

## **VITAE (abbreviated)**

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## **Education**

University of California, Berkeley, B.A. 1974  
University of Washington, Seattle, Ph.D. Oceanography, 1982

## **Positions and Experience**

Professor of Oceanography, Moss Landing Marine Laboratories (SJSU), 1989-present  
Senior Scientist, Monterey Bay Aquarium Research Institute, 1989-1992  
Young Investigator Program Award, 1987. Office of Naval Research  
Associate Professor of Biology, Harvard University, 1986-1988  
Assistant Professor of Biology, Harvard University, 1982-1986  
Drafted New York Mets Baseball Org. (declined to attend college).

## **Ten Scientific Publications Most Relevant to Ballast Water Research**

- Blatchley, E.R., J.J. Cullen, B. Petri, K. Bircher and **N. Welschmeyer**. 2018. Ballast water performance standards: “viable/non-viable” or “live/dead”? *Environmental Science and Technology* 52: 8075-8086.
- Bradie, Johanna, K. Broeg, C. Gianoli, J. He, S. Heitmüller, A. Lo Curto, A. Nakata, M. Rolke, L.Schillak, P. Stehouwer, J. Vanden Byllaardt, M. Veldhui, **N. Welschmeyer**, L. Younan, A. Zaake, S. Bailey. 2018. A shipboard comparison of analytic methods for ballast water compliance monitoring. *Journal of Sea Research* 133: 11-19.
- Bradie, Johanna, C. Gianoli, J. He, A. Lo Curto, P. Stehouwer, M. Veldhuis, **N. Welschmeyer**, L. Younan, A. Zaake, S. Bailey. 2018. Detection of UV-treatment effects on plankton by rapid analytic tools for ballast water compliance monitoring immediately following treatment. *Journal of Sea Research* 133: 177-184.
- Elskus, Adria, C. Mitchelmore, D. Wright, J. Henquinet, **N. Welschmeyer**, C. Flynn, B. Watten. 2017. Efficacy and residual toxicity of a sodium hydroxide based ballast water treatment system for freshwater bulk freighters. *J. Great Lakes Research* 43: 744-754.
- Wright, D.A. and **N.A. Welschmeyer** & L. Peperzak (2015) Alternative, indirect measures of ballast water treatment efficacy during a shipboard trial: a case study, *Journal of Marine Engineering & Technology*, 14:1, 1-8.
- Wright, D.A and **N.A. Welschmeyer** (2015) Establishing benchmarks in compliance assessment for the ballast water management convention by port state control, *Journal of Marine Engineering & Technology*, 14:1, 9-18
- Steinberg, M.K., M.R. First, E.J. Lemieux, L.S. Drake, B.N. Nelson, D.M. Kulia, D. M. Anderson, **N.A. Welschmeyer**, P.R. Herring. 2014. Comparison of techniques used to count single-celled viable phytoplankton. *J. Applied Phycology* 24: 751-758.

- Welschmeyer, N** and B. Maurer. 2012. A portable, sensitive plankton viability assay for IMO shipboard ballast water compliance testing. In: Proceeding of the Global R and D forum on Compliance Monitoring and Enforcement, p117-130, Eds. A. Olgun, F.T. Karokoc and F. Haag.
- Culley, A.I. and **N.A Welschmeyer**. 2002. The abundance, distribution, and correlation of viruses, phytoplankton and prokaryotes along a Pacific Ocean transect. *Limnology and Oceanography* 47: 1508-1513.
- Welschmeyer, N.** 1994. Fluorometric analysis of chlorophyll *a* in the presence of chlorophyll *b* and pheopigments. *Limnology and Oceanography* 39: 1985-1992. (Also included in – *Limnology and Oceanography Introduction to the Collection: The Top 60 Papers from the First 60 Years of L&O; 1901 citations*).

