

Federating knowledge on stocks and fisheries in Blue-Cloud with the GRSF

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The ocean supports a great diversity of life and ecosystems. It supports human life, provides food, and sustains countless ecosystem services. As highlighted by the [sixth principle of Ocean Literacy](#), our existence is inextricably interconnected with the ocean, and fisheries are a prime example of this relationship. Providing millions of jobs and sustenance to communities worldwide, fisheries have been identified as a core element for achieving the UN Sustainable Development Goal (SDG) number 2, [Zero Hunger](#). FAO is the official custodian of and SDG14 - "Life below water" to conserve and sustainably use the oceans, seas and marine resources for sustainable development. Progress towards each target is being measured with one indicator each, and D4Science is the platform for FAO training on SDG14.4.1 - Fish stocks sustainability: "Proportion of fish stocks within biologically sustainable levels".

In addition to the training activity, in the Blue Cloud fisheries demonstrator, other activities are ongoing to support the sustainable use of our marine living resources.

Collecting and disseminating quality data in this sector is fundamental to enable researchers and professionals to perform research across disciplines and countries, combining for example biodiversity and fisheries monitoring data. The Blue-Cloud demonstrator [Fish, a matter of scales](#), is delivering a scalable and robust open data portal for fisheries data in EU waters and beyond, with a focus on a Fisheries Atlas and a Global Record of Stocks and Fisheries (GRSF). This demonstrator is developed by the [Institute of Computer Science at FORTH](#), the Information and knowledge management Team (NFISI) of the [Fisheries and Aquaculture Division](#), Food and Agriculture Organization (FAO), and the [French National Research Institute for Sustainable Development](#). In this article we will focus on the Global Record of Stocks and Fisheries (GRSF).

What can researchers do with it?

GRSF is an interactive web-based system which assigns unique identifiers to stocks and fisheries and federates knowledge on status/trends of stocks and fisheries across various sources. The GRSF provides services and a knowledge base to collect information about stocks and fisheries from three distinct data sources: FIRMS (from FAO-UN), RAM Legacy Stock Assessment database, and FishSource (from SFP). These organisations share content through the GRSF. This may seem a trivial task, but aligning data across sometimes very vague boundaries is no sinecure; stocks are diffuse, monitoring and reporting differ widely, and there is no uniform management structure.

The GRSF provides collaborative data and values normalization, improves compliance with data standards, generates semantic and unique identifiers as a new innovative global standard, and allows linking to ancillary data. It provides the careful and sophisticated environment that is needed when harmonizing monitoring data that are potentially used by large market parties to assess origins and sustainability of their products. The merging of similar records, such as merging two stock records derived from different sources, but describing the same resource, or the dissection of complex records into fine-grained ones require delicate manoeuvring.

Moreover, the contents of GRSF are periodically refreshed, to ensure that it remains up-to-date with the original data sources (including potential fixes as well). This combination of transparent harmonisation and updating is unique, and is currently reviewed by key data providers.

The result is a robust GRSF knowledge base whose contents are published in the GRSF Virtual lab. A GRSF record is much more than unique identifiers, it is also a rich object that can have associated time series of data including catch time series, and stock status descriptors, it is properly geo-encoded and visualised through a generic ISO/OGC compliant Blue-Cloud Map viewer, and can be accessed through an variety of options, including a QR code. It also maintains the links to the data providers, and this is not only useful as a means of verification, but also acknowledges data contributors.

Once published in the GRSF Virtual Lab and catalogue, authorized researchers can explore the GRSF and search or browse over the contents of the GRSF. To this end, they are offered a set of groupings (i.e. stock records with fishing pressure information) and useful tags (i.e. records within area FAO 71) to quickly filter records. Moreover, aggregated information is shown through the virtual lab, providing details of time-dependent information. All relevant information can be downloaded from the lab. FORTH developed an API where researchers can exploit a list of predefined (and frequent) questions that summarise records.

Nephrops norvegicus - Northwest Coast of Scotland and North Ireland or as the West of Scotland (Division 27.6.a)

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GRSF Admin
The GRSF Admin VRE is the environment to manage GRSF records by authorized users. The approved and published records are available to public users in the GRSF VRE [read more](#)

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OPEN DATA

Record
Groups

PRIVATE

Nephrops norvegicus - Northwest Coast of Scotland and North Ireland or as the West of Scotland (Division 27.6.a)

Short Name: Norway lobster - West of Scotland, North Minch
 GRSF Semantic identifier: asfis:NEP+fao:27.6.a
 Record URL: https://data.d4science.org/ctlg/GRSF_Admin/b6b46037-4080-3197-b9b2-eaff34512ff9

[Citation](#)

Dataset extent



Map data © OpenStreetMap contributors
Tiles by MapBox

Tags

Assessment Unit

Code 27.6.a System fao Name Northwest Coast of Scotland and North Ireland or as the West of Scot...

Code NEP Classification System ASFIS Scientific Name Nephrops norvegicus

not connected

Together, the Global Record of Stocks and Fisheries can provide stakeholders in the fisheries management community with better, more comprehensive and up-to-date views on fisheries that will facilitate their decision-making activities.

The GRSF will continue to be maintained through the GRSF refresh workflow [1]. In addition, it will expand through the inclusion and/or linkage of information from other data sources including stocks from the SDG 14.4.1 questionnaire, and examine potential links and synergies with other demonstrators.

[Test the GRSF Virtual Lab](#)

References

[1]. Marketakis, Y., Tzitzikas, Y., Gentile, A., Van Niekerk, B., and Taconet, M., 2020. On the Evolution of Semantic Warehouses: The Case of the Global Record of Stocks and Fisheries. 14th International Conference on Metadata and Semantics Research, Special Track on Metadata & Semantics for Agriculture, Food & Environment (AgroSEM'20) Madrid, 2020 - [Download here](#)