



SEABASS

Marine Bioacoustics Summer School

Course Program

University of New Hampshire

Durham, New Hampshire

June 23 - 28, 2024

Organizers

Jennifer Miksis-Olds¹ & Susan Parks²

1- Center for Acoustic Research & Education, University of New Hampshire

2- Biology Department, Syracuse University

SeaBASS 2024 Financial Support

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Office of Naval Research



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FORWARD

Welcome to the ninth biennial marine **BioAcoustics Summer School** program. The goal of the SeaBASS program is to provide the opportunity for graduate students interested in pursuing careers in marine bioacoustics to develop a strong foundation in marine animal biology and acoustics, foster technical communication across disciplines, and to develop professional relationships within the field. Experts within the field of marine animal bioacoustics will provide half day seminars that describe fundamental aspects of underwater sound and marine animal behavior, summarize the present state of the field, identify current obstacles and challenges, and discuss important “hot topics” areas. Each seminar will include introductory lectures followed by group discussions or group projects to gain a more in-depth understanding of the issues.

We hope that SeaBASS will be more than a short course introducing students to the fundamental aspects of the field. We want the opportunity for close interaction that will allow all of the participants, presenters and students alike, to develop lasting professional contacts that will help develop the next generation of marine bioacousticians.

Jennifer Miksis-Olds & Susan Parks

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*****Supplemental materials for each lecturer will be provided in a GoogleDrive folder that will be emailed to all students in the course prior to SeaBass.**

The link to the google drive can be found here: [2024 SeaBASS SharedFolder](#)

SCHEDULE

	Sunday June 23	Monday June 24	Tuesday June 25	Wednesday June 26	Thursday June 27	Friday June 28
7:00-8:00		Breakfast and Welcome	Breakfast	Breakfast	Breakfast	Breakfast
8:00-12:00		W. Lee <i>Acoustics & Propagation Introduction</i>	L. Kloepper <i>Echolocation</i>	J. Luczkovich <i>Fish Acoustics</i>	S. Parks <i>Communication and Behavior</i>	P. Tyack <i>Noise Impacts</i>
12:00-13:00		Lunch	Lunch	Lunch	Lunch	Lunch and closing remarks
13:00-17:00	Check-in at Adams Tower	J. Warren <i>Active Acoustics</i>	J. Reidenberg <i>Sound Production/ Anatomy</i>	M. Lammers <i>Passive Acoustic Monitoring</i>	D. Harris <i>Acoustic Density Estimation</i>	P. Nachtigall <i>History of Marine Bioacoustics</i>
18:00-19:00	Dinner at Stillings Hall	Dinner	Dinner (17:30- 18:30)	Dinner	Dinner	Adjournment at 15:00
19:30-21:30	Software Installation workshop @ Adams Tower	Speed Talk Session and Social	Hot topics (1830-1930) and Bat Walk	Informal career discussions with presenters and sponsors	Open evening	

PARTICIPANT DIRECTORY

Presenters

Danielle Harris (dh17@st-andrews.ac.uk)

Dr. Danielle Harris is a post-doctoral research fellow at the Centre for Research into Ecological and Environmental Modelling (CREEM) at the University of St Andrews, with a multi-disciplinary background involving biological, statistical and acoustical analyses. Her BSc. was in Marine and Environmental Biology (2005, University of St Andrews) followed by a Masters in Environmental Biology (2007, Universities of St Andrews and Dundee). Her BSc and M.Res research projects provided an introduction to the fields of marine mammal acoustics and population monitoring methods, by studying bottlenose dolphin whistles during her BSc (supervised by Prof. Vincent Janik) and analysing visual survey data during her M.Res (supervised by Prof. Phil Hammond). Both topics were then combined during her PhD (2012, University of St Andrews), which focussed on cetacean density estimation using acoustic data (supervised by Dr. Len Thomas and Prof. John Harwood). Her thesis work comprised a variety of case studies, in collaboration with Scripps Institution of Oceanography (UC San Diego), the Cornell Lab of Ornithology (Cornell University) and the Instituto Dom Luiz (University of Lisbon). Subsequent post-doc projects have focussed on investigating cost-effective approaches to cetacean density estimation using acoustic data, by exploring existing opportunistic datasets and new technologies. Projects have included exploring cetacean density estimation using Ocean Bottom Seismometers (funded by the US Office of Naval Research); assessing the capability of a Waveglider for long term monitoring of both noise and marine mammals (funded by the UK Research Council & Department for Environment, Food and Rural Affairs); investigating large scale density estimation of blue and fin whales using non-standard density estimation methods (funded by ONR) and developing a framework for ocean glider-based acoustic density estimation (also funded by ONR).

