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## LISA A. NEEDLES

Department of Ecology, Evolution, and Marine Biology  
University of California, Santa Barbara  
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### EDUCATION

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- Ph.D. **University of California Santa Barbara:** Ecology, Evolution, and Marine Biology  
(expected December 2012)  
Advisor: Dr. Steven D. Gaines
- M.S. **California Polytechnic State University San Luis Obispo:** Biological Sciences  
Graduated Honors: With Distinction (2007)  
Advisor: Dr. Dean E. Wendt
- M.A.T **Oregon State University:** Science and Mathematics Education (1997)  
Advisor: Dr. Norman Lederman
- B.S. **University of California, Davis:** Zoology (1990)

### RESEARCH INTERESTS

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Community ecology, invasive species, marine conservation and policy, marine protected areas, novel ecosystems and ecosystem based management. My current research examines community dynamics in the context of invasive species. I am interested in factors and processes that affect community resistance to invasion and shape community assemblages. Additionally, I am interested in the impacts invaders have on the recipient community, particularly the Southern Sea Otter.

### TEACHING INTERESTS

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Marine conservation, marine ecology, marine vertebrates, biology of algae, experimental methods in marine biology, wildlife biology, environmental biology and conservation, ecology and evolution, ornithology, conservation biology, tropical ecology, scientific writing, science education.

### AWARDS, FELLOWSHIPS, AND HONORS

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- Outstanding Thesis Award** (2008). California Polytechnic University, San Luis Obispo
- Luce Science to Solutions Fellow** (2007). University of California, Santa Barbara
- Outstanding Graduate Student** (2007). Cal Poly Biological Sciences Department
- California State University Research Competition: 2<sup>nd</sup> place** (2007). Agricultural and Biological Sciences
- California State University Chancellor's Doctoral Incentive Program** (2006).
- National Science Foundation** (2004). Graduate Fellowship Award, Honorable Mention
- Oregon Laurels Scholarship** (1996). Oregon State University

## TEACHING EXPERIENCE

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### University Teaching Experience

#### History and Diversity of Life: BIO 160 (2012)

*Undergraduate Level Course for Majors, California Polytechnic State University*

- Developed curriculum and taught lectures to a class of 233 students

#### Biology of Marine Plants: BOT 437 (2012)

*Undergraduate Level Course for Majors, California Polytechnic State University*

- Developed curriculum and taught both lectures and laboratories

#### Techniques of Teaching and Laboratory Class Supervision: EEMB 502 (2007-2008)

*Graduate Level Course, University of California Santa Barbara*

- Developed curriculum and assisted in the instruction and evaluation of a graduate level course on teaching techniques

#### Aquatic Communities: EEMB 142A (2010)

*Undergraduate Level Course for Majors, University of California Santa Barbara*

- Head Teaching Assistant for a course on marine and freshwater ecology
- Developed curriculum and curriculum materials
- Mentored other Teaching Assistants

#### Concepts and Controversies in the Biological Sciences: EEMB 22 (2007-2010)

*Undergraduate Level Course for Non-majors, University of California Santa Barbara*

- Developed and implemented course curriculum
- Mentored other Teaching Assistants
- Facilitated discussions on societal and scientific perspectives ranging from evolution/creationism to climate change
- Wrote an instructional grant to update the class reader

#### Laboratory and Fieldwork in Vertebrate Biology: EEMB 113L (2006-2008)

*Undergraduate Level Course for Majors, University of California Santa Barbara*

- Ran laboratory and field activities on identification and morphology of local vertebrates
- Designed and implemented both formative and summative evaluations

#### Marine Biology: BIO 328 (2003 to 2008)

*Undergraduate Level Course for Majors, California Polytechnic State University*

- Assisted with development and implementation of laboratories and evaluation of student performance
- Developed and delivered multiple lectures
- Trained other teaching assistants

#### General Biology: BIO 111 (2003 to 2006)

*Undergraduate Level Course for Non-majors, California Polytechnic State University*

- Ran laboratory sections of an undergraduate course for non-majors

#### Invertebrate Zoology: ZOO 336 (2003-2004)

*Undergraduate Level Course for Majors, California Polytechnic State University*

- Assisted with implementation of laboratories, collection of specimens and evaluation of student performance

