

KELLY J. BENOIT-BIRD

Monterey Bay Aquarium Research Institute

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RESEARCH INTERESTS

My work focuses on the ecological importance of spatial and temporal dynamics in pelagic marine ecosystems. I am particularly interested in the effects of behavior like schooling, cooperation, and other 'group' processes on inter-individual and predator-prey interactions. In order to address complex, four-dimensional problems, a significant emphasis of my efforts is the development and thoughtful application of active acoustic techniques, integration of acoustic technologies within novel platforms, and the combination of these tools with other approaches including optical sampling, animal tagging, and behavioral modeling.

CURRENT POSITIONS

Research Chair , Monterey Bay Aquarium Research Institute	02/21-present
Senior Scientist (Level V of V), Monterey Bay Aquarium Research Institute	07/16-present
Professor (By Courtesy) College of Earth, Ocean, & Atmospheric Sciences, Oregon State Univ.	07/18-present
Professor (By Courtesy) Hopkins Marine Laboratory, Stanford University	10/17-present

EDUCATION

University of Hawaii at Manoa , Honolulu, Hawaii <i>Ph.D.</i> , Department of Zoology	2003
Brown University , Providence, Rhode Island <i>B.S. with Honors</i> , Aquatic Biology	1998
Duke University Marine Laboratory , Beaufort, North Carolina	1/97-5/97

PREVIOUS EXPERIENCE

Professor (with indefinite tenure) <i>Assistant 07/04- 06/09; Associate 07/09-06/14; Professor 07/14-07/18 (on leave 07/16-07/18)</i> College of Earth, Ocean, & Atmospheric Sciences, Oregon State University	
Post-Doctoral Fellow , Hawaii Institute of Marine Biology Research advisor: <i>Whitlow Au</i>	05/03-07/04
Research Assistant , Bottomfish Project, Hawaii Institute of Marine Biology Research advisors: <i>Christopher D. Kelley and Whitlow Au</i>	08/00-05/03
Research Assistant , Hawaii Institute of Marine Biology	08/99-07/00
Teaching Assistant , Biology Program, University of Hawaii	08/98-08/99
Teaching Intern Coordinator , Biology Program, University of Hawaii	01/99-08/99
Scientific Illustrator , Department of Ecology and Evolution, Brown University Completed more than 300 scientific illustrations for <i>The Ecology of Atlantic Seashores</i> , Mark Bertness, Sinauer Associates, 1998, illustrated a poster for the Ecology Department more than a dozen journal articles	09/95-06/98
Teaching Assistant , Department of Ecology and Evolution, Brown University	01/98-05/98
Research Assistant , Duke University Marine Laboratory Research advisors: <i>Andrew Read and Heather Koopman</i>	01/97-05/97
Research Assistant , Psychology Department, Brown University Research advisors: <i>Andrea Simmons and James Simmons</i>	12/94-12/96

CONTINUING PROFESSIONAL EDUCATION

Duarte Designs Visual Storytelling Workshop	02/19
PopTech! Science Fellows training in communication, presentation design, leadership, and collaboration	10/12
COMPASS Communications Training Workshop	10/12
Communicating Ocean Science Workshop , COSEE Pacific Partnerships	02/09
Science Writing Workshop , Author Julia Whitty hosted by OSU's Spring Creek Project	10/08
Media Training , OSU News and Communications	12/07
Donor Training , OSU Foundation	08/07
Survival Strategies for Faculty New to Teaching , OSU Center for Teaching and Learning	10/06

HONORS AND AWARDS

- **Feature Article**, Marine Ecology Progress Series 2020
- **Medwin Prize in Acoustical Oceanography, Acoustical Society of America** 2020
For the effective use of sound in the discovery and understanding of biological processes in the sea
- **Slepecky Prize Lecturer**, Syracuse University 2019
- **Blinks Memorial Lecturer**, Stanford University, Hopkins Marine Station 2019
- **Fellow, Acoustical Society of America** 2017
- Lead Principal Investigator for the *Strategic Environmental Research and Development Program's* (DoD) **Project of the Year** for Deep mapping of teuthivorous whales and their prey fields 2016
- Part of the team selected by the *Secretary of Commerce to receive the Group Gold Medal for Scientific and Engineering Achievement*, recognizing the Bering Sea Project as “the most comprehensive integrated ecosystem assessment ever completed, revealing how climate cycles affect the Nation's largest fishery” 2016
- **Distinguished Lecturer**, IEEE Oceanic Engineering Society 2012-2019
- **MacArthur Fellowship** for “exceptional creativity and promise for important future advances based on a track record of significant accomplishment” 2010-2015
- **Kavli Frontiers Fellow**, National Academy of Sciences 2007, 2013, 2014
Attendee in 2007, Speaker in 2013, Organizer for 2014
- **Promising Scholar**, Oregon State University 2012-2013
- **Best Presentation Award**, Pacific Marine Science Organization (PICES) Committee on Monitoring 2009
- **R. Bruce Lindsay Award**, Acoustical Society of America 2009
Presented to an early career member who has been active in the affairs of the Society and contributed substantially to the advancement of acoustics. Citation: “*For contributions to marine ecological acoustics*”.
- **Ocean Sciences Early Career Award**, American Geophysical Union 2008
For “*innovative application of acoustical techniques*”.
- **Presidential Early Career Award for Scientists and Engineers FY 2005 (PECASE)** 2006
The highest honor bestowed by the United States government on “*outstanding scientists and engineers beginning their independent careers*”.
- **Feature Article**, Marine Ecology Progress Series 2006
- **Women in Acoustics Young Investigator Award**, Acoustical Society of America 2006
- **Office of Naval Research Young Investigator Award** 2005
- **Best Young Presenter Award**, European Congress on Underwater Acoustics, Delft, Netherlands 2004
- **The Future of Animal Bioacoustics and Acoustical Oceanography**, Acoustical Society of America 2004
Selected as one of nine young presenters to speak at the Society's 75th Anniversary Celebration Plenary
- **Excellence in Science Communication Award** 2003
15th Biennial Conference on the Biology of Marine Mammals, Best Presentation by a Non-Student
- **DIALOG V Symposium Invited Participant**, American Society of Limnology and Oceanography 2003
- **Best Student Paper in Acoustical Oceanography**
-145th Meeting of the Acoustical Society of America, Nashville, Tennessee 2003
-1st Pan-American/Iberian Meeting on Acoustics, Cancun, Mexico (2nd Prize) 2002
-142nd Meeting of the Acoustical Society of America, Ft. Lauderdale, Florida 2001
-140th Meeting of the Acoustical Society of America, Newport Beach, California 2000
- **Best Student Paper in Animal Bioacoustics**
-145th Meeting of the Acoustical Society of America, Nashville, Tennessee 2003
-140th Meeting of the Acoustical Society of America, Newport Beach, California 2000
- **Excellence in Doctoral Student Research Award** University of Hawaii Regents 2002
- **National Science Foundation Doctoral Dissertation Improvement Grant**, IBN 2002
- **Pauley Marine Biology Scholar** Achievement Rewards for College Scientists Foundation 2001
- **Sigma Xi** Inducted as a Member of the scientific honor society 2001
- **Albert Tester Memorial Award** for Best Graduate Student Paper, University of Hawaii 2000
- **Leonida Scholarship Endowment** for Fisheries Research, Oceanography Dept, Univ. of Hawaii 1999
- **Aspect Technology Fund Award** Recipient for the Development of Novel Technology 1999

PEER-REVIEWED PUBLICATIONS

- Benoit-Bird, K.J.** Au, W.W.L., Brainard, R.E., & Lammers, M.O. 2001 “Diel horizontal migration of the Hawaiian mesopelagic boundary community observed acoustically” *Marine Ecology Progress Series*, 217:1-14
- Benoit-Bird, K.J.** & Au, W.W.L. 2001 “Target strength measurements of animals from the Hawaiian mesopelagic boundary community” *Journal of the Acoustical Society of America*, 110:812-819.
- Benoit-Bird, K.J.** & Au, W.W.L. 2002 “Energy: Converting from acoustic to biological resource units” *Journal of the Acoustical Society of America*, 111: 2070-2075.
- Benoit-Bird, K.J.**, Au, W.W.L., Kelley, C.D., Taylor, C.D. 2003 “Acoustic backscattering by deepwater fish measured in situ from a manned submersible.” *Deep-Sea Research I*, 50: 221-229.
- Benoit-Bird, K.J.** & Au, W.W.L. 2003 “Prey dynamics affect foraging by a pelagic predator (*Stenella longirostris*) over a range of spatial and temporal scales.” *Behavioral Ecology and Sociobiology*, 53:364-373.
- Au, W. & **Benoit-Bird, K.J.** 2003 “Dynamic gain control in the echolocation system of dolphins.” *Nature*, 423:861-863.
- Benoit-Bird, K.J.** & Au, W.W.L. 2003 “Spatial dynamics of a nearshore micronekton sound-scattering layer.” *ICES Journal of Marine Science*, 60:899-913.
- Benoit-Bird, K.J.** & Au, W.W.L. 2003 “Echo strength and density structure of Hawaiian mesopelagic boundary community patches.” *Journal of the Acoustical Society of America*, 114: 1888-1897.
- Benoit-Bird, K.J.**, Au, W.W.L., & Kelley, C.D. 2003 “Acoustic backscattering by Hawaiian lutjanid snappers I: Target strength and swimbladder characteristics.” *Journal of the Acoustical Society of America*, 114: 2757-2766.
- Au, W.W.L. & **Benoit-Bird, K.J.** 2003 “Acoustic backscattering by Hawaiian lutjanid snappers II: Broadband temporal and spectral structure.” *Journal of the Acoustical Society of America*, 114: 2767-2774.
- Benoit-Bird, K.J.**, Würsig, B., & McFadden, C.J. 2004 “Dusky dolphin (*Lagenorhynchus obscurus*) foraging in two different habitats: Active acoustic detection of dolphins and their prey.” *Marine Mammal Science*, 20: 215-231.
- Benoit-Bird, K.J.** & Au, W.W.L. 2004 “Fine-scale diel migration dynamics of an island-associated sound-scattering layer.” *Deep-Sea Research I*, 51: 707-719.
- Benoit-Bird, K.J.** 2004 “Prey value and energy needs: Foraging predictions for wild spinner dolphins.” *Marine Biology*, 145:435-444.
- Benoit-Bird, K.J.**, Au, W.W.L. & Kastelein, R.A. 2006 “Testing the acoustic prey debilitation hypothesis: No stunning results.” *Journal of the Acoustical Society of America*, 120: 1118-1123.
- Au, W.W.L., Kastelein, R.A., **Benoit-Bird, K.J.**, Cranford, T. & McKenna, M. 2006 “Acoustic radiation from the head of echolocating harbor porpoises (*Phocoena phocoena*).” *Journal of Experimental Biology*, 209:2726-2733.
- Benoit-Bird, K.J.** & Au, W.W.L. 2006 “Extreme diel horizontal migrations by a tropical nearshore resident micronekton community.” *Marine Ecology Progress Series*, 319: 1-14.
- Au, W.W.L, **Benoit-Bird, K.J.** & Kastelein, R.A. 2007 “Modeling the detection range of fish by echolocating bottlenose dolphins and harbor porpoises.” *Journal of the Acoustical Society of America*, 121:3954-3962.
- Benoit-Bird, K.J.**, Gilly, W.F, Au, W.W.L, & Mate, B. 2008 “Controlled and *in situ* target strengths of the jumbo squid *Docidicus gigas* and identification of potential acoustic scattering sources.” *Journal of the Acoustical Society of America*, 123:1318-1328.
- Au, W.W.L. & **Benoit-Bird, K.J.** 2008 “Broadband backscatter from individual Hawaiian mesopelagic boundary community animals with implications for spinner dolphin foraging” *Journal of the Acoustical Society of America*, 123:2884-2894.
- McManus, M.A., **Benoit-Bird K.J.**, & Woodson, C.B. 2008 “Behavior exceeds physical forcing in the diel horizontal migration of a midwater sound-scattering layer in Hawaiian waters.” *Marine Ecology Progress Series*: 365:91–101.
- Benoit-Bird, K.J.**, Zirbel, M.J., & McManus, M.A. 2008 “Zooplankton spatio-temporal distributions in Hawaiian waters favor diel horizontal migration by midwater micronekton.” *Marine Ecology Progress Series*, 367:109-123.
- Benoit-Bird, K.J.** & Au, W.W.L. 2009 “Phonation behavior of cooperatively foraging spinner dolphins.” *Journal of the Acoustical Society of America*, 125:539-546.
- Benoit-Bird, K.J.** & Au, W.W.L. 2009 “Cooperative prey herding by a pelagic dolphin, *Stenella longirostris*.” *Journal of the Acoustical Society of America*, 125:125-137.

