Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IODE Steering Group for OBIS (SG-OBIS)

Tenth Session

Online
17-20 May 2022

UNESCO

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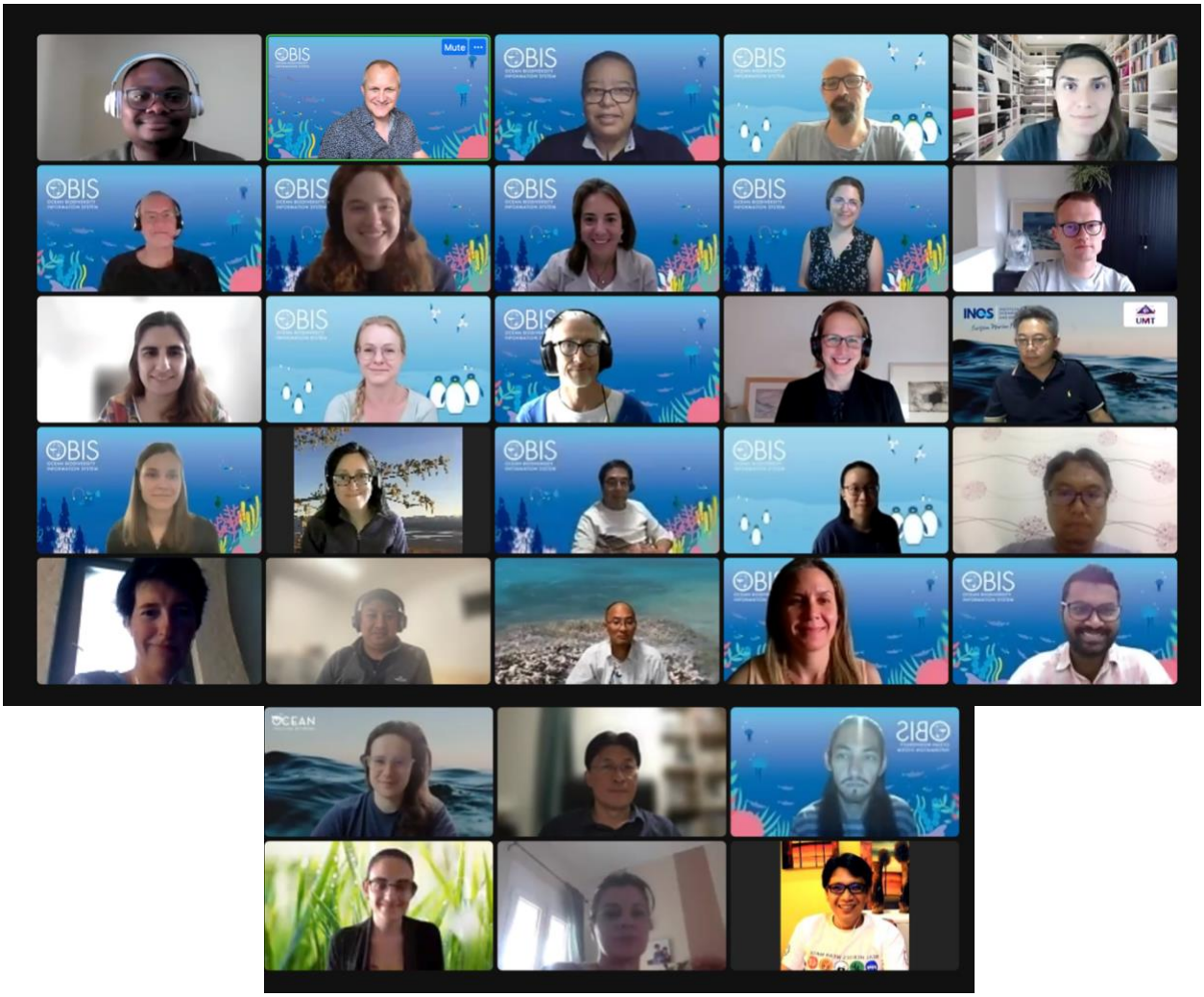

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Executive Summary

Forty-four participants from 23 countries representing 26 OBIS nodes participated in the 10th session of the IODE Steering Group for OBIS (SG-OBIS) on 17-20 May 2022. The session was held online.

Since last year (May 2021) OBIS published 21.55 million new taxon occurrence records from 409 new datasets, 17 million new measurements and 4,900 new marine species. OBIS now has a total of 100 million records, 180 million measurements or facts, 4,471 datasets and 160,000 marine species. A large part of this (exponential) growth can be assigned to the new capability at OBIS to deal with DNA derived data, which accounts for 14.6 million records.

The OBIS secretariat grew from 3 to 5 staff members and now has dedicated capacity to (i) support the various OBIS task teams, (ii) develop more training resources, (iii) actively support science capacity building on the ground with two eDNA projects (one in Pacific Islands to monitor marine invasive species and a global one in UNESCO's World Heritage marine sites to monitor biodiversity and vulnerability to climate change) and (iv) support the Global Ocean Observing System by providing a portal and helpdesk to monitor the status of the biological ocean observing system. These extrabudgetary projects also provide necessary resources for further technological developments of the global data system, such as a bioinformatics pipeline to manage species occurrences based on DNA sequences.

The OBIS steering group adopted the 2022 work plan. Among many other things, OBIS will submit a UN Ocean Decade project proposal and develop recommendations for historical data and data from archaeological and paleontological sources through a new OBIS Historical Data Project Team (HDPT). GBIF is currently exploring a new data model for a unified common model capable of supporting expanded data-publishing capabilities. A new OBIS Grand Unified Data Model Project Team (GUMPT) has been formed to provide direction and guidance into how the model can best represent OBIS community data and an opportunity for OBIS to prepare for this new direction.

The OBIS steering group stressed the importance of being recognized as the marine network in GBIF as well as having all marine biodiversity data published in both GBIF and OBIS. It agreed on a single publishing workflow, which should lead to a better synchronization of marine data in both GBIF and OBIS.

The OBIS steering group regretted the severe budget cuts to our parent programme IODE, which impacts the ability to execute our work and urged Member States and donors to provide financial support to OBIS.

The 11th SG-OBIS session will take place as a hybrid event on 16-19 May 2023.

1. Opening of the session and adoption of the agenda

SG-OBIS co-chairs Mrs. Martha Vides and Mr. Anton Van de Putte opened the tenth session, which was initially planned for December 2021, but was postponed due to COVID19. They welcomed all participants. A round table introduction was done, especially for the new members from whom this is their first official session, and we heartily welcomed them: Caitlin Bate (OTN-OBIS), Laoise Dillon (OPI-OBIS), Ruben Perez Perez (EurOBIS) and Georgia Sarafidou (MedOBIS).

Apologies were received from Izwandy Bin Idris (OBIS Malaysia), Oleksandr Neprokin (OBIS Black-Sea), Jonathan Pye (OTN), Pamela Brodie (OBIS Australia, retired from CSIRO).

Mr. Van de Putte then introduced the agenda. He said the first day will be devoted to reporting on progress and status. On the second day we will be discussing (i) harvesting marine datasets from GBIF publishers, (ii) revision of the IOC data policy, (iii) OBIS historical data project team and (iv) the UN Ocean Decade. On the third day, we will develop our 2022 work programme and future plans. On the fourth and last day we will adopt the report including the decisions and recommendations. It is possible that some agenda items will take more or less time than planned, so the timetable is subject to change.

The SG-OBIS welcomed the new members and adopted the agenda without any changes.

2. OBIS progress report

2.1. OBIS Executive Committee

Ms. Martha Vides introduced this agenda item. The 4th session of the OBIS Executive Committee took place on 26-27 May 2021. It was decided to also invite all members of the OBIS Steering Group, and the meeting was attended by 35 participants from 22 OBIS nodes. The EC-OBIS reviewed the progress of the OBIS work plan and discussed some new activities. The meeting report is available on https://www.oceanexpert.org/event/2884.

The IODE management group (MG) met on 21-22 March 2022. The meeting report is available online at: https://oceanexpert.org/document/30181. Mr. Ward Appeltans represented OBIS (and reported on OBIS and the projects PacMAN and eDNA expeditions) on behalf of the OBIS co-chairs who were not able to participate. The IODE MG revised the work plan and budget 2022-2023. It was announced that the UNESCO regular programme budget for IODE has been cut from US$117,000/year to US$70,000/year and the contribution of Flanders of approx.

US$200,000/year to the IODE project office has ceased as of 2022. This budget cut of approximately 80% for IODE obviously has repercussions for the IODE projects such as OBIS.

Initially, the IODE Committee allocated the following budget to OBIS for 2022:

- US$21,000 for OBIS meetings (incl SG-OBIS)
- US$22,000 for OBIS training and data mobilization organized by ODINBlackSea

Under the new budget situation, the IODE MG decided to allocate to following budget to OBIS for 2022:

- US$15,000 for SG-OBIS (US$5,000 from UNESCO regular programme and US$10,000 from left over budget from the IODE Project Office).

Because the IODE project office will no longer have an operational budget, and unless there is a change in the UNESCO regular programme budget, the future OBIS budget from IODE will likely be in the order of US$5,000/year (which corresponds to the 80% budget cut). Since this year's SG meeting is fully online, we need to make a proposal to spend the US$15,000 allocated to us this year and submit this for endorsement to the IODE MG. Mr. Appeltans reported that the part of the project office budget (US$10,000) needs to be spent in Ostend and all in 2022.

Mr. Appeltans added that the IOC special account dedicated to support OBIS can receive financial contributions, which could help fill the funding gap.

The ISA OBIS reported that there might be possibilities soon for a joint collaborative activity with funds from the International Seabed Authority (ISA). Whether this could be used for meetings needs to be seen.

The SG-OBIS thanked the in-kind support and contributions received from within the OBIS community but regretted the decrease in cash funding to the central OBIS budget. The SG-OBIS urged Member States and donors to financially support OBIS in order for the OBIS community to be able to execute the activities based on the 2022 work plan and budget.

2.2. OBIS Secretariat

Mr. Ward Appeltans (OBIS project manager) reported on the OBIS secretariat activities since May 2021. This has been a very busy year again with a lot of online meetings, submission of grant proposals, the start of new projects, not least the hiring of two new staff members and extension of one staff member.

The OBIS secretariat members participated in the following meetings:

- IPHAB TT on HAIS and GHSR, online, 25 June 2021
- OBIS session at the GBIF global nodes meeting, online, 1 July 2021
- PacMAN Advisory Board meeting, online, 14 September 2021
- OBPS workshop, online, 20-24 September 2021
- OTN IDMC, 21 September 2021
- UNCLOS/BBNJ webinar on Clearing-House Mechanism, 14 Oct 2021
- ISA Workshop on Enhancing Image-based Biodiversity Assessments to Advance Deep-Sea Taxonomy, online, 12-14 October 2021
- Scientific Committee of Flanders UNESCO Science Trust fund, online, 29 Oct 2021
- GOOS BioEco panel meeting, 2 November 2021
- SCOR C-grass data scheme meeting, 11 November 2021
- Training course HAIS-HAEDAT to ANCA-IOCaribe, 22-23 November 2021
- EuroSea MacroAlgae workshop, 23 November 2021
- COINAtlantic OBIS webinar, 16 March 2021
- IODE Management Group meeting, Oostende, 21-22 March 2022
- EOOS Technology Forum, online, 23 March 2022
- Scientific Committee of Flanders UNESCO Science Trust fund, Paris, 24 March 2022
- 22nd International Conference on Aquatic Invasive Species (ICAIS), Oostende, 19-22 April 2022
- IPHAB Task Team on HAIS & GHSR, Online, 20 April 2022
- GOOS Steering Committee, Cross-GOOS data session, online, 25 April 2022
- AtlantECO General Assembly, online, 25-29 April 2022
- EMODNet Biology annual meeting, Oostende, 4-5 May 2022
- GOOS BioEco panel meeting, 5 May 2022
- IOC Workshop on Alien species in the Canary Current Large Marine Ecosystem, online, 5 May 2022

The OBIS Secretariat also participates in regular meetings of:

- OceanInfoHub WP2 technical meetings, monthly
- PacMAN coordination team meetings, bi-weekly
- eDNA expeditions team meeting, several calls per week
- Marine Biodiversity Observation Network (MBON) steering committee meetings, monthly
- UN Decade MarineLife 2030 coordination team meetings, monthly
- OBIS Task Team meetings, several per month

The OBIS secretariat was involved in two project proposals: MPA Europe (not funded) and MARCO-BOLO (under review):

- Marine Protected Areas Europe (MPA Europe) submitted under call HORIZON-CL6-2021-BIODIV-01-12. MPA Europe would map the optimal locations for Marine Protected

Areas (MPA) in European seas using measures covering the range of biodiversity from species to ecosystems, including habitats. An atlas will provide transparency, traceability and enable reproducibility of the results. Its synthesis will show stakeholders (MSP, NGO, students, researchers) why areas have been prioritised. The use of decision support software will enable alternative network designs based on stakeholder preferences and could thus support wider MSP beyond the subject and study area. OBIS would be involved in the modelling and data distribution (OBIS would receive 1 FTE for 3 years).

- MARine COastal BiOdiversity Long-term Observations (MARCO-BOLO) submitted under call HORIZON-CL6-2022-BIODIV-01- 01. The MARCO-BOLO project aims to structure and strengthen European coastal and marine biodiversity observation capabilities, linking them to global efforts (e.g., MBON, GOOS, OBIS and UN Ocean Decade Programmes Marine Life 2030, OBON, ODIS, Ocean Practices for the Decade) to understand and restore ocean health, and ensuring outputs respond to explicit stakeholder needs from policy, planning, and industry. OBIS will lead the task on Essential Ocean Variable (EOV) data delivery and will contribute to other tasks e.g., setting up data flows into long term archives, and the creation of data and metadata specifications. OBIS will summarise and optimise current data resources, including assessing the robustness of genetic reference databases, bioinformatic pipelines and eDNA data integration into databases such as OBIS. OBIS will also coordinate the development of a Community of Practice (CoP) and support the project with co-design/ co-creation and knowledge transfer events. We will organise two major CoP meetings, which are planned in the beginning and end of the project where we will measure the impact of MARCO-BOLO on improving the effectiveness of the current marine biological observing system. If funded, the OBIS secretariat will receive 1.5 FTE for 4 years. Also, EurOBIS, MedOBIS and UK-OBIS are partners in this consortium.

