Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IODE Steering Group for OBIS (SG-OBIS)

Ninth Session

Online
17-20 November 2020

UNESCO

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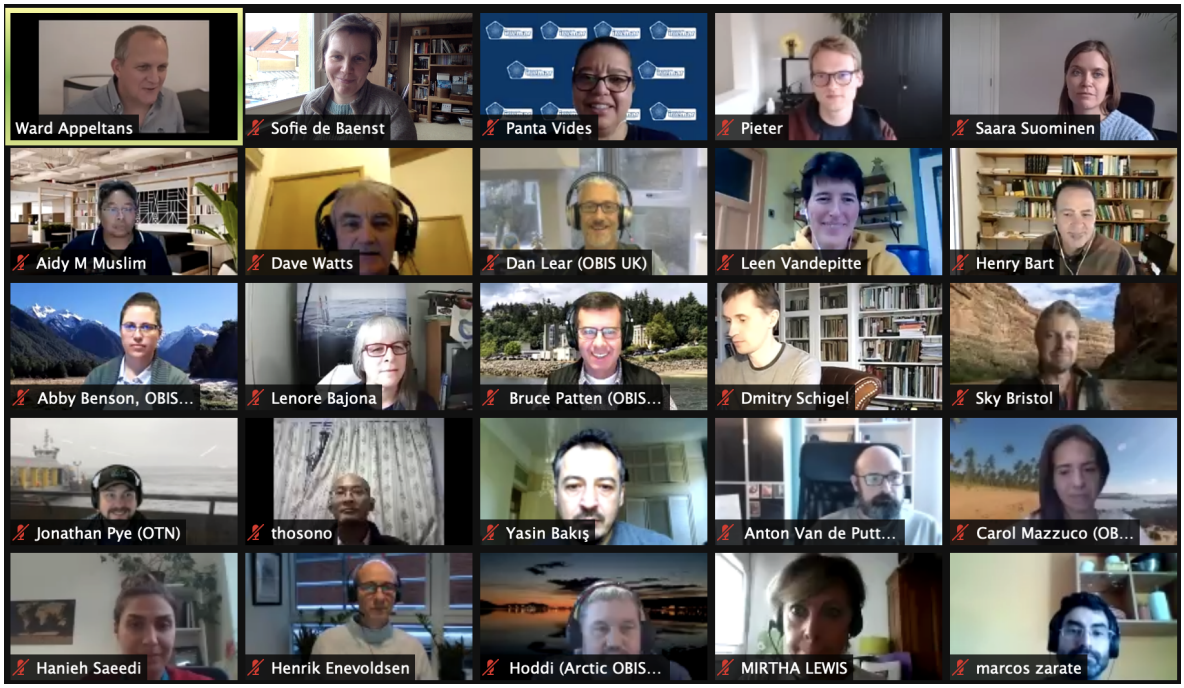

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Executive Summary

Fifty-eight participants from 25 countries participated in the 9th session of the IODE Steering Group for OBIS (SG-OBIS) on 17-20 November 2020. The session was held online. Despite the COVID19 pandemic´s impact, a record amount of new records was published in OBIS in the past year (6 million presence records from 574 new datasets). This year, we also celebrated our 20th anniversary and changed our name into the Ocean Biodiversity (replacing biogeographic) Information System.

At the 9th session we discussed and agreed on our 2021 work plan. Some of the important activities in 2021 are: the data quality control tools and QC reporting will be further developed, including a registry of recommended vocabulary terms used for measurements and sampling facts. A new project team has been established to report back on recommended data integration workflows for DNA-sequence derived records, including agreements on genetic data standards in collaboration with the Biodiversity Information Standards (TDWG) and the Genomic Standards Consortium (GSC). Agreeing on these practices for molecular biodiversity data is also essential for managing the data resulting from the Pacific Islands Marine Bioinvasions Alert Network (PacMAN) project. PacMAN is a new 3-year project led by OBIS and funded by the Flanders/UNESCO Trust Fund for the Support of UNESCO's Activities in the Field of Science (FUST) and aims to build a national early-detection/early-warning monitoring system of marine invasive species in Fiji, in close collaboration with the University of the South Pacific and local (government) stakeholders.

A new project team on the UN Decade of Ocean Science for Sustainable Development has been established to support the development of a Decade programme proposal on Observing Life in the Ocean in collaboration with MBON, GOOS BioEco and UNEP-WCMC. The OBIS Strategic Advisory Task Team will develop a roadmap and architectural plan for the next generation international OBIS infrastructure (OBIS3.0), taking into account the continuing increases in demand for new features and services (expected to increase also under the Ocean Decade), and ensure keeping up with the accelerating pace of technological developments.

OBIS will work closer with the Global Biodiversity Information Facility (GBIF) for example in areas of capacity development (developing training material on marine cases), harmonizing data publication and interaction between OBIS nodes and GBIF nodes, in data standard developments and representing the biodiversity data informatics community in international fora.

In dealing with the COVID19 pandemic the internal communication between the OBIS nodes and with the secretariat increased through weekly and monthly video conferences and using Slack as our new communications platform. One positive effect was that as this year's meeting was held online, we had the best-attended meeting so far.

The OBIS steering group is a very large group (more than 50 members) and the cost and carbon footprint of in-person meetings is considerable, so we decided to hold the next session again as an online meeting on 30 November - 3 December 2021 and organize one extra short interim SG-OBIS online meeting on 26-27 May 2021.

We heartily thanked Mr Sky Bristol who served us as our OBIS co-chair in the past 4 years and welcomed Mr Anton Van de Putte as the new incoming SG-OBIS co-chair.

1 OPENING OF THE SESSION AND ADOPTION OF THE AGENDA

SG-OBIS Co-Chairs Mrs Martha Vides and Mr Sky Bristol opened the 9th session. They welcomed all participants. It is unfortunate that we cannot meet face-to-face this year, but it is exciting to have 58 participants from 25 countries present in this online meeting. Because of the different time zones we are limiting the session to two hours each day. It will be a challenge to cover all topics and deal with all the important issues. By the end of this week, we should agree on our 2021 work plan and the directions OBIS will need to take to address the many challenges, including supporting the UN Ocean Decade and the scalability that this will require.

A round table introduction was done, especially for the new members for whom this is their first session, and we heartily welcomed them: Mr Tshikana (TK) Rasehlomi (AfrOBIS), Mr Marcos Zarate (ArOBIS), Mr Johnny Konjarla (IndOBIS) and Mrs Pauline Carmel Joy Eje (SEAOBIS).

The advantage of online meetings is that there is no restriction on the number of people per node that can participate as observers to the session. So we also welcomed Mrs Joana Beja (EurOBIS), Mr Vasilis Gerovasileiou (MedOBIS), Mr Braulio Fernández (ESPOBIS), Mr Maxime Sweetlove (AntOBIS), Mrs Maria Cornthwaite (OBIS Canada), and Mrs Melissa Nottingham (OBIS Canada).

Following our cooperation agreement with the Global Biodiversity Information Facility (GBIF) we now also invite GBIF as an observer to our Steering Group. We welcomed GBIF's Executive Secretary Mr Joe Miller, deputy director Mr Tim Hirsch and Mr Dmitry Schigel, Scientific Officer at GBIF.

Mr Frank Muller-Karger, one of the co-chairs of MBON joined us on Thursday as invited expert, when we discussed our contribution to the UN Ocean Decade.

Apologies were received from Anne Treasure (AfrOBIS), Ismaila Ndour (OBIS Senegal) and Christos Arvanitidis (MedOBIS).

Mr Sky Bristol then presented the draft agenda (Annex 1), which was adopted without changes.

2 OBIS PROGRESS REPORT

Mrs Martha Vides continued the meeting with the OBIS Progress Report. This year has been unusual for everyone due to the COVID19 pandemic and obviously this has impacted the work of the secretariat, nodes and task teams. A few weeks prior to the session, the secretariat issued a survey to the OBIS nodes. One of the questions was if they have encountered any difficulties in

operating the OBIS node during the COVID-19 pandemic. The response was: No impact: 10 nodes (37%) vs Impacted: 17 nodes (63%). No response from 4 nodes.

The nodes that were impacted reported: anxiety, reduced effective social communication, reassignment of priorities, increased number of online meetings and the difficulties linked to teleworking such as stress, lack of adequate equipment and restricted access to servers. Despite these difficulties, many activities continued and new ways of working and communicating across the node's network were set up.

In terms of numbers, 6 million presence records were added to OBIS from 574 new datasets, and 10,645 new marine species were added that were not previously in OBIS (for reference, in the previous year we added 5.4 million records from 405 new datasets and 5,170 new marine species). In total, OBIS now has 63.6 million occurrences of 137,215 species from 3,512 datasets (77.3 million total occurrences of which 11.9 million absence records and 1.9 million dropped records).

OBIS continues to support researchers. So far, not less than 106 scientific papers have cited OBIS in 2020, out of a total of over 1,500 papers. This list of papers is regularly updated (based on notifications via Google Scholar), with support from the VLIZ library, and is available at https://obis.org/library/.

In the next section, we report on the OBIS activities following the structure of the 2020 OBIS work plan.

2.1 OBIS Executive Committee

Mr Sky Bristol reported on the activities of the OBIS Executive Committee.

The OBIS-EC is authorized to proceed with sharing the draft Letter of Agreement between OBIS and GBIF with the GBIF managing body, negotiating any changes to the text, and then circulating for consideration and adoption by both OBIS and GBIF governing bodies before final signature. (Sky Bristol - lead)	The cooperation agreement with GBIF is signed and advertised broadly by OBIS and GBIF: https://obis.org/2020/09/07/obis-gbif/ and https://www.gbif.org/news/6M8YYYirX3bK57bHaIpd0U/ocean-biodiversity-information-system-and-gbif-update-and-expand-cooperation-agreement
The OBIS-EC is directed to submit an indication of full support for the global alliance for biodiversity knowledge (https://www.biodiversityinformatics.org/) and	Sky reported that he is still trying to make this happen. Understanding is that things are a bit stalled on the "GBIC" pursuit.

seek placement of the OBIS logo in the materials of the Alliance. (Sky Bristol - lead)	
The OBIS-EC is directed to plan and conduct an in-person meeting within six (6) months from SG-OBIS-8 to be held during the same week as the first meeting of the new OBIS Strategic Advisory Task Team.	Replaced by online meeting 23-25 June 2020, open to all SG members. The meeting report is available at: https://obis.org/2020/07/17/ecobis3/. The OBIS EC is also meeting online on a monthly basis (every first Wednesday) where the secretariat, task team and project team chairs have the opportunity to report on progress, issues and challenges.
The OBIS-EC is directed to finalize development of the plan and application to change the name of OBIS to the "Ocean Biodiversity Information System" and present the plan for consideration and acceptance at the IOC Executive Council meeting in 2020. (Sky Bristol - lead)	The OBIS name change was adopted by the IODE Management Group in January 2020 and the Member States are informed on the name change through Circular Letter 2801. Japan informed us that the IOC data exchange policy will need to be updated at next year's IOC Assembly to reflect the name change. The OBIS nodes are also requested to update their names and websites to reflect the change.
The OBIS-EC, with support from the OBIS Project Manager, is directed to explore, document, report, and propose action on new and innovative business sustainability models for OBIS to account for the disparity between community requirements for services and available funding from current sources. This should include an environmental scan of potential funders and outreach to determine willingness to contribute directly to the OBIS Account within the IOC-IODE or other means and documentation of the funding criteria that will need to be evaluated for OBIS eligibility.	Not implemented.

2.2 OBIS Secretariat

Mr Ward Appeltans (OBIS project manager) provided an overview of the OBIS secretariat activities during the intersessional period (November 2019-November 2020).

The OBIS secretariat participated and presented on OBIS at the following events:

- Workshop on data sharing between UN agencies as a contribution to the UN decade of ocean science for sustainable development, 20 April 2020
- GEOBON Open Science Conference, 6-9 July 2020 (online)
- ISA taxonomy workshop, 15-16 September 2020
- AtlantECO kickoff meeting, 21-25 September 2020
- EMODNet Biology annual meeting, 22-24 September 2020
- ISA DeepData workshop, 21-25 September 2020
- TDWG future of IPT session, 24 September 2020
- EMODnet Biology Transatlantic Data Products Workshop, 9 October 2020
- International data sharing workshop (for non-UN agencies), 12 October 2020
- GOBI Advisory Board meeting, 16 October 2020
- European Marine Board forum on Big Data, 23 October 2020

There are a number of recurrent meetings which the OBIS secretariat attends:

- IODE Staff meeting (weekly)
- SG-OBIS platform meetings (monthly)
- OBIS-EC meetings (monthly)
- MBON Steering Committee meetings (monthly)
- GOOS BioEco panel meetings (bi-monthly)

With regards to the BBNJ process[1], the 4th Intergovernmental Conference initially scheduled for March 2020 has been postponed. The UN has set up an intersessional online discussion forum using MS Teams. In September 2020, the IOC has published a Non-Paper on existing and potential future services of the IOC-UNESCO in support of a future ILBI for the conservation and sustainable use of biodiversity beyond national jurisdiction (BBNJ)[2]. OBIS features prominently in this document.