Laura Kloepper (Laura.Kloepper@unh.edu)

Dr. Laura Kloepper is an Assistant Professor at the University of New Hampshire in the Department of Biological Sciences and the Center for Acoustics Research and Education where she leads the Ecological Acoustics and Behavior Lab. Her research focuses on how animals use acoustics to sense and navigate their world and how we can use acoustics to monitor animal populations. Specifically, using bats as her primary model organism, she investigates the link

between acoustics and locomotion in actively sensing animals, the behavior of animals in groups, and passive acoustic approaches to estimate animal populations. Dr. Kloepper has received a National Science Foundation Postdoctoral Research Fellowship and an Office of Naval Research Young Investigator Award. Dr. Kloepper currently serves as the Chair of the Animal Bioacoustics Technical Committee for the Acoustical Society of America (ASA) and is the former chair of ASA's Public Relations Committee. She believes in engaging directly with the public about research and the role of science in policy. As a former high school biology teacher, Dr. Kloepper also promotes the connection of students with scientists and encourages hands-on research at all academic levels.

Marc Lammers (Marc.Lammers@noaa.gov)

Dr. Marc Lammers is the Research Coordinator at NOAA's Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS). He is also the Co-Founder and President of Oceanwide Science Institute and is an affiliate faculty member at the Hawai'i Institute of Marine Biology. He holds a B.A. and a Ph.D. in Zoology from the University of Hawaii. His research interests are diverse, but largely focused on marine bioacoustics, cetacean behavior and the effects of anthropogenic activities on marine life. At HIHWNMS he leads research activities focused on understanding the population, ecology and behavior of Hawaii's humpback whales. He is also an expert in marine acoustics and has studied Hawaii's dolphins for more than 25 years. Dr. Lammers is an active collaborator with many researchers both in Hawaii and around the world, and is a teacher/mentor to numerous undergraduate and graduate students. He has worked on projects focused on a variety of topics and marine organisms, including dolphins, whales, corals, fish and turtles.

Wu-Jung Lee (leewj@uw.edu)

Dr. Wu-Jung Lee is a Senior Oceanographer at the Applied Physics Laboratory, University of Washington in Seattle, WA, USA. She received her B.S. degrees in Electrical Engineering and Life Science from National Taiwan University and her Ph.D. from the Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program in Oceanography. Prior to joining APL-UW, she took a detour from ocean acoustics to study bat echolocation as a F.V. Hunt Postdoctoral Fellow of the ASA at Johns Hopkins University. Dr. Lee enjoys working on problems that bridge across disciplinary boundaries and with people with different backgrounds. Her research spans two primary areas: acoustical oceanography and animal echolocation. In acoustical oceanography, she develops physics-based and data-driven methods to extract biological information from active acoustic observations of the ocean. In animal echolocation,

she combines experimental and computational approaches to study the sonar of bats and dolphins as biological models for engineering insights. Dr. Lee actively contributes to open-source scientific software and leads the development of Echotype, a Python library for interoperable and scalable processing of ocean sonar data. She is also an advocate for a more inclusive and supportive research community. Since 2018 she has led and co-led the organization of OceanHackWeek, a workshop dedicated to building a community centered around data science in oceanography that embraces these values. Dr. Lee loves going to the sea despite being very prone to motion sickness. Outside of work, she enjoys spending time in the mountains and drawing.