The OBIS secretariat grew to 5 staff members (table 1), of which only the project manager is not project based and is covered by the UNESCO regular programme. Both the data manager and scientific officer are covered by two Flanders funded projects (PacMAN and eDNA expeditions). The GOOS BioEco data manager position is covered by GOOS (central budget + Pegasus project) and the OBIS training officer position is covered by a grant from Norway (NORAD). The table below provides an overview of the OBIS secretariat staffing, funding source and contract type/duration.

Ward Appeltans	OBIS Project Manager	UNESCO Fixed-term position (P3)	UNESCO Regular Programme	Permanent
Pieter Provoost	OBIS Data Manager	UNESCO Project Appointment (P3)	FUST PacMAN and AtlantECO	Until Dec 2023
Saara Suominen	OBIS scientific officer	UNESCO Consultancy contract	FUST eDNA expeditions	Until Dec 2023

Serita Van der Wal	GOOS BioEco data manager	VLIZ detaché	GOOS + Pegasus grant	Until Dec 2022
Elizabeth Lawrence	OBIS training officer	UNESCO Consultancy contract	NORAD fund	Until Mar 2023

Table 1: Staffing at the OBIS secretariat, by name, job title, contract type, funding source and contract duration.

Ms. Saara Suominen (OBIS scientific officer) reported on the two Flanders (FUST/FUT) funded projects. The Pacific Islands Marine Bioinvasions Alert Network (PacMAN) project has developed well, with major steps taken during 2021. The monitoring plan of the project was finalized, in consultation with the international scientific advisory board. As there is very little information on the current state of marine invasive species in Suva, the advisory board recommended that the monitoring plan contains an initial survey phase, where the focus of sampling efforts is on describing the biodiversity at site. The project will move on to more routine sampling once all the protocols have been tested and optimized for the conditions in Fiji. In addition, to allow the rapid detection of high-risk species, quantitative PCR analyses will be done on the most aggressive invasive species known in the area. This will enable rapid responses from the management teams if high-risk species would arrive on the site. The quantitative PCR work will be done together with the Biosecurity Authority of Fiji, with which the PacMAN team signed a Memorandum of Understanding. The team in Fiji brought together key national stakeholders in the advisory board who also gave feedback on the monitoring plan. The monitoring plan was accepted by all parties in a virtual meeting of the full advisory board on 14 September 2021. A launch event for the sampling phase of the project was held on 24 November 2021 in the Suva harbor, together with the deployment of signage for the four sampling sites. The first phase of sampling has started for the project with the collection of settlement plates at the end of January 2022, including collection and redeployment of plates at sampling sites 1 and 2, water and plankton samples as well as environmental measurements. Many lessons were already learned from the first samplings and will be included in a new version of the sampling protocols.

Throughout the year, the PacMAN project has been presented on multiple occasions, at the *Genomic Standards Consortium* virtual meeting held on March 23rd to 26th 2022 and the International Conference of Invasive Aquatic Species 19th to 22nd of April 22 in Oostende, Belgium to name a few of the most recent ones. There has been considerable interest in PacMAN as a project that links eDNA data collection to the sharing of that data and its further use for management decisions, from the data standards community. However, further involvement of the environmental management community in data standards is required. The open-access PacMAN bioinformatics pipeline[1] has been further developed throughout the year and is being integrated into the PacMAN data management workflow, a toolkit that could then be used in other similar projects as well. The project has been endorsed as an official project for the United Nations Decade of Ocean Science for Sustainable Development. The team in Fiji is involved in activities for developing the national policies around marine invasive species,

[1] https://github.com/iobis/PacMAN-pipeline

showing that the need and interest in the PacMAN project locally is strong, and it is contributing to the national biosecurity plan in Fiji. The next major step for PacMAN is the development of the decision support tool, where species risk assessments are created based on their known distributions, recent detections, possible migration pathways, and habitat suitability models. This work will enable eDNA work to directly inform decision-making in Fiji.

Mrs. Martha Vides (OBIS Colombia) recommended to consider if products developed under PacMAN can support the development and reporting on marine invasive species under the post-2020 CBD global biodiversity framework.

The OBIS secretariat team was also successful in a call for funding for a second eDNA project; eDNA expeditions in Marine World Heritage Sites. This is a citizen science project that will collect eDNA samples across UNESCO Marine World Heritage sites throughout 2022 and 2023. The project is led in a fully collaborative way together with the marine programme of the UNESCO Marine World Heritage Centre and the OBIS secretariat. This collaboration with the cultural and scientific sectors of UNESCO aims to bring eDNA monitoring and the data derived from it into the hands of marine site managers to inform of the state of the biodiversity at site. The project will send out kits to the local communities for sampling and will partner with an eDNA laboratory for sample processing. The data derived from the sampling will be used to calculate community thermal indices, to understand how vulnerable the biodiversity at Marine World Heritage sites is to predicted warming due to climate change. The project is advancing rapidly, with surveying the sites for sampling, the eDNA partner laboratory and the advisory board chosen. A test sampling trip to Scandola, in Corsica, France, was made for collecting visual communication material. A group of 15 schoolchildren took samples with the guidance of Ward Appeltans and Saara Suominen from the OBIS secretariat. The implementation plan for the samplings is expected to be finalized by the end of June 2022, and the samplings to start already in July 2022, and run until July 2023, when all data from the samplings should be available through OBIS.

Ms. Katherine Tattersall (OBIS Australia) suggested considering involving the Reef Life Survey team in citizen science campaigns.

Mr. Pieter Provoost reported on the AtlantECO project. AtlantECO is a Horizon 2020 funded project that aims to study the Atlantic Ocean from pole to pole to determine the structure and function of the Atlantic microbiome, its relation to ocean circulation and presence of pollutants, how it provides ecosystem services, and if it can be used as a sensor for ecosystem state. OBIS is involved in work package 10 (Data Management, dissemination, and exploitation of results) of the AtlantECO project and is responsible for dissemination of the biogeographic observations generated by the project to global biodiversity data aggregators. AtlantECO will generate microbiome metagenomics observations from six types of sampling platforms, including public and private research vessels, coastal and offshore observatories, citizen sail boats, and industrial cargo ships. Sequence data are analyzed on EBI's MGnify platform, and OBIS is developing a software library for converting the resulting observations to Darwin Core datasets making use of the new DNADerivedData extension.

The SG-OBIS appreciated that these extrabudgetary projects provide welcome and necessary resources for further technological developments of the global data system and allow OBIS to support science capacity activities on the ground, as well as providing visibility to OBIS. OBIS nodes are encouraged to make use of these new technological developments in local projects.

Mrs. Serita van der Wal (GOOS BioEco data manager) reported on the work she is doing supporting the Biology and Ecosystem Panel of the Global Ocean Observing System (GOOS BioEco). With the initial launch of the GOOS BioEco portal planned for the summer of 2022, her main focus was aimed at metadata and information management and the development of the portal. The final report for the Development and Preparations for a Global Ocean Observing System, Biology and Ecosystems (GOOS BioEco) portal was submitted in early January 2022. Together with Mr. Pieter Provoost the portal has been developed according to the needs and feedback from the GOOS BioEco panel, first at a meeting held in February 2022 where the portal in its “under development” state was first presented to the executive committee of the BioEco panel, and later with the full GOOS BioEco panel on 5 May 2022. In addition to BioEco EOV specific metadata and information, the portal allows for additional metadata input of interest, including EBV and EOV sub-variable metadata; funding sector information; links to SOP and best practice; links to products, tools, and outputs; and information about the availability of the actual EOV data in OBIS. The portal's functionality and use is currently being tested by selected beta-tester monitoring programs. These beta-testers serve as example/ demo programs for further community and data provider/ user feedback on the portal, its documentation, and possible short-comings.

The 5-year implementation plan, management, and timeline for the BioEco portal were presented by Mr. Ward Appeltans and Mrs. Serita van der Wal at the 11th GOOS Steering Committee Online Meeting as part of the Cross-GOOS Data planning on 25 April 2022. For 2022, the milestone is to develop and publicly launch the GOOS BioEco portal 1.0. This milestone includes tasks such as developing the GOOS BioEco GeoNode and portal interface; processing, formatting, quality control and import of missing programmes; creation of documentation; and identifying and contacting beta-testers for their contribution and feedback. For the years 2023 and 2024, two milestones are set. The first of these is the launch of the GOOS BioEco portal 2.0, which will be able to connect and feed live information into the OceanOPS system, providing tailored information for the annual GOOS report cards. The second milestone for this timeframe is to establish regular data publication flows from GOOS BioEco Monitoring programmes to OBIS. Here, the target is to have 25% of the monitoring programmes provide continuous dataflow to OBIS (currently, 25% claim to publish to OBIS, but perhaps not continuous). For the final year, 2025, another two milestones are set. The first of these is to have a fully operational GOOS BioEco portal with a target of more than 90% of active BioEco monitoring programmes contributing and actively updating their metadata. Information from all active programmes is used in the annual GOOS report cards (covering all BioEco EOVs). The final milestone is that OBIS would be the global data access point for GOOS

BioEco EOV data, supporting international processes. A target of 80% of BioEco monitoring programmes should establish continuous data flows to OBIS.
Through OBIS, GOOS BioEco EOV data should be used in status and trends of CBD indicators and other global and regional assessments.

The GOOS BioEco portal aims to be the backbone for future GOOS outputs such as EOV status publications, the annual GOOS Report Card (e.g. 2020[2]) and other assessments of the state and trends in ocean observation. Mrs. Van der Wal's role is to provide support and coordination to contributing observing programs and the BioEco monitoring community as it relates to the BioEco portal and its development.

Ms. Abby Benson (OBIS-USA) recommended providing information on the website that clearly explains the difference between the GOOS BioEco metadata portal and the OBIS portal.

Mrs. Van der Wal is further developing use case example datasets for ENV-DATA and DNA derived data[3] that is made available in the OBIS manual. The aim of these examples is to provide a demonstration to OBIS data providers and users, of which Darwin Core extension files should be provided; the terminology used; and the structure and format for populating the various core extension files. A specific example(s) is being developed for each of the eleven established EOVs, as well as for eDNA and DNA derived datasets to ensure an appropriate demonstration is available for each specific EOV. The use cases consist of existing datasets in the OBIS database with complete data and standardized data formats. In some cases, where no comprehensive and/or standardized dataset is available yet, a fictional dataset is created (based on feedback and development of schemas by the BioEco community and panel), to demonstrate which fields are required, recommended and highly recommended for each extension file, as well as the format in which the data should be provided.

Ms. Elizabeth Lawrence reported on the development of training resources for OBIS stakeholders. Two online surveys were conducted targeting OBIS alumni specifically as well as general users; the surveys concluded in December 2021. There was a total of 125 respondents; the surveys identified stakeholder needs as well as areas where data providers have difficulties in the OBIS life cycle. She reviewed the survey results and consulted with Carolina Peralta (Chair, OBIS Capacity Development Task Team) in April 2022 regarding current needs and where to focus training efforts. Data cleaning and quality control were identified as consistent topics respondents would like extra training on. A list of potential training topics for future tutorials was initiated by Ward Appeltans in December 2021; contributions were also made by John Nicholls, Lenore Bajona, Braulio Fernández, Johnny Konjarla, Yi-Ming Gan, Enrique Montes, Carolina Peralta and Elizabeth Lawrence. Ms. Lawrence requested input from the entire SG in this draft list of training topics.

Ms. Lawrence reviewed the current training resources available on OceanTeacher Global Academy (OTGA) and the OBIS manual. She pointed out that much of the content between

[2] https://www.ocean-ops.org/reportcard2020/
[3] https://manual.obis.org/examples/

OTGA modules is repeated, many of the older modules have broken URLs since the movement of the OBIS manual to https://manual.obis.org/, and that the Contributing datasets to EMODnet Biology 2020 course had the most up to date links. She noted that this module also had an excellent workflow with example datasets for participants to clean and prepare. Using the eMODnet module as a reference, Lawrence generated a skeletal framework diagram (see her presentation at https://oceanexpert.org/document/30386) for the process data providers must follow to format data according to OBIS standards. Her next steps are to expand and finalize the list of topics for tutorials (to be completed by June 15, 2022) so that there are at least 50 topics to create action plans for, and then create the actual tutorials with links and videos as applicable.

Mr. Pieter Provoost (OBIS data manager) reported on technical developments. OBIS is now harvesting data shared using the DNADerivedData extension, and sequence records are available through the API, mapper, and R package. The dataset pages display the number of DNADerivedData records by marker gene. Several new versions of the *robis* R package have been published, with improvements in error handling and performance, and new features such as filtering by extension type. The ability to export extension records was added to the mapper (previously only occurrence downloads were available). Several reports were added to https://reports.obis.org/, including reports on data duplication, datasets added to the OBIS network in the GBIF registry, and the list of names without a WoRMS match. Work was started on a Python package for exporting Darwin Core datasets with DNADerivedData from EBI's MGnify microbiome metagenomics platform. The OBIS manual is now hosted on GitHub at https://manual.obis.org/.

The SG-OBIS encouraged all OBIS nodes to regularly look into the OBIS reports (https://reports.obis.org/**) and solve any outstanding issues.**

2.3. OBIS Nodes

Mr. Ward Appeltans reported that since our last meeting (May 2021), the OBIS nodes published 21.55 million new records of 409 new datasets, 17 million new measurements or facts and 4,900 new marine species to OBIS. OBIS now has a total of 100 million records, 180 million measurements or facts, 4,471 datasets and 160,000 marine species. He noted that a large part of this growth can be assigned to the 14.6 million records from DNA derived datasets (of which the majority are published by OBIS Australia).

The OBIS secretariat keeps track of the number of new datasets per OBIS node, so it can report on the health status (i.e., OBIS nodes which do not publish new datasets for more than two years are considered inactive). Currently, on this basis, four OBIS nodes are listed as inactive

(AfrOBIS, Arctic OBIS, OBIS Kenya, OBIS Senegal) of those AfrOBIS, OBIS Kenya and OBIS Senegal were already listed as inactive at SG-OBIS-9 in November 2020.

