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EDUCATION

B. A., Biology, Oberlin College	1982
M. Sc., Biological Oceanography, University of Washington	1986
Ph. D., Biological Oceanography, University of Washington	1990

OTHER TRAINING

Harvard University, Graduate School of Education, Institutes of Higher Education, Management and Leadership in Education	2007
Council for the Advancement and Support of Education, Summer Institute in Educational Fund Raising, Dartmouth College	2003
Harvard University, Graduate School of Education, Institutes of Higher Education, Management Development Program	2001

PROFESSIONAL EXPERIENCE

Washington State University	
WSU Faculty Representative to the State Legislature and Co-Chair of statewide Council of Faculty	2018 - present
Director, Meyer's Point Environmental Field Station	2018 - present
Director of Multi-Campus Planning and Strategic Initiatives, College of Arts and Sciences and College of Agriculture, Human and Natural Resource Sciences (WSU system-wide)	2014 - 2018
Director, School of the Environment/ School of Earth and Environmental Sciences (WSU system-wide)	2006 - 2014
Professor, School of the Environment	2006 - present
Director, College of Sciences, Vancouver Campus	2004 - 2011
Professor, School of Biological Sciences	2004 - present
San Francisco State University	
Associate Dean for Research and Development, College of Science and Engineering	2003 - 2004
Professor, Department of Biology	1999 - 2004
Assistant Dean, Office of Research and Sponsored Programs	1998 - 2003
Associate Professor, Department of Biology	1996 - 1999

Woods Hole Oceanographic Institution, Biology Department	
Faculty Member, Massachusetts Institute of Technology –	
Woods Hole Oceanographic Institution Joint Ph.D. Program	1993 - 1996
Assistant Scientist (tenure-track)	1992 - 1996
Postdoctoral Fellow	1990 - 1992
University of Washington, School of Oceanography	
Research/Teaching Assistant	1984 - 1990

OTHER (TEMPORARY) PROFESSIONAL EXPERIENCE

Visiting Professor, School of Civil, Environment, and Mining Engineering, and the Oceans Institute, University of Western Australia	2017
Visiting Professor, Departments of Zoology and Marine Science, University of Otago, New Zealand	2010
Adjunct Professor, Department of Wildlife, Fish and Conservation Biology, University of California, Davis	2003 - 2006
Visiting Professor, School of Oceanography, University of Washington	2002 - 2003
Visiting Scientist, Moss Landing Marine Laboratories, California State University System	2000 - 2001
Guest Researcher, Max Planck Institute for Limnology, Ploen, Germany	1993; 1994
Faculty Member (temporary), Hatfield Marine Science Center, Oregon State University	1992
Faculty Member (visiting), East/West Marine Biology Program, Northeastern University (Friday Harbor Laboratories)	1991

HONORS AND AWARDS

Sahlin Faculty Excellence Award for Leadership, Washington State University (system-wide)	2020
Elected Fellow, California Academy of Sciences	2000
San Francisco State University Presidential Fellowship	1998 - 1999
Office of Naval Research Young Investigator Award	1994 - 1998
Woods Hole Oceanographic Institution Postdoctoral Scholar Award	1990 - 1991

PROFESSIONAL SERVICE

Executive Committee, Global Ocean Ecosystem Dynamics (GLOBEC) Georges Bank/Northwest Atlantic Program	1993 - 1996
Executive Committee, Bering Sea Fisheries Oceanography Coordinated Investigations (BS FOCI)	1993 - 1997

Panel Member, National Science Foundation, Ocean Sciences	1995; 1996
Panel Member, Science Advisory Panel, Cape Cod Commission	1995 - 2000
Board of Directors, Romberg Tiburon Center for Environmental Studies	1996 - 2004
Board of Governors, Moss Landing Marine Laboratories	1997 - 2004
Graduate Coordinator for Marine Biology Program, Department of Biology, San Francisco State University	1997 - 2002
Panel Member, National Science Foundation, Field Stations and Marine Laboratories Program	1997; 1998
Estuarine Ecology Team, Interagency Ecological Program, San Francisco Bay-Delta Program	1998 - 2004
Panel Member, National Science Foundation / National Oceanic and Atmospheric Administration's Coastal Ocean Program	1999
Scientific Steering Committee, Coastal Ocean Processes (CoOP) Program, National Science Foundation	2000 - 2004
Bay-Delta Science Consortium Executive Committee (San Francisco State University's representative)	2001 - 2004
Co-Chair, Science Program Committee, 2003 Estuarine Research Federation Biennial Conference, Seattle, WA	2001 - 2003
Panel Member, National Science Foundation, Coastal Ocean Processes Program	2003
Panel Member, Science Program, California Bay-Delta Authority	2005
Member, Vancouver Lake Watershed Partnership	2006 - present
Center for Environmental Research, Education and Outreach, Member, Executive Committee member, Washington State University	2006 - 2020
Member, Science and Education Coordinating Committee, Pacific Northwest Domain, National Ecological Observatory Network	2010 - present
Advisory Board Member, Vancouver iTech Preparatory, Vancouver, WA	2013 - 2017
Member, Association of Public and Land-grant Universities; Commission on Food, Environment and Renewable Resources Boards; Board on Oceans, Atmosphere, and Climate	2015 - present

Delegate, Universities Council on Water Resources	2018 - present
Panel Member, National Science Foundation, Field Stations and Marine Laboratories Program	2018
Member, Research Council, Washington State University	2019 - present

PUBLICATIONS

1. **Bollens**, S. M. 1988. A model of the predatory impact of larval marine fish on the population dynamics of their zooplankton prey. *J. Plankton Res.* 10: 887-906.
2. **Bollens**, S. M. and B. W. Frost. 1989. Zooplanktivorous fish and variable diel vertical migration in the marine planktonic copepod *Calanus pacificus*. *Limnol. Oceanogr.* 34: 1072-1083.
3. **Bollens**, S. M. and B. W. Frost. 1989. Predator-induced diel vertical migration in a planktonic copepod. *J. Plankton Res.* 11: 1047-1065.
4. **Bollens**, S. M. 1990. Predation and Diel Vertical Migration in Zooplankton. Ph. D. Dissertation, University of Washington.
5. **Bollens**, S. M. and B. W. Frost. 1990. Ultraviolet light and vertical distribution of the marine planktonic copepod *Acartia hudsonica* Pinhey. *J. Exp. Mar. Biol. Ecol.* 137: 89-93.
6. **Bollens**, S. M. and B. W. Frost. 1991. Ovigerity, selective predation, and variable diel vertical migration in *Euchaeta elongata* (Copepoda: Calanoida). *Oecologia* 87: 155-161.
7. **Bollens**, S. M. and B. W. Frost. 1991. Diel vertical migration in zooplankton: rapid individual response to predators. *J. Plankton Res.* 13: 1359-1365.
8. **Bollens**, S. M. and D. E. Stearns. 1992. Predator-induced changes in the diel feeding cycle of a planktonic copepod. *J. Exp. Mar. Biol. Ecol.* 156: 179-186.
9. **Bollens**, S. M., B. W. Frost, and T. S. Lin*. 1992. Recruitment, growth, and diel vertical migration of *Euphausia pacifica* in a temperate fjord. *Mar. Biol.* 114: 219-228.
10. **Bollens**, S. M., B. W. Frost, D. T. Thoreson, and S. D. Watts*. 1992. Diel vertical migration in zooplankton: field evidence in support of the predator avoidance hypothesis. *Hydrobiologia.* 234: 33-39.
11. **Bollens**, S. M., B. W. Frost, H. R. Schwaninger*, C. S. Davis, K. L. Way*, and M. C. Landsteiner. 1992. Seasonal plankton cycles in a temperate fjord, and comments on the match-mismatch hypothesis. *J. Plankton Res.* 14: 1279-1305.