- Benoit-Bird, K.J.** 2009 “Effects of scattering layer composition, animal size, and numerical density on the frequency response of volume backscatter.” *ICES Journal of Marine Science*, 66: 582-593
- Benoit-Bird, K.J.**, Cowles, T.J., Wingard, C.E. 2009 “Edge gradients provide evidence of ecological interactions in planktonic thin layers.” *Limnology and Oceanography* 54:1382-1392.
- Au, W.W.L., Branstetter, B.K., **Benoit-Bird, K.J.**, Kastelein, R.A. 2009 “Acoustic basis for fish prey discrimination by echolocating dolphins and porpoise.” *Journal of the Acoustical Society of America* 126: 460-467
- Benoit-Bird, K.J.**, Au, W.W.L., Wisdom, D.W.* 2009 “Nocturnal light and lunar cycle effects on diel migration of micronekton.” *Limnology and Oceanography* 54: 1789-1800
- Kaltenberg, A.M.* & Benoit-Bird, K.J.* 2009 “Diel behavior of sardine and anchovy schools in the California Current System.” *Marine Ecology Progress Series* 394:247-262.
- Benoit-Bird, K.J.**, Dahood, AD, & Wursig, B. 2009 “Using active acoustics to compare predator-prey behavior of two marine mammal species”. Invited Contribution to Special Issue “Applications of Acoustics in Exploring Marine Ecosystems and the Impacts of Anthropogenic Sound” *Marine Ecology Progress Series* 395: 119–135.
- Benoit-Bird, K.J.** 2009 “Dynamic three-dimensional structure of zooplankton thin layers is affected by foraging fish.” *Marine Ecology Progress Series* 396: 61–76.
- Benoit-Bird, K.J.**, Moline, M.A., Waluk, C.M, Robbins, I.C. 2010 “Integrated measurements of acoustical and optical thin layers I: Vertical scales of association.” *Continental Shelf Research*, 30: 17-28.
- Moline, M.A., **Benoit-Bird, K.J.**, Robbins, I.C, Schroth-Miller, M, Waluk, C.M, Zelenke, B. 2010 “Integrated measurements of acoustical and optical thin layers II: Critical horizontal length scales.” *Continental Shelf Research*, 30: 29-38.
- Sullivan, J.M., McManus, M.A., Cheriton, O.M., **Benoit-Bird, K.J.**, Goodman, L., Wang, Z., Ryan, J.P., Stacey, M., Holliday, D.V., Greenlaw, C., Moline, M.A., & McFarland, M. 2010 “Layered organization in the coastal ocean: An introduction to planktonic thin layers and the LOCO project.” *Continental Shelf Research*, 30:1-6.
- Benoit-Bird, K.J.**, Moline, M.A., Schofield, O.M., Robbins, I.C, & Waluk, C.M. 2010. “Zooplankton avoidance of a profiled open-path fluorometer.” *Journal of Plankton Research*, 32:1413-1419.
- Kaltenberg, A.M.**, Emmett, R., **Benoit-Bird, K.J.** 2010 “Timing of forage fish seasonal appearance in the Columbia River plume and linkage to ocean conditions” *Marine Ecology Progress Series*, 419: 171–184.
- Benoit-Bird, K.J.** & Kuletz, K., Heppell, S, Jones, N., Hoover, B. 2011 “Active acoustic examination of the diving behavior of murre foraging on patchy prey” *Marine Ecology Progress Series*, 443: 217-235.
- Benoit-Bird, K.J.** & McManus, M.A. 2012 “Bottom-up regulation of a pelagic community through spatial aggregations” *Biology Letters*, 8: 813-816.
- Benoit-Bird, K.J.** & Gilly, W.F. 2012 "Coordinated nocturnal behavior of foraging jumbo squid, *Dosidicus gigas*" *Marine Ecology Progress Series*, 455:211-228.
- McManus, M.A., Sevadjan, J.C., **Benoit-Bird, K.J.**, Cheriton, O.M., Timmerman, A.V., & Waluk, C.M. 2012 "Observations of Thin Layers in Coastal Hawaiian Waters" *Estuaries and Coasts*, 35:1119-1127.
- Sevadjan, J.C., McManus, M.A., **Benoit-Bird, K.J.**, & Selph, K.E. 2012 “Shoreward advection of phytoplankton and vertical re-distribution of zooplankton by episodic near-bottom water pulses on an insular shelf: Oahu, Hawaii" *Continental Shelf Research*, 50-51:1-15
- Benoit-Bird, K.J.**, Battaile, B.C., Heppell, S.A., Hoover, B., Irons, D., Jones, N., Kuletz, K.J., Nordstrom, C.A., Paredes, R.A., Suryan, R.M., Waluk, C.M., & Trites, A.W. 2013 "Prey patch patterns predict habitat use by top marine predators with diverse foraging strategies." *PLoS ONE*, DOI 10.1371/journal.pone.0053348.
- Benoit-Bird, K.J.**, Battaile, B.C, Nordstrom, C.A., & Trites, A.W. 2013 "Foraging behavior of northern fur seals closely matches the hierarchical patch scales of prey." *Marine Ecology Progress Series*, 479: 283-302
- Kaltenberg, A.M.* & Benoit-Bird, K.J.* 2013 “Intra-patch size clustering in mysid aggregations revealed through multi-frequency acoustics.” *ICES Journal of Marine Science*, 70:883-891.
- Nordstrom, C.A., Battaile, B.C., **Benoit-Bird, K. J.**, & Trites, A.W. 2013 "Northern fur seals augment ship-derived ocean temperatures with higher temporal and spatial resolution data in the eastern Bering Sea", *Deep-Sea Research II*, 94:257-273

