24th Biennial Conference on the Biology of Marine Mammals
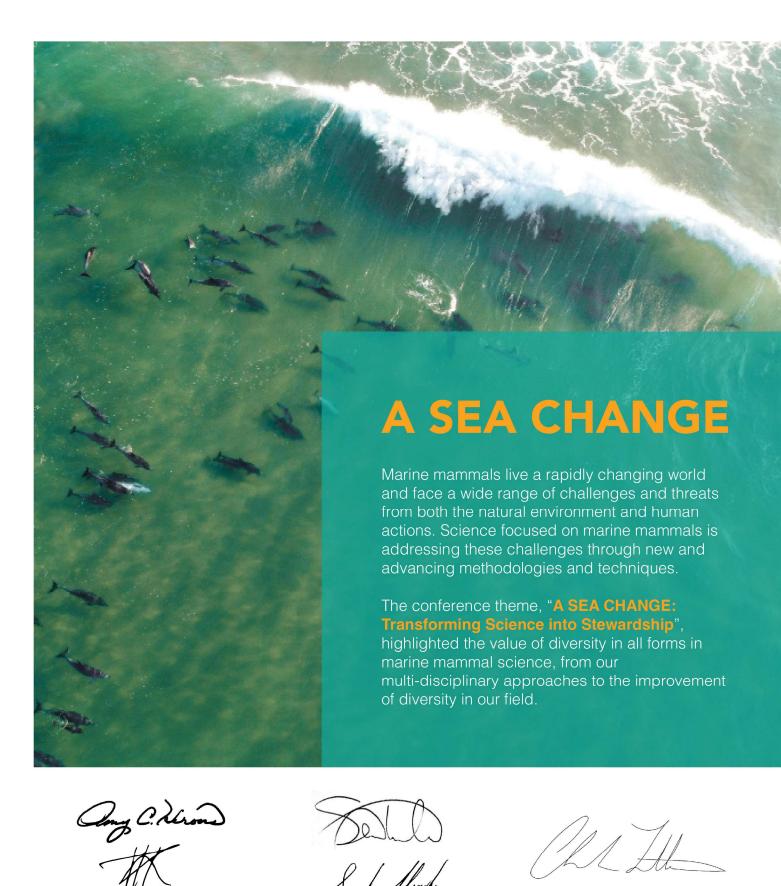
Palm Beach, Florida • August 1-5, 2022

BOOK OF ABSTRACTS

AUGUST 2022

A SEA CHANGE

Marine mammals live a rapidly changing world and face a wide range of challenges and threats from both the natural environment and human actions. Science focused on marine mammals is addressing these challenges through new and advancing methodologies and techniques.

The conference theme, "**A SEA CHANGE: Transforming Science into Stewardship**", highlighted the value of diversity in all forms in marine mammal science, from our multi-disciplinary approaches to the improvement of diversity in our field.
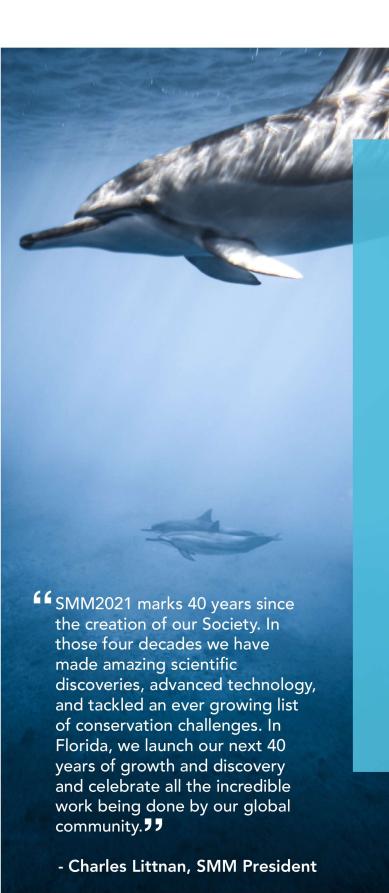
Amy Hirons
Jeremy Kiszka

Conference Co-chairs

Stephen Trumble
Sasacha Usenko

Scientific Program Co-Chairs

Charles Littnan

SMM President

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ABOUT SMM

The Society for Marine Mammalogy (SMM) was founded in San Francisco during the 4th Biennial Conference in 1981 and is the largest global organization of individuals interested in marine mammal research and conservation.

