Biological Observing Programs/Networks Information

This questionnaire seeks to ascertain the coverage and attributes of long-term biological monitoring and observing programs worldwide. The survey should take ~15-20 minutes and please note that you cannot save your progress, so this needs to be filled out in one attempt.

We are primarily interested in information from long-term observing sites/programs/networks with respect to the following <u>biological Essential Ocean Variables</u>:
- <u>benthic invertebrate abundance & distribution</u>
- <u>bird abundance & distribution</u>
- <u>hard coral cover & composition</u>
- <u>fish abundance & distribution</u>
- <u>macroalgal cover & composition</u>
- <u>mangrove cover & composition</u>
- <u>marine mammal abundance & distribution</u>
- <u>microbe biomass & diversity</u>
- <u>ocean sound</u>
- <u>phytoplankton biomass & diversity</u>
- <u>seagrass cover & composition</u>
- <u>turtle abundance & distribution</u>
- <u>zooplankton biomass & diversity</u>

In the next year we will deliver a map of contributing networks to the international community, including identifying major geographic and capacity gaps. We will then report progress in filling these gaps on a regular basis to the United Nations community.

Thank you very much for taking your time to provide this essential information!

* 1. Your first name

[   ]

* 2. Your last name

[   ]

* 3. Your email address

[   ]

* 4. Your primary institution (Full name of institution, abbreviation *if applicable*)

[   ]

* 5. Full name of observing network/program/observatory

[ ]

6. Network/program/observatory abbreviation (if applicable)

[ ]

7. If the network/program/observatory has a website, please put the url below.

[ ]

8. If the observing program is a site, observatory, program, or node that is part of a larger observing network, please indicate which larger network/program it is a part of.

[ ]

* 9. List full names of the funding institutions/organizations. Please be sure to separate multiple entries with commas.

[ ]

* 10. Which sector(s) best characterize the funder(s) of the program/network. Select all that apply.

[ ] Academia/Research institutions

[ ] Civil society (e.g. foundations, NGOs, charities)

[ ] Industry/Business/Private sector

[ ] Policy/government: mandated

[ ] Policy/government: not mandated

[ ] Other (please specify)

[ ]

11. If you would like to provide more information on the funders/drivers, please describe below.

[ ]

* 12. List full names of other key institutions, organizations, networks, programs, and entities affiliated with your network/program. Include hosting institutions and other affiliated entities. Please be sure to separate multiple entries with commas. If you would like to provide a url with a complete list of affiliates, please do so in the space below. We would like this information to better understand how observing entities are connected globally.

[ ]

13. If there is an additional person to contact for information about this network please provide their contact name & email following the format: First Last, email

[   ]

* 14. What description(s) best characterize the observing program/network? (Please check all that apply.)

☐ Raw data collector/provider (observatory/site/program collects data)

☐ Network of raw data collectors/providers (network/program coordinates many individual entities that collect data)

☐ Data aggregator (network/program stores or combines data, but the raw data is collected elsewhere)

☐ Data product developer (network/program takes raw data and creates data products)

☐ Data user (network/program uses the data from observing networks)

☐ Directory of programs/networks/observatories (the program provides information on observing networks/programs)

15. If you would like to provide more information on the type of observing program, please describe below.

[   ]

* 16. Does the network/program support capacity development and/or technology transfer for ocean observing?

○ Yes

○ No

17. If you would like to provide more information on the capacity development and/or technology transfer provided by the network/program, please describe below.

[   ]

Spatial Information about Sampling Locations

Providing spatial information for your observing program/network is an _extremely important_ part of this survey, since we would like to add networks/programs to a global map of biological observing systems worldwide. We would greatly appreciate if you would provide spatial information for your network by (1) using the point/polygon drawing tool provided on the subsequent page or (2) by submitting a csv file of sampling sites/locations/areas following the specifications below.
Please note: For biologging or animal telemetry data, please provide spatial information on deployment locations and/or acoustic receiver locations as described below. If you have any questions on how to provide spatial data please email satterthwaite@nceas.ucsb.edu.

Specifications for csv file of sampling locations
Filename: **Network name_network abbreviation_your name.csv**

Columns: **Network name, Latitude (in decimal degrees), Longitude (in decimal degrees)** , Biological EOVs sampled (optional but preferred), Year start sampled (optional but preferred), Year end sampled (optional but preferred), sampling site name (optional)

See sample image below

* 18. **Please indicate how you will provide spatial information below.**

   ◯ Option 1: Use the **point/polygon tool provided on the next page of the survey** to draw your sampling sites/locations (recommended for sampling programs without a csv file or programs with less than 10 sites)

   ◯ Option 2: Provide a **spatial csv file in the format described above** and send it to satterthwaite@nceas.ucsb.edu (recommended for sampling programs with more than 10 sites)

   ◯ Option 3: The network/program **samples biological variables using _only_ satellite data so has global coverage**

19. If you would like to provide more information on the sampling location(s) of the program/network, please describe below.