12. Frost, B. W. and S. M. **Bollens**. 1992. Variability of diel vertical migration in the marine planktonic copepod *Pseudocalanus newmani* in relation to its predators. *Can. J. Fish. Aquat. Sci.* 49: 1137-1141.
13. Van Dover, C. L., S. Kaartvedt, S. M. **Bollens**, P. H. Wiebe, J. H. Martin, and S. C. France. 1992. Deep-sea amphipod swarms. *Nature*. 358: 25-26.
14. **Bollens**, S. M., B. W. Frost, K. Osgood, and S. D. Watts*. 1993. Vertical distributions and susceptibilities to vertebrate predation of the marine copepods *Metridia lucens* and *Calanus pacificus*. *Limnol. Oceanogr.* 38: 1827-1837.
15. Marquet, P., M.-J. Fortin, J. Pineda, D. Wallin, J. Clark, Y. Wu, S. M. **Bollens**, C. M. Jacobi, and R. D. Holt. 1993. Ecological and evolutionary consequences of patchiness: a terrestrial - marine perspective. *Lecture Notes in Biomathematics*. 96: 277-304.
16. Kaartvedt, S., C. L. Van Dover, L. S. Mullineaux, P. H. Wiebe, and S. M. **Bollens**. 1994. Amphipods on a deep-sea hydrothermal treadmill. *Deep-Sea Res.* 41: 179-195.
17. **Bollens**, S. M., B. W. Frost, and J. R. Cordell⁺. 1994. Chemical, mechanical, and visual cues in the vertical migration behavior of the marine planktonic copepod *Acartia hudsonica*. *J. Plankton Res.* 16: 555-564.
18. **Bollens**, S. M., B. W. Frost, and J. R. Cordell⁺. 1995. Diversity of cues in zooplankton vertical migrations. *J. Plankton Res.* 17: 656-657.
19. Madin, L. P., S. M. **Bollens**, E. Horgan, M. Butler⁺, J. Runge, B. K. Sullivan, G. Klein-MacPhee, E. Durbin, A. Durbin, D. VanKeuren, S. Plourde, A. Bucklin, and M. E. Clarke. 1996. Voracious planktonic hydroids: Unexpected predatory impact on a coastal marine ecosystem. *Deep-Sea Res.* 43: 1823-1829.
20. **Bollens**, S. M. 1996. Diel Vertical Migration in Marine Zooplankton. *Oceanus* 39: 19.
21. Francis, R. C., K. Aydin, R. Merrick, and S. M. **Bollens**. 1999. Modeling and Management of the Bering Sea Ecosystem, pp. 409-433, In: "Dynamics of The Bering Sea" (Eds: Loughlin, T. R. and K. Ohtani). Fairbanks: University of Alaska Sea Grant Press.
22. Mincks*, S., S. M. **Bollens**, L. P. Madin, E. Horgan, M. Butler⁺, P. Kremer, and J. Craddock. 2000. Distribution, abundance, and feeding ecology of decapods in the Arabian Sea, with implications for vertical flux. *Deep-Sea Research II*, 47: 1475-1516.
23. Solow, A., S. M. **Bollens**, and A. Beet. 2000. Comparing two vertical plankton distributions. *Limnol. Oceanogr.* 45: 506-509.

24. Speekmann*, C. L., S. M. **Bollens**, and S. R. Avent*⁺. 2000. The effect of ultraviolet radiation on vertical distribution and mortality of estuarine zooplankton. *J. Plankton Res.* 22: 2325-2350.
25. Avent*⁺, S., S. M. **Bollens**, E. Horgan, M. Butler⁺, and R. Roundtree. 2001. Planktonic hydroids on Georges Bank: Ingestion and selective feeding by predatory fishes. *Deep-Sea Research II*, 48: 673-684.
26. **Bollens**, S. M., E. Horgan, S. Concelman*, L. P. Madin, and M. Butler⁺. 2001. Planktonic hydroids on Georges Bank: Effects of mixing and food supply on feeding and growth. *Deep-Sea Research II*, 48: 659-672.
27. Butler⁺, M., M., S. M. **Bollens**, B. Burkhalter*, L. P. Madin, and E. Horgan. 2001. Predatory mesopelagic fishes of the Arabian Sea: Distribution, abundance and diet of *Chauliodus pammelas*, *C. sloani*, *Stomias affinis*, and *S. nebulosus*. *Deep-Sea Research II*, 48: 1369-1383.
28. Concelman*, S., S. M. **Bollens**, B. Sullivan, E. Horgan, L. Madin, and M. Butler⁺. 2001. Distribution, abundance and benthic-pelagic coupling of planktonic hydroids on Georges Bank. *Deep-Sea Research II*, 48: 645-658.
29. Lougee*, L., S. M. **Bollens**, and S. R. Avent*⁺. 2002. The effect of haloclines on vertical distribution and migration of zooplankton. *J. Exp. Mar. Biol. Ecol.* 278: 111-134.
30. **Bollens**, S.M., J. C. Cordell, S. Avent*⁺, and R. Hooff*. 2002. Invasive Zooplankton: A Brief Review, Plus Two Case Studies from the Northeast Pacific Ocean. *Hydrobiologia*, 480: 87-110.
31. Purkerson*, D. G., M. A. Doblin, S. M. **Bollens**, S. N. Luoma, G. A. Cutter. 2003. Selenium in San Francisco Bay Zooplankton: Potential Effects of Hydrodynamics and Food Web Interactions. *Estuaries*. 26: 956-969.
32. Beet, A., A. R. Solow, and S. M. **Bollens**. 2003. Comparing vertical plankton profiles with replication. *Mar. Ecol. Prog. Ser.*, 262: 285-287.
33. **Bollens**, S. M., and A. Sanders. 2004. Ecology of larval Pacific herring *Clupea pallasii* in the San Francisco Estuary: Seasonal and interannual abundance, distribution, diet and condition. *Amer. Fish. Soc. Symp.* 36: 15-35.
34. Hooff*, R. C. and S. M. **Bollens**. 2004. Functional response and potential predatory impact of *Tortanus dextrilobatus*, a recently introduced carnivorous copepod in the San Francisco Estuary. *Mar. Ecol. Prog. Ser.* 277: 167-179.

35. Clay*, T. W., S. M. **Bollens**, A. B. Bochdansky#, and T. R. Ignoffo*. 2004. The Effects of Thin Layers on the Vertical Distribution of Larval Pacific Herring, *Clupea pallasii*. J. Exp. Mar. Biol. Ecol. 305: 171-189.
36. Bochdansky#, A. B. and S. M. **Bollens**. 2004. Relevant scales in zooplankton ecology: Distribution, feeding and reproduction of the copepod *Acartia hudsonica* in response to thin-layers of the diatom *Skeletonema costatum*. Limnol. Oceanogr. 49: 625-636.
37. Brown*, H., S. M. **Bollens**, L. P. Madin, and E. F. Horgan. 2005. Effects of Warm Water Intrusions on Populations of Macrozooplankton on Georges Bank, Northwest Atlantic. Cont. Shelf Res. 25: 143-156.
38. Dorman*, J.G., S. M. **Bollens** and A. M. Slaughter+. 2005. Population Biology of Euphausiids off Northern California, and Effects of Short Time-Scale Winds on *Euphausia pacifica*. Mar. Ecol. Prog. Ser. 288: 183-198.
39. Dean*, A. F., S. M. **Bollens**, C. Simenstad and J. R. Cordell. 2005. Marshes as sources or sinks of an estuarine mysid: demographic patterns and tidal flux of *Neomysis kadiakensis* at China Camp Marsh, San Francisco Estuary. Estuar. Coast. Shelf Sci. 63: 1-11.
40. Ignoffo*, T., S. M. **Bollens**, and A. Bochdansky#. 2005. The Effect of Thin Layers on the Vertical Distribution of the Rotifer *Brachionus plicatilis*. J. Exp. Mar. Biol. Ecol. 316: 167-181.
41. Gewant*, D. S. and S. M. **Bollens**. 2005. Macrozooplankton and Micronekton of the Lower San Francisco Estuary: Seasonal, Interannual and Regional Variation in Relation to Environmental Conditions. Estuaries 28: 473-485.
42. Kimmerer, W., S. Avent*+, S. M. **Bollens**, T. Visintainer*, F. Freyer, M. Nobriga, and P. Moyle. 2005. Variability in length-weight relationships in fishes of the San Francisco Estuary. Trans. Am. Fish. Soc. 134: 481-495.
43. Fulmer*, J. and S. M. **Bollens**. 2005. Responses of the chaetognath, *Sagitta elegans*, and larval Pacific hake, *Merluccius productus*, to spring diatom and copepod blooms in a temperate fjord (Dabob Bay, Washington, USA). Prog. Oceanogr. 67: 442-461.
44. Visintainer*, T. A., S. M. **Bollens**, and C. Simenstad. 2006. Community Composition and Diet of Fishes as a Function of Tidal Channel Geomorphology. Mar. Ecol. Prog. Ser., 321: 227-243.
45. Slaughter+, A., S. M. **Bollens**, and G. Rollwagen Bollens. 2006. Grazing Impact of Mesozooplankton in an Upwelling Region of Northern California, 2000-2003. Deep-Sea Res. II, 53: 3099-3115.
46. Papastephanou*, K., S. M. **Bollens**, and A. Slaughter+. 2006. Cross-shelf Distribution of Copepods, and the Role of Event-Scale Winds in a Northern California Upwelling Zone. Deep-Sea Res. II, 53: 3078-3098.