The mission of the SMM is to promote the global advancement of marine mammal science and contribute to its relevance and impact in education, science, conservation and management. The Society is also making important efforts to promote diversity and inclusion in STEM (Science, Technology, Engineering and Math) education.

The SMM holds its conference every two years to promote science, collaboration, and improve the quality of research on marine mammals around the globe. The 24th biennial conference will be held in Palm Beach, Florida at the Palm Beach Convention Center in December 2021.

"SMM2021 marks 40 years since the creation of our Society. In those four decades we have made amazing scientific discoveries, advanced technology, and tackled an ever growing list of conservation challenges. In Florida, we launch our next 40 years of growth and discovery and celebrate all the incredible work being done by our global community."

- Charles Littnan, SMM President

SMM2022 CONFERENCE COMMITTEE

This conference would not have been possible without the hard work and dedication from our conference committees and volunteers!

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Jeremy Kiszka - Conference Co-Chair

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Kathleen Dudzinski - Opening & Closing
                          Event Coordinator
Damian Lidgard - Video Submission Coordinator
Verena Gill - Last of The Right Whales Event
Jeremy Kiszka & Sascha Usenko - LGTBQ+ Event
Jeremy Kiszka - Media Event Coordinator
Lucy Keith-Diagne - Int. Travel Grants Coordinator
Lindsay Porter - Awards and Judges Chair

STUDENT MEMBERS AT LARGE

SMAL committee was responsible for student travel grants, as well as planning the student night event.

Eric Angel Ramos
Ayça Eleman
Theresa-Anne Tatom-Naecker

SCIENTIFIC PROGRAM COMMITTEE

Stephen Trumble - Scientific Committee Co-chair
Sascha Usenko - Scientific Committee Co-chair
Sarah Kienle - Virtual Conference Chair

SCIENTIFIC THEME CHAIRS

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Sarah Kienle - Ecology
Kathleen Hunt - Conservation
Allyson Hindle - Molecular / Cellular
Shane Kanatous - Physiology
Russell Fielding - Social Science

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Jarrett Corke - SMM Conference Information and
                      Technology Manager
Kim Rhodes - Maritz Global Events Conference Planner
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Daria Cohen - X-CD Technologies Inc.
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"In a sea of change, be the change you wish to see."

SMM2022 SPONSORS

On behalf of The Society for Marine Mammalogy and the entire conference committee for the 24th Biennial Conference on the Biology of Marine Mammals, we would like to thank all of our incredibly generous sponsors would have made this event possible!
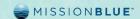
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salmon, a non-native species in Chile, using a combination of biological and social approaches, including a valuation by fishers about this interaction. During 2019 austral summer, an observer onboard artisanal fishing boats characterized the attack behavior of SASL to gillnet-captured Chinook salmon during 33 hauls and analyzed which factors may affect the intensity of attacks. A total of 23 interviews with fishers were also conducted to describe how fishers perceived these interactions. Interactions were recorded in 35% of the fishing events and varied depending on both operational factors, such as the number of vessels, as well as environmental factors, such as moon luminosity. A total of 87% of the interviewed fishers consider the conflict with the SASL as very important. The results show that there is a negative perception regarding the presence of SASL, despite the fact that the interactions do not represent a substantive economic issue for the fishers. While older fishers with less formal education have a purely instrumental focus, younger leader fishers with a more sustainable and conservationist view of fishing offer an opportunity for an improved local understanding of the coevolution of the relationship between salmon, SASLs, and humans.

Beneath the surface: Diving behavior of false killer whales from two populations across diel and lunar cycles in Hawaiian waters
Jacquelyn Shaff[1], Michaela Kratofil[2], Robin Baird[3]
[1]*Cascadia Research Collective, University of Washington,* [2]*Cascadia Research Collective, Oregon State University,* [3]*Cascadia Research Collective, Olympia, WA*

Long-term datasets of two island-associated false killer whale populations in Hawaiʻi provide unique insights into the variability of this top predator's foraging ecology and habitat use. Observational studies indicate that false killer whales regularly forage during the day on large