Joseph J. Luczkovich (LUCZKOVICHJ@ecu.edu)

Dr. Joseph Luczkovich is a Professor of Biology and an Associate Scientist in the Institute for Coastal Science and Policy at East Carolina University. He was educated at Lehigh University (B.S. Biology), Rutgers University (M.S. Ecology), The Florida State University (PhD Biological Sciences), and completed post-doctoral fellowship at the Harbor Branch Oceanographic Institute, in Ft. Pierce, Florida. It was at Harbor Branch that he was introduced to the sound production of drums and croakers (Family Sciaenidae) by R. Grant Gilmore. After this post-doc, he worked at Humboldt State University and NC State University, and then joined the faculty at East Carolina University. He has published extensively on the use of passive acoustics in monitoring sound-producing fishes. Dr. Luczkovich has used the passive acoustic approach to determining spawning areas of Sciaenidae, which make sounds during their spawning activities, with males making the sounds as advertisement calls to attract females. He has also used acoustic data loggers to monitor the impact of anthropogenic noises from vessels on fish sound production and is interested in the role the species-specific sounds may play in reproductive isolation of the Sciaenidae, which could lead to speciation events within this group. Dr. Luczkovich continues to study the sound production of fishes and marine mammals in Pamlico Sound, Atlantic Ocean and the Caribbean Sea.

Jennifer L. Miksis-Olds (J.MiksisOlds@unh.edu)

Dr. Jennifer L. Miksis-Olds is the Director of the Center for Acoustics Research & Education and Research Professor at the University of New Hampshire. Dr. Miksis-Olds was the Vice-Chair of the Board of Trustees for the Consortium for Ocean Leadership (2020-2021). She is a member of the Scientific Committee of the International Quiet Ocean Experiment Program and serves as a Scientific Advisor to the Sound and Marine Life Joint Industry Programme. Dr. Miksis-Olds was the recipient of an Office of Naval Research Young Investigator Program

award in 2011 and the Presidential Early Career Award in Science and Engineering in 2013. She is a Fellow of the Acoustical Society of America. Her primary research interests are patterns and trends in ocean soundscapes, animal behavior and communication, and the impact of environmental change on marine life. Dr. Miksis-Olds received a A.B. cum laude in Biology from Harvard University, M.S. in Biology from the University of Massachusetts Dartmouth, and Ph.D. from the University of Rhode Island. She is currently chairing the National Research Council panel on Ocean Acoustics Education and Expertise through the National Academy of Sciences.

Paul E. Nachtigall (nachtiga@hawaii.edu)

Dr. Nachtigall is Director Emeritus, an Emeritus Research Professor, and founder of the Marine Mammal Research Program at the Hawaii Institute of Marine Biology, University of Hawaii at Manoa. He has studied a variety of marine mammals ranging from polar bears to sperm whales and most of his studies have centered on measuring and developing an understanding of animal learning and sensory systems. Dr. Nachtigall has worked throughout the world. He is a founding member of the Society for Marine Mammalogy, an honorary member of the European Association for Aquatic Mammals, edited the journal Aquatic Mammals for over 10 years, is a Fellow of the Acoustical Society of America, is a former president of the Society for Marine Mammalogy, and has served on many international boards and advisory committees. He has written or edited 7 books and published over 150 peer-reviewed research journal articles. He remains active teaching occasional classes at Syracuse University, the University of New Hampshire and Lund University in Sweden, and continues research and writing, reviewing and consulting.

Susan E. Parks (sparks@syr.edu)

[@ParksLabSU](#) (Twitter)

Dr. Susan E. Parks is a Professor in Biology at Syracuse University where she leads the [Bioacoustics and Behavioral Ecology Lab](#). Prior to her position at Syracuse University, she was a Senior Research Associate and Associate Professor of Ecology and Acoustics at the Applied Research Laboratory at the Pennsylvania State University. Her primary research interests are the behavioral function and evolution of sound production in animals, their perceptual abilities, and the impact of noise on their ability to communicate. She has been involved in animal bioacoustics studies since 1995, first as an undergraduate working on whale acoustic census data and studying male frog calling behavior, then as a graduate student focusing on acoustic communication of the North Atlantic right whale. Her primary research focus has been on the endangered North Atlantic right whale, which she has studied for the past 26 years. Her awards

