

**Project Title:**

Climate Adaptation Commons

**Proposal by:**

Deanne DiPietro, Research and Information Services Program Manager  
Sonoma Ecology Center  
20 East Spain St.  
Sonoma, CA 95476

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**Scope & Budget:**

Location: CA LCC-Wide

Duration in months: 12

Requested Funding: \$100,000.00

Leveraged Funding: \$390,000.00

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Briefly summarize the goals of the project, what products will result, and how the products support decision-making and conservation delivery for natural resource management within the CA LCC.

There are countless projects generating climate change related datasets, as well as many ways of accessing these products. These products are generally highly technical in nature, and based on a rapidly evolving set of assumptions and analytical methods. Many of the most sophisticated models are currently only accessible by users with specialized statistical and computer programming skills. At the same time, more and more management activities justifiably are required to consider climate change adaptation, so people responsible for implementation are at high risk of wasting time sorting through a tangled web of climate-related data products, or making decisions based on less than the best possible information, though that information always exists, somewhere. We seek to substantially improve this situation by creating a Climate Adaptation Commons for the California LCC region: an online environment in which land managers and their technical support staff can quickly find the information they need, communicate with each other and with the researchers producing the data, and then share lessons learned. The Commons will offer land managers a resource to which they can turn first to get started and then participate in a community of practice by communicating, learning, and contributing. This will result in a greater shared understanding about the use of climate change research data products, facilitate comparison of results among adaptation planning projects, and ultimately ensure that management decisions are well-informed. Improving access to meaningful, relevant information and the assistance needed to put it to use will empower land managers in their conservation planning process, resulting in more effective and coordinated conservation action.

For continuing 2010 CA LCC projects, describe the accomplishments and outcomes to date, why additional funds are needed, and what this proposal will add to the project.

NEW PROJECT

Identify which National LCC Performance Measure(s), if any, your project addresses.

DID NOT COMPLETE

List Partners

Project Team: Sonoma Ecology Center, UC Davis Information Center for the Environment and PRBO Conservation Science. Project Collaborators: Climate change scientists from USGS (Lorrie and Alan Flint), UC Berkeley (the Ackerly Group), UC Davis, CalAcademy (Healy Hamilton), and EcoAdapt will contribute data and input on use and interpretation, and participate in communications with end-users. NBCAI, BAECCC, Cal-IPC, State Parks, DWR: will provide feedback and test cases as end-users, participate in communications with data originators, and contribute data from adaptation projects. CERES and CalDFG will ensure interoperability with state data cataloging efforts.

Briefly describe how the project team (main PIs) provides the range of experience, expertise, and organizational capacity needed to accomplish the project. List recent and current projects (names, time-periods, PI time commitments, and total budgets). Also attach 1 page CVs for the principle investigator and/or project leaders per below under additional information.

Team and Organization Qualifications: The project team of DiPietro, Quinn, and Ballard represent a unique collaboration combining expertise in ecology, geography, and computer science. Jim Quinn, Deanne DiPietro, and Grant Ballard all have long-standing experience developing solutions at the interface between environmental conservation and informatics, and have worked together on many projects over the years. The team also includes Dr. Allan Hollander at the Information Center for the Environment, Lorraine and Alan Flint of USGS, Zhahai Stewart and Alex Young at Sonoma Ecology Center, and Dr. Leo Salas and Douglas Moody at PRBO Conservation Science. The collaboration's broad range of skills in web innovation, geographic analysis, data visualization, climate change modeling, and vulnerability analysis combined with extensive computing resources and partnerships make this collaboration especially qualified to accomplish the project and provide leadership for reaching the long-term goals of the California Conservation Commons. Deanne DiPietro, Research and Information Services Program Manager at Sonoma Ecology Center Ms. DiPietro leads Sonoma Ecology Center's research, GIS, and informatics efforts conducted by a team comprised of specialists in ecology, geography, historical ecology, geology, and software engineering. Deanne is founder and lead coordinator of the San Francisco Bay Area/California Conservation Commons (<http://sfcommons.org>) and co-founder of the North Bay Climate Adaptation Initiative (<http://www.nbcai.com>). Deanne and her team specialize in informatics solutions for watershed and species health evaluation, invasive plant monitoring, climate change analysis for adaptation planning, and data sharing.

Deanne DiPietro's Selected Recent and Current Projects: Title: The San Francisco Bay Area Conservation Commons Regional Collaborative Data Group and Digital Library Demonstration Project; Source Sonoma County Water Agency; Period Covered: June 2006 – June 2009; PI time: 15%; Total funding amount: \$135,000. Title: Data Library Management and Metadata Training; Source: USGS National Spatial Data Infrastructure; PI time: 10%; Period covered: 2005 – 2009; Three NSDI CAP grants for total funding amount: \$75,000. Title: Data analysis and Management for the NOAA Fisheries North Central California Coast Salmonid Recovery Plans (CCC Coho Recovery Plan, CCC Multi-species Recovery Plan for Chinook and Steelhead); Source: NOAA NMFS Southwest Regional Office; Period Covered: July 2008 – Dec 2011. PI time: 10% FTE; Total funding amount: \$410,104. Title: Groundwater Recharge Mapping for Sonoma Valley Groundwater Management Plan; Source: Sonoma County Water Agency; PI time: 10% FTE; Period Covered: January 2010 – May 2011. Total funding amount: \$36,325. Title: Developing Prioritization Criteria for Reach-Scale Enhancement and Incision/Erosion Projects in Sonoma Creek Watershed; Source: US EPA 319(h) Clean Water Act Program; PI time: 12% FTE; Period Covered: April 2011 – December 2012. Total funding amount: \$125,000. Title: Terrestrial Weed Eradication Monitoring Protocol; Source: CalFed ERP Monitoring and Evaluation Program; PI time: 12%; Period Covered: August 2010 – February 2011. Total funding amount: \$111,000. Title: SF Commons Support for the North Bay Climate Adaptation Initiative; Source: A. W. Gerbode Foundation; PI time: 15%; Period Covered: September 2009 – June 2011. Two grants for total funding amount: \$48,000. Title: North Bay Climate Adaptation Initiative: GIS Analysis for Monitoring Plan Development, Science Working Group Chair; Source: Community Foundation of Sonoma County; PI time: 5%; Period Covered: February 2011 – December 2011. Total funding amount: \$8,500. Grant Ballard, PhD., Climate Change and Informatics Director at PRBO Conservation Science Dr. Ballard

