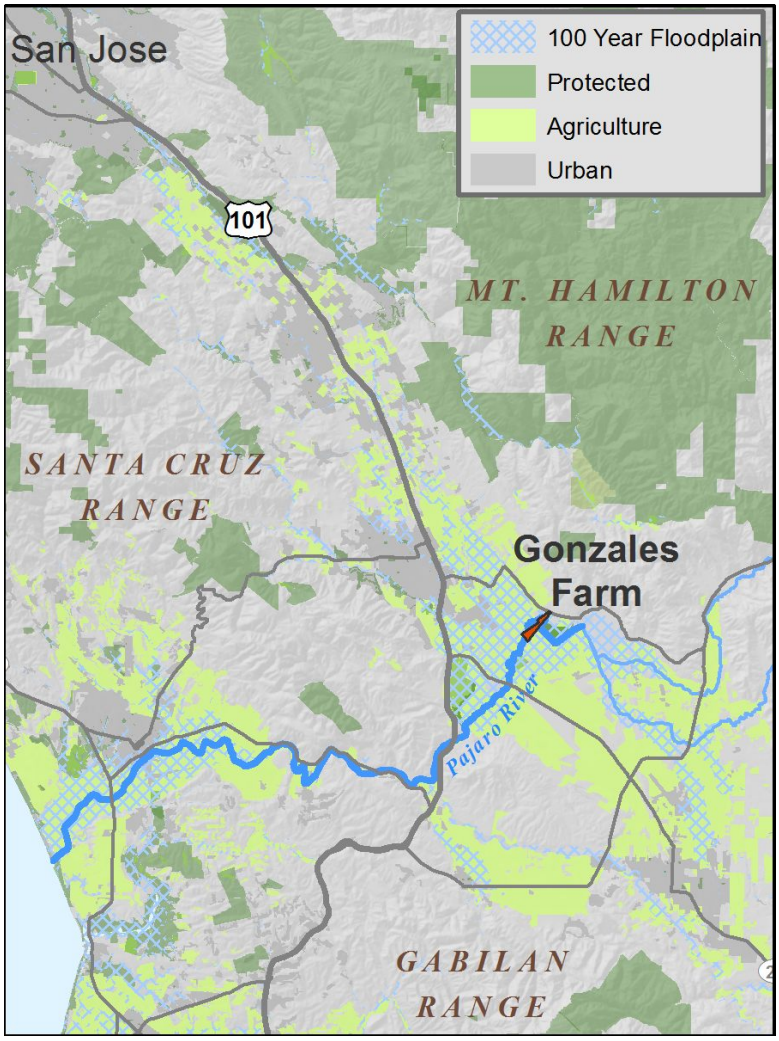
Project Title: Implementing Climate-smart Restoration along California's Central Coast

Project Lead and Co-Lead Contact Information: Project Leads: Melissa Pitkin (Education and Outreach Group Director, Point Blue Conservation Science, mpitkin@pointblue.org, 831-423-8202) and Thomas Gardali (Pacific Coast and Central Valley Group Director, Point Blue Conservation Science, tgardali@pointblue.org, 415-868-0655). Co-leads: Abigail Ramsden (The Nature Conservancy, aramsden@tnc.org, 415-281-0435) and Grey Hayes (Elkhorn Slough Coastal Training, grey@elkhornslough.org, 831-728-2822)

Project Duration: August 2014 to May 2016

Total Requested Funding: $129,334

Partners: The Nature Conservancy will help implement the restoration on the Upper Pajaro River, participate in the workshops and host site tour, conduct outreach, and review the restoration design database. Elkhorn Slough Coastal Training will coordinate and organize the training workshops including agenda development, logistics, outreach, and evaluation.



Geographic Scope: This project is within the California Landscape Conservation Cooperative Central Coast Ecoregion (see map). The case study restoration site is the on the Gonzales Farm in the Upper Pajaro River floodplain, 30 miles south of San Jose. The riparian corridor on this property helps connect three mountain ranges that contain significant conservation lands: the Mount Hamilton Range (1 million acres), Santa Cruz Mountains (450,000 acres), and Gabilan Mountains (600,000 acres). By restoring habitat that encourages wildlife movement across the Upper Pajaro floodplain, the project will reconnect these important pieces of the Central Coast ecoregion, a global hot spot for biodiversity.

Partner Contributions/Leveraging: $241,196 from The Nature Conservancy to implement years 1 and 2 of the habitat restoration project, including:

- $97,900 - Wildlife Conservation Society in support of The Nature Conservancy staff time, travel, communications and outreach materials, plant materials and supplies, and tractor work.
- $25,000 - U.S. Fish & Wildlife Service Partners for Fish and Wildlife program in support of fencing.
- $21,000 - Silicon Valley Community Foundation for The Nature Conservancy staff time.
- $45,000 - private donors to The Nature Conservancy (unrestricted).
- $52,296 - (projected) in volunteer labor time for project implementation and education.

PROJECT SUMMARY/MANAGEMENT RELEVANCE

We propose to develop a suite of climate-smart restoration practices in the Central Coast Ecoregion and pilot those practices on the Upper Pajaro River as a case study. Our work will be based on the climate-smart principles identified in the California Landscape Conservation Cooperative (LCC) Strategic Plan (Cohen 2013) and fine-tuned for ecological restoration (Gardali et al. in review). Our **goals** are to 1) establish native riparian vegetation using climate-smart restoration designs that will benefit wide-ranging wildlife and prepare the region for the consequences of climate change, 2) engage and educate local communities as advocates for conservation, habitat restoration, and climate resilience, and 3) develop a community of conservation professionals prepared to employ climate-smart restoration practices tailored to the Central Coast ecoregion.

Our project will accomplish these goals by completing the following: (1) develop a riparian restoration planting tool (restoration design database and how-to guide) for use by practitioners in the Central Coast ecoregion, (2) conduct an analysis of future analog climates for use in restoration design and teaching about climate-smart conservation, (3) use the tools to implementation of a climate-smart restoration project on the Upper Pajaro River with community members (separate funding), (4) involve the local community by educating students, teachers, and family members about the climate-smart restoration project and principles, and (5) conduct two workshops to educate regional restoration practitioners and regulators about planning and designing climate-smart restoration projects.