during her career include the Office of Naval Research Young Investigator Award and a Presidential Early Career Award for Scientists and Engineers from the White House. Dr. Parks is a member of the Acoustical Society of America, the Animal Behavior Society, and the Society for Marine Mammalogy. She earned her B.A. in Biology from Cornell University and her Ph.D. in Biological Oceanography from the Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program in Oceanography. She has previously served on the Committee on Offshore Science and Assessment for Ocean Energy Management for the U.S. National Academy of Science, as chair of the North Atlantic Right Whale Consortium, and as an Associate Editor for the journals Marine Mammal Science and Behavioural Ecology and Sociobiology.

Joy S. Reidenberg (joy.reidenberg@mssm.edu)

Joy S. Reidenberg, Ph.D. is a comparative anatomist, specializing in cetacean anatomy. She is a Professor in the Center for Anatomy and Functional Morphology at the Icahn School of Medicine at Mount Sinai, NY, USA. Her degrees are from Cornell University (B.A. 1983) and Mount Sinai's Graduate Program in Biomedical Sciences (M.Phil. 1986, Ph.D. 1988). Dr. Reidenberg also held appointments as Guest Investigator at Woods Hole Oceanographic Institution, and Associate Scientist at National Museum of Natural History (Smithsonian Institution). She is a Fellow of the American Association of Anatomists, and an Inaugural Fellow of the Society for Marine Mammalogy.

Dr. Reidenberg teaches Structures (Human Gross Anatomy, Histology, Embryology, Imaging) to medical and graduate students, and participates in several anatomy courses for surgeons. Her reputation as a teacher extends beyond Mount Sinai: she was awarded both the Basmajian Award and the Henry Gray Distinguished Educator Award of the American Association for Anatomy for excellence in research and outstanding teaching. She regularly engages with the public through outreach educational programs (e.g., two TED talks, numerous television documentaries). Dr. Reidenberg is best known on television as the comparative anatomist for the BAFTA award winning documentary series Inside Nature's Giants. She was featured most recently (Jan 2024) in two new documentaries: When Whales Could Walk on PBS NOVA and The Mystery of the Walking Whale on CBC (Canada). Dr. Reidenberg does research in comparative anatomy of animals adapted to environmental extremes, particularly focusing on marine mammals (e.g., underwater sound production mechanisms). Studying such "natural experiments" helps uncover basic biomechanical relationships that affect all animals, including humans. She hopes to mimic these adaptations to develop protective/preventive technologies or

new medical treatments for injuries and diseases. Her work has been funded by: ONR, DOD, NOPP, NOAA. Dr. Reidenberg has been featured as the lead scientist (comparative anatomist) in many national and international science documentaries (e.g., PBS, BBC, SBS, NatGeoWild, Discovery Network, Science Channel), and interviewed for scientific and popular press (e.g., Nature, New York Times-Science Times, O the Oprah Magazine). She is an active member of U.S. national whale stranding necropsy teams. Dr. Reidenberg has written over 100 publications, guest-edited three special issues of the Anatomical Record, created digital and video media projects, and continues to present at multiple scientific and educational conferences annually.

<https://profiles.mountsinai.org/joy-s-reidenberg>

<https://www.linkedin.com/in/joy-s-reidenberg/>

<https://www.facebook.com/ReidenbergTV/>

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Peter L. Tyack (plt@st-andrews.ac.uk)