- Hoving, H.J., Gilly, W.F., Markaida, U., West-Brown, Z., Daniel, P., Campos, B., **Benoit-Bird, K.J.**, and Li, B. 2013 “Extreme plasticity in life-history strategy of jumbo squid (*Dosidicus gigas*) allows a migratory predator to cope with El Niño.” *Global Change Biology*, 19:2089-2103.
- Benoit-Bird, K.J.**, *McIntosh, N.M.**, & Heppell, S.A. 2013 “Nested scales of spatial heterogeneity of juvenile walleye pollock (*Theragra chalcogramma*) in the southeastern Bering Sea.” *Marine Ecology Progress Series*, 479:283-302.
- Benoit-Bird, K.J.**, Shroyer, E.L., & McManus, M.A. 2013 “A critical scale in plankton aggregations across coastal ecosystems” *Geophysical Research Letters*, 40:3968–3974.
- Paredes, R., Orben, R.A., Irons, D.B., Roby, D.D., Harding, A.M.A., Young, R.C., **Benoit-Bird, K.J.**, Ladd, C., Renner, C., Heppell, S., Phillips, R.A., Kitaysky, A. 2014 “Foraging responses of black-legged kittiwakes to prolonged food-shortages around colonies in the Bering Sea Shelf” *PLoS ONE*, DOI: 10.1371/journal.pone.0092520
- Benoit-Bird, K.J.**, McManus, M.A. 2014 “A critical time window for organismal interactions in a pelagic ecosystem” *PLoS ONE*, 9(5): e97763. doi:10.1371/journal.pone.0097763
- Shroyer, E.L., **Benoit-Bird, K.J.**, Nash, J.D., & Moum, J.M. 2014 “Stratification and mixing regimes in biological thin layers over the Mid-Atlantic bight” *Limnology and Oceanography*, 59(4), 1349–1363
- Cade, D.E.** & **Benoit-Bird, K.J.** 2014 “An automatic and quantitative approach to the detection and tracking of acoustic scattering layers” *Limnology and Oceanography Methods*, 12:742-756.
- Cade, D.E.** & **Benoit-Bird, K.J.** 2015 “Depths, migration rates and environmental associations of acoustic scattering layers in the Gulf of California” *Deep Sea Research*, 102:78-89.
- Moline, M.A., **Benoit-Bird, K.J.**, Robbins, I.C. & O’Gorman, D. 2015 “Integration of scientific echosounders with a dynamically adaptable autonomous platform to extend our understanding of animals from the surface to the bathypelagic”. *Journal of Oceanic and Atmospheric Technology*, 32:2173-2186
- Benoit-Bird, K.J.** & Lawson, G.L. 2016 “Ecological insights from pelagic systems acquired using active acoustic techniques” *Annual Reviews of Marine Science*, 2016.8:463-490.
- Moline, M.A. & **Benoit-Bird, K.J.** 2016 “Sensor Fusion and Autonomy as a Powerful Combination for Biological Assessment in the Marine Environment” *Robotics*, 5: doi: 10.3390/robotics5010004.
- Benoit-Bird, K.J.**, Southall, B., & Moline, M.A. 2016 “Predator guided sampling reveals biotic structure in the bathypelagic” *Proceedings of the Royal Society of London B*, 283:20152457.
- Benoit-Bird, K.J.**, Moline, M.A., & Southall B. 2017 “Prey in oceanic sound scattering layers organize to get a little help from their friends” *Limnology and Oceanography*, 62:2788–2798. doi:10.1002/lno.10606
- Sato, M.** & **Benoit-Bird, K.J.** 2017 “Spatial variability of deep scattering layers shapes the Bahamian mesopelagic ecosystem” *Marine Ecology Progress Series*, 580:69-82
- Arranz, P., **Benoit-Bird, K.J.**, Southall, B.L., Calambokidis J., Friedlaender A.S., and Tyack, P.L. 2018 “Risso’s dolphins plan foraging dives” *Journal of Experimental Biology*, 221: jeb165209.
- Dunlop, K., Jarvis, T., Caress, D., Thomas, H., **Benoit-Bird, K. J.**, Waluk, C.W., Smith, K. 2018 “Detection and characterisation of deep-sea benthopelagic animals from an autonomous underwater vehicle with a multibeam echosounder: a proof of concept and description of data-processing methods” *Deep Sea Research*, doi:10.1016/j.dsr.2018.01.006.
- Sato, M.**, Barth, J.A., **Benoit-Bird, K.J.**, Pierce, S.D., Cowles, T.J., Brodeur, R.D., Peterson, W.T. 2018 “Coastal upwelling fronts as a boundary for fish distributions” *Marine Ecology Progress Series*, 595: 171–186.
- Benoit-Bird, K.J.**, Welch, T.P., Waluk, C.M., Barth, J.A., Wangen, I., McGill, P., Okuda, C., Hollinger, G.A., *Sato, M.**, & McCammon, S. 2018 “Equipping an underwater glider with a new echosounder to explore ocean ecosystems” *Limnology and Oceanography: Methods*, 10.1002/lom3.10278.
- Southall, B., **Benoit-Bird, K.J.**, Moline, M.A., & Moretti, D. 2019 “Deep-water biological heterogeneity affects beaked whale foraging energetics” *Journal of Applied Ecology*, 56:1040-1049, doi:10.1111/1365-2664.13334
- Benoit-Bird, K.J.**, Waluk, C.M., & Ryan, J.P. 2019 “Forage species swarm in response to upwelling” *Geophysical Research Letters*, 46:1537-1546, doi:10.1029/2018GL081603
- Arranz, P., **Benoit-Bird, K.J.**, Friedlaender, A.S., Hazen, E.L., Goldbogen, J.A., Stimpert, A.K., DeRuiter, S.L., Calambokidis, J., Southall, B.L., Fahlman, A., Tyack, P.L. 2019 “Diving behavior and fine-scale kinematics of free-ranging Risso’s dolphins foraging in shallow and deep-water habitats” *Frontiers in Ecology and Evolution*, 7:53. doi: 10.3389/fevo.2019.00053.

- Lombard, F., Boss, E., Waite, A.M., Uitz, J., Stemmann, L., Sosik, H.M., Schulz, J., Romagnan, J.-B., Picheral, M., Pearlman, J., Ohman, M.D., Niehoff, B., Möller, K.O., Miloslavich, P., Lara-Lopez, A., Kudela, R.M., Mendez Lopes, R., Karp-Boss, L., Kiko, R., Jaffe, J.S., Hvitfeldt Iversen, M., Irsson, J.-O., Hauss, H., Guidi, L., Gorsky, G., Carolin Giering, S.L., Gaube, P., Gallager, S., Dubelaar, G., Cowen, R.K., Carlotti, F., Briseño-Avena, C., Berline, L., **Benoit-Bird, K.J.**, Bax, N.J., Batten, S.D., Ayata, S.D., and Appeltans, W. 2019 “Globally consistent quantitative observations of planktonic ecosystems” *Frontiers in Marine Science*, doi: 10.3389/fmars.2019.00196
- Ryan, J.P., Cline, D.E., Joseph, J.E., Margolina, T., Santora, J.A., Kudela, R.M., Chavez, F.P., Pennington, J.T., Wahl, C., Michisaki, R., **Benoit-Bird, K.J.**, Forney, K.A., Stimpert, A.K., DeVogelaere, A., Black, N., Fischer, M. 2019 “Humpback whale song occurrence reflects ecosystem variability in feeding and migratory habitat of the northeast Pacific” *PLOS One*, doi: 10.1371/journal.pone.0222456.
- Dunlop, K., **Benoit-Bird, K.J.**, Waluk, C.M., Henthorn, R. 2019 “Ecological insights into abyssal benthic-pelagic fish at 4000 m depth using a multi-beam echosounder on a remotely operated vehicle” *Deep Sea Research II*, doi: 10.1016/j.dsr2.2019.104679.
- Benoit-Bird, K.J.**, Southall, B.L., Moline, M.A. 2019 “Dynamic foraging in Risso’s dolphins revealed in four-dimensions” *Marine Ecology Progress Series*, 613:221-234, doi: 10.3354/meps13157.
- Benoit-Bird, K.J.**, Waluk, C.M. 2020 “Exploring the promise of broadband fisheries echosounders for species discrimination with quantitative assessment of data processing effects” *Journal of the Acoustical Society of America*, 147:411-427.
- Zhang, Y., Kieft, B., Hobson B., Raanan, B., Urmy, S., Pitz, K., Preston, C., Roman, B., **Benoit-Bird, K.J.**, Birch, J., Chavez, F., Scholin, C. 2020 “Persistent Sampling of Vertically Migrating Biological Layers by an Autonomous Underwater Vehicle within the Beam of a Seabed-Mounted echosounder” *IEEE Journal of Ocean Engineering*, doi: 10.1109/JOE.2020.2982811.
- Benoit-Bird, K.J.**, Southall, B.L., Moline, M.A., Claridge, D.E., Dunn, C.A., Dolin, K.A., Moretti, D.J. 2020 “Critical threshold identified in the functional relationship between beaked whales and their prey” *Marine Ecology Progress Series*, 654:1-16 doi.org/10.3354/meps13521
- Benoit-Bird, K.J.** Moline, M.A. 2021 “Vertical migration timing illuminates the importance of visual and non-visual predation pressure in the mesopelagic” *Limnology and Oceanography*, in press

**indicates student/post-doc advisee author*

OTHER PUBLICATIONS

- Benoit, K.J.**, 1996 “Auditory triggers of the alarm response in *Rana catesbeiana* larvae”, Undergraduate Honors Thesis, Brown University, 55 pages.
- Bertness, M.D., **Benoit-Bird, K.J.**, Illustrator “The Ecology of Atlantic Shorelines”, Sinauer Associates, 1998.
- Benoit-Bird, K.J.**, “Dynamics of the Hawaiian Mesopelagic Boundary Community and their effects on Predator Foraging”, Ph.D. Dissertation. Department of Zoology, University of Hawaii, 272 pages, 2003.
- Benoit-Bird, K.J.** 2005 (Invited) “Review of Echolocation in Bats and Dolphins. J. A. Thomas, C. F. Moss, and M. Vater, eds.”, *Marine Mammal Science*, 21: 173-174
- Jochens, A., D. Biggs, **K. Benoit-Bird**, D. Engelhaupt, J. Gordon, C. Hu, N. Jaquet, M. Johnson, R. Leben, B. Mate, P. Miller, J. Ortega-Ortiz, A. Thode, P. Tyack, and B. Würsig. 2008.”Sperm whale seismic study in the Gulf of Mexico: Synthesis report”. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2008-006. 341 pp
- Churnside, J., Brodeur, R., Horne, J.K., Adam, P., **Benoit-Bird, K.J.**, Reese, D.C., Kaltenberg, A.M., Brown, E. 2009. “Combining techniques for remotely assessing pelagic nekton: Getting the whole picture” Edited Conference Proceedings of The American Institute of Fishery Research Biologists.
- Dahood, A.* & **Benoit-Bird, K.J.** 2009 “Nocturnal foraging of dusky dolphins” Peer-reviewed book chapter in “Dusky Dolphins: Master Acrobats of the Ocean”.
- Duce, R, **Benoit-Bird, K.** Ortiz, J, Woodgate, R, Bontempi, P, Delaney, M, Gaines, S, Harper, S, Jones, B, While, L 2012 “NSF OCE Urban Myths and the Report of the 2012 Committee of Visitors” *EOS*, 93: 533-534.
- Benoit-Bird, K.J.** 2019 “A Journey Through Unseen Oceans”, *Acoustics Today*, American Institute of Physics, 15:3 71-75. doi: 10.1121/AT.2019.15.3.71

