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ONLINE TALK: ‘You can’t value what you don’t know’ – Understanding the Ocean with Oliver Steeds

13 January, 6:30pm
Location Online: https://messumswiltshire.com/members-area/
Or: Zoom Meeting
https://us02web.zoom.us/j/83961827561?pwd=SjA1YWVzOWxGWC9OQk1HczdBRHhvQT09

Meeting ID: 839 6182 7561
Passcode: 15668

We are delighted to welcome Oliver Steeds to our Active Environmentalism Talk series in 2021. Oliver Steeds is founder and chief executive of Nekton which is leading the development on the ‘Ocean Ark’ project as it aims to sequence, catalogue and characterise the ocean genome. Formerly he was a critically acclaimed broadcast journalist with ABC, NBC, Channel 4, Discovery Channels and others. He is co-founder of Encounter EDU including the Ocean’s Academy.

The aim is to increase biodiscovery which will in turn drive better evidence-based decision making for the conversation and sustainable management of the oceans. It follows other recent initiatives, namely The Census of Marine Life, a 10-year international effort to assess the diversity, distribution, and abundance of marine life concluding in 2010, and GEBCO Seabed 2030 which aims to facilitate the complete mapping of the global ocean floor by the year 2030. ‘Ocean Ark’ aims to document mt+cpDNA and high quality reference genomes of all marine organisms by 2040. Steads summarizes his vision for the project as:

> ‘to enhance knowledge exchange and technology transfer to empower equitable benefit sharing and drive solutions to maximise returns to society and human welfare whilst safeguarding the ocean for future generations.’

What is the Ocean Genome?

Life has existed in the ocean for at least 3.7 billion years, over three times as long as on land. Of the 34 major known animal phyla, 33 are found in the ocean while only 12 are found on land. The 'ocean genome' is the foundation upon which all marine ecosystems including their functionality, productivity and resilience, rest, collectively supporting global food security, human well-being and a sustainable ocean and planet.

The ocean genome is largely unknown and under threat. Currently, at least 91% of marine life is undescribed and only a tiny fraction have had their genomes sequenced. The ocean genome is being significantly degraded and eroded by human activity and climate change is expected to result in disproportionate levels of species loss in the ocean.

They are working with museums such as The Smithsonian Institute and The Natural History Museum to sequence existing collections as well collecting and archiving new samples. A significant challenge is the disparity in the recording of ocean life with most sampling conducted by high income countries but often not in their own waters. Part of Ocean Ark's aim is to address this through sharing of knowledge, technology transfer and research funding.

The speed of sequencing has increased while the cost has decreased, and Ocean Ark joins a global effort alongside a wide range of organisations engaged in elements of sequencing life on our planet.

How will this information be used?

Biological assessments: Environmental DNA (eDNA) is rapidly evolving and proven research approach that generates essential data to inform ecosystem-based management and conservation. Its utilization and associated impact is currently limited by a lack of reference genomes. When applied at scale, it be a transformative tool that will accelerate ocean conservation and sustainable management.

Marine Biotechnology: 35,000 marine natural products have been discovered from marine organisms. Many have high levels of bioactivity that are harnessed in marine biotechnology including - pharmaceuticals (fighting diseases like Covid-19, cancers, heart, HIV-AIDS), nutraceuticals (omega 3, vitamins, proteins and peptides) , cosmeceuticals (UV protection, skin restoratives), bulk chemicals (probiotics in

animal feed to reduce methane emissions, sustainable bioplastics) , biofuels or for aquaculture / food production. Marine biotechnology has the potential to meet global needs both by increasing the current production and by introducing new products in the food, feed, pharmaceutical, nutraceutical, healthcare, welfare, biomaterials, and energy sectors. The global marine biotechnology market is expected to reach $6.5 billion by 2024 and it currently represents only 1% of the whole biotechnology market.

QUESTIONS to Consider

Whose responsibility is the Ocean?
Can we make small personal changes?
Should we place value on this environmental resource?
What would you do?