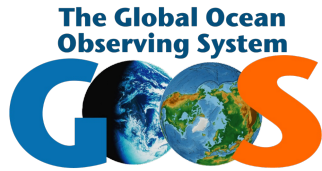


**Table S3.** Blank form of survey designed to obtain information on taxonomic, ecosystem, geographic and temporal coverage from globally distributed ocean observing programs. Survey was posted on-line using the SurveyMonkey® platform and available from January to July, 2016.



## GOOS Biology & Ecosystems Survey

### ASSESSMENT OF CURRENT STATUS OF MARINE OBSERVING NETWORKS FOR BIOLOGY AND ECOSYSTEMS

**AUTHORS:** The Global Ocean Observing System – Biology and Ecosystems Panel (GOOS BioEco)

**PURPOSE:** This survey seeks to: (1) evaluate the current state of biological and ecosystem observations in the ocean worldwide, (2) identify pathways to aggregate and upgrade regional and global observing networks, (3) demonstrate the benefits gained from integrated datasets, and 4) evaluate the need for additional sustained observations.

By providing information on your observation network, you will help promote global monitoring under an intergovernmental platform. All information collected through this survey will be publicly available. Contributors will be acknowledged and invited to contribute to any subsequent publication.

**INSTRUCTIONS:** The survey may take up to 20-25 minutes to complete. Please fill in or select appropriate responses to the questions on the following survey pages.

We hope than you can provide answers to all the questions, however, if there are non-applicable questions or questions you do not wish to answer, please disregard and continue to the next. **A partially completed survey is still useful.**



## GOOS Biology & Ecosystems Survey

**\* 1. Please provide the following information about yourself (Required):**

Your name:

Your position/title:

Your email address

**2. Please provide the following information about the observing network or monitoring program you are responding to this survey about:**

Name of the  
network/program:

Acronym (If  
applicable/commonly used):

Name of Observation  
Program (If part of a larger  
network):

Link to website of the  
Observation Program (if  
available):



## GOOS Biology & Ecosystems Survey

### 3. What type of program is it? (What are the "drivers")

- Government (management / policy)
- Science (research / academic...e.g. NSF funded)
- Conservation (e.g. TNC, WWF, CI, IUCN...)
- Intergovernmental (e.g. food security FAO / GEF)
- Other (please specify)

**4. Please describe the level of reporting (select all that apply):**

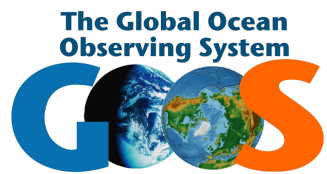
	No reporting obligation	To government reporting	To private (institution or funding entity) reporting	To international body reporting
Local survey or data collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Set of surveys or data collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Or other and please provide any specific details

**5. Organization(s) to which the programme reports (if any, describe how it works):**

**6. Could this observation network be reported by a larger aggregator (e.g. commercial fisheries reported through FAO)?**

- No
- Not sure
- Yes (if so please specify)



## GOOS Biology & Ecosystems Survey

**7. Are the collecting/observation methods used automated?**

- Yes
- No

Please provide any clarifying comments here:

**8. Please identify all of the sampling tools/approaches used in the program (select all that apply):**

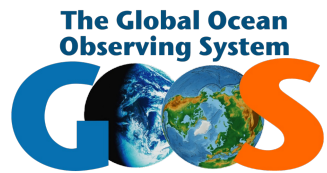
- |   |  |
|---|--|
| <input type="checkbox"/> Remote sensing         | <input type="checkbox"/> aerial surveys                            |
| <input type="checkbox"/> buoys                  | <input type="checkbox"/> divers, snorkelers                        |
| <input type="checkbox"/> moorings               | <input type="checkbox"/> satellites                                |
| <input type="checkbox"/> floats                 | <input type="checkbox"/> Net tows (pelagic, midwater, or demersal) |
| <input type="checkbox"/> gliders                | <input type="checkbox"/> Continuous Plankton Recorders (CPR)       |
| <input type="checkbox"/> AUVs                   | <input type="checkbox"/> Bottle samples                            |
| <input type="checkbox"/> ROVs                   | <input type="checkbox"/> Benthic quadrat/transects                 |
| <input type="checkbox"/> towed video            | <input type="checkbox"/> Visual survey                             |
| <input type="checkbox"/> BRUVs                  | <input type="checkbox"/> Still photos                              |
| <input type="checkbox"/> animal telemetry       | <input type="checkbox"/> Video                                     |
| <input type="checkbox"/> hydrophones            | <input type="checkbox"/> Active acoustics                          |
| <input type="checkbox"/> research ship surveys  | <input type="checkbox"/> Passive acoustics                         |
| <input type="checkbox"/> ships of opportunity   | <input type="checkbox"/> Sediment cores                            |
| <input type="checkbox"/> Other (please specify) |  |