47. Johnson*, T. M., S. M. **Bollens**, and A. M. Sanders⁺. In Revision. The limited effect of tidal fronts on larval fishes in the San Francisco Estuary. *Estuaries*.
48. Stoltz*, G. S., S. M. **Bollens**, H. Brown*, L. P. Madin, and E. Horgan. In Revision. The distribution and population biology of the ctenophore *Pleurobrachia pileus* of Georges Bank, Northwest Atlantic. *Mar. Biol.*
49. Rollwagen Bollens G. C., S. M. **Bollens**, and D. L. Penry. 2006. Vertical distribution of micro- and nanoplankton in the San Francisco Estuary, in relation to hydrography and predators. *Aquatic Microbial Ecology*, 44: 143-163.
50. Largier, J., M. Roughan, C. Kaplan, E. Dever, K. Lawrence, R. Kudela, S. M. **Bollens**, F. Wilkerson, D. Koracin, L. Botsford, N. Garfield. 2006. WEST: a northern California study of the role of wind-driven transport in the productivity of coastal plankton communities. *Deep-Sea Res. II*, 53: 2833-2849.
51. Cordell, J., M. Rasmussen, and S. M. **Bollens**. 2007. Biology of the introduced copepod *Pseudodiaptomus inopinus* in a northeast Pacific estuary. *Mar. Ecol. Prog. Ser.*, 333: 213-227.
52. Gifford*, S. M., G. Rollwagen-Bollens, and S. M. **Bollens**. 2007. Mesozooplankton omnivory in the upper San Francisco Estuary. *Mar. Ecol. Prog. Ser.* 348: 33-46.
53. Cohen*, S. and S. M. **Bollens**. 2008. Diet and growth of non-native Mississippi silversides and yellowfin gobies in restored and natural wetlands in the San Francisco Estuary. *Mar. Ecol. Prog. Ser.*, 368: 241-254.
54. Cordell, J.R., S. M. **Bollens**, R. Draheim, and M. Sytsma. 2008. Asian copepods on the move: recent invasions in the Columbia-Snake river system, USA. *ICES J. Mar. Sci.*, 65: 753-758.
55. Marko*, L. and S. M. **Bollens**. 2008. Ichthyoplankton of the Lower Columbia River Estuary in relation to environmental variables. *Est. Coastal Shelf Sci.* Submitted
56. Morgan, S. G., J. L. Fisher, A. J. Mace, L. Akins, A. M. Slaughter⁺ and S. M. **Bollens**. 2009. Cross-shelf distributions and recruitment of crab postlarvae in a region of strong upwelling. *Mar. Ecol. Prog. Ser.* 380: 173-185.
57. Bochdansky[#], A. B. and S. M. **Bollens**. 2009. Thin layer formation during runaway stratification in the tidally dynamic San Francisco Estuary. *J. Plankton Res.* 31: 1385-1390.
58. Cordell, J.R., Tear⁺, L.M., and **Bollens**, S.M. 2010. Modelling physico- chemical factors affecting occurrences of a non-indigenous planktonic copepod in northeast Pacific estuaries. *Biological Invasions*. 12: 1427-1445.
59. Graham*, E. and S. M. **Bollens**. 2010. Macrozooplankton community dynamics in relation to environmental variables in Willapa Bay, Washington, USA. *Estuaries and Coasts*. 33: 182-194.

60. Bochdanský A. B., S. M. **Bollens**, G. C. Rollwagen-Bollens, and A. H. Gibson⁺. 2010. Effect of the dinoflagellate *Oxyrrhis marina* and the copepod *Acartia tonsa* on vertical carbon fluxes in and around thin layers of *Isochrysis galbana*. Mar. Ecol. Prog. Ser. 402: 179–196.
61. Breckenridge*, J. and S. M. **Bollens**. 2010. Biological thin layer formation: interactions between the larval decapod, *Neotrypaea californiensis*, haloclines and light. J. Plankton Res. 32: 1097–1102.
62. **Bollens**, S. M., R. C. Hooff*, M. Butler⁺, J. R. Cordell, and B. W. Frost. 2010. Feeding ecology of juvenile Pacific Salmon (*Oncorhynchus* spp.) in a Northeast Pacific fjord: diet, availability of zooplankton, selectivity for prey, and potential competition for prey resources. Fish. Bull. 108: 393–407.
63. Breckenridge*, J. and S. M. **Bollens**. 2011. Vertical distribution and migration of decapod larvae in relation to light and tides in Willapa Bay, Washington. Estuaries and Coasts. 34: 1255–1261.
64. **Bollens**, S. M., G. C. Rollwagen-Bollens, J. Quenette*, and A.B. Bochdanský. 2011. Cascading Migrations and Implications for Vertical Fluxes in Pelagic Ecosystems. J. Plankton Res. 33: 349–355.
65. Rollwagen-Bollens, G. C., S. M. Gifford* and S. M. **Bollens**. 2011. The Role of Protistan Microzooplankton in the Upper San Francisco Estuary Planktonic Food Web: Source or Sink? Estuaries and Coasts, 34: 1026–1038.
66. Williamson, C.E., J. M. Fischer, S. M. **Bollens**, E. P. Overholt, and J. K. Breckenridge⁺. 2011. Towards a more comprehensive theory of zooplankton diel vertical migration: Integrating ultraviolet radiation and water transparency into the biotic paradigm. Limnol. Oceanogr. 56: 1603–1623.
67. Rau, G. H. and S. M. **Bollens**. Submitted. Zooplankton Survival in Seawater Equilibrated with 1%, 10%, and 25% Carbon Dioxide. Mar Ecol. Prog. Ser.
68. **Bollens**, S.M., J.K. Breckenridge⁺, R.C. vanden Hooff⁺, and J.R. Cordell. 2011. Mesozooplankton of the lower San Francisco Estuary: Spatio-temporal patterns, ENSO effects, and the prevalence of non-indigenous species. Journal of Plankton Research. 33: 1358–1377. DOI: 10.1093/plankt/FBR034
69. Boyer*, J., G. Rollwagen Bollens, and S. M. **Bollens**. 2011. Microzooplankton grazing before, during and following a cyanobacteria bloom in Vancouver Lake, Washington, USA. Aquatic Microbial Ecology. 64: 163–174.

70. Friedenber^{*}, L., S. M. **Bollens**, G. C. Rollwagen Bollens. 2012. Feeding dynamics of larval Pacific herring (*Clupea pallasii*) on natural prey assemblages: the importance of protists. Fisheries Oceanography. 21: 95–108. DOI: 10.1111/j.1365-2419.2011.00611.x
71. **Bollens**, S. M., J. Breckenridge⁺, J. Cordell, G. C. Rollwagen-Bollens, and O. Kalata⁺. 2012. Invasive Copepods in the Lower Columbia River Estuary: Seasonal Abundance, Co-occurrence and Potential Competition with Native Copepods. Aquatic Invasions. 7: 101-109. DOI: 10.3391/ai.2012.7.1.011
72. Gewant⁺, D. S. and S. M. **Bollens**. 2012. Fish assemblages of interior tidal marsh channels in relation to environmental variables in the upper San Francisco Estuary. Environ. Biol. Fishes. 94: 483–499. DOI: 10.1007/s10641-011-9963-3
73. Sorenson^{*}, K.L., S. M. **Bollens**, and T. Counihan. 2012. Rapid range expansion of *Orconectes rusticus* in the John Day River, Oregon, USA. Aquatic Invasions. 7: 291-294.
74. **Bollens**, S.M., Quenette^{*}, J., and G. C. Rollwagen-Bollens. 2012. Predator-enhanced diel vertical migration in a planktonic dinoflagellate. Mar Ecol. Prog. Ser., 447: 49-54. DOI: 10.3354/meps09467
75. Rollwagen-Bollens, G. C., S. M. **Bollens**, A. Gonzalez, J. Zimmerman⁺, T. Lee^{*}, and J. Emerson⁺. 2013. Feeding dynamics of the copepod *Diacyclops thomasi* before, during and following cyanobacteria blooms in a large, shallow temperate lake. Hydrobiologia, 705: 101-118.
76. Smits, A., A. Litt, J. R. Cordell, O. Kalata⁺, and S. M. **Bollens**. 2013. Non-native cladoceran *Bosmina coregoni* established on the Pacific coast of North America. Bioinvasion Records, 2: 281-286. DOI: 10.3391/bir.2013.2.4.03
77. Whitley^{*}, S. N. and S. M. **Bollens**. 2014. Fish assemblages across a vegetation gradient in a restoring tidal freshwater wetland: Diets and potential for resource competition. Environ. Biol. Fishes, 97: 659-674. DOI: 10.1007/s10641-013-0168-9
78. Howe, E. R., C. A. Simenstad, J. D. Toft, J. R. Cordell, and S. M. **Bollens**. 2014. Macroinvertebrate prey availability and fish diet selectivity in relation to environmental variables in natural and restoring North San Francisco Bay tidal channels. San Francisco Estuary and Watershed Science, 12(1). DOI: [10.15447/sfews.2014v12iss1art5](https://doi.org/10.15447/sfews.2014v12iss1art5)
79. Chang, H., P. Thiers, N.R. Netusil, J.A. Yeakley, G.C. Rollwagen-Bollens, S. M. **Bollens**, and S. Singh. 2014. Relationships between environmental governance and water quality in a growing metropolitan area of the Pacific Northwest, USA. Hydrology and Earth System Sciences, 18: 1383-1395. DOI: 10.5194/hess-18-1383-2014

