



National, regional and thematic Biodiversity Observation Networks (BONs): Background and criteria for endorsement

In a nutshell. This document explains what national, regional, and thematic BONs are and describes GEO BON's criteria for their endorsement. BONs will contribute to the collection and analysis of harmonized biodiversity observations, the development of integrated and interoperable biodiversity monitoring programs, the development of data standards and will make biodiversity data and data products more openly available. The observations from these networks will contribute to the management, conservation and sustainable use of biodiversity and the ecosystem services it provides to society.

1. Introduction

Many biodiversity observation efforts exist around the world, driven by a variety of objectives, focusing on various aspects of biodiversity and employing a range of methods. Biological field stations collect data on biological communities and ecosystem functioning, often for decades; conservation organizations and citizen scientists typically monitor species; fisheries data are collected from a vast range of rivers, lakes and the sea; and forest data are available from large parts of the globe. Remotely sensed platforms have produced long term data on change in land cover and land use, data on phenology are becoming available and there is a powerful, emerging field for genetic monitoring. Despite the many excellent biodiversity observation efforts underway, in most cases, these efforts are not interlinked and harmonized in a way that facilitates data aggregation and scaling. In order to address the many pressures driving biodiversity change and considering the limited capacity for biodiversity observations, it is critical that we begin to move towards a more interlinked approach for observation, data management, data flow and reporting. Achieving greater interlinkage will facilitate national reporting for the Convention of Biological Diversity (CBD), serve regional and global assessments of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), improve conservation planning and environmental impact mitigation and serve the scientific community.

GEO BON is encouraging the establishment, enhancement and interlinkage of biodiversity observation networks (BONs). BONs engage in networking, biodiversity monitoring and making biodiversity data and data products publically available. These BONs will become full members



of the GEO BON family, benefiting, on an ongoing basis, from the expertise and tools of the global network and biodiversity observation community.

The purpose of this document is to provide background on the various types of BONs and to explain the criteria that should be met for formal endorsement as a GEO BON network member.

2. Benefits of being involved with GEO BON

Becoming part of the GEO BON network ensures that the value of biodiversity observation efforts are maximized and scaled to better inform scientists, decision-makers and global organizations such as the CBD and the IPBES.

Various BONs have already begun the process of integration into GEO BON, and by this, to the large data infrastructure of GEOSS, the Global Earth Observation System of Systems, which opens the gate to a large body of Earth observation data from all societal benefit areas.

GEO BON helps:

- Enhance the credibility, visibility, discoverability and legitimacy of biodiversity data at the global scale.
- Assist BONs to meet the data needs of decision makers, researchers and other user groups.
- Gain access to a global network of scientific excellence where expertise and experience in biodiversity monitoring efforts around the world can be shared.
- Access to GEO BON's network, expert knowledge, and capacity building initiatives.
- Access information on funding calls and other opportunities through GEO BON news and networks.
- Access best practices, expertise and state-of-the-art tools for biodiversity observations, data management, analysis and reporting
- Access knowledge on how to scale up biodiversity observations (both through other in-situ and remotely sensed efforts), disaggregate global datasets and better detect change (e.g., improved ability to discover and link to other biodiversity observation initiatives).
- Access other relevant data holdings to help detect, understand, predict and respond to biodiversity change at their scale and within their own domain.

3. National, regional and thematic BONs within the GEO BON Global Network



Endorsed BONs are the member networks of GEO BON. The general aims of GEO and GEO BON, and thus of partner BONs, are:

- Promote synergies, efficiencies, collaboration and data sharing among biodiversity communities.
- Strive to create a harmonized, globally interoperable biodiversity observation network.
- Ensure that observation system outputs address key user needs such as those of governments, CBD, IPBES, companies, citizens and the scientific community.
- Maintain biodiversity observation efforts following best practice methods and utilizing methodological standards such as those associated with the Essential Biodiversity Variables (EBV) framework.
- Engage in the development of new standards for biodiversity data and metadata collection and archiving.
- Help to make biodiversity change data, metadata, and products discoverable and openly accessible through GEO BON partners such as GBIF, Map of Life (MoL), Encyclopedia of Life (EoL), the GEOSS Common Infrastructure (i.e. the data become discoverable to the GEOSS Data Access Broker) and others.
- Contribute and link, where appropriate, to regional and global projects and assessments such as the Long Term Ecological Research (LTER) Network, the Global Wetlands Observation System (GWOS), the Global Ocean Observing System (GOOS).

All BONs form an open network of national, regional or thematic initiatives, experts and practitioners to help each other and the broader community with methods and knowledge. They help deliver data to national, regional and global users and also to interlink with other BONs. All BONs are strongly encouraged to contribute to GEO BON products and projects such as monitoring Essential Biodiversity Variables or BON in a Box (an online toolkit for biodiversity observations), and also, where appropriate, may engage in the development of CBD Indicators through GEO BON's partner organizations such as UNEP-WCMC.

