, land management partners have been able to incorporate monitoring findings from site-specific reports into their own final reports to funders. This serves to highlight for funders the value of the Adaptive Conservation Planning relationship.

4. Seek a science partner that is able and willing to train land/ocean management biologists in appropriate field methodologies for monitoring target wildlife species<sup>1,2</sup>.

This is an advantage when an agency desires to set up a long-term monitoring and evaluation program that staff biologists can implement. It can also facilitate continuity after short-term monitoring and analysis programs set up in partnership with science organizations have been completed.

5. Locate scientific monitoring and evaluation staff on-site whenever possible<sup>2</sup>.

When conservation science field teams are located on site, it enhances the probability that they will be included as part of the resource management team. This also provides opportunities for ad-hoc project consultation.

6. Maintain flexibility (on the part of science partners) to go wherever a resource manager needs to go to answer specific management questions<sup>1,2</sup>.

Recognize that needs related to the scientific goals of a monitoring program may not always coincide with compelling local needs of resource managers—find the balance. Land managers and conservation scientists need to show the relevancy of monitoring and science to decision-makers, otherwise they will be “out of business.” Be responsive too: the value of both data and relationships is greatly enhanced when questions related to specific wildlife, habitats, or management are answered quickly and well.

7. Recognize that over the course of a partnership, there will sometimes be tension between scientific versus management goals<sup>1,2</sup>.

There is a need for transparency in establishing long-term as well as year-to-year goals for adaptive conservation projects, to ensure that management goals are achieved at the same time that monitoring program designs provide sufficient scientific rigor.

8. Make this *Guide to Developing an Adaptive Conservation Strategy* required reading for those who are part of a new science-management partnership<sup>2</sup>.

Starting with a common frame of reference can greatly increase the efficiency of communication and facilitate greater understanding of partnership needs, goals, and processes.

## **IV. Communication**

1. Strengthen the feedback loop between scientific monitoring and management teams by regularly communicating and meeting<sup>1,2</sup>.

Conduct pre- and post-season meetings! These meeting(s) serve three purposes: (a) a forum for discussion of regional issues among all project partners, including upper level staff; (b) a review and discussion of the past season's results, with interpretation of key data and issues by scientists; and (c) a discussion of next season's needs including funding requirements and changes to scope of work. Pre-season meetings can serve in lieu of c above. Such meetings should include briefings from resource managers on management or project design changes implemented as a result of the previous season's scientific findings and recommendations.

Create other traditions for meeting and communication appropriate to your projects<sup>1,2</sup>.

2. Invite project partners to attend "field days" with scientific staff at least once per season<sup>1,2</sup>.

This allows managers to interact with scientific monitoring staff in a relaxed setting and to privately discuss the details of each individual organization's monitoring and analysis needs.

3. Take advantage of web-based communication as much as possible<sup>2</sup>.

The web is a powerful tool for disseminating information and gathering data from partners. Determine which partners have the most developed web capability to take the lead in this.

4. Present findings at scientific and natural resource management meetings to foster replication of successful models for collaboration and monitoring<sup>2</sup>.

An example of this occurred when National Park Service personnel from Devil's Post Pile National Monument learned about the Eastern Sierra Project while attending a Partners in Flight meeting in 2001. They approached PRBO, and by 2002 a meadow restoration monitoring program with a bird education component had been initiated in the monument.

5. Be aware that staffing turnover contributes to communications problems and can slow down the “learning” process of an organization<sup>1,2</sup>.

Extra effort should be made to record the lessons and history of resource management projects; to orient new staff; and to foster renewed working relationships with partners when staff change.

## **V. Fundraising**

1. Design projects, to the extent possible, that cross jurisdictional boundaries and include many partners; these are seen as more effective<sup>1,2</sup>.

Such projects can provide landscape perspective and greater statistical power in analyses for everyone.

2. Seek and justify the need for greater flexibility from funding sources when necessary<sup>1,2</sup>.

Examples of funding issues that regularly affect science-manager partnerships include:

- Lack of flexibility to allow for a pilot year(s) in long-term or multi-year projects. Such flexibility is often required to adequately tailor a long-term project to local conditions and local needs. One or more pilot years of familiarization with an area, including data collection, can greatly facilitate advance planning for multi-year projects.
- Lack of recognition of the benefits of monitoring. Perceptions are still common that monitoring results will not be available in a timely fashion or that monitoring funds would be better spent implementing projects. These issues should be addressed in proposals.
- Lack of recognition of the costs of “conservation accounting.” Money is required to provide ongoing evaluation through project monitoring and to maintain and update ACPs.
- Funding cycles do not match field seasons. This can result in inadequate time to prepare proposals.