**9. Please identify the sampling design used (specify where applicable)**

- Hierarchical, multiple sites arranged over multiple spatial scales
- Regionally, distributed sites
- Stratification (e.g. depth, other criterion)
- Spatio-temporal: the same sites are sampled over time
- Spatio-temporal: different sites are sampled at different times

Please provide short specification of sampling design



## GOOS Biology & Ecosystems Survey

10. Spatial (geographic) coverage of entire observation network (e.g. coordinate bounding box or name of ocean basin, Large Marine Ecosystem, Marine Ecoregion, Country's Exclusive Economic Zone, other). You may also provide a link to an online map. OBIS has developed a tool that may help you define the observing area. Go to: <http://iobis.github.io/map/> (check quick demo on [https://youtu.be/LSsuaeFi\\_u8](https://youtu.be/LSsuaeFi_u8)).

**11. Spatial extent of entire observing network (longest dimension):**

- <1km
- 1-10km
- 10-100km
- 100-1,000km
- >1,000km

Please provide any clarifying comments here:

**12. Granularity. Number of distinct sampling areas or locations within entire observing network (type continuous for complete coverage)**



## GOOS Biology & Ecosystems Survey

### 13. Time span of observations:

First assessment year?

Final assessment year?

Are observations ongoing?

### 14. Temporal coverage (sampling frequency):

- Daily
- Weekly
- Monthly
- Seasonal
- Annually
- Infrequent (opportunistic)
- Single snapshot
- Other (please specify)



## GOOS Biology & Ecosystems Survey

### 15. Major system(s) covered:

		coastal (<25m depth)	Shelf (25-200m depth)	Deep sea (>200m depth)
Pelagic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benthic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supra-littoral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

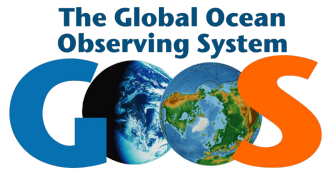
**16. Habitats sampled (please select all that apply):**

- |  |  |
|--|--|
| <input type="checkbox"/> pelagic neritic                                     | <input type="checkbox"/> mangroves                       |
| <input type="checkbox"/> pelagic oceanic                                     | <input type="checkbox"/> kelps                           |
| <input type="checkbox"/> rocky shores  | <input type="checkbox"/> seagrasses                      |
| <input type="checkbox"/> coral reefs   | <input type="checkbox"/> salt marshes                    |
| <input type="checkbox"/> shelf reefs   | <input type="checkbox"/> shelf-edge/canyons              |
| <input type="checkbox"/> deep sea reefs                                      | <input type="checkbox"/> seeps and/or hydrothermal vents |
| <input type="checkbox"/> shelf unconsolidated sediments (e.g. sandy beaches) | <input type="checkbox"/> seamounts                       |
| <input type="checkbox"/> Other (please specify)                              |  |