Based on the procedures adopted at SG-OBIS-7 (2017), inactive nodes are asked to submit a work plan to the SG outlining their approach to become active again. In case the OBIS node is inactive by the next SG meeting, the SG can make a recommendation to remove the OBIS node from the network to the IODE Committee (which will meet in earnest in Feb/March 2023).

Mr. Tshikana Rasehlomi (AfrOBIS node manager) reported that AfrOBIS submitted its work plan to reactivate the node at the previous SG meeting (SG-OBIS-9). In that work plan, we highlighted the challenges facing the Node and how we plan to mitigate them. Importantly, throughout the period to date, AfrOBIS remained active in terms of its participation in the activities of OBIS and GBIF. AfrOBIS continued its interactions with other regional and African partners who submit biodiversity data via the Node. Unfortunately, during the 2021/22 financial period, we encountered a contract impasse which saw us losing the technical team responsible for data curation, system development and administration. However, just after this contract issue was resolved, our system suffered physical damage from nation-wide electricity load shedding in South Africa. We are happy to report that as of today, the 17th of May 2022, our technical team has managed to get our system back online, and as soon as the system has stabilized and data start trickling in, we would be able to start identifying biodiversity data which could be published and shared with the OBIS community. The next coming few months will be used for that process.

Ms. Nina Wambiji (OBIS Kenya) informed the steering group that KMFRI has established an OBIS Committee, comprised of her as the data manager, the KeNODC manager- Mr. Harrison Onganda, an alternate data manager- Mr. Noah Ngisiang'e, which are both qualified OTGA facilitators and Dr Esther Fondo who was the pioneer scientist during the development of the Marine Species Database for Eastern Africa (MASDEA). A workshop introducing the Committee to the OBIS tasks was conducted 24-29 April 2022. OBIS Kenya has published its datasets on GBIF, which is one of the recommendations. The OBIS node put out a plan for data mining from data holders of huge datasets. It also participated in various stakeholder meetings and promoted the value of OBIS and its database. These include: the sixth Ocean Decade Laboratory on the Outcome "An Accessible Ocean 10-12 May 2022, which was attended by Dr Uku. OBIS Kenay plans to work with the GBIF team located in the National Museum of Kenya, which has had success working with different stakeholders across the African continent.

Mr. Ismaila Ndour (OBIS Senegal) reported that although OBIS Senegal has not published any new data, it continues to promote awareness of the sharing of data on marine and coastal biodiversity among stakeholders in the opportunities offered through national or regional workshops. This is the case during meetings organized within the framework of the BIODEV-2030 project, which aims to facilitate the commitment to Biodiversity in Senegal, the Ocean InfoHub Project, and Multiple Ocean Stressors and Invasive Alien Species Project, among others. In terms of prospects, the node will continue to exploit all opportunities at their disposal such as small grants at both national and regional levels to revitalize the Senegal OBIS Node. In

the current context of oil and gas exploitation, various projects are underway to survey and map marine and coastal biodiversity in Senegalese waters. The node hopes that this information, once available, can be used for OBIS.

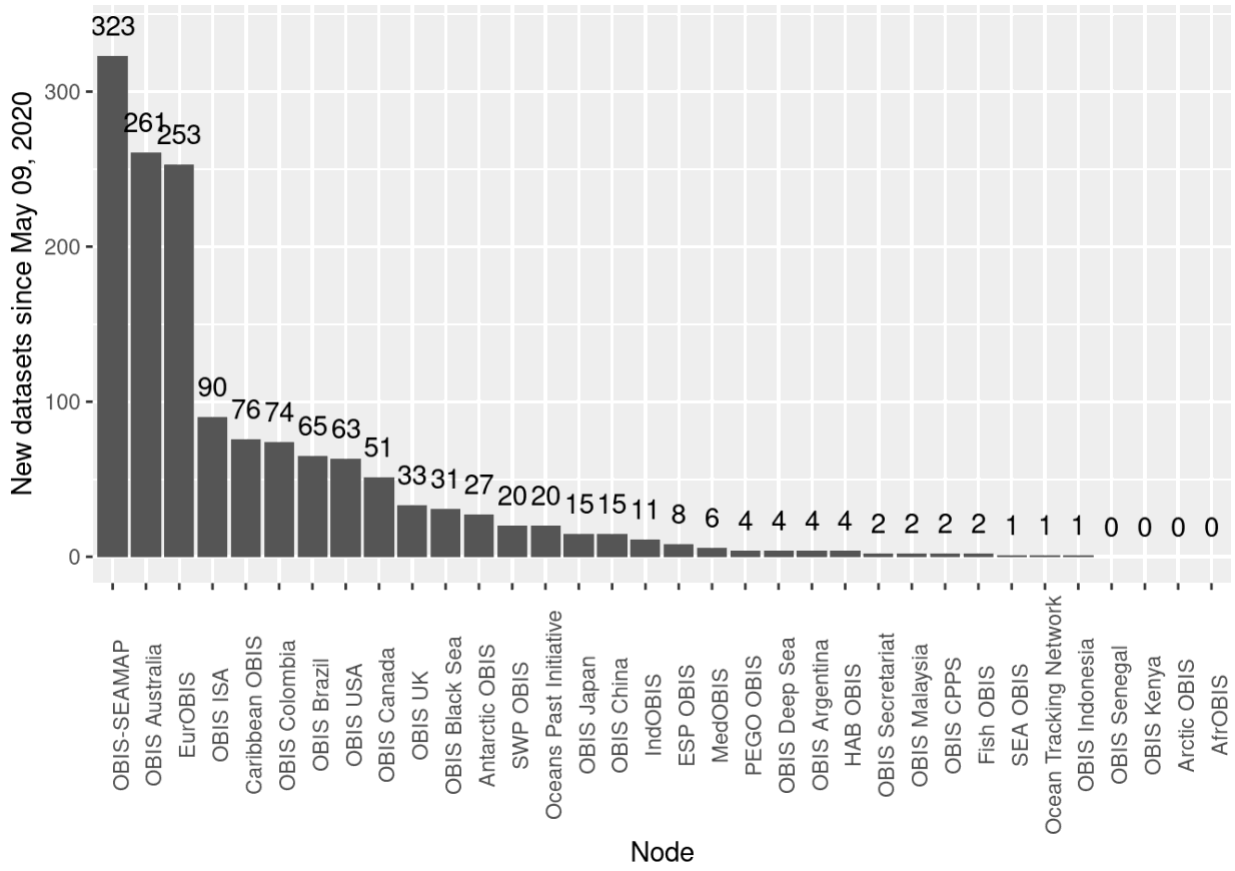


Figure 1: Number of new datasets per OBIS node published to OBIS in the last two years.

The SG-OBIS reiterated the importance of the OBIS Node health status check and transition strategy for inactive OBIS Nodes, adopted at SG-OBIS-6 (2017). The SG-OBIS requested the OBIS nodes that are listed as inactive (or nearly inactive) to reconsider their status as OBIS nodes and reminded them that being an OBIS node bears responsibilities and commitments, and privileges such as contributing to defining the priorities via the OBIS steering group. The SG-OBIS reminded that institutions that no longer have the capacity to run an OBIS node can still become data providers to OBIS, are welcome to participate in OBIS task teams and project teams and can remain involved in OBIS communication channels (e.g., Slack). With the newly adopted data flow model, non-OBIS node institutions will also be able to publish to OBIS directly (and GBIF) via their IPT, after dataset endorsement by an OBIS node.

Following the procedure of the 'inactive node strategy', the SG-OBIS requested the Arctic OBIS node to submit a plan with actions, deliverables, and timelines to improve their performance within 3 months to the OBIS secretariat. Because AfrOBIS, OBIS Kenya and OBIS Senegal were already listed as inactive at the previous session, the SG-OBIS requested the secretariat to submit a recommendation to IODE-27 to remove those nodes from the OBIS network unless they publish new datasets before the end of November 2022 (deadline for text submissions to IODE-27).

Mr. Ward Appeltans continued this agenda item and reported on the outcomes of a Nodes survey which was held in November 2021, asking OBIS nodes to report on past and planned activities. Below are the results:

Question 1. Did you participate at meetings representing OBIS and/or your OBIS node in 2021?

OBIS Canada: Yes. Also briefed DFO colleagues who attended other regional and national meetings throughout the year:

- Within Fisheries and Oceans Canada (DFO): OBIS Canada updates for DFO regional (Jan 2021) and national (March 2021) Science management executives and national data management working groups (ongoing, monthly)
- Spoke on behalf of OBIS Canada at three OBIS training sessions delivered by Canada's Ocean Tracking Network (OTN) in February-March 2021 (DFO and non-DFO participants)
- Attended GBIF North America quarterly meeting March 2021
- Presented introduction to OBIS to DFO national eDNA working group (April 2021)
- Led one meeting of Canada's "OBIS community" in May 2021 (DFO and non-DFO participants)

OBIS HAB: Yes, Global HAB Status Report (GHSR) Editorial Team meetings

OBIS Deep-sea: Yes, some examples: OBIS SG, OBIS data quality control, CETAF meetings, DiSSCo meetings, UN Decade meetings, IPBES meetings, and etc.

OBIS Japan: Yes, we participated in the Japan GBIF (JBIF) steering committee as representing OBIS Japan Node.

OBIS-UK: When participating at meetings at the national (UK) level or wider, I always include the fact that we represent OBIS-UK. This includes

- 25th Jan 2021 – Big Picture Benthic Imagery Coordination Committee:
- 28th Jan 2021 – UK Biodiversity Data and Information Group (BioDIG)
- 18th February – Scottish Marine Biodiversity Data Flow
- 24-25th Feb 2021 – Healthy & Biologically Diverse Seas Evidence Group (HBDSEG)

- 2-4th March – Big Picture Workshop
- 8th April – iNaturalist UK Partners Meeting
- 12-14th April – International Marine Data Information Systems (IMDIS) conference
- 20-23rd April – IODE Assembly
- 26-27th May – OBIS SG
- 26-28th May – EuropaBON
- 24th June - Scottish Marine Biodiversity Data Flow Project Advisory Group
- 1st July – OBIS Marine Session at GBIF Global Nodes Meeting
- 29th-30th July - Healthy & Biologically Diverse Seas Evidence Group
- 21st Sept – UK Non-Natives species data review & data flow
- 13th-14th Oct - Healthy & Biologically Diverse Seas Evidence Group

Ant-OBIS: GBIF Global Nodes Meeting, TDWG annual conference, OBPS workshop, Southern Ocean Decade/PDF IV

ISA-OBIS: Yes, pending availability ISA secretariat plans to attend the International Ocean Data Conference 2022 (14-16 February 2022, Sopot, Poland).

MedOBIS: Yes. During the LifeWatch ERIC Online Workshop entitled “e-Science for NIS Research”, which took place on 20 and 21 May 2021. HCMR. participated in the session 1: Long-term monitoring of hard-bottom marine communities (IJI Validation Case #2), which was jointly organized by LifeWatch ERIC and ENVRI FAIR project. The presentation was focused on the contribution of Research Repositories and specifically of MedOBIS to the FAIRification process. In addition, several meetings and workshops took place in HCMR, during which MedOBIS was presented in order to inform researchers and make them feel confident regarding submitting their data to an open and FAIR repository.

OPI-OBIS: Yes, provided details of historic marine extraction data and their transformation to DarwinCore e.g., Norfish and related datasets, HMAP Whaling Dataset.
Workshops where we presented on OBIS: 26 November, 25 October, 8 October, 24 September, 1 September. Project Meetings incorporating OBIS presentation: 22 June – OPI

SEA-OBIS: Yes. The Asia Pacific Observation Network APBON and the 14th Asia-Oceania Group on Earth Observations Symposium Envisioning AOGEO in 2022 and beyond Online Event, 10 - 12 November 2021.

OBIS-BlackSea: Yes. SG-ODINBlackSea-IX, Ninth Session of the IODE Steering Group for the ODINBlackSea Project [online], 14 July 2021. New data provider IBER-BAS presented by Stefania Klayn.

OBIS-Colombia: Yes, OBIS co-chairs meeting. May 21, 2021 03:00 PM Brussels; May 24, 2021 08:00 PM Brussels; OBIS-EC-4 & interim SG-OBIS meeting May 26, 2021 08:00 PM Brussels; EC-OBIS-4/interim SG-OBIS meeting, 26-27 May 8-11 PM CET; Webinar on ODIS on 31 May 2012, 2 PM CEST; OBIS-GOOS BioEco Jun 10, 2021 01:30 PM Brussels; OBIS-

GBIF marine session prep meeting Jun 16, 2021 03:00 PM Brussels; OBIS-GBIF meeting 16 June, 16 June at 13:30-14:30 CET; 2nd meeting OBIS-GBIF marine session preparations Jun 25, 2021 03:00 PM Brussels; OBIS Marine Session at GBIF Global Nodes meeting, 1 July between 4-5:30 PM UTC.Webinar 21 jul 2021- Serie Webinars SiB Colombia https://www.youtube.com/watch?v=kc68nwBVSRc. Coordination meeting SiBM OBIS Colombia - SiB Colombia, thursday 22 july 2:00-3:00 pm BOG. Interview OBIS Stakeholder Consultancy, Sep 21, 2021, 03:00 PM Brussels; OBIS EC 6 Oct Call, Oct 6, 2021, 02:00 PM Brussels. Seminario "Exploración del Fondo Marino una Perspectiva Científica, Ambiental y Económica". 28 y 29 de octubre - Bogotá; OBIS data quality laundromat event, 8-12 Nov 2021; Second Session of the Steering Group for the OceanTeacher Global Academy 2 Project (SG-OTGA2-II) 16,18,19 November 2021 (online); SG-OBIS Informal Meeting, 2 December 2021 2-4 PM CET;

OBIS-AU: No, there has been a complete hiatus on travel at our organization due to COVID.

