

T. Aran Mooney

Postdoctoral Scholar

*Biology Department, Woods Hole Oceanographic Institution
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Education

- Ph.D., Department of Zoology** 2004-2008
University of Hawaii at Manoa, Honolulu, Hawaii
“Temporal effects of sound on the odontocete auditory system: an electrophysiological study”
Advisor: Paul Nachtigall
- M.S., Department of Zoology** 2001-2003
University of Hawaii at Manoa, Honolulu, Hawaii
“How acoustically enhanced gillnets reduce odontocete bycatch”
Advisor: Paul Nachtigall
- B.S. in Biology, *magna cum laude*, Spanish minor** 1996-2000
University of New Hampshire, Durham, New Hampshire

Positions Held

- Postdoctoral Scholar, Woods Hole Oceanographic Institution** 2008-2010
In collaboration with Darlene Ketten
Focusing on comparative hearing in whales and dolphins
- Grass Fellow in Neuroscience, Marine Biological Laboratory** summer 2008
In collaboration with Roger Hanlon, Woods Hole, MA
Researching sensory capabilities and acoustic reflectivity of the squid, *Loligo pealeii*
- Graduate Assistant, University of Hawaii** 2001-2008
Research Advisor: Dr. Paul Nachtigall
Marine acoustics including the effects of noise on marine mammals and fisheries target strength studies.
- Scientific Consultant, e2M** 2006-2007
Science Advisor for drafting U.S. Coast Guard Environmental Impact Statement (EIS)
- Scientist, Atlantic Marine Mammal Survey, NMFS / NOAA** April 2002
Acoustic survey of marine mammals (pairing acoustics with visual survey data).
- Hatchery Assistant, Aquaculture, Breeding, and Genetics Center** 2001
Virginia Institute of Marine Science, William and Mary College
Managed oysters field sites and stock for aquaculture.

Peer-Reviewed Publications

- Mooney, TA**, Nachtigall, PE, Taylor, KA, Rasmussen, MH, and Miller, LA. 2008. Auditory temporal resolution of a wild white-beaked dolphin (*Lagenorhynchus albirostris*). *Accepted for publication*. Journal of Comparative Physiology A.
- Mooney, TA**, Nachtigall, PE, Breese, M, Vlachos, S, and Au, WWL. 2008. Predicting temporary threshold shifts in a bottlenose dolphin (*Tursiops truncatus*): the effects of noise level and duration. *Submitted*.
- Mooney, TA**, Nachtigall, PE, Vlachos, S. 2008. Sonar induces temporary hearing loss in dolphins. *Submitted*.
- Mooney, TA**, Nachtigall, PE, Castellote, M, Taylor, KA, Pacini, AP, and Esteban, JA. 2008. The hearing pathways and directional sensitivity of the beluga whale, *Delphinapterus leucas*. 362(2): 108-116 Journal of Experimental Marine Biology and Ecology.
- Nachtigall, PE, **Mooney, TA**, Taylor, KA, Miller, LA, Rasmussen, MH, Akamatsu, T, Teilmann, J, Linnenschmidt, M, and Vikingsson, G. 2008. Shipboard measurements of the hearing of the white-beaked dolphin, *Lagenorhynchus albirostris*. 211(4): 642-647 Journal of Experimental Biology.
Cover Article.