## High School, Middle School and Elementary School Experience

- Independent Studies Teacher (2000-2003)  
*Paso Robles Public Schools. Paso Robles, CA*
- Naturalist (1999-2000)  
*Kern County Superintendent of Schools. Bakersfield, CA*
- Biological and Physical Science Teacher (1998-1999)  
*Central Linn School District. Halsey, OR*
- Student Teacher (1996-1997)  
*Lebanon Union High School. Lebanon, OR*

## Curriculum Development

### University of California Santa Barbara

- Concepts and Controversies in the Biological Sciences
- Aquatic Communities
- Techniques of Teaching and Laboratory Class Supervision

### Paso Robles Public Schools

- Individualized curriculum for all subject areas (9<sup>th</sup> -12<sup>th</sup> grades)

### Central Linn School District

- Marine Biology
- Anatomy and Physiology
- Physical Science

## RESEARCH EXPERIENCE

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### Marine Ecology

#### Research Assistant: Marine Invasive Species (2002-present)

*University of California Santa Barbara: Dr. Steven Gaines*

*California Polytechnic State University: Dr. Dean Wendt*

#### Marine Mammal Intern: Southern Sea Otter Demographics (2002)

*University of California, Santa Cruz: Dr. Tim Tinker and Dr. James Estes*

#### Research Assistant: Environmental Toxicology Study (1990-1991)

*Bodega Marine Laboratory, University of California Davis: Dr. Gary Cherr*

#### Marine Mammal Intern: Dolphin Cognition and Communication (1989-1990)

*Marine World Africa USA: Dr. Diana Reiss*

### Wildlife Ecology

#### Research Assistant: Burrowing Owl Population Study (2002-2003)

*Oregon State University: Dr. Daniel Rosenberg*

#### Research Assistant: Northern Spotted Owl Demographics Study (1994-1998)

*Oregon State University; Oregon Cooperative Wildlife Research Unit.*

*Dr. Robert Anthony and Dr. Eric Forsman*

Biological Technician: Rare and Threatened Species of Colorado (1994-1995)  
*Colorado Natural Heritage Program, Fort Collins, CO*

Research Assistant: Northern Spotted Owl Demographics Study (1992-1994)  
*United States Forest Service Pacific Southwest Research Station: Dr. Barry Noon*

Biological Technician: Pesticide Application and Wildlife Toxicology Study (1992)  
*Wildlife International Ltd. Visalia, CA*

Lead Biologist: California Spotted Owl Populations Monitoring (1991)  
*United States Forest Service, Foresthill, CA*

## **PUBLICATIONS**

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### **Publications**

Needles, LA (2007). Big Changes to a Small Bay: Exotic Species in the Morro Bay Fouling Community over Thirty Years. Master's Thesis, California Polytechnic State University San Luis Obispo

Woodson CB, DI Eerkes-Medrano, A Flores-Morales, Foley MM, SK Henkel, M Hessing-Lewis, D Jacinto, **LA Needles**, MT Nishizaki, J O'Leary, CE Ostrander, M Pespeni, KB Schwager, JA Tyburczy, KA Weersing, AR Kirincich, JA Barth, MA McManus, L Washburn (2007). Local diurnal upwelling driven by sea breezes in northern Monterey Bay.  
*Continental Shelf Research* 27:2289-2302

### **Manuscripts in Preparation**

Needles, LA and DE Wendt (in review). Big changes to a small bay: Introduced species and long-term compositional shifts to the fouling community of Morro Bay (CA)  
Target Journal: *Biological Invasions*

Needles, LA, SE Lester, R Ambrose, A Andren, M Beyeler, M Connor, J Eckman, B Costa-Pierce, SD Gaines, K Lafferty, H Lenihan, J Parrish, MS Peterson, A Scaroni, J Weis, DE Wendt (in review). Managing bay and estuarine ecosystems for multiple services.  
Target Journal: *Estuaries and Coasts*

Needles, LA, S Gosnell, GT Waltz, DE Wendt, and SD Gaines (in preparation). Native predators facilitate the dominance of the invasive bryozoan, *Watersipora subtorquata*, in a highly invaded estuary.  
Target Journal: *Ecology Letters*