3. Seek to improve and streamline the funding process for monitoring and evaluation<sup>1,2</sup>.

The year-to-year contracting process with long-term partners could be improved by negotiating 5- to 20-year agreements. This process would require developing a common vision of where the project is going, long-term goals, and defined stepwise products. Such a step would save a significant amount of staff time and resources spent in developing year-to-year contracts. An effort to collaboratively ensure better long-term funding would also improve project effectiveness. Long-term funding would free up staff time by lessening fundraising duties, and more importantly would allow practitioners to learn if their restoration designs and conservation practices are actually benefiting wildlife over the long term.

## VI. Improving the ACS Approach

### I. Improve tracking of (a) resource managers' use of wildlife monitoring data and (b) implementation of management recommendations<sup>1,2</sup>.

From the outset, working relationships with natural resource management partners should be structured to include a request for feedback on how monitoring data and management recommendations are used. It is necessary to formally request this information, since management agencies and organizations really have no requirement to report how and when they use data supplied by other organizations. An effort should be made to track management practices or permits, management plans, and other project-specific actions. Managers and their partners will more easily track such information on an on-going basis when both sides recognize the value of tracking this information *from the beginning*. The incentives for such an approach include documenting improved performance by demonstrating the extent to which natural resource management decisions are supported by data, and improved fundraising by demonstrating the utility of the ACS in achieving conservation results.

The following are three suggestions for methods to achieve this goal.

- (a) Resource management biologists could use email to transmit to scientists, in “real time,” details of a decision or issue whenever bird data is involved. (For example, when restrictions are added to a special use permit to protect wildlife, or when a specific land management prescription related to wildlife conservation is incorporated into a resource management plan on the basis of data provided by the science organization.) The science organization would be responsible for maintaining its own comprehensive list of how its data is used.
- (b) Resource managers could maintain a list of decisions or documents that incorporated data or recommendations supplied by their science partners. This information could be shared and discussed regularly with science partners.
- (c) Science partners could develop a broad outreach campaign and survey instruments seeking feedback from government agencies and other partners concerning how monitoring information and conservation recommendations

have been applied. (See #4 under “Achieving Conservation Results” and #2 below).

2. Ensure a concerted outreach effort by science partners to decision-makers within natural resource agencies<sup>1</sup>.

Decision-makers in resource management agencies and organizations tend to be less aware of the value of scientific monitoring data to adaptive management, and the value of partnerships with science organizations. Seek to highlight the role of the decision-makers’ own agency in adaptive management and the contributions of science partners in helping to achieve the agency’s mission. This will help to increase decision-makers’ support of the collaboration. (Power point presentations work well for this purpose.) Furthermore, information in ACPs can be extremely valuable to staff responsible for preparing and responding to Environmental Assessments and Impact Reports. One of the best ways to ensure ACP data are used to guide such decisions is to raise the profile of the Plans through concerted agency outreach.

3. Recognize, highlight, and expand scientists’ role in the burgeoning movement toward “auditing” of conservation projects<sup>1,2</sup>.

A consensus is emerging that conservationists need something akin to the generally accepted accounting principles that govern financial reporting<sup>4</sup>. Organizations such as The Nature Conservancy, the World Wildlife Fund, the Wildlife Conservation Society, and Conservation International as well as major funders of conservation have all begun working toward this goal<sup>7,12</sup>. In addition, the Government Performance and Review Act of 1993 requires that measurable performance indicators be established to measure progress toward the achievement of strategic goals, such as conservation of wildlife populations. The Fish and Wildlife Service’s 2003 Annual Performance Plan stresses that “successful migratory bird conservation depends on assessment of how populations respond to their environment”<sup>13</sup>. Therefore, any researchers collecting standardized data about the environment, working in partnership or with the permission of land/ocean managers, should seek to make their data available for the purposes of improving management practices. Such cooperation could run the gamut from collaboration with a specific goal of measuring conservation success to simply using recognized standards in collecting data and making the extra effort to share data with resource managers subsequent to publication.

4. Investigate the potential for establishing Memoranda of Understanding (MOU) with resource management agencies to reinforce the use of monitoring data and ACP recommendations<sup>1</sup>.

This suggestion came from an agency staffer who cited MOUs developed by Bat Conservation International (BCI) with the USFS and BLM. The BCI MOU formalizes cooperation with the agencies in conducting surveys of old mining caves prior to their permanent closure. The intent of an ACP MOU would be to reinforce the agency mandate to make land/ocean management decisions using the best available scientific

data (for example, by incorporating conservation plan recommendations, bird or other wildlife monitoring data into development of resource management plans/revisions). The MOU could also seek to formalize the necessity of providing feedback to scientific monitoring organizations on the use of their monitoring data.