- Mooney TA**, Au, WWL, Nachtigall PE, and Trippel, EA. 2007. Acoustic and stiffness properties of gillnets as they relate to small cetacean bycatch. 64(7): 1324-1332. ICES Journal of Marine Science.
- Lammers, MO, Brainard, RE, Au, WWL, **Mooney, TA**, Wong, K. 2008. An ecological acoustic recorder (EAR) for long-term monitoring of biological and anthropogenic sounds on coral reefs and other marine habitats. 123(3): 1720-1228. Journal of the Acoustical Society of America.
- Taylor, KA, Nachtigall, PE, **Mooney, TA**, Supin, AYa, and Yuen, MML. 2007. A portable system for the evaluation of the auditory capabilities of marine mammals. Aquatic Mammals. 33(1): 6-13.
- Nachtigall, PE, **Mooney, TA**, Taylor, KA, Yuen, MMY. 2007. Hearing and auditory evoked potential methods as applied to Odontocete cetaceans. Aquatic Mammals. 33(1): 93-99. ***Cover Article.***
- Nachtigall, PE, Supin A Ya, Amundin, M, Röken, B, Møller, T, **Mooney, TA**, Taylor, KA, and Yuen, MMY. 2007. Polar bear, (*Ursus maritimus*), hearing measured with auditory evoked potentials. Journal of Experimental Biology. 210(7): 1116-1122. ***Cover Article.***
- Mooney TA**, Nachtigall PE, Yuen MMY. 2006. Temporal resolution of the Risso's dolphin, *Grampus griseus*, auditory system. Journal of Comparative Physiology A. 192: 373-380.
- Nachtigall, PE, Yuen, MMY, **Mooney TA**, Taylor KA (2005) Hearing measurements from a stranded infant Risso's dolphin, *Grampus griseus*. Journal of Experimental Biology. 208: 4181-4188.
- Mooney, TA**, Nachtigall, PE, and Au, WWL. 2004. Target strengths of a nylon monofilament and an acoustically enhanced gillnet: Predictions of biosonar detection ranges. Aquatic Mammals. 30(2): 220-226.

Other Publications

- Mooney, TA**, Nachtigall, PE, Pacini, AF. 2007. Acoustic deterrents reduce false killer whale (*Pseudorca crassidens*) echolocation abilities but only so much. Report to Western Pacific Fisheries Management Council and IFF4.
- Mooney, TA**. 2003. How do acoustically enhanced gillnets reduce bycatch: Measures of target strengths and flexural stiffness, and predictions of biosonar detection ranges. M.S. report. Department of Zoology, University of Hawaii. 62 pages.
Advisor: Paul E. Nachtigall, Ph.D.
- Mooney, TA**. 2001. Tag Retention and Mortality Rates for *Homarus americanus*. Bigelow Laboratories and University of New England. 24 pages.
Advisor: Richard Wahle, Ph.D.
- Mooney, TA**. 2000. Cytotoxic Assay with Two Anti-Neoplastic Drugs Using the Soft-Shell Clam *Mya arenaria* as a Model for Studying Acute Myelocytic Leukemia. Senior Thesis. 43 pages.
Advisor: Charles W. Walker, Ph.D.
- Mooney, TA**. 1998. Ganhaarr: Traditional Knowledge of *Crocodylus porosus* and *Crocodylus johnstoni*. School for International Studies Independent Study.

Funding Received

- | | |
|---|-------------------|
| Woods Hole Oceanographic Institute, Postdoctoral Scholarship, 2008-9 | (\$55,800) |
| “Examination of the Auditory Diversity of Odontocete Marine Mammals” | |
| Grass Foundation Research Fellowship, 2008 | (\$15,000) |
| “Examination of the Auditory Sensitivity of the Squid (<i>Loligo pealeii</i>)” | |
| Defense University Research Instrumentation Program (DURIP), 2007 – Co-PI | (\$173,504) |
| “Rugged Portable Instrumentation Package for Marine Mammal Evoked Potential Hearing Measurements” | |
| Arts and Sciences Advisory Council Award, 2007 | (\$2500) |
| “Hearing Measurements of Individual Minke Whales in Icelandic Waters” | |
| Office of Naval Research Graduate Research Assistantship, 2002-8 | (\$18,125 / year) |
| “Temporary threshold shift in odontocetes: Effects of noise duration, intensity, and frequency” | |
| Western Pacific Regional Fisheries Management Council, 2006 – Co-PI | (\$17,836) |
| “False killer whale echolocation experiments to reduce long-line bycatch” | |