INVITED SEMINARS

Slepecky Prize Lecture , Syracuse University	April 2019
Syracuse University , Biology Department	April 2019
Blinks Memorial Lecture , Stanford University, Hopkins Marine Station	March 2019
Moss Landing Marine Laboratories , San Jose State University	March 2018
Stanford University , Hopkins Marine Station	February 2018
University of California, Santa Cruz , Ocean Sciences Seminar	April, 2017
Scripps Institution of Oceanography , Ecology Seminar Series	February, 2017
Monterey Bay Aquarium	January, 2017
San Francisco State University , Romberg-Tiburon Center	October, 2016
University of Rhode Island , Vetlesen Distinguished Lecture	November, 2015
University of Aberdeen , Aberdeen, Scotland	May, 2015
Willamette University , Biology Department Colloquium	February, 2015
Swarms with a Purpose , Radcliffe Institute, Cambridge, MA	December, 2014
SERDP/ESTCP Webinar	November, 2014
Hatfield Marine Science Center , Newport, OR	October, 2014
Monterey Bay Aquarium Research Institute , Moss Landing, CA	September, 2014
Marine Biology Student Association Seminar , California State University, Long Beach, CA	May, 2013
Harvard University, Organismic and Evolutionary Biology Department , Cambridge, MA	March, 2013
University of Delaware, College of Earth, Ocean and Environment , Lewes	February, 2013
Duke University Marine Laboratory , Beaufort, North Carolina	September, 2011
Booz/Allen/Hamilton Distinguished Colloquium , University of Maryland	September, 2010
Northwest Fisheries Science Center , Seattle Washington	January, 2010
Oregon Institute of Marine Biology , University of Oregon, Charleston.	August, 2007
Office of Naval Research , Young Investigator Seminar Series, Washington, D.C.	February, 2007
Louisiana State University , Department of Oceanography and Coastal Sciences	March, 2006
University of Washington , School of Aquatic and Fishery Sciences	March, 2005
Office of Naval Research , Washington, D.C.	June, 2004
Rutgers University , Institute of Marine and Coastal Sciences	May, 2004
Scripps Institute of Oceanography , University of California at San Diego, Ecology Program	May, 2004
Woods Hole Oceanographic Institution , Applied Ocean Physics and Engineering	March, 2004
University of Washington , Applied Physics Laboratory	February, 2004
Oregon State University , College of Oceanic and Atmospheric Sciences	January, 2004
University of Connecticut , Avery Point	March, 2003
University of Hawaii , Oceanography Seminar	November 2000

INVITED CONFERENCE PRESENTATIONS

- Benoit-Bird, K.J.** “Sound Helps Resolve the Food Paradox in the Sea” Medwin Prize Lecture, Acoustical Society of America Meeting, TBA
- Benoit-Bird, K.J.** “Acoustical Ocean Ecology in the Era of the Robot Revolution” Special Session on New Technologies, Acoustical Society of America Meeting, San Diego, CA, December 2-6, 2019
- Benoit-Bird, K.J.** “The Ocean has Music for those who Ping and Listen” Special Session on Combining Active and Passive Acoustics, Acoustical Society of America/Canadian Acoustical Association Joint Meeting. Victoria, BC Canada, November 5-9, 2018
- Benoit-Bird, K.J.** “Ecological Insights from Pelagic Habitats Acquired Using Active Acoustic Techniques” Ocean Acoustics, National Security, and Walter Munk: A Symposium in Honor of Walter Munk on the occasion of his Centennial. La Jolla, CA August 28-30, 2017
- Benoit-Bird, K.J.** “Biotic patterns in the briny deep control food webs” The Ocean - Understanding Big Blue Symposium, National Academy of Sciences, Washington, D.C., May 2, 2016.
- Benoit-Bird, K.J.** “Causes and Consequences of Heterogeneity of Organisms in the Ocean: From Phytoplankton to Dolphins” Plenary Lecture, Ocean Sciences 2012 (AGU, ASLO, TOS joint meeting). February 20-24, 2012.
- Benoit-Bird, K.J.** “Using acoustics to reveal patchiness in the coastal ocean and its ecological consequences for plankton, fish, birds, and marine mammals” Session on Active Acoustic Applications to Bioacoustics Research, 161st Meeting of the Acoustical Society of America. Seattle, WA. May 23-27, 2011.

- Benoit-Bird, K.J.** “Finding my voice: Experiences communicating research with the media” Session on Effective Communication between Scientists and the Media 161st Meeting of the Acoustical Society of America. Seattle, WA. May 23-27, 2011.
- Benoit-Bird, K.J.** “Trophic cascades in Hawaii’s nearshore ecosystem: Using observing technology to understand ecological interactions” PICES Annual Meeting, Jeju, Korea. October 23-November 1, 2009.
- Benoit-Bird, K.J.** “Three-dimensional structure of thin zooplankton layers is impacted by foraging fish” Acoustics ’08. Paris, France. June 30-July 4, 2008.
- Benoit-Bird, K.J.** “Effects of scattering layer composition, animal size, and numerical density on the frequency response of volume backscatter” 4th Meeting of the Acoustical Societies of America and Japan. Honolulu, HI. Nov 28-Dec 2, 2006.
- Benoit-Bird, K.J. & McManus, M.A.** “Advancing from pattern to process in Hawaii’s nearshore pelagic ecosystem” 150th Meeting of the Acoustical Society of America. Minneapolis, MN. October 17-21, 2005.
- Benoit-Bird, K.J. & Au, W.W.L.** “Echolocation click rates and behavior of foraging Hawaiian spinner dolphins (*Stenella longirostris*).” 7th European Conference on Underwater Acoustics. Delft, Netherlands. July 5-8, 2004.
- Benoit-Bird, K.J.** “Acoustics will play an important role in revealing the biological secrets of the ocean.” Celebratory Plenary Session “The Future of ASA”, 75th Anniversary Meeting of the Acoustical Society of America, New York, NY. May 24-28, 2004.
- Benoit-Bird, K.J. & Au, W.W.L.** “Light and lunar cycle as cues to diel migration of a sound-scattering layer.” 75th Anniversary Meeting of the Acoustical Society of America, New York, NY. May 24-28, 2004.
- Benoit-Bird, K.J. & Au, W.W.L.** “Using acoustics to study the ecology of Hawaii’s mesopelagic zone.” 2004 Ocean Sciences Meeting, American Geophysical Union. Portland, OR. January 26-30, 2004.
- Benoit-Bird, K.J.** “Using active acoustics to study marine mammal behavior.” Pauley Foundation Workshop on the acoustics of whales and dolphins; Hawaii Institute of Marine Biology. Kaneohe, HI. August 10, 2001.
- Benoit-Bird, K.J. & Au, W.W.L.** “Foraging behavior of the Hawaiian spinner dolphin observed with active acoustics.” 140th Meeting of the Acoustical Society of America; William Cummings session on the acoustics of whales and dolphins. Newport Beach, CA. December 3-8, 2000.

SUBMITTED CONFERENCE PRESENTATIONS

- Benoit-Bird, K.J., Moline, M.A., Southall, B.** “Vertical migration’s why and when revisited with new technology” Ocean Sciences Meeting, San Diego, CA, February 17-21, 2020
- Benoit-Bird, K.J.** “Exploring the promise of broadband fisheries echosounders for species discrimination” Session on Bioacoustical Oceanography, Acoustical Society of America Meeting, San Diego, CA, December 2-6, 2019
- Benoit-Bird, K.J., Moline, M.A.** “The When and Why of Up and Down Revisited with New Technology”, Deep Sea Biology Symposium, Monterey, California, Sep 10-14, 2018.
- Benoit-Bird, K.J., Ryan J., Waluk, C.W., Barth, J.A., Sato, M., Welch, P., Erefeev, A., Pierce, S.A.** “Behavioral Responses of Swarming Species to Intra-Seasonal Variation in Upwelling”, Ocean Sciences Meeting, Portland, Oregon, Feb 12-16, 2018.
- Benoit-Bird, K.J., Moline, M.A., Southall, B.** “Beaked Whales Bring the Secrets of the Deep to Light: Biological ‘Hotspots’ in the Bathypelagic Drive Habitat Use in Deep-Diving Predators”, Society for Marine Mammalogy 22nd Biennial Meeting, Halifax, NS Canada, Oct 22-27, 2017.
- Benoit-Bird, K.J., Moline, M.A., Southall, B.** “Using acoustics to examine odontocete foraging ecology: Predator-Prey Dynamics in the Mesopelagic”, Joint Meeting of the Acoustical Societies of America and Japan, Nov 20-Dec 3, 2016.
- Benoit-Bird, K.J., Moline, M.A., Southall, B., Arranz, P.** “Foraging ecology of Risso’s dolphins” Biennial Conference on the Biology of Marine Mammals, San Francisco, CA Dec 14-18, 2015.
- Benoit-Bird, K.J.** “Predator-prey dynamics: Micronekton schooling inside the deep scattering layer in response to foraging Risso’s dolphins” ICES Marine Ecosystem Acoustics Symposium, Nantes, France, May 25-28, 2015.
- Benoit-Bird, K.J.** “Deep-diving autonomous underwater vehicle provides insights into scattering layer dynamics” 167th Meeting of the Acoustical Society of America, Providence, RI, May 5-9, 2014.
- Benoit-Bird, K.J., Moline, M.A., Southall, B.L.** “The way to a whale’s habitat is through his stomach” Ocean Sciences 2014, Honolulu, February 24-28, 2014.
- Benoit-Bird, K.J.** “Active acoustic examination of the diving behavior of murrets foraging on patchy prey” 162nd Meeting of the Acoustical Society of America, San Diego, October 31- 4 November, 2011.