3.1 National BONs

Most biodiversity monitoring and observation is done at a national or subnational scale. A national BON is an open network of national initiatives, experts and practitioners to help national and subnational initiatives with methods and knowledge, but also to interlink national experience, results and dataflows with other BONs to share with and have access to the experience of others.



There should only be one national BON per country, thus national BONs should strive to include all the key monitoring initiatives in their country as a network of networks.

National BONs are strongly encouraged to adapt, utilize and contribute to GEO BON products and projects such as the monitoring of specific Essential Biodiversity Variables and BON in a Box. This will improve national BONs' ability to serve their governments in the process of national reporting (e.g. national biodiversity targets and/or environmental state reporting) for both national and international purposes (e.g. CBD National Biodiversity Strategies and Action Plans; NBSAPs).

National BONs are recommended to have the endorsement of their government though they would not need to be financed directly or indirectly by their government. This endorsement might come from a national governmental body as the environmental ministry or the national CBD focal point. With that official endorsement and the acceptance of other criteria, GEO BON can fully approve them as member national BON in the GEO BON network. **Prior to full endorsement National BONs may be considered to be in a developing phase.**

3.2 Regional BONs

To date, GEO BON has three regional BONs (EU BON, AP-BON, and Arctic BON (Circumpolar Biodiversity Monitoring Program)). A regional BON might be a network of more than one national BON within a geographic region (as EU BON and AP-BON) or a network of experts, initiatives or organizations active within a biome (as Arctic BON) or a geographic region (as AP-BON). It considers all biodiversity monitoring done at the regional, supra-national scale. Regional BONs, in some cases, engage in setting up national BONs to help them to become associated to and approved by GEO BON as described above.

3.3 Thematic BONs

A thematic BON is organized by theme or discipline. These BONs aim to bring together thematic biodiversity observation initiatives in their field of expertise. These might be a specific group of taxa (e.g. butterflies, birds, fish, earthworms; here coordination with IUCN specialist groups is encouraged), ecosystems (e.g. marine, wetlands, mountains (e.g. GLORIA, ITEX), rainforests) or methodologies (e.g. camera traps (e.g. TEAM), remote sensing). MBON is an actually developing thematic BON. Thematic BONs aim to promote global, methodologically sound biodiversity observations, to improve the collection of harmonized and open access data



and develop data standards and methodologies for biodiversity monitoring and data management. The thematic BONs are encouraged to harmonize information that feeds directly into the development of Essential Biodiversity Variables. Thematic BONs also bring together and harmonize methods and tools that can feed into BON in a Box.

4. Endorsement criteria and process

4.1 Endorsement criteria

Endorsement provides a formal relationship to GEO BON and the associated benefits. Initiatives that meet the criteria described below will be eligible for endorsement by GEO BON:

- **Data Continuity and Interoperability** – BONs actively engage with their partners to collect time-series data to observe changes using standardized methods. In addition, BONs actively engage to improve interoperability of data.
- **Data Availability** – BONs actively engage to adopt an open data policy to make data/metadata or data products openly available.
- **Data Discovery** – BONs actively engage with GEO BON partners such as GBIF, Encyclopedia of Life (EoL) and the GEOSS Common Infrastructure (i.e. the data become discoverable to the GEOSS Data Access Broker), as well as GEO BON itself and others to make their data discoverable.
- **Products** – BONs manage their sector within the GEO BON website (which might be just a link to their own website).
- **Interaction** – Leads of BONs participate, when feasible, in GEO BON meetings and Working Groups and BONs provide relevant updates on their activities to GEO BON
- **Branding** – BONs brand themselves as a GEO BON regional, national or thematic BON.
- **National BONs** are recommended to have the endorsement and support of their national government.

BONs might not fulfill all criteria from the very beginning. In that case, a BON will be provisionally endorsed as a Developing BON. BONs in that initial phase will develop further and might seek help within the GEO BON community to do so.

4.2 Endorsement Process



A short application form will be made available on the GEO BON webpage and BONs interested in GEO BON endorsement fill out this template and send it to the GEO BON secretariat. The GEO BON secretariat will then come into contact with applicants. The application form asks for the following information:

- Name of BON
- Description of the BON
- Thematic, regional or national BON
- List the already involved Biodiversity Monitoring Initiatives and Partners
- Statement about data policies or how the data will be made open access
- Statement about which BONs partners are already involved in GEO, GEO BON or one of its working groups
- Statement about which biodiversity variables are being observed by the BON itself or BON members.
- National BONs: Endorsement and description of support of national government.

Developing BONs only need to provide information for parts of the criteria mentioned.

Based on the information provided, GEO BON's Implementation Committee (IC) will decide if a BON is ready to be endorsed. BONs will be given feedback immediately after the decision of the IC and steps forward will then be discussed individually between the GEO BON secretariat and the BON.