The Flemish Government selected our project proposal “Pacific Islands marine Bioinvasions Alert Network (PacMAN[3])” for funding under the FUST programme. The project started in September 2020, after we have established an Implementing Partnership Agreement with the University of the South Pacific (USP) in Fiji. Mr Joape Ginigini is the local project manager. We also hired Dr Saara Suominen as the scientific officer for PacMAN. In the first year, PacMAN will need to deliver a national monitoring plan for the detection and early-warning of marine invasive species for Fiji. A scientific workshop is planned between 23 November -1 December 2020 and an advisory board meeting with the local stakeholders will be held in the first quarter of 2021.

[1] https://www.un.org/bbnj
[2] https://unesdoc.unesco.org/ark:/48223/pf0000374421.locale=en
[3] https://pacman.obis.org

AtlantECO (Atlantic Ecosystems Assessment, Forecasting & Sustainability) is a new 4-year European Horizon 2020 project that focuses on the microbiome, plastics and seascape connectivity. OBIS has a small role in this project (only 5 person-months). Our task is to further develop the EMBL-EBI/MGnify to Darwin Core tool[4]. EMBL will link the images from ECOTAXA with the annotated DNA sequences and publish this via MGnify. This will allow us to integrate the large amount of TARA Oceans sequence data into OBIS.

We have been asked by GOOS to develop the GOOS BioEco metadata portal (with funding from the PEGASUS Future Earth grant). Erin Satterthwaite provided a pre-recorded video on the work she has done and the objectives of the GOOS BioEco metadata portal. The aim is to make Biological observing programs & their attributes: (i) Findable, (ii) Displayed & queried interactively, (iii) Publicly accessible and (iv) Regularly updated. By providing program metadata, program managers can demonstrate the impact of their program to the global community. A Metadata Entry Interface will allow the observing network managers to publish and edit (i) Network name, (ii) Network geographic coverage and (iii) EOV keywords and other attributes such as sampling duration & frequency, and data license and usage rights, and best practices will be linked to the Ocean Best Practices (OBP) systems so datasets can be filtered by programs that use a given best practice that is endorsed for EOV collection. Network Visualization Tool will render spatial information from multiple sources. Geographic coverage from the metadata entry tool will be combined with spatially aggregated sample locations from populated datasets in OBIS. The visualisation tool will allow the user to filter using the EOV keywords in the metadata (dataset level) and possibly EOV variables in the actual data (record level). Dr. Lavenia Ratnarajah (GOOS BioEco International Project Officer) will coordinate the content and input.

The SG-OBIS wondered what the relationship is with the many other metadata portals such as IODE's ODISCat and Oceanscape of GEO Blue Planet. Mr Anton Van de Putte suggested to collaborate with the Polar Data Discovery Enhancement Research (POLDER)[5] system. The secretariat responded that we are aware that observing programmes are asked multiple times to provide metadata and that ultimately the aim is to index the metadata from the observing systems directly (e.g. through publishing the info as schema.org), so this would become a dynamic distributed system which no longer requires manual input or harvesting from a multitude of metadata portals. However, this will be implemented in a stepwise approach.

The secretariat also set up a consultancy contract with the Science Crunchers, a communications company in Portugal to develop outreach material for OBIS (more under the COTT reporting below).

The secretariat continues to be involved in the GOOS EOV activities and actively participated in the Seagrass EOV workshops in September and October 2020 as part of the C-Grass SCOR working group. One of the aims is to agree on a common data framework based on the OBIS-

[4] https://github.com/gbif/mgnify-to-dwc
[5] https://polder.info/

ENV-DATA format of Darwin Core, much like the MacroAlgae Canopy cover implementation as outlined in the OBIS manual[6].

The IODE secretariat established a contract with a graphical designer to create the logos for the three new FUST projects. We included a request to design a new OBIS logo. According to the survey results: Do you like the OBIS logo?: YES = 13, NO = 2 and So-So = 12. Because less than 50% liked the logo, we suggested that we do not use it.

Staffing/Funding

Mr Ward Appeltans then reported on the status of staffing and funding at the OBIS secretariat. This year has not been an easy year for the secretariat. Because we did not have sufficient funds to cover a full-time OBIS data manager in 2019-2020, only 35% of Pieter Provoost's time could be allocated to OBIS activities while he was tasked to support other IOC related IT-tasks. From 2021, his salary will be covered by PacMAN and only a small part by AtlantECO. This means he will be able to focus on OBIS activities, while also developing data management tools and bioinformatics pipelines for PacMAN. However, these developments will benefit OBIS directly.

We already reported on the Richard Lounsbery Foundation grant at the previous SG session. We decided to hire a full-time scientific officer to help us with the coordination and implementation of genetic data in OBIS including the PacMAN pilot project in Fiji. Mrs Saara Suominen was selected for this position and joined the secretariat on 15 September 2020 (on a VLIZ position).

We also received a grant of 50,000 US$ from NCEAS/University of South California to develop a metadata portal for GOOS. This funding will likely be used to extend the contract of Mrs Suominen.

The AtlantECO budget corresponds to approximately 50,000 US$, but those funds are spread over 4 years and will be used to partly cover the salary of Pieter Provoost.

There is still ±30,000 US$ available on the Complementary Additional Programme (CAP) accounts for OBIS. These CAP funds in addition to possible additional IODE Regular Programme funds (to be requested), can be used to support activities in 2021 (to be discussed under agenda item work plan and budget).

Technical developments

Mr Pieter Provoost (OBIS data manager) reported on the technical activities during the intersessional period:

- Improvements have been made to the API and the R package:
    - All quality flags are available and can be used as filters when querying the OBIS database

[6] https://obis.org/manual/dataformat/#example

    - The environmental layers (bathymetry, shore distance, temperature, salinity) are included with the occurrence results.
    - Parameters have been added to optionally include dropped records, absence records, and pure event records in occurrence results.
    - Support for vector tiles has been added, this makes it possible to have high-resolution map layers and custom styling in third party applications. Vector tiles are going to be used in the HAB and GOOS BioEco portals (under development).
- Some improvements have been made to the dataset pages, which now feature overviews of the quality flags and dropped records. An overall quality report is available at https://reports.obis.org/quality.
- Download statistics from the mapper and R package are now displayed on the dataset pages.
- Added email notifications to the downloads component.
- Integration of the WoRMS annotated names list, the WoRMS distributions, and WoRMS external identifiers into the database (BOLD, NCBI). This is to support application development for PacMAN and other projects.
- Some work has been done to improve the stability and performance of the data pipeline. Switched to cloud storage. Additional checks and quality flags have been added to the QC component.
- An RStudio server for periodically running reports (https://reports.obis.org).
- An Airflow server has been set up for running data management batch jobs.
- We now provide exports of the entire database (https://obis.org/manual/access/).
- We started setting up a GeoServer for data products, environmental layers, etc with the help of our intern Njeri, this is still ongoing.
- Bug fixing and UI improvements on the Small Data app (https://smalldata.obis.org, https://github.com/iobis/smalldata).
- Development was started of two data visualization apps:
    - The GOOS BioEco portal which will visualize metadata on monitoring networks as well as OBIS datasets linked to EOVs. This also includes a data entry interface for networks to edit their metadata.
    - The HAB portal which visualizes harmful algal events from the HAEDAT database together with OBIS distributions of harmful algae. (https://hab-dev.iode.org).

The SG-OBIS expressed appreciation of the work done by the OBIS data manager, and requested training in the use of the new QC features, through a webinar, through sharing of training resources (e.g. GitHub notebooks) and through training courses.

2.2 Status of OBIS nodes

2.2.1 OBIS activities

Mr Ward Appeltans (OBIS Project Manager) introduced this agenda item. At the 8th SG-OBIS session, the steering group requested a number of specific actions from OBIS nodes. A few weeks

ago we launched a survey where we asked the OBIS nodes to report on those activities. 27 of 31 OBIS nodes responded (response rate 87%). A summary of the responses are provided in the table below. More specific responses to the questions are available in Annex 3.

The OBIS Node Managers were asked to reach out to their national IOC representative to highlight with them the importance of OBIS and to request their support in securing adequate operational funding for the OBIS Secretariat. Funding directed at OBIS priorities for which countries are willing and able to contribute may be provided directly to the IOC special account for OBIS in the current operational model. OBIS Node Managers associated with an agency should also explore the ability and willingness of their agency to make an annual commitment to sustaining funding for OBIS.	The survey asked the question: Did you reach out to your IOC National focal point to highlight the importance of OBIS? YES: 7 vs NO: 20 Only a few OBIS nodes are in direct contact with their IOC national focal point (or the IODE national focal point). None of these contacts resulted in additional financial support to the OBIS work plan or secretariat. Responses in Annex.
Facilitate the introduction of OBIS Project Manager to local non-governmental interest groups that may be interested in supporting and/or partnering with OBIS (e.g. to sponsor local training courses).	The survey asked the question: Did you reach out to local NGO interest groups that may be interested in and/or want to partner with OBIS (e.g. sponsor local training course)? YES: 12 vs NO: 15 Several nodes are very well networked or are working on that. However, only a few partnerships are long-term and none are funded.
Promote OBIS social media presence by working with their institution's external communications resources to re-post OBIS items and/or generate new posts to highlight the value of OBIS.	The survey asked the question: Did you reach out to your institutional communication officer to repost OBIS items and/or generate new posts to highlight OBIS? YES: 18 vs NO: 9 The majority of nodes do redistribute news items via their institutional communication channels.
If necessary, build / increase networks: all	The survey asked: Have you been able to build

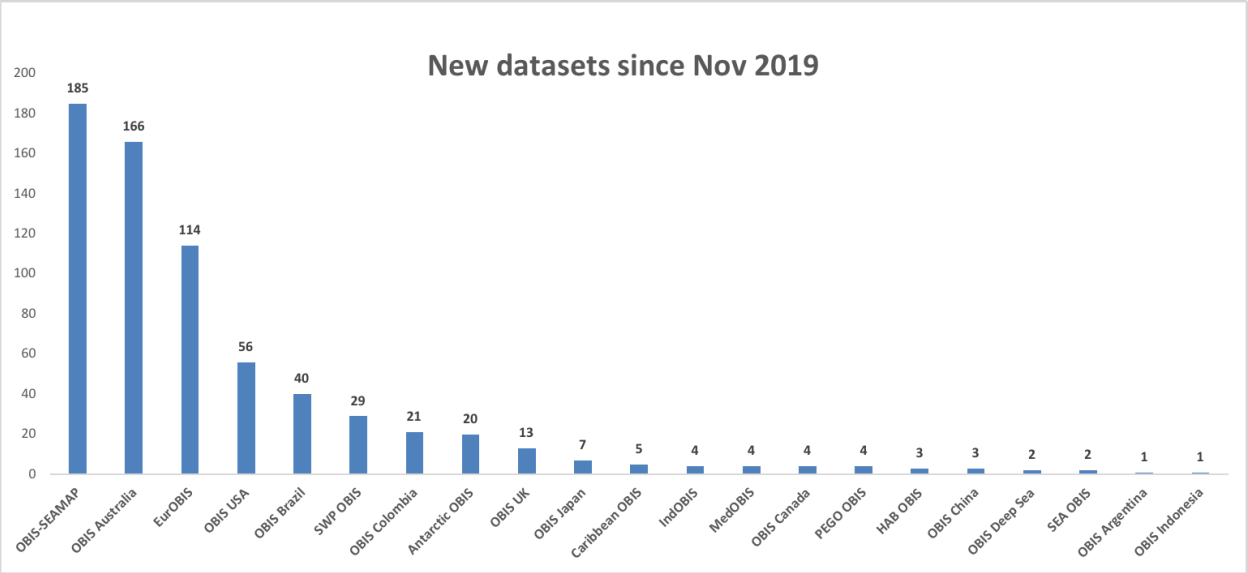
node managers to identify potential data providers / partners within their countries to approach regarding data sharing with OBIS (depends on local context) including smaller institutes, organizations or consultancies (e.g. consult OceanExpert - but note that this list is not exhaustive)	and increase your network of (potential) data providers/partners? YES: 21 vs NO: 6 The majority of OBIS nodes continue building and expanding their network of data providers.
OBIS Node Managers are kindly asked to set up meetings with their respective representatives/delegations to the IOC Executive Council in advance of the IOC Executive Council in 2020 to share the value propositions of OBIS and secure support for the OBIS name change. This work will be supported by the activities of the COTT, OBIS Project Manager, and OBIS Executive Committee to develop briefing materials.	No longer necessary. The name change was advertised through a Circular Letter to all IOC National focal points.
OBIS Node Managers are asked to establish contact with their Regional or other related GBIF Nodes to explore opportunities for collaboration, including data sharing from GBIF Nodes to OBIS and OBIS Nodes to GBIF, training opportunities, and data provider engagement.	The survey asked: Did you reach out to your national or regional GBIF node to explore opportunities for collaboration, including data sharing, training opportunities and data provider engagement? YES: 16 vs NO: 11 Some of the OBIS nodes are also GBIF nodes. OBIS nodes reported on activities related to data sharing and training activities with their national/regional GBIF node. However, for many OBIS nodes, the relationship with GBIF nodes can be further improved.
OBIS Node Managers are asked to establish contact with their respective IPBES focal points (https://www.ipbes.net/national-focal-points) to develop relationships toward how OBIS data and expertise can be contributed to the ongoing assessment process.	The survey asked: Did you reach out to your national IPBES focal point to develop relationships toward how OBIS data and expertise can be contributed to the ongoing assessment process? YES: 6 vs NO: 21 This activity did not get a lot of positive responses and can be further improved.