leads PRBO's core team of spatial and quantitative ecologists, GIS experts, and informatics engineers to develop data driven conservation decision support systems. He is a co-founder of the Avian Knowledge Network ([www.avianknowledge.net](http://www.avianknowledge.net)), the leader of the California Avian Data Center ([www.prbo.org/cadc](http://www.prbo.org/cadc)) and has published several peer-reviewed articles documenting and predicting the effects of climate change on ecosystems. Ballard serves on the Science and Informatics Subcommittees of the USFWS California Landscape Conservation Cooperative as well as the Conservation Delivery Committee of the San Francisco Bay Joint Venture.

Grant Ballard's Current Projects:

Current Projects:

Title: Adélie penguin response to climate change at the individual, colony and metapopulation levels; Source of Support: NSF/OPP; Total Award Period Covered: Aug 2010 – Jul 2015; Person Month/Year: 3.5; Total award: \$1,400,000

Title: Preparing for Sea-Level Rise Along the San Francisco Bay Area's Outer Coast; Source of Support: NOAA/SARP; Period Covered: Oct 2010 – Sep 2012; Person Month/Year: 0.5; Total award: \$300,000

Title: Scientific Review and Recommendations for Ecosystem Management of the Ross Sea; Source: Lenfest Foundation; Period Covered: 6/1/09 – 6/30/11; Person Months/Year: 0.75; Total award: \$100,000

Title: How do we monitor the ecological consequences of climate change? Developing an Environmental Change Network in the California Landscape Conservation Cooperative; Source: US Fish & Wildlife Service / California LCC; Period Covered: Oct 2010 – Sep 2011; Person Month/Year: 1.75; Total award: \$86,065

Title: Tidal Marsh Bird Population and Habitat Assessment for SF Bay Under Future Climate Change Conditions; Source: US Fish & Wildlife Service / California LCC; Period Covered: Oct 2010 – Sep 2011; Person Month/Year: 0.75; Total award: \$100,241

Title: Vulnerability Analysis and Monitoring Program for Detecting Changes in San Francisco Bay Tidal Marsh Bird Populations Resulting from Climate Change; Source: US Fish & Wildlife Service / California LCC; Period Covered: Oct 2010 – Sep 2011; Person Month/Year: 0.5; Total award: \$40,995

James F Quinn, Ph.D., Professor Jim Quinn is Professor of Environmental Science and Policy at the University of California, Davis, co-founder and Director of the Information Center for the Environment (ICE -- <http://ice.ucdavis.edu>), and leader of the California Information Node (CAIN -- <http://cain.nbii.org>) of the National Biological Information Infrastructure (NBII). His program collaborates with multiple public agencies and conservation organizations to develop information systems applied to public environmental policy and ecological research. He is a member of multiple federal scientific advisory groups, and co-founder and editor of San Francisco Estuary and Watershed Science, the first free, all-electronic, open-access peer-reviewed journal published by the University of California Library System. He is author of well over 100 technical publications and holds degrees from Harvard (AB, 1973) and the University of Washington (Ph.D., 1979), and was on the faculty of the University of Pennsylvania before joining the Davis faculty in 1981.

Quinn -- Current Projects

Project Name: Groundwater Contamination affecting Communities in CA, Start Date: 24-Feb-11 End Date: 31-Mar-12, Award Amount: 89,700.00, PI Effort: 2.00%

Project Name: Cosumnes River Preserve Ecosystem Restoration, Start Date: 1-Jan-05, End Date: 30-Jun-11, Award Amount: 400,384.00, PI Effort: 5.00%

Project Name: CA Drinking Water Information Clearinghouse (DRINC), Start Date: 1-Jul-10, End Date: 30-Jun-11, Award Amount: 42,600.18, PI Effort: 2.00%

Project Name: CA Drinking Water Information Clearinghouse (DRINC), Start Date: 1-Jul-10, End Date: 30-Jun-11, Award Amount: 28,400.12

Project Name: International Seminar on Climate Change and Natural Resources Management 14-Jan-10, End Date: 30-Sep-11, Award Amount: 398,900.00, PI Effort: 3.50%

Project Name: National Biological Information Infrastructure, Start Date: 1-Jul-08, End Date: 30-Jun-11, Award Amount: 95,000.00

Project Name: GIS Support for Groundwater Nitrates in CA, Start Date: 31-Mar-13, Award Amount: 114,206.00

Project Name: Natural Resources Projects Inventory (NRPI), Start Date: 15-Apr-10, End Date: 31-Mar-12, Award Amount: 97,999.00, PI Effort: 2.00%

Project Name: CA Parcel Data Collection (with the Office of Chief Information Officer), Start Date: 1-Jul-10, End Date: 30-Jun-11, Award Amount: 78,795.00, PI Effort: 2.00%

## **The Climate Adaptation Commons**

Proposal to the California Landscape Conservation Cooperative

April 12, 2011

Deanne DiPietro, Grant Ballard, PhD, and James Quinn, PhD

Sonoma Ecology Center, PRBO Conservation Science, and the UC Davis Information Center for the Environment

### **Project Description**

There are countless projects generating climate change related datasets, as well as many ways of accessing these products. These products are generally highly technical in nature, and based on a rapidly evolving set of assumptions and analytical methods. Many of the most sophisticated models are currently only accessible by users with specialized statistical and computer programming skills. At the same time, more and more management activities justifiably are required to consider climate change adaptation, so people responsible for implementation are at high risk of wasting time sorting through a tangled web of climate-related data products, or making decisions based on less than the best possible information, though that information always exists, somewhere. We seek to substantially improve this situation by creating a Climate Adaptation Commons for the California LCC region: an online environment in which land managers and their technical support staff can quickly find the information they need, communicate with each other and with the researchers producing the data, and then share lessons learned. The Commons will offer land managers a resource to which they can turn first to get started and then participate in a community of practice by communicating, learning, and contributing. This will result in a greater shared understanding about the use of climate change research data products, facilitate comparison of results among adaptation planning projects, and ultimately ensure that management decisions are well-informed. Improving access to meaningful, relevant information and the assistance needed to put it to use will empower land managers in their conservation planning process, resulting in more effective and coordinated conservation action.

