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## ATLAS Deliverable 4.2

### Connectivity tissue collections for ATLAS

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## 1. Introduction

**Brief summary of the content of this deliverable:** the deliverable includes: (1) a database on the species from which tissue collections can be made available to ATLAS for genetic and genomic studies to understand species genetic connectivity, phylogeography and evolution and how these are affected by different dispersal strategies; (2) a bibliographic compilation of connectivity studies on cold water coral species, as well as some general-reference papers, book chapters and theses; and (3) a compilation of results from preliminary tests on the adequacy of performing Restriction site-associated DNA (RAD) sequencing on CWC species.

**Information prepared and compiled by** Sophie Arnaud-Haond (Ifremer), Joana Boavida (Ifremer), with contributions from ATLAS partners.

### 1. Database on available samples of cold-water species for connectivity studies

A spreadsheet-based data table has been prepared including the information received from ATLAS partners as well as from researchers from other research institutes, museums and universities, regarding available samples of selected cold-water corals and associated species to be analysed for connectivity and other genetic and/or genomic studies.

The spreadsheet is organised with:

- A first sheet showing contacts, general information on the request for this deliverable and the partners which already contributed to the database; this is named "contact manager"
- A second sheet with a table showing information for all taxa named "quick filling", with general information on the institution responsible for storing the samples, biogeographical area, location, sampling strategy, number of specimens, preservation method, analyses already available, month and year of collection and the contact person
- One sheet per taxa showing the information on available samples separately; these sheets are named with the taxa name

The species considered were agreed in the First Annual Meeting of ATLAS in Edinburgh in 2016, with the exception of *Solenosmillia variabilis* and *Eunice norvegica*, which were added later. The species included in the data table are:

**Scleractinian corals:** *Lophelia pertusa*, *Madrepora oculata*, *Dendrophyllia cornigera*, *Desmophyllum dianthus*, *Solenosmillia variabilis*

**Octocorals:** *Paracalyptrophora josephinae*, *Viminella flagellum*, *Enalopsammia*

**Antipatharia corals:** *Leiopathes* sp.

**Other invertebrates:** *Eunice norvegica*, *Cidaris cidaris*, *Parastichopus tremulus*, *Nephrops norvegicus*, Crinoids

**Fish:** *Phycis blennoides*, *Chimera monstrosa*, *Lophius* sp., *Helicolenus dactylopterus*, *Capros aper*

Additionally, we added available information on samples of several other taxa, which are also available for genetic studies. This information is shown in a sheet named "Others". As initially these taxa were not targeted for this deliverable, the information included is thus limited.

Nevertheless, all information in this data table can be updated through the project duration and partners are encouraged to add samples they may have and to collect new ones.

Overall, information regarding available samples is relatively limited as from the total number of ATLAS partners, 9 replied to our request and from them, 6 partners have samples available. Further, we contacted several institutions external to ATLAS in order to explore possible contributions to our common data table from other colleagues. From all contacted institutions, four replied, three have samples available for this data table. Those are ready to ship or already sent or will be added to a large-scale collaboration. The final version of this data table will be uploaded to Zenodo/Pangea.

In general the areas from which samples are available are located in the Northeast Atlantic (e.g. Rockall bank, Bay of Biscay, off Galicia, Azores, Gulf of Cadiz) but also some samples are available from the high latitudes (e.g. Norway and Iceland), the Portuguese coast and the Mediterranean Sea (e.g. Alboran and Adriatic Seas). It is expected that through the duration of the ATLAS project this data table will become more comprehensive as more samples are collected in upcoming research cruises.

## **2. Bibliographic compilation on connectivity studies of cold water species**

The present spreadsheet compilation is the result of an attempt to collect information on genetic connectivity studies of NE Atlantic cold-water coral species. However, due to the reduced number of studies, some bibliography was included beyond the NE Atlantic, studies that address connectivity but not genetic connectivity and work that addressed coral historic phylogeography. It is by no means an exhaustive compilation of studies. At this point, it contains a list of 27 publications, of which 21 refer to single species, including a total of 12 cold-water coral taxa. Referred studies are provided in pdf format in a compressed folder.

**Structure and Content of the table:** Each entry corresponds to a bibliographic reference. References including more than one species are shown with one entry for each species. On the first columns of each entry, we gathered relevant bibliographic information (*Author, Year, the title of Journal or Book, Name of the publication and associated Keywords*).

Genetic connectivity information is contained in the following columns:

- Species name
- Geographical scope of the study
- Inferred connectivity range (e.g. inter-ocean, regional, etc.)
- Sampling type (e.g. ROV, trawl). This information was included as it may influence clonality estimates.
- Type of molecular markers used

## Appendix: Document Information

<b>EU Project N°</b>	678760	<b>Acronym</b>	ATLAS
<b>Full Title</b>	A trans-Atlantic assessment and deep-water ecosystem-based spatial management plan for Europe		
<b>Project website</b>	<a href="http://www.eu-atlas.org">www.eu-atlas.org</a>		

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