epipelagic and reef-associated game fish, but stomach contents from stranded animals from the endangered main Hawaiian Islands (MHI) population suggest they also feed on deeper mesopelagic cephalopods. We used depth-transmitting satellite tag data from five individuals (71 days) from the MHI population and three individuals (31 days) from the Northwestern Hawaiian Islands (NWHI) population to investigate the effects of lunar and solar cycles on behavior. Individuals from both populations were typically in waters 600-3,000m deep and spent between 82-96% of their time in the top 30m of the water column. Mean shallow dives (<182m from k-means cluster analysis) were 72m (SD=21) deep and 3.7min (SD=0.6) long. Mean deep dives (>182m) were 430m (SD=58.8) and 7.8min (SD=1.0), with the deepest and longest dives recorded at 1,272m and 19.0min. On average, dives deeper than 500m occurred twice per 24-hr period, with seven individuals diving to depths over 800m. The occurrence of deep dives was highest during dawn and day compared to dusk and night. On average, dives from NWHI individuals were 6km further offshore, and shallow dives were 24m deeper compared to MHI individuals. Dives varied with lunar phase, showing deeper night-time deep dives increasing with lunar illumination. Deep dive depth increased with bathymetric depths up to about 1,300m where the deepest dives occurred, suggesting they sometimes forage at or near the sea floor. Variations in diving patterns may align with shifts in prey preference from epipelagic to mesopelagic species across solar and lunar light cycles. Combining observational work with satellite tagging provides a greater understanding of foraging across time scales, habitats, and populations.

About the protected natural area in the Kazakhstani part of the Caspian Sea for the conservation of the Caspian seal (Pusa caspica)

Mirgaly Baimukanov[1], Assel Baimukanova[2], Kuanysh Isbekov[3], **Anuar Shagilbayev[2]**
[1]Institute of Hydrobiology & Ecology, Almaty, Kazakhstan, [2]Institute of Hydrobiology and Ecology, Almaty, Kazakhstan, [3]LLP «Fisheries Research and Production Center», Almaty, Kazakhstan

In 2021, the Species Survival Commission and the World Commission on Protected Areas of the IUCN informed that three key habitats of the Caspian seal (*Pusa caspica*) were awarded the international status — Important Marine Mammal Area (IMMA). Studies conducted during 2015-2021 in the Kazakhstani part of the Caspian Sea revealed the distribution, the number of the population, size structure of seal aggregations in haulouts, estimated mortality, and the impact of various natural and anthropogenic factors on seals during periods of occurrence. As a result of a comprehensive analysis of literary and proprietary data, it is proposed to organize a state nature reserve. According to the legislation of Kazakhstan, this type of specially protected natural area is intended for the conservation and restoration of lost habitats and the number of species. It is crucial to consider the variability of key habitats because of the phenomenon of periodic changes in the Caspian Sea level, migration of the species by sea, the increased economic impact on the sea's ecosystem.

It is recommended to organize a mosaic-type reserve consisting of various spatially separated areas: haulouts and the water area around along the northeast coast of the sea, the Tyuleniy Archipelago, the islands in the Kendirli Bay. It is necessary to approve an ecological corridor on the migration routes and foraging places. The adoption of special Rules of economic activity will ensure the protection of IMMA in a flexible model. Rehabilitation centers for sick, injured seals should function as part of the reserve. Based on interstate agreements of the Caspian littoral states, it is possible to subsequently create a cross-border reserve for the conservation of the Caspian seal population.

Assessing characteristics of small-scale fisheries to inform cetacean conservation in Bangladesh
Shanta Shamsunnahar[1], Ashik Jahan Galib[2], Elisabeth Fahrni Mansur[2], Mohammad Shamsuddoha[2], Lisa T. Ballance[3]
[1]Oregon State University, Newport, OR, Bangladesh, [2]Wildlife Conservation Society, Bangladesh, [3]Oregon State University, Newport, Oregon

Fisheries bycatch has long been the greatest threat to many marine mammals. Interactions between small-scale fisheries and cetaceans are increasingly recognized as problematic at best, and threatening extinction at worst. We conducted vessel-based surveys in the coastal waters of Bangladesh to assess the impacts of small-scale fisheries on cetaceans and other marine megafauna including elasmobranchs and marine turtles. Two surveys were conducted in December-January of 2017/18 (28 days) and 2018/19 (23 days) using line transect methods to estimate distribution and relative abundance of cetaceans and fishing gear, and sample target and non-target catches (57 net sets). We also interviewed 88 fishermen. We recorded 1,662 pieces of fishing gear in depths of 4-125 m. We categorized these in 10 types: drifting large, medium, small mesh and anchored gill nets; estuarine and marine set bag nets; longshore nets; baited and unbaited long lines; and stern trawlers. Marine set bag nets (mesh 0.5-10 cm), medium mesh (mesh 8-13 cm), and large mesh (mesh (16-19 cm) gillnets were the most abundant gear types representing 32%, 18% and 8% of all fishing gears, respectively. No cetaceans were

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