### **Ten Service Activities and Presentations Relevant to Ballast Water Research**

- Welschmeyer, N. Member U.S. EPA Environmental Technology Verification Program (ETV), Ballast Water Management: Technical Advisory Panel (2010 – present)
- Welschmeyer, N. Member California State Lands Commission, Ballast Water Management: Technical Advisory Panel (2010 – present).
- Welschmeyer, N. Member U.S. EPA Scientific Advisory Board: Efficacy of ballast water management systems (2010-2012).
- Welschmeyer, N. US Coast Guard/US EPA, Subcommittee on application of Most Probable Number (MPN) technique to ballast water Type Approval test procedures, (2015-2017).
- Welschmeyer, N. 2017. “Biology of a Ballast Tank”, presentation: Ballast Water Summit Conference, California State Lands Commission, March 7-8, Long Beach, CA.
- Welschmeyer, N. 2016. “The Mismeasure of Ballast Efficacy in Ballast Water Treatment Testing”, Presentation: North American Ballast Management Technology Conference, Sept 22-29, Miami FL.
- Welschmeyer, N. 2016. “Ballast Water Discharge Standards and Ballast Water Challenge Concentrations: Conceptions and Misconceptions”, Presentation: US EPA ETV Technical Panel meeting, February 2, Baltimore MD.
- Welschmeyer, N. 2015. “Aquatic Invasive Species in Ballast Water: Wanted Dead, Not Alive”, Presentation: California Ocean Day, State Capital, March 24, Sacramento, CA.
- Welschmeyer, N. 2015. “Ballast Water Discharge Standards and Biological Testing Procedures: a Review of Successes and Challenges”, Presentation: Ballast Water Summit Conference, California State Lands Commission, Long Beach, CA.
- Welschmeyer, N. 2014. “Ballast Water Discharge Standards and Ballast Water Management: New Data and Future Perspectives”, International Conference on Ballast Water Management, November 22-24, Singapore.
- Welschmeyer, N. 2013. “Progress on Rapid Biological Methods for Shipboard Ballast Water Compliance Testing”, Invited Presentation to United Nations International Maritime Organization (IMO) BLG17 Meeting, Feb 4-9, London, England.

### Recent Research Funding:

1. ASJSUF: 22-1509-5850. 01/01/2018 – 12/31/2018. \$484,420. Landbased and Shipboard Type Approval Testing: Panasonic BLUEsys Ballast Water Management System. **P.I. N. Welschmeyer**, Lead Scientist, Golden Bear Research Center, CSU Maritime and Moss Landing Marine Laboratories. Funding: Panasonic Corp. Japan
2. SJSUF: 22-1509-5633. 05/01/2017 – 12/31/2017. \$182,400. Landbased and Shipboard Type Approval Testing: Envirocleanse inTANK Ballast Water Management System. **P.I. N. Welschmeyer**, Lead Scientist, Golden Bear Research Center, CSU Maritime and Moss Landing Marine Laboratories. Funding: Envirocleanse, Corp., USA
3. SJSUF: 22.1509-5570. 01/01/2016 – 12/31/2017. \$304,955. Landbased and Shipboard Type Approval Testing: Panasia Glo-En Patrol-250 Ballast Water Management System. **P.I. N. Welschmeyer**, Lead Scientist, Golden Bear Research Center, CSU Maritime and Moss Landing Marine Laboratories. Funding: Panasia, Ltd. S. Korea.
4. SJSUF: 22-1509-5459. 04/20/2015 – 03/31/2017. \$420,178. Landbased and Shipboard Type Approval Testing: Ecochlor Series 75, Model ES-400S-1.0 Ballast Water Management System. **P.I. N. Welschmeyer**, Lead Scientist, Golden Bear Research Center, CSU Maritime and Moss Landing Marine Laboratories. Funding: Ecochlor, Corp. USA.
5. SJSUF: 21-1509-5281. 03/24/2011 – 07/15/2016. \$277,021. USCG Analysis of Adenosine Triphosphate (ATP) as a rapid, quantitative compliance test for ships' ballast water. **P.I. N. Welschmeyer**, co PI Marcel Veldhuis, Moss Landing Marine Laboratories. Funding: US Coast Guard Research and Development Center.

### **Postdoctoral/Masters Students**

Jack DiTullio Ph.D.  
Ralf Goericke Ph.D.  
Nick Hoepffner Ph.D.  
Suzanne Strom Ph.D.

Jill Baltan MS  
Jennifer Broughton MS  
Alex Culley, MS  
Bill Chevalier, MS  
Jodie Edmunds, MS  
Judah Goldberg MS  
Matthew Huber MS  
Elizabeth Lam MS  
Jules Kuo MS  
Eli Landrau, MS  
Stewart Lamerdin, MS  
Patricia McMillan MS  
Elena Mauri, MS  
Brian Maurer MS  
Karen Parker MS  
Kimberly Puglise MS  
Alice Roberts MS  
Christopher Scianni MS  
James Smith MS  
Sarah Smith MS

Andrew Thurber MS  
Gabriella Vega MS  
Tye Waterhouse, MS  
Gala Wagner MS  
April Woods MS

### **At-Sea Research Experience**

(2.5 years accumulated research time  
at sea):

MV PFEIFFER  
MV SEA PRINCESS  
RV COLUMBUS ISELIN  
RV JOHN MARTIN  
RV METEOR  
RV MOANA WAVE  
RV ONAR  
RV POINT LOBOS  
RV POINT SUR  
RV POLARIS  
RV THOMAS G THOMPSON  
RV WEATHERBIRD  
RV WECOMA  
T/S GOLDEN BEAR