

Milestone MS514

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Progress report for operations of established EU BON sites M24

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Co-ordinator: MFN, Museum für Naturkunde - Leibniz Institute for Research on Evolution and Biodiversity, Germany

Partners: UTARTU, University of Tartu, Natural History Museum, Estonia
UEF, University of Eastern Finland, Digitisation Centre, Finland
GBIF, Global Biodiversity Information Facility, Denmark
UniLeeds, University of Leeds, School of Biology, UK
UFZ, Helmholtz Centre for Environmental Research, Germany
CSIC, The Spanish National Research Council, Doñana Biological Station, Spain
UCAM, University of Cambridge, Centre for Science and Policy, UK
CNRS-IMBE, Mediterranean Institute of marine and terrestrial Biodiversity and Ecology, France
Pensoft, Pensoft Publishers Ltd, Bulgaria
SGN, Senckenberg Gesellschaft für Naturforschung, Germany
SIMBIOTICA, Simbiotica S.L., Spain
FIN, FishBase Information and Research Group, Inc., Philippines
HCMR, Hellenic Centre for Marine Research, Greece
NHM, The Natural History Museum, London
BGBM, Botanic Garden and Botanical Museum Berlin-Dahlem, Germany
UCPH, University of Copenhagen: Natural History Museum of Denmark, Denmark
RMCA, Royal Museum of Central Africa, Belgium
PLAZI, Plazi GmbH, Switzerland
GlueCAD, GlueCAD Ltd. – Engineering IT, Israel
IEEP, Institute for European Environmental Policy, UK
INPA, National Institute of Amazonian Research, Brazil
NRM, Swedish Museum of Natural History, Sweden
IBSAS, Slovak Academy of Sciences, Institute of Botany, Slovakia
EBCC-CTFC, Forest Technology Centre of Catalonia, Spain
NBIC, Norwegian Biodiversity Information Centre, Norway
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EU BON







EU BON: Building the European Biodiversity Observation Network
Project no. 308454

Large scale collaborative project

MS 514

Progress report for operations of established EU BON sites

Milestone number	MS514
Milestone name	Progress Report for operations of established EU BON sites
WP no.	WP5
Lead Beneficiary (full name and Acronym)	CSIC
Nature	Written report
Delivery date from Annex I (proj. month)	2014-11-30 (M24)
Delivered	Yes
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Comments	

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In case the report consists of the delivery of materials (guidelines, manuscripts, etc)

Delivery name	Delivery name	From Partner	To Partner

Summary of the Milestone

This document summarizes the activities performed by the members of WP5 during the second year of project's life (M13-M24) and dealing specifically with tasks:

- Internal document: [Metadata and Data Sharing Tools](#)
- D5.1: Principles and guidelines for establishing and operating EU BON test sites (M12=>M15=>M27).

The D5.1 document was rejected during the first evaluation of the project (1st review, Sept 2014), and the main task was to address the recommendations/suggestions made by reviewers on the first submitted version (M15) of the document. In addition, several preparatory tasks required for a proper functioning of the network of test sites were also conducted. These tasks included metadata format and managing tools, documenting test sites, preparing data sets to be shared, and the required feedback with analytical work packages (WP3 and WP4) to check the availability of test site data to be used for their analyses. In addition, test sites actively participated in several citizen science programs and/or designed new ones for their own purposes.

Introduction

WP5 was designed to coordinate testing of EU BON concepts and services for integrating biodiversity and Earth observation information at a few carefully selected areas in Germany (Rhine-Main Observatory), Greece (Amvrakikos Wetlands National Park), and Spain (Doñana Biological Reserve). During this period a new site (LTER Sierra Nevada, Spain), representing alpine ecosystems, joined the project. Likewise, two additional sites from France/Italy (Mercantour/AlpiMarittime) and Israel (HaMAARAG) were associated to the network (Fig. 1). These EU BON test sites are expected to offer a representative sample of European ecosystems, data layers, and links to local stakeholders and decision makers. Sites were chosen as being representative sites of freshwater, marine and terrestrial ecosystems, but also because of the availability of data layers and infrastructures, past and ongoing biodiversity assessment and monitoring activities, as well as applicable use cases. To achieve the goal of coordinating EU BON test sites, it is required that all test sites start working as a network, using common standards, protocols, and objectives. As initial steps towards a functioning biodiversity monitoring network, we are first focusing on adopting a common theoretical framework (e.g. Essential Biodiversity Variables, DPSIR -Driving force, Pressure, State, Impact and Response- framework), where we made already good progress, and implementing minimum standards to be adhered (as sketched in D5.1). In this procedure, the Brazilian test site (Instituto Nacional de Pesquisas da Amazônia) from our EU BON partner INPA, initially selected as an example of tropical systems was also actively involved.