- McIntosh, N.E. *, **Benoit-Bird, K.J.**, Heppell, S. "Spatial variation in the small-scale distribution of juvenile walleye pollock (*Theragra chalcogramma*) in the southeastern Bering Sea" 162nd Meeting of the Acoustical Society of America, San Diego, October 31- 4 November, 2011.
- Cowles, T.J. & **Benoit-Bird, K.J.** (presenting author) "Planktonic layers: New insights stimulated by Van Holliday" 162nd Meeting of the Acoustical Society of America, San Diego, October 31- 4 November, 2011.
- Piatt, J.F., Hunt, G.L., **Benoit-Bird, K.J.** "Advances in the methods for quantifying the distribution and abundance of seabird prey". 1st World Seabird Conference, Victoria, BC, Canada, September 7-11, 2010.
- Benoit-Bird, K.J.**, Kuletz, K., Heppell, S., Jones, N., Hoover, B., & Whitman, L. "Active acoustic examination of the diving behavior of murres on patchy prey during the breeding season" 2010 Ocean Sciences Meeting, Portland, OR Feb 22-18, 2010.
- Kaltenberg, A.M.*, **Benoit-Bird, K.J.**, Emmett, R. "Seasonal timing of zooplankton and forage fish in the Columbia River plume and effects on marine juvenile salmon survival" 2010 Ocean Sciences Meeting, Feb 22-18, 2010.
- Matteson, R.S.*, **Benoit-Bird, K.J.**, Mate, B.R., Calambokidas, J. "Aggregation characteristics of prey determine blue whale distribution at the Costa Rica Dome" 2010 Ocean Sciences Meeting, Portland, OR Feb 22-18, 2010.
- Cowles, T.J., **Benoit-Bird, K.J.**, Benfield, M. "Assessing the Ecological Role of Planktonic Thin Layers" 2010 Ocean Sciences Meeting, Portland, OR Feb 22-18, 2010.
- McIntosh, N.E. *, Whitman, L.D. *, **Benoit-Bird, K.J.**, Heppell, S.A. "Spatial variation in the distribution and energy density of juvenile walleye pollock in the southeastern Bering Sea" 2010 Ocean Sciences Meeting, Portland, OR Feb 22-18, 2010.
- Benoit-Bird, K.J.**, Cowles, T.J. "Acoustical and optical measurements provide evidence of ecological interactions in planktonic thin layers" 157th Meeting of the Acoustical Society of America. Portland, OR. May 18-22, 2009.
- Kaltenberg, A.M. *, **Benoit-Bird, K.J.**, Emmet, R. "Temporal patterns of fish and mesozooplankton near the Columbia River plume" 157th Meeting of the Acoustical Society of America. Portland, OR. May 18-22, 2009.
- Matteson, R.S. *, **Benoit-Bird, K.J.**, Gilly, W.F. "Humboldt squid distribution in three-dimensional space as measured by acoustics in the Gulf of California" 157th Meeting of the Acoustical Society of America. Portland, OR. May 18-22, 2009.
- Benoit-Bird, K.J.** "Three-dimensional structure of thin zooplankton layers is impacted by foraging fish" 2008 Ocean Sciences Meeting, Orlando, FL. March 3-7, 2008.
- Kaltenberg, A.M. *, **Benoit-Bird, K.J.** "The influence of zooplankton prey abundance and daylight on pelagic schooling fish behavior" 2008 Ocean Sciences Meeting, Orlando, FL. March 3-7, 2008.
- Benoit-Bird, K.J.**, McManus, M.A., McLaughlin, B. "Thin phytoplankton and zooplankton layers and not so thin micronekton layers off the west coast of Oahu, Hawaii" 2006 Ocean Sciences Meeting, Honolulu, HI. Feb. 20-24, 2006.
- Au, W.W.L. & **Benoit-Bird, K.J.** "Acoustic properties of the Hawaiian mesopelagic boundary sound scattering layer" 2006 Ocean Sciences Meeting, Honolulu, HI. February 20-24, 2006.
- Cowles, T.J., Briggs Whitmire, A., Wingard, C., Desidario, R., **Benoit-Bird, K.J.**, Concannon, B., & Prentice, J. "Spatial and temporal patterns in planktonic thin layers: the interplay between vertical shear, mixing, and plankton behavior" 2006 Ocean Sciences Meeting, Honolulu, HI. February 20-24, 2006.
- Concannon, B.M., Prentice, J.E., **Benoit-Bird, K.J.**, & Cowles, T.J. "Lidar signatures in regions with thin layers in the coastal ocean" 2006 Ocean Sciences Meeting, Honolulu, HI. February 20-24, 2006.
- Kaltenberg, A.M. *, Churnside, J.H, **Benoit-Bird, K.J.**, Brodeaur, R.D., Brown, E.D, & Horne, J.K. "A study of sardines in the NE Pacific using multiple platforms and technologies" 2006 Ocean Sciences Meeting, Honolulu, HI. February 20-24, 2006.
- Smith, J.N. *, **Benoit-Bird, K.J.**, & McManus, M.A. "Effects of lunar phase on biomass at four trophic levels along Oahu, Hawaii's leeward coast" 2006 Ocean Sciences Meeting, Honolulu, HI. February 20-24, 2006.
- Benoit-Bird, K.J.**, Au, W.W.L., Kastelein, R.A., & Van de Huel, S. "Testing the prey debilitation hypothesis: No stunning results" 16th Biennial Conf on the Biology of Marine Mammals. San Diego, CA. Dec 15-18, 2005.
- Benoit-Bird, K.J.**, Au, W.W.L., Kastelein, R.A., & Van de Huel, S. "Testing the prey debilitation hypothesis: No stunning results" 148th Meeting of the Acoustical Society of America. San Diego, CA. November 15-18, 2004.
- Benoit-Bird, K.J.** "Predator avoidance by midwater micronekton: Differences between visual and non-visual predators." Ecological Society of America, Portland, Oregon. August 1-7, 2004.
- Benoit-Bird, K.J.** & Au, W.W.L. "Echolocation click rates and behavior of foraging Hawaiian spinner dolphins (*Stenella longirostris*)." Acoustical Society of America, New York, NY. May 24-28, 2004.
- Benoit-Bird, K.J.** & Au, W.W.L. "Observing the diel migration dynamics of an island-associated sound-scattering layer." ASLO/TOS Ocean Research Conference. Honolulu, HI. February 15-20, 2004.

- Benoit-Bird, K.J.** & Au, W.W.L. “Echolocation click rates and behavior of foraging Hawaiian spinner dolphins (*Stenella longirostris*).” 15th Biennial Conference on the Biology of Marine Mammals. Greensboro, NC. December 14-19, 2003.
- Benoit-Bird, K.J.** & Au, W.W.L. “Hawaiian spinner dolphins aggregate midwater food resources through cooperative foraging” 146th Meeting of the Acoustical Society of America. Austin, TX. November 10-14, 2003.
- Benoit-Bird, K.J.** “Sound-scattering layers and the foraging ecology of pelagic marine mammals.” 88th Annual Meeting of the Ecological Society of America. Savannah, GA. August 3-8, 2003.
- Benoit-Bird, K.J.**, Würsig, B., McFadden, C.J. “Behavior of dusky dolphins foraging on the deep-scattering layer in Kaikoura Canyon, New Zealand.” 145th Meeting of the Acoustical Society of America. Nashville, TN. April 22-May 2, 2003.
- Benoit-Bird, K.J.** & Au, W.W.L. “Target strength and density structure of Hawaiian mesopelagic boundary community patches” 145th Meeting of the Acoustical Society of America. Nashville, TN. April 22-May 2, 2003.
- Benoit-Bird, K.J.** & Au, W.W.L. “Fine-scale diel migration dynamics of an island-associated sound-scattering layer.” First Pan-American/Iberian Meeting on Acoustics. Cancun, Mexico. December 2-6, 2002.
- Benoit-Bird, K.J.**, Au, W.W.L., Kelley, C.D., & Taylor, C. “Acoustic backscattering by deepwater fish measured *in situ* from a manned submersible.” First Pan-American/Iberian Meeting on Acoustics. Cancun, Mexico. December 2-6, 2002.
- Benoit-Bird, K.J.** & Au, W.W.L. “Dynamics of the Hawaiian mesopelagic boundary community studied with active acoustic moorings.” ICES Symposium on Acoustics in Fisheries and Aquatic Ecology. Montpellier, France. June 10-14, 2002.
- Kelley, C.D, **Benoit-Bird, K.J.** (presenting author), Taylor, C., Richman, N., Au, W., & Crook, K. “Two New Submersible Techniques for Deepwater Fisheries Research in Hawaii.” 2002 Ocean Sciences Meeting. Honolulu, HI. February 11-15, 2002.
- Benoit-Bird, K.J.** & Au, W.W.L. “Energy: Converting from acoustic to biological resource units.” 142nd Meeting of the Acoustical Society of America. Ft. Lauderdale, FL. December 3-7, 2001.
- Benoit-Bird, K.J.** & Au, W.W.L. “Foraging behavior of the Hawaiian spinner dolphin, *Stenella longirostris*.” 14th Biennial Conference on the Biology of Marine Mammals. Vancouver, BC. November 28-December 3, 2001.
- Benoit-Bird, K.J.** “Foraging behavior of the Hawaiian spinner dolphin observed with active acoustics.” Animal Behavior Society; W. C. Allee Session. Corvallis, OR. July 15-18, 2001.
- Benoit-Bird, K.J.** & Au, W.W.L. “Acoustic investigation of the Hawaiian mesopelagic boundary community” 140th Meeting of the Acoustical Society of America. Newport Beach, CA. December 3-8, 2000.
- Benoit-Bird, K.J.** “Spinner dolphin foraging and the mesopelagic boundary community” 25th Annual Albert Tester Symposium, University of Hawaii. April 13-14, 2000. Published in: *Pacific Science*, 55:99.

GRANT AND CONTRACT SUPPORT

My research program has attracted funding from diverse sources including the National Science Foundation, Office of Naval Research, National Oceanic and Atmospheric Administration, National Oceanographic Partnership Program, Minerals Management Service, North Pacific Research Board, Strategic Environmental Research and Development Program (DoD), and Packard and Keck Foundations, totaling more than 10 million dollars.

