

## CHRISTOPHER N. JANOUSEK, Ph.D.

Assistant Professor (Senior Research), Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR  
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### EDUCATION

Ph.D. *Oceanography*, University of California, San Diego, Scripps Institution of Oceanography, 2005

- Dissertation: "Functional diversity and composition of microalgae and photosynthetic bacteria in marine wetlands: spatial variation, succession, and influence on productivity". Advisor: Dr. Lisa A. Levin
- Research included algal succession, algal pigment research, and microalgal photosynthesis
- Coursework in biological oceanography, wetlands ecology, marine chemistry, marine geology, biogeography, marine biodiversity, marine chemical ecology, fisheries oceanography, non-parametric statistics, experimental design.

B.A. *Marine Biology*, University of California, Santa Cruz, 1999

- Received highest honors in the major; Crown College honors; Phi Beta Kappa
- Senior thesis investigating abnormalities in *Aurelia aurita* (Scyphozoa) development
- Coursework in ecology, marine ecology, statistics, linear algebra, physics, oceanography, chemistry, organic chemistry, marine botany, plant systematics, invertebrate zoology

### PROFESSIONAL APPOINTMENTS

Assistant Professor (Senior Research), Oregon State University, Dept. Fisheries and Wildlife, June 2017-present

- My research focuses on 4 major areas in coastal wetlands: climate change impacts to wetland function, plant ecology, blue carbon, and habitat restoration. I also conduct work on tidal wetland hydrology, seed germination and wetland sediment dynamics. Collaborators include researchers from USGS, EPA, UC Berkeley, PNNL, NOAA NERRs, and the Institute for Applied Ecology. Regular responsibilities include grant writing, research design, data collection and analysis, report and manuscript preparation, conference presentations, and other academic duties.

Research Associate, Oregon State University, Dept. Fisheries and Wildlife, Dec 2013-May 2017

- Duties similar to current position as Assistant Professor (Senior Research).

Ecologist, Institute for Applied Ecology and Green Point Consulting, Corvallis, OR, Aug-Dec 2013

- My work focused on wetland restoration ecology along the Oregon coast, including sampling design for restoration monitoring, data analysis, and field work (vegetation, hydrology, and sediment accretion). Our work included analysis vegetation and hydrologic indicators of wetland restoration status.

Ecologist, US Environmental Protection Agency, Western Ecology Division, (GS12-04), Jan 2010-Jul 2013

- I conducted research on climate change impacts to tidal wetlands in the Pacific Northwest, including experiments to assess inundation and salinity effects on plant growth and seed germination, statistical modeling of plant and algal assemblages along environmental gradients, and work on spatio-temporal patterns of salinity in Oregon estuaries. A key product of our work was an analysis of spatial patterns of wetland plant diversity, an important ecosystem service. Collaborators included the US Geological Survey.

Lecturer, University of California, Davis (BIS 1C: *Plant Biology*), Aug-Sep 2008

## *Curriculum vitae, Christopher N. Janousek*

- I designed lectures and exams for this summer session course (~140 undergraduates). Course content included plant anatomy, physiology, and ecology and an overview of algae and fungi.

Lecturer, Sonoma State University (BIOL 121: *Diversity, Structure and Function*), Jan-May 2008

- I designed lectures for half of an introductory biology course for majors focusing on principles of phylogeny and macroevolution and an overview of prokaryotes, fungi, algae and plants (~90 students)
- I led two weekly laboratory sections for the course (~20 students each)

Post-doctoral researcher, Dept. of Plant Pathology, University of California, Davis, May 2006-Jan 2010

- I conducted research on plant disease management, microbial diversity effects on plant disease resistance, and nutrient effects on invasive and native gastropods in San Francisco Bay.

### **OTHER TEACHING AND RESEARCH EXPERIENCE**

Co-instructor, ECL 290: *Marine Algal Biodiversity*, UC Davis, 2007

- I developed and led this graduate-level seminar course with Dr. Ted Grosholz.
- Our weekly meetings focused on readings from the primary literature

Graduate student researcher, Scripps Institution of Oceanography, UC San Diego, 2000-2005

- My dissertation research on coastal wetland microphytobenthos comprised the following areas of study:
  - Succession of microalgae in a large restored tidal wetland in southern California
  - Evaluation of habitat-level variability in microphytobenthic diversity and composition
  - Diversity-productivity relationships in benthic algal communities
  - Compilation of a preliminary flora of micro- and macroalgae in southern California tidal wetlands

Research mentor

- OSU: I supervise a OSU field technician and help train USGS field technicians
- EPA: I mentored an undergraduate summer hire and a GRO intern in wetland ecology.
- UCD: I worked with graduate students and research staff in statistics and experimental design.
- UCSD: I mentored five undergraduate students conducting lab and field research in wetland ecology.