As part of the OBIS funding review, Node Managers are asked to identify the cost of operating as an OBIS Node, including in-kind contributions and proportions of shared infrastructure and resources. This will enable the EC to assess the true cost of the network and can also be utilized to promote the exceptional value of the network to potential funders and partners.	The annual cost to operate OBIS (including the OBIS nodes) is close to 2 million US$ / year.

2.2.2 OBIS Health Status Report

Mr Ward Appeltans reported on the “health status” of OBIS nodes. As a reminder, at the 6th OBIS steering group meeting (in 2017), an “OBIS Node Health Status Check” was developed with six criteria to classify an OBIS node as inactive. The annual health status check was set-up to identify and mitigate any problems with existing nodes and to allow for objective criteria to transition an OBIS node to another organisation if the OBIS node would fail to reactivate its activities. As a reminder, these are the six criteria:

1. The OBIS node manager recurrently fails to answer the communications from the project manager or the SG co-chairs in the last 12 months
2. The OBIS node manager or a representative fails to attend (personally or virtually) the last 2 SG meetings without any written reason
3. The OBIS node does not have an IPT
4. The OBIS node has an IPT, but it has not been running for the last 12 months
5. The datasets in the OBIS node's IPT have been removed and not restored in the last 12 months (without any explanation)
6. The OBIS node has not provided new data for the last 2 years



New datasets published in OBIS in the past year (those without new datasets are omitted from this graph).

During the past year, 21 (67%) of the OBIS nodes published new data (23 nodes in the previous intersessional period). However, this also means that 10 OBIS nodes did not publish any new datasets. Those are OBIS-OPI, FishOBIS, ESPOBIS, OBIS Kenya, OBIS CPPS, OBIS Senegal, OTN OBIS, Arctic Node, AfrOBIS and OBIS Malaysia. Of them, OBIS-OPI, FishOBIS, OBIS Kenya, OBIS Senegal and AfrOBIS have not published new data in the past two years.

Meanwhile, FishOBIS has just published 2.8 million occurrence records on their new IPT, and these will be harvested soon. This removes FishOBIS from the inactive OBIS node list.

The SG-OBIS requested OBIS-OPI, OBIS Senegal, AfrOBIS and OBIS Kenya to submit a concrete action plan of activities to be undertaken in 2021 before 15 December 2020.

Mr John Nicholls (OBIS-OPI) reported that arrangements are being made with EurOBIS to timetable the submissions of some outstanding datasets, which will be submitted in tranches over the coming months (by February 2021). Processing and harvesting will result in all datasets being published during 2021. In addition, work is ongoing with the revision of the original 22 HMAP datasets which are being extensively reviewed and it is expected that this review will be completed during 2021. The new 4-Oceans project, commencing July 2021 will run for 6 academic years and will produce a range of historical and archaeological datasets spanning the past two millennia. As a global study, it will incorporate primary species of marine life with a focus on fishing, whaling and farming. At this stage it is not possible to determine the exact number of datasets that will be produced, but this is expected to be in the range of 50 to 60 datasets incorporating over 200,000 records. It is likely that researchers will not make the data public until completion of the project or research papers are published, so incidental datasets will be sought for interim submission. Members of the OPI will be encouraged to submit their own datasets through the OBIS-OPI node. The continued support and assistance of the EurOBIS team is gratefully acknowledged as they continue to enable OBIS-OPI as a tier-3 OBIS node.

Mr Ismaila Ndour (OBIS Senegal) provided a report after the meeting, listing the following actions to revive the OBIS node in 2021:

- Compiling and organizing documentary holdings and historical data series at an institutional level and publishing them.
- Reactivating the OBIS Senegal network by contacting all national and regional partners and mainly previously trained people and identifying together the means and mechanisms for publishing the data available in the OBIS platform.
- Training staff and others for partner institutions on the latest updates of biodiversity data management tools.
- Developing projects on biodiversity data sharing to acquire funding to support the OBIS Senegal activities.
- Participating in national and regional meetings dealing with biodiversity to better promote the services of the node and strengthen adherence to biodiversity data sharing via the publication of data on the OBIS's IPT.

Mr Izwandy Idris (OBIS Malaysia) reported that they are currently working on local datasets from their repository (30,000 records/specimens), and are in the process of hiring a new collection curator. Unfortunately, the pandemic has slowed down the administration process. A new Cnidarian dataset is expected to be published before the end of this year, and the team will be able to focus more on OBIS when the database has been upgraded and a new curator is hired.

Mrs Monica Machuca (OBIS-CPPS) reported that the communication and response from data providers have been complicated by the pandemic, but the good news is that they just managed to publish one new dataset on OBIS and that five new datasets are in process.

Mr Tshikana Rasehlomi (AfrOBIS) reported that he has just recently been appointed as the new AfrOBIS node manager and that the transition of the node to the Department of Environmental Affairs, Oceans and Coasts has caused delays in their operations. However, he reported that AfrOBIS receives the full support from the director and he is positive in reviving the AfrOBIS node in the next months. The previous node manager a.i. Mrs Anne Treasure will continue providing support to the AfrOBIS node.

Mrs Nina Wambiji (OBIS Kenya) reported that she had a meeting with the Kenya National Oceanographic Data Centre (KENODC) also housed at KMFRI to synchronize data uploading into OBIS. The OBIS Kenya node IPT was also successfully set up at VLIZ. She noted that KMFRI fully supported the OBIS node but agrees that a new group of younger scientists and IT staff need to be trained on OBIS procedures. Meanwhile she worked on the dropped datasets from the OBIS portal. Also the institution has recently worked on Data management policy and Intellectual property rights policies to help remove the hurdle or fear of scientists sharing their datasets.

Action plan for Kenya

1. Contact all participants in previous OBIS database courses to revive conversion on data sharing (Most were PhD students then but now graduated and published their work)

2. Conduct a WIO region wide user survey and campaign on OBIS database to understand exactly what are the bottlenecks and how they can be fixed individually.
3. Finalize QC on data from projects especially the Kenya Coastal Development project and the New Digital Technologies for marine Biodiversity data handling in East Africa (NeDIT) by GTZ Germany that had monitoring on many marine ecosystems
4. Request for training of new node staff or volunteers.

2.3 OBIS Task Teams

2.3.1 OBIS Strategic Advisory Task Team

No report was provided by the OBIS SATT co-chairs.

2.3.2 OBIS Taxonomy Task Team

Mrs Leen Vandepitte reported on the activities of the OBIS TTT.

The TTT was directed to work with the WoRMS project to investigate how the list of non-matching names and their annotations can be exposed within OBIS, and to implement the most feasible solution to do so.	In progress - continuous task at WoRMS data management team (DMT). The OBIS data manager has received the Annotated list. Inconsistencies are being cleaned up at VLIZ and an updated version was provided to OBIS. VLIZ will also build a web service to serve these annotations, which will be very helpful for OBIS.
The TTT was directed to conduct a six-month attempt to clean up the situation with missing taxonomic identifiers (LSIDs) and invalid names in source data. Results from this work will help determine the next steps on how missing LSIDs can get into the OBIS data ingestion process in the quickest and most efficient way.	In progress. A new list of non-matching names - from the latest harvests - has generated over 38.000 non-matching names of which many could have been easily cleaned/matched by the node managers. The WoRMS DMT at VLIZ is urging node managers to give more attention to the quality of the taxonomic names because this is giving them a lot of extra work. Leen Vandepitte is proposing to develop a strategy of “who does what” with regards to taxonomic QC.

Mrs Leen Vandepitte further reported on the outcomes of the OBIS nodes survey, which included a number of questions related to the taxon matching. Some node managers gave very specific feedback, which will be dealt with directly. However, some issues were reported that should be solved accordingly:

- When (new) species are not found in WoRMS: please contact info@marinespecies.org. The WoRMS data management team (DMT) will take care of this as quickly as possible with the relevant taxonomic editors.
- When species may not be marine: WoRMS already contains many non-marine taxa. If the non-marine taxa are relevant for your dataset, then WoRMS can be contacted and they will check if those taxa can be added with the correct environment flags. Non-marine taxa not relevant for WoRMS or incorrect names will eventually be added to the Annotated List, with the correct explanation on why they cannot be added to WoRMS.

The OBIS nodes made the following suggestions for improvements:

- Short videos demonstrating how to do the matching with WoRMS tools.
- Support for datasets greater than 1,500 lines. Mrs Vandepitte responded that online matching indeed has its limits, for performance reasons. There are two options: (i) use of web services (no limits) or (ii) send the taxon list to info@marinespecies.org, to ask for assistance in the matching process
- Integration with species traits. Species traits are being documented within WoRMS. How OBIS offers the available traits as an extra search option, is something that needs to be discussed.
- Common name search, with reference to FishBase. WoRMS has not yet implemented all common names from FishBase. This is part of our future plans, as part of the Memorandum of Understanding between WoRMS, FishBase & SeaLifeBase.
- 12 (44%) of the OBIS nodes requested training to improve their taxon-matching skills.

In summary, there seems to be a genuine need for more training opportunities to use the available taxon matching tools, and following the correct procedures in the matching process. The Taxonomy Task Team will look for opportunities to offer online material. When actual (in person/online) training and workshops are being organized by individual nodes or institutes, the WoRMS DMT can always be contacted, to check whether a short session on taxonomic QC can be added. Mrs Vandepitte also reminded us that info@marinespecies.org remains the main contact address for all questions related to taxon matching and taxonomic QC. The TaxTT has taken note that there is a need for a way to offer species traits through the OBIS portal.

Mr Pieter Provoost noted that the taxon annotations provided by the WoRMS team are now included in the OBIS QC process and are available through the QC flags table of your node: e.g. https://obis.org/table/flags?nodeid=4bf79a01-65a9-4db6-b37b-18434f26ddfc

The SG-OBIS thanked the WoRMS data management team and acknowledged the amount of work to process non-matching names. The SG-OBIS also welcomed the addition of the taxonomic annotations in the OBIS QC report, which will greatly enhance our taxon matching work.

2.3.3 OBIS Capacity Development Task Team

Mrs Carolina Peralta reported on the OBIS CDTT activities. Mrs Claudia Delgado (IOC/OceanTeacher Global Academy project manager) joined the meeting for this agenda item.

