CA LCC Statement of Interest
Strategic Plan Implementation
Science Delivery for Existing CA LCC Projects

Section 1 – General Information

Title of Existing Project: Sea-level rise modeling across the California salt marsh gradient for resource managers: evaluation of methodology
Title of Proposed Augmentation: Science communication and delivery of nearshore climate change impacts to natural resource managers in support of decision-making
Project Lead and Organization: Dr. John Y. Takekawa, USGS Western Ecological Research Center; 505 Azuar Dr., Vallejo, CA 94592; tel: 707/562-2000; email: john_takekawa@usgs.gov
Ecoregions: Bay-Delta, Central Coast, Marine, North Coast, South Coast

Section 2 – Partners and Management Relevance

Site Partners: *NOAA NERR (J. Crooks), San Diego NWRs (A. Yuen), San Francisco Bay NWRs (A. Morkill), CDFW Eco. Reserves (C. Navarro), State Parks (A. Gillespie), Marin County (W. Carmen), NBVC Pt. Mugu (M. Ruane);* **Methods Development:** *FWS Inv. & Mon., R8 (K. Laing, G. Block) & R1 (K. Kilbride, B. Root);* **NW Outreach:** *North Pacific LCC (M. Mahaffy); SFB Joint Venture;* **Regional Coordination:** *South Bay Salt Pond Restoration Project;* **Research Partner:** *UC Davis, Cen. Spatial Tech. & Remote Sensing.*

Management Needs Addressed by Science Products: The USGS Western Ecological Research Center program on Coastal Ecosystems Response to Climate Change (CERCC) has been supported by the CALCC, NPLCC, FWS I&M (R8,R1), and DOI SWCSC and NWCSC. We use a bottom-up approach to assess vulnerability of nearshore habitats from climate change. Our goal is to use detailed site data and analyses of elevation, inundation, tidal range, and plant communities to examine effects on wildlife and nearshore habitats from marshes to mudflats. By collecting extensive field data and developing site-specific SLR response models, our approach informs management decisions at a local level with data relevant for parcel-based management decisions. However, the greatest benefit will be gained from these studies if they are closely integrated into local management and planning activities. Thus, we propose to facilitate CALCC science communication and outreach by bringing the USGS CERCC results to the managers through conducting in-person workshops in their communities to present our initial results, identify their climate science needs, and introduce a decision-support tool.

How Project Implements CA LCC Strategic Plan: Our proposal fulfills Obj. 1, strategy 2–5, to facilitate collaborations that address high priority conservation needs for landscape conservation under sea-level rise scenarios. This program is jointly funded by the USGS SWCSC (FY13-14) where additional funds will facilitate science delivery of those products. In addition, we will expand access and translation of sea-level rise research to multiple resource managers which will improve collaboration between groups. Our integrative multi-discipline research team will perform outreach which will achieve steps towards *Climate Smart Conservation* for coastal land managers by providing the science they need to 'focus conservation goals on future conditions' and the development of adaptive and collaborative approaches across their geographical areas (Obj. 2). We will discuss how results may be integrated into long-term planning documents (i.e. refuge Comprehensive Conservation Plans), and we will learn about, and provide additional information for, local planning decisions and goals.

Section 3 – Work Summary

Status of Existing Product Deliverables and Outreach: (1) Meetings: (2012, 2013) SFB USFWS All Hands Meeting, SD USFWS update meeting (2011, 2012), and R8 FWS I&M progress meeting (2012); (2) Updates: Takekawa, Thorne et al. 2012: Evaluating the Effects of Projected Sea-level Rise on Tidal Marsh Habitats; (3) Result Dissemination: B. Collins & A. Yuen (SDNWR) synthesized elevation, vegetation data to inform marsh restoration targets, K. Gilligan (SBNWR) summarized inundation and elevation to inform marsh culvert augmentation project; (4) Update interview with CA LCC Climate Commons with links to reports; (5) Takekawa et al. 2012. Final report for

sea-level rise response modeling for San Francisco Bay estuary tidal marshes. USGS Open File Report (Data on USB Drive sent to each site manager); (6) CERCC Webpage: *http://www.werc.usgs.gov/SFBaySLR.*

