

# Humboldt Bay Initiative

## 2011 Update and Accomplishments

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The Humboldt Bay Initiative (HBI) is a diverse, multidisciplinary team formed in 2007 to develop an ecosystem based approach to coastal resource management. HBI completed a formal strategic planning process in 2009. Six priority ecosystem-based management (EBM) strategies were developed based on identification of “EBM targets” and threats to those targets. Two strategies have been implemented: Strategy A: Establish the Humboldt Bay Initiative and Strategy B: Coordinated Response to Coastal and Climate Change. The remaining four strategies are in various planning phases or not yet active. Meeting notes, documents and other project information is available at:

<http://ca-sgep.ucsd.edu/focus-areas/healthy-coastal-marine-ecosystems/humboldt-bay-ebm>

### Strategy A: Establish the Humboldt Bay Initiative

The Humboldt Bay Initiative will organize initially as a non-profit organization or as an institute at HSU. HBI will develop stable funding while continuing to coordinate the ongoing EBM effort, and implement HBI strategies by taking on the specific roles that are not feasible or appropriate for existing entities and partners in the project area.

### HBI Non-Profit: Coastal Ecosystems Institute of Northern California (CEINC)

A non-profit entity has been organized and is still in the initial stages:

- CEINC was formed to provide a vehicle to seek and receive grant and other funding for locally prioritized watershed and bay ecosystem related projects and to administer projects of the ad-hoc Humboldt Bay Initiative.

- Board of Directors: F. Shaughnessy, Biology Department, HSU; S. Kramer, HT Harvey & Associates; J. Anderson, Northern Hydrology; D. Mierau, CalTrout; R. Price-Hall, City of Trinidad. Technical Liaison: S. Schlosser, California Sea Grant
- The purpose of CEINC is
  - To develop, integrate, and disseminate scientific information about coastal ecosystems
  - To advance communication, collaboration, and activities that enhance ecosystem health
  - To promote ecosystem-based management
- The CEINC Board of Directors is currently developing initial projects and proposals which are based on priorities identified in *Humboldt Bay Initiative Strategic Plan: Adaptive Management in a Changing World*. These include:
  - State of Humboldt Bay Report
  - Responses of targeted estuarine indicators to management actions and climate change
  - Develop a model to show physical effects from altered temperature, rainfall and sea level on Humboldt Bay infrastructure, species and habitat.
  - Baylands Economic Study: Economic valuation of Humboldt Bay salt marsh habitat in Dungeness crab production to inform resource and planning decisions in and around Humboldt Bay.
  - Local data and information portal



### **Strategy B: Coordinated Response to Climate Change**

HBI will synthesize and provide the most recent information needed for understanding the impact of climate variability and change on biological and physical properties of the ecosystem, and the implications for infrastructure and human activities.

## **Coastal and Climate Change Adaptation**

Around the world communities and governments recognize the need for integrated planning and management for potential and expected climate effects. Because coastal ecosystems provide immense value to humans, communities expend considerable resources on managing and restoring these ecosystems. The HBI climate strategy takes an ecosystem-based approach to climate adaptation:

- Gathering and synthesizing information
- Using models to develop forecasts and scenarios
- Providing technical assistance, and relevant scientific information
- Assisting with policy analysis and development

Humboldt Bay Initiative's role in this strategy is to provide a forum for addressing challenges in stewardship of the changing coastal environment. HBI is accomplishing this through leveraging existing strengths and resources, and developing new diverse collaborations engaging scientists, managers, minority and disadvantaged populations, students, land owners, businesses, NGOs, tribes, and others.

- ***Humboldt Bay Sea Level Rise Synthesis and Community Planning:*** Characterize existing data sets relevant to sea level rise adaptation and planning, summarize data set location and access, and describe modeling tools available.
  - Project Team: USFWS Coastal Program (P. Golightly), Pacific Watershed Associates (W. Gilkerson), California Sea Grant (S. Schlosser)
  - Project Timeline and funding: Sept. 2010 to Sept. 2012, USFWS Coastal Program
  - Project Deliverables
    - Three stakeholder workshops to identify data sets
    - EXCEL spread sheet and report describing data sets: themes, location, and availability. Contact Susan Schlosser for more information (sschlosser@ucsd.edu)
    - Workshop was held Nov. 10, 2011 to present the results
    - Final Report incorporating workshop input.
- ***Building Local Capacity for Climate Adaptation Planning:*** Incorporating the Use of Tools into Local Planning Processes – This demonstration project will scope local management issues, develop management questions, identify geospatial tools to analyze and evaluate the management issues. The project will use some of the data sets from the Humboldt Bay Sea Level Rise Synthesis and Community Planning project. The concept is to familiarize the Humboldt Bay Initiative Project Team and others with using tools for analysis of complex questions.
  - Project Team: Ecosystem-based Management Tools Network (J. Rozum, P. Crist, I. Varley, S. Carr), Humboldt Bay National Wildlife Refuge (E. Nelson, K. Griggs), West Coast EBM Network (J. Hansen), California Sea Grant (S. Schlosser)
  - Project Timeline and funding: March 2011 to March 2012, Keith Campbell Foundation for the Environment, California Sea Grant
  - Project Deliverables:
    - A toolkit workflow that supports climate adaptation from data and science information to outputs for local planning.
    - Identification of appropriate tools for the local community to use in climate change adaptation planning
    - Workshop with training and demonstration of the toolkit
- ***Humboldt Bay Initiative - Climate Change Symposium***  
– September 29, 2011
  - Project Team: California Sea Grant (S. Schlosser, D. Marshall), City of Trinidad (R. Price-Hall)
  - Presentations about global and local climate effects with implications for climate change adaptation



- Geology is Destiny – Michael J. Furness, U. S. Forest Service
- California's Vulnerability to Climate Change –Dan Cayan, Scripps Institute of Oceanography, University of California San Diego
- Visualizing sea-level rise and potential impacts to coastal wetlands of California – Monique Myers, California Sea Grant

### **Strategy C: Coordinated Response to Invasive Species:**

In order to facilitate an invasive species early detection, rapid response strategy, HBI will promote development of a regional database that integrates the best available scientific information on current and potential invasive species, and control methods.