Other teaching experience

- Teaching assistant, *Biodiversity*, UC San Diego, 2003
- Course assistant, *Invertebrate Zoology lab*, UC Santa Cruz, 1999
- Field and lab assistant, *Marine Botany lab*, UC Santa Cruz, 1999
- Guest lectures in *Phycology/Bryology*, UC Davis, 2007, and *Coastal Wetlands Ecology and Conservation*, UC San Diego, 2004

### **PUBLICATIONS**

#### *Journal articles*

Janousek CN, Folger C. 2017. Evaluating National Wetlands Inventory wetland class differences in plant composition and soil characteristics in Oregon tidal wetlands. [Wetlands Ecol. Management](#). <https://doi.org/10.1007/s11273-017-9575-6>

Thorne KM, Elliott-Fisk DL, Bui TB, Freeman CM, Powelson KW, Janousek CN, Buffington KJ, Takekawa JY. 2017. Are coastal managers ready for climate change? A case study from estuaries along the Pacific coast of the United States. [Ocean and Coastal Management 143:38-50](#).

Janousek CN, Buffington K, Guntenspergen G, Thorne K, Dugger B, Takekawa T. 2017. Inundation, vegetation, and soil effects on litter decomposition in Pacific coast tidal marshes. [Ecosystems](https://doi.org/10.1007/s10021-017-0111-6) <https://doi.org/10.1007/s10021-017-0111-6>

Janousek CN, Buffington K, Thorne K, Guntenspergen G, Takekawa T, Dugger B. 2016. Potential effects of sea-level rise on plant productivity: species-specific responses in northeast Pacific tidal marshes. [Marine Ecology Progress Series 548:111-125](#).

Janousek CN, Folger CL. 2014. Variation in tidal wetland plant diversity and composition within and among coastal estuaries: assessing the relative importance of environmental gradients. [J. Vegetation Science 25:534-545](#).

Janousek CN, Folger CL. 2013. Inter-specific variation in salinity effects on germination in Pacific Northwest tidal wetland plants. [Aquatic Botany 111:104-111](#).

Peduto F, Backup P, Hand EK, Janousek CN, Gubler WD. 2013. Effect of high temperature and exposure time in *Erysiphe necator* growth and reproduction: revisions to the UC Davis Powdery mildew Risk Index. [Plant Disease 97:1438-1447](#).

Janousek CN, Mayo C. 2013. Plant responses to increased inundation and salt exposure: interactive effects on tidal marsh productivity. [Plant Ecology 214:917-928](#).

Janousek CN, Folger CL. 2012. Patterns of distribution and environmental correlates of macroalgal assemblages and sediment chlorophyll *a* in Oregon tidal wetlands. [Journal of Phycology 48:1448-1457](#).

Janousek CN. 2009. Taxonomic composition and diversity of microphytobenthos in southern California marine wetland habitats. [Wetlands 29:163-175](#).

Janousek CN, Lorber JD, Gubler WD. 2009. Combination and rotation of bacterial antagonists to control powdery mildew on pumpkin. [J PI Diseases Protection 116:260-262](#).

Rooney-Latham S, Janousek CN, Eskalen A, Gubler WD. 2008. First report of *Apergillus carbonarius* causing sour rot of table grapes (*Vitis vinifera*) in California. [Plant Disease 92:651](#).

Janousek CN, Currin CA, Levin LA. 2007. Succession of microphytobenthos in a restored coastal wetland. [Estuaries and Coasts 30:265-276](#).

#### *Journal articles in review or revision*

Thorne K, MacDonald G, Guntenspergen G, Ambrose R, Buffington K, Janousek CN, Freeman C, Dugger B, Takekawa J, Holmquist J, Brown L. *In Revision*. Squeezed out? Evidence for future rapid submergence of coastal wetlands from sea-level rise. *Science Advances*.

*Journal articles in preparation*

Janousek CN, Thorne K, Takekawa T. *In prep.* Vertical zonation and niche breadth of tidal marsh plants along the northeast Pacific coast.

Janousek CN, Drucker BM, Thorne KM, Dugger BD, Vasey M. *In prep.* Salinity and inundation effects on brackish tidal marsh plant productivity and fecundity.