80. **Bollens**, S. M., J. Breckenridge⁺, J. R. Cordell, S. Simenstad and O. Kalata⁺. 2014. Zooplankton of tidal marsh channels in relation to environmental variables in the upper San Francisco Estuary. *Aquatic Biology*, 21: 205-217. DOI: 10.3354/ab00589
81. Brown*, H., S. M. **Bollens**, G. S. Brown*. 2014. Vertical distribution and diel migration of *Crangon septemspinosa* Say 1818 (Decapoda, Caridea) on Georges Bank, Northwest Atlantic. *Crustaceana*, 87: 1486-1499. DOI: 10.1163/15685403-00003372.
82. Breckenridge⁺, J., S. M. **Bollens**, G. C. Rollwagen-Bollens, and C. Roegner. 2015. Plankton assemblage variability in a river-dominated temperate estuary during late spring (high-flow) and late summer (low-flow) periods. *Estuaries and Coasts*, 38: 93-103. DOI: 10.1007/s12237-014-9820-7
83. Lee*, T. A., G. Rollwagen-Bollens, S. M. **Bollens**, and J. Faber-Hammond. 2015. Environmental influence on cyanobacteria abundance and microcystin toxin production in a shallow temperate lake. *Ecotoxicology and Environmental Safety*, 114: 318-325. DOI: 10.1016/j.ecoenv.2014.05.004
84. Emerson*, J. E., S. M. **Bollens**, and T. Counihan. 2015. Seasonal dynamics of zooplankton in Columbia-Snake River system reservoirs, with special reference to the invasive copepod *Pseudodiaptomus forbesi*. *Aquatic Invasions*, 10: 25–40.
85. Dexter*, E., S. M. **Bollens**, G. Rollwagen-Bollens, J. Emerson*, and J. Zimmerman⁺. 2015. Persistent versus ephemeral invasions: 8.5 years of zooplankton community dynamics in the Columbia River. *Limnology and Oceanography*, 60: 527–539.
86. Lee*, T. A., G. C. Rollwagen-Bollens, and S. M. **Bollens**. 2015. The influence of water quality variables on cyanobacteria blooms and phytoplankton community composition in a shallow temperate lake. *Environmental Monitoring and Assessment*, 187(6): 315. DOI: 10.1007/s10661-015-4550-2.
87. Bowen*, A., G. Rollwagen-Bollens, S. M. **Bollens** and J. Zimmerman⁺. 2015. Feeding of the invasive copepod *Pseudodiaptomus forbesi* on natural microplankton assemblages in the lower Columbia River. *Journal of Plankton Research*, 37: 1089-1094. DOI: 10.1093/plankt/fbv078
88. Adams*, J., S. M. **Bollens**, and J.G. Bishop. 2015. Predation on the invasive copepod, *Pseudodiaptomus forbesi*, and native zooplankton in the lower Columbia River: An experimental approach to quantify differences in prey-specific feeding rates. *PLoS One*, DOI: 10.1371/journal.pone.0144095
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91. Haskell*, C. A., D. A. Beauchamp, and S. M. **Bollens**. 2017. Trophic interactions and consumption rates of subyearling Chinook Salmon and nonnative juvenile American Shad in Columbia River reservoirs. *Transactions of the American Fisheries Society*, 2: 291-298. DOI: 10.1080/00028487.2016.1264997.
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103. Dexter*, E., and S. M. **Bollens**. 2020. Zooplankton invasions in the early 21st Century: A global survey of recent studies and recommendations for future research. *Hydrobiologia*, 847: 309-319. <https://doi.org/10.1007/s10750-019-04096-x>
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105. Rollwagen-Bollens, G.C., S. M **Bollens**, E. Dexter*, and J. Cordell. 2020. Biotic vs. abiotic forcing of plankton assemblages varies with season and size class in a large temperate estuary. *Journal of Plankton Research*, 42: 221–237. <https://doi.org/10.1093/plankt/fbaa010>
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107. Connelly*, K. A., G. Rollwagen-Bollens, and S. M. **Bollens**. 2020. Seasonal and longitudinal variability of zooplankton assemblages along a river-dominated estuarine gradient. *Estuarine, Coastal and Shelf Science*, Vol 245, <https://doi.org/10.1016/j.ecss.2020.106980>
108. Dexter*, E., S. Katz, S. M. **Bollens**, G. Rollwagen-Bollens and S. Hampton. 2020. Modeling the trophic impacts of invasive zooplankton in a highly invaded river. *PLOS ONE* 15(12): e0243002. <https://doi.org/10.1371/journal.pone.0243002>
109. Rollwagen-Bollens, G.C., B.A. Bolam*, S.M **Bollens**, S. Henricksen*, C. Sandison, and J. Zimmerman⁺. 2021. Temperature-dependent functional response of the invasive Asian clam, *Corbicula fluminea*, feeding on natural phytoplankton. *Inland Waters*. In Press. <https://doi.org/10.1080/20442041.2020.1843933>

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111. Rose*, V., G. Rollwagen-Bollens, S. M. **Bollens**, and J. Zimmerman⁺. 2021. Effects of nutrients and grazing on phytoplankton blooms and microplankton assemblage structure in four temperate lakes spanning a eutrophication gradient. *Water*. In Press.
112. **Bollens** S. M., J. Harrison, M. Kramer, G. C. Rollwagen-Bollens, T. Counihan, S. Robb-Chavez*, and S. Nolan*⁺. 2021. Calcium concentrations in the lower Columbia River, USA, are generally sufficient to support invasive bivalve spread. *River Research and Applications*. In Press.
113. Henricksen*, S., and S. M. **Bollens**. Submitted. Growth and condition of the invasive Asian clam, *Corbicula fluminea*, in the lower Columbia River, USA. *Aquatic Invasions*.
114. Hassett*, W., J. Zimmerman⁺, G. Rollwagen-Bollens, S. M. **Bollens**, and T. D. Counihan. Submitted. An experimental evaluation of the efficacy of the FlowCam for detecting invasive dreissenid and corbiculid bivalve veligers. *Lake and Reservoir Management*.
115. Olsen*, K. L., P. J. Hrodey, and S. M. **Bollens**. Submitted. Assemblage and diet of native and non-native nearshore fishes in a restoring wetland in the northern Sacramento-San Joaquin Delta, California. *Hydrobiologia*.
116. Sorenson*, K. L., S. M. **Bollens**, and T. D. Counihan. Submitted. Comparative population biology of native signal and invasive rusty crayfish. *Freshwater Science*.
117. Whitley*, S. N., E. Dexter*, C. S. Simenstad, and S. M. **Bollens**. Submitted. Fish assemblages vary across a vegetation gradient in a restoring tidal freshwater marsh in the Northern Sacramento River Delta. *San Francisco Estuary and Watershed Science*.
118. Stewart-Malone*, A.B., L. New, S.M. **Bollens**, and J. Gross. Submitted. Sea Lamprey (*Petromyzon Marinus*) behavioral response to electric fields. *PLoS One*.
119. **Bollens**, S. M., D. Gewant⁺, S. Avent⁺, T. Visintainer*, S. Simenstad and J. Toft. In Preparation. Tidal wetland fish assemblages as a function of marsh restoration status in the upper San Francisco Estuary. *Restoration Ecology*.

* **Students** under my direct supervision.

⁺ **Technicians** under my direct supervision.

Postdoctoral Investigators under my direct supervision.

Non-refereed Publications

120. **Bollens**, S. M., B. W. Frost, and H. R. Schwaninger*. 1989. Seasonal abundance patterns in the ichthyoplankton and zooplankton of a temperate fjord, with comments on the match-mismatch hypothesis. *Rapp. P.-v. Reun. Cons. int. Explor. Mer.* 191: 456.
121. Madin, L. P., E. F. Horgan, B. K. Sullivan, G. Klein-MacPhee, S. M. **Bollens** and M. Butler⁺. 1997. Estimating the impact of invertebrate predation on target species of copepods on Georges Bank. International Council for Exploration of the Seas 1997 Annual Science Conference, ICES CM 1997/T:16, 14 pp.
122. Solow, A., H. Franklin⁺ and S. M. **Bollens**. 1997. Retrospective analysis of variability in zooplankton community composition of Georges Bank and the Northwest Atlantic. International Council for Exploration of the Seas 1997 Annual Science Conference, ICES CM 1997/T:48, 15 pp.
123. Kimmerer, W., C. Peñalva, S. M. **Bollens**, S. Avent*, and J. Cordell. 1999. Zooplankton in the Lower San Francisco Estuary. *Interagency Ecological Program Newsletter*. Spring 1999.
124. Avent*, S. R., S. M. **Bollens**, W. Kimmerer, and J. Cordell. 2000. Copepods invade the San Francisco estuary. *Ballast Exchange Newsletter*, Univ. California Ballast Sea Grant Outreach Project. 2: 4-5.
125. Simenstad, C. and S. M. **Bollens**. 2002. Into the BREACH: Tidal Marsh Restoration in the San Francisco Estuary. *Estuarine Research Federation Newsletter*. 28(4): 18-21

* **Students** under my direct supervision.

+ **Technicians** under my direct supervision.

Postdoctoral Investigators under my direct supervision.