### **Project Goals**

The goal of the Climate Adaptation Commons is to support conservation practitioners in their application of climate adaptation science and help guide new research directions by facilitating more effective information exchange between the climate change research and conservation communities.

### **Project Objectives**

- Create an online clearinghouse for searching and comparing across existing data sources, projects, and services relevant for Cal-LCC land managers and the people assisting them in their adaptation planning,
- Provide hosting, download, documentation, and intuitive access and visualization tools for fine-scale model outputs and ecological data products,
- Create an online environment for communications among Cal-LCC land managers and the research/modeling community about the application of scientific data to conservation practice.

### **Deliverables**

The project will produce a user-friendly website that will present the following products and tools:

- A searchable climate adaptation clearinghouse catalog with utilities for understanding and comparing across multiple information resources
- 3 – 5 new datasets from partner research efforts producing fine-scale model outputs, presented and interpreted by the originators

## **The Climate Adaptation Commons**

### Proposal to the California Landscape Conservation Cooperative

- Hosting and support services for organizations wishing to share their data
- Communication tools integrated with the catalog and data access interfaces

#### **CA LCC Priorities addressed**

The project addresses the **Decision Support for Climate Adaptation** priority by developing a data access and communication system customized for adaptation decision-making processes across the LCC region. The resulting online system and services will enable resource managers and their GIS staff to quickly access what they need for evaluation, planning, and outreach, as well as to talk about the process of using the information in a practical setting. The system will encourage open access to data, take advantage where possible of existing climate data portals, and produce and host data where needed. The project will inform research directions and create new collaborations by facilitating communications between the climate research and resource management communities. This project supports other LCC projects by providing access to relevant data and supporting its use through online utilities, documentation, and communication, especially the **Ecosystem Response/Species and Habitat Information** priority, by developing GIS based data layers at scales relevant to resource managers.

#### **CA LCC Criteria addressed**

**Applicability to Conservation and Adaptation Decisions** – The Climate Adaptation Commons supports an effective connection between climate change researchers and land use and policy decision-makers, improving the ability of conservation practitioners to apply the latest science to adaptive management and the ability of the research community to serve this process.

**Ecological or Ecosystem Response to System/Climate Change** – A major focus of the project is improving understanding of the results of research in climate change science and how it may be applied to conservation practice. The Commons supports expanding understanding of climate change science among land managers and policy makers, enabling them to utilize scientific research and participate in guiding its future direction.

**Breadth of Understanding** – The project provides and enhances access to a variety of physical and biological data and simplifies the task of discovery, interpretation, comparison, and application of these data.

**Accessibility** – The Commons will provide for online data access and use of data generated by climate change research, and will work to make these data and information products more useful and relevant to conservation practitioners.

**Scope/Transferability** – The Commons will institute, support, and encourage data sharing and information exchange practices that are highly applicable to LCC-wide and cross-LCC adoption.

**Partnerships/Leveraging** – The Commons encourages partnerships across the range of disciplines necessary for climate change science to be applied in conservation practice. The Commons team itself is a collaboration and leverages partnerships with conservation practitioners and climate change scientists, and will strive to build new collaborations between them.

**Timeliness and Urgency** – The Climate Adaptation Commons is urgently needed to improve information exchange between and among the scientific community and conservation decision-makers. It will reduce duplication in efforts producing and using scientific data and inform researchers in their future modeling and downscaling efforts for decision-making uses.

#### **Approach and Scope of Work**

The concept of a conservation commons combines improved access to data and technical support with an active community of practice. The desired results are:

- a conservation community that is more equipped with and able to use the information they need,
- climate change research that more closely tracks the needs of conservation practice, and

**The Climate Adaptation Commons**  
Proposal to the California Landscape Conservation Cooperative

- an ever-growing pool of shared knowledge as early implementers become resources for others.

The project will focus on land managers (such as California State Parks park managers, Fish and Wildlife Service Reserve managers, and conservation planners at county open space districts and private land trusts) who need the latest information in a form that is relevant and useable. This project also directly assists the GIS analyst who has limited time to gather data and conduct analyses for a planning deadline, and collaborations of organizations seeking to develop outreach materials or coordinate across landscape scale adaptation programs. In all cases resources are limited and streamlining the process of searching for, sorting through, evaluating, post-processing, and analyzing data will directly result in more successful and well-informed adaptation planning and action.

The project team will coordinate with other LCC efforts to ensure that the early products of the Climate Adaptation Commons are on-target for the audience it intends to serve and to dovetail complementary efforts while avoiding duplication. We have already been in conversation with others involved at the regional scale addressing land manager information needs for applying adaptation information and sharing adaptation project results. These include the EcoAdapt group, the Bay Area Ecosystems Climate Change Consortium, the California Invasive Plant Council, and the California LCC's emerging Environmental Change Network. We have been and will continue to coordinate with data portal efforts such as CalAdapt and Climate Wizard. Also important for testing and informing Commons efforts will be those projects working directly on planning and implementing on-the-ground adaptation action; such as efforts by the North Bay Climate Adaptation Initiative and California State Parks. Products and interfaces will be refined through testing and communications with LCC conservation collaborators and we will capitalize upon opportunities to directly serve their needs while producing data products or access tools that serves others.