Description of Additional Work: To facilitate communication and outreach of our CERCC results, we will convene managers, biologists, Tribes, and other important decision makers and partners and host in-person workshops with stakeholders in our coastal study site areas. Our objectives are to: (1) Disseminate site-specific baseline data and modeling results, reveal coast-wide trends, and identify data gaps; (2) Identify how local climate science results may be incorporated into habitat conservation, planning, and adaptation strategies; and (3) Recruit stakeholder involvement in developing a decision-making tool (Envision). Recent travel budget restrictions have limited the ability of many managers to attend meetings and learn about recent climate science studies. Our team proposes to bring results to the field by providing workshops at field sites to facilitate interactions that are mission-critical. Thus, rather than burdening managers to obtain travel exemptions, we will develop a "road-show" to travel to coastal areas for 2-3 day discussions.

Value Added to Existing Work: With help of our field site partners, we would offer workshops in each of the 3-6 areas to present our study results and solicit visits with managers over 2-3 days. The advantage to our "road-show" approach is that each meeting would be tailored to a site to facilitate in-depth discussions. In addition, we will recruit stakeholder involvement at 1-3 areas to develop a decision-making tool (Envision: Bolte et al. 2007) that incorporates climate change projections in management alternatives. Stakeholder engagement will help to: 1) develop a conceptual map of the system, and 2) test 'what-if' questions (*e.g.* "What are the top two drivers of change in the system?" or "What are the primary management tools you control that really make a difference?"). We have established 7 sites in the CALCC: Tijuana NERR, Newport Bay EcoReserve, Seal Beach NWR, NBVC Pt. Mugu, Morro Bay State Park, Bolinas Lagoon, and San Pablo Bay NWR. In addition, we have 9 sites spanning the Northwest and 13 sites in San Francisco Bay. A complementary proposal to enhance science communication and outreach for Northwest nearshore managers and stakeholders is in review with the NPLCC (FY13 RFP: M. Mahaffy).

Staff Involvement and Capabilities: Mr. Kevin Buffington, PhD Student, *Oregon State University, kevin.buffington@oregonstate.edu, 920/915-4524; Envision development, workshops;* Dr. Susan De La Cruz, Coastal Ecologist, *USGS Western Ecological Research Center, sdelacruz@usgs.gov; analysis, workshops;* Dr. Bruce Dugger, Assoc. Prof., *Oregon State University, bruce.dugger@oregonstate.edu; presentations, Envision development, workshops;* Mr. Chase Freeman, Coordinator, *USGS Western Ecological Research Center, cfreeman@usgs.gov; GIS analysis, workshops;* Dr. Karen Thorne, Research Ecologist, USGS CA LCC Science Advisor, *USGS Western Ecological Research Center, kthorne@usgs.gov; analysis, workshops*

Timeline for Deliverables:
The study will begin in FY14 (fall 2013). Contracting will be completed by the end of FY13. Workshop scheduling (Obj 1) and individual manager visits (Obj 2) will be initiated in the fall of 2013. Questionnaires will be developed for the Envision model (Obj 3). A final report will be completed in FY15. Meeting updates will be provided to local land managers, CALCC, SWCSC, and interested parties. Results will be made available at The Society of Wetland Scientist annual meetings and webinars hosted by the CALCC and NPLCC.