The CDTT is directed to develop a process for characterizing the data processing and management workflows of each OBIS Node to serve as a baseline in understanding inter-node synergies and divergences, training priorities and data quality issues. This concept will be facilitated by the rotating Nodes Platform concept being put in place by the Communications and Outreach Task Team.	The COTT had been implementing several meetups (monthly meetings) in order to fulfill this subject. This action was very useful and could be a channel that could help to update and follow up on the Nodes priorities. However, more actions are needed to truly outline the training priorities and data quality issues. We could consider webinars and Node Managers updating processes. Although this could also be coped with by the Help Desk system. We could work on the “updating process” as a part of the Help Desk system, which is not implemented yet, or as part of a Train the Trainers course in which the priority must be given to OBIS Nodes and OBIS Data Managers
The CDTT is directed to develop a help desk system and management methodology for supporting OBIS Nodes, documenting the process, and communicating to the OBIS Nodes. It is recommended that the team uses a non-proprietary, cloud-based system that is freely available for use.	Not implemented yet. In June 2020, the OBIS-EC suggested setting up a private GitHub repository and organizing a webinar to explain to all OBIS node managers how to use GitHub.
The CDTT will organize during the next year a “Training of Trainers” certification course, to level up the capacities of the node’s managers and data managers in the new OBIS technologies and methods. The CDTT will also coordinate a network of certified OBIS trainers that keep training materials updated, translated to main languages and shared in an accessible repository.	Not implemented yet. Together with the EC-OBIS, we started to draft the content for a full on-line training course. Still we need to agree on some outlines and learning outcomes. There is still a discussion about the financial support: “We should consider a business model. Free online without support, and a paid model that includes one-to-one online training support during a fixed time window (e.g. two weeks) (with hourly credits) or in-house

	training. In case there is an update of a module, the paid subscriber may get a reduction to upgrade his certification to the newer version. We need to find a partner who can organize, manage and provide this mentoring service.”
The CDTT will design an on-line course, using preferably OceanTeacher Global Academy e-learning platform and support. This course will contain audiovisual materials in different languages and virtual laboratory exercises organized in modules that will target different audiences.	Not implemented yet. The current online courses need to be updated. More training material needs to be developed. We could agree in a logo or header to standardize the training material template.
The CDTT will keep track of the OBIS trainees, building a network of OBIS users and encouraging them to provide timely biodiversity records to their closest nodes.	More action is needed. The CDTT keeps track of the trainees (see alumni list) but some courses are not registered in OceanExpert and therefore are not included. The OBIS-EC asked the CDTT to develop a strategy to organize a frequent follow-up approach with the trainees (in collaboration with OTGA).

2.3.4 OBIS Communications and Outreach Task Team

Mr John Nicholls reported on the OBIS COTT activities.

The OBIS COTT was directed to develop and conduct a monthly rotating forum for Node Managers to share activities and specific mission information about their organizations. These forums are designed to both share internally to the network but also to gather specific information for the OBIS Network (refer to further information in the Annex). 1. Events added to the OceanExpert calendar 2. News stories for the OBIS web site (dataset highlights, publications, public engagement events, etc.)	This activity commenced in January 2020 and has seen a monthly meeting via video chat where each month three OBIS node managers have presented a brief talk to highlight who they are, what their activities are and how they envisage future directions for their node. These meetings have gone ahead and been shared with the Steering Group membership. All SG Members have been encouraged to participate. The following points were, and continue to be addressed (as per the Task Outline):

3. Updates and additions to OBIS Meta database (Node descriptions, institution descriptions and details, partners, activities) 4. “Node Stories” from each of the participating presenting nodes for the months highlighting activities and accomplishments 5. Identification of funding opportunities	1. Any events or core news items are shared and made available on the shared Google Calendar, and published on the OceanExpert calendar as appropriate 2. News items and items of interest to the OBIS Community are compiled into a Newsletter that is shared on a monthly basis among all SG members. Anne Treasure (AfrOBIS) edited and disseminated the document. 3. OBIS Node activities are reported and discussed as necessary. Updates and additions are shared. 4. “Node Stories” are presented and recorded alongside transcripts which are made available via links contained in the internal monthly Newsletter. 5. Where possible, funding opportunities may be discussed. The Newsletter edited and published by Anne Treasure provides OBIS news, information and summaries of meetings, conferences, etc. Links are provided to recorded sessions and transcripts of the Monthly rotating. These will be delivered on a bi-monthly basis. We introduced a new initiative of weekly check-in meetings (Fridays) at several time slots to cover different time zones. This enabled SG members to check-in during extreme lockdown due to COVID-19 pandemic and share ideas and express any needs or assistance. These sessions are now concluded as lockdown restrictions are beginning to be relaxed worldwide. Following a poll of SG members, there is overwhelming support for the continuation of the monthly SG Platform meetings (see annex 3). After a hiatus of two months (in the build-up to the annual OBIS SG meeting) the sessions will resume in December 2020. A timetable will be formalised during the SG Meeting.
The OBIS COTT was directed to develop a slate of outreach materials, including policy briefs on priority value propositions, relatively	A call for a 3-month consultancy, followed by rigorous checking by the OBIS EC, has resulted in the “ScienceCrunchers” consultancy firm being employed to develop a

simple marketing material (stickers, etc.), introductory letter templates for more formal engagements, slides and infographics, and other materials for use across the OBIS Community in briefings and presentations to stakeholders. Wherever possible, we should seek to use OBIS itself to create dynamic, data-driven infographics that can be inserted in near real time to presentation materials in multimedia. Key materials for high level stakeholders should be developed in advance of the IOC Executive Council meeting in June 2020.	detailed and visually striking brochure, slide deck and two short videos that highlight the work of OBIS and define its values, presence and outreach. The ongoing work of the Secretariat and EC members determining a ToR and appropriate contract details is recognised and appreciated. A drive to develop visual materials suitable for practical use by the OBIS Community is seen as a major investment in developing the OBIS brand and engaging in the OBIS 2020 Anniversary tasks. Work on all aspects of infographics is ongoing. Input from SG members is always welcome and appreciated.
The OBIS COTT was directed to continue work that builds on the elements of a communication strategy included in the Annex 3 of the SG-OBIS-8 meeting report toward a living document that will be used to develop support for an enhanced and appropriately funded operational capacity.	Work is ongoing - little progress has been realised due to limited communication options experienced due to the COVID-19 pandemic since February 2020. It is envisaged that the addition of a new consultant who will produce relevant outreach visuals that will boost the communication effort and foster better communication. It is envisaged that work will be developed in this arena during the SG Meeting.

Mr John Nicholls further reported that:

- Work has been undertaken and is ongoing regarding the development of audio-visual materials.
- Further work still needs to be done to realise a complete “ToR” for the COTT.
- The production of a newsletter requires the current editor (Anne Treasure AfrOBIS) to be capably assisted in being able to deliver on a bi-monthly basis. Volunteers are sought.
- Volunteers are also sought for deputising for the COTT Chair in occasionally hosting the monthly SG Platform meetings.
- Access to a viable Zoom account is recommended for use by the COTT to continue the monthly SG Platform meetings.
- A calendar is to be established that will be populated by nodes and SG members prepared to deliver a brief talk about their nodes and relevant activities for the SG Platform.
- The COTT wishes to fully acknowledge the sterling effort by Anne Treasure (AfrOBIS) in compiling, editing and disseminating the SG Platform Newsletter, as well as the various

other tasks that she so capably undertook. Anne has now moved on to other tasks within her organisation and we need a volunteer to help with the monthly internal newsletter.

Mrs Carol Mazzuco volunteered to review outreach material. Mrs Dimitra Mavraki requested more information on what exactly is expected, so she could consider volunteering to help with the internal newsletter. Mr Dan Lear suggested to help organise/host the platform meetings and Mr Izwandy Idris is offering the UMT webex for hosting meetings.

The SG-OBIS thanked John Nicholls and Hólmgrímur Helgasson for organizing the monthly SG-OBIS platform meetings and Anne Treasure for editing and distributing an internal OBIS newsletter, and called the COTT to continue organizing these monthly calls as a way to update each other on new developments, challenges or issues that need support.

2.4 OBIS PROJECT TEAMS

2.4.1 OBIS Data Quality Control Project Team

Mrs Hanieh Saeedi reported on the activities of this DQC project team.

The project team is directed to complete the documentation of quality/fitness-for-use assessment steps and present to the SG-OBIS for review and input within six (6) months from the conclusion of SG-OBIS-8.	The team decided to review several papers (e.g. Chapman et al 2020, Moudrýa & Devillers, 2020) and assess how much alignment there is with the OBIS QC protocol. The gap analysis would provide input into future OBIS developments. Hanieh Saeedi (OBIS Deep-sea) will take the lead in the assessment report. Ms Saeedi also suggested developing, reviewing and promoting use cases for quality control profiles. The team will organize 2-monthly online meetings and all OBIS nodes are invited to join this initiative.

2.4.2 OBIS Vocabulary Infrastructure Project Team

Mrs Lenore Bajona reported on the activities of the VIP team.

The project team was directed to review and evaluate the existing vocabulary identifiers in the MoF data to determine what vocabularies are in use for the measurementType and measurementTypeUnit but also for other terms. The team should produce a registry of the vocabularies recommended for use in OBIS data with regard to measurementType and measurementTypeUnit.	The team decided on the following steps: 1/ review and clean up the list of existing field contents with counts. To assist with this cleaning the OBIS data manager was asked to develop/implement basic QC for missing MoF fields, and for this to be added to QC issues on the dataset page. The OBIS Data Manager recently created the report on MoF Statistics: https://reports.obis.org/mof. Issues can be reported here: https://github.com/iobis/notebook-mof-statistics Now we need to add a bit more details on the meaning of stats and forward to the individual Nodes requesting they use it for updating the relevant datasets. 2/ These new QC flags should be advertised to the OBIS nodes (e.g. via the monthly newsletter) and OBIS nodes will be asked to review and if necessary update their datasets. 3/ The team will then focus on the more commonly used values that do not already use vocab terms and will recommend vocab usage or updated terms (as a subset of the BODC vocab). A slack channel is set up for any internal vocab discussions. At the EC-OBIS meeting, Eduardo Klein (Caribbean OBIS) suggested reviewing and selecting best practices related to the EOVs (esp. habitat/ecosystem EOVs).
The project team is directed to develop and test a methodology for establishing groups that can be authorized to solicit community consensus on the logical mappings from simple term values in the properties of the data model that should be aligned with vocabulary identifiers. The team will test and execute this work within the context of the “undefined term	Not yet implemented. The OBIS-EC suggested to: 1/ Set up a Vocab GitHub repository including read me info on “searching and requesting”, which could also link to the OBIS manual. 2/ Establish some form of automated notification to nodes regarding Quality Reports and the need to update and review terms.

registry tool" that will be scoped by OBIS Data Manager.	3/ Once a workflow with reviewing submissions is in place, the team will then consider inviting others/outsiders to assist.
The project team is recommended to conduct its work within the context of the existing vocabulary-related activities of the Biodiversity Information Standards (TDWG) group.	For the moment the team still works via Slack and GitHub, but it is the intention to move forward with virtual meeting(s) with members of TDWG vocabulary-related activities. Chair has noted contact from TDWG Vocab. Group and will reach out toward shared vocab related activities.

2.4.3 OBIS 20th Anniversary Project Team

Mr John Nicholls reported on these activities.

The project team was directed to develop plans and relationships for a celebration and major marketing push for OBIS in concert with the World Conference on Marine Biodiversity, in advance of the UN Decade of Ocean Science for Sustainable Development, and other major activities.	The introduction of a new consultant to work on visual materials will provide a boost to this activity. A focus on online video exposure is most likely to provide good results due to COVID-19 pandemic restrictions. The work undertaken by the "ScienceCrunchers" consultancy, while ongoing, is expected to result in highly positive outreach materials that can be utilized centrally or at OBIS node level.
OBIS Node Managers were asked to develop ideas for ongoing annual birthday activities focused on marketing and advancing OBIS.	Martha Vides (INVEMAR) developed an excellent logo that is now implemented for use by OBIS. A news item was published on the website, along with the new OBIS name and a circular letter was distributed to all IOC national focal points. Nina Wambiji (OBIS-Kenya) wrote an article that will be produced for the Western Indian Ocean Marine Science Association about the name change Kit Elloran (SEA-OBIS) developed a Facebook frame.

	OBIS-Japan produced an English Language video that is suitable for young people through all school ages. Can be adopted/adapted/edited for local node use as necessary. EurOBIS made sure that the OBIS Anniversary logo is used on every occasion where EurOBIS has been (re)presented. An OBIS session celebrating 20 years of OBIS was proposed at the 5th World Conference on Marine Biodiversity (WCMB2020), but due to too many drop-outs this session is merged with another session. However, there will be an OBIS talk provided by the secretariat and EurOBIS will have a poster presentation.

The SG-OBIS thanked everyone for contributing to the 20th Anniversary and closed the project team.