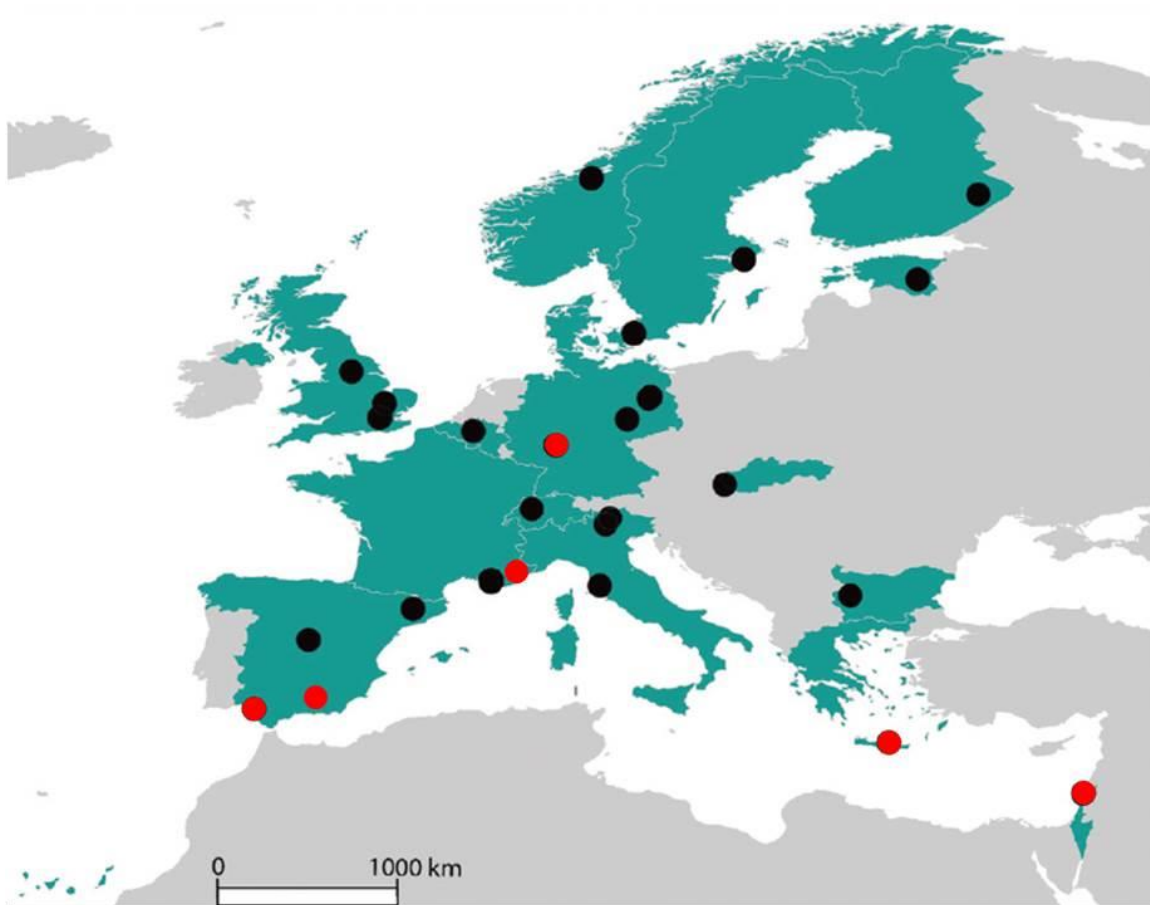


Fig. 1. Map of EU BON partners with test sites depicted in red. Modified from Hoffmann et al 2014 (Nature Conservation 6: 49-65)

We are also exploring ways to bring together the different facets of biodiversity change that we observe in each test site, i.e. find conceptual ways to bring our data together. Such tools for data integration and comparison are being developed in WPs 3 and 4 and are supposed to be tested in task 5.2 “Testing EU BON tools for data analysis and interpretation”.

