Quantitative
Eco/evo/etho
Discussions

Remote Sensing of Secluded Ecosystems' Health - Challenges and Perspectives Using the Example of Penguin Colonies

Thursday, March 18th: 4pm ET

Prof. Daniel Zitterbart

Understanding, mitigating and reversing human-induced loss of biodiversity is one of the most important and urgent scientific, economic, and ethical challenges we face today. This is especially true for marine ecosystems, as the oceans play a key role in regulating world climate and are home to much of the world's biomass and biodiversity. An effective approach to investigate the effects of climate change on marine ecosystems is to monitor top-predator populations, such as seabirds. Animal movements inherently encode ecosystem health, and are today mainly measured by biologging efforts which are difficult to conduct in very remote regions. We have developed methods to expand the scope of ecosystem remote sensing, from its current focus on large-scale long-term dynamics (e.g. animal population distribution and counts) to include remote sensing animal behavior. Penguins are a prime species for such studies, as they sample a large oceanic area, while returning to the same colony, where their behavior can be analyzed. I will present recent work on our efforts to use remotely sensed collective behavior of Emperor and Adélie penguins to better understand penguin colony and ecosystem health.

Daniel Zitterbart is an Assistant Scientist at Woods Hole Oceanographic Institution (WHOI). He got his PhD in Physics from the University of Erlangen, Germany and worked as a Postdoc at the Alfred-Wegener-Institute for Polar and Marine Research in Bremerhaven, Germany before joining WHOI in 2015. He is a physicist with a passion for ecosystems and conservation biology. His long-term scientific goal is to advance our understanding of ocean ecosystems within a movement ecology framework. Combining methods from statistical physics, computer vision, robotics and movement ecology, he develops methods across the spectrum from detecting animal presence to remote sensing of behavior and life history. Daniel's recent work includes the study of collective animal behavior in large seabird colonies, as well as methods development for the estimation of ocean basin scale marine mammal distributions using passive acoustic monitoring, and the protection of marine mammals from ship-strike and underwater noise.

Hosted by the Soft Math Lab.

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