Our case study will be along the Upper Pajaro River, which crosses a 9,000-acre natural floodplain in the Central Coast. A portion of the riparian corridor within the floodplain is highly degraded due to intensive agricultural land use that has diminished its wildlife value and severed habitat connectivity. If restored, the corridor would connect 2 million acres of core habitat in adjacent uplands and link exceptionally rich natural communities in three climatically diverse coastal mountain ranges.

Management need

Today, ecological restoration is tasked not just with aiding the recovery of damaged and destroyed ecosystems, but projects must now succeed in a world where climate change is the new normal. Climate change is causing people involved with the science and practice of restoration to focus less on historic conditions and engage in new activities concerned with future predictions and uncertainties. However, there is little pragmatic guidance for practitioners to implement on-the-ground projects that plan for the future and thus are climate-smart.

Restoration is an important and ongoing activity in the Central Coast region due to great losses of native habitats, especially riparian. We will provide specific ways for riparian restoration projects to address climate change, designed specifically for the Central Coast region, and tested at a project site owned and managed by The Nature Conservancy (TNC), who has a commitment to on-the-ground climate adaptation projects. The natural habitats in the Upper Pajaro floodplain have been damaged by a century of intensive agriculture. A one-mile segment of the riparian corridor on the Pajaro floodplain is so degraded that it no longer sustains trees or shrubs. TNC's assessment of the floodplain identified this degraded stretch as the most important restoration site for enhancing connectivity (TNC 2008) and they purchased the 167-acre Gonzales Farm because it encompasses 60 percent of the degraded stretch. Our project will provide pragmatic guidance to support the Conservancy's restoration efforts on the Gonzales Farm and will serve as a model for others.

Ecological outcomes

- Connect 2 million acres of core habitat for carnivores and other wildlife.

- Restore 1 mile of highly degraded riparian habitat to improve climate resiliency and in particular to reduce the vulnerability of the area to extreme weather events by increasing the capacity of the restoration to rebound from longer and/or more frequent periods of drought, floods, and to a lesser extent fire.
- Create 1 mile of functional riparian habitat for birds and other riparian-dependent wildlife.

Climate-smart adaptation strategies and actions

All aspects of this project will be based on the LCC climate-smart principles fine-tuned for ecological restoration (Gardali et al. in review). These principles include: (1) look forward but don't ignore the past, (2) consider the broader ecological context, (3) build in ecological insurance, (4) build evolutionary resilience, and (5) include the human community.

Point Blue Conservation Science (Point Blue), with input from TNC, will develop a Central Coast restoration planting tool (including a user-friendly database and how-to guide) to develop planting palettes that aim to provide greater tolerance for environmental conditions likely to occur due to climate change (e.g., increased drought). Because the tool is designed with resilience and changed circumstances in mind, we believe the "climate-smart" design will be the most effective way to ensure that the restored area will remain viable and functional in the long term, even with the uncertainties presented by a changing climate.

Point Blue will also develop a future climate analog analysis and tool for the Upper Pajaro River that will identify what climates today (geographic places) most resemble the future climates for the Upper Pajaro River. This information can be used to identify ecosystem features that could be considered for restoration design.

Students and teachers are key to implementing this restoration project, meeting the fifth principle of climate-smart restoration. Involving the community, through students, teachers, and families, has been a successful model for the past 15 years of the Students and Teachers Restoring A Watershed Program (STRAW). Engaging children, as community members, is an important and often overlooked strategy in forming policies and action plans to address climate change, despite research showing that providing students with empowering and relevant education on climate change can reduce a community's risk from climate change (UNICEF 2012). In addition, educating students about climate change through participation in habitat restoration engages students as part of a local solution to a global problem, with participation being a key component of "empowering education" (Shor 2012). Finally, educating students and community members fits with the LCC strategy of promoting "cross-sectoral understanding of ecosystem processes and services to advance climate-smart conservation at a landscape scale."

Working with Elkhorn Slough Coastal Training, we will hold two workshops to expand the climate-smart restoration approach and tools to others working on restoration in the region. In particular, we will target regulators and practitioners, soliciting their input on opportunities and constraints of making climate-smart restoration more widely applicable

CAPACITY

The project will be completed by three primary partners, Point Blue, The Nature Conservancy, and The Elkhorn Slough Coastal Training Program. Project leaders are Thomas Gardali and Melissa Pitkin from Point Blue (Primary leads), Abigail Ramsden from TNC, and Grey Hayes from the Elkhorn Slough Coastal Training Program.

Point Blue Conservation Science: Founded in 1965, Point Blue advances the conservation of birds, other wildlife and ecosystems through science, partnerships and outreach. Our 140 scientists work to reduce the impacts of

habitat loss, climate change, and other environmental threats while promoting nature-based solutions for wildlife and people, on land and at sea. Along with restoration project design and evaluation, Point Blue's Students and Teachers Restoring a Watershed Program (STRAW), focuses on community-based restoration and management, and will work with TNC to implement restoration with local schoolchildren, teachers, and families. STRAW cultivates, educates, and engages local school communities as participants and stakeholders in watershed restoration projects. Because of expertise in both climate-resilient restoration design, implementation, and local community engagement, Point Blue is the serving as the primary lead.

Melissa Pitkin, Education and Outreach Director, focuses on communicating the breadth and depth of Point Blue's science to a variety of audiences, from students to conservationists. Melissa has developed educational curricula for science-based educational programs in the classroom and field, as well as translated science into non-technical outreach programs, trainings, and products, like the 2011 San Francisco Bay State of the Birds Report. She is engaged in a variety of regional outreach efforts including serving on the CA LCC Communications Team, Bay Area Ecosystems Climate Change Consortium, and she chairs the SF Bay Joint Venture outreach committee. Melissa will co-lead Point Blue's role in this project, assist with curriculum development for the student education component, and help coordinate and teach the workshops.

Thomas Gardali, Pacific Coast and Central Valley Group Director, focuses his research on conservation-oriented topics ranging from natural history to restoration to the effects of habitat succession and climate patterns on birds. He has extensive experience with ecological restoration and has authored several papers that evaluate and guide restoration success. Additionally, Tom is pioneering work on how to modify restoration to prepare systems for climate change. He has also conducted and published a climate change vulnerability assessment for California's at-risk birds. Tom will co-lead Point Blue's role in this project, assist with development of the riparian restoration design database, and help teach the workshops.