3 STRATEGIC DIRECTIONS FOR OBIS

3.1 Future Activities

Mr Sky Bristol introduced this agenda item where we will talk about our GBIF collaboration and how we are now moving ahead in co-developing our respective work plans. We will then cover our new project PacMAN, which is helping OBIS to both fund some aspects of our work on a whole and keep things moving along, and also advance some other key areas of data and capabilities that will start to come online and will benefit the community. We will then talk about the developments over the last year in managing genetic data and will shift in the last hour to talk about the UN Decade of Ocean Science for Sustainable Development, and the expectations there for what OBIS is and what OBIS can provide. We need to develop a strategy for what we need to do, to position OBIS well within the decade.

3.1.1 Collaboration with GBIF

The OBIS secretariat, OBIS Co-Chairs and representatives of the GBIF Secretariat met on 1 October 2020 to discuss the implementation of the cooperation agreement[7]. Mr Tim Hirsch (Deputy Director of GBIF) summarized the outcomes of this meeting:

Standards development and communication
OBIS will find it useful to have periodic technical check-ins with the GBIF informatics/data products team to ensure that both communities are up to speed with developments especially relating to standards but also new features and processes. This could be quarterly or more frequent depending on the preference of the technical teams. Action: GBIF and OBIS technical teams communicate directly to establish the best means and frequency for these updates.

Governance coordination
While the priority will be on developing the ongoing practical collaboration, we will explore opportunities for cross-representation in our respective governance/advisory bodies to ensure good long-term understanding and collaboration. Actions: GBIF to explore adding a marine-focused member to its Science Committee; OBIS to consider inviting GBIF observer to its Steering Group meeting; longer-term, GBIF to consider how best to include OBIS in consultations e.g. on annual Work Programme and possibly standing invitation to attend Governing Board meetings as an observer.

Harmonized data publication to both networks
We will jointly work to establish clear guidelines and workflows ensuring that as far as possible, marine datasets are published both to GBIF and OBIS without the need for separate versions to meet our respective technical requirements. Actions: OBIS will provide a summary of the key steps enabling 'GBIF-first' marine datasets to be harvested by OBIS – both in terms of registration/flagging and any common issues currently blocking OBIS ingestion of datasets shared by GBIF nodes and publishers (Pieter?); We will develop a few use cases demonstrating best practices for a combined GBIF/OBIS workflow, including where it is working well at present (Colombia -Martha, US - Sky/Abby) and where new GBIF-OBIS links are being established (Pacific – Mélianie/Tim to follow up with Kevin Mackay and USP team in the Pacific); following this exploration, GBIF will include specific guidance for publishing marine datasets in its standard documentation for nodes (Mélianie) and in training materials (Laura); GBIF will continue working with OBIS nodes to remove remaining barriers for 'OBIS-first' datasets to be registered with GBIF (Andrea).

Improved collaboration between GBIF and OBIS nodes
Besides the technical guidance mentioned above, we will look at ways of ensuring good communication between our respective nodes communities. Action: GBIF will outline the main points of the agreement at the next meeting of the GBIF Nodes Steering Group (8 Oct) and start the discussion of ways in which collaboration can be improved, e.g. inviting OBIS observers to regional nodes meetings, GBIF community webinars etc (Tim/Mélianie); map GBIF and OBIS

7 https://assets.ctfassets.net/uo17ejk9rkwj/1ZgCl8DIpc7GicBZgBQ23n/64c4c1cb2cc75280a0f82cae16ae808b/OBIS-GBIF-LOA-FINAL.pdf

node overlap/gaps to build connections and identify opportunities to advance participation in both networks (Tim).

Training
We will look at opportunities to combine training resources/opportunities based on materials developed by both networks. Actions: GBIF to share use cases included in current training curricula both on data mobilization and data use for decision making, as well as the full eLearning resources for these courses (Laura/Andrew); OBIS to contribute more marine use cases for GBIF training as well as other resources currently used in OBIS training (not sure who will lead this in OBIS?); depending on the outcome of the selection of projects under the current phase of the Biodiversity Information for Development (BID) programme in Africa, Caribbean and Pacific, we can look at incorporating some joint materials in the associated training workshops for any marine-focused projects (Maheva/Laura).

Funding
We will consider how joint efforts could maximize opportunities to raise additional funds supporting data mobilization through marine-focussed initiatives e.g. the UN Ocean Decade. Action: GBIF will keep OBIS in the loop as we develop the new GBIF resource mobilization strategy, and consider joint messages to ensure that funding proposals are targeted in a complementary and not competitive spirit – possibly in the context of the Alliance (Hilary/Kyle).

Joint representation at meetings
We will look for opportunities for shared representation at relevant events, including through the Biodiversity Open Data Ambassador programme. Actions: GBIF will provide some slides for Ward to present during his session at the upcoming World Conference on Marine Biology (13-16 December), with an emphasis on the new agreement (Dmitry); GBIF will help with joint statements/messaging where appropriate during the upcoming series of meetings associated with the post-2020 process through the CBD when IOC/OBIS is unable to be present, as well as joint side event with GEO BON proposed for CBD SBSTTA 24 (Tim/Ward).

Handling sequence-derived data
Connected also with the standards collaboration, we will keep in regular touch about ongoing efforts to support sharing and analysis of eDNA/metagenomic data through the two networks. Actions: Follow up on the details of how the MGNify datasets are flowing into GBIF to understand if this could support their ingestion by OBIS, taking account of taxonomic issues that may arise (Pieter/Dmitry/GBIF informatics); ensure that the new GBIF-published guide on sequence-derived data is circulated to interested people in the OBIS community (Dmitry/Pieter/Saara).

The SG-OBIS welcomed the collaboration with GBIF and the co-development of work plans to align our activities where there is mutual interest. The SG-OBIS stressed the importance of publishing datasets once - harvest many times, to avoid the creation of different versions of datasets or splitting of datasets.

3.1.2 The PacMAN project

Mrs Saara Suominen (OBIS Science Officer) introduced PacMAN. The OBIS secretariat has successfully secured funding for a 3-year project regarding invasive species monitoring in the Pacific Island States (PacMAN; Pacific Islands Marine Invasions Alert Network). The secretariat will be responsible for the overall coordination and implementation of the project, supported by a local project manager hosted at the University of the South Pacific. This will include the organization of regular project meetings (advisory board, composed of scientific experts and government stakeholders). The coordinating committee for this project has started their meetings at the end of September 2020, the first scientific workshop will take place at the end of November 2020, and an advisory board meeting will take place in early 2021.

Invasive alien species are considered to be perhaps one of the greatest threats to biodiversity in the Pacific. Small Islands Developing States, SIDS (or better called large ocean states) are particularly vulnerable. In addition to the climate and biodiversity crisis, marine bioinvasions also pose a real biosecurity risk for human health and the sustainability of SIDS livelihoods. It is widely recognised that ship's ballast water and vessel biofouling, including the surge of new (or larger) marine structures linked to the blue economy, are the main vectors for the introduction and spread of NIS in the marine environment.

This project, with a focus on the Pacific Islands, will build capacity in science, using the latest technologies and know-how to early detect marine invasive species (using genomics and metabarcoding). By building on a number of existing initiatives, PacMAN will create a bioinformatics pipeline in order to improve the availability of omics data, and more specifically metabarcoding data from biofouling communities, to global data infrastructures (OBIS) and preserve the provenance trail with links to other repositories where standardized metadata (GEOME), sequence data (INSDC), and taxonomic information (WoRMS) are stored.

Based on the output data stored in OBIS, a decision-support tool will provide the observations in a user-friendly dashboard indicating the presence of invasive species, including pathogens, pest -, endangered - and protected species to support local management. Early warnings will be generated based on observations in nearby adjacent areas and will provide a service for local managers and decision-makers to set up targeted monitoring programmes. The specific services of this decision-support tool will be discussed and selected in consultation with the advisory board.

The scientific knowledge, tools and services will directly support the development and implementation of national strategic action plans for the control and management of ship’s biofouling, which countries have signed up to following international (IMO) regulations.

The project builds an end-to-end system from co-designing the monitoring plan through engaging scientists and stakeholders, to training and empowering local researchers using international standards and best practices in ocean observing, capitalising world's top IT infrastructures, to ultimately deliver policy-relevant science-based services that can trigger a rapid response at national and regional management level, which is crucial to secure the Islands biosafety.

Mrs Hanieh Saeedi (OBIS deep-sea) mentioned that in chapter 2 of the IPBES Assessment on Invasive Alien Species, occurrence records of the invasive species listed in the Global Register of Invasive Species (GRIS) were extracted from OBIS and GBIF. This dataset could benefit PacMAN.

The SG-OBIS welcomed the PacMAN project and is excited to see the development of building a relationship with local stakeholders and developing activities on the ground that will benefit the network globally, and has a foundation for sustainability beyond the duration of the project funding.

3.1.3 Proposal for a new OBIS Project Team on developing guidelines for DNA based occurrence data

Dr Saara Suominen (OBIS science officer) introduced this proposal for a new OBIS project team. She said that with the development of analysis methods for DNA in the environment, genetic information is becoming more and more accessible for the community surrounding biodiversity research. This genetic data can provide an unprecedented level of information for the assessment of the global marine ecosystem and environmental management. There are several initiatives presently that will enhance the collection and use of genetic data to understand the state of the marine environment, including AtlantECO, PacMAN, the addition of marine genetic resources (MGR) in the BBNJ legal framework and Essential Ocean Variables (EOVs) developed within GOOS BioEco panel. Currently there is no central database where sequence data is efficiently linked to occurrence information and other metadata, and OBIS has a great opportunity to lead developments in this area.

Environmental DNA analyses and their link to occurrences still face many technical challenges, when it comes to reliably assigning taxonomic identification. Additional factors to take into consideration are the sequence localization in genomes (i.e. which biomarker was targeted, or found in the case of metagenomes), the reliability of the reference taxonomic database, as well as the bioinformatic pipelines used for the analyses. DNA data in OBIS therefore will need to conserve links to raw sequence data, as well as allow updating the taxonomic assignment of sequences on a regular basis.

Mr Dmitry Schigel (GBIF) suggested to build on the new GBIF guide[8], which is supposed to work as mapping guidelines across platforms and is DwC based with MIxS extension. He also suggested to collaborate with the TDWG Genomic Biodiversity Working Group[9].

Mr Anton Van de Putte (AntOBIS) reported that they have experience with genetic data using the MIxS extension and developed an information system dedicated to facilitate the discovery, access

[8] https://docs.gbif-uat.org/publishing-sequence-derived-data/1.0/en/
[9] https://www.tdwg.org/community/gbwg/

and analysis of molecular microbial diversity (meta)data generated by Antarctic researchers (Pola3r[10]).

The SG-OBIS welcomed the establishment of a new OBIS project team on developing guidelines for sequence-based occurrence data, in close collaboration with other initiatives and felt that OBIS can play a role in bringing those different communities together.

OBIS Project Team on Genetic Data

Terms of Reference

The objective of the project team will be to define the approach that will be taken in integrating genetic data into the OBIS database, and how the information will be stored and maintained. Major discussion points include:

- The standards needed to add genetic data to the Darwin Core format,
- The possibility to mine additional sequence data from public sequence databases,
- The use of the biom-format to integrate sequence data into OBIS,
- The need for a bioinformatics pipeline for sequence analysis including taxonomic processing and quality control.

The project team will review and develop the best practices around sequence data formats and analyses. It will also make an overview of the efforts currently in place, to ensure that DNA-based data is dealt with in collaboration with the whole community. The project team will deliver a report of the guidelines for genetic data integration to be presented at the next SG-OBIS meeting (towards the end of 2021). The final goal is to have genetic occurrence data fully integrated into OBIS so that ultimately the sequences can be searchable and comparable to each other and their geographic locations.

Membership

We propose to have this as an open-ended project team welcoming members from the OBIS nodes as well as any experts in molecular data. An initial list of people that indicated interest or should be involved has been provided by the OBIS nodes through the survey (annex 3).

The project team will meet virtually and (if possible) through one face-to-face meeting likely in September 2021 to finalize the report. Sponsorship for this workshop will need to be requested in the OBIS work plan.

Expressed interest to contribute to this: Saara Suominen & Ward Appeltans & Pieter Provoost (OBIS Sec), Maxime Sweetlove & Anton Van de Putte (AntOBIS), Hanieh Saeedi (Deep-Sea

[10] http://antabif.bebif.be/www/pola3r/

node), Akinori Yabuki & Takashi Hosono (OBIS Japan), Dmitry Schigel (GBIF), Ben Sutherland (OBIS Canada). Still waiting for confirmation of names from OBIS Brazil and EurOBIS.

3.1.4 Proposal for a new OBIS project team to coordinate the involvement of OBIS in the UN Ocean Decade

The UN Decade of Ocean Science for Sustainable Development will start in January 2021. The implementation plan is published and the first call for “Decade Actions” is published on 15 October.

In the US, the OceanObs Research Coordination Network (RCN) is organizing a meeting on 4 December 2020 to allow groups that plan to request endorsement for proposed ‘Decade Actions’ to share summaries of these proposals during an online workshop, and engage in a dialogue with other groups to find synergies, potential collaborations, and advance their ideas.

The Partnership for Observation of the Global Ocean (POGO) is hosting an online International Conference on the use of Environmental DNA (eDNA) in Marine Environments, with the aim to develop a Decade programme around eDNA. The OBIS secretariat will provide a presentation on OBIS (including PacMAN) on 1 December 2020.

The OBIS secretariat has been approached by Mr Linwoord Pendleton from C4IR Ocean to develop a Decade project on “Breaking Down Barriers to Data Flow in IOC’s Global Databases: World Ocean Database (WOD) and Ocean Biodiversity Information System (OBIS). Funding will be sought via corporations linked to the World Economic Forum (WEF), and would provide 1 FTE to IODE/OBIS and 0.5 FTE to C4IR Ocean. The project would deliver the following:

- White Paper on Barriers and Solutions to Improving Data Flow in IOC (WOD and OBIS)
- White Paper on solution design for specific actions to increase data flow including a proposal for funding technical and policy development of pilot solutions
- Develop a process and proposal for funding to scale solutions across IOC (WOD and OBIS)

An Ocean Decade Programme to observe life in the sea

Mr Frank Muller-Karger (MBON Co-Chair) introduced this item. He submitted an expression of interest to the Decade secretariat on behalf of the Marine Biodiversity Observation Network (MBON), Global Ocean Observing System (GOOS BioEco), Ocean Biodiversity Information System (OBIS), UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), Ocean Best Practices System (OBPS) and contributing collaborators.

Together they propose an Ocean Decade Programme to "observe life in the sea" as a framework to coordinate people across national and international networks to increase the scope of marine biodiversity research and applications, capacity to carry out and use observations, add innovation and new perspectives, and provide opportunities for students and early-career professionals. One approach will be to work with established ocean observing systems and networks to incorporate biology and biodiversity observations. A goal is to share standards, best practices and approaches for
interoperability and knowledge management to work toward 4D observations of life in the sea. This includes advancing ethics, diversity, and inclusion among stakeholders, and working on approaches jointly between social and natural scientists to address societal problems and coastal and marine ecosystem services. The Programme to observe life in the sea will accommodate a series of specific Ocean Decade Actions aligned with Ocean Decade Challenges. (The specific name of the Programme will be developed jointly with participating groups).

The OBIS nodes survey asked if any of the OBIS nodes are involved or aware of any UN Ocean Decade action preparations of relevance to OBIS. 15 nodes (out of 27) reported that they have been involved in the Decade preparations, either through attending workshops, as a member of national Decade committees or through the IODE SODIS working group. However, only a few reported activities related to the recent call for action proposals. 17 OBIS nodes indicated they were interested in being involved in a Decade programme.

The SG-OBIS agreed to establish an OBIS Project Team to help OBIS involvement in Decade Actions including the development of a programme proposal on Observing Life in the Ocean in collaboration with MBON, GOOS and UNEP-WCMC.

OBIS project team on the UN Decade of Ocean Science for Sustainable Development

Terms of Reference

- Co-develop a Decade programme proposal with MBON, GOOS BioEco and UNEP-WCMC to be submitted on 15 January 2020
- Define what OBIS should look like in 10 years and what it takes for OBIS and OBIS nodes to operate under the Decade. If funding becomes available, what are the priorities to have the biggest impact?
- Support the development of a global ocean biodiversity observing system that operates under shared principles and standards, and move our work beyond the traditional science and into the operational space (e.g. fisheries in-dependent surveys).

Membership

The following people expressed interest: Ward Appeltans (OBIS secretariat), Dan Lear (OBIS-UK), Martha Vides (OBIS Colombia), Lenore Bajona (OBIS OTN), Kats Fujikura (OBIS Japan), Izwandy Idris (OBIS Malaysia), Anton Van de Putte (Ant OBIS), Ana Carolina Mazzuco (OBIS Brazil) and Hanieh Saeedi (Deep-Sea node).

Practical

The team will communicate virtually, by email and video conference between now and 15 January 2021.

4 OBIS WORK PLAN AND BUDGET 2021

4.1 OBIS Executive Committee (OBIS-EC)

The OBIS-EC is directed to meet monthly and monitor and evaluate progress of the OBIS work plan and prepare for the OBIS SG meetings. The OBIS Co-chairs will need to represent and report on OBIS at the IODE Management Group (MG) and IOC Committee on IODE.

Meetings:

- IODE MG meeting, 12-14 January 2021 (online)
- 26th session of the IODE Committee, 19-23 April 2021 (online)
- First International Ocean Data Conference in Sopot, Poland between either 15-19 November 2021 or 22-26 November 2021 (dates are provisional)
- 4th EC-OBIS meeting (online, date to be defined)
- Representation of OBIS at other events (TBD)

Budget/support requested
8,000 US$ travel funds

4.2 OBIS Secretariat

The OBIS secretariat is directed to manage and support the various task teams and project teams within the available resources. The OBIS project manager will organize and provide technical support to the various OBIS meetings including the next SG-OBIS session. The OBIS project manager should represent OBIS at partner organizations or networks, such as MBON and the GOOS BioEco panel.

The OBIS project manager oversees the developments of the OBIS website and portal, supported by the OBIS data manager.

4.3 OBIS Nodes

The SG-OBIS requested:

- The inactive OBIS nodes to submit a concrete action plan to revive their activities before 15 December 2020 and encouraged all OBIS nodes, especially those that did not publish new data in 2020 to contribute new data to the system in 2021.
- OBIS nodes to work with GBIF nodes at the national level to define the nature and scope of interactions, identify potential for data duplication and share these experiences (illustrating opportunities and challenges) within the OBIS network for aggregation and integration through on online meeting. For example, OBIS-USA is leading several activities with cross node participation:
    - ESIP Biological Data Standards Cluster (https://wiki.esipfed.org/Biological_Data_Standards_Cluster)
    - Standardizing Marine Biological Data working group with participation from OBIS Canada, OBIS OTN, CIOOS, and US IOOS.
    - GBIF North America quarterly meeting with participation from OBIS Canada and OBIS OTN.

4.4 OBIS Strategic Advisory Task Team (SATT)

Mr Sky Bristol proposed a specific task for the SATT in 2021 to develop a roadmap and architectural plan for OBIS 3.0, the next generation of the International OBIS infrastructure. The overall goal for this task will be to provide the OBIS Steering Group with a plan to consider for adoption at SG-OBIS-X. Major drivers for consideration in developing the architecture for OBIS 3.0 include the following:

- Demand for more value-added information products and analytics to be made available from the global index
- Continuing increases in demand for new features and capabilities in the central indexing system and its associated services coupled with overall lack of new resources for development
- Continuing acceleration of issues in scale and complexity based on evolving data standards
- Need and desire for abilities to more quickly leverage developments in the broader community of Darwin Core data facilities
- Overall need to keep up with the accelerating pace of technology development writ large while maintaining solid support for users.

Mr Sky Bristol offered to lead the SATT effort in 2021 to develop the OBIS 3.0 architecture. He will work closely with the OBIS Secretariat and the OBIS Executive Committee and will seek engagement with current and former SATT members. Architectural concepts and the trajectory of the architecture will be discussed openly via the OBIS Slack to solicit broad community input to the design.

Membership:

During the meeting, additional OBIS-SG members volunteered to be a direct part of the planning effort:
Sky Bristol (OBIS-USA), Anton Van de Putte (AntOBIS), John Nicholls (OBIS-OPI), Abby Benson (OBIS-USA), and OBIS secretariat

Budget and support requested:
No budget request.

4.5 OBIS Taxonomy Task Team (TTT)

During 2021-2022, the WoRMS DMT & IT should be able to develop an online tool that will help in a quicker processing on non-matching taxa, so OBIS has quicker and easier access to the results of the taxon matching efforts we do.

The OBIS TTT is requested to:

- Continue its operations according to the taxon matching strategy
- Develop on online tool for easier processing of non-matching names
- Organize training on taxon matching upon specific request by nodes

Membership:
WoRMS DMT (EurOBIS), Pieter Provoost (OBIS Secretariat)

Budget and support requested:
The OBIS TTT called for support in sorting out the number of non-matching names. **This could be a summer student (supervised by VLIZ).**

4.6 OBIS Capacity Development Task Team (CDTT)

The CDTT is directed to renew the OBIS CD strategy and cooperate with GBIF, OBIS nodes and OTGA to develop a distributed training strategy. Developing the new strategy will be done through online meetings.

The CDTT will also continue its work on the following tasks:

- Organize webinars or short online workshops to update the OBIS nodes on the new QC tools and the Taxon Matching process in collaboration with the COTT.
- Provide help desk support to OBIS nodes through our various communication channels (e.g. GitHub and Slack).
- Update the OBIS manual and OBIS nodes training course on OTGA; develop more training materials and video tutorials.

- Organize a frequent follow-up with our alumni network.

Membership
Carolina Peralta (Caribbean OBIS), Jon Pye (OTN), Brian Jones (OTN), Leen Vandepitte (EurOBIS, TaxTT for items related to taxonomic QC), Ward Appeltans, Saara Suominen, Pieter Provoost (OBIS Sec), John Nicholls (OPI, COTT for communications), Maxime Sweetlove and Anton Van de Putte (AntOBIS).

Budget/support requested
No budget requested.

4.7 OBIS Communications and Outreach Task Team (COTT)

The COTT is directed to:

- To maintain contact and communication within the OBIS network (OBIS EC, SG), host monthly SG Platform meetings (second Tuesday of the month) and request topics for discussion or presentation one week prior to the monthly meetings.
- Continue to develop audio-visual materials.
- Continue to produce the OBIS SG Platform Newsletter (bi-monthly) - may require administrative assistance.
- Organize short “Brown Bag” sessions for existing or new tools being developed by members of the OBIS network
- Collaborate with other Task Teams and projects wherever possible to maximise communication and shared resourcing.

Membership:
John Nicholls - chair, Izwandy Idris - Asia/Oceania
Carolina Peralta – Americas-Caribbean OBIS
Dan Lear - Europe/Africa
Kit Elloran - comms support
Hoddi - comms support
Ana Carolina Mazzuco - comms support

Budget and support requested:
IODE has both a Zoom and a GoToMeeting account which can be used. UMT/Malaysia also offered their WebEx account.

4.8 SG-OBIS-9 Project Teams

4.8.1 OBIS Data Quality Control Project Team

The OBIS DQC team is directed to collaborate with TDWG, GBIF, ALA to:

- Develop a framework for the assessment and management of data quality using a fitness for use approach (Veiga et al. 2017). This can be built upon a mapping of the available QC checks in OBIS against other biodiversity quality checks and validations.
- In this case we will have a cross-mapping matrix, and we will be able to see what we are missing or could do differently, and probably there are additional checks that we should implement for any new data types (images, DNA, tracking, habitat…).
- Gather and classify user stories to form contextually themed use cases, such as species distribution modeling, invasive species, etc.
- Define a core set of standardised tests and associated assertions based on Darwin Core terms (Wieczorek et al. 2012).
- Develop QC flags for missing metadata.

Membership:
Hanieh Saeedi (OBIS deep-sea), Yi Ming Gan (and Anton Van de Putte) (AntOBIS), Leen Vandepitte (EurOBIS team, to be confirmed), Dave Watts (to be replaced with Kath when Dave retires and she is back at work).

Budget and support requested:
OBIS Data Quality Control project team will not require any budget. But we will need the support from OBIS data manager to implement the case studies and quality control checks, and implementation of the revisions of the concept and strategy of the quality control checks.
US$10,000 towards Pieter's salary

4.8.2 OBIS Vocabulary Infrastructure Project Team

The OBIS VIP is directed to:

- Conduct its work within the context of the existing vocabulary-related activities of the Biodiversity Information Standards (TDWG) group.
- Produce a registry of the recommended vocabularies with regards to MeasurementorFact and develop an "undefined term registry tool". In particular:
    - Evaluate MoF data to determine what vocabularies are in use for the measurementType and measurementTypeUnit and should produce a registry of the vocabularies recommended for use in OBIS data with regard to measurementType and measurementTypeUnit:

        - Team to review/add details for clarification of statistics purpose toward nodes addressing missing values (units/IDs).
        - The new MoF Statistics should be advertised to the OBIS nodes (e.g. via the monthly newsletter) and OBIS nodes will be asked to review and if necessary update their datasets.
        - The team will then focus on the more commonly used values that do not already use vocab terms and will recommend vocab usage or updated terms (as a subset of the BODC vocab).
    - Develop and test a methodology for establishing groups that can be authorized to solicit community consensus on the logical mappings from simple term values in the properties of the data model that should be aligned with vocabulary identifiers. Then test and execute this work within the context of the “undefined term registry tool” that will be scoped by OBIS Data Manager.

Membership
Lenore Bajona, Ward Appeltans, Joana Beja, Kevin Mackay, Pieter Provoost, Dave Watts, Katherine Tattersall (future additions include Gwen Moncoiffe (BODC), Paula Zermoglio (TDWG)); Observers include (to be reconfirmed): Marcos Zarate (volunteer), Leen Vandepitte, Dan Lear, Derek Broughton, Ana Carolina de Azevedo Mazzuco, Mirtha Lewis.

Budget and support requested:
The OBIS Data Manager is asked to establish some form of automated notification to nodes regarding Quality Reports and the need for nodes to review and update terms. OBIS Data Manager will scope “undefined term registry tool”.
US$ 10,000 towards Pieter’s salary

4.8.3 OBIS Project Team on Genetic Data

This project team is directed to discuss and decide on the guidelines and actions needed to integrate biodiversity data derived from sequence information to OBIS.

Recommendations:

- The project team on genetic data is directed to review existing guidelines for genetic data addition to DwC-A of GBIF, and to align the guidelines based on this
- Develop guidelines on how the biom-format could be used for genetic data ingestion to OBIS
- Decide how sequence information will be linked to or stored in OBIS
- Decide how taxonomic assignments can be kept reliable and comparable
- Decide the need for a bioinformatics pipeline for sequence analysis including taxonomic processing and quality control. Or the use of existing standardized analytics pipelines
- Discuss the possibility to mine additional sequence data from public sequence databases

Membership:

- Saara Suominen, Ward Appeltans, Pieter Provoost (OBIS Secretariat)
- Maxime Sweetlove, Anton Van de Putte (AntOBIS)
- Hanieh Saeedi (Deep-Sea node)
- Akinori Yabuki, Takashi Hosono (OBIS Japan)
- Dmitry Schigel (GBIF)
- Ben Sutherland (OBIS Canada)
- To be confirmed: someone from the EurOBIS Team

Budget and support requested:
US$15,000 for the drafting workshop (Second half of 2021)

4.8.4 OBIS Project Team on the UN Ocean Decade

The SG-OBIS directed this team to:

- Co-develop a Decade programme proposal with MBON, GOOS BioEco and UNEP-WCMC to be submitted on 15 January 2020
- Define what OBIS should look like in 10 years and what it takes for OBIS and OBIS nodes to operate under the Decade. If funding becomes available, what are the priorities to have the biggest impact?
- Support the development of a global ocean biodiversity observing system that operates under shared principles and standards, and move our work beyond the traditional science and into the operational space (e.g. fisheries in-dependent surveys).

Membership
Ward Appeltans (OBIS secretariat), Dan Lear (OBIS-UK), Martha Vides (OBIS Colombia), Lenore Bajona (OBIS OTN), Kats Fujikura (OBIS Japan), Izwandy Idris (OBIS Malaysia), Anton Van de Putte (AntOBIS), Ana Carolina Mazzuco (OBIS Brazil) and Hanieh Saeedi (Deep-Sea node).

Budget and support requested:
No budget requested

6 ADOPTION OF RECOMMENDATIONS, WORK PLAN AND REPORT

The SG-OBIS adopted the recommendations and work plan. The draft of the report was circulated afterwards for final input and approval.

7 DATE AND PLACE OF NEXT SESSION

Due to the uncertainty on travel in 2021, as well as the advantages of online meetings (more participants and less costs), the SG-OBIS decided to organize the 10th session of the IODE Steering Group for OBIS on 30 November - 3 December 2021 as an online meeting. In addition, an interim SG-OBIS online session will be organized on 26-27 May 2021.

8 ANY OTHER BUSINESS

Mr Sky Bristol has completed his 2 terms as SG-OBIS Co-Chair and the position was opened for nominations reminding the SG members of the tasks, both personal and institutional commitments this requires as outlined in the SG-OBIS-8 meeting report.

The OBIS project manager received the nomination of Mr Anton Van de Putte who was nominated by SEAOBIS and EurOBIS.

Mr Anton Van de Putte said that he is honoured by the nominations that were put forward for my candidacy for the IODE-OBIS Steering Group Co-chair. As such I would like to postulate my name on behalf of myself and my supporting Organisation the Royal Belgian Institute for Natural Sciences RBINS (and the Université Libre de Bruxelles (ULB)). Studying the ecology and evolution of Antarctic fish, I know from personal experience the time and effort that go into collecting samples in the marine realm, even more, I became aware of the utmost importance of making the raw data available for future generations of researchers. After obtaining my PhD in biological sciences, I started working for the SCAR Antarctic Biodiversity Portal, the Regional Antarctic node of both OBIS and GBIF in 2011 and continue to do so. Since 2016, I'm the Scientific Representative for Belgium for the Commission for the Conservation of Antarctic Marine Living Resources and as such provide advice on the Belgian Position. I've completed two terms as the Chief Officer of the Standing Committee of Antarctic Data Managers for the Scientific Committee for Antarctic Research. Having completed these latter responsibilities, I think I now have sufficient time to dedicate myself to the role of co-chair of the IODE-OBIS Steering Group. I believe that with my expertise in data management and international collaboration, I can make a valuable contribution to the OBIS network. I look forward to the opportunity to support the OBIS community in achieving its work plan and to engage with (re)newed partners and the UN Decade of Ocean Science for Sustainable Development.

The SG-OBIS greatly appreciated all the work done by Sky Bristol as co-chair and his visionary role in moving OBIS into OBIS2.0.

The SG-OBIS unanimously accepted and welcomed Anton Van de Putte as the new SG-OBIS co-chair, who will co-chair OBIS together with Mrs Martha Vides.

9 CLOSING OF THE SESSION

The 9th session of the IODE Steering Group for OBIS concluded on 20 November 2020 at 15:58.

ANNEX 1: AGENDA AND TIME TABLE

	TUE 17 Nov	Wed 18 Nov	THU 19 Nov	FRI 20 Nov
2-3 PM CET	**1/ Welcome and introduction** **2/ OBIS progress report** -OBIS executive committee -OBIS secretariat	-OBIS SATT -OBIS TaxTT -OBIS CDTT	**3/ Future Activities** -GBIF collaboration -PacMAN project - Proposal for new project team: Genetic data	**4/ Adoption of work plan 2021 and Recommendations**
3-4 PM CET	-OBIS nodes (survey) including OBIS nodes health status report	-OBIS COTT (incl 20 years project team) -OBIS QC project team -OBIS VIP	-UN Decade -Proposal for new project team: - Decade project team	**5/ Election of new OBIS Co-Chair** **6/ Any other business**

ANNEX 2: LIST OF PARTICIPANTS

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ANNEX 3: OBIS Nodes Survey

The OBIS nodes were asked the following questions. 27 out of 31 OBIS nodes responded to the survey. In case the response was positive, the OBIS nodes were asked to provide more details.

Do you encounter any difficulties in operating your OBIS node during the COVID-19 pandemic?

YES: 17 vs NO: 10

- The COVID-19 pandemic delayed quality control of datasets using R tools. I made an agreement with the local University to train a student. The candidate would work under the supervision of the PhD in computer Sciences (Marcos Zarate). With the quarantine we decided to cancel the selection of applicants.
- Although we are functional, some providers were not able to give us the data because they lost their job, or presented difficulties working from home. The data manager had some technical difficulties working from home (poor internet connection or loss of energy issues).
- Stress anxiety amongst staff, managing taking care of kids and work being at home, increased demand for online meetings
- The COVID-19 pandemic reduced in-person interactions among members of my staff and significantly disrupted our work on OBIS-related activities.
- No training and no workshop in relation of our internal Chilean plans
- Human capacity has been disturbed
- It has been difficult to follow communication with our possible data providers, as well as to consolidate the actions that have been carried out since last year. Local mobilization and meeting restrictions also obstruct the ability to conduct training and socialization on the OBIS node.
- Exploring new data providers is difficult, due to less chance of face-to-face workshop or scientific conference
- It has reduced the possibilities of taking part in national or international workshops dealing with issues related to the objectives of OBIS in order to promote our activities and expand our network
- We had the lockdown till September and now continue the distant work
- Many training and workshop events were moved virtual which allowed broader participation but also did not allow for the deeper connections that are necessary to establish new partnerships. I did have slightly higher participation from IOOS Regional Associations for sharing data.
- I have to attend many online meetings and this unfortunately kills a lot of work efficiency
- Re-assigned to COVID response work meant less time available to focus on OBIS; IOC meeting postponement meant I did not have good timing for reaching out for highlights.
- No big issues, mainly access to large-screen computers in the university. But we keep the activities

- I have to work at home now and there is some difficulty running the script to connect directly to the IPT server and upload/release datasets due to the network security
- Communication with the Oceans Past Initiative is fragmented.

Did you reach out to your IOC National focal point to highlight the importance of OBIS?

YES: 7 vs NO: 20

- We are in contact with Ariel Troisi, nowadays Chair at IOC of UNESCO. He knows about the activities of the OBIS in Argentina. We shared national initiatives to overcome difficulties in integrating biological data from research and fisheries surveys.
- Through the participation of meetings and committees the importance of OBIS has been highlighted although no formal presentation was carried out
- This is normally done through several of our colleagues, who are involved in networking
- Project to Fishery and aquaculture research foundation (Public agency)
- Yes, I do give briefs on OBIS.
- Our colleagues highlight OBIS importance through contribution to Global Ocean Science Report 2020, and through activities related to GOOS, G7 Ocean
- Yes, the programs of CMLRE are reviewed annually through a committee comprising members which include the IOC focal point.
- Yes, but via the IOC / IODE National Coordinator for Marine Information Management through the sharing of newsletters and information notes on OBIS
- Understood/confirmed with Bruce Patten that OBIS Canada is addressing this item.
- I have brought the importance of OBIS to my institute (Senckenberg) and also to CETAF and DiSSCo communities
- Yes, we had a recent talk with the Brazilian IOC focal point and are in contact. We will include a link of the OBIS node in their home site, the Brazilian National Oceanographic Database BNDO, and try to close other partnerships in 2021.
- Yes - because that me

Did you reach out to local NGO interest groups that may be interested in and/or want to partner with OBIS (e.g. sponsor local training course)?

YES: 17 vs NO: 15

- National institutions, NGO and Research center (e.g. Oceanography institute, University of Concepción).
- I posted an article on WIOMSA which has a very wide readership in the Western Indian Ocean region and beyond
- Red Interinstitucional para el Estudio de Ecosistemas Acuáticos del Ecuador
- As part of IndOBIS, efforts have been made to reach out to research organizations, universities and colleges that are involved in research activities in marine exploration.
- Reached out to CIOOS (national) and SLGO (regional), provided OBIS+ training to SLGO January 2020

- From our ASEAN contact person. Some gave interest, but we need to consult with their heads.
- Highlighted OBIS during meetings with partners; but not regarding sponsorship
- I am a member of UN decade for Germany, IPBES fellow, and CETAF official representative from Germany, also involved in DiSSCo project, and they will be happy to partner with OBIS
- We routinely promote OBIS within our existing networks (inc MEDIN and NBN in the UK). We are actively promoting the adoption of OBIS-ENV as the standard for biodiversity data exchange in Gov Agencies and NGO's
- Working with a couple groups (e.g. Hakai Institute, Saint Lawrence Global Observatory) for data contribution and planning to host "local" online training courses.
- We are discussing a partnership with the Ministry of Environment to collaborate with the implementation of Brazilian Biodiversity law and integration of databases.
- GBIF Regional BID workshops

Did you reach out to your institutional communication officer to repost OBIS items and/or generate new posts to highlight OBIS?

YES: 18 vs NO: 9

- Once, advertising of the 20th anniversary
- Partially; general information was shared on the INVEMAR´s social media.
- Yes on the RAATD paper, which data was published to OBIS
- Academics and investigators
- Yes, an email was sent out encouraging scientists to share their data
- Although there is no communication officer within the institution, a section for the OBIS node has been included on the CPPS website. This year the information and OBIS logos were updated. For the year 2021, it has been programmed to generate notes with infographics in order to highlight the contribution of OBIS to the generation of data and information, these will be uploaded to the CPPS website and social networks.
- Twitter
- IndOBIS has manpower dedicated for data dissemination and popularization amongst scholars, researchers and university students
- Rather, we specifically communicated at the institutional level of the objectives, products and services of OBIS through the sharing of flyers for example
- OTN Communications and OTNDC personnel regularly repost OBIS items and/or generate new posts.
- Our institute is now helping us to build a platform of OBIS-China for data sharing and gathering.
- In any communications with regard to our institution, we will always mention that our institution is one of OBIS nodes.
- ACB and Natureserve are currently developing a ASEAN Biodiversity Dashboard. And one of the map layers to be implemented is to include OBIS data
- I present OBIS always in Senckenberg meetings to report the highlights of OBIS

- All news items and social media are cross-promoted between MBA, OBIS-UK and OBIS
- Yes, sent two news articles about events we are participating and potential partnerships with Brazil GBIF node
- NIWA regularly reposts OBIS posts
- Oceans Past Initiative newsletter and communications include OBIS.

Did you reach out to your national or regional GBIF node to explore opportunities for collaboration, including data sharing, training opportunities and data provider engagement?

YES: 16 vs NO: 11

- We have attended training courses organized by GBIF Argentina and carried out collaborative work regarding the quality of georeferenced data. An application that uses data extracted from GBIF and OBIS was presented at the TDWG 2020 conference (https://doi.org/10.3897/biss.4.58975), the work included Dr. Anabela Plos (GBIF Argentina), John Wieczorek and Paula Zermogili, both members of different TDWG working groups.
- Even before consolidating the OBIS Colombia, we have been working with the GBIF-Node as we both are part of the Technical committee of the National Biodiversity System of Colombia and follow an Annual Plan on data provision (IPT OBIS-Colombia), publication of data (occurrences and events and even species data lists) and the revision and provision of minimum DWC standards for data providers. The GBIF-Node has facilitated a fellowship for the documentation and publication of marine data that has been carried out by a passant under supervision of INVEMAR.
- We are ourselves the regional GBIF node
- Already in touch with them
- Yes, we met in a meeting-Biodiversity Next and discussed collaboration at length
- Adding new datasets from the GBIF Japanese node
- Yes, we are in touch with GBIF Node manager for possible collaboration on data sharing.
- Yes, we have collaborated with GBIF Mauritania within the framework of the CESP-GBIF program for the development of a concept note on Regional capacitation on inventories of marine macroalgal biodiversity for the western coast of Africa
- Started discussions with GBIF via TDWG/GBIF October 2020 symposium contacts.
- Data exchange between Atlas of Living Australia (ALA) and OBISAU using the IPT and custom web services. Marine data from ALA collections is harvested into the OBISAU IPT and OBISAU data not in ALA is pushed to ALA on a regular basis.
- CAFF also operates as a node within GBIF and share data there
- Yes, significant time spent facilitating the North America GBIF/OBIS region including Mexico.
- We are working more closely with our national GBIF node (NBN) including automated data exchange and the development of a citizen science recording platform
- Attended one GBIF node meeting and connected with Canadian reps; but COVID pressures got in the way of more collaboration so far.

- Yes, we had two meetings and now we are discussing how to build a pipeline of data upload and publishing.
- GBIF Regional BID workshops
- Yes, via EurOBIS.

Did you reach out to your national IPBES focal point to develop relationships toward how OBIS data and expertise can be contributed to the ongoing assessment process?

YES: 6 vs NO: 21

- There are four focal points In Argentina nominated by the Ministry of Foreign Affairs of Argentina members of Environmental and Biodiversity Desk. I got in touch only with researchers that were involved in IPBES report led by Sandra Diaz but they focused on nature's contributions to people to inform policies and decisions. They used reviews of fishery surveys not databases.
- INVEMAR is part of the Colombia IPBES National Committee and throughout the meetings the importance and resources of OBIS has been highlighted. Nevertheless, the expert oriented framework of the reports has difficulty the inclusion of any particular matter.
- Have discussed with IPBES potential ways to inform IPBES assessments including provision of data
- Yes I have interacted with my national IPBES focal point on a few occasions but communications have decreased during COVID.
- I have done this several times, and now we are using OBIS for the ocean Data in IPBES because I have put it on the Table
- Ongoing work with our national IPBES focal point

Have you been able to build and increase your network of (potential) data providers/partners?

YES: 21 vs NO: 6

- I have been able to build one dataset BENTHIC SURVEY OF ARGENTINIAN ROCKY REEFS: PARDELAS BAY. Database belongs to georeferenced benthic photo-quadrats (25 x 25 cm) collected by SCUBA diving over rocky reefs. It is not available yet because the provider is waiting for the result of the journal review to change the visibility.
- We're hosting data from MBON Pole to pole project which has the Americas a geographical scope
- Al least 9 new personal providers have reached the node, but no new institutions or partners have been included.
- We continuously seek new potential data providers & partners; both through project involvement or 'ad hoc', loose contacts

- Collaboration projects with other institutions and investigators, database of Doctoral thesis and public database
- Yes, individual scientists
- In process to possible agreements with the Instituto Público de Investigación de Acuicultura y Pesca and Red Interinstitucional para el Estudio de Ecosistemas Acuáticos del Ecuador
- AP-MBON https://members.geobon.org/pages/ap-mbon.php
- Yes, we are building a national network for data sharing particularly on oceanography. Biodiversity data also one among them.
- VIA OTN Growth (new partners), expiring embargoes and in progress development of detections IPT-ENV products.
- I am trying to build the OBIS-China network, which can be used for communication of data providers and partners.
- Added harvesting from IMOS, IMAS, Global Archive, ZoaTrack and other geoserver instances in Australia.
- Target data providers are museums and academia in ASEAN countries
- Marenostrum, Constanta, Romania (potentially)
- Yes continues to expand new data management partners through events at Ocean Sciences earlier this year as well as work by IOOS to share more biological data. Also find new people to connect with via Twitter occasionally.
- I convinced many of my colleagues at Senckenberg to publish their data to OBIS, many have done so far
- Through our national role we actively engage with individuals, organisations and projects to increase the number of regular data providers.
- Received funding to hire two people to highlight OBIS and assist data contributors. Planning to sponsor training sessions early in 2021.
- Yes, I reached out to interested groups, gave several talks and training support to scientific groups intending to collaborate with data to OBIS, and already received new datasets. We are waiting for at least 2 big datasets from national programs in Brazil that might be published in the beginning of 2021.
- Incorporating regional GBIF providers and new NZ organisations
- More individual data providers. Happywhale.com. Also working with Flukebook to share their data with OBIS-SEAMAP.
- Large new project commences next year - will supply new historical data.

Are you involved or are you aware of any UN Ocean Decade action preparations of relevance to OBIS?

YES: 15 vs NO: 12

- Francisco Arias, the General Director of INVEMAR is Member of the Decade Planning Group
- yes, involved in setting up Southern Ocean actions

- Via IWG-SODIS
- only lecture
- Yes, I was one of the organizers of the African version of Decade meeting to garner ideas. I have participated since then in webinars for the call for actions, filled surveys on capacity development, ocean literacy etc
- Our institution has received the Call for Decade Actions No. 01/2020 and is exploring the possibilities of making a proposal
- Member of IODE IOC IWG-SODIS. Aware of others but none that OBIS Secretariat would not also be aware.
- I have participated in the review of its manuscript.
- Decade of Ocean Science for Sustainable Development (2021-2030)
- We are involved and have participated in WG6 to represent OBIS there
- Yes the OceanObs Research Coordination Network is having a meeting on Dec 4 to allow groups that plan to request endorsement for proposed 'Decade Actions' (Programmes and Contributions) to share summaries of these proposals during an online workshop, and engage in a dialogue with other groups to find synergies, potential collaborations, and advance their ideas. Proposals are due Nov 8. I do not have a proposal that I'm involved in but would be happy to help coordinate an OBIS one although the due date is soon. Maybe we could submit one late.
- member of German committee
- Yes, participating in IWG-SODIS
- I moderated the data management and forecasting working groups in the regional UN Decade workshops in Brazil (5 regions), where we highlighted the importance of OBIS and other best practices. I recently joined the IWG-SODIS, where I am collaborating with the preparation of the UN Decade Data Strategy.
- Attending regional Ocean Decade activities as OBIS rep.

Would you like to be involved in the preparations of a UN Ocean Decade programme on Biodiversity (e.g. in collaboration with MBON, GOOS and others)? Please explain in what capacity and what aspects you would like to contribute to.

YES: 17 vs NO: 10

- I am involved as focal point in AANChoR, All-Atlantic Ocean Research Alliance in data management aspects
- Yes, in training
- Participating on the call for Decade Actions on behalf of INVEMAR and/or OBIS
- MBON, data management, data integration, calculations of EOV's
- Will to help with steering and planning activities.
- If we can contribute expertise or general thoughts, we are willing to do so.
- Plankton diversity , adaptations in especial ecosystem such as upwelling and hypoxia zones
- Yes, liaising with potential contributors

- Perhaps, would need more details before committing, determining in what capacity/aspects to contribute.
- I think yes but unclear about capacity and aspects as yet.
- Policy on data management and sharing
- Open to cooperation
- Yes I would be happy to be involved but I'm not sure in what capacity, maybe brainstorming/proposal writing.
- In marine biodiversity and digitisation of natural collections
- Interested in coordination activities, meetings, network building. Linked to EMODnet Biology aspirations to establish EU MBON node
- Yes, I would be happy to collaborate. We (our research group) integrate several marine biodiversity programs in Brazil, including LTER, MBON, IUCN, and could contribute in developing working plans and strategy, mainly in the South Atlantic.

Do you want to continue with the monthly SG-OBIS platform meetings to share updates, exchange information and ask questions?

YES: 23 vs NO: 3 (one blank)

Do you have experience in dealing with molecular data and if yes do you want to contribute to developing data guidelines for DNA-based occurrence data?

YES: 12 vs NO: 15

- OBIS Colombia: Giomar Borrero - Scientific Researcher at INVEMAR
- AntOBIS: Maxime Sweetlove, Yi Ming Gan
- FishOBIS: My colleague, Dr. Yasin Bakis has experience with this.
- ESPOBIS: Dr Marcelo Oliva
- OBIS Kenya: Yes, but I will recommend a colleague Samuel Mwakisha - mwakishasam@gmail.com
- OBIS Japan: Akinori YABUKI
- IndOBIS: Dr. Sherine Sonia Cubelio
- OBIS China: Dr. Zhao Feng, XU Kuidong
- OBISAU: Published eDNA from the Bioplatforms database and would like to help with the guidelines.
- OBIS Malaysia: Melissa Beata Martin and Mohd Hafiz Borkhanudin
- OBIS Canada: I am following up with a colleague to confirm interest and can provide contact info later.
- OBIS Brazil: I do have some experience with molecular data, but I am not sure if it is enough to develop guidelines. But I am happy to assist in case you need it.
- SWP OBIS: Working with local DNA specialists to develop working guidelines

Do you make use of the WoRMS taxon match tool and/or related taxon matching tools to make sure your records have the WoRMS LSID in DwC:scientificNameID?

Yes: 24 vs No: 2 (one blank)

Can you identify the problems - if any - you encounter with the taxon matching part of the data processing?

- I do not know from OBIS. Some datasets cannot improve without assistance from the provider.
- The taxon matching is mostly the responsibility of the data providers. We've collected a list of species present in different environments (rocky shores and sandy beaches) and incorporated them into the data-entry forms with pulldowns. Providing a pre-curated list for the specific environment helps enormously. Also, short videos demonstrating how to do the matching with WoRMS tools.
- Support datasets greater than 1500 lines (virtual assistance on the suggested tool)
- integration with species traits
- More automation.
- assistance
- None
- Continuous improvement of libraries with the change in software version (R tool).
- A tool for catching incidental records, trainings
- Love the API, keep supporting it.
- correct spelling and know their recent classification
- Not at the moment
- None at this moment
- Works fine for our needs
- It seems fine to me.
- Common name search could be a bit more intuitive - most researchers will head directly there and seem to prefer Fishbase as a result.

Would you need additional (online) training or (online) support to improve your taxon-matching skills?

YES: 11 vs NO: 13 (2 blanks)