GRANTS AWARDED

Bollens, S. M., C. S. Davis, and B. W. Frost, Co-Principal Investigators:

"Modeling the upper ocean production dynamics of plankton and larval pollock in the Bering Sea." National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Coastal Ocean Program, 1 October 1991 - 30 September 1993, \$122,400, plus three year extension through 30 September 1996, \$141, 616. \$264,000

Miller, B. S., S. M. **Bollens**, B. W. Frost, and K. Bailey, Co-Principal Investigators: "Recruitment fisheries oceanography of Pacific hake in Dabob Bay, Puget Sound." Sea Grant, National Oceanic and Atmospheric Administration, 1 February 1993 - 31 January 1996. \$89,000

Bollens, S. M. , Principal Investigator: "Experimental studies of vertical migration in larval reef fishes." National Oceanic and Atmospheric Administration, subcontract from the University of Miami, 1 April 1993 – 31 May 1993, \$18,940; extended from 1 July 1994 - 1 January 1995 \$23,460	\$42,400
Bollens, S. M. , Principal Investigator: "Towards a comprehensive theory on habitat (depth) selection and foraging behavior in marine zooplankton." Woods Hole Oceanographic Institution, 1 June 1993 - 30 May 1995.	\$15,000
Bollens, S. M. , Principal Investigator: "Field manipulation studies of the growth and behavior of larval reef fishes", National Oceanic and Atmospheric Administration, subcontract from the University of Miami, 1 July 1993 - 31 June 1996 (includes several extensions).	\$101,666
Bollens, S. M. , C. S. Davis, and A. Solow, Co-Principal Investigators: "US GLOBEC: Georges Bank Zooplankton and Storm Effects: Historical Data Analysis and Comparison with Model Results." National Oceanic and Atmospheric Administration, Climate and Global Change Program, 1 July 1993 - 31 June 1996.	\$126,000
Madin, L. P and S. M. Bollens , Co-Principal Investigators: "US GLOBEC: Effects of predation of fish and invertebrates on target species of fish and copepods on Georges Bank." National Oceanic and Atmospheric Administration, Climate and Global Change Program, 1 July 1993 - 30 June 1998. Funded as a collaborative proposal with B. Sullivan and G. Klein-MacPhee (University of Rhode Island) and M. Grosslein and M. Fogarty (National Marine Fisheries Service).	\$360,000
Bollens, S. M. , Principal Investigator: "High-frequency bioacoustic techniques applied to habitat (depth) selection in marine zooplankton: theory and experimental tests", Office of Naval Research (Young Investigator Award), 1 May 1994 - 30 April 1998.	\$299,910
Madin, L. P., S. M. Bollens , and J. E. Craddock, Co-Principal Investigators: "Distribution, biomass and ecological role of macrozooplankton and fishes in the Arabian Sea and equatorial Indian Ocean." National Science Foundation, 1 February 1995 - 31 January 1998. Funded as a collaborative proposal with P. Kremer (University of Southern California).	\$359,219
Madin, L. P. and S. M. Bollens , Co-Principal Investigators: "Assessment of benthic and benthopelagic predator fauna on Georges Bank." National Undersea Research Program, National Oceanic and Atmospheric Administration, 1 March 1995 - 28 February 1996.	\$35,307

- Bollens, S. M., and J. H. Steele, Co-Principal Investigators:** "Predation closure in modeling the Arabian Sea ecosystem: Model extension and data assimilation." Naval Research Laboratory – Office of Naval Research, 15 April 1995- 14 April 1998. \$225,000
- Bollens, S. M. and B. W. Frost, Co-Principal Investigators:** "Modeling the upper ocean production dynamics of plankton and larval pollock in the Bering Sea." National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Coastal Ocean Program, 1 October 1996 - 30 September 1997. \$65,000
- Bollens, S. M., Principal Investigator:** "Invasion of San Francisco Bay by Exotic (Non-indigenous) Species of Zooplankton", San Francisco State University, 1 January 1997 - 30 June 1997. \$5,000
- Bollens, S. M., Principal Investigator:** "Effects of Massive Flooding in January 1997 on the Zooplankton of San Francisco Bay", United States Geological Survey, 1 April 1997 - 30 September 1997. \$15,000
- Bollens, S. M., Principal Investigator:** "Experimental Investigation of Salinity and Nutrient Effects on Florida Bay Plankton and Larval Sea Trout", Sea Grant, National Oceanic and Atmospheric Administration, 1 August 1997 - 31 July 1998. \$31,000
- Bollens, S. M., Principal Investigator:** "U.S. GLOBEC: Field Studies on Predation Mortality of Copepods and Fish Larvae on Georges Bank." National Science Foundation, 15 November, 1996 - 31 October, 1999. Funded as a collaborative proposal with L. P. Madin (Woods Hole Oceanographic Institution). \$162,819
- Madin, L. P. and S. M. Bollens, Co-Principal Investigators:** "US GLOBEC: Planktonic hydroids as predators on larval fish and copepods on Georges Bank." National Science Foundation, 1 November 1996 - 31 October 1999. Funded as a subcontract from B. Sullivan's and G. Klein MacPhee's (University of Rhode Island) parent GLOBEC grant from NSF. \$84,000
- Solow, A. and S. M. Bollens, Co-Principal Investigators:** "US GLOBEC: Retrospective Studies of Variability in Zooplankton Composition on Georges Bank and the Northwest Atlantic." National Science Foundation, 1 November 1996 – 31 October 2000. \$165,000
- Arp, A., S. M. Bollens, and J. T. Hollibaugh, Co-Principal Investigators:** "Student and Visiting Scientist Housing for The Romberg Tiburon Center." National Science Foundation, 1 May 1997 - 30 April 1999. \$100,000

- Arp, A., S. M. **Bollens**, R. Dugdale, W. Kimmerer, and F. Wilkerson, Co-Principal Investigators: "FSML: Upgrade of the Scientific Capabilities of the Romberg Tiburon Center's Research Vessel." National Science Foundation, 1 September 1997 - 31 August 1998. \$99,000
- Bollens**, S. M., Principal Investigator: "Studies of Selenium Bioaccumulation in Zooplankton in the San Francisco Bay Delta." United States Geological Survey, 15 August 1998 - 31 August 2000. \$39,888
- Bollens**, S. M., Principal Investigator: "Georges Bank Zooplankton Data Analysis." Woods Hole Oceanographic Institution, 1 July 1998 - 30 June 1999. \$10,000
- Frost, B. W., J. R. Cordell, and S. M. **Bollens**, Co-Principal Investigators: "Effects of the invasive Asian copepod *Pseudodiaptomus* on Pacific Northwest estuaries." Sea Grant, National Oceanic and Atmospheric Administration, 1 February 1998 - 31 January 2001. \$182,462
- Bayliss, F T., A. J. Arp, S. M. **Bollens**, I. Erden, N. Gerber, S. Gronert, P. Palmer, E. Routman, U. Simonis, T. Smith and G. Spicer. "San Francisco State University's Beckman Scholars Program." Beckman Foundation, 1 June 1998 - 30 September 1999. \$70,400
- Bayliss, F. T., S. M. **Bollens**, and L. Marquez-Magaña,. "SFSU Project for Undergraduate Student Enhancement in Science". Department of Defense, Office of Naval Research, 1 August 1998 - 30 June 2003. \$2,242,000
- Bollens**, S. M., Principal Investigator: "U.S. GLOBEC: Predation impacts on target species: Role of frontal processes and small predator species." National Science Foundation, 1 January 1999 - 31 December 2001. Funded as a collaborative proposal with L. Madin (WHOI), B. Sullivan And G. Klein-MacPhee (URI) for a total of \$800,000. \$269,441
- Dugdale, R, S. M. **Bollens**, F. Wilkerson, W. Kimmerer, J. Thompson, D. Julian and A. Arp, Co-Principal Investigators. "Ecological Indicators Of Ecosystem Condition in the San Francisco Estuary," Environmental Protection Agency, 1 October 1999 – 31 September 2002. \$891,000
- Arp, A., S. M. **Bollens**, and W. Cochlan, Co-Principal Investigators: "FSML: Upgrade of the Seawater System and Animal Care Facilities at the Romberg Tiburon Center for Environmental Studies", National Science Foundation, 1 November 1999 - 31 September 2000. \$99,000
- Bollens**, S. M., Principal Investigator: "CoOP: The Role of Wind-Driven Transport in Shelf Productivity: Zooplankton Population Maintenance, Grazing, and Reproductive Response." National Science Foundation,

1 November 1999 – 31 October 2006.	\$820,182
Bollens , S. M., Principal Investigator: "Zooplankton Behavioral Responses to Thin Layers", Office of Naval Research, 1 January 2000 - 31 December 2001.	\$199,941
Bollens , S. M., Principal Investigator: "Habitat Assessment of Herring and Native Oyster in San Francisco Bay", University of California, Davis/San Francisco Airport Commission, 15 February 2000 - 14 February 2001.	\$58,135
Kimmerer, W., S. M. Bollens , and W. Bennett, Co-Principal Investigators: "Effects of Non-Indigenous Zooplankton and Clams on the San Francisco Estuary Food Web", CALFED Bay/Delta Program, 1 April 2000 - 31 July 2003	\$826,930
Bollens , S. M., Principal Investigator: "Understanding Tidal Marsh Processes and Patterns: Fishes and Invertebrates." CALFED Bay/Delta Program (Sub-contract from UW); 1 April 2000 - 31 July 2004, Funded as a collaborative proposal with S. Simenstad (lead PI, UW), D. Reed (UNO) and N. Nur (PRBO) for a total of \$1,042,246.	\$236,744
Bollens , S. M., Principal Investigator: "Habitat Assessment of Herring and Native Oyster in San Francisco Bay", University of California, Davis/San Francisco Airport Commission, 15 February 2002 - 30 June 2003.	\$120,000
Bollens , S. M., R. Dugdale, W. Kimmerer, F. Wilkerson, and W. Cochlan, Co-Principal Investigators: "Plankton Communities in South San Francisco Bay: Historical Data Analyses and Pilot Monitoring", City of San Jose, CA, 1 May 2001 - 30 June 2003,	\$506,000
Carpenter, E. J., A. Arp, and S. M. Bollens , Co-Principal Investigators: "FSML: Environmental Monitoring System for the Romberg Tiburon Center for Environmental Studies", National Science Foundation, 1 October 2001 – 30 September 2004.	\$79,927
Bollens , S. M., Principal Investigator: "Ecology and efficacy of ballast water treatment", California State Water Resources Control Board, 1 May 2001 – 30 June 2002.	\$132,500
Bollens , S. M., Principal Investigator: "Zooplankton Responses to Thin Layers: Integrating Behavior and Physiology", Office of Naval Research, 1 January 2002 - 30 September 2005.	\$245,000
Bollens , S. M., Principal Investigator: "U.S. GLOBEC: Integration and Synthesis of the Georges Bank Broad-scale data sets." National Science Foundation, 28 February 2003 - 1 March 2007. (Funded as	