*Selected reports and dissertation*

Thorne KM, MacDonald GM, Ambrose RF, Buffington KJ, Freeman CM, Janousek CN, Brown LN, Holmquist JR, Guntenspergen GR, Powelson KW, Barnard PL, Takekawa JY. 2016. Effects of climate change on tidal marshes along a latitudinal gradient in California. [U.S. Geological Survey Open-File Report 2016-1125](#), 75 pp + appendices.

Thorne KM, Dugger BD, Buffington KJ, Freeman CM, Janousek CN, Powelson KW, Guntenspergen GR, Takekawa JY. 2015. Marshes to mudflats – effects of sea-level rise on tidal marshes along a latitudinal gradient in the Pacific Northwest. [U.S. Geological Survey Open-File Report 2015-1204](#), 54 pp + appendices.

Janousek CN, Folger CL. 2013. Concordance between marsh habitat classes and composition in Oregon estuaries: Implications for assessing coastal wetland structure and function. In: DeWitt, T. (ed.), “Uncertainty, scaling and transferability of ecological production functions and estimates.” Internal Report. US Environmental Protection Agency, Washington DC.

Brophy L, Janousek CN. 2013. 2013 Monitoring report: Pixieland tidal wetland restoration. Green Point Consulting and Institute for Applied Ecology, Corvallis, OR, 88 pp.

Brophy LS, with contributions from Reusser DA, Janousek CN. 2013. Tidal wetlands of the Yaquina and Alsea River estuaries, Oregon: Geographic information systems layer development and recommendations for National Wetlands Inventory revisions. [USGS Open-File Report 2012-1038](#).

Janousek CN. 2011. Common benthic algae and cyanobacteria in southern California tidal wetlands. [Scripps Institution of Oceanography Technical Report](#).

Janousek CN, Lorber JD, Gubler WD. 2010. Mixtures and rotations of microbial antagonists for powdery mildew management in grape. [Plant Disease Management Reports 4:SMF031](#).

Janousek CN, Gubler WD. 2010. Control of brown rot and shot hole in almond: 2009 field trial. [UC Cooperative Extension Report](#).

Bay IS, Janousek CN, Gubler WD. 2010. Fungicide control of Phomopsis cane and leaf spot on grape: 2009 field trial. [UC Cooperative Extension Report](#).

Janousek CN, Bay IS, Gubler WD. 2009. Control of grape powdery mildew with synthetic, biological, and organic fungicides: 2009 field trials. [UC Cooperative Extension Report](#).

Janousek CN, Lorber JD, Gubler WD. 2008. Control of powdery mildew on pumpkin leaves by experimental and registered fungicides: 2007 trials. [UC Cooperative Extension Report](#).

Janousek CN, Lorber JD, Varga Z, Wunderlich L, Gubler WD. 2007. Fungicide control of apple scab: 2007 trial results. [UC Cooperative Extension Report](#).

Janousek CN. 2005. *Functional diversity and composition of microalgae and photosynthetic bacteria in marine wetlands: spatial variation, succession, and influence on productivity*. Ph.D. Dissertation, University of California, San Diego, 245 pp.