Please provide **spatial point or polygon information (Lat, Lon in decimal degrees) for the sampling site(s)/location(s) over which your network samples using the polygon drawing tool linked here.** **Please follow the steps in the images below**. **Please create separate points/polygons for sampling sites/transects/areas that are more than ~100km apart.** For example, if all the sites in the network are in an area less than 100km then create 1 polygon, but if the network has sites spread out over more than 100km then create separate polygons/points for all sites.

Polygon/point drawing tool url: geojson.io

Although we understand that this information may be difficult to find, this question is *extremely important* since we would like to map the existing sampling efforts worldwide. Please reach out to satterthwaite@nceas.ucsb.edu with any questions about providing sampling area information. Thank you!

* 20. Please paste all of the **spatial information for your sampling site(s)/location(s)** from the
tool (geojson.io) following the instructions above.

Temporal Information about Sampling

* 21. What year did the network/program start sampling biological variables?

[   ]

* 22. What year did the network/program stop sampling biological variables? If the program is ongoing please write "active".

[   ]

23. If you would like to provide additional information on how long the network/program has been sampling, please describe below.

[   ]

* 24. What is the most common frequency with which biological variables in the network/program are sampled? (mode of sampling frequency).

○ Sub-daily

○ Daily

○ Monthly (12x per year)

○ Quarterly (4x per year)

○ 2x per year

○ 1x per year

○ 1x every 2 to 5 years

○ 1x every 6-10 years

○ 1x every >10 years

○ Opportunistically/highly irregular intervals

25. If you would like to provide additional information regarding the sampling frequency, please describe below.

[   ]

* 26. Does the network or program use any standard operating procedures, protocols, or other best practices for data collection?

◯ Yes

◯ No

27. If you would like to provide additional information regarding the standard operating procedures, protocols, or best practices for data collection, please describe below.

Raw Biological Data Access

* 28. Currently, are there any data access restrictions for the <u>raw</u> biological data sampled? Please note that access to averaged data, data products, or other synthesized data does not constitute access to raw data.

◯ Yes, there are restrictions to <u>raw</u> data access.

◯ No, the <u>raw</u> data are publicly accessible/open.

29. If the <u>raw</u> biological data are publicly accessible/open, please provide the website(s).

website

[   ]

website

[   ]

website

[   ]

30. If access to the <u>raw</u> biological data is restricted, please select the best answer below to describe the most common level of restriction for the data.

◯ Access by request only- anyone can get access but need to formally ask

◯ Limited access- many entities have access to raw data (e.g. something is hindering it being fully open such as a moratorium or a secure login is needed)

◯ Restricted access- only data provider and another entity (e.g. contractor) have access to raw data

◯ Fully restricted access- only data provider/program/network has access

31. If you would like to provide additional information about biological data access, please describe below.

[   ]

32. If access to the <u>raw</u> biological data is restricted, is the network/program working toward making the raw biological data publicly accessible/open in the future?

◯ Yes

◯ No

33. If the network is *not* working to make the <u>raw</u> biological data publicly accessible/open, what is the reason for this?

◯ Lack of sufficient funding

◯ Data are not allowed to be open

◯ Other (please specify)

[   ]

34. Do the raw data feed into any data aggregator(s)? Data aggregators are online platforms which store/compile data at once central location to be utilized for different purposes and can include data portals, data centers, data hubs, information systems.

○ Yes

○ No

35. If yes, what is/are the data aggregator(s)? (Separate multiple names with a comma.)

[   ]

* 36. Is the biological data from the network/program included in the Ocean Biogeographic Information System (OBIS)?

○ *Yes; all of the biological data* collected by the network is included in OBIS

○ *Yes; more than half but not all of the biological data* collected by the network is included in OBIS

○ *Yes; less than half of the biological data* collected by the network is included in OBIS

○ *No; none of the biological data* collected by the network is included in OBIS

○ *I don't know* if the biological data collected by the network is included in OBIS

37. If not, would the network/program be interested in putting the data into OBIS?

○ Yes

○ No

Essential Ocean Variables (EOVs)

* 38. Please select the variables that are included in your network. (Check all that apply.)

☐ Marine Mammals   ☐ Microbes

☐ Benthic Invertebrates   ☐ Ocean Sound

☐ Birds   ☐ Phytoplankton

☐ Hard Coral   ☐ Seagrass

☐ Fish   ☐ Sea turtles

☐ Macroalgae   ☐ Zooplankton

☐ Mangroves   ☐ The network does not include any of these variables

* 39. For each Essential Ocean Variable (EOV) listed below, please indicate if the network is/was collecting the variable systematically, if the network is/was collecting the variable opportunistically, the network aggregates the data, products from the variable are developed by the network, the network is a user of data of this variable, or if the variable is not part of the network in anyway. (Please select all that apply.)