OBIS Kenya: Yes, OBIS has been highlighted in various workshops, UN Ocean Lab, An Accessible Ocean – 10-12 May 2022

OBIS-Brazil: Yes, there is the list of meetings I attended representing OBIS from Jan 2021 to May 2022 (mostly online): Nautilus Project - workshop and meetings (about four 1h meetings from Jul to Dec 2021); MeioBase project meetings (4 meetings between May and July 2021); Our Blue Hands project meetings (1h meeting once a month); Challenge4ClimateAction (about nine 1h meetings through March 2021); Data Management Consortium (two 1h meetings in the 1st semester 2021); XMBON eDNA meetings (four 1h meetings throughout 2021); XVI Semana Temática da Oceanografia da USP (workshop talk, 1 Sep 2021); SiBBr/GBIF-OBIS Brazil meeting (one 2h meeting - 3 Sep 2021); International Ocean Data Conference IODE-IOC (14016 Feb 2022); PELD-CSB (Long-term Ecological Research Program - Brazilian Semi-arid Coast) support meeting (7 Jan 2022); BioGeoMar project meetings (two 2h meetings in Feb 2022); Mission Atlantic EuroOBIS-Brazil meeting (22 Feb 2022); MarineLife2030 project meeting.

Question 2. Do you plan to participate at meetings representing OBIS and/or your OBIS node in 2022?

OBIS Canada: Yes – will likely continue to be called on to provide updates within DFO. Will endeavor to host a virtual Canadian “OBIS Community” meeting.

OBIS Deep-sea: Of course, I will continue promoting OBIS and my node in all the initiatives and consortiums that me and Senckenberg are involved in. I also presented OBIS deep-sea node in iDoos initiative conference in May 2022 to establish a working group to digitize the acoustic data that came from pelagic species.

OBIS Japan: Yes, we will participate in the Japan GBIF (JBIF) steering committee as representing OBIS Japan Node.

OBIS-UK: IODE International Ocean Data Conference, plus other events

ArOBIS: YES, National Conference on Marine Sciences, Argentina, Comodoro Rivadavia. March 2022.

ISA-OBIS: ISA secretariat will consider participation in other networks/projects representing ISA OBIS node, as required.

MedOBIS: Yes. An abstract sent to the "International Ocean Data Conference 2022 - The Data We Need for the Ocean We Want", which will be held between 14-16 February 2022 in Sopot, Poland. The abstract ‘s title is “Dive into MedOBIS: an Open and FAIR Biogeographic Information System for the Mediterranean Sea”. In addition, MedOBIS participates at all the EMODnet Biology-related meetings.

OPI-OBIS: Yes, we plan to represent OBIS at the Oceans Past Initiative (OPI) Conference in Seattle, June 2022

OBIS-BlackSea: IODE ODINBlackSea

EurOBIS: Yes. Through EMODnet Biology-related meetings, and any other meeting where VLIZ Data Centre is represented and where there is a (in)direct link with the VLIZ work on biodiversity data and/or the OBIS network.

OBIS-Colombia. Yes, In the national context, as part double role that we have as OBIS Colombia Node and Marine Node for the National Biodiversity System – SiB Colombia, we will be participating of the different meetings Technical Committee of SiB Colombia (CT-SiB) and meetings about data management between both networks; Also on the *Sustainable Ocean Initiative Capacity-Building Workshop for the Wider Caribbean and Central America on Other Effective Area-Based Conservation Measures in the Marine Fishery Sector*, 20-21 April and 27-28 April 2022, virtual

OBIS-AU: Possibly at the Australian Marine Science Association conference in Cairns August 2022.

OBIS-Brazil: Yes, some meetings already schedules: CoNSENSUS SCOR working group 23-26 May 2022; Our Blue Hands project meetings (1h meeting once a month); BioGeoMar project meetings (probably 4 meetings through Jun to Nov 2022); XMBON eDNA meetings; MarineLife2030 project meetings; and MeioBase project meetings.

OBIS Kenya: A workshop at the Institute of Marine Sciences and Leibniz Center for Tropical Marine Research (ZMT) -Conference on Marine Biodiversity Data Handling and Dissemination

in East Africa, Zanzibar, Tanzania on 14-15th June 2022. The upcoming Western Indian Ocean Marine Science Association Scientific Symposium in Durban, South Africa in October 2022.

Question 3. Did you participate in other networks/projects representing OBIS and/or your OBIS node in 2021?

OBIS Canada: Yes – "Slack" community. Follow Abby Benson's GBIF USA "Standardizing Marine Biological Data" Slack group (but zoom meetings conflict with a pre-existing commitment so I can rarely attend).

OBIS Japan: AP-BON (The 13th Asia-Oceania Biodiversity Observation Network Workshop)

OBIS-UK: Yes - UK MEDIN Network, EMBRC, BioDIG, HBDSEG

Ant-OBIS: GBIF, MBON, OBPS, Southern Ocean Decade/PDF IV

MedOBIS: Yes, in the Lifewatch ERIC community https://www.lifewatch.eu/ through the ENVRI FAIR project, and the EMODnet biology infrastructure.

SEA-OBIS: Yes, Annual meeting of Asia Pacific Observation Network APBON

OBIS-BlackSea: Yes. EMODnet Biology Phase III- final meeting (online), May 17th 2021;
EMODnet Biology Phase IV kick-off meeting (online), May 18th and 21st 2021;
Online meeting BRIDGE-BS Project (H2020). Data partners inventory, 4th November.

OBIS-Colombia: Yes, *Increasing the accessibility of marine information from Colombian's Natural History Collections by mobilizing data, strengthening infrastructure, and training*, Project ID BID-CA2020-055-NAC. 1 July 2021 - 30 June 2023; IOC/OTGA/INVEMAR: Curso de Publicación y gestión de datos de biodiversidad marina (The Ocean Biodiversity Information system),02-31 August 2021.
We were invited for presenting to OBIS in the webinar's modality as part of the Program of Training Cycle 2021 of SiB Colombia (GBIF Colombia node). Otherwise, in the framework of the binational cooperation project between Colombia and Chile "*Strengthening of technical-scientific capacities of new methods for the study of marine biodiversity in Colombia and Chile*" of which Invemar is part together with other institutions, we had the opportunity to include into the Curse # 3 "*Marine Biological Collections and curatorial processes*" some talks about our experience biodiversity information systems, and we took the opportunity to present OBIS (history, process, etc.) through OBIS Colombia (it is worth mentioning that OBIS Chile also presented a talk about its node). Finally, since October 2020 we became part of the GGBN network with the execution of the project "Preserving and sharing the marine genetic diversity of Colombia through the tissue collection of the Marine Natural History Museum of Colombia - Makuriwa of INVEMAR", for this we gave support and are close to publishing through our IPT the datasets digitalized,

which will incorporate GGBN' standards and extensions, as is usual we planned to publish it in one step for OBIS, GBIF and since now GGBN (when applying).

OBIS-Deep-sea: Yes, some examples are NFDIBiodiversity, CETAF (Consortium of European Taxonomic Facilities), IPBES (invasive alien species assessment), Digital specimens (DiSSCo ; https://www.dissco.eu/), Challenger 150 (https://www.dosi-project.org/challenger-150/)

OBIS-AU: Yes, online collaborative meetings with Atlas of Living Australia, who host a GBIF node and harvest OBIS data. Represented both CSIRO and OBIS-AU on the AODN (Australian Ocean Data Network) TAG. Ongoing collaboration with the Australian Microbiome Project and Bioplatforms Australia to publish eDNA data to OBIS.

OBIS-Brazil: Nautilus Project (marine biodiversity data management); Our Blue Hands project (regional microplastics database); MeioBase project (meiofauna data sharing and biogeographic research); CoNSENSUS SCOR working group (demersal fish imagery data); MarineLife2030 (marine biodiversity); OBON (Ocean Biomolecular Observing Network).

Question 4. Do you plan to participate in other networks/projects representing OBIS and/or your OBIS node in 2022?

OBIS Deep-sea: Yes, CETAF meetings, DiSSCo meetings, UN Decade meetings, IPBES meetings, Clalenger 150 (to digitise all the new deep-sea species collected in the series of challenger 150 in the upcoming years), NFDIBio, Marine life 2030 networking, and etc.

OBIS Japan: AP-MBON (Asia Pacific M-BON)

OBIS-UK: Yes. UK MEDIN Network, EMBRC, BioDIG, HBDSEG

AntOBIS: GBIF, MBON

ArOBIS: Yes. We plan to give virtually together with the RTC Argentina and the OTGA the course " Management and publication of marine biodiversity data through OBIS""

OPI-OBIS: Yes, we plan to represent OBIS for the duration of the 4-Oceans ERC-funded project (within the Trinity Centre for Environmental History and Humanities, Dublin and at relevant conferences, workshops, and meetings. We will continue collaborative work with the CDTT with a view to establishing tutorial videos and teaching materials relating to DarwinCore and OBIS.

SEA-OBIS: Yes, OBIS is always recognized in our ACB meetings (Governing board, ASEAN Working Group etc.) as ACBs primary marine biodiversity data holder.

OBIS-BlackSea: Yes, EMODNET-BIOLOGY, BRIDGE-BS Project (H2020)

OBIS-Colombia: Yes, Between 2021-2023 as part of the project “Increasing the accessibility of marine information from Colombian’s Natural History Collections by mobilizing data, strengthening infrastructure, and training” which is funded by BID Caribbean Program of GBIF-EU (Project ID BID-CA2020-055-NAC) we will be digitizing and publishing more than 11400 marine data of different national biological collections through OBIS and GBIF, and carry out several workshops for data management and outreach activities. Two Invemar researchers will contribute as part of the advisory team in the citizen science initiative of the Project “eDNA expeditions in marine World Heritage Sites”. Ongoing project “Preserving and sharing the marine genetic diversity of Colombia through the tissue collection of the Marine Natural History Museum of Colombia - Makuriwa of INVEMAR” (described earlier).

OBIS-AU: Yes, there is a new development project called Unified Marine Imagery (UMI) for Australian marine video and stills where the species identifications and annotations could be published by OBIS-AU.

OBIS-Brazil: Yes, the same. Nautilus Project (marine biodiversity data management); Our Blue Hands project (regional microplastics database); MeioBase project (meiofauna data sharing and biogeographic research); CoNSENSUS SCOR working group (demersal fish imagery data); MarineLife2030 (marine biodiversity); OBON (Ocean Biomolecular Observing Network).

Question 5. Have you been able to attract new data providers to your OBIS node in 2021?

OBIS Canada: New individuals within the existing community of contributors in Canada, especially within DFO.

OBIS HAB: No, network of data providers for the HAB node not changed

OBIS Deep-sea: Yes, I am coordinating to mobilize the SeSam (Senckenberg internal database) data to OBIS. I also have coordinated the submission of the deep-sea data from Nekton https://nektonmission.org/. Also, the deep-sea data from the deep NW Pacific of the Beneficial extension project were added. I am also in the Challenger 150 of DOSI meetings and task groups to host the data from newly discovered deep-sea species in upcoming years.

OBIS Japan: No

OBIS-UK: Yes – We continually explore how we can broaden our pool of data providers.

AntOBIS: Various, mostly countries that are already providing data.

ArOBIS: YES, currently we are working with the upload of 3 data sets from 3 different institutions. Austral Center for Scientific Research (CADIC-CONICET), National Institute for Fisheries Research (INIDEP) and Argentine Institute of Oceanography (IADO)

IndOBIS: We are constantly in touch with other institutions and individual researchers working in this similar area and we have got some datasets already.

ISA-OBIS: ISA OBIS node was established in 2021 with 30 data providers, corresponding to 30 ISA contracts for exploration of mineral resources in the Area.

MedOBIS: Yes, researchers inside HCMR, mainly from the Institute of Marine Biology, Biotechnology and Aquaculture.

SEA-OBIS: Not at this moment, ACB still in process of negotiating to ASEAN focal person. And need to validate datasets from the Philippines Museum and other countries. Due to COVID data from sources are not yet all validated. Target data by next year's first quarter.

OBIS-BlackSea: Yes. IBER-BAS from Bulgaria.

EurOBIS: Yes, through the EMODnet Biology network, and a constant networking and look-out for possible interesting marine datasets within Europe.

OBIS-Colombia: After the OTGA course (September 2021) those participants with the intention to publish, were redirected to the Caribbean Node and the Argentina Node.

OBIS-AU: No, but there is much extant content being developed and provided to OBIS by and for existing data providers.

OBIS-Brazil: Yes. PELD ILOC (Brazilian Long-term Ecological Research Program Oceanic Islands, mostly marine fish, and benthic reef data); Ecology and Coastal Management Laboratory, Universidade Federal de São Paulo (rocky shore invertebrate data); and Phycology Laboratory, Universidade Federal de Santa Catarina (macroalgae data).

Question 6. Are there new data providers in the pipeline for 2022?

OBIS HAB: No, GHSR not to be updated in 2022

OBIS Deep-sea: the data will be most likely from our deep-sea expeditions in Aleutian Islands at Senckenberg museum lead by Angelika Brandt. Also, the data from Challenger 150 will be hosted by the deep-sea node in upcoming years.

OBIS Japan: Yes (1 or 2)

OBIS-UK: Yes – We are exploring new data providers related to Natural Capital and eDNA based approaches.

AntOBIS: Yes, through support for publication of data Papers.
ISA-OBIS: Yes, a new exploration contract was signed in 2021, which will become a new data provider in 2022.

MedOBIS: Yes, including historical datasets. There is also expressed interest for genetic and Micro-CT data.

OPI-OBIS: Yes, BAS (British Antarctic Survey), ICES (International Council for the Exploration of the Seas), AINA (Arctic Institute of North America).

SEA-OBIS: Target data providers are from Museums and Environment ministries.

EurOBIS: Yes, mostly on an ad-hoc basis, but also through citizen science efforts in the framework of EMODnet Biology.

OBIS-Colombia: Yes, throughout efforts of the Project ID BID-CA2020-055-NAC and associated Universities. Universidad Tecnológica del Chocó – UTCH (confirmed).

OBIS-AU: Possibly UMI (Understanding Marine Imagery) data as they become available.

OBIS-Brazil: Yes, from BioGeoMar project (several marine invertebrate datasets should be published in the next two months maximum).

Question 7. If your OBIS node is not yet registered and connected to GBIF, then why not?

OBIS Japan: not registered, but connected through GIBF Japan node

IndOBIS: We will attempt to register.

ISA-OBIS: ISA secretariat's understanding is that the data shared with OBIS is also made available to GBIF as these two databases can exchange data among themselves, therefore ISA secretariat has not registered separately with GBIF. Further details on the requirements and added value to register with GBIF will be sought.

OPI-OBIS: We are registered through EurOBIS.