John Parodi, Restoration Manager for the STRAW Program, has provided leadership and science expertise in STRAW's habitat restoration projects with students, teachers, and community members in more than 400 projects on public and private landscapes. With his team, John has participated in the development of Point Blue's first climate-smart restoration design database for the North Bay Area. He has a B.S. in fermentation science from U.C. Davis and a California Single Subject Teaching Credential with CLAD emphasis in biology from Dominican College. John will oversee his team to develop the riparian restoration design database and assist with teaching the workshops.

Sam Veloz, PhD, is Point Blue's lead spatial ecologist. Sam's recent work has focused on projecting changes in the distribution and abundance of birds at landscape scales in response to changing environmental conditions, particularly climate change. He has also focused on how to develop spatial prioritizations of conservation and restoration actions while incorporating uncertainty in our future projections. Sam has also published work and developed web tools (http://www.wicci.wisc.edu/climate-map.php) using climate analog analyses as a place based approach to understanding and communicating the effects of climate change. Sam will lead the development of the climate analog tool/analysis for the project.

The Nature Conservancy: Because the Conservancy's project staff focuses on regional work, they are able to combine the scientific, funding, and administrative resources of an international organization with the fine-grained expertise necessary to work in a particular landscape. TNC staff have spent over 15 years in the Central Coast region acquiring land, sponsoring research, and cultivating partners ranging from individual ranchers to state and local resource agencies. Through the Gonzales Farm project on the Upper Pajaro River, the

Conservancy will leverage its conservation legacy work preserving a 70-mile corridor of rangelands in the Mount Hamilton Range.

Abigail Ramsden, Mount Hamilton Project Director, establishes strategic priorities and supports conservation partnerships in the Central Coast of California. She joined the California Chapter in 2012 after practicing land use and conservation law in San Francisco for seven years. She holds a B.A. in English from Williams College and a J.D. from U.C. Hastings College of the Law. Abigail will assist with the restoration and hosting the workshops.

Sasha Gennet, PhD, Central Coast Ecoregional Ecologist, addresses critical conservation issues such as climate change, wildland fire, and sustainable ranching and farming through science, spatial planning, policy, and land protection strategies. Since she joined TNC in 2007, she has been the lead biologist and planner for the Mount Hamilton and Monterey projects. She holds a B.S. in philosophy from Yale and an M.S. in range management and a Ph.D. in ecosystem sciences from U. C. Berkeley. Sasha will assist with the restoration, review the planting tool, and host the field component of the workshops.

The Elkhorn Slough Coastal Training: Elkhorn Slough Coastal Training (ESCT) staff has well-documented capacity for leading workshops that improve the knowledge and skills of target audiences. Program staff are trained and experienced in training program design and evaluation, such that their programs' evaluations regularly meet the target of over 90% of respondents reporting that their time was well spent in ESCT sponsored events and that they learned new information that they intend to apply in their work. ESCT is also familiar with target audience training needs through their own surveys, but also with their collaboration in training networks. For instance, ESCT convenes all climate adaptation trainers in California through regular meetings of the California Climate Adaptation Training Coalition.

Grey Hayes has spent the last 22 years focusing on agroecology and natural systems ecology of California's Central Coast. His research and management experience includes work with the Ohlone tiger beetle (*Cicindela ohlone*) and red-legged frog (*Rana aurora draytonii*), as well as restoration and management of coastal prairie, coastal scrub, riparian, and maritime chaparral. As coordinator of the Coastal Training Program, he has developed educational projects focusing on bridging the gaps between regulators, land managers, and researchers by fostering dialogue, helping build communities, and increasing ecological literacy. Grey will oversee his team to plan, organize, and implement the workshops.

APPROACH AND SCOPE OF WORK

Our approach and scope of work is summarized in this workflow: (1) collect and summarize available climate projections, vulnerability assessments, and conservation planning documents for the region → (2) build tools (climate-smart planting tool and future analogs) including metadata and how-to guide for the database → (3) get external review on restoration planting tool → (4) design climate-smart restoration project using tools → (5) implement the restoration project with students, teachers, and agencies, and educate them about climate-smart restoration, → (6) refine tool based on on-the-ground experience → (7) train the regional conservation community including restoration practitioners and regulators in our climate-smart restoration approach.

1. Collect and summarize information: Extensive place-based information for the Pajaro River region exists from ongoing monitoring, land management activities, and plans by TNC. Drawing from this site-specific information and climate projections for the region, accessed through the Climate Commons as well as a literature review for California (PRBO 2011), we will develop planting design criteria that addresses how climate

change will impact the region. We will also consult all available vulnerability assessments including for birds in California (Gardali et al. 2012) and for ecosystem services in the Central Coast (Shaw et al. 2011). We have already used the climate-smart principles from the LCC and the National Wildlife Federation to develop principles specific to ecological restoration and we will employ these principles in the Central Coast region (Gardali et al. in review and see www.pointblue.org/restorationprinciples). We will use all of these principles to develop, implement, guide, and teach others about how to implement climate-smart ecological restoration in the Central Coast.

2-4. Build tools with review from stakeholders and include target audience input: Using the site and region specific information, we will build tools and analyses to facilitate the implementation of region-specific, climate-smart restoration practices, following the climate-smart principles summarized above. The analysis will include identifying regional climate analogs for restoration sites on the Gonzales Farm (e.g., Veloz et al. 2012). Existing plant and wildlife communities at analog sites will characterize and set potential restoration targets. In addition, we will produce a riparian planting tool for the Central Coast region that is available for anyone to use through a downloadable database and associated How-To Guide. Point Blue restoration ecologists will create these tools, soliciting review and input from restoration practitioners at TNC, The Natural Resources Conservation Service, Prunuske Chatham Incorporated, and others to be determined.

5-6. Implement the restoration project and educate community members: The riparian restoration project, funded through existing grant monies secured by TNC, will restore native riparian vegetation using innovative, climate-smart restoration designs that will benefit wide-ranging wildlife and prepare the region for the consequences of a rapidly changing climate. STRAW and TNC will conduct the habitat restoration. The restoration will connect two million acres of core habitat and link exceptionally rich natural communities in three climatically diverse coastal mountain ranges. In addition, it will engage local communities by conducting a multi-visit, hands-on science education program for at least 10 classes from Santa Clara and San Benito counties, including teacher training, and classroom lessons, in preparation for the hands-on restoration. To achieve this task, Point Blue will develop an educational curriculum, emphasizing our climate-smart approach to elementary students, as an important way to address the global problem of climate change through local action.