CURRENT GRANTS

(\$ home institution component)

National Science Foundation, Office of Polar Programs 2019-2023

Co-Principal Investigator (\$323,836)
 ‘Linking Predator Behavior and Resource Distributions: Penguin-directed Exploration of an Ecological Hotspot’
 Collaborators: Mark Moline, University of Delaware; Megan Cimino, University of California at Santa Cruz

Office of Naval Research, Marine Mammal Biology 2018-2021

Co-Principal Investigator (\$28,000)
 ‘Integrating Information on Displacement Caused by Mid-Frequency Active Sonar and Measurements of Prey Field into a Population Consequences of Disturbance Model for Beaked Whales’
 Collaborators: Nancy DiMarzio, Naval Undersea Warfare Center Division; John Harwood & Len Thomas, University of St. Andrews; Andre de Roos & Vincent Hint, University of Amsterdam

Office of Naval Research, Marine Mammal Biology 2017-2020

Co-Principal Investigator (\$15,200)
 ‘The use of navy range bottom-mounted, bi-directional transducers for long-term, deep-ocean prey mapping’
 Collaborator: David Moretti, National Undersea Warfare Center

COMPLETED GRANTS

Office of Naval Research, Marine Mammal Biology 2015-2018

Principal Investigator (\$681,355)
 ‘Linking deep-water prey fields with odontocete population structure and behavior’
 Collaborators: Mark Moline, University of Delaware; Brandon Southall, Southall Environmental Associates;
 Diane Claridge, Bahamas Marine Mammal Research Org; David Moretti, National Undersea Warfare Center

Keck Foundation 2015-2019

Co-Principal Investigator (\$1,000,000)
 ‘Revolutionizing our Understanding of Ocean Ecosystems’
 Collaborators: Jack Barth and Geoffrey Hollinger, Oregon State University

Office of Naval Research, Ocean Acoustics 2011-2016

Principal Investigator, Chief Scientist for the Fish Acoustics Basic Research Challenge (\$1,395,628)
 ‘Acoustical scattering, propagation, and attenuation caused by two abundant Pacific schooling species:
 Humboldt squid and hake’
 Collaborators: Joseph Warren, Stony Brook University; Dezhang Chu, Northwest Fisheries Science Center

Strategic Environmental Research and Development Program, Department of Defense 2012-2017

Principal Investigator (\$1,566,000)
 ‘Deep mapping of teuthivorous whales and their prey fields’
 Collaborators: Mark Moline, University of Delaware; Brandon Southall, Southall Environmental Associates

National Science Foundation, Biological Oceanography RAPID 2013-2014

Principal Investigator (\$75,993)
 ‘Collaborative Research: Adaptable life history strategy of a migratory large predator in response to El Nino and
 climate change’, Collaborators: William Gilly, Stanford University

National Science Foundation, Biological Oceanography 2009-2012

Principal Investigator (\$463,873)
 ‘Collaborative Research: Physiological limits to vertical migrations of the pelagic, jumbo squid, *Dosidicus gigas*,
 in the Gulf of California’,
 Collaborators: William Gilly, Stanford University; Brad Seibel, University of Rhode Island

North Pacific Research Board, Bering Sea Integrated Ecosystem Research Program 2007-2012, Principal Investigator

‘Patch Dynamics of Forage Fish’ (\$375,647)
 ‘Bogoslof Island: Patch Dynamics of Forage Fish’ (\$596,009)
 Collaborator: Scott Heppell, Oregon State University + others

Office of Naval Research, Marine Mammals & Biological Oceanography Program 2009-2011

Co-Principal Investigator (\$518,856)
 ‘Factors influencing the acoustic behavior and nearshore residence of the gray whale (*Eschrichtius robustus*)
 along their migration route’
 Collaborators: Timothy Cowles and David Mellinger, Oregon State University

Office of Naval Research, Marine Mammals & Biological Oceanography Program 2008-2012

Principal Investigator (\$338,881)
 ‘Importance of thin plankton layers in Hawaiian food web interactions: Research spanning from physical
 circulation to spinner dolphins’
 Collaborator: Margaret McManus, University of Hawaii

National Science Foundation, Major Research Instrumentation 2006-2010, Co-Principal Investigator

‘ROV-based System for Sampling Planktonic Thin Layers’ (\$584,119)
 Collaborators: Timothy Cowles, Oregon State University; Mark Benfield, Louisiana State University

Office of Naval Research, Young Investigator Program 2005-2010, Principal Investigator

‘Predator effects on dense zooplankton aggregations in the coastal ocean’ (\$596,609)

Packard Foundation 2008-2009, Co-Principal Investigator

(\$56,609)
 ‘Biomass estimates of jumbo squid in the Gulf of CA and incorporation into a squid fishery management plan.’
 Collaborator: William Gilly, Stanford University

National Oceanographic Partnership Program 2005-2008, Principal Investigator, Project Director

‘Novel acoustic techniques to measure schooling in pelagic fish in the context of an operational coastal ocean
 observatory’ (\$423,614)
 Collaborators: Oscar Schofield, Scott Glenn, Rutgers University; Christopher Jones, Univ of Washington

National Oceanographic Partnership Program 2005-2008 , Co-Principal Investigator	
‘A novel technique to detect epipelagic fish and map their habitat’	(\$230,549)
Collaborators: James Churnside, Richard Brodeur, NOAA; John Horne, U of Washington; Evelyn Brown, UAF	
Minerals Management Service, Sperm Whale Seismic Study 2005-2008 , Co-Principal Investigator	(\$36,454)
Collaborators: Bruce Mate	
Office of Naval Research, Ocean Optics and Biology Program 2004-2007 , Principal Investigator	
‘Factors Influencing the Nearshore, Sound-Scattering Layer in Hawaiian Waters’	(\$234,000)
Oregon State University, Research Council Award 2005 , Principal Investigator	
‘The way to a whale’s habitat is through his stomach: Adding prey to sperm whale assessment’	(\$10,000)
NOAA Fisheries Pacific Islands Fisheries Science Center 2004-2005 , Principal Investigator	
‘Fisheries data analysis’	(\$31,000)
Measurements and Signature Intelligence, Defense Intelligence Agency 2004-2006 , Co-Principal Investigator	
‘Acoustic characterization of the mesopelagic boundary community’	(\$120,000)
Collaborator: Whitlow Au	
University of Hawaii SeaGrant College Biennial 2003-2005 , Co-Investigator	
‘The Role of Mesopelagic Boundary Community Dynamics in Hawaiian Fisheries’	(\$123,761)
Collaborator: Whitlow Au	
Defense University Research Instrumentation Program 2004 , Co-Principal Investigator	
‘Mesopelagic processes and underwater noise effects on marine mammals’	(\$399,500)
Collaborator: Whitlow Au	
Office of Naval Research, Marine Mammal Program 2002-2003 , Co-Principal Investigator	(\$197,291)
‘Dynamics of the Hawaiian Mesopelagic Boundary Community and their Effects on Spinner Dolphin Foraging’	
Collaborator: Whitlow Au	
National Science Foundation Doctoral Dissertation Improvement Grant 2002 , IBN, Co-PI	(\$9,065)
‘Fine-scale pelagic predator-prey interactions: Hawaiian spinner dolphins and the mesopelagic boundary’	
University of Hawaii SeaGrant College Biennial 2001-2003 , Co-Investigator	(\$137,600)
‘The Dynamics of the Mesopelagic Boundary Community and their Role in Hawaiian Coastal Fisheries’	
Collaborator: Whitlow Au	

PROFESSIONAL ACTIVITIES

Editorial Board, <i>Limnology and Oceanography</i>	01/18-present
IEEE Oceanic Engineering Society Technical Committee on Underwater Acoustics	01/06-present
Acoustical Society of America	
Nominating Committee	10/14-12/15
Strategic Leadership for the Future Summit participant	01/15
Public Relations Committee	05/04-05/18
Acoustical Oceanography Technical Committee	05/08-05/14
Outreach Committee on Posters	04/09-04/13
Website Committee	04/09-05/13
Animal Bioacoustics Technical Committee	12/02-12/04, 05/05-05/08, 12/16-present
Vision 2010 Retreat Participant, the future of the Society after 75 years	11/04
Student Council	2002-2003
Workshop to Identify National Ocean Exploration Priorities in the Pacific Participant ,	
Consortium for Ocean Leadership & NOAA Office of Exploration and Research	07/20-11/20
Meeting of the Acoustical Society of America , Organizer and Co-Chair for sessions in Acoustical Oceanography and Animal Bioacoustics	12/18-12/19
Speaker, <i>Discovery of Sound in the Sea Webinar Series: Echosounders</i>	10/19
Organizer and Chair, <i>IEEE Workshop on Acoustics in Autonomous Platforms</i>	01/18-3/19
Ocean Sciences Meeting 2018 , Session Organizer and Co-Chair for two sessions	06/17-02/18
California State Lands Commission Technical Advisory Group	09/17-06/18
Consortium for Ocean Leadership	
Industry Forum on Ocean Noise participant	11/16
Advisory Team member: facilitate collaborative community program on ocean noise	11/16-09/17
5th Joint Meeting of the Acoustical Society of America and Acoustical Society of Japan , Organizer and Co-Chair for sessions in Acoustical Oceanography and Animal Bioacoustics	06/15-11/16
Ocean Sciences Meeting 2016 , Session Organizer and Co-Chair	06/15-02/16

Office of Naval Research Fish Acoustics Basic Research Challenge , Chief Scientist for research program involving 19 Principal Investigators under 10 different grants	2010-2015
ICES Symposium on Marine Ecosystem Acoustics , Scientific Steering Committee	10/13-05/15
167th Meeting of the Acoustical Society of America , Session Organizer and Co-Chair	01/13-04/14
Ocean Sciences Meeting 2014 , Session Organizer and Co-Chair	06/13-02/14
National Science Foundation , Committee of Visitors Member, Division of Ocean Sciences	2012
Advancing to Professorship in Biology, Ecology, and Earth Sciences , NSF Advance Discussion Leader	04/12
19th Biennial Conference on the Biology of Marine Mammals , Ecology Session Chair	12/11
D.V. Holliday Memorial Session , Session Co-Chair, Acoustical Society of America Meeting, San Diego	10/11
Acoustic Challenges in Aquatic Ecosystem Assessment , Scientific Committee, A Joint Special Workshop of the Acoustical Society of America and the American Fisheries Society	2010-2011
Oceanography in 2025 Workshop , Plenary Speaker & Invited Participant, Sponsored by the National Academy of Sciences' Ocean Studies Board and the U.S. Office of Naval Research	01/09
Society for Marine Mammalogy	
Education Committee	01/00-11/09
Hawaii Student Chapter Organizer	02/00-05/03
Cooperative Institute for Marine Resources Studies	
Scientific Advisory Council	10/04-04/09
Fish Acoustics Science Review Invited Speaker, Participant, and ONR DRI Working Group Leader	11/07
Autonomous and Lagrangian Platforms and Sensors Workshop Invited Participant	11/05
Western Pacific Regional Fisheries Management Council , Presenter and Scientific Advisor	03/04-05/04
Hawaiian Islands Stranding Response Group Volunteer	12/02-07/04

REFeree

(Average 8 manuscripts/year, 6-7 proposals/year)

Named an "Outstanding Reviewer" by Deep-Sea Research in 2018

Selected Journals: Journal of the Acoustical Society of America, Limnology and Oceanography, Canadian Journal of Fisheries and Aquatic Sciences, Aquatic Mammals, Deep-Sea Research I & II, Fisheries Research, Journal of Marine Systems, Scientia Marina, Aquatic Living Resources, Marine Mammal Science Book Reviews, Animal Behaviour, Marine Ecology Progress Series, Marine Biology, Canadian Journal of Zoology, Fisheries Oceanography, Nature Communications, Sea Grant College Programs, Journal of Physical Oceanography, Biology Letters, Journal of Plankton Research, Limnology and Oceanography, Limnology and Oceanography: Methods, Ecospheres, ICES Journal of Marine Science, Behavioral Ecology and Sociobiology, Society for Marine Mammalogy Biennial Conference Abstract Reviewer (Bioacoustics, Ecology, and Behavioral Ecology divisions).