OBIS-BlackSea: Registered but requires rename for OBIS Black Sea instead of Ukrainian Scientific Centre of Ecology of the Sea

OBIS-AU: OBIS-AU is registered using ALA as the endorsing node.

Question 8. Do you have datasets that are not registered and published in GBIF, if yes, why?

OBIS Canada: Yes. Historical data sets that were not registered originally, perhaps due to misunderstanding what “registration” meant. Newer datasets have been registered. No dedicated resources currently to contact data owners and explore registering additional older datasets but will be addressed gradually.

OBIS deep-sea: Yes, there are three private datasets in deep-sea node because I have not created them, and I am not sure if the data providers want to publish it to GBIF or not.

AntOBIS: Some of the SCAR Biogeographic Atlas of the Southern Ocean. Various reasons: fear of creating overlap in data, not convinced of quality, review backlog….

IndOBIS: Yes. Initially, IndOBIS node was with NIO, Goa. During that time some of the data has been published to GBIF and the same was uploaded to OBIS after transferring node to CMLRE which are not registered but still published in GBIF.

SEA-OBIS: Most of our datasets (terrestrial species) are already in the GBIF portal.

OBIS-BlackSea: Yes. All the data sets from external data providers are not registered. All our 2021-year datasets are not registered yet but we will.

EurOBIS: Yes. The EurOBIS internal policy is to only share datasets with GBIF that have a DOI. VLIZ – as host of EurOBIS – offers a DOI service to its data providers (and VLIZ-network in general).

OBIS-AU: Some of the data OBIS-AU publishes is from ALA, so to avoid duplication those datasets must not be registered at GBIF. The ALA datasets might contain terrestrial data which is filtered out for OBIS.

MedOBIS: Following the EurOBIS internal policy (only share datasets with GBIF that have a DOI) we are in the process of applying DOI to MedOBIS datasets and then we will register these datasets to GBIF.

Question 9. Do you know if IODE NODCs in your area hold marine biodiversity/biogeographic data that are not yet in OBIS?

OBIS Canada: Within DFO there are many datasets not yet in OBIS – DFO has a national mandate to publish on Open Canada – and there are many datasets not published there either.

We try to encourage simultaneous publication to OBIS. Awareness is there but there are workload and funding issues. I'm sure there are none DFO datasets also. Through our Canadian OBIS community efforts, we try to reach more people and datasets.

OBIS-UK: Yes. But we are working with partners to ensure we capture them.

ISA-OBIS: ISA secretariat does not know if any IODE NODCs from ISA members or Sponsoring states hold biodiversity/biogeography data from the Area that is not yet in OBIS.

MedOBIS: There are biodiversity-related data on biotic variables such as chl-a POC, etc. and from satellites measurements of salinity, temperature etc. It is worth mentioning that recently the growing data collection for seabirds, marine mammals, and sea turtles raised the need of storing telemetry data.

OPI-OBIS: No, we are a thematic node – focused on global history. We actively seek out large projects and subsume or publish their material alongside our own. We would be open to engaging with NODCs if the opportunity arises.

EurOBIS: This is something that we would need to investigate.

OBIS-Colombia: Probably but is difficult to establish due to restrictions on the data holders.

OBIS-AU: We monitor AODN/IMOS for new data and publish it as soon as practical.

OBIS-Brazil: The Brazilian NODC does not hold marine biodiversity datasets officially, their current and historical focus is on physical and geochemical data. However, they are represented by the Brazilian Marine Navy and some of their official cruises and institutions carry out marine biodiversity research. We might link these datasets to OBIS in the future, it is an ongoing talk directly to the data providers. But the Brazilian NODC are not planning to incorporate these datasets to their online hub for now.

Question 10. Did you contribute to any of the OBIS task teams or projects teams in 2021 and do you plan to contribute to those in 2022?

OBIS Canada: I attempted to facilitate engagement in the genetics task team by eDNA experts within DFO but did make any direct contributions. I don't think that I have sufficient capacity to contribute directly in 2022, other than to continue to engage the eDNA group.

OBIS Dee-sea: Yes, CD-TT, CO-TT, QC-TT

OBIS Japan: UN Ocean Decade TT

OBIS-UK: CD-TT, CO-TT, QC-TT, VIP, Gen-PT, Decade-PT

AntOBIS: QC-TT

ArOBIS: Vocab-PT but won't join in 2022

IndOBIS: interested to join QC-PT in 2022

ISA-OBIS: interested to join QC-PT in 2022 (Sheldon Carter), interested to join the VIP (Sheldon Carter/Luciana Genio), interested to join the Decade-PT (Luciana Genio)

MedOBIS: QC-TT

OPI-OBIS: CD-TT and CO-TT however to be confirmed for 2022

SEA-OBIS: interested to join the CO-TT in 2022

EurOBIS: TaxTT, QC-PT, CD-TT (no active contributions, we are always willing to share available training material with this team & the wider obis community and provide ad-hoc input to this task team), CO-TT (no active contributions, we do share relevant obis news within our own networks), Decade-PT (willing to collaborate on this, when specific input is required and/or specific, targeted questions are put forward).

OBIS-AU: CD-TT, OBIS Data Quality Assessment and Enhancement Project Team: In 2021, added comments in the recent Data Quality review and where possible corrected some datasets. Participated in the Data Laundry event in 2022. Will be active in the OBIS Project Team on Genetic Data and the VIP in 2022. CSIRO as a whole is engaging with the UN Ocean Decade, and we will fit in with that work.

OBIS-Brazil: I signed up to several task teams in 2021 (QC-Vocab-CD-COTT) and I was hardly ever able to join the meetings mainly because of the extra load of work with the pandemic's situation. I intend to join them actively next year.

2.4. OBIS Task Teams

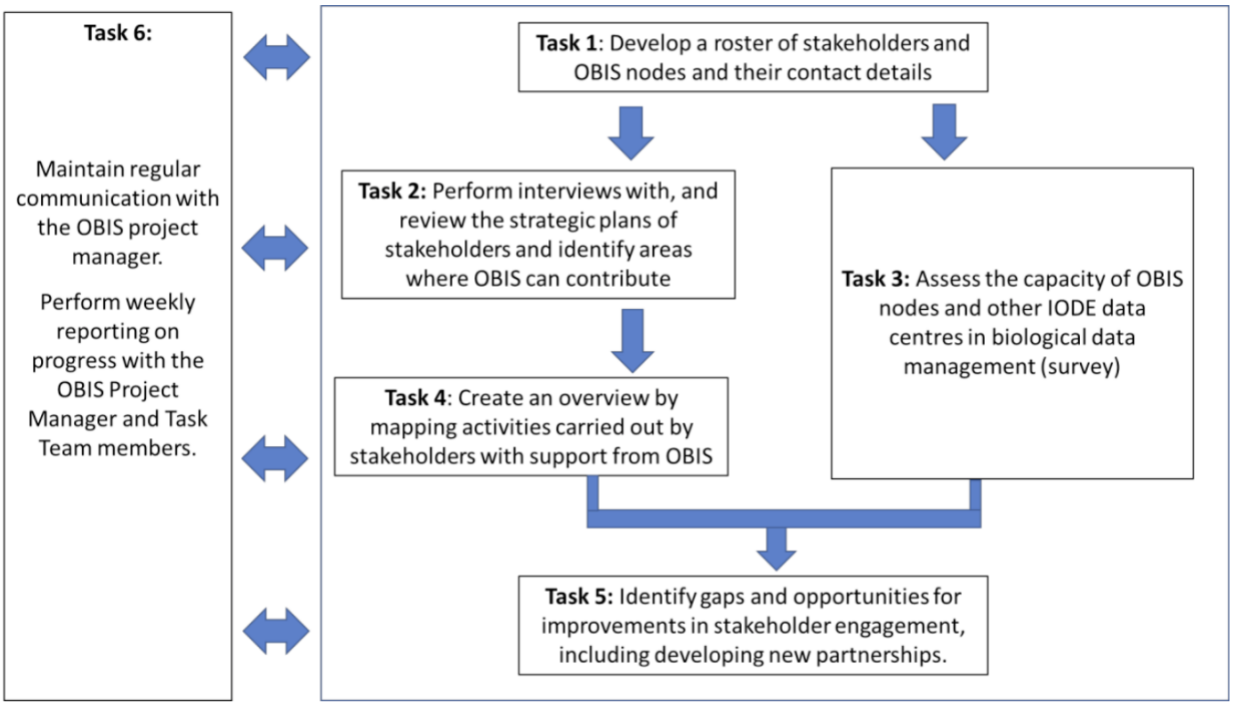
2.4.1. OBIS Strategic Advisory Task Team

Mr. Ward Appeltans introduced this agenda item. In the context of the UN Ocean Decade and initiatives under GOOS, MBON and others, expectations from stakeholders regarding OBIS are

high. To meet these expectations, it is important to clearly understand the requirements for OBIS from key stakeholders, assess OBIS nodes' capacity to support those needs and identify gaps and opportunities for improvement in stakeholder engagement, including developing new partnerships. To perform this assessment, we hired a team of 2 consultants from Seascape Belgium: Nathalie Van Isacker and Nathalie Tonné, who worked for us during a 2-month period between Mid-October and Mid-December 202.

Ms. Nathalie Tonné joined the SG-OBIS meeting for this agenda item and reported on the work which was organized in 6 Tasks (figure):

- Task 1: Develop a roster of stakeholders and OBIS nodes and their contact details
- Task 2: Perform interviews with, and review the strategic plans of stakeholders and identify areas where OBIS can contribute
- Task 3: Assess the capacity of OBIS nodes and other IODE data centers in biological data management
- Task 4: Create an overview by mapping activities carried out by stakeholders with support from OBIS
- Task 5: Identify gaps and opportunities for improvements in stakeholder engagement, including developing new partnerships – Conclusions and recommendations
- Task 6: Maintain regular communication with the OBIS project manager and reporting



The report of the stakeholder assessment is available at the document section[4] of the event page. Mr. Ward Appeltans summarized the results of the assessment as follows:

[4] https://oceanexpert.org/event/3276#documents

For 22 years now, we have been building a central global data platform that provides free access to the world's ocean biodiversity and biogeographic data. He believed it is fair to say that we have built up a solid reputation especially among the scientific community. OBIS provides access to 100 million observations of 160,000 marine species integrated from over 4,000 datasets. This sounds amazing, but maybe this is just the top of the iceberg? In a recent study (https://dx.doi.org/10.3389/fmars.2021.737416), a survey of around 300 long-term biological observing programmes revealed that only half of them store their data in a long-term data repository and only a quarter provide public access to their data. The most common argument is that they don't know how to publish their data in OBIS, or there are no resources to cover that extra step. In a recent European macroalgae workshop, 20% of the participants admitted that the only copy of their data is the one they have on their computer. Another issue is that a lot of marine data in GBIF is not OBIS and a lot of the data in OBIS is not in GBIF. Gladly, we do have good cooperation with GBIF and GBIF has now made it possible to indicate that a dataset can be published in both GBIF and OBIS. So, there is now a single publication process to OBIS and GBIF. This discrepancy between OBIS and GBIF should become smaller in the coming years.

We realize that our data systems are not well connected to decision making, which means there is little incentive or mandate to publish data in OBIS. It would be very powerful if governments would start making management decisions based on OBIS. So why is this not happening? The work concluded that we have not yet managed to develop a system that systematically monitors the change of biodiversity. There are tons of research papers predicting the effects of climate change on the distribution of species but detecting and reporting the change is still in its infancy and we remain mostly at the level of biodiversity description as illustrated in the many international and UN led assessment processes to which OBIS actively contributes. But then the recent Global Coral Reef Status report did not use OBIS and they could not release the underlying data either. Things might change under the CBD post-2020 Global Biodiversity Framework, where several new marine biodiversity indicators and targets are proposed, and which countries will need to report upon. However, for OBIS to play a role, it will be very important to build trust and provide indicators on completeness and reliability. Develop targeted information products based on decision-grade criteria and with an indication of fit for purpose. Co-design/co-development workshops as part of the UN Ocean Decade programmes could help us in developing policy relevant statistics. But then there is a question of where does the role of OBIS start and end in the value chain from observation to decision making?

Our core mandate is still making data FAIR and developing that capacity in our community, and we need to develop partnerships to make the connections with the other ends of the spectrum. In terms of findability and accessibility, since we run on a new technology stack, OBIS has a very powerful portal to map, filter and download data. We have an API which powers third party applications that are directly connected to our system, and many scientists are running analysis on OBIS data on their desktop using the *robis* R package. There is a lot of work to do in making the data in OBIS interoperable. A lot of that work means mapping the measurement types and units with controlled vocabularies. An OBIS task team is looking into this. We perform 21 QC checks on every record, and every record receives QC flags, which provides a measure of accuracy. We provide tools and training resources and in collaboration with the OceanTeacher

Global Academy have organized 24 in person training courses. Our goal is to publish at least 50 short online tutorials by the end of the year. So, nobody will ever say again that publishing data in OBIS is too difficult.

The stakeholders recommended that to survive, OBIS needs to expand its scope, especially with novel technologies like imaging and we only just started dealing with genetic data. We will also need to think about disease vectors or pollution and other stressors to biodiversity data like underwater noise, acidification, oxygen reduction etc. In 2017, OBIS introduced a new Extension to the Darwin Core standard, called the extended Measurement or Fact Extension. This has allowed OBIS to capture biotic and abiotic measurements as well as document all the sampling facts. The possibilities are endless, and we are really at the beginning of a new era for OBIS. We already added 100 million measurements last year. However, the reputation that OBIS is only about presence data is very sticky. We have always captured information on abundance and biomass, and are now adding data from genetic sequences, tracking as well as habitat cover. The collaboration with the Global Ocean Observing System (GOOS) and the Marine Biodiversity Observation Network (MBON) is key to developing the data specifications of the Essential Ocean Variables. The assessment stated that communication and outreach is still too weak in OBIS, despite that we are working on building and engaging with our community through our Slack Channels, twitter, Facebook and YouTube. We are also developing forces in the field, like setting up an early detection system of marine invasive species in Fiji using environmental DNA. The data processing and bioinformatics pipeline is part of OBIS. And we are now expanding the eDNA story through UNESCO expeditions in marine World Heritage sites.