UH Graduate Student Organization	(\$984)
Conference travel	
SEASPACE Scholarship Award, 2004	(\$3000)
“Temporary Threshold Shifts in a Bottlenose Dolphin: Effects of Sound Duration on Hearing and Echolocation in Marine Mammals”	
Arts and Sciences Advisory Council Award, 2004	(\$1500)
“Characterization, behavioral context, and significance of sounds produced by three species of Azorean groupers”	
Northeastern Consortium, 2004	(\$4995)
Measure acoustic reflectivity of iron oxide nets.	
Fisheries and Oceans Canada, 2003	(\$2143)
The acoustic reflectivity of barium sulphate nets.	
SEASPACE Scholarship Award, 2003	(\$2000)
“A Potential Method of Reducing Dolphin and Porpoise Entanglement in Fishing Nets”	
PADI Project AWARE Foundation, 2003	(\$2000)
“Using Acoustics for Conservation”	
Friday Harbor Laboratories, University of Washington 2003	(\$1000)
Marine Bioacoustics Workshop, “How might killer whales acoustically differentiate species of salmon”	
Gulf of Maine Foundation, 2000	(\$6000)
Summer Undergraduate Research Fellowship	
“Tag retention and mortality rates in the American lobster, <i>Homarus americanus</i> ”	
University of New Hampshire, 1999	(\$2500)
Center for Marine Biology	
“Clam Leukemia: Developing a marine model for testing human anticancer drugs”	

Invited Presentations

- Mooney, TA**, Nachtigall, PE, Pacini, A. 2007. Acoustic masking to reduce false killer whale long-line bycatch. 4th International Fishers Forum. Puntarenas, Costa Rica. November 12-15, 2007.
- Mooney, TA**, A bit of the ecology of the white-beaked dolphin. 2007. Hanauma Bay Nature Preserve Community Education Lecture. Honolulu, HI. April 6, 2007.
- Mooney, TA**, Nachtigall, PE, Supin, YA, Yuen, MML, Taylor, KT. 2006. The need for speed: The utility of rapid hearing tests. 20th Conf. of the European Cetacean Society. Gdynia, Poland. April 2-7, 2006.
- Mooney, TA**, Santos, PA, Nachtigall, PE, and Santos, R. 2005. Fish, dolphins and whales: Fish sounds and dolphin bycatch. University of the Azores, Horta, Faial, Pt. August 18, 2005.

Paper Presentations

- Mooney, TA**, Nachtigall, PE, Vlachos, S. Intense sonar pings induce temporary threshold shift in a bottlenose dolphin, *Tursiops truncatus*.
- Mooney, TA**, Taylor, KA., Nachtigall, PE, Pacini, A, Castellote, M, Esteban, JA. Odontocetes don't all hear the same: directional sensitivity and hearing pathways in the beluga whale, *Delphinapterus leucas*. 17th Biennial Conference on the Biology of Marine Mammals. Cape Town, South Africa. Nov 28-Dec 3, 2007.
- Apprill, AM, **Mooney, TA**, Stimpert AK, Lammers MO, Rappé, MS. A novel approach to examine environmental and health-related characteristics of humpback whales using the bacterial composition of epithelial skin. 17th Biennial Conference on the Biology of Marine Mammals. Cape Town, South Africa. Nov 28-Dec 3, 2007. ***Best poster presentation***
- Taylor, KA, **Mooney, TA**, Nachtigall, PE, Rasmussen, M, Miller, LA., The high frequency hearing and temporal processing of caught-and-released white-beaked dolphins, *Lagenorhynchus albirostris*. 17th Biennial Conference on the Biology of Marine Mammals. Cape Town, South Africa. Nov 28-Dec 3, 2007.

