January 2024 Issue

Newsletter

About Marine Life 2030:

Marine Life 2030 is a programme endorsed by the United Nations Decade of Ocean Science for Sustainable Development to establish a globally coordinated system that delivers knowledge of ocean life to those who need it, promoting human well-being, sustainable development, and ocean conservation.

Learn more at marinelife2030.org.

The South East Australian Marine Ecosystem Survey (SEA-MES): a Marine Life 2030-Affiliated Project

Contributed by Rich Little and Karen Evans, SEA-MES Science Team, CSIRO

Figure 1. The SEA-MES Science Team (Photo: David Flynn).

The marine waters of southeast Australia contain a range of valuable industries, including fisheries, oil and gas, shipping, and a developing offshore wind sector. The region also holds the Australian Southeast Marine Park Network, which was established in 2012 to protect biodiversity and ensure the long-term viability of Australia's marine ecosystems. In addition to the pressures caused by the many uses of the region, the area is a global warming hotspot where the East Australian Current is extending pole-wards, resulting in warming of the ocean surface at more than twice the global average. Extreme events, such as marine heatwaves, are having additional impacts. Both warming and extremes are expected to intensify in the region in the coming years. Understanding what is changing in the ecosystem, why, and the role that the marine park network can play in supporting biodiversity resilience is highly important for planning and decision making that supports mitigation of and adaptation to change, and protects Australian heritage.

The South-East Australian Marine Ecosystem Survey (SEA-MES; a Marine Life 2030-affiliated project) is revisiting sites that were sampled 30 years ago, using similar operations in an effort to evaluate ecosystem change and the drivers of it. In addition, it is establishing new sampling sites for comprehensive future monitoring. SEA-MES consists of a comprehensive multi-year field campaign on the state-of-the-

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Figure 2. A coffin fish caught during trawl operations (Photo: Rich Little).

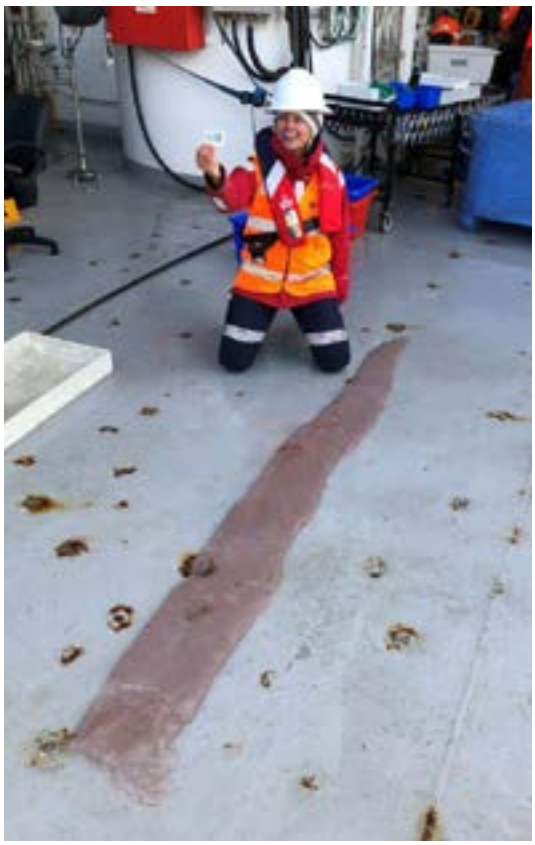

Figure 3. A pyrosome caught in the trawl net almost entirely intact (Photo: Rich Little).

art *R/V Investigator*, Australia's marine national facility.

The planned outcomes of SEA-MES are:

- An evaluation of ecosystem change and the drivers of that change;
- An evaluation of pressures being placed on marine parks in the region and collection of baseline data for use in assessing the impacts of offshore wind developments on parks;
- An evaluation and calibration of eDNA monitoring technology with traditional sampling methods;
- Enriched marine science capability via at-sea opportunities for early career and Indigenous scientists;
- Delivery of key information on the region for multiple stakeholders.

In July 2023, the first of four voyages was conducted. Sampling methods consisted of:

- Demersal trawls to sample fish and fish habitat;
- Underwater deep-towed video recordings of benthic communities and habitat;
- Pelagic mid-water plankton trawls to capture lower trophic prey-fields;
- Water samples collected via a CTD to measure the physical and nutrient components of the water column and environmental DNA (eDNA).

Approximately 250 operations were conducted over 31 days (Table 1).

Stable isotope analyses of tissue, plankton and fish catch distribution, habitat classification, and eDNA amplification and sequencing are now underway, with preliminary results being used to evaluate the sample design and progressively update it as needed to ensure efficient operations and robust results.

The second voyage (SEA-MES-2), scheduled for May 2024, will allow for the capture of inter-annual and seasonal variability, with further voyages in November 2024 and May 2025 (SEA-MES 3 and 4) also being planned.

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Further details on the project and voyages can be found here.

Recent news items associated with the first voyage can be found here.

Gear	Operation Count
Demersal Trawl	60
Deep Towed Camera System	87
Plankton Trawl	41
CTD	62

Table 1. Gear deployments achieved during SEA-MES Voyage 1.

