

# BENJAMIN P. NEAL

*Catlin Seaview Survey  
Global Change Institute  
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## EDUCATION

- 2013 **Ph.D.** **Scripps Institution of Oceanography, University of California San Diego:**  
Marine Biology  
Dissertation Title: *Long-term coral recovery and symbiont changes following the 2005 major bleaching disturbance in Bocas del Toro, Panama*  
Co-advisors: B. Greg Mitchell and Richard Norris
- 2007 **M.S.** **Scripps Institution of Oceanography, University of California San Diego:**  
Marine Biology
- 1993 **B.A.** **Dartmouth College:** Geography/Environmental Studies. Minor in Russian

## RESEARCH EXPERIENCE

*Postdoctoral Research Fellow, University of Queensland, January 2014- January 2016*

- Leader of the Shallow Reef Survey Team, Catlin Seaview Survey, Coral Reef Ecosystems Lab (Dr. Ove Hoegh-Guldberg, PI)

*Ph.D. Student Scripps Institution of Oceanography 2005-2013*

- Assisted in development and utilization of rapid and spatially extensive *in situ* optical methods for ecological classification of coral reef ecosystems
- Led and participated in international underwater research teams to coral reef locations using high resolution and multispectral photography
- Investigated coral photobiology with Pulse-Amplitude-Modulated (PAM) fluorometry, underwater spectrometer profiling, and HPLC photosynthetic pigment analysis
- Extracted tissue samples *in-situ* and genotyped *Symbiodinium* clades with rDNA (23s) chloroplast genotyping, in collaboration with the Buffalo Undersea Reef Research group (Dr. M. A. Coffroth)
- Collaborated with Computer Science Dept. to design and build coral imaging systems and to develop novel computer vision processing methods for analysis of coral imagery

## TEACHING EXPERIENCE AND PRIOR EMPLOYMENT

*Undergraduate instructor: Colby College, Tropical Marine Ecology and Conservation, Jan. 2013*

- Developed and co-taught a four week undergraduate course on coral ecosystems in Moorea, French Polynesia for Colby JanPlan Program

*Scripps Classroom Connection Teaching Fellow: San Diego Unified School, 2010-2011*

- Developed and taught a course on oceanography and marine life in the Southern California Bight as a National Science Foundation GK-12 Program Fellow

*Research Advisor: University of California, San Diego, 2006-2011*

- Mentored three M.S. students, two of whom are now doctoral students
- Supervised five NSF Research Experience for Undergraduates projects
- Managed twelve laboratory volunteers in the Scripps Photobiology Group

*Marine Resources Projects Director: Island Institute, Rockland, ME, 2000-2005*

- Developed marine research projects supporting marine conservation, managed research vessel and staff of three, and raised project funding totaling \$252,675
- Mapped herring spawning area change over time in Eastern Maine
- Investigated population structure and spatial concentration of soft-shell clams on Maine islands, and conducted clam flat habitat repopulations and restoration
- Tagged and tracked over 110,000 cod fish, in collaboration with regional effort
- Collected and measured lobster larvae and monitored juvenile lobster abundance and distribution in relation to local coastal oceanographic conditions
- Developed and presented science-based advocacy positions for marine environmental issues to state and federal agencies, including water and shoreline use, aquaculture development, and habitat restoration
- Wrote 100+ articles for *Working Waterfront* newspaper on local marine issues including changing fisheries regulations, new fisheries practices, and marine science and history

*Field Biologist: Maine Dept. of Marine Resources, Boothbay Harbor, ME, 2004-2005*

- Conducted at-sea data collection on lobster vessels, contributing to the ME DMR Lobster Research, Monitoring, and Assessment Program

*Fisheries Observer: National Marine Fisheries Service, Woods Hole, MA, 1998-2000*

- Conducted at-sea data collection for the Northeast Fisheries Science Center, including 200 days at-sea in 21 fisheries Mid-Atlantic and New England fisheries
- Performed finfish and shellfish tissue sampling, genetic sample collection, age structure analysis, marine mammal dissection, shark tagging, and electronic sea turtle monitoring

## **PUBLICATIONS**

McClenachan, L. E.; **Neal, B. P.**; Al-Abdulrazzak, D.; Witkin, T.; Fisher, K.; Kittinger, J. N. Do community supported fisheries (CSFs) improve sustainability? In publication: *Fisheries Research*. Volume 157, September 2014, Pages 62-69, ISSN 0165-7836, <http://dx.doi.org/10.1016/j.fishres.2014.03.016>.

**Neal, B. P.**; Condit, C; dos Santos, S.; Liu, G.; Kahru, M.; Kline, D.; Mitchell, B.G. (2013) When depth is no refuge: Cumulative thermal stress increases with depth in Bocas del Toro, Panama. In publication: *Coral Reefs* (Open Access Online; DOI 10.1007/s00338-013-1081-6).

**Neal, B. P.**; R. N. Winter; H. Lin; T. Trebitz; D. Kline; B. G. Mitchell. Estimation of two-dimensional planar area of coral colonies from underwater photographs. Accepted, in revision: *Coral Reefs*.

Trebitz, T.; **Neal, B.P.**; Kline, D.I.; Beijbom, O.; Roberts, P.; B. G. Mitchell; Kriegman, D. Wide Field-of-View Fluorescence Imaging of Coral Reefs. Submitted: *Nature Methods*.

