sampled for all tissue matrices before, during and after an out-of-water event (OWE) for veterinary examinations. All three whales exhibited increased average plasma (pre=1.6 µg/dl, 30 min=8.4 µg/dl, post=1.9 µg/dl), blow (pre=0.13 µg/dl, 30 min=0.38 µg/dl, post=0.15 µg/dl), and salivary (pre=0.01 µg/dl, 30 min= 0.051 µg/dl, post=0.011 µg/dl) cortisol from baseline to 30 min OWE with the exception of the male who showed a lag time in peak cortisol. Fecal glucocorticoid metabolites increased 2- and 4-fold from baseline to 6.5 hrs post exam in the male and one female. This study is the first to show the time course of cortisol and its metabolites simultaneously in blood, blow, saliva and feces. All tissue matrices show promise for monitoring health and the physiological impact to stressors in wild and managed care cetaceans and will be useful in controlled experimental studies.

Are acoustic devices with low sampling rates effective in ecological studies of coastal bottlenose dolphins?

Romeu, Bianca[1]; Cremer, Marta[2]; Daura-Jorge, Fábio G.[1]; Simões-Lopes, Paulo C.[3]
(1) Universidade Federal de Santa Catarina, Florianópolis, Brazil
(2) University of the Joinville Region, São Francisco do Sul, Brazil
(3) Federal University of Santa Catarina, Aquatic Mammals Lab (LAMAQ), Florianópolis, Brazil
Corresponding Author: romeu.bianca@gmail.com

Echolocation is used by odontocetes for navigation and foraging. Passive acoustic monitoring efforts use detection of echolocation clicks to study distribution, habitat use, and behavior of many species. In general, however, acoustic devices with a sampling rate of up to 500 kHz are expensive. Thus, the use of recorders with a lower sampling rate and lower-cost, such as 48 and 96 kHz, may be an alternative for monitoring programs. Although the clicks produced by bottlenose dolphins are broadband, in general ranging from 0.01 to 150 kHz, the proportion of clicks emitted at lower frequencies are still unknown. Here, we investigated the proportion of clicks that can be detected below 24 and 48 kHz, in recordings up to 96 kHz. We used a Sony PCM-D100 digital audio recorder with a sampling rate of 192 kHz, connected to a Reason TC 4032 hydrophone (frequency range: 0.005 to 120 kHz) to record coastal bottlenose dolphins (*Tursiops truncatus gephyreus*) from a resident population in southern Brazil. We conducted the recordings in a lagoon system (mean depth of two meters, muddy bottom). We analyzed 1h15min of recordings of six different groups of dolphins. We used Raven Pro 1.5 to create spectrograms and analyze the clicks. We counted a total of 27,108 clicks recorded up to 96 kHz. Approximately 99.6% of the total clicks were detected below 48 kHz and 94.6% at frequency below 24 kHz. The proportion of clicks detected below 48 kHz is significantly higher than the proportion of clicks detected below 24 kHz (χ^2=1198.7, df=1, p<0.001). However, less than 6% of the total clicks are undetected below 24 kHz. We conclude that, at least for coastal bottlenose dolphins, ecological studies can use lower-cost acoustic devices with sampling rates of 48 or 96 kHz with no substantial loss in detection rates of clicks.

CeNoBS – a step closer in completing a generation dream: Basin-wide survey of cetaceans in ACCOBAMS area.

Romulus-Marian, Paiu[1]; Mirea-Candea, Mihaela[1]; Belmont, Julie[2]; Descroix-Comanducci, Florence[2]; Le Ravallec, Célia[3]; Gol'din, Pavel[4]; Amaha Ozturk, Ayaka[5]; Mihail, Otilia[6]; Meshkova, Galina[7]; Duzgunes, Ertug[8]; Spînu, Alina[9]; Robinson, Miroslava[10]; Panayotova, Marina[11]
(1) Mare Nostrum NGO, Constanta, Romania
(2) ACCOBAMS Permanent Secretariat, Monaco, Monaco
(3) ACCOBAMS, Monaco, Monaco
(4) I.I. Schmalhausen Institute of Zoology of National Academy of Sciences of Ukraine, Kiev, Ukraine, Kiev, Ukraine
(5) Istanbul University, Faculty of Aquatic Sciences
(6) Romanian Ministry of Water and Forest, Buchares, Romania
(7) Green Balkans NGO, Plovdiv, Bulgaria
(8) Karadeniz Technical University, Marine Science Faculty, Trabzon, Turkey
(9) National Institute for Marine Research and Development "Grigore Antipa", Constanta, Romania
(10) Black Sea Basin Directorate, Varna, Bulgaria
(11) Institute of oceanology – Bulgarian Academy of Sciences, Varna, Bulgaria
Corresponding Author: romulus.marian@gmail.com