- Pacini, A, **Mooney, TA**, Nachtigall, PE. False killer whale echolocation experiment to reduce long line bycatch: preliminary results. 17th Biennial Conference on the Biology of Marine Mammals. Cape Town, South Africa. Nov 28-Dec 3, 2007.
- Mooney, TA**, Nachtigall, PE, Taylor, KA, Miller, LA, Rasmussen, M. Temporal resolution and broadband click thresholds in a caught-and-released white-beaked dolphin (*Lagenorhynchus albirostris*). 21st Conference of the European Cetacean Society. San Sebastian, Spain. April 22-25, 2007.
- Breese, M, **Mooney, TA**, Nachtigall, PE, Au, WWL, Vlachos, S. Temporary threshold shifts in the bottlenose dolphin (*Tursiops truncatus*), varying noise duration and intensity. 21st Conference of the European Cetacean Society. San Sebastian, Spain. April 22-25, 2007.
- Mooney, TA**, Nachtigall, PE, Au, WWL, Breese, M, Vlachos, S. Temporary threshold shifts in the bottlenose dolphin (*Tursiops truncatus*), varying noise duration and intensity. 4th Joint Meeting of the Acoustical Society of America and the Acoustical Society of Japan. November 28th-December 2nd 2006. **** Best Student Paper Presentation**
- Mooney, TA**, Nachtigall, PE, Au, WWL, Breese, M, Vlachos, S. The effects of noise intensity and exposure duration and potential protective mechanisms in the bottlenose dolphin (*Tursiops truncatus*). Ocean Sciences Meeting. Honolulu, HI. February 20-24, 2006.
- Lammers, MO, **Mooney, TA**, Brainard, RE, Au, WWL. Passive acoustic monitoring of biological activity on coral reefs and in nearby waters. Ocean Sciences Meeting. Honolulu, HI. February 20-24, 2006.
- Mooney, TA**, Nachtigall, PE, Au, WWL, Breese, M, Vlachos, S. Predicting noise induced threshold shifts in a bottlenose dolphin: Effects of noise duration, intensity, and frequency. 16th Biennial Conference on the Biology of Marine Mammals. San Diego, CA. December 12-16th, 2005.
- Taylor, KA, Nachtigall, PE, Yuen, MMY, **Mooney, TA**,. A portable system to evaluate the auditory system of stranded marine mammals. 16th Biennial Conference on the Biology of Marine Mammals. San Diego, CA. December 12-16th, 2005.
- Lammers, MO, Stimpert, AK, Au, WWL, and **Mooney, TA**. Diel and spatial patterns in the singing behavior of humpback whales off Oahu, Hawaii. 16th Biennial Conference on the Biology of Marine Mammals. San Diego, CA. December 12-16th, 2005.
- Lammers, MO, Stimpert, AK, Au, WWL, and **Mooney, TA**. Diel and spatial patterns in the singing behavior of humpback whales off Oahu, Hawaii. 150th Meeting of the Acoustical Society of America. Minneapolis, MN. October 17-21, 2005.
- Mooney, TA**, Lammers, MO, and Nachtigall, PE. Monitoring for fish sounds: Characterization and diurnal trends of three species of Pomacentrids. Underwater Acoustic Measurements, Heraklion, Crete, Greece, June 28-July 1, 2005.
- Mooney, T.A.**, Lammers, M. O., Santos, P. A., and Nachtigall, P. E. An underwater system to monitor ecologically important fish sounds: Characterization and diel trends of three species of Pomacentrids. 149th Meeting of the Acoustical Society of America. Vancouver, B.C., Canada. May 16-20, 2005.
- Mooney, TA**, Nachtigall, PE, Yuen, MM, and Taylor, KT. Can you hear me now? Hearing thresholds of a stranded Risso's dolphin. University of Hawaii Testers Symposium. Honolulu, HI. March 17-18, 2005.
- Taylor, KT, Nachtigall, PE, Yuen, MM, and **Mooney, TA**. A portable system to assess the auditory status of stranded marine mammals. University of Hawaii Testers Symposium. Honolulu, HI. March 17-18, 2005.
- Nachtigall, PE, Yuen, MM, **Mooney, TA**, and Taylor, KT. Measuring hearing in a neonatal stranded Risso's dolphin (*Grampus griseus*). 148th Meeting of the Acoustical Society of America. San Diego, CA. November 15-19, 2004.
- Mooney, TA**, Nachtigall, PE, and Yuen, MM. The modulation rate transfer function of a Risso's dolphin, *Grampus griseus*, using the envelope following response. 148th Meeting of the Acoustical Society of America. San Diego, CA. November 15-19, 2004.
- Mooney, TA**, Au, WWL., and Nachtigall, PE. Will acoustically enhanced nets reduce odontocete gillnet bycatch because they are better sound reflectors? 148th Meeting of the Acoustical Society of