a collaborative proposal with 12 other PIs for a total of \$1,000,000).	\$86,421
Dugdale, R., S. M. Bollens , A. Arp and E. J. Carpenter, Co-Principal Investigators: "Acquisition of Isotope Tracer Instrumentation for the Romberg Tiburon Center", National Science Foundation, Major Research Instrumentation Program, 1 October 2002 – 30 September 2004	\$245,000
Bollens , S. M., Principal Investigator: "Building Experimental Capacity to Assess Ballast Treatment Effectiveness and Residual Risk – 2002", United States Geological Survey (as a subcontract from the Northeast Midwest Institute), 1 June 2002 - 31 May 2004. (Funded as a collaborative proposal with 3 other co-PIs for a total of \$ \$482,158)	\$91,700
Bollens , S.M., E. J. Carpenter, R. Dugdale, N. Garfield, A. Arp and F. Wilkerson, Co-Principal Investigators, "CI-CORE: Establishment of a Prototype Monitoring Station at the Romberg Tiburon Center for Environmental Studies", National Oceanic and Atmospheric Administration, 1 September 2002 – 30 August 2003, (Submitted as a collaborative proposal with several other CSU campuses for a total of \$1,750,000)	\$494,223
Bollens , S.M., E. J. Carpenter, R. Dugdale, N. Garfield, A. Arp and F. Wilkerson, Co-Principal Investigators, "CI-CORE: Further Development of a Prototype Monitoring Station at the Romberg Tiburon Center for Environmental Studies", National Oceanic and Atmospheric Administration, 1 September 2003 – 30 August 2004, (Submitted as a collaborative proposal with several other CSU campuses for a total of \$950,000)	\$125,000
Bollens , S. M., Principal Investigator: "Ecology and efficacy of ballast water Treatment: II", California State Lands Commission, 1 January 2003 – 31 December 2003.	\$66,250
Bollens , S.M., S. W. Siegel, N. M. Kelly, V. T. Parker, M. Vasey, J. Callaway, J. N. Collins, and N. Nur, Co-Principal Investigators: "Integrated Regional Wetlands Monitoring: Component I: Physical Processes, Plants, Birds and Landscape Ecology", CALFED Bay Delta Program, 1 January 2003 - 31 December 2006.	\$2,449,847
Bollens , S.M., C. Simenstad, E. J. Carpenter, R. Dugdale and F. Wilkerson, Co-Principal Investigators: "Integrated Regional Wetlands Monitoring: Component II: Fishes, Invertebrates, Primary Production and Nutrients", CALFED Bay Delta Program, 1 January 2003 - 31 December 2006.	\$1,309,318
Frost, B. W. and S. M. Bollens , Co-Principal Investigators: "Larval Pacific hake, <i>Merluccius productus</i> , and plankton dynamics in Dabob Bay, Washington", Washington State Sea Grant, National Oceanic and Atmospheric Administration, 1 July 2003 – 30 June 2004.	\$10,000

Bollens, S. M. and G. C. Rollwagen Bollens, Co-Principal Investigators: "Protistan Microzooplankton in the Suisun Bay Food Web: Source or Sink?", CALFED Bay Delta Program, 1 August 2003 - 31 July 2006	\$229,340
Bollens, S.M., E. J. Carpenter, R. Dugdale, N. Garfield, A. Arp and F. Wilkerson, Co-Principal Investigators, "CI-CORE: Continued Development of a Prototype Monitoring Station at the Romberg Tiburon Center for Environmental Studies", National Oceanic and Atmospheric Administration, 1 September 2004 – 30 August 2005, (Submitted as a collaborative proposal with several other CSU campuses for a total of \$1,750,000)	\$375,000
Rau, G., S. M. Bollens, and N. Welschmeyer, Co-Principal Investigators: "Carbon Dioxide as a Biocide for Ship Ballast Water: A Laboratory-Scale Study." Sea Grant, National Oceanic and Atmospheric Administration/ U.S. Fish and Wildlife Service, 16 September 2004 – 31 December 2006. (\$20,000 to WSU via sub-contract from UCSC)	\$145,000
Manning, B., S. M. Bollens, A. Ishimura and B. Laforce, Co-Principal Investigators: "Acquisition of an X-ray Diffractometer for Environmental and Materials Chemistry Research", National Science Foundation, Major Research Instrumentation Program, 1 October 2004 – 30 September 2006	\$190,000
Ristow, S., S. M. Bollens, S.M., and K. Patten, Co-PI's. "Research into alternative controls of ghost and mud shrimp in Willapa Bay"; Washington State University Agricultural Research Station; 1 July 2005 – 30 June 2009	\$800,000
Bollens, S.M., G. Rollwagen Bollens, and A. Bochdansky, Co-PI's. "Grazing impacts of diverse zooplankton taxa on thin layers"; Office of Naval Research; 1 January 2006 – 31 December 2009	\$279,247
Bollens, S.M., and G. Rollwagen Bollens, Co-PI's. "Biotic Assessment of Vancouver Lake;" Clark County/Vancouver Lake Watershed Partnership; 1 April 2007 – 31 March 2008	\$100,247
Rollwagen-Bollens, G., S. M. Bollens, T. Nelson, A. Kennedy, and B. Tissot, Co-PIs. "GK12: Partners in Discovery on the Columbia River," National Science Foundation; 1 April 2008 – 31 March 2015	\$2,711,198
Bollens, S.M., Principal Investigator. "Understanding the Dynamics of Nuisance Algae Blooms in Vancouver Lake," Murdock Charitable Trust, Partners in Science Program; 1 April 2008 – 31 March 2010	\$15,000
Bollens, S.M., and G. Rollwagen Bollens, Co-PI's. "Grazing Impacts and the	

Biotic Assessment of Vancouver Lake;" Clark County/Vancouver Lake Watershed Partnership; 1 April 2008 – 31 March 2009	\$85,000
Bollens , S.M., Principal Investigator. "Expanding teaching laboratory capabilities in science and mathematics at WSU Vancouver," Murdock Charitable Trust; 1 January 2009 – 31 December 2010	\$220,000
Bollens , S. M., Principal Investigator: "Understanding Tidal Marsh Processes and Patterns: BREACH III." CALFED Bay-Delta Authority/US Fish and Wildlife Service (CESU); 1 June 2009 – 16 June 2013, submitted as a collaborative proposal with S. Simenstad (lead PI, UW), D. Reed (UNO) and N. Nur (PRBO) for a total of \$2,342,246; WSU total =	\$221,990
Rollwagen Bollens, G. and S. M. Bollens . Co-PI's. "Understanding Controls on Cyanobacteria Blooms: Vancouver Lake as a Model System;" State of Washington Water Research Center; 1 March 2009 – 28 February 2010	\$27,455
Bollens , S.M., and G. Rollwagen Bollens, Co-PI's. "Cyanobacteria growth and grazing in Vancouver Lake;" Washington Department of Ecology/ Clark County Public Works; 1 April 2009 – 31 March 2010	\$64,183
Bollens , S. M., Principal Investigator: "Monitoring the Composition and Abundance of Zooplankton Communities in the Columbia River above Bonneville Dam;" US Geological Service (CESU); 16 June 2009 – 15 June 2011.	\$15,000
Rollwagen Bollens, G. and S. M. Bollens . Co-PI's. "Understanding Toxin Production in Harmful Algae: Vancouver Lake as a Model System;" State of Washington Water Research Center; 1 March 2011 – 31 May 2012	\$30,000
Bollens , S. M., Principal Investigator: "Columbia River Basin Zebra Mussel and other Nonnative Species Research and Monitoring Project;" US Geological Service (CESU); 16 June 2010 – 15 June 2013. Granted via congressional appropriation; official award from USGS.	\$153,018
Bollens , S.M., P. Thiers, M. Stephan, G. Rollwagen Bollens, and J. Harrison, Co-PI's. "Collaborative Research: ULTRA-EX: How do feedbacks between governance and biophysical systems affect resilience of urban socio-ecological systems?"; National Science Foundation; 1 September 2010 – 31 March 2015. Submitted as a collaborative proposal with OSU, PSU and WSU for a total of \$500,000; WSU portion = \$81,341.	\$81,341
Bollens , S. M., Principal Investigator: "Integrated Regional Wetlands Monitoring: Synthesis," CALFED Bay-Delta Authority/United States Geological Survey/Association of Bay Area Governments; 1 June 2012 - 31 October 2012.	\$12,000

