

OCEAN CENSUS FAQs

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WHAT IS OCEAN CENSUS?

Ocean Census is the largest programme in history to discover life in our ocean. It will be launched on April 27th, 2023 and will herald a new era of pioneering research and scientific exploration to accelerate species discovery and protection. Recent technological advances in high resolution imaging, DNA sequencing, and machine learning mean scientists can now massively accelerate the process.

This will revolutionise our understanding of marine life which lies largely undiscovered beneath the waves. Today, scientists believe they have described little over 10% of the species that exist. It is believed there are 2.2 million species in our ocean, to date about 240,000 have been described.

Ocean Census has set the ambitious target of finding at least 100,000 new marine species in the first decade.

We currently describe only around 1,700 – 2,000 new ocean species a year. The time from discovery to registration of new organisms can vary greatly depending on the species, existing species knowledge, the research entity, research method, and level of identification. This currently takes as little as one to two years and as long as several decades¹. That rate of discovery has changed little since the 1800s.

WHO IS INVOLVED IN OCEAN CENSUS?

Ocean Census is a global collaborative initiative, an open network of science, business, media and civil society organisations joining forces. It has been founded by The Nippon Foundation, a private, non-profit foundation for social innovation, and Nekton, a UK-based marine science and conservation institute.

WHAT IS THE ESTIMATED COST OF OCEAN CENSUS?

The cost of Ocean Census is dependent on how large the initiative grows. Whilst the Nippon Foundation is providing the project's initial core funding, the alliance of partners involved are committing their own resources to the global effort.

WHY IS IT TAKING PLACE?

Ocean life is fundamental to all life on Earth. It produces the oxygen we breathe, isolates carbon dioxide, creates food for billions of people and is constantly providing vital scientific advances to fight disease.

We urgently need to protect this precious resource and the life within it, but we can't protect what we do not know.

Ocean Census will help to significantly advance our understanding of fundamental science – oxygen production, carbon cycling, sustainable food production, the evolution of life on Earth and discoveries of new medicine and biotechnologies.

Ocean Census will help to identify how marine ecosystems are responding to climate change, assessing how marine life could support climate adaptation and alleviate the impacts of climate change for the benefit of all. A recent IPBES-IPCC Co-Sponsored Workshop Report on Biodiversity and Climate Change showed strong linkages between measures to mitigate and adapt to climate change and biodiversity.

¹ Marine biodiversity discovery: The metrics of new species descriptions, Philippe Bouchet, Muséum National d'Histoire Naturelle, Institut Systématique Evolution Biodiversité (ISYEB), CNRS, Sorbonne Université, EPHE, Université des Antilles; Wim Decock, Britt Lonneville, Bart Vanhoorne & Leen Vandepitte, Flanders Marine Institute (VLIZ), Belgium. In press in *Frontiers in Marine Science*.

HOW WILL OCEAN CENSUS WORK?

- Scientists from across the world will embark on expeditions to the ocean's biodiversity hotspots to find new life from the surface to full ocean depth (10,925 metres).
- Specimens will be sent to Ocean Census Biodiversity Centres which harness technological advances across high resolution imaging, DNA sequencing and machine learning to speed up and scale up the process of discovery.
- Oxford is the headquarters of Ocean Census. As more partners get involved in high, middle- and low-income nations, more scientists and centres will participate.
- Networks of taxonomists will connect virtually to draw on the aggregated data set created which will provide a complete picture of species discovery and description.
- This aggregated, open-sourced data is added to a network of data centres globally and made freely accessible to scientists, marine policymakers and the public. We are working with these data centres to increase interoperability with a goal of having a single point of access - the Ocean Census Biodiversity System for scientists, decision makers, and the public.

WHY SHOULD I CARE?

Ocean life makes all life on Earth possible and holds the wisdom of four billion years of evolution on Earth (life has existed in the ocean for three times longer than land). For context, 33 phyla are known in the Tree of Life, of which 32 are found in the ocean and 17 on land and in freshwater. Phyla are the major branches of 'The Tree of Life', how life is classified. Life in our ocean is responsible for much of the air we breathe, regulating our climate and Earth's chemistry, and a vital food source for billions. To sustain and benefit life on Earth, we need to understand, protect and restore ocean life.

WHO OWNS THE DATA, IS IT ETHICAL TO TAKE SAMPLES FROM THE OCEAN, PARTICULARLY IN DEVELOPING COUNTRIES?

All data is open access for science, decision makers and the public for non-commercial use. All expeditions and research is co-produced hand-in-hand with host nation scientists and governments and the species, specimens, and related data discovered from territorial waters are owned by the host nation (under Nagoya Protocol and related laws). Under the UN Law of the Sea, species, specimens, and data from international waters are part of the collective commons, owned by the people of the planet and all data is open access for the common benefit of humankind.

WHO WILL NAME THE SPECIES?

Species from a nation's territorial waters are given Latin names by the scientists doing the species descriptions where at all possible, in consultation with host nation scientists. A smaller number of species will be given Common Names by the people of the host nation of each expedition in a process that will be managed and guided by the scientists from the host nation. **Species from international waters** are given Latin names by the scientists doing the species descriptions with a small number of species to be given Common Names by the public. These protocols will be established in the first phase of the programme.

ISN'T IT ALL TOO LATE AND THE OCEAN IS DOOMED?

No, it's not too late. We have a short window of opportunity, perhaps the next ten years, when the decisions we all make will likely affect the next thousand or even ten thousand years. We hope the giant leaps in knowledge we can make with the discovery of ocean life can help put us on a better track towards a positive future for people and the planet.