- America. San Diego, CA. November 15-19, 2004.
- Mooney, TA**, Au, WWL, and Nachtigall, PE. A method to reduce marine mammal bycatch: Predicted harbor porpoise detection ranges of three experimental gillnets. University of Hawaii Testers Symposium. Honolulu, HI. March 11-12, 2004.
- Mooney, TA**, Au, WWL, and Nachtigall, PE. Target strength and predicted biosonar detection ranges of three experimental gillnets: A method to reduce marine mammal bycatch. ASLO/TOS Ocean Research Conference. Honolulu, HI. February 15-20, 2004.
- Mooney, TA**, Nachtigall, PE, Au, WWL, and Muhic, CM. Barium sulfate nets reduce bycatch: acoustic reflectivity or flexural stiffness? 15th Biennial Conference on the Biology of Marine Mammals. Greensboro, NC. December 14-19th, 2003.
- Mooney, TA**, Nachtigall, PE, & Au, WWL. Target strength of two gillnets and predictions of biosonar detection ranges. First Pan-American/Iberian Meeting on Acoustics. Cancun, Mexico. December 2-6, 2002.
- Mooney, TA**, Nachtigall, PE, & Au, WWL. Can dolphins detect gillnets? Implications of reflective gillnets. Hawaii Institute of Marine Biology Colloquium. Kaneohe, HI. October 21-22, 2002
- Mooney, TA** & Wahle, R. Tag retention and mortality rates of the American lobster, *Homarus americanus*. Gulf of Maine Foundation Symposium. Damariscotta, ME. August 1-2, 2000.

Research Experience

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| Scientist, Icelandic Research Cruises | 2006-2007 |
| Capture, study and release of wild white-beaked dolphins and minke whales. | |
| Scientist, Polar Bear Hearing Expedition, Kolmården, Sweden | 2005 |
| Study of polar bear hearing range and sensitivity. | |
| Scientist, SPLASH (Structure of Population, Levels of Abundance, and Status of Humpbacks) | 2004-2006 |
| NOAA's Oahu contractor to biopsy and photo-identify North Pac. humpback whales. | |
| Visiting Scientist, Dept. of Fisheries and Oceans, University of the Azores, Portugal | Summer 2004 |
| Survey of soniferous fishes and efficacy of using acoustics to monitor MPAs | |
| Visiting Researcher, Friday Harbor Laboratories, Univ. of Washington | Summer 2003 |
| Marine Bioacoustics Workshop – Investigated acoustic reflectivity of salmon using SIMRAD echosounders and EchoView. | |
| Research Assistant, Bigelow Laboratories and Darling Marine Center | 2000 |
| University of Maine at Orono | |
| Lobster population study in the Gulf of Maine; tagging, movements, predation work. | |
| Laboratory Technician, Walker Lab | |
| University of New Hampshire | 1997-2000 |
| Aquaculture of the green sea urchin and leukemia study in the soft shell clam. | |