Funding groups: Joint Industry Programme, Natural Science and Engineering Research Council of Canada, North Pacific Research Board, National Science Foundation (Major Research Instrumentation, Ocean Sciences, and Polar Programs), NOAA, National Geographic Society, SeaGrant (Alaska, Hawaii, California)

PROFESSIONAL ASSOCIATIONS

Acoustical Society of America; American Geophysical Union; Society for Marine Mammalogy; American Society for Limnology and Oceanography; IEEE, Oceanic Engineering Society

TEACHING

Synthesis in Pelagic Ecology (OC649)	Spring 14, Winter 15
Ocean Ecological Dynamics (OC523)	Spring 14
Zooplankton Ecology (OC441/541)	Spring 06; 08, Winter 10
Acoustical Oceanography (OC679)	Spring 07; Winter 11; 13, 16
MathCamp Guest Lecturer	09/13, 09/15
Honors College Introduction to Oceanography (OC331H) Guest Lecturer	11/05
Applications in Ocean Ecology and Biogeochemistry (OC599) Guest Lecturer & Lab Instructor	Spring 12; 13

ADVISING

Sam Urmy , Postdoctoral Fellow Monterey Bay Aquarium Research Institute	<i>Advisor</i> 02/18-02/20
Elan Portner , Ph.D. Student Department of Biology, Stanford University	<i>Research Mentor</i> 01/17-4/19
Mei Sato , Postdoctoral Associate College of Earth, Ocean, and Atmospheric Sciences, Oregon State University	<i>Advisor</i> 06/15-01/18
David Cade , M.S. Student College of Earth, Ocean, and Atmospheric Sciences, Oregon State University	<i>Committee Chair</i> 09/11-04/14
Amanda Kaltenberg , Postdoctoral Associate College of Oceanic and Atmospheric Sciences, Oregon State University	<i>Advisor</i> 06/10-12/11
Neal McIntosh , M.S. Student College of Oceanic and Atmospheric Sciences, Oregon State University	<i>Committee Chair</i> 09/08-05/11
Amanda Olson Kaltenberg , Ph.D. Student College of Oceanic and Atmospheric Sciences, Oregon State University	<i>Committee Chair</i> 06/05-06/10
Robyn Matteson , M.S. Student College of Oceanic and Atmospheric Science, Oregon State University	<i>Co-Advisor</i> 09/07-10/09
Daniel Wisdom , Marine Resource Management M.S. College of Oceanic and Atmospheric Sciences, Oregon State University	<i>Committee Chair</i> 09/06-12/08
Joy Smith , B.S. Student Coastal Carolina University, HMSC REU Program	<i>REU Mentor</i> 06/05-08/05
Kristine Hiltunen , B.S. Student Texas A&M University, University of Hawaii SOEST REU Program	<i>REU Mentor</i> 06/01-08/01

OTHER MENTORING

Natalie Mastick , Ph.D. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 01/15-01/16
Florence van Tulder , M.S. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 09/14-01/16
Sheanna Steingass , Ph.D. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 04/14-01/16
Marisa Litz , Ph.D. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 01/13-01/16
Sarah Guermond , M.S. Student Department of Integrative Biology, Oregon State University	<i>Committee Member</i> 12/13-08/14
Renee Albertson , Ph.D. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 10/10-12/14
Joshua Baker , M.S. Student Mechanical Engineering, Oregon State University	<i>Committee Member</i> 01/13-12/13
Marina Milligan , M.S. Student Dalhousie University	<i>Outside Thesis Reader</i> 07/2013
Michael Summers , M.S. Student Mechanical Engineering, Oregon State University	<i>Graduate Representative</i> 04/13-12/13
Sheanna Steingass , M.S. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 04/13-12/13
Martin Hoecker-Martinez , Ph.D. Student College of Oceanic and Atmospheric Science, Oregon State University	<i>Committee Member</i> 10/09-01/13
Andrew Szabo , Ph.D. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 04/05-12/11
Luke Whitman , M.S. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 07/08-12/10
Gregory Kowalke , M.S. Student College of Oceanic and Atmospheric Sciences, Oregon State University	<i>Committee Member</i> 09/08-08/10
Renee Gibb , M.S. Student Department of Fisheries and Wildlife, Oregon State University	<i>Committee Member</i> 09/07-06/09
Ladd Irvine , M.S. Student College of Oceanic and Atmospheric Sciences, Oregon State University	<i>Committee Member</i> 12/05-12/07
Alyson Azzara , M.S. Student Department of Oceanography, Texas A&M University	<i>Outside Research Advisor</i> 06/05-12/06
Jennifer Pettis , M.S. Student Georgetown University	<i>Outside Thesis Reader</i> 12/04-06/05

OUTREACH ACTIVITIES

7x7 project

Collaborated with artists Mendi + Keith Obadike as part of Rhizome.org's 7x7 project that brings together artists and technologists to create something new. We presented our collaboration on the behavior of ocean predators through a live-streamed event hosted by New York City's New Museum. A sound installation piece with a mirrored exhibit at the Kusthall Stavanger contemporary art museum in Norway will premier when the museums can reopen

American Museum of Natural History

Ocean Luminaries event speaker

03/02/18

Unseen Oceans Exhibit

03/2018-present

Participated in the development of a feature piece on my research for the exhibit. This temporary exhibit attracted 1 million visitors at the main museum in New York City and is now traveling to other museums around the country.

Worked with educators to develop K-12 educational materials to pair with the exhibit

Monterey Bay Aquarium

Board Meeting Speaker

09/2017

Presenter to aquarium volunteers

09/2017

Scientists and Fishermen Exchange (SAFE)

09/04-05/16

Participant in this group of fishermen and scientists working together to build trust and a mutual understanding of the industry and ocean sciences. Sponsored by Oregon Sea Grant

Discovering the Scientist Within, Keynote speaker for middle school girls' event

02/14

TEDYouth, Spoke to 500 high school students live, presentation streamed to 48 countries, part of TEDEd

11/12

PopTech, Conference Speaker to innovators across fields of engineering, business, and social policy

10/12

Connecticut Science and Engineering Fair, Awards Ceremony Opening Speaker (by video)

03/12

Intel International Science and Engineering Fair, Awards Ceremony Remote Speaker

05/11

Acoustics for Kids, profiled scientist for the poster and guidebook for middle school students, Acoustical Society of America

2011

Song for the Blue Ocean: Science, Arts, & Ethics, Spring Creek Project co-speaker with writer Julia Whitty

02/11

Columbia Forum Food for the Mind Dinner Lecture Speaker

03/10

COSEE NOW (Centers for Ocean Sciences Education Excellence - Networked Ocean Now) Podcast interview

<http://coseenow.net/>

02/09

SeaFest Featured Speaker, Hatfield Marine Science Center Open House and Marine Science Festival

06/05

Oregon Ocean Science and Math Collaborative Program

Technical Advisor, Keynote Speaker, Teacher at Sea Program Host

09/04-5/05

This is the largest single initiative of the Office of Community College and Workforce Development for the State of Oregon. It aims at integrating the expertise of scientists and educators in a collaborative project designed to incorporate ocean sciences into science, math, critical thinking as part of adult education.

Hawaii State Science Fair, Judge, High School Biological Sciences Division

04/02, 4/04

Community Seminar Series, Keynote Speaker, Kula Nai'a Foundation & Kohala Center, Waimea, Hawaii

04/04

SELECTED MEDIA & WEBSITE COVERAGE

North State Public Radio "The Sound of Science in the Sea" interview

12/19

Christian Science Monitor "Into the twilight zone: An age of discovery unfolds beneath the waves"

07/19

talkRADIO UK guest for morning show science segment focusing on our beaked whale foraging work

01/19

New York Times featured in an article on the AMNH *Unseen Oceans* Exhibit

02/18

National Wildlife Magazine research featured in an article on diel vertical migration

10/17

Women in Oceanography featured in the *Oceanography* Special Issue

03/15

Ocean News and Technology Magazine Cover story on our AUV echosounder development

07/13

Science Illustrated European, Thai, and Australian Magazine covered jumbo squid research

07/13

National Public Radio, Academic Minute On Air story on PLoS ONE paper

03/13

Science Daily, redOrbit, KVAL TV, Covered research presented in Jan 2013 PLoS ONE paper

01/13

Fast Company Magazine story "An Autonomous Sub Speaks Whale to Explore the Deepest Ocean"