Progress towards objectives

As mentioned in the previous annual report (MS513), the next step in data set documentation is checking whether the pre-defined list of required information to properly document data sets fits with real data coming from the test sites, including the suitability of different information to the pre-defined EML/Darwin Core tags. This exercise was first done by testing the most promising tools documented by WP2 and was compiled in the MS231. The objectives were: 1) to see whether the tools have resolution enough to account for the requirements previously made by EU BON partners, and 2) to find their pros and cons regarding the data set documentation process. The results of this exercise were published in the internal document [Metadata and Data Sharing Tools](#). This was uploaded to the ICP, and indicated that tools from both LTER (DEIMs) and GBIF (IPT) would be useful to partners according to both usability and resolution. The document also details the strengths and weaknesses of each of the tools to help new users to choose the one that best fit into their data set documentation process. In parallel, partners advanced the documentation of their data sets, involving additional staff (CSIC), or publishing new data sets through the IPT of GBIF (HCMR).

Partners have strengthened their collaboration by attending more frequently the teleconferences. Five of these WP5 meetings were done during this period, but also some additional meetings involving a reduced number of partners to discuss particular questions. Apart from the regular check of the WP progress, the main topic for many of the meetings was the first consolidated review report on the project, published in September (see below).

Achievements and current status

Task 5.1 *In situ* testing of EU BON information services through researchers and stakeholders (Lead CSIC; MfN, UFZ, SGN, Vizzuality, HCMR, MRAC, INPA, NBIC, TerraData; Months 4-50)

The document on “Principles and guidelines for the establishment and operation of monitoring sites” (Deliverable 5.1) was rejected during the first evaluation of the process, and therefore the main task developed by the WP during this period was addressing the recommendations/suggestions made by the reviewers. Once the consolidated review report was published (Sept 2014), partners of WP5 met *via* teleconference on 9th October to draft a working plan for this task. During that meeting, a core team was selected to give the document a new structure. The core team met on 16th October suggesting a new structure for the document that was finally discussed with all other WP5 members on 22nd October. All members agreed in the new structure and suggested important documents and publications to be taken into account for the revision process. It also was suggested to involve further key people from the project, and decided on both the work plan and the task to be conducted by each of the partners. The draft document was stored in a cloud drive with editing permissions for anyone with the link, so all partners involved in the WP had the opportunity of making suggestions, comments and additions to the draft text. Partners met again several times in November, December and January to discuss the numerous suggestions made during the time the document was online. The D5.1 was finally submitted to the EC in M27 (January 2015).

Some monitoring schemes are being conducted in the framework of the citizen science approach. For instance, the animals + plants app, launched by the MfN in collaboration with GBIF is being used since April 2013 by a notable number of EU BON members, also

including test sites. A new version of this application has been recently released with many improvements that already consider the feedback from users of the previous version. SGN made particular test runs with the app, using it in a survey sheet to assess strengths and weaknesses of the app with regard to biodiversity assessment in the Rhine-Main-Observatory. Some other citizen science-based approaches are being developed by test sites. For instance, CSIC was chosen as coordinator of the Butterfly Monitoring Scheme (BMS) of Spain and the beta version for the BMS-Spain portal is already available and ready to be tested by members of this network during the next breeding season.

Task 5.2 Testing EU BON tools for data analysis and interpretation (Lead SGN; UFZ, CSIC, Vizzuality, HCMR, MRAC, INPA, EBCC; Months 13-50)

This task has been started at the WP3/WP4/WP5 kick-off meeting in Solsona, Spain, in November 2013 and the task group schedule was specified at the General Meeting in Heraklion, Crete, in April 2014. In accordance with the agreed schedule, the matching procedure of tool developers and test sites was started in July 2014 (EU BON 4th Interim Report). As a first step, fact sheets for each tool were produced (11 altogether), stating the technical requirements and needs of expertise to test individual tools. Then, these fact sheets were circulated among the test sites and all associated sites of EU BON. Sites were supposed to specify, for which tools they have 1) appropriate data and 2) the expertise to independently test the user-friendliness of the tool. The institutions HCMR, CSIC, BGBM, SGN, Mercantour, UGR and Hamaarag completed this task so far and matches between tool developers and test sites have been identified for 9 of the 11 tools (Table 1; all tools except RangeShifter and FunCon, which have very comprehensive data requirements).

For all the matched tools, tool developers and test sites that hold appropriate data have been put in contact by email. The partners were asked to (1) define a timeline for this task and (2) discuss opportunities of this task and develop ideas that will lead to joint publications (e.g. by comparing the functionality of a tool on several data sets from different ecological realms). These discussions were first lead by email exchange, but once ideas crystallized, skype meetings were used to get used to the working protocol.