## PRESENTATIONS

- Janousek C, Drucker B, Thorne K, Dugger B, Vasey M. 2017. State of the Estuary Conference, Oakland, CA. Declining productivity of brackish marsh plants with increasing inundation and salinity in Suisun Bay. [Poster]
- Buffington K, Janousek C, Dugger B, Thorne K. 2017. State of the Estuary Conference, Oakland, CA. Seasonal and spatial patterns of sediment deposition across two San Francisco Bay-Delta tidal marshes. [Poster]
- Janousek C, Buffington K, Thorne K, Dugger B, Guntenspergen G, Takekawa J. 2017. Ecological Society of America, Portland, OR. Vegetation effects on plant litter decomposition in Pacific coast tidal marshes.
- Janousek C, Buffington K, Thorne K, Dugger B, Takekawa J, Guntenspergen G. 2016. Bay Delta Science Conference, Sacramento, CA. Species-specific plant responses to salinity and inundation in tidal wetlands of the San Francisco Bay-Delta ecosystem.
- Buffington K, Janousek C, Dugger B, Thorne K. 2016. Bay Delta Science Conference, Sacramento, CA. Seasonal and spatial patterns of sediment deposition across two San Francisco Bay-Delta tidal marshes. [Poster]
- Janousek C, Thorne K, Takekawa J, Powelson K, Lovett K, Buffington K, Freeman C, Bellevue L, Curry L, Holt M. 2016. Western Society of Naturalists, Monterey, CA. A biogeographic perspective on zonation and species richness in marsh plants of the Pacific coast.
- Janousek C, Buffington K, Thorne K, Guntenspergen G, Takekawa J, Dugger B. 2015. Coastal and Estuarine Research Federation meeting, Portland, OR. Drivers of organic matter decomposition in Pacific coast tidal marshes: Inundation, species composition and latitude.
- Brown C, Mochon-Collura T, DeWitt, T, Janousek C, Cornu C. 2015. Coastal and Estuarine Research Federation meeting, Portland, OR. Oregon salt marshes: How blue are they?
- Thorne K, Guntenspergen G, Takekawa J, Buffington K, Dugger B, Janousek C, MacDonald G, Ambrose R, Brown L, Holmquist J. 2015. Coastal and Estuarine Research Federation meeting, Portland, OR. A latitudinal approach to assess sea-level rise vulnerability for Pacific coast tidal wetlands.
- Freeman C, Thorne K, Powelson K, Elliott-Fisk D, Bui V, Janousek C, Buffington K, Spragens K. 2015. Coastal and Estuarine Research Federation meeting, Portland, OR. [Poster] Variation in climate change adaptation planning readiness along the Pacific coast.
- Janousek C, Thorne K, Buffington K, Takekawa J, Powelson K, Freeman C, Dugger B, Goodman A, Czapanskiy M, Edgarian T, Guntenspergen G. 2015. Conservation & restoration seminar, University of California, Santa Barbara. Sea-level rise impacts to tidal wetlands along the Pacific coast.
- Janousek C, Thorne K, Buffington K, Takekawa J, Dugger B, Guntenspergen G. 2015. State of the Estuary Conference, Oakland, CA and Western Society of Naturalists, Sacramento, CA. [Poster] Tidal marsh vulnerability to climate change in the San Francisco Bay Estuary.
- Buffington K, Thorne K, Dugger B, MacDonald G, Ambrose R, Janousek C, Guntenspergen G, Freeman C, Brown L, Holmquist K. Coos Estuary Research Meeting, OR. Coastal ecosystem response to climate change (CERCC): Sea-level rise effects on tidal marshes along the Pacific coast.
- Takekawa J, Lowe R, Thorne K, Dugger B, Buffington K, Powelson K, Freeman C, Janousek C. 2014.