7. Train the conservation community in climate-smart restoration approach: In collaboration with our partners, we will host two training workshops with Elkhorn Slough Coastal Training targeting 100 practitioners and regulators to increase implementation of our approach in the region.

Workshop #1: Incorporation of climate-smart principles in riparian restoration compliance and policy. Audience: Regulatory Agencies with Jurisdiction over Riparian Areas, includes NMFS, CDFW, State/Regional Water Boards, DWR, EPA. Goal: Improve regulatory agency knowledge about climate-smart approaches to riparian restoration that can be used by staff for compliance purposes, and gain understanding of regulatory barriers to making climate-smart restoration widespread.

Workshop #2: Improving riparian restoration planning through application of climate-smart principles. Audience: Restoration Practitioners, includes biological consultants, conservation lands managers, water management agencies, private landowners. Goal: Improve riparian restoration practitioner knowledge about climate-smart approaches to riparian restoration to improve riparian restoration design.

Both workshops will include classroom training for 50 participants and a site visit to the Gonzales Ranch restoration site. Pre-workshop assessments will inform presenters about participant perceptions of

opportunities and constraints for applying workshop material. In Workshop #1, presentations from regulatory agency personnel will frame workshop content within the jurisdictional bounds of the agencies represented and address concerns from the pre-workshop assessment. These will be followed by presentations by early adopters on how agencies can incorporate riparian restoration climate-smart principles into their work. Field training will illustrate the presentation material and lead participants through scenarios where they would apply climate-smart principles. Workshop #2 will target restoration practitioners and will follow a similar format including presentations from leading riparian restoration practitioners about the questions and concerns from the pre-workshop assessment and how climate-smart principles can best be incorporated into riparian restoration. Field training will help participants to apply the lecture material in multiple exercises tailored by the pre-workshop assessment to guarantee relevance.

A recently completed national assessment of coastal decision maker climate adaptation training needs suggests that preferred trainings are in-person (with multiple agencies/organizations), customized to local conditions, and taking into account regional differences (Eastern Research Group 2014). A California state-wide assessment of these same audiences indicated habitat loss from climate change is a primary concern and a strong preference for in-person trainings (Finzi Hart et al. 2012). In the Central Coast region, Elkhorn Slough Coastal Training has completed a number of assessments of audience training priorities, indicating that riparian restoration and climate adaptation are priorities for conservation policy and land management audiences (Hayes 2004, Applied Survey Research 2005, Lyon and Hayes 2012).

Partners: In addition to the partners listed in the capacity section of the grant, this project connects a team of people including government agencies, conservation non-profits, private consulting firms, and a local producer who farms part of the restoration property. This diverse set of stakeholders ensure that the results of this project will be implemented on-the-ground. Specifically, the team includes: a land manager (TNC), a local producer (Allan Renz), NRCS (who conducts additional outreach to producers, practitioners and Resource Conservation Districts), Point Blue (ecological science, restoration technical expertise, restoration implementation, students and teachers), Prunuske Chatham Incorporated (implementation and technical experience), USFWS Pathways for Wildlife Fund (http://pathwaysforwildlife.com/, fencing and mammal monitoring), and Elkhorn Slough Coastal Training (hosting workshop for practitioners and regulators).

This partnership, and funding secured for the restoration, ensure that all tools will be used, tested, and revised base on real-world application, involving community members. Further, we will make the restoration planting tool available to anyone via an online webpage dedicated to the tools and via the Climate Commons. Finally, the two workshops will prepare conservation professionals to employ climate-smart restoration practices in the Central Coast region, and all workshop materials will be made available online.

DELIVERABLES/TIMELINE/ACCESSIBILITY

Deliverable	**FY 2014 (Oct – Sept)**	**FY 2015 (Oct – Sept)**
	Completed by:	**Completed by:**
Climate-smart planting tool (database and how-to guide)	July 2015	
Future climate analogs analysis and tool	October 2015	
Community engagement and restoration		December 2015
Two workshops 1 practitioners, 1 regulators, and assessments		March 2016
Website content		April 2016
Final report		May 2016

See budget/deliverables form for additional information.

MEASURING RESULTS

Facilitating climate-smart restoration practices: We will conduct training workshops for two target audiences (practitioners and regulators) in the Central Coast, and make our tools available online. Elkhorn Slough Coastal Training measures results from its workshops through pre- and post-workshop evaluations and makes all workshop materials available through their highly trafficked website: www.elkhornsloughctp.org.

Restoring riparian habitat for climate resiliency: We will set specific planting targets for species that may best prepare the restoration for climate change and associated plant survival targets. We will measure success by comparing our design targets with the implemented restoration project. We will further assess construction success using our long-standing and tested vegetation protocols to assess plant survival, relative vigor, and height class by individuals within each species.

Restoring riparian habitat for birds: To evaluate success at creating habitat for birds, we completed baseline surveys in 2012. We established four area search plots covering the entire project. Area search methods are available on-line at the California Avian Data Center and data will be entered there.

Connecting habitat for mammals: In August 2012, TNC deployed 16 camera traps throughout the Upper Pajaro River floodplain and adjacent foothills at points most likely to capture animal movement including the Gonzales reach of the Pajaro. Post restoration monitoring will continue to evaluate the effectiveness of the restored corridor in attracting migrating or dispersing animals.

Engage students and teachers in climate-smart conservation: We will use student and teacher pre-post testing to assess learning objectives associated with our new climate-smart restoration curriculum. Our teaching tools will be revised based on the evaluation, and shared with regional teachers through an online resource center at pointblue.org, and through teacher workshops.