Some of the tools need additional remote sensing data in a resolution that is not readily available at all test sites. Therefore, currently all needs for additional remote sensing data are being aggregated and this data will be requested from the ESA warehouse through the remote sensing task force of EU BON. In parallel, associated sites that have not yet responded will be regularly reminded that this task is ongoing and that they are invited to join.

Table 1. Matching results between tools and test sites

Test sites	Tool title / Developer (Institution)											
	Habitat classification / Yoni Gavish (Leeds)	Fourier transforms / Duccio Rocchini (FEM)	Up-scaling species diversity / Yoni Gavish (Leeds)	Down-scaling species occupancy / Charlie (Leeds)	RangeShifter / Guy Pe'er (UFZ)	FunCon / Guy Pe'er (UFZ)	Create-Your-Own-Map (CYOM) / Cristina Garilao (FIN)	rAquaMaps Global Modelling Tool / Markus Skyttner (NRM)	Hybrid SDM/down-scaling method / Yoni Gavish (Leeds)	Improved freshwater SDMs / Mathias Kueimmerlen (SGN)	Diversity calculator / Johannes Penner (MfN)	
HCMR	YES	MAYBE	YES	MAYBE	NO	NO	YES	YES	MAYBE	NO	YES	
CSIC	MAYBE	-	YES	MAYBE	-	-	-	-	YES	-	-	
BGBM	-	-	-	YES	-	-	-	-	YES	-	-	
SGN	YES	MAYBE	YES	MAYBE	MAYBE	NO	YES	YES	MAYBE	YES	YES	
Mercantour	-	-	-	-	-	-	-	-	-	-	-	
Sierra Nevada	YES	YES	MAYBE	-	-	MAYBE	-	-	YES	MAYBE	MAYBE	
Hamaarag	-	-	YES	-	-	-	-	-	-	-	-	

Task 5.3 Testing EU BON services for management, decision makers and stakeholders: applications across different scales (regional, national, international) (Lead CSIC; UFZ, UCAM, SGN, HCMR, TerraData; Months 13-54)

After internal discussion on whether using a particular test site or an approach that allows linking all of them under the same use case, this task was formally initiated at the general assembly meeting in Heraklion, Crete, in April 2014. Information on managers and stakeholders' interests is being gathered in all sites based on experiences with different government mechanisms at local, national, European and international levels and some applications are being drafted. They will be discussed during the General meeting in Cambridge to get clear outputs that may contribute to the review of policy requirements undertaken by WP6 (task 6.1) to be submitted in Month 40.

Task 5.4 Networking and expanding EU BON sites and acquiring additional support (Lead MfN; UFZ, CSIC, SGN, HCMR, MRAC, INPA, WCMC; Months 10-54)

This task has started in September 2013 (M10) and it seeks mainly to increase the number of EU BON test sites, thus increasing the network in Europe and globally. As explained above, the initial list of test sites has been already expanded and some potential new sites like the ECOSCOPE network are planned to be incorporated, and they are expected to play an active role in the consortium. In parallel, several EU BON partners will be part of forthcoming EU projects such as ECOPOTENTIAL, also aiming to give access to interoperable ecosystem Earth Observation data and information. Their members could be asked to become associated test sites to EU BON and guidelines and principles for biodiversity monitoring developed in EU BON could be also implemented there. Additionally, some EU BON partners are involved in eLTER, which could be asked to become associated EU BON test sites as well.

Challenges and further/future developments

Due to the mutual interdependency between WP2 and WP5, some of their outputs will be produced jointly, especially those involving CSIC, which participates in both work packages. That was the case of the internal document [Metadata and Data Sharing Tools](#) that was built under strong cooperation between WP2 and WP5. Similarly, WP2 is considering the requirements of WP5 regarding the specification of the data portal, including online tools required to upload and edit information on test sites, metadata, data sets, as well as any other information from all the test sites that needs to be provided in standard formats. An important tool to be integrated into the EU BON portal will be a user-friendly CRUD (create, read, update, and delete) interface, that allows for data and metadata management. Some use cases related to that tool would be the geo-referencing of both sites and monitoring protocols using basic GIS tools, the documentation of metadata using the online editor and the uploading and editing of data sets within the portal. One of the test-sites (Rhine-Main Observatory) has already suggested the creation of a multi-layered biodiversity portal linked to its site as use case.

All the above described feedback between work packages would be used to define, introduce and integrate EU BON common tools.