

BRP Sound Analysis Workshop Participants, April 3rd to 7th, 2017

Danelle Cline: Software Engineer, Monterey Bay Aquarium Research Institute, Moss Landing, California. dcline@mbari.org



I am a software engineer with a BS degree in electrical engineering and MS degree software engineering. I'm fairly new to sound analysis, so I'm really looking forward to having some focused time to learn about Raven. Most of my career has involved developing software for ocean, atmospheric, or space instruments. I've spent a good deal of time developing software to analyze imagery (video, still, holographic). I'll be working closely with another participant, John Ryan. John and I are a science-engineering team on a project that involves recording sound from a deep water observatory off the coast of California called MARS (Monterey Accelerated Research System). We have been recording sound from a hydrophone deployed around 900 meters deep almost continuously since August 2015! My goal is to learn how Raven can be used to explore our **underwater sounds** with an eye towards automation. I'd like to have a more in-depth understanding of how to fine-tune a spectrogram, different methods of detection, and just a better general understanding of sound measurement to support any science goals that John has.

Matthew Cybulski: Species at Risk/Wildlife Technician, Department of National Defence, Garrison Petawawa, Ontario, Canada. Matthew.Cybulski@forces.gc.ca



I have a Bachelor Degree in Environmental Geography and have been working primarily in species at risk management since graduating in 2008. My current role at Garrison Petawawa is to ensure that all military training and infrastructure development is conducted in compliance with relevant SAR/wildlife legislation. A large focus of mine is annually locating and protecting the **Kirtland's Warbler**, as our training base is the only known breeding location of the species in Canada. I am beginning to utilize bioacoustic recording devices more frequently to increase survey effort for the Kirtland's Warbler and now want to expand to specifically target other species at risk such as **Eastern Wolf** and **Western Chorus Frog**. Collecting data is relatively easy, but with no sound analysis background, I don't even know how to begin properly analyzing it! My primary goal for this workshop is to learn how to efficiently and accurately determine species presence/absence with RAVEN, but I am also interested in learning about other potential applications of the software.

Kyla Graham: Environmental consultant, Victoria, Canada. kylacelestegraham@gmail.com



I'm a self-employed environmental consultant living in Victoria, BC, Canada. I have been involved in work with marine mammals, as a marine naturalist and marine mammal scientist, for nearly 20 years in Canada, USA, Mexico, Africa, South America, Australasia and Europe. I have over seven years of experience working as a marine mammal observer and passive acoustic monitor implementing mitigation for oil and gas and geophysical seismic research surveys and offshore construction projects. I have worked on a variety of marine mammal research projects in Canada and abroad since 1996 and have been involved in collecting data on: killer whales, gray whales, humpback whales, bottlenose dolphins and humpback dolphins. I

graduated with a Master of Research in Marine Mammal Science (University of St. Andrews, 2008) and a Bachelor of Science in Geography and Environmental Studies (University of Victoria, 2004). Most recently, I have assisted with Fisheries and Oceans Canada's Whale Tracking Network, establishing a network of hydrophones along the BC coast to acoustically track marine mammals including **Southern Resident and West Coast Transient killer whales and humpback whales**. I hope to gain more knowledge on sound analysis theory and the technical skills of acoustic analyses of marine mammal sounds, including **identifying and classifying species by their acoustics**, and the **anthropogenic noise** that has the potential to impact them.

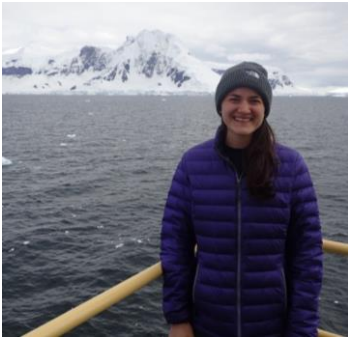
Tina Jackson: Environmental Scientist, LG2 Environmental Solutions (Jax, FL), Graduate Student, University of Florida, Gainesville, Florida. tjackson.flagirl@gmail.com



I am a graduate student with UF's School of Forest Resources and Conservation, majoring in Fisheries and Aquatic Science. My program is a non-thesis M.S, which works for me since I do plenty of research with my job. I am currently employed with an environmental consulting firm in Jacksonville, Florida. I perform work for all of our business lines including Natural Resources, Cultural Resources and Contamination Remediation. I spend most of my time working on Navy projects. Currently, I'm involved in a **neo-tropical migratory bird** survey, Rare Threatened and Endangered (RTE) **reptile** and

amphibian survey, **bear** survey, and **bat**/ nocturnal avian survey, among others- all at naval installations. These surveys are used to determine presence/absence or to monitor population trends of RTE species so that they can be properly managed. I will be using Raven to attempt to process recordings of **nocturnal birds**. My goal is to learn how to work with the software, define parameters, and hopefully become able to classify recordings down to species level. In addition to using Raven, I will be attempting to learn AnalookW to analyze bat recordings on an Anabat system. I'm curious to see if Raven could be applicable for use in any of the other surveys I conduct, and I'm looking forward to learning what it is and isn't capable of.