Dr. Peter Tyack is a Professor of Marine Mammal Biology at the University of St Andrews. His research focuses on behavioral ecology, especially acoustic communication and social behavior in marine mammals. He has studied the role of vocal learning in reproductive advertisement in baleen whales and individually distinctive contact calls in toothed whales, and echolocation in deep diving toothed whales. He has developed new methods to sample behavior continuously from marine mammals, including the development of sound-and-orientation recording tags, and has used these to study communication and echolocation. During his field work recording sounds of whales, he noticed that anthropogenic sound is ubiquitous in the ocean, and he developed concern that anthropogenic sounds could disturb marine mammals. He has developed a series of studies on responses to anthropogenic sounds, including effects of oil exploration on baleen and sperm whales, and the effects of naval sonar on toothed whales. Tyack graduated *summa cum laude* in Biology from Harvard College and his PhD is in Animal Behavior from Rockefeller University. His PhD advisor was Donald Griffin, an early pioneer of studying animal sonar and animal awareness. He is an author of more than 100 peer reviewed scientific publications, served on 3 National Research Council Committees on the effects of sound on marine mammals, and is an author of 3 reports published by the National Academy Press and an editor of 2 books on animal behavior. He chaired a committee of the US National Academy of Sciences Ocean Studies Board which wrote a 2017 report on “Approaches to Understanding the Cumulative Effects of Stressors on Marine Mammals.” He has served on the US Federal Advisory

Committee on Acoustic Impacts on Marine Mammals, and testified to Congress and advised many non-governmental groups and government agencies on this topic.

Joseph D. Warren (joe.warren@stonybrook.edu)

@warren_lab (Twitter)

I am a Professor in the School of Marine and Atmospheric Sciences at Stony Brook University. I was an undergraduate engineering major and discovered underwater acoustics as a summer student at WHOI working on acoustic measurements of sediment transport. I quickly realized that animals are more interesting than sand grains and started working with Tim Stanton (a physicist) and Peter Wiebe (a biologist) on using active acoustics to measure zooplankton populations in the Gulf of Maine. The majority of my field work involves acoustic surveys of zooplankton and nekton populations and my research interests include: improving our ability to get “biologically-meaningful” information from acoustic echosounders, development of acoustic scattering models for different types of scattering processes, and examining predator-prey relationships between zooplankton and their charismatic megafauna (including seabirds) consumers. “Studying whale food” has become a larger part of my lab's activities in the past few years and I’ve done a bit of work looking at small zooplankton in freshwater lakes which has allowed me to make the [completely unverified] claim that I've used an underwater echosounder at a higher elevation (7000 ft above sea level) than anybody else in the world. SeaBASS 2018 comes in a busy stretch of fieldwork for me with: coral reef passive acoustics in Fiji (January), blue whale foraging study in Chile (Feb-Mar), Philippines sardine survey (May), ADEON bottom lander redeployment cruise (June), and I leave the dock for a New York bight offshore fish survey two days after this course ends. I also published my first passive acoustics paper (lead author is a recent Master’s student in my lab and SeaBASS alum: Colin Wirth) this year on the use of an artificial reef off the coast of NY as a foraging habitat for bottlenose dolphins.

Student Directory

Name	Affiliation	Research Description
Ilaria Coero Borga	University of Vermont	I am a second-year PhD student at UVM, interested in humpback whale acoustic behavior. With my project, I want to investigate the environmental factors influencing humpback whale singing activity in Central America and I want to explore the rhythmic features of humpback whale songs
Daryll Carlson	University of New Hampshire	My proposed graduate work will focus on baleen whale species distribution modeling along the northeastern coast of the United States using passive acoustic data.
Michael Carlowicz	SUNY Stony Brook University	Mike Carlowicz studies active acoustics in Dr. Joe Warren's lab at Stony Brook University focusing on long- and short-term temporal changes in multiple trophic levels of pelagic organisms. His master's thesis will explore zooplankton diel vertical migration and 3-D fish tracking using bottom-mounted, upward-facing echosounders in the Gulf of Maine
Mikayla Carrier	North Carolina State University	My current graduate research focuses on using passive acoustic monitoring to assess marine health and biodiversity in the Galapagos coral reef system. I am hoping to expand my research to categorize species-specific fish calls to automate call rates in my long-term soundscape data.
Lucinda Chambers	University of New South Wales	In my PhD I am investigating the marine bioacoustic soundscapes of the Southern Ocean. My work aims to further our knowledge of the role of underwater acoustic communication in a number of Antarctic marine mammals, including investigating the vocal dialects of Antarctic killer