- PNW Climate Science Conference. Salt marsh management and the Coastal Ecosystem Response to Climate Change (CERCC): a bottom-up approach for informing adaptation strategies.
- Janousek C, Edgarian T, Guntenspergen G, Takekawa J, Thorne K. 2014. Western Society of Naturalists, Tacoma, WA. Sea-level rise impacts in salt marsh vegetation in the San Francisco Bay estuary.
  - Janousek C, Thorne K, Takekawa J, Guntenspergen G, Buffington K, Edgarian T, Spragens K. 2014 Bay Delta Science Conference, Sacramento, CA. Sea-level rise impacts in salt marsh vegetation in the San Francisco Bay estuary.
  - Janousek C. 2014. Coastal sea-level rise workshops, San Pablo Natl Wildlife Refuge, CA; Eureka, CA, Newport, OR; Long Beach, WA; Imperial Beach, CA. I helped conduct several workshops on sea-level rise effects on west coast salt marshes, including presentations on general salt marsh ecology and marsh productivity.
  - Janousek C, Takekawa J. 2014. Climate Change workshop, Eureka, CA. Climate change impacts to Pacific Northwest coasts.
  - Janousek C, Mayo C, Thorne K, Takekawa J. 2014. Joint Aquatic Sciences meeting, Portland, OR. Interspecific and geographic variability in elevation-productivity relationships in northeast Pacific tidal marshes.
  - Janousek C, Folger CL, Mayo C. 2013. Coastal and Estuarine Research Federation meeting, San Diego, CA. Early life history responses of tidal wetland plants to sea-level rise and salinization in the Pacific Northwest.
  - Janousek C, Folger C, Mayo C. 2013. Benthic Ecology meeting, Savannah, GA. Potential sea-level rise impacts on tidal wetlands in the Pacific Northwest: Declines in productivity and diversity?
  - Janousek C, Mayo C. 2012. Western Society of Naturalists meeting, Seaside, CA. Plant growth under salinity and inundation stress: Implications for sea-level rise effects on tidal wetland function.
  - Brown C, Janousek C. 2012. Sea-level hazards workshop, Coos Bay, OR. Sea-level rise impacts on Oregon estuaries: Biology and hydrology.
  - Janousek C, Folger C, Mayo C. 2012. Seminar, Oregon Institute for Marine Biology, University of Oregon, Charleston, OR. Potential climate change impacts on tidal wetland plant and algal assemblages in the Pacific Northwest
  - Janousek C, Folger C. 2012. Ecological Society of America annual meeting, Portland, OR. High plant diversity in Oregon tidal wetlands and multiple threats to its persistence.
  - Janousek C, Folger C, Lee H II. 2012. Seminar, Hatfield Marine Science Center, Oregon State Univ., Newport, OR. Tidal wetland plant and algal assemblages in Oregon: spatial patterns of composition and vulnerability to climate change.
  - Janousek C, Folger C. 2012. Pacific Estuarine Research Society meeting, Anacortes, WA. Tidal wetland plant and algal assemblages in Oregon: spatial patterns of composition and vulnerability to climate change.
  - Janousek C, Folger C, Lee H II, Brown C, Reusser D. 2012. Seminar, Western Ecology Division, U.S. EPA, Corvallis, OR. Tidal wetland plant and algal assemblages in Oregon: spatial patterns of composition and vulnerability to climate change.
  - Brown C, Sharp D, Chang H, Steel M, Janousek C, Reusser D. 2011. 2<sup>nd</sup> Annual Pacific Northwest Climate Science Conference, Seattle, WA. Effects of climate change on temperature and salinity in the Yaquina Estuary.
  - Janousek C, Folger C. 2011. Phycological Society of America meeting, Seattle, WA. Distribution of macroalgae and sediment chlorophyll *a* along salinity and elevation gradients in Oregon tidal marshes.
  - Saarinen J, Reusser D, Lee H II, Janousek C. 2011. 2011 Coastal GeoTools Meeting, Myrtle Beach, SC. Uncertainty in elevation data and sensitivity to a sea-level rise estuary habitat model: costs and benefits of high precision.
  - Janousek C, Folger C, Lee H II. 2011. Pacific Estuarine Research Society meeting, Astoria, OR. Plant distributions along salinity and tidal gradients in Oregon tidal marshes.
  - Janousek C, Folger C, Lee H II. 2011. Sea-level rise workshop, Newport, OR. Plant distributions along salinity and tidal gradients in Oregon tidal marshes.
  - Loiselle R, Reusser D, Lee H II, Brown C, Clinton P, Janousek C. 2010. OCCRI PNW Climate Conference,

- Portland, OR. SLAMM modeling of Yaquina Estuary, central Oregon Coast.
- Lee H II, Brown C, Janousek C, Clinton P, Young D, Reusser D, Loiselle R. 2010. Coastal Wetlands Data and Information Workshop, Newport, OR. Keeping your seed head above water – EPA’s research on the effects of sea level rise on sea grasses and emergent marshes in the Pacific Northwest.
  - Janousek C, Lorber J, Gubler W. 2009. Western Society of Naturalists meeting, Monterey, CA. On microbial diversity effects on plant functional stability.
  - Janousek C. 2008. Seminar, Department of Biology, Sonoma State University. On the use of effect size statistics in ecological research.
  - Janousek C, Lorber J, Gubler W. 2007. Western Society of Naturalists meeting, Ventura, CA. On testing diverse microbial bio- fungicides to enhance control of plant pathogens.
  - Janousek C. 2007. Seminar, Department of Plant Pathology, UC, Davis. On statistical power and effects size in plant pathology field research.
  - Janousek C. 2007. Northwest Algal Symposium, Friday Harbor, WA. Using herbaria to do ecology: seaweed dynamics in western North America.
  - Janousek C. 2007. Seminar, Bodega Marine Lab, UC Davis. Microphytobenthic diversity in marine wetlands: spatio-temporal variability and relationships with photosynthetic biomass.
  - Janousek C. 2004. Univ. California Natural Reserve System Conference, Bodega Marine Lab, CA. Functional diversity of wetland communities of algae and photosynthetic bacteria: spatial patterns and influences in productivity.
  - Janousek C. 2003. Western Society of Naturalists meeting, Long Beach, CA. On microphytobenthic diversity and productivity.
  - Janousek C. 2002. Western Society of Naturalists meeting, Monterey, CA. On microphytobenthic succession.