Schuyler Nardelli: PhD Student, Rutgers University, New Brunswick, New Jersey.
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My current research is based off the Western Antarctic Peninsula, looking at how changing climatic conditions along the peninsula are affecting plankton distribution, abundance, and species composition shifts. I am utilizing bio-optics as well as active acoustics on a Slocum glider, an autonomous underwater vehicle (AUV) platform, to understand the spatial and temporal variation of plankton around Palmer Station, Antarctica. However, I am also interested in how plankton dynamics are driving changes in higher trophic levels, such as whales. In the future, we are hoping to use passive acoustics on our gliders to detect **marine mammal presence** along the peninsula in

combination with the data we are collecting on plankton. To test the effectiveness of this technique, I am currently analyzing data collected using a SoundTrap underwater sound recorder that was deployed on a glider in the Amundsen Sea. At the workshop, I am hoping to learn how to become a more proficient RavenPro user, as well as learn as much as I can about the field of bioacoustics.

Erin Obodiac: Visiting Scholar, Cornell University, Ithaca, New York. emo57@cornell.edu



I received my Ph.D. in Comparative Literature from the University of California, Irvine and have held teaching and research appointments at UC Irvine, the University of Leeds, SUNY Albany, and Cornell University. My writings assemble residual questions from the deconstructive legacy with emergent discourses on technics and animality, media ecology, and machinic subjectivity. I am currently a Visiting Scholar at Cornell University, completing a book called *The Transhuman Interface*, which repositions critical theory and deconstruction

within the history of cybernetics and machinic life. *The Transhuman Interface* is a result of the research project “Robots at Risk: Transgenic Art and Corporate Personhood”. The project and the accompanying book manuscript examine contemporary theories of machinic life and robotics as well as the philosophical traditions that underpin them. I also run a project called [The Media Ecology Lab](#) hosted by UC Irvine’s desert research center. Acknowledging that in our technological era we live in a hybrid techno-vivarium, the lab welcomes projects that interrogate the ways that media technologies interface with and constitute subjectivities, forms of life, and ecologies. For our first sound ecology project, we are using automated recording devices to record ambient sound from the **desertscape** and any accompanying animal/bird sounds. In particular, we hope to record the sound of signature species like the **Roadrunner** and the **Desert Coyote**.

Craig Raffenberg: PhD student, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, Florida. car84@miami.edu



I am a PhD candidate in the department of Marine Biology and Ecology working in Dr. Claire Paris' Lab. Our lab focuses on dispersal and settlement processes, in which larvae from benthic species return from a pelagic environment to settle and transition to juveniles. The mechanisms and sensory information necessary for these processes are still unclear. My work focuses on the acoustic environment of pre-settlement larval fish, specifically in the possibility of group communication via **larval vocalization**, which was found for the first

time in the Paris Lab while studying larval grey snapper (*Lutjanus griseus*) orientation at night. This work represents the only occurrence of vocalization in the early life history of fishes. Additionally, the sound emanating from coral reefs has been thought of as a directional cue for orientation and settlement of larval reef fish. Yet, recent work suggests that the **reef cacophony** may not be audible to the pelagic larvae. Therefore, I am interested in answering these questions by focusing on larval auditory capabilities and larval vocalization in the lab and in an environmental context. I am hoping to gain a strong foundation in acoustic analysis during the Sound Analysis Workshop, and I am excited about using the Raven software for detection and comparison of vocalizations.

John Ryan: Biological Oceanographer, Monterey Bay Aquarium Research Institute, Moss Landing, California. rjo@mbari.org



I completed MS and PhD at the University of Rhode Island Graduate School of Oceanography before moving to the west coast for a 2-year postdoc. 18.5 years later, I am still at this wonderful institute that integrates science and engineering to advance ocean research. My research focuses on interactions between marine life forms and the environments they inhabit – spanning microscopic plankton to the largest mammals and fish. I also contribute to augmenting capabilities of autonomous underwater vehicles (AUVs) so that these mobile robots can recognize and respond to unpredictable encounters with dynamic features of interest, thereby enabling

better understanding of their nature. I am relatively new to bioacoustics, and I see this workshop as a good way to explore some of the fundamentals of the research field and its methods. We deployed a hydrophone on a cabled ocean observatory (900 m depth) just outside Monterey Bay, CA in July 2015, in the heart of Monterey Bay National Marine Sanctuary, and we've been recording almost continuously since then. We are studying the sounds of **marine mammals, earthquakes, and anthropogenic noise**.