Task 1: Climate Clearinghouse and Hosting Services

Using standards and technology developed by the San Francisco Bay Area Conservation Commons and CERES, we will develop a searchable clearinghouse catalog containing descriptions of and links to existing data sources (such as CalAdapt, Climate Central, Climate Wizard, and CERES), collaborations and their projects (such as the Bay Area Ecosystem Climate Change Consortium, the North Bay Climate Adaptation Initiative, and the Southern Sierra Conservation Cooperative), and tools and services (such as the Bay Area Open Space Council's Explorer, Data Basin, and EcoAdapt).

The catalog will provide standardized information that assists in comparison across resources (such as the region covered, and grid-size/resolution). Users will be encouraged to use online tools to describe their application and use of these resources, as well as sharing issues, techniques, and practical annotation about data and tools. Cataloging and annotation will be open to any registered user who wishes to contribute relevant data and reports. Hosting services will be offered for research groups and agencies wishing to share relevant datasets.

Task 2: Access to Data for Local Scale Adaptation Planning

The Commons will provide hosting, download, documentation, and intuitive access tools for fine-scale model outputs and ecological data products designed specifically for conservation decision-making. These datasets come from the project partners: PRBO Conservation Science (Environmental Change Network and SF Bay Sea Level Rise projects), UC Davis Information Center for the Environment, and the USGS Flint modeling team. Additional datasets will be included as they become available for hosting.

## **The Climate Adaptation Commons**

### Proposal to the California Landscape Conservation Cooperative

Data products targeted will be those determined meaningful for evaluation of wildlife and habitat response to climate change at the preserve, landscape, and watershed scale and will be offered in formats immediately useful to the preserve GIS manager, ready for use in map-making and common analyses. Raw data will be processed into more readily usable forms, such as decadal or 30-year means or trends, and outputs will be standardized with respect to grid, projection, units, and sources (GCM and scenario, where appropriate). Utilities will be developed to focus these datasets to the needs of land managers while retaining the ability to customize access rather than restricting the user to one particular output. For example: park, preserve, or watershed summaries and multiple preserve comparison and visualization tools may be queried online to produce custom results for local and state-wide evaluation of the historical and projected effects of climate change within a single preserve or across a network of conservation lands.

Data sets (including model results) would be managed in a searchable catalog, allowing for smaller scale queries through spatial operations (e.g., drawing the boundary of a property) and tabular attributes (e.g., all results for Acorn Woodpecker distributions), summarized in downloadable graphs and tables. All display and querying technologies would use available, open-source software delivered highly interactively to the non-technical user, providing scale-appropriate results.

We will leverage the informatics resources of PRBO's California Avian Data Center (CADC) and the UC Davis Information Center for the Environment (ICE) to host the Commons cyberinfrastructure. CADC and ICE both already host several public, large scale data aggregation, curation, and visualization workflows, and the partnership is actively developing options for scaling data storage and processing capacity through collaborations with larger networks such as the California Digital Library, DataOne, and the Avian Knowledge Network.

#### Task 3: Communication Services

The Climate Adaptation Commons will encourage the development of a community of practice by providing and participating in an online environment for communications across Cal-LCC land managers and the research/modeling community. Users will have the opportunity to log in to create annotations and comments regarding use of data, data gaps and needs, or suggestions to improve or add tools. Partner data providers will be reachable through a forum for discussing appropriate use of data and to discuss future directions for modeling and research. The forums and commenting tools will be actively used by the Commons team as we develop the products in collaboration with partners, documenting questions and ideas for further innovations relevant to land managers.

#### **Long-term Goals:**

The near-term goal is a Climate Adaptation Commons serving the LCC community that is expanded and maintained to keep abreast of current resources produced by climate and ecology researchers and the needs of the conservation community. With increased use the Climate Adaptation Commons will foster information exchange and mentoring among the research and conservation communities and create a coherent community of practice for adaptive conservation management in the LCC.

The long-term goal is one of a California Conservation Commons serving the state-wide conservation community that leverages multiple partnerships and data centers to coordinate and streamline California's environmental informatics services. Services envisioned will include support for organization-level knowledge management, full-life-cycle data curation, institution of

**The Climate Adaptation Commons**  
Proposal to the California Landscape Conservation Cooperative

the most effective data-sharing conventions and practices, and aggregation of distributed digital libraries for search and discovery. Alongside these services will be training and technical support for organizations and communities seeking help with knowledge management techniques. A constantly evolving community of practice will offer a supportive and dynamic environment for conservation practitioners to find and share the latest information resources, changing the way we manage environmental knowledge and improving our ability to apply it to conservation practice.

**Products/Data Sharing:**

By project month 5:

- Publicly-available draft Climate Adaptation Commons website with clearinghouse catalog and communication tools
- Example fine-scale data products for review by collaborators
- Data hosting services offered to project collaborators

By project month 8:

- Beta user-interface utilities for regionally sub-setting/downloading, summarizing, and visualizing data
- Two or more of the partner datasets made publicly available on the Commons
- Partners using communication tools for commenting on new products

By project month 12:

- Refined user-interface utilities available for public use
- Refined clearinghouse catalog with data-comparison utilities for public use

Data to be made available by Commons project partners will include:

- Historical and future ensemble projections of climate (precipitation, maximum and minimum air temperature) and hydrologic response parameters (e.g. potential evapotranspiration, snowpack, snowmelt, recharge, runoff, soil storage, climatic water deficit) served at multiple scales,
- Sea level rise products for San Francisco Bay that incorporate dynamic processes such as tidal marsh sediment accretion and bird population viability,
- Bird community changes and projected species distributions for all of California at 800m or finer resolution,

**Measuring Results:**

Short-term success of project deliverables may be evaluated through the comments and feedback provided by project collaborators about their ease of use and relevance as they begin to apply them to their projects. Longer-term success will be evident in the usage of the Commons website, in number of accesses and downloads and activity on the communications tools by a growing audience of researchers, data providers, and conservation practitioners. We will be successful when the CA LCC community of management practitioners considers the California Climate Adaptation Commons the starting point for finding the most relevant data sets for planning climate adaptation activities.