Trinidad to Humboldt Bay Watershed  
 Coordinators: Secured 3-year grant funding from the Department of Conservation for 2 part time watershed coordinators. B. Price-Hall and C. Benson will work with HBI partners, Humboldt Bay and Mad River stakeholders to take a coordinated approach to invasive species management in the region.

### **Strategy D: Study and Control of Sediment**

Complete a sediment study in freshwater, estuarine and bay habitats and develop a sediment circulation model for Humboldt Bay to provide key information needed by scientists, managers, and others in the community.

- Several proposals have been developed and submitted but none have been funded to date.
  - Work Group: Northern Hydrology (J. Anderson), Biology Department, HSU (F. Shaughnessy), California Sea Grant (S. Schlosser), RWQCB (A. White), DFG (V. Frey), NMFS (E. Bjorksted), Scripps Institute of Oceanography (D. Cayan)
  - Study effects of turbidity and sediment on Humboldt Bay ecological functions and physical processes
  - Study present and future patterns of suspended sediment, aquatic light and productivity in Humboldt Bay



### Strategy E: Promote Sustainable Development

Reduce the impacts of roads and development on water quality and the ecosystem through promotion of water quality best management practices, including low impact development (LID) and protection of streams, wetlands and open space.

- Work with agencies, watershed groups, and other partnerships to improve water quality through implementation of pollution reduction strategies and best management practices
  - Work Group: City of Trinidad (B. Price-Hall), City of Arcata (J. Neander), City of Eureka (M. Slattery), Humboldt Baykeeper (J. Kalt) and members of the North Coast Stormwater Coalition (NCSC)
  - Developed Storm Water education and outreach materials targeted for residents and businesses (updated *Humboldt Bay Starts on Your Street*, and dog waste brochures)
  - Promote use of LID technologies and other non-point source runoff best management practices to improve water quality and storm water management

### Strategy F: Support Integrated Forest Management

Assist with coordination of long term forest management planning, developing community supported forest goals and facilitating refinement of the regulatory process to meet the needs of agencies, the timber industry and the community.

- No activity by HBI on this strategy.

### HBI Partner Activities - Related Projects with some HBI involvement or participation

- ***Humboldt Bay National Wildlife Refuge Sea Level Rise Modeling***: A Bottom-up approach to evaluating sea-level rise effects at the parcel scale. Project will develop baseline data to understand impact of rising sea level for local management and to detect changes into the future from climate change.
  - Project Team
    - Leaders: J. Takekawa, I. Woo, K. Thorne – USGS, Western Ecological Research Center, San Francisco Bay Field Station.
    - Collaborators: A. Pickart, E. Nelson, K. Griggs, P. Golightly, N. Athern, D. Van Dyke – USFWS, Humboldt Bay Area
  - Project Timeline - Aug. 2011 to Sept 2012





- Project Deliverables
  - High resolution Digital Elevation Models of selected marshes in the Humboldt Bay National Wildlife Refuge
  - Salmon Creek Unit
  - Lanphere Dunes Unit
  - Table Bluff Unit
  - Annual water inundation and salinity patterns
  - Detailed GIS vegetation maps showing community structure
  - Wildlife species presence and abundance summary
- ***Humboldt Bay Vertical Reference System Work Group:*** The project will provide an accurate measurement of sea level and terrestrial elevation. An accurate elevation data set is essential to all sea level rise forecasting, estuarine restoration planning, and hazard preparation.
  - Project Team: Cascadia GeoScience (J. Patton, T. Leroy, T. Williams, J. Stallman), Pacific Watershed Associates (W. Gilkerson), Northern Hydrology (J. Anderson), Oregon State University (R. Weldon), California Sea Grant (S. Schlosser), USFWS Coastal Program (P. Golightly), CalTrans (D. Campbell), Humboldt State University (M. Hemphill-Haley, F. Shaughnessy)
  - Project timeline and funding: Sept. 2012 to Sept. 2018, North Pacific Landscape Conservation Cooperative
  - Deliverables
    - Foundational data and information for rising sea level forecasts, scenarios and models
    - Precise tidal benchmark locations will be provided to the NOAA Geodetic Survey via their “blue book” process.
    - Precise sea level estimates from tide gauge data
    - Data available on Central and Northern California Ocean Observing System data portal
    - Estimates of ongoing tectonic deformation
- ***Humboldt Bay Shoreline Habitat Inventory and Mapping:*** shoreline assessment to establish natural limits of tide water inundation at current sea level and evaluation of shoreline response to expected rising sea level for 2050 and 2100.
  - Project Team: Trinity Associates (A. Laird), McBain and Trush (B. Owell)
  - Project Timeline: Nov. 2010 to June 2012
  - Project Deliverables
    - Delineation of natural and artificial shoreline area and location
    - Detailed tidal habitat mapping adjacent to shoreline
    - Detailed report with shoreline assessment and GIS analysis