		whales, characterising the acoustic repertoire of the Arnoux's beaked whales and examining the structure of leopard seal vocalisations using information theory
Ambrosine Clark	University of Liverpool	I am currently in the first year of my PhD program and my research focuses on biotremology, a relatively new discipline in bioacoustics which involves the study of the biological use of vibrational waves used by animals for fundamental ecological processes. My PhD project encompasses a novel approach of aquatic biotremology, as I aim to assess vibrational sensitivities of marine invertebrates. My research will also investigate the effects of anthropogenic substrate-borne vibrations on the behaviour and physiology of different marine species, as very little data exist on this topic currently.
Marie Comuzzo	Brandeis University	Marie Comuzzo studies how sound mediates the relationship between humans and whales, and how the recognition of their vocal expression as song has shifted humans' perception of them.
Matthew Duggan	Cornell University	I'm a PhD student at the Yang Center of The Cornell Lab working on describing community assemblages, spawning areas, and behavior of Caribbean deep reef fishes from 0-300 meters utilizing coupled video acoustic methods for species specific classification modeling across continuous long-term datasets.
Alex Eschmann	Syracuse University	For my master's research I'm looking into the lateralization patterns of baleen whales to see if they have a left or right body side bias for different foraging behaviors. I'm doing this by analyzing the sensor data off suction cupped bio-logging tags.
Sonnie Flores	University of the Sunshine Coast	Sonnie is a current PhD student investigating acoustic communication in crocodylians. These investigations include describing the repertoire of estuarine crocodiles (<i>Crocodylus porosus</i>), and assessing the feasibility of passive acoustic monitoring as an alternative to traditional tagging methods.
Alanna Frayne	Heriot-Watt University	Alanna is an MSc student studying International Marine Science at Heriot-Watt University School of Energy, Geoscience, Infrastructure and Society. Alanna's program focuses on applied research and climate change, and she is currently working on GIS modeling and analysis of marine mammal sightings/detection and oil spills in the marine

		environment.
Dinah Hartmann	St Andrews University	During my Master's, I studied the small-scale spatio-temporal distribution of harbour porpoises (<i>Phocoena phocoena</i>) using drones to identify ecological drivers and anthropogenic impacts such as motor boats. I will be conducting my PhD research into the distribution of harbour porpoises in the North Sea and the integration of acoustic monitoring data from different sources.
Prajna Jandial	University of Hawaii at Manoa	I am developing algorithms that sample a survey region based on the sound field characteristics. These algorithms use an active learning strategy based on Gaussian Process (GP) regression to characterize a static sound field in a survey region. With each location sampled, the algorithms employ a GP to estimate the distribution and quantify the uncertainty of static acoustic sources within the region. The uncertainty metric is used to then choose the next sampling location. This dynamic approach not only maximizes the information gained by the AUV at every location that it samples but also ensures an efficient convergence toward the true distribution of static sources in that region.
Aditya Krishna	University of Washington	I am investigating the effects of duty-cycle based subsampling in passive acoustic monitoring of bats to identify the minimum sampling effort needed for long-term behavioral studies.
Callyan Lacio	University of New Hampshire	My proposed research aims to use terrestrial passive acoustic monitoring (PAM) for estimating the population size and tracking the breeding phenology of gray seals (<i>Halichoerus grypus</i>) in Cape Cod and the Isle of Shoals.
Alyssa Lopez	Oregon State University	My graduate work at Oregon State University's Marine Mammal Institute focuses on the overlap between endangered Southern Resident killer whales (SRKW) and vessel traffic off the coast of Washington using passive acoustics. The goal of the project is to determine if vessel traffic is impeding SRKW access to Chinook salmon stocks.
Alexa Manley	University of San Diego	My graduate thesis, which I am currently working on, is with the beluga whales at SeaWorld San Diego. My project focuses on vocal matching and changes in beluga whale vocalizations with and without human-generated sounds.