**Climate Adapatation Commons - California Landscape Conservation Cooperative 2011 Proposal Budget**

Task	Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(s) Contribution(s) (non-monetary value/in-kind)	Total
Climate Clearinghouse and Hosting Services	Salaries (SEC)	\$ 12,300.00	\$ -	\$ -	\$ 12,300.00
	Salaries (PRBO)	\$ 2,510.00	\$ 10,000.00	\$ -	\$ 12,510.00
	Salaries (ICE)	\$ 3,990.00	\$ -	\$ -	\$ 3,990.00
	Supplies	\$ 1,000.00	\$ -	\$ -	\$ 1,000.00
	Overhead	\$ 6,299.00	\$ -	\$ -	\$ 6,299.00
	Equipment	\$ -	\$ -	\$ 50,000.00	\$ 50,000.00
	Other (specify)	\$ -	\$ -	\$ 50,000.00	\$ 50,000.00
Access to Data for Local Scale Adaptation Planning	Salaries (SEC)	\$ 2,535.00	\$ -	\$ -	\$ 2,535.00
	Salaries (PRBO)	\$ 20,255.00	\$ 10,000.00	\$ -	\$ 30,255.00
	Salaries (ICE)	\$ 12,250.00	\$ -	\$ -	\$ 12,250.00
	Supplies	\$ -	\$ -	\$ -	\$ -
	Overhead	\$ 11,740.00	\$ -	\$ -	\$ 11,740.00
	Equipment	\$ -	\$ -	\$ -	\$ -
	Other (specify)	\$ -	\$ -	\$ 270,000.00	\$ 270,000.00
Communication Services	Salaries (SEC)	\$ 7,800.00	\$ -	\$ -	\$ 7,800.00
	Salaries (PRBO)	\$ 2,510.00	\$ -	\$ -	\$ 2,510.00
	Salaries (ICE)	\$ 2,510.00	\$ -	\$ -	\$ 2,510.00
	Supplies	\$ -	\$ -	\$ -	\$ -
	Overhead	\$ 4,295.00	\$ -	\$ -	\$ 4,295.00
	Equipment	\$ -	\$ -	\$ -	\$ -
	Other (specify)	\$ -	\$ -	\$ -	\$ -
Project Management and Reporting	Salaries (SEC)	\$ 3,000.00	\$ -	\$ -	\$ 3,000.00
	Salaries (PRBO)	\$ -	\$ -	\$ -	\$ -
	Salaries (ICE)	\$ -	\$ -	\$ -	\$ -
	Supplies	\$ -	\$ -	\$ -	\$ -
	Overhead	\$ 1,006.00	\$ -	\$ -	\$ 1,006.00
	Equipment	\$ -	\$ -	\$ -	\$ -
	Other (specify)	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00
	Salaries (SEC)	\$ -	\$ -	\$ -	\$ -
	Salaries (PRBO)	\$ -	\$ -	\$ -	\$ -
	Salaries (ICE)	\$ -	\$ -	\$ -	\$ -
Supplies	\$ -	\$ -	\$ -	\$ -	
Overhead	\$ -	\$ -	\$ -	\$ -	
Equipment	\$ -	\$ -	\$ -	\$ -	
Other (specify)	\$ -	\$ -	\$ -	\$ -	

(PRBO code development supervision; PRBO donors; in hand)

(PRBO server infrastructure)

(SEC SF Commons software)

(PRBO server administration and project management; PRBO donors; in hand)

(\$150k for model outputs for songbirds and climate change in California; SF Bay SLR projections and ecosystem response; \$120k for USGS downscaled data and ensemble projections)

Administrative overhead for ICE and PRBO subcontracts by SEC

0.335059761 overhead rate

0.664940239

<b>Total</b>	\$ 100,000.00	\$ 20,000.00	\$ 370,000.00	\$ 477,700.00
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**Other:**

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	sec	ice	prbo	
	34000	25000	35000	94000
\$ 25,635.00	\$ 18,750.00	\$ 25,275.00	\$ 69,660.00	
\$ 8,589.26	\$ 6,282.37	\$ 8,468.64	\$ 23,340.26	
\$ 34,224.26	\$ 25,032.37	\$ 33,743.64	\$ 93,000.26	

**DEPARTMENT OF WATER RESOURCES**

DIVISION OF FLOOD MANAGEMENT

P.O. BOX 219000

SACRAMENTO, CA 95821-9000



April 7, 2011

Subject: Climate Adaptation Commons Proposal

Attention: Cal-LCC Grant Review Committee

To Whom It May Concern,

I am writing on behalf of California State Climate Office to express support for the "Climate Adaptation Commons" project proposed by Sonoma Ecology Center and the California Conservation Commons collaboration.

Responding to climate change involves developing adaptation strategies which requires using data from many fields across multiple space and time scales. Data acquisition for some efforts to date has been challenging and time consuming.

Successful completion of the Commons project will be helpful to adaptation planning efforts. Having a centralized location for discovery of existing resources combined with a platform for sharing new data as it becomes available is highly desirable. It is challenging for resource managers to stay abreast of the rapidly changing and expanding sets of climate data and the associated science while carrying out their programmatic activities. Timely access to this work will greatly improve its transition from research to application in resources management and improve the products being developed.

I highly recommend that Cal-LCC fund this project. If the proposal is successful I would be happy to work with the Commons team to provide insight and perspective from an end-user point of view as well as contribute suitable data as it becomes available. I look forward to this exciting opportunity to collaborate and am confident it will provide value to adaptation planning efforts in response to climate change.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Anderson".