WHAT DOES SUCCESS LOOK LIKE AND HOW WILL IT BE MEASURED?

Success for us is ultimately helping inform the protection and restoration of ocean life so it can continue to support life on Earth. This requires a lot of other global issues to line up towards this outcome which are outside of our control. However, in terms of our contribution it will be measured by:

- **The number of species discovered** – the goal is at least 100,000. Each one represents a vital piece of the code of life on earth - the more we discover, the more we understand how life exists and how to sustain and strengthen life in the ocean and therefore on Earth.
- **The range of discoveries which will benefit all humankind** – from oxygen production, carbon cycling, sustainable food production, the evolution of life on Earth and discoveries of new medicine and biotechnologies.
- **The number of scientists involved**, particularly taxonomists. Currently taxonomists are declining in number and are usually found in high-income nations. Success will be growing a network of scientists engaged in the discovery and conservation of ocean life – and notably, far more equitably distributed across the global ocean.

WE HAVE HEARD THAT MANY PHARMACEUTICALS AND CURES HAVE BEEN FOUND IN THE OCEAN. WHAT DO YOU EXPECT TO FIND?

Marine genetic resources are the genetic material present in all marine life and have been a source of many important pharmaceuticals, nutraceuticals, and personal care products (e.g., currently 13 pharmaceutical drugs derived from marine organisms have been clinically approved, including treatments for cancer, neuropathic pain, COVID-19, HIV-AIDS and antivirals, with a further 24 marine-derived products in clinical trials and 250 in preclinical investigations).

Harnessing marine genetic resources will galvanise marine biotechnology industries including through the discovery of new drugs to treat disease and identifying bulk eco-chemicals and sustainable bioplastics. However, Ocean Census is not involved in bioprospecting nor any onward commercialisation.

IS THE EXTRACTION OF CORAL & OTHER SAMPLES A HARMFUL PROCESS?

Ocean Census will deploy high-precision sampling tools to collect corals and other large organisms. This means that a small number of individual samples will be collected and then preserved for further classification in museums or other laboratories. Sub-samples will be taken for DNA analysis. These organisms will be killed as part of this process but the number of samples will be minimised.

Smaller organisms that live in sand or mud will be collected as small samples of sediment, preserved and then later extracted. Again, bare minimum sampling will be undertaken.

Ocean Census may opportunistically collect specimens from fisheries surveys or other sources. These organisms would usually die as a result of collection but in this case they will be preserved for scientific description.

ARE YOU USING LARGER VESSELS TO CARRY OUT THE RESEARCH, IS THIS NOT BAD FOR THE ENVIRONMENT?

Ocean Census will combine vessels from the philanthropic, government academic and commercial fleets. We are deploying a combination of advanced subsea technologies with divers, human submersibles, and remotely operated vehicles (ROVs). At present these vessels are generally powered by fuel oil and these do have a CO₂ footprint. Our shore-based and nearshore expeditions will have a much lower carbon footprint. As the programme continues overtime, large hydrocarbon-powered vessels will likely be replaced by vessels powered by ammonium or hydrogen.

WHAT IF WE FAIL?

The loss and destruction of ocean life is an existential crisis. Without ocean life, life on Earth will not continue as we know it. The more we can do right now, the more positive the impact we can have down the tracks.

HOW DO I GET INVOLVED?

We welcome all partners from government, science, expeditions, media, philanthropy, business and civil society to join the alliance and be part of Ocean Census. Please do contact us through the website. There are a multitude of different ways that different partners can get involved including:

- **Governments:** 1) Invite Ocean Census to work together to discover ocean life in your territorial waters, 2) Work with Ocean Census to develop or align research grants, research expeditions and scientists to advance research in ocean life.
- **Science:** 1) Collaborate on species discovery with the Ocean Census science team, 2) Take on a challenge to discover new species, 3) Contribute your new species to the global effort, 4) Register projects involved in discovery of ocean life, 5) Register taxonomic skills and expertise.
- **Expeditions:** 1) Register your expedition to become an Official Ocean Census Expedition, 2) Participate or partner with Ocean Census on our expeditions, 3) Invite Ocean Census taxonomists to join your expedition, 4) Collaborate with marine operations – from vessels to subsea technology deployment and development.
- **Media / Engagement:** 1) Engage with our media team for stories about ocean life 2) Get in touch with the Ocean Life Media Centre to share your stories of ocean life and request support to amplify across news and social media, 3) Develop partnerships across education, installations, broadcast etc.
- **Philanthropy:** 1) Co-develop programmes and funding to undertake Ocean Census activities across science, policy, expeditions, technology, engagement and/or capacity development, 2) Align existing initiatives with Ocean Census.
- **Business:** 1) Provide in-kind support to Ocean Census, 2) Co-develop and fund specific programmes including science, policy, expeditions, technology, engagement and/or capacity development, 3) Become an Ocean Census Sponsor with a bespoke range of partnership benefits.
- **Civil Society:** 1) Co-develop programmes that meet your and Ocean Census objectives, 2) Align existing initiatives with Ocean Census.

HOW DO I FOLLOW THE PROGRAMME?

Latest news, films, content and events are updated on the website and please [subscribe](#) to Ocean Census News (our monthly digital newsletter) and follow Ocean Census across our social media channels:

Instagram: [@oceancensus](#)

Facebook: [/oceancensus](#)

LinkedIn: [/oceancensus](#)

YouTube: <https://www.youtube.com/@oceancensus>