Stefanie Maxin	University of the Virgin Islands	My research focuses on using passive acoustics to better understand the reproductive patterns and behavior of two aggregating reef fish species: Nassau grouper (<i>Epinephelus striatus</i>) and yellowtail parrotfish (<i>Sparisoma rubripinne</i>). The Nassau grouper portion is centered on analyzing over a decade's worth of acoustic data to determine trends in population abundance and spatial patterns of spawning, while the yellowtail parrotfish portion is focused on identifying a novel spawning-associated sound to use as a proxy for spawning activity.
Megan McElligott	Univ. of Hawaii Manoa	I am using passive acoustic monitoring to describe the acoustic activity of Hawaiian spinner dolphins (<i>Stenella longirostris</i>) during their daytime resting behavior in the Main Hawaiian Islands. In particular, I am quantifying any differences in acoustic activity before, during, and after a statewide COVID-19 ban on commercial boating activities.
Panagiotis Mitsopoulos	University of Connecticut	My Graduate Research Project focuses on developing a Passive Acoustic Monitoring (PAM) and buoy real-time data transmitter system. I have been working on the assembly, deployment, real-time data retrieval, and data analysis for a prototype system comprising the PAL III underwater passive acoustic instrument and Spotter buoy, focusing on offshore applications, including marine mammal detection and classification.
Jill Munger	University of New Hampshire	Jill Munger (she/her) is a M.S. student in the SeaBABEL lab researching variation in acoustic communities and community behavior associated with mangrove restoration efforts in British Virgin Islands. She is captivated by the countless number of sounds in the ocean that have yet to be identified and has leveraged advances in AI throughout her work.
Noah Packard	University of California, Santa Cruz	I am currently comparing hearing sensitivity and auditory masking among northern phocid species to better understand evolutionary trends in auditory biology of this group, as well as to quantify the effects of noise on hearing in rapidly changing arctic soundscapes.
Emma Pearson	Oregon State University	I am studying the impact of offshore wind energy development on cetaceans in the Northeast Pacific Ocean. My research will specifically focus on various baleen whale populations and spatial and temporal changes in their vocal behaviors.

Jessica Provenzano	Florida Institute of Technology	My thesis research uses Unmanned Aircraft Systems (UAS;drones) to assess body condition of an immune-compromised stock of bottlenose dolphins in the Indian River Lagoon, Florida. To aid in UAS photogrammetry analysis, I am incorporating nonlinear regression models using data from historic capture-release health assessments of the population to establish reference ranges for body condition morphometrics.
Rebecca Ruiz	NC State Univ.	I am a Master's student in the Marine, Earth and Atmospheric Sciences at North Carolina State University. My research looks at the ecological response following large-scale oyster restoration projects in Pamlico Sound, NC, specifically utilizing active and passive underwater acoustic monitoring data to monitor marine species to assess the level of health and establishment of artificial reefs through reef community composition.
Kiersten Runte	Dalhousie University	Investigating the global occurrence of an unknown, long-duration beaked whale signal (Beaked Whale Long-duration, BWL) that appears to occur only at night. Aim is to identify new areas where BWL is present and make a formal comparison of the signal across regions.
Lydia Sims	Univ of South Carolina	My proposed graduate work focuses on observing the effects that marine heatwaves and warm core rings have on North Atlantic right whale foraging. Acoustics are necessary to determine changes in migration and foraging patterns.
Sara Tennant	Syracuse University	My current graduate work focuses on cataloging and characterizing right whale vocalizations to improve acoustic monitoring.
Paige Tortorice	Stony Brook University	My proposed graduate work will look at how abundances of different zooplankton taxa are varying over time in the Mid-Atlantic Bight region. This research includes data collection with the use of zooplankton net tows and active acoustic monitoring.
Emma VerGow	University of New Hampshire	My master's work aims to characterize the trends in sei whale movement patterns related to migration dynamics in the Gulf of Maine. Sei whale vocal presence and spatial movements will be determined from acoustic detections through analyzing seasonal abundance and assessing directional bearings.

MAP OF CAMPUS:

A link to the full campus map can be found here:

https://www.unh.edu/facilities/sites/default/files/media/2022-04/s_uu_dwg_map_camp_sm_map_2021-campus-map-core.pdf. Housing and check in will be in Adams Tower; Sunday evening dinner will be provided at Stillings Hall. During the week, Monday-Friday, all meals and course activities in Holloway Commons. Parking for those that requested permits will be in the Stafford Lot across the street from Adams Tower.