### 17. Major taxonomic groups

- |  |   |
|--|---|
| <input type="checkbox"/> Pigments  | <input type="checkbox"/> Billfish   |
| <input type="checkbox"/> Microbes  | <input type="checkbox"/> Corals   |
| <input type="checkbox"/> Phytoplankton                                     | <input type="checkbox"/> Submerged aquatic vegetation (e.g. seagrasses, seaweeds) |
| <input type="checkbox"/> Zooplankton                                       | <input type="checkbox"/> Benthic invertebrates                                    |
| <input type="checkbox"/> Invertebrate nekton                               | <input type="checkbox"/> Turtles  |
| <input type="checkbox"/> Bony fishes                                       | <input type="checkbox"/> Seabirds   |
| <input type="checkbox"/> Cartilaginous fishes (sharks, rays and chimaeras) | <input type="checkbox"/> Marine mammals   |
| <input type="checkbox"/> Tuna  |   |
| <input type="checkbox"/> Other (please specify)                            |   |





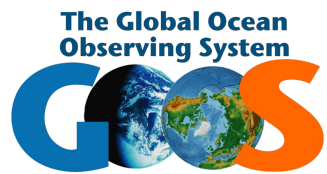
## GOOS Biology & Ecosystems Survey

18. For each major group you selected in the previous questions, please select the key variables measured (select any/all that apply):

	Functional groups or OTU (Operational Taxonomic Units)	Species presence only	Species presence and absence	Species presence and abundance or biomass	Productivity (Primary in the case of phytoplankton)	Microbial activity	Cover (e.g. live coral cover, mangrove and seagrass cover...)	Horizontal distribution	Vertical distribution (depth)	Movement patterns / residence times	Other behaviors (e.g. diving/foraging or conspecific interactions)	Population and size parameters (sex, age, body mass, length)	Biological vital rates (life history): survival, reproduction, recruitment, fecundity, etc.)	Physiology	Diet	Genetic structure
Pigments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Microbes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Phytoplankton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zooplankton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invertebrate nekton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bony fishes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cartilaginous fishes (sharks, rays and chimaeras)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tuna	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Functional groups or OTU (Operational Taxonomic Units)	Species presence only	Species presence and absence or biomass	Productivity (Primary in the case of phytoplankton)	Microbial activity	Cover (e.g. live coral cover, mangrove and seagrass cover...)	Horizontal distribution	Vertical distribution (depth)	Movement patterns / residence times	Other behaviors (e.g. diving/foraging behavior/social or conspecific interactions)	Population and size parameters (sex, age, body mass, length)	Biological vital rates (life history): survival, reproduction, recruitment, fecundity, etc.)	Physiology	Diet	Genetic structure
Billfish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Submerged aquatic vegetation (e.g. seagrasses, seaweeds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Benthic invertebrates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turtles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seabirds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marine mammals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	<div style="border: 1px solid black; height: 150px; width: 100%;"></div>														





## GOOS Biology & Ecosystems Survey

**19. Are the data archived/stored in a national data centre or other data repository?**

- No
- Yes (please specify)

**20. Is there an international data standard associated with these key variables?**

- No
- I don't know
- Yes (please specify, or provide link)

**21. Is there a data quality control process?**

- No
- Yes (Please specify, e.g. names are matched with the World Register of Marine Species, geographical and temporal outliers etc)

**22. Are there any data access restrictions?**

No (open access)

Yes (please specify)

**23. Are the data published online (e.g. through a data portal interface)?**

No

Yes (please specify link)

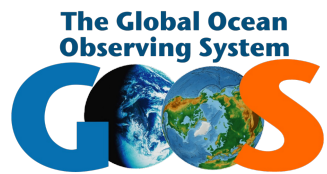
**24. Are the metadata (summary, descriptive info) published online?**

No

Yes (please specify link)

**25. Are the data in OBIS ([www.iobis.org](http://www.iobis.org))?**

- No, and I don't want this
- No, my data types are not suitable for OBIS
- No, but I would like to
- Yes, but only partly (e.g. species presence only, or aggregated summary level data)
- Yes, some datasets are but not all
- Yes, fully
- Other (please specify)



## GOOS Biology & Ecosystems Survey

**26. Is the program planning or willing to expand geographically / taxonomically?**

- Yes
- No

Please provide any clarifying comments here:



**27. Based on your experience, which biological and ecosystem variables would you suggest to be considered as essential to measure change?**



**That's it!!! Thank you so much for your time.**

**Best regards,  
The GOOS BioEco panel**

**Visit us at <http://ioc-goos.org/biology>**