

## **DELIVERABLES:**

### **Publications:**

#### **In Preparation and Review:**

##### *In preparation:*

- One to two articles on food web analyses using the stable isotope results (in preparation)
- One article on salinity trends in the SF Bay Estuary wetlands (in preparation)
- One article on plant productivity and decomposition rates (in preparation)
- One article on seed banks (in preparation, based on SFSU MS thesis)
- One article on the effect of increased inundation rates on plant growth from field transplant study (in preparation)
- One article on inundation-salinity interactions based on another just completed SFSU MS thesis
- One article on wetland sedimentation dynamics (in preparation, including data from other sites in the estuary)
- One article on updated spatial modeling efforts focusing on organic matter accumulation (in preparation)
- Others as we finish data analysis.

##### *In review:*

- Vasey, M.C., V.T. Parker, L.M. Schile, J.C. Callaway & E.R. Herbert. *In review*. Vegetation of the tidal wetlands in SF Bay-Delta. San Francisco Estuary and Watershed Science.

#### **In Press or Published:**

##### **2012**

- Callaway, J.C. & V.T. Parker. 2012. Current issues in tidal marsh restoration. In: Tidal Salt Marshes of the San Francisco Bay Estuary: ecology, restoration, preservation, pp. 253-262. A. Palaima (ed.) University of California Press, Berkeley.
- Callaway, J.C., A.B. Borde, H.L. Diefenderfer, V.T. Parker, J.M. Rybczyk, & R.M. Thom. 2012. Pacific Coast tidal wetlands. Pages 103-116 in D.P. Batzer and A.H. Baldwin, editors. Wetland habitats of North America: Ecology and conservation concerns. University of California Press, Berkeley, CA.
- Parker, V.T., J.C. Callaway, L.M. Schile, M.C. Vasey & E. Herbert. 2012a. Tidal marshes in the context of climate change. In: Tidal Salt Marshes of the San Francisco Bay Estuary: ecology, restoration, preservation, pp. 87-94. A. Palaima (ed.) University of California Press, Berkeley.
- Parker, V.T., J.C. Callaway, L.M. Schile, M.C. Vasey & E. Herbert. 2012b. Tidal vegetation: spatial and temporal dynamics. In: Tidal Salt Marshes of the San Francisco Bay Estuary: ecology, restoration, preservation, pp. 97-111. A. Palaima (ed.) University of California Press, Berkeley.

##### **2011**

- Callaway, J.C., V.T. Parker, L.M. Schile, M.C. Vasey & E.R. Herbert. 2011a. Tidal wetland restoration in the San Francisco Bay: History and current issues. In: Ferner, M.C.,

- editor. A profile of the San Francisco Bay National Estuarine Research Reserve, pp. 42-57. San Francisco Bay National Estuarine Research Reserve. San Francisco, CA. 345 p. plus appendix.
- Callaway, J.C., V.T. Parker, M.C. Vasey, L.M. Schile, and E.R. Herbert. 2011b. Tidal wetland restoration in San Francisco Bay: History and current issues. *San Francisco Estuary and Watershed Science* 9(3) <http://escholarship.org/uc/item/5dd3n9x3>
- Diggory, Z.E. and V.T. Parker. 2011. Seed supply and revegetation dynamics at restored tidal marshes, Napa River, CA. *Restoration Ecology* 19, No. 101: 121–130.
- Parker, V.T., J.C. Callaway, L.M. Schile, M.C. Vasey, and E.R. Herbert. 2011a. Climate change and San Francisco Bay-Delta tidal wetlands. *San Francisco Estuary and Watershed Science* 9(3). <http://www.escholarship.org/uc/item/8j20685w>
- Parker, V.T., J.C. Callaway, L.M. Schile, M.C. Vasey & E.R. Herbert. 2011b. Climate change and San Francisco Bay-Delta tidal wetlands. In: Ferner, M.C., editor. A profile of the San Francisco Bay National Estuarine Research Reserve, pp. 171-188. San Francisco Bay National Estuarine Research Reserve. San Francisco, CA. 345 p. plus appendix.
- Parker, V.T., E.R. Herbert, J.C. Callaway, L.M. Schile, and M.C. Vasey. 2011c. Climate change impacts on San Francisco Bay-Delta tidal wetlands. In: Willoughby, J.W., B.K. Orr, K.A. Schierenbeck, and N.J. Jensen (eds.) *Strategies and Solutions*, pp. 239-244. CNPS, Sacramento, CA
- Parker, V.T., L.M. Schile, M.C. Vasey and J.C. Callaway. 2011d. Do gradient-directed transects work at small scales: A test using tidal wetland vegetation sampling design. *Ecosphere* 2: art99. [doi:10.1890/ES11-00151.1]
- Schile L.M., Callaway J.C., Parker V.T., Vasey M.C. 2011. Salinity and inundation influence productivity of the halophytic plant *Sarcocornia pacifica*. *Wetlands* 31(6): 1165-1174.
- Stralberg, D., M. Brennan, J.C. Callaway, J.K. Wood, L.M. Schile, D. Jonsomjit, M. Kelly, V.T. Parker and S. Crooks. 2011. Evaluating tidal marsh sustainability in the face of sea-level rise: a hybrid modeling approach applied to San Francisco Bay. *PLoS One* 6(11): e27388. doi:10.1371/journal.pone.0027388
- Tuxen, K, D. Stralberg, S. Siegel, L. Schile, V.T. Parker, M. Vasey, J.C. Callaway, and M. Kelly. 2011. Tidal marsh vegetation mapping using high-resolution aerial photography and a hybrid pixel-based classification approach. *Wetlands Ecology and Management* 19: 141-157. (mostly based on previous IRWM CalFed project)
- Vasey, M.C., V.T. Parker, L.M. Schile, J.C. Callaway & E.R. Herbert. 2011. Tidal wetland vegetation in the San Francisco Bay-Delta Estuary. In: Ferner, M.C., editor. A profile of the San Francisco Bay National Estuarine Research Reserve, pp. 58-78. San Francisco Bay National Estuarine Research Reserve. San Francisco, CA. 345 p. plus appendix.