5. Seek to incorporate “all birds” (including, where appropriate, waterbirds, shorebirds, raptors, and waterfowl) and other species in monitoring programs<sup>1,2</sup>.

Expanding the focus of bird conservation programs nationwide to a more “all bird” perspective is one of the primary goals of the North American Bird Conservation Initiative (NABCI)<sup>14</sup>. NABCI has brought together the four major continental bird conservation plans (for waterfowl, landbirds, shorebirds and waterbirds) in an effort to increase the effectiveness of existing and new initiatives, enhance coordination, and foster greater cooperation among the nations and peoples of the continent<sup>14</sup>. In the case of bird monitoring, inclusion of other bird species, as appropriate, often requires very little extra time and expense, but can generate vastly improved levels of information. California Partners In Flight has long been an advocate of expanding single-species focused monitoring programs (such as for endangered species) to include all birds or at least a more representative suite of species. Monitoring of other taxa in addition to birds is increasingly required to accurately capture ecosystem responses to management, such as changes in river water levels and dam releases.

6. Seek to test the effectiveness of birds as indicators of the health of other species populations<sup>1,2</sup>.

For reasons discussed in Chapter 1, birds generally make excellent indicators of ecosystem health and ecological integrity. However, this hypothesis bears more study to show explicitly whether “healthy systems” for birds are also “healthy systems” for other taxa. In addition, the relationship between bird populations and specific populations of other wildlife taxa requires more study. Partnerships between resource managers and multiple science institutions may be a useful avenue for such research. For example, in the Eastern Sierra PRBO has begun working on streams where the Sierra Nevada Aquatic Research Laboratory is also monitoring aquatic invertebrate populations. The two institutions intend to compare what they consider to be a “healthy” stream, based on their different indicators. That is, how much do assessments of habitats using birds as indicators overlap and complement assessments using aquatic invertebrates as indicators? Results from study sites in other parts of California show that birds can be good indicators for some fish species in both freshwater and marine habitats<sup>5</sup>.

7. Increase emphasis on disseminating results in peer-reviewed journals—this applies to science organizations implementing monitoring programs in partnership with natural resource agencies<sup>1,2</sup>.

This will require an incremental increase in funding for all monitoring and evaluation projects to support the cost of the publication and review process. Resource

management agencies are increasingly being asked by Congress and others to produce solid scientific evidence of the efficacy of their conservation programs, as evidenced by strategic planning and reporting requirements under the Government Performance and Results Act. Publication of scientific results in peer-reviewed journals is still the most direct and time-honored way of demonstrating scientific credibility. Science organizations should seek to collaborate or, at minimum, invite comments from scientists at their partner institutions (whether public or private) in this process.

8. Expand programs and create partnerships that will facilitate data collection for use in prioritizing sites for future conservation, i.e., in guiding land and ocean protection efforts rather than management<sup>1,2</sup>.

This is an arena in which the use of bird monitoring data at the landscape level has tremendous potential. In an era of dwindling biodiversity and increasing population pressure, such information is a high priority for many conservation organizations and agencies seeking to either rationalize their landholdings or to determine appropriate boundaries for no-take marine reserves.

9. Incorporate existing scientific measures of success already in wide use (i.e., bird monitoring metrics) into broader regional programs<sup>1,2</sup> within California, particularly by collaborating with the California Bay-Delta Authority and the California Legacy Project.

The Ecosystem Restoration Program of the California Bay-Delta Authority (formerly CALFED) is committed to implementing restoration actions in an adaptive management context. Both the Authority's restoration program and its science program embrace the tenets of science-based adaptive management, which relies on constant monitoring and evaluation of program elements. In particular, the Science program is seeking to establish performance "measures and metrics" that can be monitored to assess change over time. The Science program calls for scientific studies to "demonstrate, pilot test, and establish performance measure monitoring<sup>6</sup>."

The California Legacy Project seeks to develop an adaptive approach for identifying long-term priorities and targets for future investment in resource protection, habitat acquisition, and preservation. "Recognizing the importance of improving existing data, the Legacy Project is putting considerable effort into sparking or enhancing cooperative data efforts. The Legacy Project has [also] established an interagency natural resource monitoring team to coordinate and improve assessment and monitoring statewide<sup>3</sup>."

## Chapter 3 References

1. Derived from a synthesis of case studies (see personal communications listed as sources in Chapter 2).

2. Sources for this material are primarily PRBO staff, particularly staff listed as personal communications in the case studies and the authors of the ACP Guide
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15. [www.shiftingbaselines.org](http://www.shiftingbaselines.org)

**Personal Communications**

16. Leah Kirk, Project Coordinator, Inyo County Water Dept., 2-03 and 4-03