The assessment identified five blockers for making progress and removing those would be big game changers. These are:

1. The lack of a strong global agreement to make our publicly funded biodiversity research and monitoring data public.
2. The need for more standardization in our protocols. Everyone is doing things their way, and it will be very difficult to change habits. But as long as we do not measure biodiversity in a coordinated way, we will always compare apples with pears.
3. We have not yet managed to identify and develop clear and effective pathways to reach and engage with our stakeholders. We need to grow up and move from scientific experiments to a mature operational observation and forecasting service. Like a met office for weather, we need an office for biodiversity prediction.
4. Too much competition - too little cooperation. Every new short-term grant is used to develop a new system for which there is no money to maintain it further, while the existing systems struggle to survive. We need to start pooling resources and work together in a much more agile way.
5. Lack of adequate funding. Governments need to become serious in funding the OBIS secretariat and the national OBIS nodes. OBIS is as strong or as weak as its network of OBIS nodes and most of them do not have any structural funding.

The SG-OBIS thanked Seascape Belgium for their comprehensive report which includes important recommendations for OBIS. The SG-OBIS asked the various OBIS task and project teams to investigate these recommendations, including the results from the surveys, and use this information in developing their work plans. The SG-OBIS also asked the secretariat to express gratitude to the interviewees and report back to them on how OBIS plans to implement the recommendations brought forward by the stakeholders.

2.4.2. OBIS Taxonomy Task Team

Ms. Leen Vandepitte (EurOBIS node manager and chair of the OBIS Taxonomy Task Team) reported on this agenda item. Last Summer (July-Aug 2021) a summer job student was funded by IODE and guided by the WoRMS Data Management Team (DMT) at VLIZ, to evaluate the non-matching names from OBIS and - where possible - improve the mapping with WoRMS. Of the original list of almost 40,000 non-matching names, about 16% were annotated by the student (=6,402 names).

Summary stats of the annotated names:

- 3,489 names matched with the World Register of Marine Species (WoRMS)
- 2,034 names unable to match with WoRMS, for a variety of reasons (ambiguous, fossil, terrestrial, no scientific name, …)
- 879 to be further looked at by the WoRMS DMT (=missing from WoRMS, probably valid name, to verify with editor(s))

For the names that need further investigation by the DMT and the remaining ±33,000 names that were not looked at, will be reviewed by a new student during the summer of 2022. Although it needs to be realized that new non-matching names are continuously added to the list, and the DMT does not have the capacity to dedicate the needed time to complete this task.

The Taxonomy Task Team is again asking all OBIS nodes to consider matching the available taxon names to WoRMS a priority, and to contact the WoRMS DMT in case of doubts or missing names through info@marinespecies.org. It is sometimes easier to deal with non-matching names through ad-hoc and occasional emails instead of large batches once a year. Meanwhile, a more user-friendly tool is in development to deal with the mapping or annotation of non-matching names, which envisions to improve the progress speed on this task.

Mrs. Leen Vandepitte also reported that a tool is being developed by the VLIZ IT-Division to make the taxon matching and annotation process easier and more straightforward. This tool will be ready before our summer 2022, which means that the student will be able to make use of this.

During the annual EMODNet Biology meeting in May 2022, a question was raised as to why OBIS is removing records from species that are reported as freshwater only in WoRMS, while

they do occur in ocean areas (e.g., the Baltic). It was suggested that the Taxonomy Task Team investigates those species and check with the taxonomic editors if these species should also receive the brackish water flag.

An additional comment from the EMODnet Biology Annual meeting concerned the represented information on data quality on node level, specifically the category ‘taxonomic issues - no accepted name available’. It is believed that this can raise confusion with both the node managers and the users: the fact that no accepted name is available has in essence nothing to do with the core quality of the provided data - the mapping with WoRMS has been done - but is solely a taxonomic issue, to be looked at the level of WoRMS and its editors. The Taxonomy Task Team would therefore advise that this category is either dropped from the reporting overview, or it is explained in detail what this means exactly.

Mr. Provoost (OBIS data manager) responded that the flag “no accepted name available” means that the name is unaccepted in WoRMS and does not link to an accepted name, which means OBIS cannot link it to a valid name in the taxonomic tree.

Mr. Ward Appeltans said that this flag could indicate an issue in WoRMS but can also provide valuable information for data providers and users, pointing that the name is no longer in use and cannot be resolved to a single unambiguous and currently valid name (e.g., paraphyletic groups).

The SG-OBIS requested the OBIS secretariat to provide clear definitions of the taxonomic QC flags and provide a list of “no accepted names available” to the WoRMS data management team.

2.4.3. OBIS Capacity Development Task Team

Ms. Carolina Peralta, chair of the OBIS Capacity Development Task Team, introduced this agenda item. She reported that the task team held online meetings to update the OBIS nodes on the QC tools and the Taxon Matching process in collaboration with the Communication and Outreach Task Team. The CDTT has contributed to the organization and implementation of OBIS training courses and is working together with Elizabeth Lawrence (OBIS training officer) for the creation of new training materials, manuals and tutorials. The outcomes of each activity are listed below.

We organized two Task Team meetings (25 January 2022 and 23 February 2022) for all the OBIS nodes in which the following topics were discussed to find solutions to specific blockers: (i) Taxonomic quality control tools and (ii) Use of the LifeWatch & EMODnet Biology QC tool. Between 15 and 17 participants attended the meetings.

A plan outline, which involves training topics assessments, a plan of action for topics and a tutorial framework backbone, has been developed.

In addition, two OBIS Training courses were held:

- BID-GBIF project for building capacity among researchers and practitioners in Venezuela to secure data mobilization (October 2021). Training and data preparation were possible with the support of the Caribbean OBIS node and the GBIF-Caribe Sur funding, resulting in 72 new datasets with around 2,000 occurrences added to OBIS. The project is still running due August 2022.
- OTGA-INVEMAR training course[5] with 35 participants from Mexico to Argentina. (September 2021). Two new datasets are being fixed by the data providers in and will be published soon through the Caribbean OBIS and OBIS Argentina Nodes. New and updated training materials were generated in Spanish language, mainly for quality control processes using R.

The SG-OBIS welcomed the support from OTGA in hosting OBIS training courses.

The SG-OBIS felt it was important that OBIS training courses organized by OBIS nodes access and use the master copy (updated version) of OBIS training resources (under development by the new OBIS training officer) and requested that in the future OBIS nodes actively contribute to further developing and maintaining this training material, including translating them into other languages.

2.4.4. OBIS Communication and Outreach Task Team

Mr. John Nicholls, chair of the OBIS Communication and Outreach Task Team, reported that the task team implemented and participated in online meetings in conjunction with the Capacity Development Task Team (CDTT) to update the OBIS nodes on the QC tools and the Taxon Matching process in collaboration. The COTT will continue to contribute and engage in the organization and implementation of OBIS training courses for the creation of new training materials, manuals, and tutorials.

In addition, a meeting was held on 17 February 2022 to encourage OBIS nodes who use historical data to engage and formulate a means of combined working that may enable common working practices. MedOBIS and OPI-OBIS nodes were involved and discussed the latest developments in the Chronometrics aspects of the Darwin Core schema as approved by TDWG. Recent developments could enable long term time series (i.e., BCE) data to be correctly entered into the eventCore series. Adoption of the Chronometrics aspect of the DwC schema is seen as a priority.

The OBIS Secretariat encouraged all OBIS nodes to sign up to the Slack channels, sign up to the OBIS task and project teams and make sure the email address used for official communication is whitelisted.

[5] https://classroom.oceanteacher.org/enrol/index.php?id=714

The OBIS secretariat also requested all OBIS nodes to contribute to external communication by e.g., contributing news items to our OBIS website and OBIS newsletter, social media channels, and by promoting your OBIS node via your institutional websites.

2.5. OBIS Ad-hoc Project Teams

2.5.1. OBIS Data Quality Control Project Team

Ms. Yi-Ming Gan, chair of the OBIS Data Quality Control Project Team, introduced this agenda item. She reported that since she took over as chairperson in June 2021, the task team started having monthly meetings. So far, 11 monthly meetings were held. The meetings are open for all OBIS nodes and reports are shared with the steering group. The achievements made by the task team are listed below:

- **Submitted 4 use cases for the development of GBIF's new data model**
  The most common standard used for biodiversity data sharing in GBIF and OBIS is Darwin Core. Darwin Core Archive is the format most often used by OBIS nodes to publish biodiversity data with the Integrated Publishing Toolkit (IPT). However, the simplicity of publishing using Darwin Core (star schema) imposes various limitations when it comes to shaping data from diverse sources. GBIF and TDWG have been collecting case studies since 2021 in order to expand the current data model. In the effort to enhance collaboration with TDWG and GBIF, the task team consulted various OBIS nodes as well as GBIF nodes (GBIF Norway) to collect marine data related use cases for this purpose. Four use cases have been submitted:
    - The Autonomous Reef Monitoring Structures (ARMS) MBON use case provided by EurOBIS,
    - Two environmental and community measurements use cases provided by GBIF Norway (featuring the Nansen Legacy project) and AntOBIS and
    - Animal tracking data use case from AntOBIS.

- **Organized 2 data laundry events - actions taken on over 20 datasets in 2021 and 34 datasets in 2022**
  Two data laundry events were organized by the task team with support from the OBIS secretariat: 8-12 November 2021 and 20-22 April 2022. The goal of the data laundry event is for OBIS nodes to resolve the quality issues of datasets in OBIS. Nine OBIS nodes investigated datasets from their nodes in each of these events. Four sessions of data laundry meetings were organized in each event where node managers discussed data quality issues with the task team. In 2021, actions were taken on more than 20 datasets while 34 datasets were being investigated in 2022. Discussions of all the issues

and solutions provided were recorded in the data laundry report. The report is then shared with the OBIS steering group. During these events, the task team has identified several needs from OBIS nodes: (i) Guidance is needed for data which has limited information on required fields for OBIS, (ii) documentation of OBIS pipelines can be improved and others. The discussions are shared with other task teams to improve training materials that will be developed as well as the content of the OBIS manual. The task team would like to thank all of the OBIS nodes who contributed to the event.

- **Monthly node presentation to improve data quality process and knowledge exchange**
  From April 2022 onwards, each monthly meeting will start with one OBIS node presenting about their data cleaning process followed by a discussion of data quality issues encountered. The goal of this initiative is to foster knowledge exchange, to identify areas that need assistance, to streamline best practices and data quality processes between nodes. All discussions are recorded and shared with the steering group.

- **User survey drafted to collect user feedback to guide the development of QC protocols**
  To close the gap between data users and OBIS, a survey is drafted to collect feedback that would help improve the quality control currently implemented for datasets in OBIS and to guide the development of quality control measures and protocols including the fitness for use profiles. The survey is available in Annex 3 and should be approved by the steering group.

Challenges encountered by the task team
We are extremely grateful for all the contributions provided by various OBIS nodes and OBIS secretariat thus far. However, several challenges were encountered by the task team:

- **Lack of user feedback.** The goals of the task team are to develop the fitness for use profiles for OBIS data and to improve the OBIS data quality pipeline. Since we lack the information of which profiles are needed from the users and how the data is being used, it is difficult to steer the direction and the development. Hence, we proposed a user survey to close this gap.
- **Bias in feedback and interactions from OBIS nodes.** We noticed that there is a bias in the nodes that are actively participating in the task team activities. The reasons for inactivity of certain nodes are not known, but the task team would like to encourage the nodes to reach out so that support can be provided to them. We hope all nodes will participate in the monthly meetings and make a presentation on their QC procedures.
- **Technology restrictions in certain countries**. We were notified that due to restrictions from certain countries, they could not participate in the event hosted by us due to the technology we used to host the event (e.g., Google).

The SG-OBIS expressed gratitude to Ms. Yi-Ming Gan for effectively and passionately co-chairing the OBIS data QC project team.

The SG-OBIS reviewed and approved the user survey (annex 3 to this report).

2.5.2. OBIS Vocabulary Infrastructure Project Team

Ms. Elizabeth Lawrence (OBIS training officer) reported on the progress of the Vocabulary Infrastructure team, noting that the VIP chair Mrs. Lenore Bajona left OTN and can no longer chair the team. The team has had monthly meetings leading up to the end of 2021 since the meeting in May, with a total of six meetings. The team has continued work on producing guidelines for mapping the most commonly used Measurement or Fact terms in OBIS with the preferred BODC vocabulary term. They have generated a draft of a decision tree to assist data providers, which is pending feedback incorporation from the whole vocabulary team before finalization.

The team also developed a new Datasets report, derived from the MoF filtering tool (https://mof.obis.org/), which details the currently used measurementType and associated measurementTypeIDs for a given dataset, if measurementType was used. Guidelines on how to use the report filtering tool were outlined in the OBIS manual https://manual.obis.org/mofreports/. The team also worked on identifying datasets containing measurementOrFacts related to biomass/abundance or length terminology to identify ambiguous terminology and common terms missing measurementTypeIDs. This will aid in the potential creation of new BODC vocabulary. New terms or issues can be requested and discussed on the BODC GitHub repository for OBIS https://github.com/nvs-vocabs/OBISVocabs/issues.

The team shared their intent to run a very important Vocabulary Laundry event in July 2022, and strongly encouraged all OBIS nodes to attend. The event will be similar to Data Laundry events held by the Data Quality task team, where nodes will bring one dataset that has missing, invalid, or uncertain measurementTypeIDs related to length/diameter/width parameters. The team would then walk participants through the process of selecting appropriate IDs, or how to request the creation of a new term when appropriate. Feedback from this event will be critical in developing training resources related to vocabulary guidelines and the decision tree.

In writing before the meeting, Gwen Moncoiffe (BODC) requested a discussion on ways to fund or support the vocabulary team as they are getting stretched by demand and greatly need assistance.

The SG-OBIS thanked Mrs. Lenore Bajona for chairing the OBIS vocab team until the end of 2021 and requested members from the network to express interest in chairing this important team and to complete the remaining tasks with support from the OBIS secretariat.

2.5.3. OBIS Genetic Data Project Team

Ms. Saara Suominen (OBIS Scientific Officer, Chair of the OBIS Gen PT) reported on the developments around genetic data in OBIS throughout the last reporting period. The DNA derived data DwC extension for adding genetic data has been fully integrated into OBIS and OBIS now holds 23 datasets with a total of 16,000,000 records. This illustrates the number of records is to be expected to come from DNA derived data in the future, as they include very large datasets.