	Variable is/was **collected systematically**	Variable is/was **collected opportunistically**	Network **aggregates data** for this variable	**Data products** from this variable are developed by the network	Network **uses data** for this variable	This variable is **not part of the network/program in any way**
Marine Mammal abundance	☐	☐	☐	☐	☐	☐
Marine Mammal distribution	☐	☐	☐	☐	☐	☐
Benthic Invertebrate abundance	☐	☐	☐	☐	☐	☐
Benthic Invertebrate distribution	☐	☐	☐	☐	☐	☐
Bird abundance	☐	☐	☐	☐	☐	☐
Bird distribution	☐	☐	☐	☐	☐	☐
Hard coral cover	☐	☐	☐	☐	☐	☐
Hard coral composition	☐	☐	☐	☐	☐	☐
Fish abundance	☐	☐	☐	☐	☐	☐
Fish distribution	☐	☐	☐	☐	☐	☐
Macroalgal cover	☐	☐	☐	☐	☐	☐
Macroalgal composition	☐	☐	☐	☐	☐	☐

	Variable is/was **collected systematically**	Variable is/was **collected opportunistically**	Network **aggregates data** for this variable	**Data products** from this variable are developed by the network	Network **uses data** for this variable	This variable is **not part of the network/program in any way**
Mangrove cover	☐	☐	☐	☐	☐	☐
Mangrove composition	☐	☐	☐	☐	☐	☐
Microbe biomass	☐	☐	☐	☐	☐	☐
Microbe diversity	☐	☐	☐	☐	☐	☐
Ocean sound	☐	☐	☐	☐	☐	☐
Phytoplankton biomass	☐	☐	☐	☐	☐	☐
Phytoplankton diversity	☐	☐	☐	☐	☐	☐
Seagrass cover	☐	☐	☐	☐	☐	☐
Seagrass composition	☐	☐	☐	☐	☐	☐
Turtle abundance	☐	☐	☐	☐	☐	☐
Turtle distribution	☐	☐	☐	☐	☐	☐
Zooplankton biomass	☐	☐	☐	☐	☐	☐
Zooplankton diversity	☐	☐	☐	☐	☐	☐

40. In addition to the biological EOVs listed above, does the network sample any of the following physical or biogeochemical EOVs? (Check all that apply.)

☐ Sea state

☐ Ocean surface stress

☐ Sea ice

☐ Sea surface height

☐ Sea surface temperature

☐ Subsurface temperature

☐ Surface currents

☐ Subsurface currents

☐ Sea surface salinity

☐ Subsurface salinity

☐ Ocean surface heat flux

☐ Oxygen

☐ Nutrients

☐ Inorganic carbon

☐ Transient tracers

☐ Particulate matter

☐ Nitrous oxide

☐ Stable carbon isotopes

☐ Dissolved organic carbon

☐ Ocean colour

41. If you would like to provide additional information on the variables sampled, please describe below.

Marine Mammals EOVs

You are seeing these additional questions because you indicated that the network includes marine mammals. **If the network collects marine mammal abundance and/or distribution**, please answer the questions below.

42. Please indicate if the network measures the following variables in addition to (or to derive) abundance and/or distribution. (Check all that apply.)

☐ Species presence/absence

☐ Age (year, age class, life history stage)

☐ Count data

☐ Repeated individual presence (e.g., tracking/resights/photo-id)

43. Please indicate which methods are used by the network to collect these data. (Check all that apply.)

☐ Line transect survey (vessel or aerial)

☐ Unmanned aerial vehicles (e.g., drone, hexacopter)

☐ Unmanned underwater vehicles (e.g., float, glider, mooring)

☐ Manned ground-based counts/resights/observations

☐ Photo-identification

☐ Passive acoustic monitoring/hydrophones

☐ Tracking/telemetry instrumentation

☐ Genetics (including eDNA)

☐ Other (please specify)

44. For any of the variables the network collects or methods the network uses, are there established standard operating procedures or best practices?

By "established" we mean that they have been formally described/written down, and they have been vetted among, and approved by, network members.

○ Yes

○ No

○ Unsure

45. If yes, please check for which method(s) or variable(s) the network has established best practices.

☐ Species presence/absence

☐ Age (year, age class, life history stage)

☐ Count data

☐ Repeated individual presence (e.g., tracking, resights, photo-id)

☐ Line transect survey (vessel or aerial)

☐ Unmanned aerial vehicles (e.g., drone, hexacopter)

☐ Unmanned underwater vehicles (e.g., float, glider, mooring)

☐ Manned ground-based counts/resights/observations

☐ Photo-identification

☐ Passive acoustic monitoring/hydrophones

☐ Tracking/telemetry instrumentation

☐ Genetics (including eDNA)

☐ Other (please specify)

Thank you!

46. **If you know of other marine biological monitoring networks in your region, we would greatly appreciate if you would send this survey to the relevant people that could provide information on those networks. For a list of networks already contacted please click here.** Otherwise, please provide the name and contact information for those networks below.

Please include observing networks that are:

- currently active

- long-term (>3 years)

- sampling biological variables (microbes, plankton, benthic invertebrates, fish (fisheries-independent), marine mammals, sea turtles, sea birds, seagrass, coral, macroalgae, mangroves, and ocean sound).

Full name of other biological observing program/network we should contact

Abbreviation of other biological observing program/network we should contact

Please list a **contact person's full name** for information on the biological observing network listed above (first name, last name)

Please list the **contact person's email address** for the biological observing network/program listed in the question above

47. Is there anything else you would like to tell us?

Thank you so much for taking the time to provide additional information on your observing network/program. We really appreciate it!