11/12

Discover Magazine Covered research presented in 2012 Marine Ecology Progress Series paper on squid	10/12
Amazing Planet, MSNBC Covered research presented in May 2012 Biology Letters paper	05/12
Smithsonian Magazine Squid research featured in "Call of the Leviathan"	12/11
The Scientist Magazine Scientist to Watch story	04/11
SmartPlanet.net Feature scientist profile	02/11
Exploring How Jumbo Squid Use Oxygen to Survive US News and World Reports story on our NSF-funded research in collaboration with William Gilly, Stanford and Brad Seibel, URI	10/10
MacArthur Fellowship Covered by National Public Radio's "All Things Considered", Oregon Public Broadcasting, The New York Times, USA Today, The Washington Post, The Oregonian, Popular Science and Atlantic Magazines, and others	09/10
Mother Jones Magazine Research featured in cover story on the BP oil spill	08/10
Malamalama University of Hawaii Alumni Magazine Volume 34:1 feature article	03/09
Honolulu Star Bulletin , Story: "Underwater Dance" by Helen Alton about spinner dolphin foraging	11/10/08
Discovery Channel Canada, Daily Planet Taped interview about spinner dolphin research	aired 10/22/08
Spinner dolphin foraging research featured on Bio-Medicine.org, Sciencecentric.com, Physorg.com, Innovations-Report.de, ScienceDaily.com, ScienceNewsDaily.org, FirstScience.com, DrTom.tv, BiologyNews.net, ScienceCodex.com, NSF.gov's homepage banner, and the AAAS website	10/21/08
National Public Radio Guest for story on the Bering Sea Integrated Ecosystem Research Program	aired 08/11/08
NSF's Live Science My squid research featured by this public outreach website	06/08
Discovery of Sound in the Sea Served as a scientific expert for www.dosits.org, an outreach website about the recently controversial topic of the use of sound in the ocean. I did an on camera interview for the "Scientists Gallery" of the website, provided figures and information for the site, and fact checked the final pages.	12/05
Women in Oceanography featured in the <i>Oceanography</i> Special Issue Vol. 18, No. 1 One of a series of autobiographical sketches of modern women in oceanography	03/05
Press Conference Panel Member for the 2004 Ocean Sciences Meeting	01/04
Acoustical Society of America, Press Room Prepared Lay-Language Papers for meeting website, fielded press questions at meeting press conferences	05/03, 12/01

INSTITUTIONAL SERVICE: COMMITTEES

Telepresence Committee, MBARI	08/20-present
Website Redevelopment Committee, MBARI	10/20-present
Building G Replacement Subcommittee, MBARI	10/20-present
AUV Users Committee, MBARI	05/17-present
Marine Operations Manager Search Committee, MBARI	10/19-06/20
Engineering Technician Search Committee, MBARI	01/18
Communications Director Search Committee, MBARI	05/17-09/17
Research Engineer Review Committee, MBARI	05/17
Scientist V Review Committee, MBARI	08/16
Strategic Planning and Hiring Committee, CEOAS	09/15-08/16
Oregon State University Faculty Senate	12/04-01/08, 01/14-08/16
Promotion and Tenure Committee, CEOAS	09/07-06/08, 09/14-06/15
External Awards, CEOAS	09/14-06/15
Discipline Exam Committee, Ocean Ecology and Biogeochemistry Discipline Group	01/12-06/15
Ship Operations, College of Earth, Ocean, and Atmospheric Sciences	09/06-09/07, 09/10-08/15
Publications Director Search Committee, College of Earth, Ocean, and Atmospheric Sciences	02/14-05/14
Peer Review of Teaching Committee, College of Earth, Ocean, and Atmospheric Sciences	09/14-06/14
College Advisory Committee, College of Earth, Ocean, and Atmospheric Sciences	09/12-08/14
Geospatial Scientist Search Committee, College of Earth, Ocean, and Atmospheric Sciences	03/13-04/14
OEB Curriculum Committee Chair, CEOAS	09/13-05/13
Marine Technician Superintendent Search Committee, CEOAS	02/13-04/13

Cetacean Ecologist Search Committee , Dept of Fisheries and Wildlife, COMES	09/12-05/13
Marine Superintendent Hiring Committee , CEOAS	09/10-01/11, 01/13-03/13
Associate Dean for Research Search Committee , CEOAS	06/11-09/11
Strategic Planning Committee , College of Oceanic and Atmospheric Sciences	09/10-01/11
Faculty Hiring Committee , College of Oceanic and Atmospheric Sciences	12/07-01/11
Peer Review of Teaching , College of Oceanic and Atmospheric Sciences	09/09-09/10
Dean's Advisory Committee , College of Oceanic and Atmospheric Sciences	09/06-09/07, 09/08-08/09
Frontiers Seminar Series Committee , College of Oceanic and Atmospheric Sciences	09/07-09/08
Director Search Committee , Oregon Sea Grant	09/07-06/08
Branding Committee , College of Oceanic and Atmospheric Sciences	09/06-09/07
Scientific Facilities Committee , College of Oceanic and Atmospheric Sciences	09/05-09/06
Cetacean Biologist Search Committee , Dept of Fisheries and Wildlife, COMES	11/04-12/05
Instructional Programs Committee , College of Oceanic and Atmospheric Sciences	09/04-09/05

OTHER INSTITUTIONAL SERVICE

External Review Committee , speaker	02/20
MBARI Board , Presenter	09/19
MBARI Board , Science tour presenter	03/19
MBA Board , Presenter	09/17
MBARI Board , DOEST science tour presenter	06/17
California State Lands Commission MBARI representative to the Technical Advisory Group on Low-Energy Geophysical Survey Regulation	06/16-06/17
MBARI Board Science presenter	11/16
ARCS Foundation Luncheon speaker	10/14
Senate, State of Oregon Invocation speaker for University Day	04/11
ARCS Foundation Speaker for the College to this scholarship organization	04/11
Terra Magazine Interviewed for article on recent research and MacArthur Award	10/10
Media Listed on OSU's " <i>Faculty Experts</i> " website, I am regularly contacted by the press to talk about my research or comment on science in the news	
Terra Magazine Interviewed for article "Sounding the Deep" on my recent squid research	07/08
OSU Foundation Campaign for OSU feature article and banner Worked with the Development Office on materials representing my work at OSU which included several interviews and a photo-shoot	2007-2008
OSU University Advancement Participated in meetings with the Vice President for University Advancement focusing on the impacts of advancement on the broader implications of research	05/07
Oregon State University Board of Trustees Presenter at annual meeting	09/06
OSU University Advancement Presenter	05/06
OSU University Advancement Faces of OSU banner subject	01/06
COAS Board of Advisors Presenter at annual meeting	07/05

TECHNOLOGY DEVELOPMENT

In my work, I have often found existing tools incapable of addressing key questions. As a result, I have made significant investments in new analytical approaches and technologies. At MBARI, our research group is collaborating with engineers and operations experts to integrate echosounders into a variety of robotic platforms including tethered Remotely Operated Vehicles (ROVs) and autonomous vehicles including the WaveGlider surface vehicle and the small Long-Range AUV and large Dorado class underwater vehicles. A primary objective of these efforts is the integration of acoustic sampling with other sampling techniques including optics, imaging, and eDNA. A few technological developments from my laboratory and their scientific applications are highlighted below.

Moorable echosounders

I developed and constructed inexpensive, internally recording autonomous echosounders that we deployed off the coasts of Hawaii, Oregon, and in Monterey Bay, resulting in descriptions of diel migration, plankton layer dynamics, and fish school behavior.

Nocturnal light sensors

Light sensors that are sensitive enough to measure nocturnal illumination are not available. To address the role of nocturnal light and lunar cycle on diel migration, I designed, built, and calibrated a simple and inexpensive logging sensor to quantify surface irradiance at night.

Deep-water broadband sonar

In collaboration with electrical engineer Whitlow Au, I designed and fabricated a biomimetic sonar. This system uses a broadband, dolphin-like sonar signal to provide rich backscatter information. Along with biologist Chris Kelley and manned submersible engineer Chris Taylor, we deployed this system along with high resolution video cameras to depths of over 1000 m from a manned submersible to obtain echoes from free swimming deepwater fish to compare with laboratory measures from the same species obtained at surface pressures. In other studies, we deployed the system from profiling packages, using the acoustics to observe the avoidance behavior of micronekton to the profiling system and specific components such as the video lighting system.

Micronekton stereo camera

To provide ground-truthing for highly mobile micronekton in untrawlable areas, we developed a stereo camera system that utilizes only infrared illumination to minimize avoidance. To facilitate sampling from small vessels, the system can be used in an internally recording configuration. The system has provided details on the differences in migration behavior amongst species and information for models of predator energetics.

Isopycnic ROV + zooplankton acoustic system

In collaboration with biologists Timothy Cowles and Mark Benfield, we modified a commercially available ROV to maintain its vertical position based on water density measured with the onboard CTD instead of pressure. This allows us to keep our sensors within fine-scale plankton features even as these important biological structures are moved by internal waves and other processes. The ROV carries a very high frequency (1, 5, and 7 MHz) zooplankton sonar system we developed. Uniquely, this system retains the entire waveform of each echo rather than just the envelope, providing the ability to resolve individual copepods. The sonar complements the sampling from an underwater video microscope developed by Mark Benfield. The imaging system provides taxonomic specificity while the acoustic system has a much larger sample volume, permitting us to examine the distribution of zooplankton and behavior including potential avoidance of the vehicle.

Dual-frequency echosounder + deepwater AUV

In collaboration with biological oceanographer Mark Moline, engineer David O’Gorman (now with Tesla) and engineers at Kongsberg Hydroid and Kongsberg Simrad, we autonomized and integrated two, customized split-beam EK60 systems into a REMUS 600 vehicle. In partnership with Echoview, we developed on-board processing capabilities that are used to alter vehicle flight based on the characteristics of biological targets. This system is providing descriptions of the distribution of biota in the meso and bathypelagic.

Smart glider + acoustic system

In collaboration with physical oceanographer Jack Barth, robotics engineer Geoff Hollinger, electrical engineers from Kongsberg Simrad, and the engineering team at Teledyne Webb, we are integrating two low power sonar systems into a Slocum glider. One transducer will look upward and the other downward to provide a synoptic view of the photic zone while the vehicle obtains profiles of physical and bio-optical characteristics of the water. The vehicle will expand on the onboard processing and flight alteration of our deepwater AUV using algorithms inspired by our research with predator hunting behavior to search for, identify, and track biological hotspots that occur as a result of coastal upwelling.