Steph Sardelis: Master's Candidate, Conservation Biology, Columbia University, New York, New York. Stephanie.sardelis@columbia.edu



I was inspired by the sea as a child and tailored my education to specialize in marine and aquatic biology. Although my undergraduate thesis at Queen's University focused on the effects of antifouling paints on non-target zooplankton, I became fascinated with acoustics after leading a seminar on ocean noise pollution. I studied marine mammals at the Huntsman Marine Science Centre and completed the Fall Program at the Bamfield Marine Sciences Centre to bolster my background knowledge. Before starting my Master's at Columbia University, I worked as an Educator at Ripley's Aquarium of Canada and in the Royal Ontario Museum's ichthyology department. My Master's thesis is part of the Wildlife Conservation Society's

Arctic Beringia Program, monitoring **Arctic marine mammals** in the Bering Strait region. I have manually processed ~1,250 hours of hydrophone recordings in Raven. In my spare time, I work with the herpetology department at the Bronx Zoo, assessing the calling repertoire of extinct-in-the-wild **Kihansi spray toads** in hopes of improving our understanding of them. I anticipate the workshop will sharpen my Raven skills and improve my confidence working as an acoustician for future research.

Amanda Savagian: PhD student, Princeton University, Princeton, New Jersey.
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I am a first year PhD student broadly interested in behavioral ecology, but currently curious about animal communication and signaling. As an undergraduate at Penn, I studied song development in brown-headed cowbirds, as well as spatial ecology and territorial behavior in wild owl monkeys in Argentina. After graduation, I worked in Puerto Rico studying the social networks of rhesus macaques and spent some time trapping and radio-collaring grey wolves with Montana's Department of Fish Wildlife & Parks. I also worked as a field assistant researching **greater ani** behavior in Panama, and decided to continue this research

as a PhD student. Anis are cooperative breeders, and I am interested in how communication mediates the cooperative behaviors and relationships within their dynamic social groups. Not much is known about ani communication, but they make strikingly loud and raucous communal choruses and are constantly talking to their mates. Specifically, I am interested in how their choruses are used and what information they contain, as well as how vocal signals may facilitate immigration into a new breeding group. I am comfortable using spectrograms to visualize my recordings of ani vocalizations, but hope to learn more about extracting and comparing specific acoustic parameters and to connect with other researchers interested in acoustic communication.

Kevin Scharffenberg: Master's student, University of Manitoba, Winnipeg, Canada.
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I received my bachelor's degree in Biology from the University of the Fraser Valley, in British Columbia. After completing my undergraduate studies I worked with coastal tailed frogs and western painted turtles, conducting radio telemetry studies, mark recapture, and population assessments. I took a break for a while and went off on an 8-month backpacking adventure through central and South America. During this time, I shared my herpetology skills with students at a research station in Belize, and volunteered at an animal rehabilitation center in Guatemala. While in Peru I participated in a marine mammal rescue internship where I fell in love with **marine mammals**. Upon my return to Canada I was given the opportunity to work towards a master's degree at the University of Manitoba studying beluga whales in the Arctic. My thesis project will examine spatial and temporal patterns of beluga habitat use in their summering grounds in the Mackenzie Estuary. I will be using passive acoustic monitoring to assess presence/absence, in conjunction with oceanography data to see if any environmental variables are driving beluga movement in the estuary. During this workshop, I hope to gain more formal instruction for sound analysis techniques, and find out if any automated detection methods can be applied to my study site.

Silvy van Kuijk: PhD student, The University of Texas at Austin, Austin, Texas.
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My interest in animal vocal communication sparked during my MSc in Primate Conservation. For my MSc research, I estimated the population density of the San Martin titi monkey through triangulating of the duet songs of the monkeys. After a forest patch the size of two football fields had been cleared and burned at the field site, the animals in the forest were quiet for a day. It made me realize that keeping track of certain species' vocal activity could potentially be a way assess the health of a population. For my PhD I work with **red titi monkeys** and hope to set up research on the structure and function of their duet songs, as well as investigate which ecological, climatic and anthropogenic factors change their vocal behavior. I have worked with this species in the field for 10 months in total, but have only spent 2 months recording their vocal behavior. In this workshop I hope to learn how to analyze the call structure and figure out if there is a good way to analyze the duet songs where the male and female contributions are uttered simultaneously and thus overlap on a spectrogram.

Connor Wood: PhD student, University of Wisconsin-Madison, Wisconsin. cwood9@wisc.edu



The barred owl is expanding into the range of the California spotted owl and has the potential to cause substantial population declines, but the distribution and density of barred owls there is unknown. I will be using acoustic recording units to conduct region-wide surveys for **spotted owls and barred owls** in the northern Sierra Nevada, California. I plan to use multi-species occupancy modeling to understand the dynamics of the two species, and to develop a more generalized, spatially extensive monitoring protocol. This project will be my first foray into bioacoustics, so I'm excited to learn about the hardware/software as well as hear from everyone else

how it is being applied. I'm in the first year of my PhD; I received a BA from Middlebury College and an MS from the University of Maine, and worked for a ski shop and a whiskey company between the two.