Bollens, S. M. and J. R. Cordell, Co-PIs: "Invasive Zooplankton in Pacific Northwest Estuaries;" Washington State Sea Grant; National Oceanic and Atmospheric Administration; 1 January 2013 – 31 December 2013	\$9,999
Bollens, S.M., and G. Rollwagen Bollens, and T. Counihan, Co-PI's. "Enhanced monitoring and investigation of the spread and potential impact of aquatic invasive mussels in the Columbia River Basin;" U.S. Department of Energy/Bonneville Power Administration; 1 October 2012 – 30 September 2015.	\$635,000
Bollens, S.M., Principal Investigator. "Enhanced monitoring and investigation of the spread and potential impact of aquatic invasive mussels in the Columbia River Basin," Murdock Charitable Trust, Partners in Science Program; 1 April 2013 – 31 March 2015	\$15,000
Rollwagen Bollens, G. and S. M. Bollens. Co-PI's. "Interactive effects of nutrients and grazing on the control of cyanobacteria blooms: a comparison across a eutrophication gradient in freshwater systems in Washington state;" State of Washington Water Research Center/USGS; 1 February 2014 – 31 January 2015	\$27,478
Bollens, S.M., and G. Rollwagen-Bollens, T. Counihan, C. Goldberg, Co-PI's. "Enhanced monitoring and investigation of the spread and potential impact of aquatic invasive mussels in the Columbia River Basin; Supplement for a Pilot Study of eDNA " U.S. Department of Energy/Bonneville Power Administration; 1 October 2014 – 30 September 2015.	\$83,695
Rollwagen-Bollens, G. and S. M. Bollens, Co-PIs. "New REU Site: Landscape Ecology and Ecosystem Dynamics of the Columbia River Basin: Integrating Terrestrial and Aquatic Perspectives," National Science Foundation; 1 March 2015 – 30 September 2018	\$259,581
Bollens, S.M., M. Brady, H. Chouinard, J. Harrison, G. Rollwagen-Bollens, and P. Wandschneider, Co-PI's. "An Integrated Biophysical-Economic Study of a Model Food-Energy-Water System: Columbia River Reservoir Storage and Spill," Center for Environmental Research, Education and Outreach/State of Washington Water Research Center/Center for Sustaining Agriculture and Natural Resources (CSANR); 1 December 2015 – 31 December 2016	\$24,943
Rollwagen-Bollens, G., T. Nelson, and S. M. Bollens, Co-PIs. "Columbia River Estuary Science, Education and Outreach (CRESCENDO): A Landscape-scale University-High School Partnership Integrating Scientific and Educational Research," Washington Sea Grant; NOAA; 1 July 2016 – 31 August 2019	\$ 213,496

Rollwagen-Bollens, G. and S. M. Bollens , Co-PIs. "Supplement to New REU Site: Landscape Ecology and Ecosystem Dynamics: Integrating Terrestrial and Aquatic Perspectives," National Science Foundation; 1 February 2016 – 31 August 2017	\$6,000
Dexter, E. and S. M. Bollens , Co-PIs. "STAR Graduate Fellowship: An Integrative Approach to Aquatic Invasions: From Origins to Impacts," U.S. Environmental Protection Agency; 1 May 2016 – 30 April 2019	\$132,000
Bollens , S. M., G. Rollwagen-Bollens and J. R. Cordell, Co-PIs: "Invasive Zooplankton in Washington Estuaries;" Washington Department of Fish and Wildlife; 1 October 2016 – 31 March 2017	\$8,483
Bollens , S. M., G. Rollwagen-Bollens and J. R. Cordell, Co-PIs: "Invasive Zooplankton in California Estuaries;" California State Lands Commission; 1 October 2016 – 3 September 2017	\$17,162
Bollens , S. M., G. Rollwagen-Bollens and J. R. Cordell, Co-PIs: "Invasive Zooplankton in Pacific Northwest Estuaries;" Washington State Sea Grant; NOAA; 10 October 2016 – 9 October 2017	\$9,959
Bollens , S.M., Principal Investigator: "The impacts of nutrients on harmful algal blooms in the Columbia River Basin," Murdock Charitable Trust, Partners in Science Program; 1 April 2017 – 31 March 2019	\$15,000
Bollens , S. M. and G. Rollwagen-Bollens, Co-PIs: "Enhancing Tribal Aquatic Invasive Species (AIS) Monitoring Capacity in the Columbia River Basin – Dreissenid Mussel Early Detection Monitoring;" Bureau of Indian Affairs/ US Department of Interior; 1 July 2017 – 30 June 2019. Submitted as a collaborative proposal with the U.S. Geological Survey and the Columbia River Intertribal Fisheries Commission, Total = \$230,000; WSU portion =	\$86,400
Bollens, S. M. , S. Hampton, L. Hufford, G. Rollwagen-Bollens, and J. Stark, Co-PIs: "FSML Planning Grant: Developing a Strategic Plan and Infrastructure Needs Assessment for Washington State University's Meyer's Point Environmental Field Station", National Science Foundation, 1 July 2017 – 30 June 2019.	\$25,000
Bollens , S. M. and G. Rollwagen-Bollens, Co-PIs: "Dreissenid Mussel Early Detection Monitoring in the Columbia River Basin – Shallow Water, Nearshore Monitoring;" U.S. Army Corps of Engineers/Pacific States Marine Fisheries Commission; 1 August 2017 – 31 December 2017.	\$38,400
Bollens , S. M., G. Rollwagen-Bollens, and T. Counihan, Co-PIs: "Dreissenid Mussel Early Detection Monitoring in the Columbia River Basin – Open-water, Ship-based Monitoring;" U.S. Army Corps of Engineers/ Pacific	

States Marine Fisheries Commission; 1 August 2017 – 31 December 2017.	\$26,756
Bollens, S. M. and G. Rollwagen-Bollens, Co-PIs: "2018 Dreissenid Mussel Early Detection Monitoring in the Columbia River Basin – Sample Collection and Laboratory Processing;" U.S. Army Corps of Engineers/ Pacific States Marine Fisheries Commission; 27 April 2018 – 31 December 2018.	\$154,954
Bollens, S. M. and G. Rollwagen-Bollens, Co-PIs: "2019 Dreissenid Mussel Early Detection Monitoring in the Columbia River Basin – Sample Collection and Laboratory Processing;" U.S. Army Corps of Engineers/ Pacific States Marine Fisheries Commission; 1 April 2019 – 31 March 2020.	\$157,956
Rollwagen-Bollens, G. and S. M. Bollens , Co-PIs: "Enhancing Tribal Aquatic Invasive Species (AIS) Monitoring Capacity in the Columbia River Basin – Outreach and Education on Dreissenid Mussels and other AIS;" Bureau of Indian Affairs/ US Department of Interior; 1 Jul 2019 – 31 Dec 2020. Submitted as a collaborative proposal with the U.S. Geological Survey and the Columbia River Intertribal Fisheries Commission, Total = \$140,000; WSU portion =	\$30,000
Bollens, S. M. and G. Rollwagen-Bollens, Co-PIs: "2020 Dreissenid Mussel Early Detection Monitoring in the Columbia River Basin;" U.S. Army Corps of Engineers/ Pacific States Marine Fisheries Commission; 1 April 2020 – 31 March 2021.	\$161,247
Bollens, S. M. and G. Rollwagen-Bollens, Co-PIs: "Stream invertebrates in pretreatment conditions in the T3 watershed experiment;" U.S. Forest Service; 16 May 2020 – 15 May 2021.	\$27,000
Rollwagen-Bollens, G. and S. M. Bollens , Co-PIs: "Columbia River Inter-Tribal Fish Commission's 2020 Invasive Species Outreach and Education Proposal;" Bureau of Indian Affairs/ US Department of Interior; 1 Jul 2020 – 31 Dec 2022. Submitted as a collaborative proposal with the U.S. Geological Survey and the Columbia River Intertribal Fisheries Commission, Total = \$147,169; WSU portion =	\$35,000

GRANTS PENDING

Harrison, J., S.M. Bollens , M. Brady, G. Rollwagen-Bollens, J. Yoder, and Rajagopalan K. Co-PI's: "DISES: RUI: Understanding the Use of Discretion and its Socio-environmental Consequences," U.S. National Science Foundation; 1 June 2021 – 31 May 2025	\$1,600,000
Rollwagen-Bollens, G., S. M. Bollens , S. M., T. Counihan, B. Parker and T. Thom, Co-PIs: "Assessing the quality and effectiveness of outreach and	

education workshops to enhance tribal capacity in aquatic invasive species management in the Columbia River Basin,” U.S. Bureau of Reclamation; 1 Jan 2021 – 31 Dec 2021.	\$40,856
Counihan, T., Rollwagen-Bollens, G. and S. M. Bollens , S. M., Co-PIs: "Comparing and optimizing ship-board vs shore-based early detection monitoring surveys for planktonic veligers of invasive bivalves,” U.S. Bureau of Reclamation; 1 Jan 2021 – 31 Dec 2022.	\$184,000
Rollwagen-Bollens, G. and S. M. Bollens , Co-PIs. “REU Site: Landscape Ecology and Ecosystem Dynamics of the Columbia River Basin: Integrating Terrestrial and Aquatic Perspectives,” National Science Foundation; 1 April 2021 – 31 March 2024	\$351,031
Rollwagen-Bollens, G. and S. M. Bollens , S. M., Co-PIs: "Double Trouble: Monitoring for Aquatic Invasive Species and Harmful Algal Blooms in the Columbia River,” Rose Foundation; 1 Jan 2021 – 31 Dec 2022.	\$39,998