### **Earlier publications:**

- Callaway, J.C., V. T. Parker, M. C. Vasey, L. M. Schile. 2007. Emerging issues for the restoration of tidal marsh ecosystems in the context of predicted climate change. *Madroño* 54 (3): 234–248.

Leck, M.A., A. Baldwin, V.T. Parker, L.M. Schile, and D. Whigham. 2009. Plant communities of tidal freshwater wetlands of the continental USA and Canada, pp. 41-58. *In: A. Barendregt, D.F. Whigham and A.H. Baldwin. (eds.) Tidal Freshwater Wetlands*. Backhuys Publ; Leiden, The Netherlands. (mostly based on previous IRWM CalFed work and early work on this project)

## **Presentations:**

### **2011**

- Callaway, JC. Implications of shifting sediments and salinities for San Francisco Bay tidal wetlands. 2011 Society of Wetland Science Conference. Prague, Czech Republic.
- Callaway, JC, and VT Parker. Suisun Marsh in the 21<sup>st</sup> Century: A landscape of change & opportunity. Symposium; Center for Aquatic Biology and Aquaculture; sponsored by Delta Science Program and Center for Watershed Sciences. – *Panelist* for afternoon session on Suisun Marsh vegetation
- Julian Wood, Sam Veloz, Leo Salas, Nadav Nur, Lisa Schile, John Callaway, V.T. Parker, Grant Ballard. Spatial Climate Change Scenarios for San Francisco Bay: Tidal Marsh Plant and Bird Communities. May 2011; Headwaters to Ocean Conference, San Diego; sponsored by California Shore and Beach Preservation Association, California Coastal Coalition, Southern California Wetlands Recovery Project, Society of Wetland Scientists - Western Chapter and the Tijuana River National Estuarine Research Reserve Coastal Training Program.
- Parker, V.T. September 2011: Modeling for sustainability of tidal marshes: workshop. Workshop participant and panelist. 2 presentations, 1 poster; Oakland, CA.
- Parker, V.T., J.C. Callaway, E. Borgnis, E. Herbert, J. Vandenberg, V.T. Vredenburg. Tidal wetlands link to pelagic food webs in the SF Bay-Delta Estuary. September 2011: State of the Estuary Meeting, 2011. Oakland, CA.
- Bishop, S. and V.T. Parker. Determining climate change effects on two dominant tidal marsh plant species. September 2011: State of the Estuary Meeting, 2011. Oakland, CA.
- Schile, L. M., J.C. Callaway, and M. Kelly. Effects of simulated sea-level rise on the growth of two tidal wetland plant species. September 2011: State of the Estuary Meeting, 2011. Oakland, CA. (*Winner of Best Student Poster award*).