The European Marine Strategy Framework Directive (MSFD) aims at implementing a precautionary and holistic ecosystem-based approach for managing European marine waters, towards achieving their Good Environmental Status (GES). Eleven high level qualitative descriptors (D1-11) aim to describe what the environment will look like after GES has been achieved. The CeNoBS project was designed to "Support MSFD implementation in the Black Sea through establishing a regional monitoring system of cetaceans (D1 - Biodiversity) and noise monitoring (D11-Energy) for achieving GES". The Black Sea is a semi-enclosed sea with a narrow connection to the Mediterranean, containing the largest anoxic

water mass on the planet. Three Black Sea cetacean subspecies (*Tursiops truncatus, Delphinus delphis, Phocoena phocoena*) are already under much anthropogenic stress such as bycatch, pollution, underwater noise, prey depletion due to overfishing and human-mediated biological invasions. It has been impossible, however, to evaluate the level of such impacts as there have been only scarce baseline data available on the population abundance and distribution of these cetaceans in recent times. By implementing a dedicated aerial survey using the line transect distance sampling method in summer 2019, CeNoBS will strongly contribute to provide these baseline data, which has been anticipated in the Black Sea for over a generation. Moreover, CeNoBS will aim to elucidate the bycatch pressure and enhance the methodology of bycatch assessment, as well as to reinforce national expertise to implement effective noise monitoring. A great number of partners from the Black Sea riparian countries (Ukraine, Bulgaria, Romania, Turkey, Georgia) collaborate to implement the largest cetacean survey ever conducted in their region, which will complement the macro regional approach undertaken by the ACCOBAMS Survey Initiative (ASI) for improving the conservation of cetaceans and their habitats in the agreement area. **Keywords:** Black Sea; CeNoBS; MSFD; GES; Harbour porpoise; Bottlenose dolphin; Common dolphin; European Union

Mobilizing Hawaiian monk seal data accessibility for the 21st century.

Ronco, Hope[1]; Johanos, Thea[2]; Khurana, Vikram[2]; Robinson, Stacie[3]
(1) Hawaiian Monk Seal Research Program, NOAA, Honolulu, HI
(2) Hawaiian Monk Seal Research Program, Honolulu, HI
(3) NOAA
Corresponding Author: hope.ronco@noaa.gov

Hawaiian monk seal (*Neomonachus shauinslandi*) research has generated one of the world's most comprehensive marine mammal population data sets. In its current form, much of the data are not accessible in real time, particularly in remote field settings where the majority of monk seals reside. The goals of this study are to identify and evaluate new technologies to streamline data collection, and put valuable data at the fingertips of biologists in the field where access to critical life history information like molt status or previous handling sensitivity can radically alter the immediate course of action for both research and response activities for a given individual. Electronic tablets were deployed during the 2018 field season to determine the feasibility of live data entry into a master database. Seal population assessment data were collected using two methods: on paper forms with data entry following the survey and on tablets where data were entered directly into the master database. Little difference was observed in time expenditure between the methods, and field personnel found tablet use in the field challenging. To address limitations identified in this pilot season, focus has shifted to using smaller mobile devices as reference resources rather than data entry tools. During the 2019 field season, we will evaluate paper reference resources updated manually against mobile reference databases updated electronically through the master database. We hypothesize this will save time by minimizing manual updates to paper forms, and increase both accuracy and consistency within the data by minimizing user error. The development of an accessible mobile database will contribute to monk seal population assessment and conservation activities by increasing efficiency, aiding decision-making, and enhancing animal safety. Mobile data management systems have the potential to aid research for numerous marine mammal species which typically inhabit remote regions far from the office computer.

Life at the edge: The limits on underwater behavior of air breathing Southern Ocean predators.

Roncon, Giulia[1]; McMahon, Clive[2]; Wienecke, Barbara[3]; Hindell, Mark[4]; Bestley, Sophie[5]
(1) Institute for Marine and Antarctic Studies (IMAS) - University of Tasmania, Hobart, Australia
(2) Sydney Institute of Marine Science, Mosman, Australia
(3) Australian Antarctic Division, Kingston, Australia
(4) Univeristy of Tasmania, Hobart
(5) University of Tasmania, Battery Point, Australia
Corresponding Author: giulia.roncon@gmail.com

Marine mammals and seabirds undertake a form of central-place foraging because they must obtain their food at depth yet are obliged to return to the surface to breathe. Prey are not evenly distributed in space and time requiring predators to balance their metabolic needs. Over the last four decades, advances in data-logger technology have greatly increased our ability to study the diving of free-ranging marine animals, to quantify extreme behaviours – such as the deepest and longest dives – and how marine predators regulate their dive cycle. In our study, we aim to identify the underlying processes that characterize marine predators' diving capacity using historical and contemporary time-depth recorder data of three species of seals and three species of penguins