Needles, LA, MC Cadotte, DE Wendt, and SD Gaines (in preparation). Scale dependent controls of community invasion and formation in marine fouling communities.  
Target Journal: *Diversity and Distributions*

Needles LA, E Wilson, C Phillips, and DE Wendt (in preparation). Community stability and resilience in an invaded estuary: Effects of the removal of the dominant invasive bryozoan, *Watersipora subtorquata*.  
Target Journal: *Biological Invasions*

## **PRESENTATIONS**

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### **Invited Presentations**

Wendt, DE, **LA Needles** and S Johnson (2010) Making the Right Connections: Research and Teaching at the Cal Poly Center for Coastal Marine Sciences, California State University Board of Trustees' Meeting, January 27, 2010

### **Presentations at Professional Meetings**

**Needles, LA**, MW Cadotte, DE Wendt and SD Gaines. (2009) *Scale dependent controls of community invasion and formation in marine fouling communities*. Sixth International Conference on Marine BioInvasions. Portland, OR.

**Needles, LA**, MW Cadotte, DE Wendt and SD Gaines. (2009) *Scale dependent controls of community invasion and formation in marine fouling communities*. Western Society of Naturalists, Monterey, CA.

**Needles, LA** and DE Wendt (2006). *Big changes to a small bay: Exotic species in the invertebrate community of Morro Bay over thirty years*. Western Society of Naturalists. Redmond, WA.

**Needles, LA** and DE Wendt (2004) *Has Morro Bay (California) been invaded? Initial characterization of the non-indigenous invertebrate macro-fouling community*. Western Society of Naturalists. Sonoma, CA. (Poster)

## **EXTERNAL FUNDING**

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**Morro Bay National Estuary Program:** Has Morro Bay (California) been invaded? Initial characterization of the non-indigenous invertebrate macro-fouling community (2004). \$53,000. (Co P.I. with D. E. Wendt)

## **SERVICE**

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### **Undergraduate Senior Projects Mentored**

- Philips, Caitrin: A Visual Identification Guide to the Gammaridean Amphipods: Order Amphipoda, Suborder Gammaridea of Morro Bay, CA (2006)
- Wilson, Emily: Competition of invasive marine invertebrates with native species in Morro Bay, California (2005)

### **Departmental, College, and University Service**

- Reviewer for educational videos on Carizzo Plain Wildlife (2007, 2009)
- Volunteer, Cal Poly Pier Open House (2008)
- Developed "Morro Bay Invertebrates" website for San Luis Obispo Ecosystem Alliance (SLOSEA) (2006). (<http://www.slosea.com/taxonomy/invertebrates.php>)
- Cal Poly Open House College of Science and Mathematics (2003-2005)
- Cal Poly Biological Sciences Student Fee Committee (2004)

### **Referee for Scholarly Journals**

- Marine Ecology Progress Series
- Journal of Applied Ecology

### **Community Presentations**

Needles, LA (2010). Invasive marine species in the Morro Bay Estuary; Current knowledge and future threats. Morro Bay National Estuary Program State of the Bay Conference. May 14, 2010.

Needles, LA, MW Cadotte, DE Wendt and SD Gaines (2009). *Scale dependent controls of community invasion and formation in marine fouling communities*. Central Coast Biological Society. October 15, 2009.

Needles, LA, MW Cadotte, DE Wendt and SD Gaines (2009). *How do communities promote or prevent invasive species?* San Luis Obispo Ecosystem Alliance (SLOSEA). September 7, 2009.

Needles, LA and DE Wendt (2006). Big changes to a small bay: Exotic species in the invertebrate community of Morro Bay over thirty years. Morro Bay National Estuary Program State of the Bay Conference. October 13, 2006.

Needles, LA and DE Wendt (2005). Has Morro Bay been invaded? Analysis of the native and exotic species in the Morro Bay macrofouling community. Central Coast Biological Society. April 14, 2005.

### **LICENSURES**

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- California Clear Single Subject Teaching Credential: Biology
- Scientific Diver Certification (American Academy of Underwater Sciences)

### **PROFESSIONAL AFFILIATIONS**

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- American Association for the Advancement of Science
- Ecological Society of America
- Western Society of Naturalists
- National Science Teachers Association