Michael Anderson  
State Climatologist  
California Department of Water Resources  
Division of Flood Management  
3310 El Camino Avenue Room 200  
Sacramento, CA 95821  
Phone (916) 574-2830  
Fax (916) 574-2767  
Email: manderso@water.ca.gov



# Cal-IPC

California Invasive Plant Council

1442-A Walnut St., #462  
Berkeley, CA 94709  
(510) 843-3902  
fax (510) 217-3500  
www.cal-ipc.org

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*USDA-Natural Resources Conservation  
Service*

Peter Schuyler  
*Santa Barbara*

Andrea Williams  
*Marin Municipal Water District*

## Student Liaisons

Lynn Sweet, *UC Riverside*

Annabelle Kleist, *UC Davis*

[Affiliations for identification only]

April 4, 2011

Deanne DiPietro  
Sonoma Ecology Center  
20 East Spain Street  
Sonoma, CA 95476

Dear Deanne,

On behalf of the California Invasive Plant Council I am writing to express my support for you "Climate Adaptation Commons" project proposed by Sonoma Ecology Center to the California Landscape Conservation Cooperative.

Over the last five years, the SEC has been a leader in developing standards and networks for data sharing. With your extensive connections to data providers, your close relationship with the state's metadata catalog (CERES), and your experience creating online "commons" for sharing conservation data, I believe you are well situated to undertake the proposed project.

Here at Cal-IPC we can see how we would use the proposed Climate Adaptation Commons. On the one hand, we need a library where we can find existing resources, such as the latest fine-scale climate projection data, to use in our mapping and modeling. These applications are changing quickly and we need a simple way to stay up-to-date. On the other hand, we ourselves are generating datasets and maps designed to help natural resource managers work strategically and effectively, and the Commons would be a good place to store them. This would enable them to be used in conjunction with many other diverse resources.

We are committed to working with you and the Commons team as a data user and data contributor. We look forward to this exciting opportunity to collaborate.

Sincerely,

Doug Johnson  
Executive Director



P.O. Box 11195  
Bainbridge Island, WA 98110

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[www.EcoAdapt.org](http://www.EcoAdapt.org)

12 April 2011

Deanne DiPietro  
Sonoma Ecology Center  
P.O. Box 1486  
Eldridge, CA 95431

CC: Rebecca Fris, Science Coordinator; California Landscape Conservation Cooperative

Re: Letter of Support and Intent to Collaborate

Dear Deanne,

We are looking forward to supporting and collaborating on your *Climate Adaptation Commons* proposal to the California LCC. Climate change is already impacting California's environment and practitioners tasked with managing these resources need access to a site that provides data access and interpretation. It is clear that the Climate Adaptation Commons will provide support for managers in finding, accessing, and applying climate change research data and products to support conservation planning.

Our proposal to survey and assess adaptation initiatives in the California LCC, incorporate adaptation case studies, resources, and people into an LCC-specific module on the Climate Adaptation Knowledge Exchange (CAKE; [www.cakex.org](http://www.cakex.org)), and host a series of training webinars would benefit from the data products offered through the Climate Adaptation Commons. For example, we plan to use the research data products supplied by the Climate Adaptation Commons to supplement the case studies of how data can be applied to enact adaptation strategies on the ground. In addition, we look forward to collaborating on our series of webinars, one of which we plan to focus on data products and their application in the region. In our extensive work on climate change adaptation, we have found that many practitioners looking to incorporate adaptation are often overwhelmed and don't know where to start; online access resources that provide data and application assistance (Climate Adaptation Commons) and case studies, tools, and resources (CAKE) can assist managers find and utilize a wealth of information to support adaptation action.

We look forward to collaborating with the Climate Adaptation Commons in building a community of practice that applies climate change science to conservation action in California.

Sincerely,

**Lara J. Hansen**, *Chief Scientist and Executive Director*  
[Lara@EcoAdapt.org](mailto:Lara@EcoAdapt.org)

## Biographical Summary for Deanne Y. DiPietro

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### EDUCATION:

M.A., Geography; University of California Davis, 2002  
B.S., Botany; University of California Davis, 1984

### PROFESSIONAL EXPERIENCE:

2004 – present; Program Manager, Research & Information Services Program, Sonoma Ecology Center

2002 – 2004; Project Manager, Sudden Oak Death Research Project, Sonoma State University

2000 – 2002; Project Manager for the California Information Node of the USGS National Biological Information Infrastructure (NBII). UC Davis, Information Center for the Environment

1994 – 2000; Technical Projects and Outreach Coordinator, California Resources Agency CERES Program

### OTHER PROFESSIONAL ACTIVITIES

Lead coordinator of the San Francisco Bay Area Conservation Commons (<http://sfcommons.net>)

Founding member of North Bay Climate Adaptation Initiative (<http://www.nbcai.com>)

Co-chair, Science and Technology Working Group, NBCAI, 2009 – 2011

California Invasive Plant Council Board of Directors, 2002 – 2003

Cal-IPC Weed Mapping Committee, 2004 – present

Bay Area Early Detection Network Technical Advisory Committee, 2008 – present

Founding member of Team Arundo del Norte (<http://teamarundo.org>)

### RECENT PROJECTS AND REPORTS:

DiPietro, D., Stewart, Z., Hollander, A. Kunkel, R. 2009. The San Francisco Bay Area Conservation Commons. <http://sfcommons.org>

DiPietro, D., Stewart, Z., Stiefer, P. 2008. The Sonoma Valley Knowledge Base. <http://knowledge.sonomacreek.net>

Trotta, M., Sesser, B., DiPietro, D., Lawton, R. 2011. Sonoma Valley Groundwater Recharge Mapping Project Technical Report. <http://knowledge.sonomacreek.net/groundwaterrecharge>

Lawton, R., DiPietro, D., Young, A. 2010. A transferable protocol to identify and prioritize sites for watershed restoration under Clean Water Act Programs. [http://knowledge.sonomacreek.net/TMDL\\_Planning](http://knowledge.sonomacreek.net/TMDL_Planning)

Napa County, et. al. 2010. Technical and Final Report: Application and Findings of the North Bay-Delta Transect Watershed Assessment Framework (WAF), and Napa Watershed Report Card 2010. <http://sfcommons.org/scorecards/waf/napa>.