GRANT SUBMISSIONS EXPECTED

Rollwagen Bollens, G., J. Wu, S. M. Bollens , J. Gawel, and J. Tepper, Co-PIs: "Predicting Harmful Algal Blooms in a Model Freshwater Ecosystem: Spanaway Lake, Washington;” U. S. Environmental Protection Agency; 1 July 2021 – 30 June 2023	\$759,982
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COURSES TAUGHT

<u>Course Title</u>	<u>Institution</u>	<u>Dates</u>
Ocean and Coastal Processes (team taught)	East/West Marine Biology Program Friday Harbor Laboratories/ Northeastern University	Autumn 1991
Biological Oceanography	Hatfield Marine Science Center Oregon State University	Summer 1992
Biological Oceanography (team taught)	Woods Hole Oceanographic Institution/ Massachusetts Institute of Technology Joint PhD Program	1993 - 1995

At San Francisco State University

<u>Course Title</u>	<u>Course No.</u>	<u>Date</u>
Biological Oceanography	BIOL 582	Spring 1997
Plankton Ecology	BIOL 863	Spring 1997
Principles of Ecology	BIOL 313	Autumn 1997

Biological Oceanography	BIOL 582	Spring 1998
Plankton Ecology	BIOL 863	Spring 1999
Principles of Ecology	BIOL 313	Spring 1999
Biological Oceanography	BIOL 582	Autumn 1999
Fisheries Oceanography	MSCI 885	Spring 2001
Biological Oceanography	BIOL 582	Autumn 2001
Plankton Ecology	BIOL 863	Spring 2002
Biological Oceanography	BIOL 582	Autumn 2003

At Washington State University

<u>Course Title</u>	<u>Course No.</u>	<u>Date</u>
Columbia River Ecology	BIOL 565	Spring 2005
Biological Oceanography	BIOL 565	Autumn 2005
Introductory Oceanography	GEOL 230	Autumn 2012
Introductory Oceanography	GEOL 230	Autumn 2013
Introductory Oceanography	GEOL 230	Autumn 2014
Environmental Science Seminar	ENV SCI 491	Autumn 2015
Introductory Oceanography	GEOL 230	Autumn 2016
Introductory Oceanography	GEOL 230	Autumn 2017
Marine Biology	BIOL 308	Spring 2018
Introductory Oceanography	SOE 230	Autumn 2018
Introductory Oceanography	SOE 230	Autumn 2019
Ecology of the Columbia River	SOE 526	Autumn 2020

SUPERVISION AND MENTORING OF STUDENT RESEARCH

Graduate Students

Dewayne Fox§	MS Student (Committee-member) UW	1993 - 1996
Gorka Sancho	PhD Student (Committee-member) WHOI-MIT	1994 - 1996
Sarah Mincks*§	MA Student (Committee Chair), SFSU	1996 - 1998
Ladd Lougee*§	MA Student (Committee Chair), SFSU	1997 - 2000
Christa Speekmann*§	MA Student (Committee Chair), SFSU	1997 - 2000
Dave Purkerson*§	MA Student (Committee Chair), SFSU	1998 - 2000
Ulises Ricoy	MA Student (Committee Chair), SFSU	1998 - 2000
Gretchen Stoltz*§	MA Student (Committee Chair), SFSU	1998 – 2001
Harmon Brown*§	MA Student (Committee Chair), SFSU	1999 - 2001

Tessa Johnson*§	MA Student (Committee Chair), SFSU	1999 - 2002
Sean Avent*§	MA Student (Committee Chair), SFSU	1999 - 2004
Darren Gewant*§	MA Student (Committee Chair), SFSU	1999 - 2003
Jeff Dorman*§	MA Student (Committee Chair), SFSU	2000 - 2002
Rian Hooff*§	MA Student (Committee Chair), SFSU	2000 - 2002
Tansy Clay*§	MA Student (Committee Chair), SFSU	2000 - 2002
Tammie Visintainer*§	MA Student (Committee Chair), SFSU	2000 - 2003
Kathy Papstephanou*§	MA Student (Committee Chair), SFSU	2001 - 2004
Amy Federline Dean*§	MA Student (Committee Chair), SFSU	2001 - 2004
Toni Ignoffo*§	MA Student (Committee Chair), SFSU	2001 - 2004
Julia Fulmer*§	MA Student (Committee Chair), SFSU	2002 - 2004
Scott Gifford*§	MA Student (Committee Co-Chair), SFSU	2003 - 2006
Sahrye Cohen*§	MA Student (Committee Chair), SFSU	2003 - 2006
Ian McComas§	MS Student (Committee Chair), WSU	2005 - 2008
Lisa Marko§	MS Student (Committee Chair), WSU	2005 - 2008
Joanne Breckenridge*§	MS Student (Committee Chair), WSU	2006 - 2008
Eileen Graham*§	MS Student (Committee Chair), WSU	2006 - 2008
Kate Olsen§	MS Student (Committee Chair), WSU	2006 - 2009
Laura Friedenber*§	MS Student (Committee Chair), WSU	2006 - 2009
Jennifer Boyer*§	MS Student (Committee Co-Chair), WSU	2007 - 2010
Joel Quenette*§	MS Student (Committee Chair), WSU	2007 - 2010
Sarah Whitley*§	MS Student (Committee Chair), WSU	2008 - 2012
Tammy Lee*§	PhD Student (Committee Co-Chair), WSU	2008 - 2015
Josh Emerson§	MS Student (Committee Chair), WSU	2008 - 2012
Keith Sorensen*§	MS Student (Committee Chair), WSU	2009 - 2012
Carl Wepking§	MS Student (Committee Chair), WSU	2009 - 2012
Alise Bowen*§	MS Student (Committee Co-Chair), WSU	2010 - 2014
Craig Haskell§	PhD Student (Committee Chair), WSU	2011 - 2017
Jesse Adams*§	MS Student (Committee Chair), WSU	2012 - 2014
Eric Dexter*§	MS Student (Committee Chair), WSU	2012 - 2014
Whitney Hassett*§	MS Student (Committee Chair), WSU	2013 - 2015
Alecia Hunter*	MS Student (Committee Chair), WSU	2013 - 2016
Vanessa Rose*§	PhD Student (Committee Co-Chair), WSU	2014 - 2020
Eric Dexter*§	PhD Student (Committee Chair), WSU	2015 - 2019
Ben Bolam*§	MS Student (Committee Co-Chair), WSU	2015 - 2018
Sean Nolan*§	MS Student (Committee Co-Chair), WSU	2016 - 2018

Kristin Connelly*§	MS Student (Committee Co-Chair), WSU	2017 – 2019
Summer Henricksen*§	MS Student (Committee Chair), WSU	2018 – 2020
Salvador Robb-Chavez§	MS Student (Committee Chair), WSU	2019 – present
Elsa Toskey	MS Student (Committee Chair), WSU	2020 – present

Undergraduate Students

Heidi Schwaninger*§	Undergraduate (REU) Student	U. Washington, 1987 - 1989
Tom Lin*§	Undergraduate (REU) Student	U. Washington, 1987 - 1989
Sidney J. Watts*	Undergraduate (REU) Student	U. Washington, 1988 - 1989
Kenneth J. Way*	Undergraduate (REU) Student	U. Washington, 1989 - 1990
Gregg E. Savage	Undergraduate (REU) Student	Woods Hole Ocean. Inst., 1994
Stephanie Concelman*§	Undergraduate (REU) Student	Woods Hole Ocean. Inst., 1995
Brenda Burkhalter*	Post-baccalaureate Guest Student	Woods Hole Ocean. Inst., 1995
Sean Avent*§	Post-baccalaureate Guest Student	Woods Hole Ocean. Inst., 1996
Kristie McCauley	Post-baccalaureate Guest Student	Woods Hole Ocean. Inst., 1996
Sarah Mincks*§	Post-baccalaureate Guest Student	Woods Hole Ocean. Inst., 1996
Paul Gundelfinger	Independent Research (BIO 699)	SFSU, 1997
Steve Lowe	Independent Research (BIO 699)	SFSU, 1997
Harmon Brown*§	Independent Research (BIO 699)	SFSU, 1997 - 1998
Darren Gewant*§	Independent Research (BIO 699)	SFSU, 1997 - 1998
Devlin Dubriwny	Independent Research (BIO 699)	SFSU, 1998
Patty Fata§	Independent Research (BIO 699)	SFSU, 1998
Toni Ignoffo*§	Independent Research (BIO 699)	SFSU, 2000
Vanessa Rose*§	Honors Research (Env Sci 499)	WSU, 2012-14
Sean Nolan*§	Honors Research (Env Sci 499)	WSU, 2014-16
Matt Perry	NSF REU Fellow	WSU, 2015
Rae Kuhlman§	NSF REU Fellow	WSU, 2016
Kate Perkins*	NSF REU Fellow	WSU, 2016
Summer Henricksen§	NSF REU Fellow	WSU, 2017
Zach Groves	Independent Research (Env Sci 495)	WSU, 2018
Salvador Robb-Chavez	NSF REU Fellow	WSU, 2018

* **Students** under my direct supervision with whom I've co-authored publications in scientific journals (see above for details).

§ **Students** under my direct supervision with whom I've co-authored presentations at scientific conferences.