Awards Received

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| Grass Foundation Fellowship – Marine Biological Lab, Woods Hole, MA | 2008 |
| AAAS Excellence in Science Program – Nominated by UH Zoology Dept. | 2007-2008 |
| Best Background Noise – Albert Tester Memorial Symposium, Univ. of Hawaii | 2006 |
| Best Student Paper Presentation – Acoustical Society of American Conference | 2006 |
| Honorable Mention – National Science Foundation, Graduate Fellowship | 2003 |
| Outstanding Teaching Assistant – University of Hawaii, Biology Program | 2001 |
| University Honors Program – University of New Hampshire | 1996-2000 |
| Dean Scholarship – University of New Hampshire | 1996-2000 |
| Golden Key National Honor Society | 2000 |
| Phi Kappa Phi National Honor Society | 1999-2003 |

Teaching, Mentoring and Education

Guest Teacher – Woods Hole Summer Science School (for 10 yr olds)	8/08
Guest Lecturer – UH Zoology Dept. Marine Bioacoustics Course (5 lectures) (Included beginner MatLab intro marine acoustics courses)	9/07
UH Marine Option Program Summer Course – Invited Lectures (3 lectures)	6/07
UH Marine Mammal Biology Class – Invited Lecture (2 lectures)	2007
Hanauma Bay Nature Preserve Community Lecture Series “A bit of the ecology of the white-beaked dolphin” – Public outreach and education lecture	4/07
Guest Lecturer – UH Zoology Dept seminars Seminars: Hearing, Marine Mammal Hearing and Physiological Effects of Sonar	Spring/'04-'06
Eckerd College Guest Lecture – Sonar Capabilities of Marine Mammals Lectured on the hearing & echolocation abilities of marine mammals focusing on current research.	11/03
RESEARCH EXPERIENCE for UNDERGRADUATES, Dept. of Zoology, UH Mentoring undergraduate students in the design of short research experiments, collecting and analyzing data, interpreting results and preparation of a short paper/presentation.	8/02-present
GRADUATE TEACHING ASSISTANT, Department of Zoology, Univ. of Hawaii Taught senior/graduate level developmental biology lab.	1/02-8/02
GRADUTAE TEACHING ASSISTANT, Biology Program, Univ. of Hawaii Taught upper level ecology and evolution labs. Wrote and graded quizzes and homework and designed course work. Rating above course and department average.	8/01-1/02
UNDERGRADUATE TEACHING ASSISTANT, Department of Biology, UNH Assisted graduate TA in teaching second semester “Introductory Biology”	1/99-5/99
UNDERGRADUATE TEACHING ASSISTANT, Department of Physics, UNH Aided graduate TA in teaching second semester “Introductory Physics”	1/98-5/98

Outreach - Media

- MBL LabBits*, “What Do Squid Hear?” by Joseph Caputo – July 23, 2008
http://www.mbl.edu/news/press_releases/2008_pr_07_23.html#Anchor-What-49575
- Le Monde*, Paris, France. “Les mammiferes marins menaces par la pollution sonore humaine” (Threats to marine mammals by human sound pollution) by Pierre Le Hir - July 4, 2008
- Science Metropolis*, “Do you hear what squid hear” by Joseph Caputo – June 24, 2008
[http://www.sciencemetropolis.com/2008/06/24/at-mbl-do-you-hear-what-squid-hear/Discover Magazine](http://www.sciencemetropolis.com/2008/06/24/at-mbl-do-you-hear-what-squid-hear/Discover%20Magazine).
- “How to Weave a Dolphin-Friendly Net” by Kathy A. Svitil - March 4, 2005
<http://discovermagazine.com/2005/mar/dolphin-friendly-net0304>

Professional Service

Reviewer: Animal Behavior, ICES Journal of Marine Science, Journal of the Acoustical Society of America, Aquatic Mammals and Journal of Experimental Biology.

Mentor for Undergraduates: I have mentored 6 undergraduates in the UH Zoology Dept., and UH-Marine Option Program.

Representative: Society for Marine Mammalogy – President, Hawaii Student Chapter 2004-2007
 UH Zoology Dept. Student Representative 2002-2003