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Brown-Nichols Science Award Nomination

Nominee:

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Nominated by:

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Information about Dr. Kathy Boyer:

Dr. Katharyn Boyer has collaborated on substantial scientific, management, policy, and educational projects since coming to San Francisco State University in 2005. I was pleased to have met her when she first came to San Francisco Bay, and I was working for the non-profit Save San Francisco Bay Association (aka "Save The Bay"). Kathy and I met to discuss a potential collaboration to connect student and adult volunteers from Save The Bay with eelgrass bed field monitoring work that her lab was doing. I remember feeling greatly inspired by Kathy as soon as we met; while we worked together with volunteers in the bay; and it has continued throughout the past seven years that we have worked together on a variety of projects. Kathy has a strong scientific background, and an insatiable amount of positive energy that serves her well, from multi-tasking to student office hours to mudflat slogging. She juggles an enormous number of activities from teaching, providing input on regional management policies, to implementing on-the-ground projects. Kathy has a long history of participating in and leading multiple keystone studies of Southern California and San Francisco Bay tidal marsh, seagrass, and algal beds; always with the goal of testing experimental applied restoration techniques in a thoughtful and well-documented approach- so as to gain information and be able to share data with her colleagues and build information for related restoration planning efforts. She is passionate about teaching, inspiring the next generation of scientists, and using estuaries as living laboratories to conduct experimental approaches to habitat restoration. She always looks towards priority key regional research questions, gathering information, and doing a clear analysis before making scientific conclusions. She is an extremely dedicated and likeable person who is passionate about the natural environment, science, people, and teaching.

She is broadly interested in the ecology of coastal habitats, with a focus on tidal marshes and seagrass beds. Her lab works at the interface of basic and applied ecology, with the philosophy that restoration and conservation activities will be most effective when there is an understanding of the processes that govern natural communities. Her work is largely experimental, conducted in the field, bay, greenhouse, and mesocosm settings.

Research: Kathy is involved in multiple large research efforts in San Francisco Bay, and has published multiple publications on San Francisco Bay tidal marsh and eelgrass bed dynamics, genetics, restoration approaches. She is the Lead Scientist for the San Francisco Bay Living Shorelines: Near-shore Linkages

Project, developing innovative multi-habitat shoreline restoration and protection designs as potential climate change adaptation planning tools. She recently began new research on sago pondweed habitats in the Delta. Her varied graduate student research includes mapping and understanding populations of perennial pepperweed, invasive Spartina, innovative work on revegetation approaches to protect native habitats, and other experimental restoration projects.

Management/ Policy: Kathy wrote the Eelgrass Opportunities and Constraints Report Appendix for the 2010 Subtidal Habitat Goals Report, which included a comprehensive review of all research and restoration of eelgrass to date in San Francisco Bay, and management recommendations for how to best protect and improve habitat over the next 50 years. She also worked as a collaborative committee member who contributed greatly to the general scientific basis for the project. Kathy has given scientific input on NMFS eelgrass policies, was a critical participant in the eelgrass group of the Cosco Busan Natural Resource Damage Assessment, and has targeted her invasive species research work on the priority key questions that managers face with regional invasive species projects such as the San Francisco Estuary Invasive Spartina Project. This partial list speaks volumes about Kathy's capacities.

Collaboration and Education: This is an area where Kathy truly excels and leverages her strong science and management work. Kathy consistently facilitates good science by focusing her project work on experimental, replicable restoration designs based on frequent, high quality monitoring and reporting so that data is of high quality and is useful for others. She has mentored and involved dozens of high school students and graduate students, and collaborated with multiple non-profits including Save The Bay, The Nature Conservancy, Bay Nature Magazine, and others. She has been featured in documentary films created by high school students, been included in newspaper, magazine, tv and radio interviews, and is also featured in the newly released UC Press Natural History of San Francisco Bay.

Kathy's current research includes the following topics:

- Habitat characteristics of brackish Submerged Aquatic Vegetation in the San Francisco Estuary
- Living Shorelines: the role of subtidal features in providing habitat and shoreline protection
- Depth and herbivory effects on eelgrass growth and life history patterns
- Factors controlling establishment of rare plants in tidal marshes
- The role of nitrogen with increased water clarity in eelgrass beds
- After the spray: legacy effects of invasive hybrid cordgrass on the restoration of native cordgrass
- Trophic interactions of native fish and non-native mesograzers as mediated by habitat complexity in eelgrass beds
- The potential for spread and impacts of non-native Algerian sea lavender in San Francisco Bay natural and restored marshes
- Experimental approaches toward successful restoration of eelgrass in San Francisco Bay
- Biodiversity and ecosystem function in marine systems: environmental context and stability of macroalgal communities
- Effects of nitrogen on marsh species richness and dominance in an increasingly saline environment
- The Seven Site Survey: seasonal and spatial patterns in San Francisco Bay eelgrass beds
- Invasion of perennial pepperweed in San Francisco Bay: evaluating impacts, potential for spread, and control mechanisms

In short, Kathy is highly collaborative and advances protection, restoration, and research in the Estuary!