Sonoma Ecology Center, et. al. 2010. Sonoma Creek and Napa River Watershed Health Scorecards. <http://sfcommons.org/scorecards/>.

## Biographical Sketch: Grant Ballard

### EDUCATION

- University of Auckland, Auckland, NZ. PhD (2010): Ecology, Evolution and Behavior.
- Cornell University, Ithaca NY. English. BA (1989): English

### APPOINTMENTS

- 2011 – Climate Change and Informatics Director, PRBO Conservation Science
- 2007 – 2011 – Informatics Division Director, Antarctic Program Leader, Climate Change Initiative Leader - PRBO
- 2006 – 2007 - Senior Conservation Scientist and Informatics Program Director, PRBO.
- 1994 - 2006. Senior biologist, data manager, and analyst, PRBO.

### SELECTED CURRENT AND RECENT PROJECTS

- 2010-2015: (co-PI) Adélie penguin response to climate change at the individual, colony and metapopulation levels – funded by National Science Foundation- [more information](#)
- 2010-2011: (co-PI) How do we monitor the ecological consequences of climate change? Developing an Environmental Change Network in the California Landscape Conservation Cooperative – funded by US Fish and Wildlife Service – [more information](#)
- 2010-2011: (PI) Tidal Marsh Bird Population and Habitat Assessment for SF Bay Under Future Climate Change Conditions – funded by US Fish and Wildlife Service – [more information](#)
- 2010-2012: (co-PI) Preparing for Sea-Level Rise Along the San Francisco Bay Area's Outer Coast – funded by NOAA –SARP – [more information](#)
- 2006-2010: (co-PI) Multi-scaled data in ecology: Scale dependent patterns in the environment - funded by National Science Foundation.

### RELEVANT PUBLICATIONS & INFORMATICS PRODUCTS (5; full list available [here](#))

- Ballard, G., M. Herzog, M. Fitzgibbon, D. Moody, D. Jongsomjit, D. Stralberg. 2008. The California Avian Data Center. [web application]. Petaluma, California. <http://www.prbo.org/cadc>.
- Kelling, S., W.M. Hochachka, D. Fink, M. Riedewald, R. Caruana, G. Ballard, G. Hooker. 2009. Data Intensive Science: A New Paradigm for Biodiversity Studies. *Bioscience* 59:613-620.
- Lepage D, Kelling S, Ballard G. 2005. The Bird Monitoring Data Exchange Schema. (7 May 2009); <http://www.avianknowledge.net/content/about/bird-monitoring-data-exchange>
- Martín, E. and G. Ballard. 2010. Data Management Best Practices and Standards for Biodiversity Data Applicable to Bird Monitoring Data. U.S. North American Bird Conservation Initiative Monitoring Subcommittee. Online at <http://www.nabci-us.org/>.
- Veloz, S., M. Fitzgibbon, D. Stralberg, S. Michaile, D. Jongsomjit, D. Moody, N. Nur, L. Salas, J. Wood, G. Ballard. 2011. San Francisco Bay sea level rise: Climate change scenarios for tidal marsh habitats. [web application]. Petaluma, California. <http://www.prbo.org/sfbayslr>. (Accessed: March 31, 2011).

### SYNERGISTIC ACTIVITIES

Member of the Landscape Conservation Cooperative Science & Informatics subcommittees, California Department of Fish and Game Climate Stakeholders Working Group; delegate to USGS National Climate Change and Wildlife Climate Science Center organizational workshop (2009) and USFWS CA Landscape Conservation Cooperative organizational workshops (2010/11); leader of the Avian Knowledge Alliance (2007-2008); Co-founder and board member, Oikonos, ecosystem knowledge ([www.oikonos.org](http://www.oikonos.org)).

## James Franklin Quinn

### Professional Preparation:

Harvard University	Biology	AB <i>cum laude</i> , 1973
University of Washington	Zoology	PhD, 1979

### Appointments:

1981-present Assistant, Associate and Full Professor, Environmental Science and Policy, UC Davis  
1994-present Director, Information Center for the Environment, UC Davis  
1979-1981 Lecturer in Biology, University of Pennsylvania

### Selected Relevant Publications:

Parks BO, Fornwall MD, **Quinn JF**. (2004). First NBII Biodiversity Modeling Workshop: Results and Recommendations. Proceedings of NBII Biodiversity Modeling Workshop, July 27-31, 2003, Maui, HI. Prepared by the North American Consortium for Biodiversity and Ecosystem Informatics (NAC-BDEI) at the University of Colorado at Boulder for the National Biological Information Infrastructure. Denver, CO: U. S. Geological Survey, Center for Biological Informatics.  
[http://www.nbii.gov/about/pubs/NBII\\_Biodiversity\\_Modeling.pdf](http://www.nbii.gov/about/pubs/NBII_Biodiversity_Modeling.pdf)

Viers JH, Thorne JH, **Quinn JF**. (2006). CalJep: A spatial distribution database of CalFlora and Jepson plant species. San Francisco Estuary and Watershed Science, 4(1): Article 1.  
<http://repositories.cdlib.org/jmie/sfews/vol4/iss1/art1>

Meynard CN, **Quinn JF**. (2007). Predicting species distributions: A critical comparison of the most common statistical models. Journal of Biogeography, 34: 1455-1469.

Maynard CN, Howell CA, **Quinn JF**. (2009). Comparing alternative systematic conservation planning strategies against a politically-driven conservation plan. Biodiversity and Conservation, 18:3061-3083.