Figure 4 (right). Seafloor habitat featuring what is thought to be a narrowbody handfish (Pezichthys compressus sp. nov.), a species not recorded for 25 years (Photo: SEA-MES Deep-towed Camera).

Figure 5. A giant crab feeding (Photo: SEA-MES Deep-towed Camera).

Figure 6. Seafloor habitat with lots of signs of human activity (Photo: SEA-MES Deep-towed Camera).

Upcoming Events: 2024 UN Ocean Decade Conference, April 10-12, 2024

Registration is now open. Marine Life 2030 is leading the effort to produce a white paper for the UN Ocean Decade's Vision 2030 on Challenge #2 (*Protect and Restore Ecosystems and Biodiversity*), which will be featured during Session 1 on April 10, 2024 on *Science and Solutions for a Clean, Healthy, and Resilient Ocean*. You can read more about the Vision 2030 process here.

ANNOUNCEMENTS/OPPORTUNITIES

MetaZooGene: Metabarcoding Zooplankton Diversity (https://metazoogene.org/) seeks new knowledge of the biodiversity of marine zooplankton using integrative molecular and morphological analysis. The MetaZooGene Ocean Decade Action (MZG-ODA No. 102.2) is linked to Marine Life 2030.

MZG-ODA partners will be active leaders and participants in an upcoming international conference, the *ICES/PICES Zooplankton Production Symposium* (#ZPS7), to be held during March 17-22, 2024 in Hobart, Tasmania (Australia). ZPS7 will bring together top zooplankton researchers globally, showcasing recent advances that provide new insights into the current and evolving role of zooplankton and their impacts on the health and productivity of our oceans and our planet.

MZG-ODA partners will serve as convenors for several sessions and workshops and as invited keynote speakers, in addition to many abstracts submitted for oral and poster presentations throughout the five-day conference. Please visit the Symposium website for more information.

On October 2, 2023, the *Contributing and Publishing Datasets to OBIS* training course was launched on the OceanTeacher Global Academy platform. This free course is self-guided and designed to teach you the skills to structure datasets to contribute to the Ocean Biodiversity Information System (OBIS). The comprehensive course will lead you through the entire OBIS data life cycle, offering step-by-step guidance. You'll learn how to identify the right data structure, apply Darwin Core Archive formatting, carry out quality control checks, publish your data, and effortlessly access data from OBIS. Additionally, the course includes a dedicated module specifically tailored for preparing DNA-derived data. This special DNA module is packed with the latest standards and practical examples illustrating how to map DNA data to Darwin Core.

You can become OBIS-certified by completing the entire course, containing around 32 hours of content, including engaging assignments and quizzes that assess your learning. The course instructor follows your progress and provides feedback on all assignments, ensuring you have support during learning. For more information and how to freely register see the OceanExpert event page. This training course has been developed with financial support from NORAD and LifeWatch ERIC.The course will be delivered online between October 2, 2023 and February 16, 2024. **Enrollment is available until February 1, 2024.**

The World Register of Marine Species (WoRMS) is calling for nominations for the WoRMS Top-Ten Marine Species of 2023. For more information and to submit a nomination, please visit the WoRMS website here. **Nominations are due February 9, 2024.**

NEWS ITEMS

World Register of Marine Species (WoRMS)

- Corallosphere Integrated into the World List of Scleractinia
- Ocean Census and WoRMS Announce Partnership to Enhance Rapid Discovery and Identification of Marine Life

MBON Europe

So far, 15 organisations have signed a Memorandum of Understanding (MoU) committing to long-term annual monitoring of marine biodiversity in Europe. A first survey of members' needs identified 13 unpublished time-series datasets. Next steps involve publishing the data. In 2024 the Marine Biodiversity Observation Network (MBON) for Europe will begin synthesis of the data to identify trends and gaps. These founding members promise that "(1) Our organisation will collect data on marine biodiversity on at least an annual basis; (2) Our sampling or observation methods will be standardised to aid comparability of data over the years, and may be adjusted to aid comparability with datasets internationally; and (3) Our data will be published into the Ocean Biodiversity Information System (OBIS) as one or more datasets each year." For more information and to view the signed MoU, please visit the MBON Europe webpage. Any organisation, be they a university, company, institute, or NGO, is welcome to sign and join the movement. Provided by Mark Costello, Nord Observations and Research on Marine Life.

Marine Life 2030 on Social Media:

X (Formerly Twitter)

Instagram

YouTube

LinkedIn

Welcome to the following recently-affiliated projects:

Marine Biodiversity and Economy Program (MBEP)

Project Lead: Hélène Leriche, RespectOcean, France

OBIS 2030 - The Biodiversity Data Hub for the Ocean Decade Actions

Project Lead: Ward Appeltans, Intergovernmental Oceanographic Commission of UNESCO, Belgium

Ocean Vision AI: Scaling Up Marine Life Observing

Project Lead: Kakani Katija, Monterey Bay Aquarium Research Institute (MBARI), USA

Please visit the Marine Life 2030 website to see all affiliated projects.