VALUE-ADDED AND TRANSFERABILITY

Funding from the LCC will greatly enhance our existing project on the Upper Pajaro River by supporting the integration of the climate-smart approach (including assessment of climate analogs) as a pilot at this site – the first such project in the ecoregion, the transfer of information to regional restoration practitioners and regulators, and through an in-depth educational experience for students, connecting them to solutions to climate change. It also supports our ability to replicate and test our existing climate-smart stream restoration model for in the North Bay (www.pointblue.org/restorationtools), in this new Central Coast region. Once completed, we will have learned how to adapt our climate-smart riparian restoration design approach to new areas, and thus the climate-smart restoration tool will be a proven template for deployment in other ecoregions.

The workshops developed as part of this proposal could be transferable, as with prior work by Elkhorn Slough Coastal Training. ESCT has successfully led work to transfer prior workshops to different regions in California, including, most recently, sensitive species workshops and environmental compliance workshops. The ESCT also routinely partners with both the Tijuana NERR and San Francisco Bay NERR to repeat workshops at their sites, broadening the impact of those efforts. In each case, the ESCT works at the onset of design of workshops to include future sponsors/site hosts as well as identifying additional presenters and case studies for regional relevance. All materials will be made available online at www.elkhornsloughctp.org.

STRAW educators and teachers in the classes that participate in Point Blue's STRAW Program will use the science-education curriculum addressing climate-adapted restoration. These teaching materials will be shared online and introduced to teachers through our annual teacher training events (3 per year).

Deliverable Name	Deliverable Type (select from pull-down)	Expected Delivery Date	Description	How will access to this product be provided? (See examples)	Target Audience (be as specific as possible)
Quarterly Financial and Progress Reports	Administrative	Quarterly	These are the quarterly reports required of all projects.	Quarterly Financial and Progress Reports should be emailed to CA LCC	Financial: CA LCC; Progress: CA LCC and Partners
Climate-smart Riparian Planting Tool (Restoration Design Database and How To Guide)	Application or Tool	1-Jul-15	This is a user-friendly database to identify and plant characteristics that will help prepare projects for climate change (e.g., drought tolerant). It will graph those characteristics and be flexible enough for others to add species if necessary	On the Point Blue website and on Climate Commons	Restoration practitioners in the Central Coast region including consulting firms, government agencies, and non-profits
Future Climate Analogs Upper Pajaro River	Methodology	31-Oct-15	This will establish a method to identify future climate analogs (geographically) that could be used elsewhere, but also a tool specific to the Upper Pajaro River basin	A report posted to the Point Blue website and the Climate Commons	CA LCC and partners interested in this concept as an adaptation strategy to identify ecosystem features that may do well in California's future climates and/or
Community Engagement and Restoration (curriculum development and delivery and assessment)	Training, Outreach, or Workshop	31-Dec-15	This is an updated educational curriculum to be delivered to school groups implementing the climate-smart restoration. It will also be featured in teacher trainings, and made available online.	On the Point Blue website and on Climate Commons, and in teacher workshops	Elementary students and teachers from Santa Clara and San Benito Counties, and the North Bay
Two Workshops - 1 Practioner and 1 Regulator, Needs Assessment and Workshop Report.	Training, Outreach, or Workshop	31-Mar-16	This will be 2 training workshops for restoration practitioners and regulators, focusing on improving riparian restoration planning through application of climate smart principles, and how to incorporate climate-smart principles in riparian restoration compliance and policy. It includes a pre-workshop survey to assess participant learning needs, and a post survey evaluation to measure change and gauge effectiveness.	In person, with materials posted on CA Climate Commons, and shared with California Climate Adaptation Training Coalition	Central Coast Riparian Restoration Practitioners - Includes biological consultants, conservation lands managers, water management agencies, private landowners. Regulatory Agencies with Jurisdiction over Riparian Areas - Includes NMFS, CDFW, State/Regional Water Boards, DWR, EPA.
Update Website Resource Pages	Website	30-Apr-16	Educational resource web pages on the CA Climate Commons and Point Blue website, and Elkhorn Slough Coastal Training Center	On Point Blue website and CA Climate Commons	All audiences previously listed

Deliverable: Reporting and Project Coordination

California Landscape Conservation Cooperative 2014 Proposal Budgets

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(non-monetary)	**Total**
Salaries	$ 11,765.00	$ -	$ -	$ 11,765.00
Supplies	$ -	$ -	$ -	$ -
Overhead	$ 4,118.00	$ -	$ -	$ 4,118.00
Total	**$ 15,883.00**	**$ -**	**$ -**	**$ 15,883.00**

Other:

Deliverable: Riparian Restoration Planting Tool (Design Dabatase and How To Guide)

California Landscape Conservation Cooperative 2014 Proposal Budgets

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(non-monetary)	**Total**
Salaries	$ 22,514.00	$ -	$ -	$ 22,514.00
Travel	$ 500.00	$ -	$ -	$ 500.00
Outside contractors	$ 1,779.00	$ -	$ -	$ 1,779.00
Overhead	$ 8,678.00	$ -	$ -	$ 8,678.00
Total	**$ 33,471.00**	**$ -**	**$ -**	**$ 33,471.00**

Other:

The outside contractor expense in this budget is for The Nature Conservancy in the amount of $1,779, for their Ecologist and Manager to review the planting design database to assure applicability to study site.

Deliverable: Climate Analogs

California Landscape Conservation Cooperative 2014 Proposal Budgets

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(non-monetary)	**Total**
Salaries	$ 2,500.00	$ -	$ -	$ 2,500.00
Outside Contractors	$ 4,810.00	$ -	$ -	$ 4,810.00
Travel	$ 500.00		$ -	$ 500.00
Overhead	$ 2,733.00	$ -	$ -	$ 2,733.00
Total	**$ 10,543.00**	**$ -**	**$ -**	**$ 10,543.00**

Other:

The contractor line covers 1 month of time to assist Veloz producing climate analogs.

Deliverable: Community Engagement and Restoration

California Landscape Conservation Cooperative 2014 Proposal Budgets

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(non-monetary)	**Total**
Salaries	$ 12,715.00	$ -	$ -	$ 12,715.00
Supplies	$ -	$ -	$ -	$ -
Outside contractors	$ 500.00	$ -	$ -	$ 500.00
Travel	$ 1,500.00		$ -	$ 1,500.00
Restoration expenses		$ 241,196.00		$ 241,196.00
Overhead	$ 5,150.00	$ -	$ -	$ 5,150.00
Total	**$ 19,865.00**	**$ 241,196.00**	**$ -**	**$ 261,061.00**

Other:

The cost for implementing the habitat restoration and associated landowner outreach will be contributed by The Nature Conservancy through a grant already secured. The outside contractor line supports the STRAW Faculty to review the curriculm.