Table 1. Timeline

	FY13	FY14				FY15			
Task	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Contracting	X								
Objective 1									
Dissemination Workshops		X	X	X	X	X			
Objective 2									
Manager Individual Visits		X	X	X	X	X			
Objective 3									
Questionnaires		X	X	X	X	X			
Model Development				X	X	X	X		
Report prep and writing							X	X	X

Literature Cited:

Bolte, J. P., Hulse, D. W., Gregory, S. V., & Smith, C. (2007). Modeling biocomplexity – actors, landscapes and alternative futures. Environmental Modeling & Software, 22(5), 570–579. doi:10.1016/j.envsoft.2005.12.033

Section 4 – Budget

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(s) Contribution(s) (non-monetary value/in-kind)	**Total**
Salaries	39,403	3,600	35,800	78,803
Supplies	600	300	1,200	2,100
Overhead[a]	9,996	-	-	9,996
Equipment	-	-	6,000	6,000
Other (specify)	-	-	-	0
Total	50,000	3,900	43,000	96,900

a = Indirect cost calculated at DOI client 24.99% for FY13

Intra-agency agreement modification from USFWS to USGS. Grad stipend to OSU under a USGS research work order. USGS partner matching contributions for salaries and supplies. In-kind contribution represents CERCC data, analysis, and synthesis. Non-monetary partner contributions include estimates for manager's time and CERCC program salary support from other grants.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay National Wildlife Refuge Complex
1 Marshlands Road
Fremont, California 94555

May 7, 2013

Rebecca Fris, Science Coordinator
California Landscape Conservation Cooperative
3020 State University Dr. E. Suite 2007
Sacramento, CA 95819

RE: Letter of Support for the CA LCC FY13 RFP

Dear Ms Fris:

The USFWS San Francisco Bay National Wildlife Refuge Complex fully supports the U.S. Geological Survey Western Ecological Research Center (WERC) in their proposal entitled, "Science communication and delivery of nearshore climate change impacts to natural resource managers to support decision-making." This proposal provides an opportunity for linking USGS scientists with Refuge Managers as well as other important decision makers and applying sound science to both local habitat management decisions and educational and outreach messaging about climate change. In-person meetings are invaluable to disseminate, translate, and discuss the ramifications of WERC's recent sea-level rise modeling results for our coastal wildlife refuges. Due to restrictions in travel budgets, this funding will facilitate the creation of an informational workshop at our Refuge headquarters with targeted managers, biologists, interpretive specialists, and public outreach specialists, as well as our conservation partners. WERC's applied research is focused effectively at the local and regional level and provides information that can be used to identify and protect sensitive coastal resources, develop management strategies to conserve endangered species and their habitats, and engage our partners and the public as stewards of these resources in the face of climate change.

The proposed delivery and communication of the USGS science products will improve our understanding of their results and will address important information needs about how our tidal marsh and mudflat habitats will be impacted by climate change. We hope that these in-person interactions will identify next steps and information gaps for future work and foster our science-management partnership. We strongly encourage the CA LCC program to fund this effort.

Sincerely,

Anne Morkill
Refuge Complex Manager

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United States Department of the Interior
FISH AND WILDLIFE SERVICE
San Diego National Wildlife Refuge Complex
1080 Gunpowder Point Drive
Chula Vista, CA 91910

May 15, 2013

Rebecca Fris, Science Coordinator
California Landscape Conservation Cooperative
3020 State University Dr. E. Suite 2007
Sacramento, CA 95819

Re: Letter of Support for the CA LCC FY13 RFP

Dear Ms Fris:

The San Diego Bay National Wildlife Refuge Complex fully supports the U.S. Geological Survey, Western Ecological Research Center in their proposal entitled, "Science communication and delivery of nearshore climate change impacts to natural resource managers to support decision-making". This proposal provides an opportunity to link our resource management agency with USGS scientist as well as other important decision makers to apply results to our local management decisions. In-person meetings are invaluable to translate and disseminate their important sea-level rise results for our coastal wildlife refuges. Due to restrictions in travel budgets, this funding will facilitate the creation of an information workshop at our headquarters with target biologist as well as other important local decision makers. This applied research is at the local and regional level and provides information that can be used to help develop management strategies that preserve sensitive coastal resources and endangered species in light of climate change.

The proposed delivery and communication of the USGS science products will improve our understanding of their results and will address important information needs about how our salt marsh habitats will be impacted by climate change. We hope that these in-person interactions will identify next steps and information gaps for future work and foster our science-manager partnership. We strongly encourage the CA LCC program to fund this effort.

Sincerely,

Andrew Yuen
Project Leader

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