## RESEARCH IN PROGRESS

Beijbom, O.; Edmunds, P.J.; Fan, T.; Smith, J.; Roelfsema, C.; Dunlap, M.; Moriarty, V.; **Neal, B.P.**, Chan, S.; Treibitz, T.; Kline, D.I.; Mitchell, B.G.; Kriegman, D. Towards Automated Annotation of Scientific Image Data: A Coral Reef Ecology Study. *In prep.*

**Neal, B. P.**; Kline, D.; Coffroth, M.A. Genetic diversity and temporal variation in the population structure of *Symbiodinium* for three Caribbean corals over an eight year period. *In prep.*

**Neal, B. P.**; Winter, R.; Treibitz, T.; Beijbom, O.; Kline, D.; Coffroth, M.A.; Mitchell, B. G. Long term, in-situ growth and recovery of the scleractinians *Montastrea franksii* and *Siderastrea siderea* following the 2005 Caribbean bleaching event. *In prep.*

## SELECTED RECENT PRESENTATIONS

- Hydrological conditions contributing to the severe heat bleaching in the Caribbean in 2005. American Society of Limnology and Oceanography Aquatic Sciences Meeting, New Orleans, LA. 17-22 February 2013
- Long term, in-situ growth and recovery of the scleractinian *Montastrea franksii* following the 2005 Caribbean bleaching event. International Coral Reef Symposium, Cairns, Australia. 9-13 July 2012
- Semi-automated photographic processing of coral reef photographs from time series observations at Bocas del Toro, Panama. American Society of Limnology and Oceanography Aquatic Sciences Meeting, San Juan, Puerto Rico. 13-18 February 2011

## AWARDS AND FUNDING

- Teledyne Student Instrument Grants: CONTROS/Teledyne USA. HydroCO2 instrument use for deployment at Aquarius Underwater Habitat
- Best Student Presentation Award: National Science Foundation IGERT Program Annual Meeting, Washington DC, 2010: \$3000
- Tinker Doctoral Travel Scholarship. Center for Iberian and Latin American Studies, University of California San Diego, 2011: \$1600
- National Science Foundation GK-12 Fellowship. Scripps Classroom Connection, 2010-2011: \$52,000
- Maine Public Utilities Commission - Efficiency Maine Program, 2007: Vinalhaven, Maine Pilot Tidal Power Project. Project lead, with the Ocean Energy Institute, Camden, ME. \$18700
- Scripps-CSIRO-UTAS Marine Science Student Travel Award. Scripps Office of the Director, 2009: \$2500
- National Science Foundation IGERT Fellowship. Center for Marine Biodiversity and Conservation, 2005-2008: \$78,000

*Funding procured at the Island Institute 2000-2005: Total \$252,675*

- Eastern Gulf of Maine inshore community based tagging of Atlantic cod (*Gadus morhua*). National Marine Fisheries Service, Protected Resources Division, Northeast Region, Collaborative Research Projects Initiative, 2004: \$70,475 (Co-PI)
- Community based lobster sea sampling. Davis Cons. Foundation. 2004: \$15,000 (PI)
- Maine nearshore Atlantic herring spawning over time. ME Sea Grant, 2003: \$2100 (PI)

- Southern Maine coastal cod spawning and habitat mapping. The Kendall Foundation, 2003: \$15,000 (PI)
- Increasing communities participation in lobster fishery research. Virginia Wellington Cabot Foundation, 2003: \$25,000 (PI)
- Building a community-based marine resource monitoring program. Maine Outdoor Heritage Fund, 2002. \$25,200 (Co-PI)
- Zone 2 Sea urchin survey. Maine Department of Marine Resources, 2002: \$8500 (PI)
- Atlantic herring spawning site mapping. ME Outdoor Heritage Fund, 2001: \$14,400 (PI)
- Ecological fisheries co-management. Surdna Foundation, 2001: \$75,000 (Project support)
- Eastern Maine Atlantic herring spawning monitoring. Eastern Maine Conservation Initiative, 2000: \$2000

## RELEVANT CERTIFICATIONS

SCUBA Diving: Commercial and scientific, 2000-present

- American Association of Underwater Scientists (AAUS): Active current certification to 90 feet, through the Scripps Inst. Of Oceanography
- PADI: Advanced Open Water/Rescue Diver/NITROX certified
- State of Maine: Commercial Dive Harvesters License #14599
- Over 900 lifetime dives

Vessel Captain: Various charter employment, 1998-2004

U.S. Coast Guard License #1026410; 100 ton inland Master, 100 ton near-coastal Mate, Towing and Sail endorsement, issued Nov. 12, 1998

## SELECTED POPULAR PRESS ARTICLES

*Working Waterfront Newspaper* (Monthly publication focusing on Maine marine issues)

- Fish tagging gets underway in the Gulf of Maine. August 1, 2001
- A change of course: new ruling could alter new England groundfish management. February 1, 2002.
- Lessons from the henhouse: In a world of diseases, penned salmon and confined poultry commonalities. March 1, 2002
- Inshore herring study relies on fishermen's reports. September 1, 2002
- State offers limited-purpose aquaculture license. November 1, 2002
- UNH to create large pelagic fish studies center. March 1, 2004
- Are the codfish coming back? December 1, 2004
- Weather, ocean conditions blamed for last year's red tide outbreak. July 1, 2006
- New England is cool to area-based fisheries management. July 1, 2007

*WoodenBoat Magazine*

- From Hawaii to California: A History of wooden surfboards. July/August 2006.

## PROFESSIONAL AND VOLUNTEER ACTIVITIES

- *Student Advisory Board Member*. NSF Integrated Graduate Education and Research Traineeship Program Review: 2010-2011
- *Science Judge*. National Ocean Sciences Bowl. Birch Aquarium, La Jolla, CA. 2009, 2010, 2011
- *Lecturer and field trip leader for disadvantaged school groups*. The Ocean Discovery Institute, San Diego, CA. 2009-2010