Deliverable: Practitioner Workshop, and Regulator Workshop, and Assessment Reports

California Landscape Conservation Cooperative 2014 Proposal Budgets

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(non-monetary)	**Total**
Salaries	$ 12,785.00	$ -	$ -	$ 12,785.00
Supplies	$ -	$ -	$ -	$ -
Outside contractors	$ 23,435.00	$ -	$ -	$ 23,435.00
Travel	$ 500.00		$ -	$ 500.00
Overhead	$ 12,852.00	$ -	$ -	$ 12,852.00
Total	**$ 49,572.00**	**$ -**	**$ -**	**$ 49,572.00**

Other:

The outside contractor expenses include one line for Elkhorn Slough Coastal Training in the amount of $16,480 for implementing the two workshops including salaries, food, materials, american sign language translation, and workshop evaluation and reports. The other contractor expense is to The Nature Conservancy in the amount of $6,955 for their ecologist and the project lead to participate in planning and hosting the field component of the workshops at the restoration

All Deliverables Combined

California Landscape Conservation Cooperative 2014 Proposal Budgets

Deliverables	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(non-monetary)	**Total**
Reporting & Coordination	$ 15,883.00	$ -	$ -	$ 15,883.00
Restoration Planting Tool	$ 33,471.00	$ -	$ -	$ 33,471.00
Climate Analogs	$ 10,543.00	$ -	$ -	$ 10,543.00
Community Engagement	$ 19,865.00	$ 241,196.00	$ -	$ 261,061.00
Practitioner Workshops	$ 49,572.00		$ -	$ 49,572.00
Total	**$ 129,334.00**	**$ 241,196.00**	**$ -**	**$ 370,530.00**

Proposal title: Implementing Climate-smart Restoration along California's Central Coast

Literature Cited

Applied Survey Research. 2005. Elkhorn Slough National Estuarine Research Reserve Coastal Training Program Web Survey. Published by: Elkhorn Slough National Estuarine Research Reserve, Watsonville, CA. 69 pp.

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Cohen, E. 2013. Climate-smart conservation: nature based solutions to climate change. California Legislature Environmental Caucus.

Eastern Research Group. 2014. Needs Assessment for Training in Climate and Hazard Adaptation. A report published by: NOAA Coastal Services Center. Charleston, SC. 44 pp.

Finzi Hart, J., Grifman, P., Moser, S., Abeles, A., Myers, M., Schlosser, S. and Ekstrom, J. 2012. Rising to the challenge: Results of the 2011 coastal California adaptation needs assessment. A report published by: University of Southern California Sea Grant. Report #USCSG-TR-01-2012. San Diego, CA. 76 pp.

Gardali, T., N.E. Seavy, J.J. Parodi, L. Giambastiani, and S.C. Nelson. In review. Climate-smart ecological restoration: framework and lessons learned from a coastal California stream. Restoration Ecology.

Gardali, T., N. E. Seavy, R. T. DiGaudio, and L. A. Comrack. 2012. A climate change vulnerability assessment of California's at-risk birds. PLoS ONE 7(3): e29507.doi:10.1371/journal.pone.0029507

Hayes, G. 2004. Coastal Planners and Regulators Audience Needs Assessment. A report published by: Elkhorn Slough National Estuarine Research Reserve Coastal Training Elkhorn Slough National Estuarine Research Reserve. Watsonville, CA. 36 pp.

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Shaw, M. R., L. Pendleton, D. R. Cameron, B. Morris, D. Bachelet, K. Klausmeyer, J. MacKenzie, D. R. Conklin, G. N. Bratman, J. Lenihan, E. Haunreiter, C. Daly, and P. R. Roehrdanz. 2011. The impact of climate change on California's ecosystem services. Climatic Change 109:S465-S484.

Shor, I. 2012. Empowering Education – Critical teaching for social change. University of Chicago Press, ISBN 022614786X, 9780226147864. 294 pp.

The Nature Conservancy. 2008. A Restoration Vision for the Pajaro River and Soap Lake. Prepared by Phil Williams Associates, San Francisco Estuary Institute, and H.T. Harvey.

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Veloz, S., J. Williams, D. Lorenz, M. Notaro, S. Vavrus, and D. Vimont. 2012. Identifying climatic analogs for Wisconsin under 21st-century climate-change scenarios. Climatic Change 112:1037–1058.

MELISSA PITKIN

Director
Education and Outreach Group
Point Blue Conservation Science
3820 Cypress Drive #11, Petaluma, CA 94954
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CURRENT FOCAL INTERESTS

Science communication efforts that advance ecosystem conservation, including incorporating human dimensions of conservation. Place-based science education programming in elementary through college classes. Knowledge and skills training in young people to develop the next generation of conservation scientists.

PROFESSIONAL PREPARATION

MS Environmental Education. Southern Oregon University, Ashland, OR, 2004-2005

Bachelor of Science in Wildlife, Fish, and Conservation Biology with an emphasis in Conservation Biology. University of California, Davis, 1992-1997.

PROFESSIONAL APPOINTMENTS

2005 – Present	Education and Outreach Group Director, Point Blue Conservation Science
2004 – 2005	Education and Outreach Coordinator, Klamath Bird Observatory
1998 – 2003	Education Coordinator, Terrestrial Ecology Division, PRBO Conservation Science

APPOINTMENTS/WORKING GROUPS

2013-Present	LCC Communications Team
2005-Present	Chair, San Francisco Bay Joint Venture Education and Outreach Committee
2007-Present	BEAC (Bird Education Alliance for Conservation) National working group
2007-2009	USFWS National Wildlife Refuge Bird Team
2000 – 2003	Chair, California Partners In Flight Education and Outreach Committee

SELECTED PUBLICATIONS

Pitkin M, and Wood, J. (Editors) 2011. The State of the Birds, San Francisco Bay, 2011. PRBO Conservation Science and the San Francisco Bay Joint Venture.

Pitkin, M. 2005. Mist-netting With the Public: A guide to communicating science at bird banding stations. PRBO Conservation Science.