## **GRANTS, FELLOWSHIPS, SCHOLARSHIPS, AND AWARDS**

- NOAA, NERR Science Collaborative, \$750,000, 2016-2019, Co-PI with C. Cornu and 11 others. Enhancing coastal zone policy, management, and research through end user-driven quantification and public dissemination of carbon stocks data for Pacific Northwest tidal wetlands.
- NOAA, Ecological Effects of Sea Level Rise Program, \$463,697, 2015-2018, Co-PI with B. Dugger & K. Thorne. Refining ecosystem model inputs for sea-level rise vulnerability in the San Francisco Bay Estuary.
- US EPA/USDA, IR-4 Biopesticide Program grant, \$9600, 2009. Field evaluation of biocontrol of grape powdery mildew with *Streptomyces lydicus* WYEC108.
- Sigma Xi, Grant-In-Aid of Research, \$840, 2003. Taxonomic diversity effects on microphytobenthic primary production.
- University of California Natural Reserve System, Mildred Mathias Research grant, \$1900, 2002. Spatial variation in microphytobenthic composition and diversity.
- ARCS Fellowship, Los Angeles chapter, SIO, UCSD, 2001-2005. Graduate student stipend support.
- Phycological Society of America, Croasdale Fellowship, 2000.
- Doherty Fellowship, SIO, UCSD, 1999-2000.
- Priscilla Parkin Memorial Scholarship and Thimann Award, UCSC, 1999.
- University of California Regents Scholarship, 1997-1999.
- International Order of Foresters and Kimberly-Clark Scholarships, UCSC, 1993-1994 & 1997-1999.

## **OTHER RESEARCH CONTRACTS**

- Tillamook Estuary Partnership, \$98,482, 2017-2019. Tidal wetland effectiveness monitoring in the Tillamook Estuary Southern Flow Corridor Project
- The Wetlands Conservancy, 2013. Contract/sub-contract, Alsea and Yaquina Estuaries, Oregon.

## **SERVICE AND OUTREACH**

- Journal peer reviewer: *Aquatic Botany, Aquatic Ecology, Botany, Ecological Applications, Ecology, Estuaries and Coasts, Estuarine Coastal and Shelf Science, Marine Ecology Progress Series, Restoration Ecology, Wetlands* (2007-2017).
- Conference session co-chair, “Sea-level rise effects on salt marsh ecosystem function”, Coastal and Estuarine Research Federation meeting, Nov 2015.
- Conference session co-chair, “Climate change and species interactions: Implications for Ecosystem Services and Functions in Estuaries and Coastal Systems”, Coastal and Estuarine Research Federation meeting, Nov 2013.
- Blog author and photographer: <http://awildernessjournal.blogspot.com>
- Contributor to the US EPA’s science blog on [invasive species](#) and [king tides](#)
- Proposal peer reviewer: MJ Murdock Charitable Trust
- Volunteer, University of California, Davis herbarium (2006-2007)

## **TECHNICAL EXPERTISE**

### **Field and lab experience**

- Environmental instrumentations including salinity, dissolved oxygen, irradiance, water level (YSI, Onset, Solinst, LI-COR & Odyssey instruments)
- Vegetation surveys; culturing/cultivation of fungi, algae & plants; herbarium techniques
- Identification of plants, seaweeds and microalgae, especially in tidal wetlands and rocky shores
- SCUBA: Master Diver certification (1998) and formerly, scientific certification, UCSC
- MOCC-certified small motor boat operator; kayaking experience
- HPLC and fluorometry: photosynthetic pigments including carotenoids and bacteriochlorophyll *a*
- Oxygen microelectrodes
- Digital SLR photography including macro-photography

### **Statistics**

- Multifactor experimental design
- Linear models including mixed effects models and logistic regression
- Quantile regression; regression splines
- Path analysis
- Hierarchical partitioning
- Non-parametric tests: rank correlation; Kruskal-Wallis ANOVA
- Ecological effect size indices
- Multivariate ordination: NMDS, DCA, CCA
- Species accumulation curves
- Goodness of fit tests
- Experience with R, R Studio, SAS and CoStat software

### **Geospatial tools**

- Survey-grade GPS, including RTK methods (Trimble and Leica rovers) with published solutions at:  
<http://www.ngs.noaa.gov/OPUS/getDdatasheet.jsp?PID=QE1616> and  
<http://www.ngs.noaa.gov/OPUS/getDdatasheet.jsp?PID=BBCJ23>
- Resource grade (sub-meter accuracy) GPS habitat mapping
- Some GIS experience

### **Languages**

- Moderate fluency in spoken Japanese