The first DNA dataset to OBIS was added by Diana LaScala-Gruenewald, consisting of 18S data collected by the team of Francisco Chavez and Kathleen Pitz in MBARI. The dataset "18S Monterey Bay Time Series: an eDNA data set from Monterey Bay, California, including years 2006, 2013 - 2016" holds approximately 65,000 records of eukaryotic species. All code used for the formatting of the data has been provided by LaScala-Gruenewald as an OBIS DNA data use case (https://github.com/iobis/dataset-edna). An OBIS webinar was held on 28 October 2021 (https://obis.org/2021/10/13/gendatawebinar/) introducing OBIS integration of the DNA derived data extensions, its use and access to the data and was attended by >100 participants. In addition, the use case was introduced, and some challenges related to its formatting to DwC were discussed. The webinar can be watched here[6].

OBIS is in contact with GBIF for the future developments of adding DNA-derived data. A paragraph has been provided on OBIS to the Publishing DNA-derived data through biodiversity data platforms. This text will be added to the next version of the guide. The main difference to genetic data in GBIF, is that OBIS has kept the principle of one taxonomic backbone: the WoRMS database. By doing this OBIS strives to keep the species names comparable to traditional datasets and scientifically reliable. Meanwhile a short paragraph on OBIS was included in a publication titled "Introducing guidelines for publishing DNA-derived occurrence data through biodiversity data platforms" by R. Henrik Nilsson et al., now submitted, which will act as a published anchor for the continuously evolving guide.

Furthermore, the PacMAN bioinformatic pipeline has been developed, so that it now includes steps for further taxonomic assignments of unknown sequences with BLAST. The pipeline will be further developed with the eDNA expeditions project to include analysis of multiple barcodes. The output of the pipeline is data formatted to the Darwin core archive structure, and therefore could be useful for the wider OBIS community. In the future, the pipeline could become a general-purpose pipeline available for the analysis of raw sequence data for the direct addition to OBIS. We welcome any feedback, development, or wishes for the further development of this pipeline.

As most of the DNA datasets now in OBIS are marine microbial datasets, it is important that the basis of how microbial taxonomy is recorded in OBIS is improved. There are plans to discuss this together with the WoRMS team. In addition, the general plans for the more distant future

[6] https://www.youtube.com/watch?v=KKh_Hd8zybs

include enabling searches based on sequences in OBIS, and the regular updating of taxonomic assignments as reference databases develop. These future developments are possible thanks to funding from the Richard Lounsbery Foundation.

The SG-OBIS thanked Mrs. Saara Suominen for chairing and successfully completing the tasks under the genetic data project team. Further developments and support related to genetic data can now happen under the respective long-standing OBIS task teams.

2.5.4. OBIS UN Ocean Decade Project Team

Mr. Ward Appeltans reminded the SG that they requested the OBIS Decade project team to develop and submit a project proposal for an OBIS Decade Project to the Decade coordination team and that the proposal should include:

- A vision and roadmap on what OBIS envisions to become by the end of the decade,
- How OBIS should be transformed to develop a more sustainable model,
- Explain the value proposition of OBIS to the various Decade actions and Decade challenges, by building on its strengths, its world-wide network and established community of practice.

This will also require a statement on the resource requirements vs the current capacity to meet the needs of the Ocean Decade including the needs for support from OBIS to the various Decade actions.

Mr. Ward Appeltans reported that this project team has not met yet. However, the results from the stakeholder assessment does form a good basis to start developing a proposal and suggested that we submit a proposal targeting the call for Decade actions related to data (the call will be open in October 2022 and close around January 2023). This will require several meetings (online and possibly in-person). He also asked the SG members to reconfirm their interest in contributing to the writing process.

The SG-OBIS reiterated the importance of submitting a UN Ocean Decade project proposal and recommended to include information on the connections with existing decade actions and how OBIS engage and interact with those and provide added value in the ocean knowledge value chain from data management to providing information products and services.

The following SG members expressed interest to contribute to the Decade project proposal writing: Martha Vides, John Nicholls, Luciana Genio, Hanieh Saeedi, Ward Appeltans, Leen Vandepitte, Kats Fujikura, Anton Van de Putte, Dan Lear.

3. Future Activities

3.1. Data flows between GBIF and OBIS

Mr. Ward Appeltans introduced this agenda item. Based on a (preliminary) analysis of marine data in GBIF (http://iobis.github.io/gbif-marine/), we have found a total of 15,364 datasets containing marine species, for a total of 223,870,046 marine species records. This means there is many times more marine data in GBIF than in OBIS. In addition, it is cumbersome for our users that they should also download data from GBIF and remove duplicates. In an ideal world, all data is only published once at source level, and harvested simultaneously by multiple data aggregators. However, data flows are more complex and need to consider the various roles organizations play at multiple levels.

At the previous OBIS steering group meeting, the OBIS secretariat reported on the survey results related to the collaboration between OBIS nodes and GBIF nodes and OBIS nodes were asked to select options for data flows from GBIF to OBIS. 25 OBIS nodes responded and there was general agreement that (i) marine datasets published to GBIF should also flow to OBIS (note that most OBIS nodes are also publishing directly to GBIF, see overview here: https://r.obis.org/gbif), (ii) that datasets should be harvested directly from the source IPTs, and (iii) that we need to provide training to GBIF nodes/publishers in following OBIS best practices (e.g., WoRMS LSIDs and eMoF extension). Three OBIS nodes said that these (marine) GBIF publishers should become OBIS nodes first and seven OBIS nodes said that marine datasets in GBIF should be endorsed by an OBIS node before ingesting these data into OBIS.

One of the issues was raised regarding potential duplication of data in OBIS and GBIF. To mitigate this, the OBIS data manager developed a script (https://iobis.github.io/notebook-duplicates/), which should help the OBIS nodes to identify data duplication.

Upon request from several OBIS nodes to better represent the OBIS network (https://www.gbif.org/network/2b7c7b4f-4d4f-40d3-94de-c28b6fa054a6) on the GBIF portal , GBIF has released IPT version 2.5.2 (on 30 November 2021) which includes the functionality to link your datasets to networks like OBIS. These datasets are then automatically added to our network page on the GBIF website. Currently 2,074 datasets representing 38 million records are listed as belonging to the OBIS network. This is less than half of the data currently in OBIS.

Based on the GBIF API, the OBIS secretariat has developed a script to list marine datasets that have the OBIS network tag, but are not yet in OBIS, as issues to this GitHub repository (https://github.com/iobis/obis-network-datasets). The secretariat suggested that an OBIS node should endorse this dataset and once endorsed, the OBIS secretariat will harvest the dataset directly from the source IPT and add it to the respective OBIS node page.

In order to strive to have the same and highest quality of data in both GBIF and OBIS, it is advised that the same and best version of each dataset (i.e., the master copy) should flow to GBIF and OBIS. This means that good communication is needed between OBIS nodes and GBIF publishers. For example, if a European marine dataset is published directly to GBIF, but EurOBIS holds a better version (richer data, higher quality), then there are two options: (i) the GBIF publisher updates the dataset and publishes to GBIF and OBIS, or (ii) EurOBIS becomes the primary publisher and publishes the dataset to OBIS and GBIF. In the latter case, the GBIF publisher should not register the dataset to GBIF.

The new functionality to indicate OBIS as the network in the IPT replaces the recommendation to add "marine, harvested by iOBIS" in the EML field "additional information". This was used by OBIS nodes who also manage non-marine datasets.

The SG-OBIS stressed the importance of being recognized as the marine network in GBIF as well as having all marine biodiversity data published in both GBIF and OBIS.

The SG-OBIS requested all OBIS nodes to upgrade their IPT to the latest version (contact the OBIS secretariat if support is needed) and indicate the OBIS network in all their datasets before the next SG-OBIS session.

EurOBIS reported that by early June 2022 all IPTs hosted at VLIZ will be upgraded to the latest version.

The SG-OBIS agreed that the OBIS secretariat should harvest marine datasets directly from the GBIF source IPTs following endorsement of the dataset by an OBIS node. The OBIS secretariat will then add the dataset to the endorsing OBIS node page. The OBIS node is in close contact with the GBIF publisher in case quality issues need to be resolved. The OBIS secretariat identifies which OBIS node(s) would be best placed to endorse the dataset. The OBIS node(s) should respond within one month to confirm it will look into the dataset and provide a recommendation within two months. If no response is received, another node will be identified.

In order to strive to have the same and highest quality of data in both GBIF and OBIS, the SG-OBIS recommends that the same and best version of each dataset (i.e., the master copy) should flow to GBIF and OBIS. This means that good communication is needed between OBIS nodes and GBIF publishers. For example, if a marine dataset is published directly to GBIF, but an OBIS node holds a better version (richer data, higher quality), then there are two options: (i) the GBIF publisher updates the dataset and publishes to GBIF and OBIS, or (ii) the OBIS node becomes the primary publisher and publishes the dataset to OBIS and GBIF. In the latter case, the SG-OBIS recommended that the GBIF publisher should not register the dataset to GBIF.

The SG-OBIS requested all OBIS node managers/data managers to sign up to the dedicated GitHub repository at https://github.com/iobis/obis-network-datasets.

The SG-OBIS requested the OBIS secretariat to draft a communiqué on this proposal for publishing marine data to OBIS and GBIF, for GBIF to share with their community.

3.2. Data policy, license and terms of use

Mr. Ward Appeltans introduced this agenda item. He reported that upon recommendation of IODE, the IOC established an Inter-sessional Working Group on the Revision of the IOC Oceanographic Data Exchange Policy (IWG-DATAPOLICY-I). The IWG met for the first time on 5-6 April 2022. The meeting report is available on: https://www.oceanexpert.org/document/30237.

The Group recommended developing a "general" policy with several annexes, each of which can be developed by and will target specific communities/communities of practice. These annexes will be "guidelines" to be used by the communities (as data providers). It is suggested that OBIS will provide one of these guidelines.

The IWG decided, in order to ensure the best possible involvement of the various IOC communities in the drafting of the policy, to invite all IOC programmes (represented in the IWG-DATAPOLICY) to inform their communities on the planning for an information session for IOC Member States (national focal points) to collect feedback - so they can discuss their views with their respective national focal points prior to the information session, which is planned for August/September 2022.

Based on the feedback from the Member States, the IWG will then revise the first draft of the new IOC data policy (September–November 2022) and submit the first draft to the IODE Committee at its 27th session (February/March 2023). The final draft of the newly proposed IOC data policy will be submitted for adoption to the IOC Assembly at its 32nd session (June 2023).

3.3. Proposal for establishing an OBIS Historical Data Project Team (HDPT)

Mr. John Nicholls introduced this agenda item. He said historical data impacts all aspects of OBIS. We are only able to project future pathways based on current data that are informed by what happened in the past. The OBIS platform currently houses many historical datasets that reflect activities dating back to the 14th century, but new data that is emerging needs to be integrated as well. Early Historical data (i.e., BCE period) and data from Archaeological and Paleontological sources are unlikely to be accepted into the current OBIS schema.

He proposed that an OBIS Historical Data Project Team (HDPT) could address issues that pertain primarily to these types of data. For example, the current OBIS platform does not

accommodate events that are dated in the distant past. For example, a 400 BCE data point cannot be interpreted as things stand. Chronometric Age Extension[7] is available in the Darwin Core standard with a full vocabulary for chronometric ages. However, are these fields available through GBIF or in node IPTs? How can basic elements such as eventDate be translated to incorporate Chronometric fields? Visualization of historical data is problematic in the OBIS data viewer. Any other relevant and pertinent objective that may arise.

Proposed Terms of Reference of the OBIS Historical Data Project Team

Objectives:

- Address the unique issues that confront researchers working with historical data and datasets.
- Share methodologies and experiences such as those developed by TDWG.
- Feed information back to the wider OBIS community about historical data developments.

Membership:

- Project Team Chair
- Project Team Co-Chair
- SG-OBIS members
- OBIS secretariat

Mode of operation:

- The task team would hold ad-hoc meetings based on individual requirements from OBIS nodes. A regular feedback session is proposed for bi-monthly (every two months) online meetings that should last no longer than 30 minutes. Where convenient and appropriate, break-out sessions at the regular SG-OBIS meetings may be an added feature. Meetings will focus on historical (and related) data issues with a view to developing solutions and maintaining existing data.

Deadlines:

- The issue of incorporating Chronometric data into the OBIS platform is regarded as urgent and resolution is desired by the end of 2022.
- Individual issues will occur on an ad-hoc basis and should be resolved within a mutually agreed timeframe within the task team.

Initial membership: John Nicholls (Chair) OBIS-OPI, Georgia Sarafidou (co-Chair) MedOBIS, Pieter Provoost (OBIS Sec), Elizabeth Lawrence (OBIS Sec), Leen Vandepitte (EurOBIS), Ruben Perez (EurOBIS), Yi-Ming Gan (AntOBIS), Serita van der Wal (OBIS Sec)

[7] https://rs.gbif.org/extension/dwc/ChronometricAge_2021-03-27.xml

The SG-OBIS established the OBIS historical data project team with the Terms of Reference agreed in the meeting report and requested the team to report on its work at the next SG session.

3.4. Proposal for establishing an OBIS Grand Unified Data Model Project Team (GUMPT)

Mrs. Abby Benson (OBIS-USA) reported that GBIF is currently exploring a new data model[8] for a unified common model capable of supporting expanded data-publishing capabilities. As noted previously, OBIS has provided textual content to the use cases such as the environmental and community measurements use case. This model represents an opportunity for OBIS to provide direction and guidance into how the model can best represent OBIS community data and an opportunity for OBIS to prepare for this new direction.

Proposed Terms of Reference of the OBIS Grand Unified Data Model Project Team (GUMPT)

The project team will explore early adoption and testing of the new data model to assess how well it works for OBIS community data, noting and sharing back to the data model team any problems encountered, suggestions for improvements, and feasibility of uptake.