Neumann, S. Parodi, J. Pitkin, M. 2003. STRAW: Students and Teachers Restoring A Watershed. A Project of The Bay Institute and the Center for Ecoliteracy pages 550-553 in Faber, P.M. (ed.) 2003. California Riparian Systems: Processes and Floodplain Management, Ecology, and Restoration. 2001 Riparian Habitat and Floodplains Conference Proceedings, Riparian Habitat Joint Venture, Sacramento, CA.

THOMAS GARDALI

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Pacific Coast & Central Valley Group
Point Blue Conservation Science
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CURRENT RESEARCH/CONSERVATION INTERESTS

Long-term studies of avian ecology, restoration ecology, population limitations in passerines, climate change, conservation of special status species

PROFESSIONAL PREPARATION

University of California Santa Cruz, Environmental Studies, B.S. 1993

PROFESSIONAL APPOINTMENTS

2011 – Present	Pacific Coast and Central Valley Group Director, Point Blue Conservation Science
1995 – 2010	Senior Conservation Scientist, Associate Division Director, Terrestrial Ecology Division, PRBO Conservation Science

SELECTED PUBLICATIONS (relevant to restoration and/or climate change)

Jongsomjit, D., Stralberg, D., **Gardali**, T., Salas, L., Wiens, J., 2013. Between a rock and a hard place: the impacts of climate change and housing development on breeding birds in California. *Landscape Ecology* 28:187–200.

Gardali, T., R. DiGaudio, N.E. Seavy, and L. Comrack. 2012. A climate change vulnerability assessment of California's at-risk birds. *PLoS ONE* 7: e29507.

Seavy, N. E., and T. **Gardali**. 2012. Developing a riparian bird index to communicate restoration success in Marin County, California. *Ecological Restoration* 30:157-160.

Gardali, T., and A.L. Holmes. 2011. Maximizing benefits from riparian revegetation efforts: local- and landscape-level determinants of avian response. *Environmental Management* 48:28-37.

Goodman, R.E., G. Lebuhn, N.E. Seavy, T. **Gardali**, and J. Bluso-Dembers. 2011. Avian body size changes and climate change: warming or increasing variability? *Global Change Biology* 18:63–73.

Seavy, N.E., T. **Gardali**, G. H. Golet, F. T. Griggs, C, A. Howell, T. R. Kelsey, S. Small, J. H. Viers, J. F. Weigand. 2009. Why climate changes makes riparian restoration more important than ever: recommendations for practice and research. *Ecological Restoration* 27:330-338.

Golet, G., T. **Gardali**, J. Hunt, D. Koenig, and N. Williams. 2009. Temporal and taxonomic variability in response of fauna to riparian restoration. *Restoration Ecology* no. doi: 10.1111/j.1526-100X.2009.00525.x

Gardali, T., A.L. Holmes, S.L. Small, N. Nur, G.R. Geupel, and G.H. Golet. 2006. Abundance patterns of songbirds in restored and remnant riparian forests on the Sacramento River, California, USA. *Restoration Ecology* 14:391-403.

A B I G A I L R A M S D E N

The Nature Conservancy

201 Mission Street, San Francisco CA 94105 * 415.281-0435 * aramsden@tnc.org

E D U C A T I O N

UC Hastings College of the Law; J.D. May 2005
- Articles Editor, *Hastings Law Journal*; CALI Award for Excellence, Property
- Senior Editor and Business Manager, *The Back Forty, the Newsletter of Land Conservation Law*

Williams College; B.A., English June 1998
- *Cum Laude*; Dean's List Honors

Oxford University; Exeter College; Oxford, England 1996 – 1997

E X P E R I E N C E

The Nature Conservancy; Mt. Hamilton Project Director 3/12 – Present

Establishing partnerships for conservation in California's Central Coast
- Raised $200,000 from federal, foundation, and individual donors in support of riparian restoration and community education project in Upper Pajaro River Floodplain; managing contracts for restoration partners; leading strategic outreach to funders, community partners, ranching and farming community.
- Managing grazing leases, facility maintenance, easement monitoring activities, and landowner relationships on over 30,000 acres of rangeland fee and easement properties.
- Facilitating outreach to Nature Conservancy individual donors, foundation funders, and local community stakeholders, leading property tours and presenting Pajaro Conservation Vision.
- Assisted passage of Santa Clara County Habitat Conservation Plan/Natural Community Conservation Plan.
- Leader in strategic partnerships including Upper Pajaro Watershed Working Group, Alameda Creek Watershed Partnership, San Benito County Working Landscapes Group.

Conservation Partners; Associate 5/11 – 2/12

Specializing in conservation transactions and environmental regulatory counsel
- Collaborated with land trusts and landowners to negotiate conservation easement terms.
- Researched environmental due diligence and regulatory compliance for conservation transactions.

Musae; Board Member 8/09 – 8/13

Women's Vocal Ensemble
- Chair of Strategic Planning Committee; drafted plan for 2013 – 2016.
- Managed search process, auditions, and hiring of new Artistic Director in Spring 2011.
- Planned major fundraiser Spring 2011 and donor cultivation event Fall 2010.

Holland & Knight LLP; Land Use and Natural Resources Associate 11/07 – 3/11

Specializing in environmental regulatory counsel
- Helped developer clients satisfy mitigation requirements for impacts to wetlands and sensitive species; collaborated with resource agencies, local governments, utilities, and land conservation entities.
- Partnered with municipal planning departments to obtain entitlements for commercial, mixed-use and residential real estate developments.
- Drafted Environmental Impact Reports; quantified biological impacts and crafted resource mitigation strategies; developed climate change project analysis; managed consultants.
- Counseled clients regarding compliance with natural resources statutes including NEPA, CWA, and ESA.

Bingham McCutchen LLP; Litigation and Land Use Associate 9/05 – 9/07

Civil litigation focused on environmental law, regulatory counsel, & e-discovery
- Counseled state agency regarding emergency construction on failing levee system: coordinated with resource agencies to draft Biological Opinions.
- Represented prisoners in federal civil rights lawsuit: argued motion for protective order before federal magistrate; managed case budget including $4 million in fees and costs.

ABIGAIL RAMSDEN

The Nature Conservancy

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Superior Court of the State of California; County of San Francisco — 1/05 – 5/05
Extern to the Hon. Ernest H. Goldsmith, Complex Asbestos Litigation

Shute, Mihaly & Weinberger LLP; San Francisco, California — 9/04 – 12/04
Law Clerk, Environmental litigation and Land Use matters

Bingham McCutchen, LLP; San Francisco, California — 6/04 – 8/04
Summer Associate, Litigation and Land Use matters

United States Department of Justice; Washington, DC — 6/03 – 8/03
Law Clerk, Environment & Natural Resources Division, Enforcement Section

Peninsula Open Space Trust; Menlo Park, CA — 11/01 – 7/02
Development Associate

Community Foundation Silicon Valley; San Jose, CA — 4/01 – 10/01
Development Intern, SV2 Giving Partnership

PUBLICATIONS & SPEAKING ENGAGEMENTS

Presenter, TNC's Pajaro Conservation Vision, various engagements (present).

"California Air Resources Board, South Coast Air Quality Management District and San Diego County Release Recommendations for Setting Interim Significance Thresholds for Greenhouse Gases Under CEQA," *Environment,* Holland & Knight Alert; Co-author (November 2008)

"California Wildlife Agency Approves Form Surety Bond to Guarantee Mitigation Projects, Lowering Up-Front Costs and Streamlining Process," *Environment,* Holland & Knight Alert; Co-author (October 2008)

Presenter, University of California, Berkeley Extension; San Francisco: CEQA Update Course (September 2008)

"New Legislation Extends Subdivision Maps for One Year," *Environment,* Holland & Knight Alert; Co-author (July 2008)

"California Establishes Ground Rules for Assessing Climate Change Impacts for Development Projects," *Environment,* Holland & Knight Alert; Co-author (June 2008)

"Army Corps of Engineers and EPA Issue New Mitigation Rule," *Environment,* Holland & Knight Newsletter; Co-author (First Quarter 2008)

"2008 Draft Update to the California State Water Resources Control Board's Water Quality Enforcement Policy," *Environment,* Holland & Knight Newsletter Alert; Co-author (February 2008)

Co-chair, Presenter & Moderator, CEB Forum on Electronic Discovery; Sacramento & San Francisco; invited speakers, delivered introductory address, and moderated panel discussions (June 2006)

"Prop. 65 Tuna Warnings Preempted By FDA," Bingham Alert; Co-author (May 2006)

"Saving Every Scrap? What You Need To Know About Document Retention," Bingham Alert; Co-author (February 2006)

"Spotlight on Metadata: A District Court Magistrate Warns That Your Documents Are About to be Revealed," Bingham Alert; Co-author (December 2005)

"Conservation Purposes Clauses: Looking to Agricultural Easements for Guidance," published in *The Back Forty* (U.C. Hastings Newsletter of Land Conservation Law), Vol. 9, No. 4 (Spring/Summer 2004)

"May a Dealer in Real Property Achieve Significant Tax Benefits Through Donation of a Qualified Conservation Easement Over Land Held for Sale?," published in *The Back Forty*, Vol. 8, No. 1 (Fall 2003)

Curriculum Vitae

Grey Hayes, PhD
Coastal Training Program Coordinator
Elkhorn Slough National Estuarine Research Reserve
email: grey@elkhornslough.org

Education

B.A. Environmental Studies (Agroecology), University of California at Santa Cruz. 1991
M.A. Environmental Studies, University of California at Santa Cruz. 2002.
Ph.D. Environmental Studies (Restoration Ecology), University of California at Santa Cruz. 2003

Affiliations

Research Associate (2007-present) Environmental Studies University of California, Santa Cruz

Expertise

Stakeholder engagement, group facilitation, conservation biology, restoration ecology, grassland management and restoration, ecological agriculture and landscaping, environmental mediation, environmental education, endangered species management and recovery, environmental regulation and enforcement.

Occupation

2002- Present: Coordinator, Elkhorn Slough Coastal Training Program. Design and implement education, outreach, and scientific review to support improved decision making, focusing on land managers, regulatory agency personnel, planners, and biological consultants. Social science applied to better understand educational and other needs to improve decision making on California's central coast.

2008 – Present: Lecturer, University of California at Santa Cruz. Advanced undergraduate course instructor for "Management of Protected Lands" course focusing on theory and practice of managing protected lands with climate change impacts given policy, economic, and social realities of the United States.

Project Experience

Linking science to practice: helping coastal managers design salt marsh conservation strategies in the face of environmental change

From 2009 – 2012, I worked with a diverse team of scientists, estuarine managers, planners, and regulators to improve salt marsh conservation strategies with the evolution of sea level rise models. The outcomes of this work included improved understanding of decision makers considering three different approaches to sea level rise models, improved understanding of scientists of the needs of decision makers, and improved understanding of both scientists and decision makers on the need for better communication. Various publications and reports have been published from this work and other work remains in process, such as a white paper outlining sea level rise modeling frameworks for the San Francisco Bay area.

Central Coast Rangelands Coalition

From 2002 – present, I have been chair of this organization's education and outreach committee and member of the organization's steering committee. The organization serves as a co-management body for the rangelands of California's central coast and includes managers of 800,000 acres of rangelands who meet regularly to inform each other on progress towards more sustainable management regimes to create biologically diverse ecological systems that support increasing economic and social prosperity. Membership includes community members, ranchers, regulators, public trust resource managers, land trust managers, researchers, rangeland consultants, and educators. My work with the group focuses on maintaining and facilitating these dialogues, evaluating progress, and increasing the membership of this community of practice.

California Department of Fish and Game Land Management Planning

In the late 1990's and early 2000's, I co-authored 4 land management plans for California Department of Fish and Game lands in Eastern California and the Mojave Desert. These were comprehensive management plans addressing all aspects of use, conservation, and management for highly sensitive ecological lands with listed species and sensitive habitats. My role with these planning efforts was to advise on botanical conservation and conservation biology elements.

City of Santa Cruz HCP Science Advisory Committee

Starting in 2004, I became a member of this important committee designed to advise on the activities of the City's water department as they develop long-term strategies for conservation while providing water, recreation, and open space facilities. Other committee members include Dr. Peter Karieva (The Nature Conservancy) and Dr. Peter Moyle (UC Davis). My role with this group was to represent local expertise to a group of largely academic and distant researchers.