### **2010**

- Herbert, EH, VT Parker, JC Callaway, EL Borgnis, and LM Schile. Vegetation biomass dynamics across an estuarine salinity gradient: organic matter contributions of tidal wetland accretion. *Poster*. 2010 Society of Wetland Science Conference. Salt Lake City, UT.
- Borgnis E.L., Callaway J.C., Parker V.T., Herbert, E.R., Schile L.M., Turner R.E., Milan C.S., Drexler J.Z. Sediment dynamics and elevation changes in tidal wetlands of the San Francisco Bay Estuary in face of a rising tide. 2010 Society of Wetland Science Conference. Salt Lake City, UT.
- Schile, LM, MC Vasey, VT Parker, JC Callaway, ER Herbert, and NM Kelly. Tidal wetland vegetation diversity gradients across and within sites in the San Francisco Bay Estuary. *Poster*. 2010 CalFed Science Conference. Sacramento, CA.

- Parker, V.T. The once and future wetlands: Will estuarine tidal wetlands survive climate change? California Estuarine Research Society & Western Section-Society of Wetland Scientists Annual Meeting, March 2010, University of San Diego, San Diego, CA. *Invited Keynote Speaker*.
- Stralberg, D., J. Wood, M. Fitzgibbon, D. Jongsomjit, S. Crooks, M. Brennan, L. Schile, J. Callaway, V.T. Parker. Spatial climate change scenarios for San Francisco Bay Tidal marsh habitats. September 2010, Bay-Delta Authority Science Conference, Sacramento, CA
- Callaway, J., V.T. Parker, L. Schile, E. Herbert, E. Borgnis, L. Porcella. Sediment dynamics at the island ponds: indications from early salt pond restoration. September 2010, Bay-Delta Authority Science Conference, Sacramento, CA
- Parker, V.T., J. Callaway, E. Herbert, L. Schile, V. Vredenburg, M. Vasey, E. Borgnis, M. Kelly, J. Van Den Berg. How climate change may impact San Francisco Bay Delta wetlands and their links to pelagic food webs. September 2010, Bay-Delta Authority Science Conference, Sacramento, CA
- Schile, L., M. Vasey, V.T. Parker, J. Callaway, E. Herbert, N.M. Kelly. Tidal wetland vegetation diversity gradients across and within sites in the San Francisco Bay Estuary. September 2010, Bay-Delta Authority Science Conference, Sacramento, CA
- Borgnis, E., V.T. Parker, J. Callaway, E. Herbert, L. Schile. Below-ground biomass dynamics across the San Francisco Bay-Delta: Organic and mineral matter contributions to tidal wetland accretion. September 2010, Bay-Delta Authority Science Conference, Sacramento, CA

## 2009

- Parker, V.T., J. Callaway, E. Herbert, L. Schile, M. Vasey, V. Vredenburg, E. Borgnis, M. Kelly and D. Talley. Modeling the impacts of climate change and reduced freshwater flows on San Francisco Bay-Delta wetlands and their dependant plant and animal communities. Poster. 1<sup>st</sup> Ecological Society of America's Millennium Conference. Athens, GA. November 2009.
- Parker, V.T., J. Callaway, E. Herbert, L. Schile, M. Vasey, V. Vredenburg, E. Borgnis, M. Kelly, D. Talley. Modeling the impacts of climate change on San Francisco Bay-Delta wetlands and links to pelagic food webs. *Poster*. Coastal and Estuarine Research Federation, Portland, Oregon, November 2009
- Callaway, J. C.; V.T. Parker; J. Drexler; R. Turner; L. Schile; E. Herbert; E. Borgnis. Evaluating Sediment Accumulation Rates in San Francisco Bay Wetlands for Restoration, Sea-Level Rise, and Carbon Sequestration. Coastal and Estuarine Research Federation, Portland, Oregon, November 2009
- Parker, V.T., J. Callaway, E. Herbert, L. Schile, M. Vasey, V. Vredenburg, E. Borgnis, M. Kelly and D. Talley. Modeling the impacts of climate change and reduced freshwater flows on the San Francisco Bay-Delta wetlands and their dependant plant and animal communities. *Poster*. 2009 State of the Estuary Meeting. Oakland, CA. October 2009.
- Parker, V.T., J. Callaway, E. Herbert, L. Schile, M. Vasey, V. Vredenburg, E. Borgnis, M. Kelly and D. Talley. Modeling the impacts of climate change on San Francisco Bay-Delta wetlands and links to pelagic food webs. *Poster*. 2009 Pacific Division of the American Association for the Advancement of Science Conference. San Francisco, CA.