Tasks:

1. Select between one to five use cases that most clearly align with OBIS community data and that the project team has datasets ready to test for the use case.
    a. Identify datasets not covered yet by any of the use cases and feedback to GBIF.
2. Apply the data model to the selected datasets.
3. Document issues, suggestions, and feasibility for each use case.
4. Report these to SG-OBIS and the data model project team.
5. Explore the feasibility of using frictionless data packages instead of Darwin Core Archives.
6. Assess impact to OBIS data system including amount of work necessary, funding required, sources for funding if required, and recommendation on adoption.

Membership:
This project team is composed of:

- Project team chair
- Members of SG-OBIS
- OBIS secretariat
- Representative of GBIF

[8] https://www.gbif.org/composition/HjlTr705BctcnaZkcjRJq/data-model

- Other external experts as needed

The project team will work through online meetings and report back to the OBIS Steering Group at the next session.

Initial membership: Abby Benson (Chair), Yi-Ming Gan (co-chair, AntOBIS), Pieter Provoost (OBIS Sec), Maria Cornthwaite (OBIS Canada), Ward Appeltans (OBIS sec), John Nicholls (OBIS-OPI), Saara Suominen (OBIS Sec), Martha Vides (OBIS- Co), Elizabeth Lawrence (OBIS Sec), Serita van der Wal (OBIS Sec), Katherine Tattersall (OBIS-AU), Sachit Rajbhandari (OBIS-AU), Ruben Perez Perez (EurOBIS)

The SG-OBIS established the OBIS Grand Unified Data Model Project Team (GUMPT) with the Terms of Reference agreed in the meeting report and requested the team to report on its work at the next SG session.

4. Workplan 2022

Action items	Due date	Cost (indicate in-kind contributions + requests from IODE)
OBIS Executive Committee (OBIS-EC)		
Co-chairs representing OBIS at IODE and IOC Governing Board meetings	TBD	Online. If in person attendance is required, then their institution needs to

		cover the costs
Regular (3-monthly) EC-OBIS meetings, to update on progress.	TBD	online
OBIS Secretariat		
Preparations for SG-OBIS-11	16-19 May 2023	
Review results from user survey and SeaScape survey and provide recommendations to the next SG meeting.	Before the end of 2022	
Update the task team and project team web pages including the memberships	June 2022	
Update documentation on QC flags (e.g., taxonomic annotations)	June 2022	
Represent OBIS at meetings of MBON, GOOS BioEco, MarineLife2030, CBD, BBNJ	ongoing	Mostly online meetings. Travel costs will need to be borne by organizers if no resources at IOC/IODE are available.
Submit activity reports to IODE Committee, IODE MG, Donors	ongoing	Covered by regular programme and project budgets
Support to OBIS EC, task teams and project teams in organizing regular meetings	ongoing	
Helpdesk support to OBIS nodes	ongoing	
Official launch of the GOOS BioEco metadata portal v1.0	30 June 2022	Part-time Serita (covered by GOOS)
Clearly distinguish between the GOOS BioEco metadata portal and the OBIS portal i.e., on portal web pages, presentations, networking and all other communications	ongoing	
Complete OBIS manual ENV-DATA and DNA derived data examples based on actual datasets in OBIS or fictional datasets		Part-time Serita (covered by OBIS/Pegasus funds)

created in collaboration with panel members and community feedback		
Maintain and update OBIS main page use cases, posts, and news items. Reach out to community for interesting posts on workshops, events and meetings held involving OBIS	Continuous	Part-time Serita (covered by OBIS/Pegasus funds)
Continue work on the external projects PacMAN and eDNA expeditions and exploring further opportunities for projects that will promote OBIS as a data source for monitoring/management	Ongoing	Saara & Pieter (covered by PacMAN and eDNA expeditions)
Develop the bioinformatics pipeline and data management workflows for eDNA projects as well as training for their use	November 2022	Saara & Pieter (covered by PacMAN and eDNA expeditions)
OBIS Nodes		
All OBIS nodes should sign up to the Slack channels, sign up to the OBIS task and project teams and make sure the email address used for official communication is whitelisted.	Before end of June 2022	
All OBIS nodes should contribute to external communication by e.g., contributing news items to our OBIS website and OBIS newsletter, social media channels, and promote your OBIS node via your institutional websites.	Ongoing	
Participate in SG-OBIS-11 and secure funding to cover travel and accommodation	16-19 May 2023	
OBIS Strategic Advisory Task Team (SATT)		
No tasks identified		
OBIS Taxonomy Task Team (TTT) - Chair Leen Vandepitte		
Look into freshwater only species that are	December 2022	

dropped by OBIS while they do occur in ocean areas, and check with the taxonomic editors if these species should also receive the brackish water flag.		
Continuation of the taxon matching exercise	Continuous	Support of OBIS team in updating the matches and annotations in the OBIS database
OBIS Capacity Development Task Team (CDTT) - Chair Carolina Peralta		
Develop core training resources (tutorials, notebooks, videos)	March 2023	Elizabeth - full-time (Norad funds)
Support any OBIS Training course to be held during 2022 (Online or in person).	Continuous	For in person training, the travel costs of the instructors will need to be covered by organizers if no resources at IOC/IODE or OTGA are available.
Continue with the regular webinars or short online workshops to train the OBIS nodes and/or OBIS data providers on the data processing and management. This aims to integrate other OBIS Project or Task Teams activities (e. g. QC Project Team) to the OBIS Capacity Building goals.	Continuous	0
Provide help desk support to OBIS nodes through our various communication channels (e.g., GitHub and Slack).	Continuous	0
Update the OBIS CDTT page (https://obis.org/about/trainingtt/): enhance the structure and content. Update the OBIS Training Meetings section, add some pics of the last webinars or monthly meetings, add links to the OBIS YouTube videos, add links to Slack, OTGA, OceanExpert Event Calendar or other communication channels	September 2022	0

for training news and support. Add an E-Learning section with some OBIS literacy supporting materials (e. g. presentations, tutorials, videos, demos, webinars, etc.)		
OBIS Communications and Outreach Task Team (COTT) - Chair John Nicholls		
Actively engage with Nodes and SG members to ensure they are receiving timely communications from OBIS.	Ongoing	0
Check with individual nodes to ensure that their web presence adequately reflects their node status.	Ongoing	0
Actively engage with other Task Teams and Project Teams to work towards integration, shared resources, and interoperability communication channels.	Ongoing	0
Actively encourage SG members to participate in the news section of the OBIS website, OBIS Newsletter, Social Media Channels, and any other forms of promotion and outreach.	Ongoing	0
Liaise with CDTT and DQPT, and any other Task Teams and/or Project Teams to establish cooperation and shared working environments.	Ongoing	0
OBIS Data Quality Assessment and Enhancement Project Team - Chair Yi-Ming Gan		
Publish the OBIS user survey on various pages and send out to known OBIS users (e.g., publication authors).	Before end of June 2022	
Provide recommendations for issues mentioned in data laundry reports and monthly node presentations.	Mid 2023	
Respond to GitHub issues that are related to issues raised in data laundry reports and monthly node presentations based on	Mid 2023	

recommendations above.		
Review tests and assertions from TDWG and OBIS QC pipelines for the fields related to issues raised in data laundry reports and monthly node presentations.	Mid 2023	
Liaise with CDTT and COTT to assist in developing and identifying events, issues and training opportunities.	Mid 2023	
Review quality issues of OBIS datasets from GBIF and explore solutions.	Mid 2023	
OBIS Vocabulary Infrastructure Project Team (VIP) - no Chair, secretariat support from Elizabeth Lawrence		
Vocab laundry event (online)	July 2022	online
Develop guidelines (e.g., decision tree) for mapping most commonly used MoF terms with preferred BODC vocab. Guidelines to be informed by OBIS node feedback and participation at vocab laundry event(s)	Before end of 2022	
OBIS Project Team on the UN Ocean Decade – no Chair, secretariat support from Ward Appeltans		
Develop and submit OBIS Ocean Decade project proposal	Before end of 2022	
OBIS Decade project proposal writing workshop	October 2022	USD 15,000
OBIS Historical Data Project Team (HDPT) - Chair John Nicholls & Georgia Sarafidou		
Work towards incorporating Chronometric data into the OBIS platform (with Pieter)	Before end of 2022	0
Individual issues will occur on an ad-hoc basis and should be resolved within a mutually agreed timeframe within the task team (e.g., best practice for using the Chrometrics DwC schema).	Ongoing	0
OBIS Grand Unified Data Model Project Team (GUMPT) - Chair Abby Benson & Yi-Ming		

Gan		
Select between one to five use cases that most clearly align with OBIS community data and that the project team has datasets ready to test for the use case.	October 2022	
Identify datasets not covered yet by any of the use cases and feedback to GBIF.	October 2022	
Apply the data model to the selected datasets.	March 2023	
Document issues, suggestions, and feasibility for each use case.	March 2023	
Report these to SG-OBIS and the data model project team.	April 2023	
Explore the feasibility of using frictionless data packages instead of Darwin Core Archives.	June 2023	
Assess impact to OBIS data system including amount of work necessary, funding required, sources for funding if required, and recommendation on adoption.	August 2023	

5. Adoption of Report

The SG-OBIS adopted the report with its decisions, recommendations, and work plan.

6. Date and place of next session

The 11th session of the SG-OBIS will take place on 16-19 May 2023 in a hybrid format. The meeting will take place at OBIS secretariat in Oostende (Belgium) unless offers are received before the end of September 2022. Offers will be reviewed by the OBIS secretariat and co-chairs.

7. Any other business

Mrs. Martha Vides (OBIS Colombia) has finished her first term as OBIS co-chair (appointed at SG-OBIS-8 in November 2019). OBIS typically has two co-chairs, and co-chairs serve at least one term (two sessions), and they can be extended for a second term. We are requesting agreement from the steering group to extend Mrs. Vides for another term.

The SG-OBIS greatly welcomed the offer from Mrs. Martha Vides to continue another term as OBIS Co-Chair.

8. Closing

The 10th session of the IODE Steering Group for OBIS concluded on 20 May 2022 at 16:20.

Annex 1 Agenda

1. Opening of the session and adoption of the agenda
2. OBIS progress report
    - 2.1. OBIS Executive Committee
    - 2.2. OBIS Secretariat
    - 2.3. OBIS Nodes
    - 2.4. OBIS Task Teams
        - 2.4.1. OBIS Strategic Advisory Task Team
        - 2.4.2. OBIS Taxonomy Task Team
        - 2.4.3. OBIS Capacity Development Task Team
        - 2.4.4. OBIS Communication and Outreach Task Team
    - 2.5. OBIS Ad-hoc Project Teams
        - 2.5.1. OBIS Data Quality Control Project Team
        - 2.5.2. OBIS Vocabulary Infrastructure Project Team
        - 2.5.3. OBIS Genetic Data Project Team
        - 2.5.4. OBIS UN Ocean Decade Project Team
3. Future Activities
    - 3.1. Data flows between GBIF and OBIS
    - 3.2. Data policy, license and terms of use
    - 3.3. Proposal for establishing an OBIS Historical Data Project Team (HDPT)
    - 3.4. Proposal for establishing an OBIS Grand Unified Data Model Project Team (GUMPT)
4. Workplan 2022
5. Adoption of Report
6. Date and place of next session
7. Any other business
8. Closing

Annex 2 - List of Participants

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Annex 3 OBIS user survey

The aim of this survey is to collect feedback on data access and data use in OBIS and to guide the development of quality control measures and protocols.

1. How regularly do you/your Institution extract data/datasets from OBIS?

Only once	
Rarely (1x/ 2x per year)	
Multiple times per month	
Monthly	
Weekly	
Multiple times per week	
Daily	
Never	

If *'Never'*, please provide a reason:

2. How easy is it to access the data that you require? (1 - difficult, 10 - easy)

1	2	3	4	5	6	7	8	9	10

   a. What were the difficulties/challenges in accessing the data, if any?

Searching for data/datasets	
Searching for the correct data type/ formats	
Navigating to where I can download data	
Other	

3. For what types of analyses do you use OBIS data (e.g., biogeography, data knowledge gap, species distribution modeling, climate studies)?

4. What fields of (meta)data are you/ your Institution most interested in (e.g. license information, biogeographic data)?
    a. Are these fields often populated with data? If not, which fields that are important for you are lacking information?

5. How do you access OBIS data?

    - Portal
    - API
    - robis R package
    - Mapper
    - Full exports
    - IPT
    - Other, please explain

6. Are there other ways you would like to be able to access OBIS data?

7. Which filtering options do you feel are important or should be added?

    - Presence/Absence
    - Functional groups
    - Quality control flags
    - Sampling protocol
    - On land (exclude)
    - Depth
    - Date
    - Time
    - Location
    - Provider country
    - Areas (EEZ, ABNJ, IHO, etc)
    - Taxon rank (e.g., species only)
    - Specific measurement
    - eDNA
    - Other - please specify:

8. Are the dataset files downloaded from OBIS immediately usable for your purposes, in the format in which it is downloaded?
   Yes/No

    a. If no, please explain how the downloaded files are handled to become usable.

b. What is your preferred file format?

9. Were there any additional quality controls, formatting, transformations, or alterations of downloaded data needed before it could be used? If yes, please explain.

10. Do you have access to tools/software programs to further analyze/process data?
    a. Yes, using software on my own desktop
    b. Yes, through shared infrastructure (virtual research environments, e.g. JupyterHub, RStudio Server)
    c. No
    d. Do not know

11. If you are using programs to further analyze/process data, are these purchased/licensed or public domain? Please specify software being utilized:
    a. Purchased:
    b. Licensed:
    c. Public Domain:

12. In your analyses using OBIS data, did you discard records that were not fit for your use? What were the reasons for discarding these data?

13. Any other remarks, suggestions or comments on the current state and implementation of quality control and data access of OBIS datasets.

Additional (optional) user information

1. Have you ever submitted datasets to the OBIS network?

2. Have you used OBIS datasets in official reports/ assessments? If so, please provide an example (optional).

3. Your Institution, if applicable:

4. Country:

5. Your sector:

Academia	
Research Center	
Government	
Private/ Commercial/ Industry	
Individual	
Military	
Non-profit NGO	

6. What is the most interesting topic/s for you and/or your Institution? (This might involve a specific field of study and/or specific taxa, or specific methods including eDNA and DNA derived data)

7. Have you ever required ocean biodiversity data from other sources/repositories to complete/supplement your study? If so, please list them: