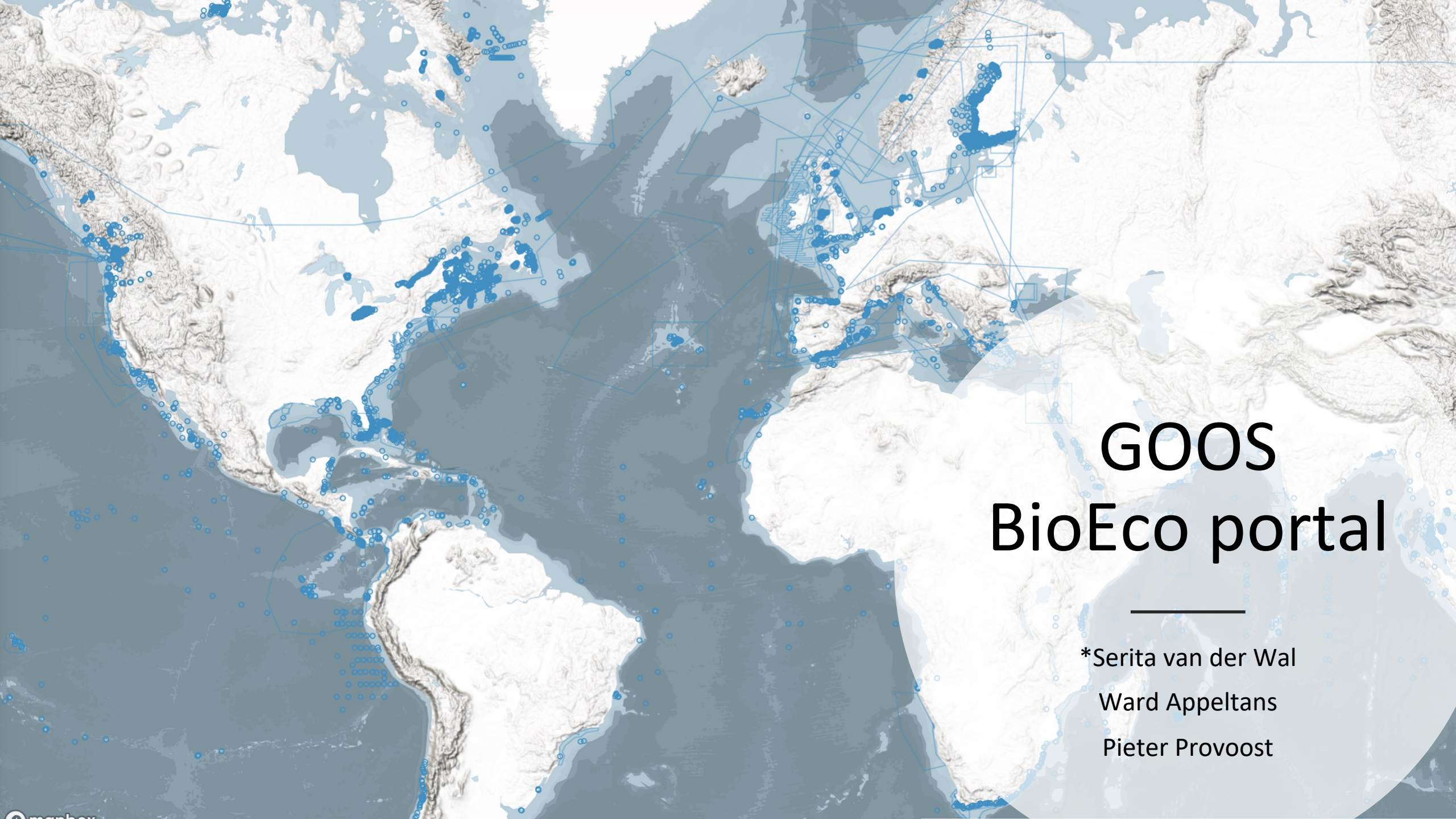
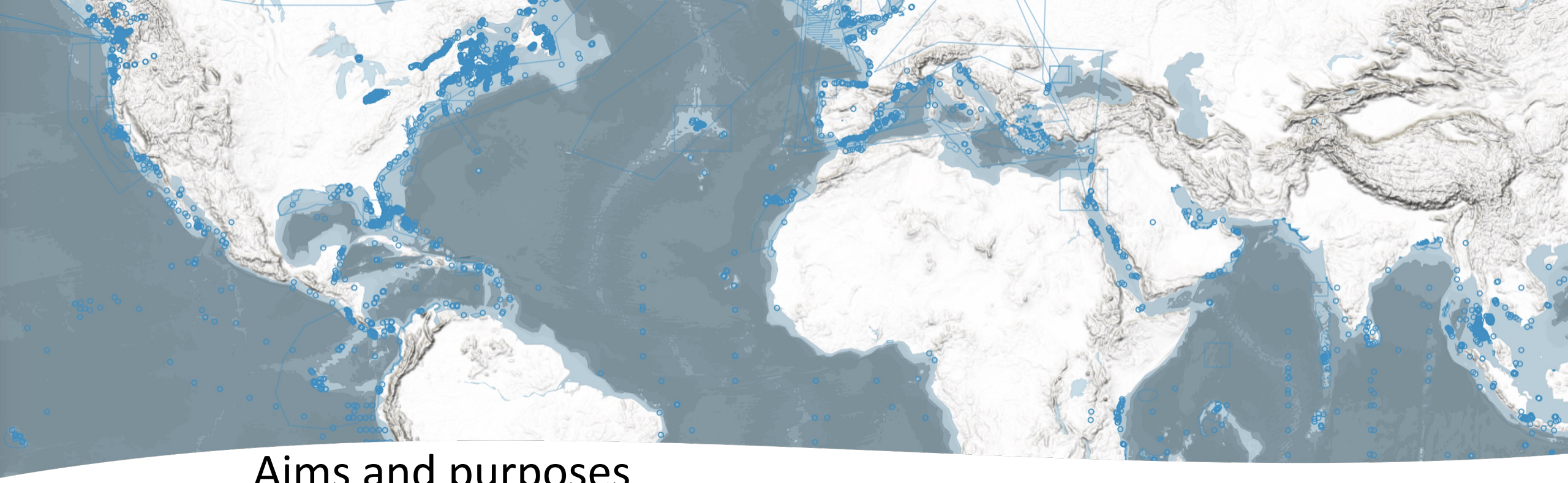


GOOS BioEco portal

*Serita van der Wal

Ward Appeltans

Pieter Provoost



Aims and purposes

- Provide open access data and information on global ocean observations and monitoring programs involving BioEco EOV's.
- **Link datasets from OBIS to the BioEco portal** to automise the data provision and input process.
- **Coordinate networks** to access / share information and metadata among global monitoring communities **and allow the panel to build its community of practice**
- **Tool for the ocean observing community** to discover where BioEco observations are recorded, SOP's/ best practices used, the status and frequency of observations, additional measurements recorded etc.
- Platform where ocean observation info can be extracted to present in, eg. the GOOS report card, other assessment - giving an overview of the status and development of BioEco EOV observations.

GOOS BioEco monitoring programs

Under development

Open GeoNode

Select variables

- Birds
- Fish
- Hard coral
- Invertebrates
- Macroalgae
- Mammals
- Mangrove
- Microbes
- Phytoplankton
- Seagrass
- Turtles
- Zooplankton

Select all | Deselect all

Readiness levels

Requirements ---
Coordination ---
Data ---

585 monitoring programs

Filter by name

Ocean Observatories Initiative

Skomer Marine Nature Reserve.Marine Conservation Zone

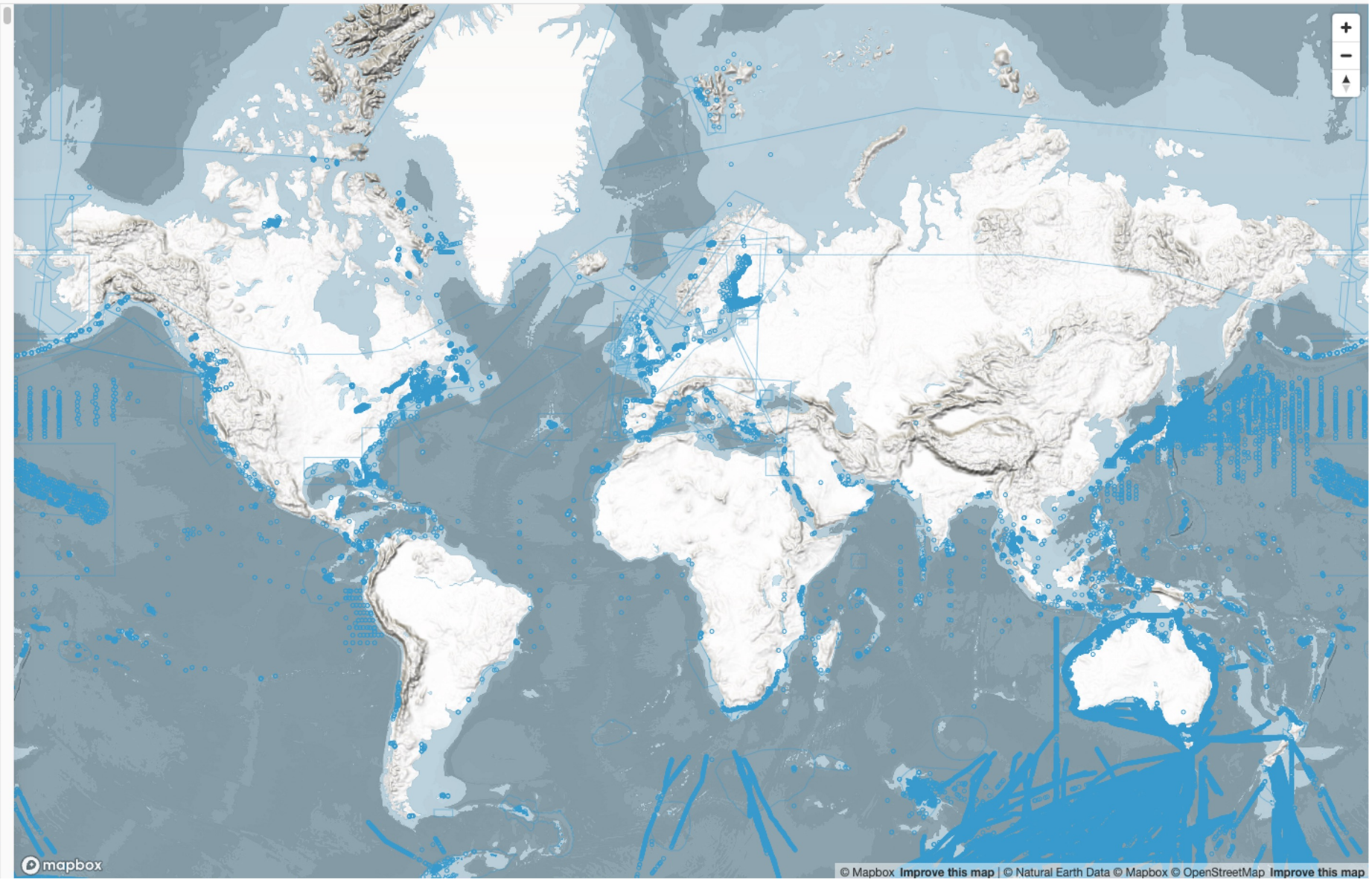
The Gulf of Riga littoral biodiversity

Infrastructure de Recherche Littorale et Côtière (ILICO): SOMLIT (Wimereux)

Projeto Toninhas; Projeto Tartarugas Marinhas; Projeto Aves; Projeto de Monitoramento de Praias da Bacia de Santos

Gulf of Maine North Atlantic Time Series

Svalbard Intertidal Project - Verlegenhuken



GOOS BioEco monitoring programs

Select variables

- [x] Birds
- [ ] Fish
- [ ] Hard coral
- [ ] Invertebrates
- [ ] Macroalgae
- [x] Mammals
- [ ] Mangrove
- [ ] Microbes
- [ ] Phytoplankton
- [ ] Seagrass
- [x] Turtles
- [ ] Zooplankton

Select all | Deselect all

Readiness levels

Requirements ---
Coordination ---
Data ---

197 monitoring programs

Filter by name

ACCOBAMS Survey Initiative

ANTIDOT

ASCOBANS

Abundance and distribution of harbour porpoises

Abundance and monitoring of sea turtles in feeding grounds of Guadeloupe FWI

Accousic monitoring of marine mammals in a changing Arctic

Aerial Survey of Arctic Marine Mammals

Applied California Current Ecosystem Studies

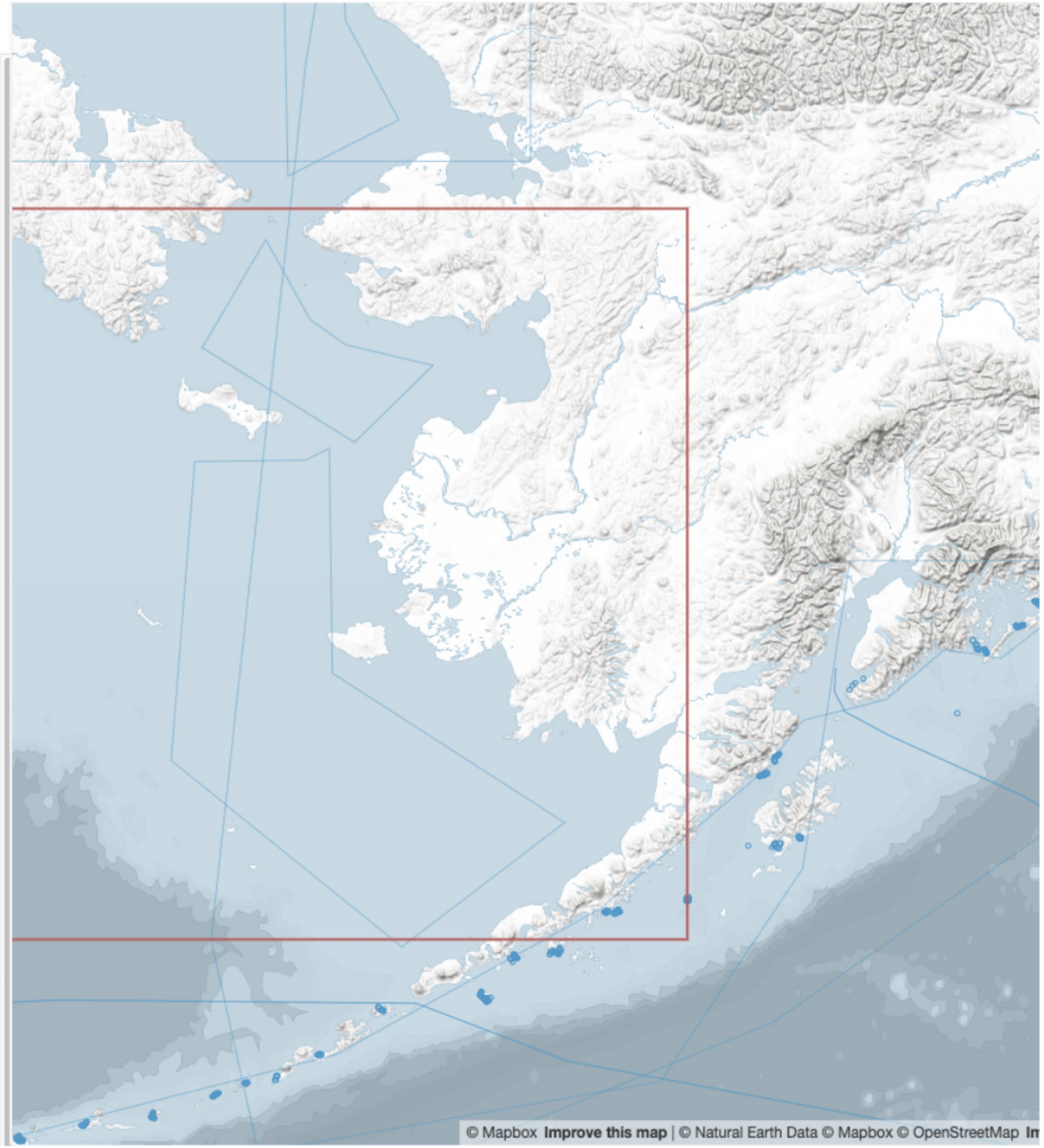
Arctic Marine Biodiversity Observing Network

NOAA Fisheries - Bering-Okhotsk Seal Survey (BOSS)

US surveys were conducted of the Bering Sea pack ice for bearded, spotted, ribbon, and ringed seals using digital cameras and thermal imagers mounted in the belly ports of two fixed-wing aircraft from 6 April to 23 May 2012 and 4 April to 9 May 2013. U.S. flights were flown at a target altitude of 1,000 ft (300 m) to maximize the area surveyed while maintaining the required imaging resolution and minimizing the chance of disturbance to seals and other wildlife. A NOAA Twin Otter (N56RF) aircraft housed three FLIR SC645 thermal imagers, which recorded continuous data in the 7.5-13.0 µm wavelength. Each thermal imager was paired with a Canon Mark III 1Ds digital single-lens reflex camera fitted with a 100-mm Zeiss lens. All six instruments were mounted in an open-air belly port. The combined thermal swath width was approximately 1,500 ft (470 m) at an altitude of 1,000 ft. A contracted Aero Commander aircraft carried two sets of paired thermal imagers (SC645) and digital SLR cameras (Nikon D3X) and surveyed a maximum swath width of approximately 900 ft (280 m). Color cameras collected images at a 1-1.2 second interval. In 2013 the two aircraft flew a total of 36 surveys covering more than 17,000 nmi (32,090 km) of trackline and collected about 913,000 images. Combined with the 2012 survey effort, the U.S. BOSS team covered 31,000 nmi of trackline and collected 1.8 million images.

Open in Geonode
Zoom

EOVs	**Birds** **Mammals** **Turtles**
Frequency	**every_6_to_10_years**
Start date	**2012-04-06**
End date	**2013-05-09**
SOPs	
Outputs	
Interested in publishing to OBIS	-
In OBIS	-
License	**Public Domain**
Funding	-
Funding sector	
Readiness (data)	**Level 7 - Fitness for purpose**
Readiness (requirements)	**Level 7 - Fitness for purpose**
Readiness (coordination)	**Level 7 - Fitness for purpose**
Contact	**<admin>**



GeoNode Data Maps About Search Serita Van der Wal

Welcome to the GOOS Biology and Ecosystems GeoNode

The GOOS Biology and Ecosystems Panel is made up of biology and ecosystem experts from around the world who provide guidance to the GOOS community. It aims to provide a better, clearer understanding of marine life to meet universal goals in sustainable development and conservation.

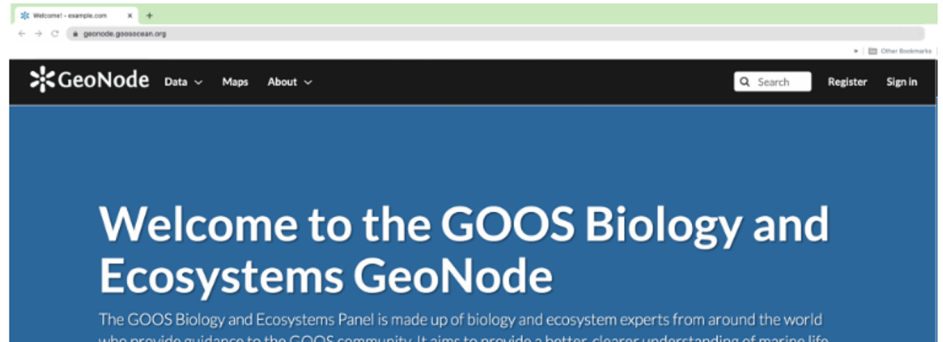
Documentation » Go to map »

GOOS BioEco portal documentation Search

GOOS BioEco portal documentation

This is the documentation for the GOOS BioEco portal and GeoNode. More general GeoNode documentation is available at https://docs.geonode.org/en/master/.

The source for this documentation is hosted at https://github.com/iobis/bioeco-docs.



Edit Metadata

Editing details for NOAA Fisheries - Bering-Okhotsk Seal Survey (BOSS)

Return to Layer | Update

Title

NOAA Fisheries - Bering-Okhotsk Seal Survey (BOSS)

Abstract

File Edit View Insert Format Tools Table Help

Helvetica 14px Paragraph

US surveys were conducted of the Bering Sea pack ice for bearded, spotted, ribbon, and ringed seals using digital cameras and thermal imagers mounted in the belly ports of two fixed-wing aircraft from 6 April to 23 May 2012 and 4 April to 9 May 2013. U.S. flights were flown at a target altitude of 1,000 ft (300 m) to maximize the area surveyed while maintaining the required imaging resolution and minimizing the chance of disturbance to seals and other wildlife. A NOAA Twin Otter (N56RF) aircraft housed three FLIR SC645 thermal

P 236 WORDS POWERED BY TINY

Owner

admin

Edition

version of the cited resource

DOI

a DOI will be added by Admin before publication.

Maintenance frequency

1x every 6 to 10 years

Free-text Keywords

Regions

× North America

License

Public Domain

temporal extent start

2012-04-06

temporal extent end

2013-05-09

Metadata uploaded preserve

Featured

Is Published

Project website

SOPs

List of SOP URLs, comma separated.

Outputs

List of outputs (products, applications), comma separated URLs.

Interested in publishing to OBIS

--

In OBIS

--

Funding

Funding sector

Academia
Civil society
Industry
Governmental

Point of Contact

admin

Metadata Author

admin

GOOS Essential Ocean Variables (EOVs)

× Marine birds abundance and distribution × Marine mammals abundance and distribution ×
× Marine turtles abundance and distribution

GOOS Readiness - Data management and information products

Level 7 - Fitness for purpose

GOOS Readiness - Coordination of observations elements

Level 7 - Fitness for purpose

GOOS Readiness - Requirement processes

Level 7 - Fitness for purpose

GOOS Essential Ocean Variable (EOV) subvariables

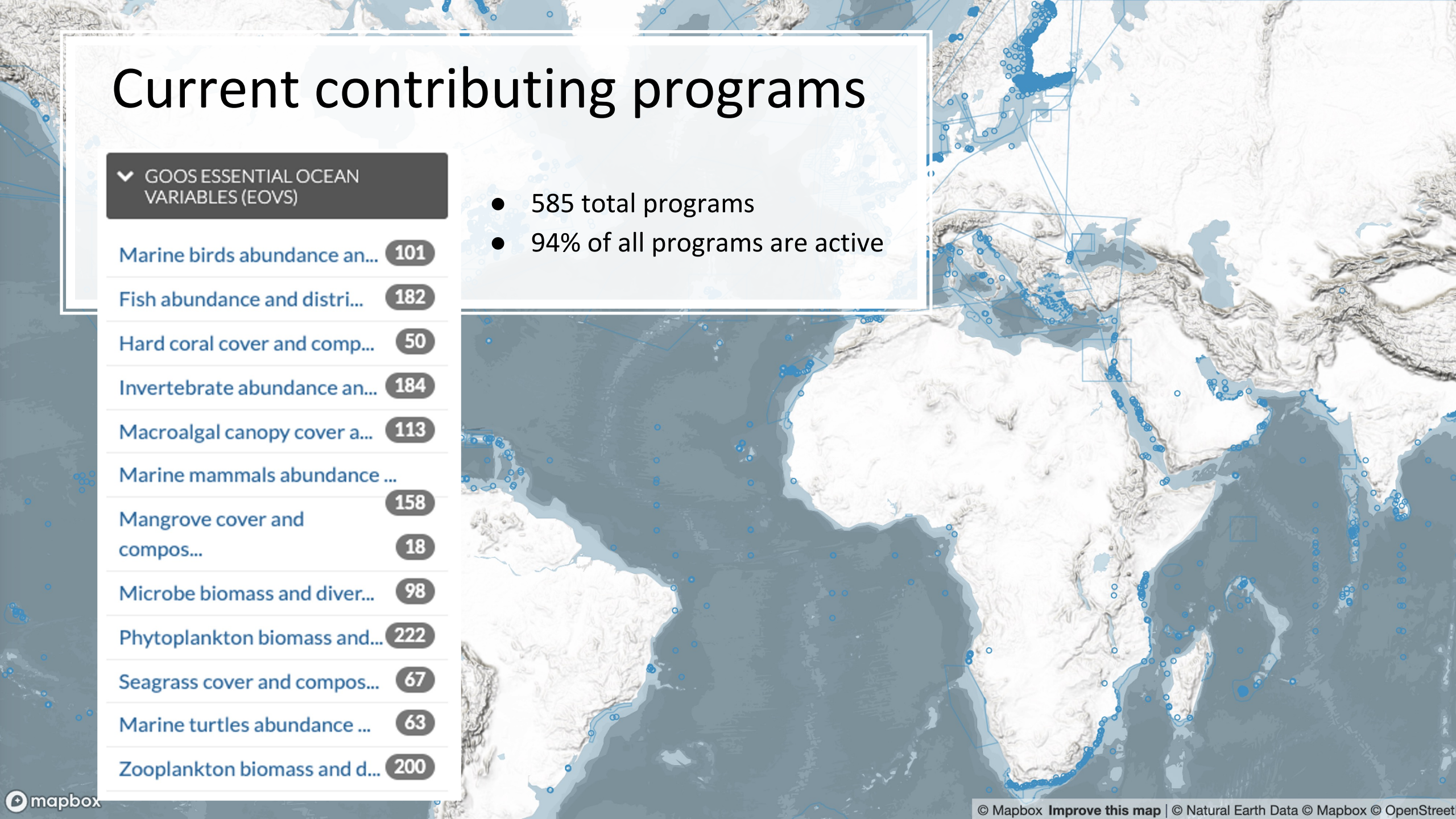
GOOS Essential Ocean Variables (EOVs): Physics, Biochemistry, and Cross-disciplinary

Attributes

Attribute	Label	Description	Display Order	Display Type	Visible
fid			1	Label	☑
the_geom			2	Label	☐

Return to Layer | Update

Current contributing programs



- 585 total programs
- 94% of all programs are active

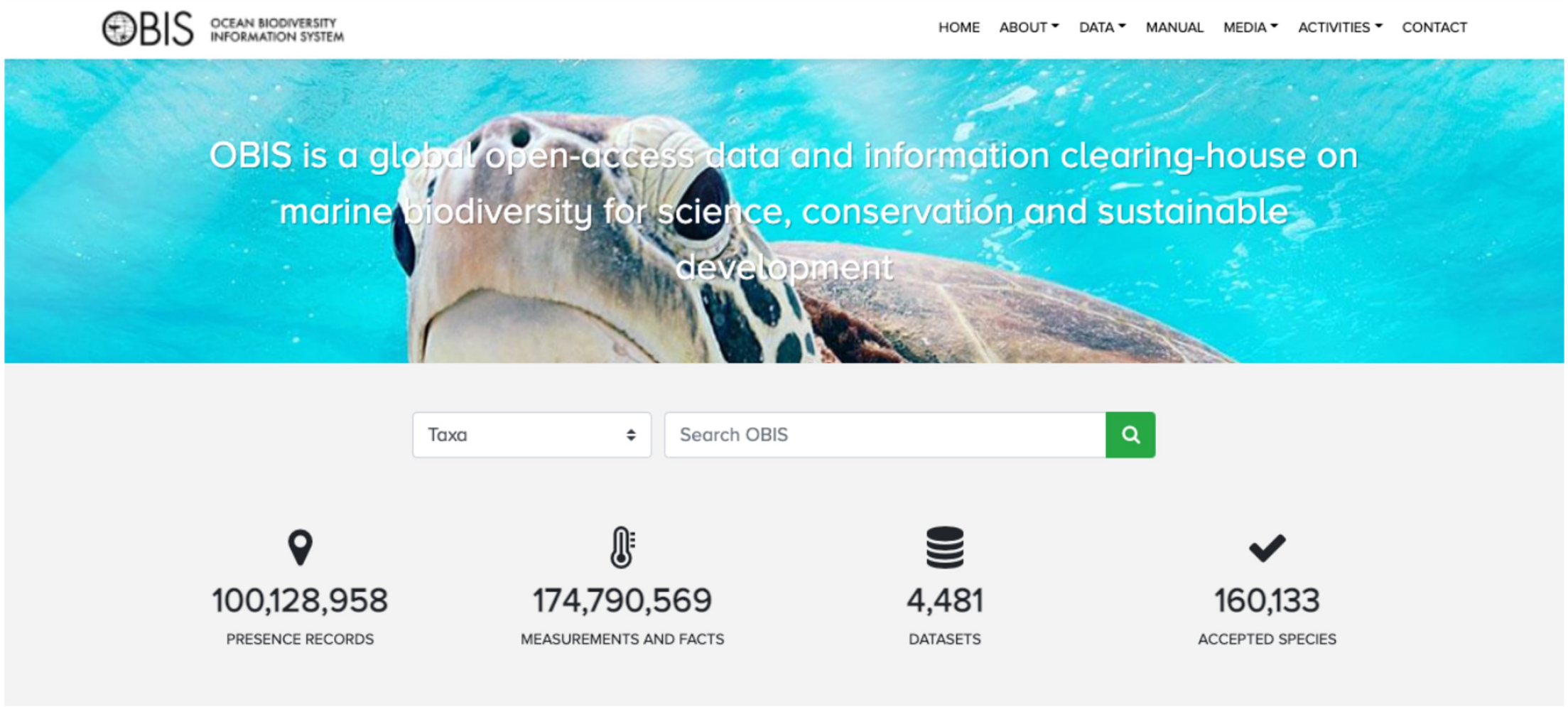
Goals for the BioEco portal

Deliverable 1: Develop an interactive map of networks and metadata for biological monitoring
Deliverable 2: BioEco EOV data available through OBIS

Year	Milestone nr.	Description	Target
2022	1	Development and public launch of the GOOS BioEco portal 1.0	Initial launch of the portal
2023 - 2024	2	Launch of the GOOS BioEco portal 2.0	Connecting and live feeding information into OceanOPS system, providing tailored information for the annual GOOS report cards.
	3	Establish regular data publication flows from GOOS BioEco Monitoring programmes to OBIS	Target of 25% of monitoring programmes establish **continuous dataflow** to OBIS.
2025	4	Fully operational GOOS BioEco portal	Target of **>90% of active BioEco monitoring programmes contributing and actively updating their entries**. Information from all active programmes are used in the annual GOOS report cards (covering all BioEco EOVs).
	5	OBIS is the global data access point for GOOS BioEco EOV data supporting international processes	Target of **80% of BioEco monitoring programmes established continuous data flow to OBIS**.
			Through OBIS, GOOS BioEco EOV data is used in **status and trends of CBD indicators and other global and regional assessments.**

OBIS manual

ENV-DATA examples



Examples: ENV-DATA and DNA derived da

Contents

12. eDNA & DNA derived data

The following example use cases draw on both the GBIF guide and the DNA derived data extension to illustrate how to incorporate a DNA derived data extension file into a Darwin Core archive. Note: for the purposes of this section, only required occurrence core terms are shown, in addition to all eDNA & DNA specific terms. For additional occurrence core terms, refer to Occurrence.

12. 1: eDNA data from Monterey Bay, California

The data for this example is from the use case "18S Monterey Bay Time Series: an eDNA data set from Monterey Bay, California, including years 2006, 2013 - 2016'. The data from this study originate from marine filtered seawater samples that have undergone metabarcoding for the 18S V9 region.

First, we can populate the Occurrence core file with all the required and highly recommended fields, as well as considering the eDNA and DNA specific fields. The Occurrence core contain the taxonomic identification of each ASV observed; its number of reads, as well as relevant metadata including the sample collection location, references for the identification procedure, and links to archived sequences.

Occurrence core:

occurrenceID	basisOfRecord	organismQuantity	OrganismQuantityType	associatedSequences
11216c01_12_edna_1_S_occ1	MaterialSample	19312	DNA sequence reads	NCBI BioProject acc. nr. PRJNA433203
11216c01_12_edna_2_S_occ1	MaterialSample	16491	DNA sequence reads	NCBI BioProject acc. nr. PRJNA433203
11216c01_12_edna_3_S_occ1	MaterialSample	21670	DNA sequence reads	NCBI BioProject acc. nr. PRJNA433203

`OccurrenceID` and `basisOfRecord` are some of the required occurrence core terms, in addition to the highly recommended fields of `organismQuantity` and `organismQuantityType`. A selection of samples from this plate were included in another publication (Djurhuus et al., 2020),which is recorded in `identificationReferences` along with the GitHub repository where the data can be found.

Occurrence core (continued):

sampleSizeValue	sampleSizeUnit	identificationReferences	identificationRemarks
147220	DNA sequence reads	GitHub repository Djurhuus et al. 2020	Genbank nr Release 221 September 20 2017
121419	DNA sequence reads	GitHub repository Djurhuus et al. 2020	Genbank nr Release 221 September 20 2017
161525	DNA sequence reads	GitHub repository Djurhuus et al. 2020	Genbank nr Release 221 September 20 2017

Next, we can create the DNA derived data extension which will be connected to the occurrence core with the use of `occurrenceID`. This extension contains the DNA sequences and relevant DNA metadata, including sequencing procedures, primers used and SOP's. The recommended use of ENVO's biome classes were applied to describe the environmental system from which the sample was extracted.

DNA derived data extension:

occurrenceID	env-broad_scale	env_local_scale	env_medium
11216c01_12_edna_1_S_occ1	marine biome (ENVO:00000447)	coastal water (ENVO:00001250)	waterborne particulate matter (ENVO:01000436)
11216c01_12_edna_2_S_occ1	marine biome (ENVO:00000447)	coastal water (ENVO:00001250)	waterborne particulate matter (ENVO:01000436)
11216c01_12_edna_3_S_occ1	marine biome (ENVO:00000447)	coastal water (ENVO:00001250)	waterborne particulate matter (ENVO:01000436)

The samples were collected by CTD rosette and filtered by a peristaltic pump system. Illumina MiSeq metabarcoding was applied for the target_gene 18S and the target_subfragment, V9 region. URL's are provided for the protocols followed for nucleic acids extraction and amplification.

DNA derived data extension (continued):

samp_vol_we_dna_ext	nucl_acid_ext	nucl_acid_amp	lib_layout	target_gene
1000ml	dx.doi.org/10.17504/protocols.io.xjufknw	dx.doi.org/10.17504/protocols.io.n2vdge6	paired	18S
1000ml	dx.doi.org/10.17504/protocols.io.xjufknw	dx.doi.org/10.17504/protocols.io.n2vdge6	paired	18S
1000ml	dx.doi.org/10.17504/protocols.io.xjufknw	dx.doi.org/10.17504/protocols.io.n2vdge6	paired	18S

For a detailed description of the steps taken to process the data, including algorithms used, see the original publication. Adding Operational Taxonomic Unit (OTU) related data are highly recommended and should be as complete as possible, for example:

DNA derived data extension (continued):

target_subfragment	seq_meth	otu_class_appr	otu_seq_comp_appr
V9	Illumina MiSeq 2x250	dada2;1.14.0;ASV	blast;2.9.0+;80% identity;e-value cutoff: x MEGAN6;6.18.5
V9	Illumina MiSeq 2x250	dada2;1.14.0;ASV	blast;2.9.0+;80% identity;e-value cutoff: x MEGAN6;6.18.5
V9	Illumina MiSeq 2x250	dada2;1.14.0;ASV	blast;2.9.0+;80% identity;e-value cutoff: x MEGAN6;6.18.5

otu_db	sop	DNA_sequence
Genbank nr;221	dx.doi.org/10.17504/protocols.io.xjufknw or GitHub repository	GCTACTACCGATT...
Genbank nr;221	dx.doi.org/10.17504/protocols.io.xjufknw or GitHub repository	GCTACTACCGATT...
Genbank nr;221	dx.doi.org/10.17504/protocols.io.xjufknw or GitHub repository	GCTACTACCGATT...