- Schile, L., J. Callaway, V. T. Parker, E. Herbert. Rapid sediment accumulation in a restoring tidal salt marsh in the South Bay Salt Pond Restoration Project. State of the Estuary, Oakland, CA, 29 September-1 October 2009.
- Callaway, J.C. Bay wetland plants and sediments: Inseparable in the face of climate change. State of the Estuary, Oakland, CA, 29 September-1 October 2009.
- Parker, V.T., J.C. Callaway, E.R. Herbert, L.M. Schile, V.T. Vredenburg, M.C. Vasey, E.L. Borgnis, N.M. Kelly, and D.M. Talley. Modeling the Impacts of Climate Change on San Francisco Bay-Delta Wetlands and Links to Pelagic Food Webs, Meeting of the American Association for the Advancement of Science, San Francisco, CA, August 2009
- Parker, V.T., J.C. Callaway, E.R. Herbert, L.M. Schile, M.C. Vasey. Potential impacts of climate change on San Francisco Bay-Delta marsh vegetation. Society of Wetland Scientists (Annual Meeting), Madison, Wisconsin, 21-26 June 2009.
- Callaway, J.C., V.T. Parker, J.Z. Drexler, R.E. Turner, L.M. Schile, E.R. Herbert, E.L. Borgnis. Dynamics of sediment accumulation in San Francisco Bay wetlands. Society of Wetland Scientists (Annual Meeting), Madison, Wisconsin, 21-26 June 2009.
- Parker, V.T., J.C. Callaway, M.C. Vasey, L.M. Schile, and E.R. Herbert. Climate change impacts on San Francisco Bay-Delta tidal wetlands. California Native Plant Society Conservation Conference, 17-19 January 2009; Sacramento, CA.
- Dailey, B.A. and V.T. Parker. The effect of increased salinity due to rising sea levels on germination rates in the San Francisco Bay-Delta. California Native Plant Society Conservation Conference, 17-19 January 2009; Sacramento, CA.

## 2008

- Parker, V.T., J.C. Callaway, L.M. Schile, E.R. Herbert, M.C. Vasey. Potential impacts of climate change on Bay-Delta marsh vegetation. CalFed Science Conference; 20-22 October 2008; Sacramento, CA.
- Parker, V.T., J.C. Callaway, L.M. Schile, E.R. Herbert, D.M. Talley, V.T. Vandenburg, N.M. Kelly. Climate change impacts to San Francisco Bay-Delta wetlands and their links to pelagic food webs. CalFed Science Conference; 20-22 October 2008; Sacramento, CA.
- Vasey, M.C., J.C. Callaway, E.R. Herbert, V.T. Parker, L.M. Schile. Shifting composition of tidal marsh plant species along a salinity gradient in the San Francisco Bay-Delta CalFed Science Conference; 20-22 October 2008; Sacramento, CA.
- Schile, L.M., R.R. Carson, J.C. Callaway, V.T. Parker, M.C. Vasey, S. Siegel. Elevation, Inundation, and Vegetation patterns in natural and restored tidal wetlands CalFed Science Conference; 20-22 October 2008; Sacramento, CA.
- Dailey, B.A. and V.T. Parker. Effects of salinity on germination in a brackish-freshwater system in response to climate change. CalFed Science Conference; 20-22 October 2008; Sacramento, CA.
- Callaway, J.C., V.T. Parker and L.M. Schile. Sediment dynamics at the newly restored Island Ponds, South San Francisco Bay. CalFed Science Conference; 20-22 October 2008; Sacramento, CA.
- Callaway, J.C., V. T. Parker, M.C. Vasey, L.M. Schile, and E.R. Herbert. Climate Change Impacts on Tidal Wetland Vegetation. SERCAL; 15<sup>th</sup> Annual Conference, August 13-16, 2008.

- Callaway, J.C. 2008. Plant colonization in restored tidal wetlands: Potential wind wave impacts. Workshop on Wind Waves and Tidal Wetlands Workshop. San Francisco Bay Conservation and Development Commission, 18 March 2008.
- Parker, V.T. 2008. Climate change and the San Francisco Bay-Delta tidal wetlands. Interagency Ecological Program, 2008 Annual Workshop. Asilomar Conference Grounds, 27-29 February 2008.
- Schile, L. M., J. C. Callaway, V. T. Parker, M. C. Vasey, et al. 2008. Elevation, inundation and vegetation patterns in the San Francisco Bay-Delta. 14-15 January 2008: Northern California Botanists meeting, Chico, CA. Invited speaker for the meeting.
- Callaway, J.C. 2008. Restoring wetland ecosystems: The importance of plant diversity and sediment dynamics. UC Berkeley Conservation Biology Student Chapter, 29 January 2008.

**2007**

- Parker, V. T., L. M. Schile, J. C. Callaway and M. C. Vasey. Fading to blue: effects of inundation and salinity on tidal marsh vegetation. 16-18 October 2007: State of the Estuary Meeting, Oakland CA. Invited speaker for one of the symposia.