Thode, A; JW van Wagendonk; JD Miller; **JF Quinn**. Quantifying the Fire Regime Distributions for Severity in Yosemite National Park, California, USA. International Journal of Wildland Fire (in press)

Underwood, EC, **JF. Quinn**, (2010). Response of ants and spiders to prescribed fire in oak woodlands of California. J. Insect Conserv. 14:359-366

Underwood, EC, AD Hollander and JF Quinn, in press. Geospatial Tools for Identifying and Managing Invasive Plants, in Invasive Plant Ecology, S. Jose, H. Singh, D. Batish and R. Kohli, eds., CRC Press/Taylor & Francis (June 2011)

### Other Significant Publications:

Thorne J, Huber P, Girvetz E, Quinn J, McCoy M. (2009). Effects of Roads and Traffic on Wildlife Populations and Landscape Function. Ecology and Society, 14(1): 47. [online] URL:  
<http://www.ecologyandsociety.org/vol14/iss1/art47/>

Cisneros-Mata MA, Botsford LW, **Quinn JF**. (1997). Projecting Viability of *Totoaba macdonaldi*, a Population with Unknown Age-Dependent Variability. Ecological Applications, 7(3): 968-980.

Cook RR, **Quinn JF**. (1998). An evaluation of randomization models for nested species subsets analysis. Oecologia, 113(4): 584-592.

Harrison S, Viers JH, **Quinn JF**. (2000). Climatic and spatial patterns of diversity in the serpentine plants of California. Diversity and Distributions, 6(3): 153-162. © Blackwell Science Ltd.

Viers JH, Sailer CT, Ramirez CM, **Quinn JF**, Johnson ML. (2002). An integrated approach to the discrimination of riparian vegetation in the Navarro River watershed, Mendocino County, California, USA. AVIRIS Proceedings 2002. Jet Propulsion Laboratory  
[http://popo.jpl.nasa.gov/docs/workshops/02\\_docs/2002\\_Viers.pdf](http://popo.jpl.nasa.gov/docs/workshops/02_docs/2002_Viers.pdf)

### Synergistic Activities:

- **Head, California Node (CAIN) of the National Biological Information Infrastructure (NBII)**. NBII is an interagency coordination body for government information on biodiversity, land cover, watersheds, and related biological resource issues. CAIN (<http://cain.nbii.gov>) has partnerships with over a dozen agencies to standardize, exchange, and post federal and state environmental data on the web and to catalog information resources with standardized catalogs, vocabularies, and search facilities. (Funding from USGS, the Forest Service, and the California Resources Agency);
- **NSF-ITR Science on the Semantic Web: Prototypes in Bioinformatics**. A new joint project

among ecologists and computer scientists at 4 universities and NASA to develop an IT framework to use next generation Web technologies to integrate and process biological information, including the NBII system, foodwebs, and long-term environmental monitoring systems (<http://spire.umbc.edu/about.html>).

- **CALFED Bay-Delta Research.** PI for a large interdisciplinary grants analyzing the restoration success in terrestrial floodplain and riparian systems in the Cosumnes River Watershed (immediately west of the Tahoe Basin), and a follow-up grant for experimental and geospatial analysis of the spread of the invasive perennial pepperweed. This research is developing data integration, remote sensing, automatic change detection, and population/vegetation assessment methods that will be immediately applicable to the proposed research. (<http://watershed.ucdavis.edu/crg>)
- **California Watershed Analysis.** PI on several joint projects with state and federal water regulators on land use, water quality, and listed salmonids in rivers and watersheds rated “impaired” under the Clean Water Act. Technologies developed include vegetation modeling using hyperspectral imaging, measuring and modeling shading and water temperature, assessing effects of roads, timber operations, and landslides on runoff and sedimentation, and modeling impacts of potential restoration options (<http://ice.ucdavis.edu>.)
- **Information Systems for Water Quality.** PI on a series of cooperative projects with the California Department of Public Health and both California and U.S. Environmental Protection Agencies to standardize and communicate standardize water quality data required by the Clean Water Act and Safe Drinking Water Act. Current activities include designing, supporting and providing training for a geodatabase of source water protection data, and creating a California node under the EPA NEIEN program to provide state and federal water pollution control programs with data from source assessments and laboratory analyses of drinking water quality as a XML-based web service.

#### **Collaborators and Other Affiliations**

**Collaborators and Co-Editors:** Louis Botsford, UC Davis; Randall Brown, CALFED; Regina Donahoe, CalEPA; Kaylene Keller, Jones and Stokes; George M. Robinson, SUNY Albany; Susan Harrison, UC Davis; John Hunter, SUNY Brockport; Caroline Lundquist, Univ. Otago, New Zealand; Michael McCoy, UC Davis; Lance Morgan, NMFS; Dennis Murphy, University of Nevada, Fred Nichols, USGS; K. Ricker, CalEPA; Karen Willett, UC Davis, Julie Yamamoto, California Resources Agency

**Graduate Advisors and Postdoctoral Sponsors:** Robert T. Paine, University of Washington

**Thesis Advisor and Postgraduate-Scholar Sponsor:** Kama Almasi, University of Wisconsin Stevens Point; William M. Beckon, Fish and Wildlife Service; Michael Byrne, Chief Geographic Information Officer, State of California; Susan Cameron, Harvard; Miguel Cisneros, PESCA and Conservation International, Mexico; Valerie Connor, California State Water Resources Control Board; Rosamond Cook, Colorado State University; Deanne DiPietro, Sonoma Ecology Center; Mark Dybdahl, Washington State University; Martha Hoopes, Mount Holyoke College; Kimberly Keating, Biological Resources Division, USGS; Kaylene Keller, NOAA; Jeffrey Kennedy, University of California, Davis; Michael M. Judge, Manhattan College; Robert Meese, University of California, Davis; Christine Meynard, University of Montpellier (France); David Olson, World Wildlife Fund; Raymond Sauvajot, National Park Service; William Sydeman, Farallon Institute for Advanced Ecosystem Research; Andrea Thode, University of Northern Arizona; James Thorne, University of California, Davis; Emma Underwood, University of California, Davis; Joshua Viers, University of California, Davis; Stephen Wing, University of Otago, New Zealand