

# Manual for the European Tracking Network data management platform

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## 1. General Introduction

The European Tracking Network (ETN) data management platform is the central data portal of ETN. It gives access to all types of fish telemetry data (currently acoustic telemetry is supported, but this will be expanded in the future to other telemetry techniques as ETN aims at being all-inclusive) and provides an interface to manage, explore and download the metadata and data. Access is password protected and data moratorium rules are in place.

The ETN data portal has been developed by the Flanders Marine Institute (VLIZ) and is open to all European telemetry users. New developments and additional features are added on a continuous basis. The web application is built using PHP (using the Symfony framework) for the back-end side and Bootstrap/jQuery/Datatables/... (among others) to facilitate the development of the front-end side.

## 2. Registration, user groups and projects

Access to the data portal is restricted to registered members only. If you would like to make use of the data portal, you should become a member of ETN, by registering at <http://www.lifewatch.be/etn/login>.

By registering, you automatically agree with the [data policy](#).

Once your account has been created, you can be added to user groups. A user group has restricted access to (meta)data of specific projects.

ETN makes a distinction between network and animal projects. A network project refers to a group of receiver deployments, linked to a project/study area. An animal project refers to a group of animals tagged in the framework of a project/study.

## 3. Landing page

On the landing page of the ETN Data portal network project information is available. The networks (both active and past) are shown on a map by dots. If you click on one of the dots, project information is listed (i.e. Project name, Abstract, Contact person and Contributors). If you click 'Full details' you are directed to the IMIS website (<http://www.vliz.be/en/imis>), where you can find all details on people, projects, datasets, institutes and publications. When 'show receiver network' is clicked all deployment locations (both active and past) are listed.

To submit new project information use the Project template (available at [www.lifewatch.be/etn](http://www.lifewatch.be/etn)) and send it to the ETN administrators.

## 4. General sections in data management portal

Within the data management portal, **4 general sections** (fig. 1) are available to manage, explore and visualize the (meta)data:

- 1) Technology type
- 2) Metadata upload
- 3) Detection data upload
- 4) Metadata folders
  - a. Receivers
  - b. Tags
  - c. Deployments
  - d. Animals
- 5) Detection view

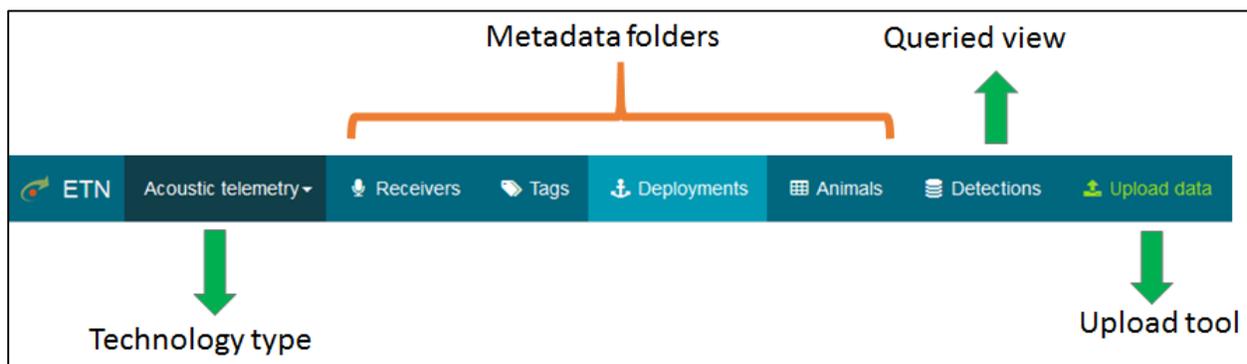


Figure 1- Overview of the different sections available in the data management portal

### A) Technology type

First, you have to select the type of technology you are working with. Currently, the database supports both acoustic telemetry and C-POD data. In the future, other telemetry technology types will be included. In this manual the acoustic telemetry is discussed.

By clicking the header, you can choose the technology type of your interest.

## B) Metadata upload

To facilitate the introduction of metadata by (new) users, the data management portal foresees in the possibility to import metadata (in bulk). This has the advantage that the user isn't obliged to fill in metadata forms one by one, but upload a single CSV-file containing all required metadata.

This is possible for:

- Tags
- Receivers
- Animals
- Deployments

Some important remarks to take into account before you start the import:

- An animal and a deployment are always linked to a (animal/network) project, thus the system needs to know to which project it should link the animal or deployment. This requires that the projects are created in advance, and that the scientist makes the link with a project in the CSV-files. Projects are created by the administrators. Use the template (available at [www.lifewatch.be/etn](http://www.lifewatch.be/etn)) to fill out the mandatory metadata linked to a project.
- The CSV-files need to respect a certain structure. Therefore, users should always use the sample CSV-file which can be downloaded at the 'Import metadata' tab (fig. 2). For each type of metadata, there is a file description available (click 'Open file description') that reveals which fields are mandatory and provides a short description for each field name.
- The CSV-file to upload should be comma-separated (and not dot-comma separated). If this is not the case, the user should reset the regional settings on its PC (control panel → clock, language & region → region & language → additional settings)

The import is performed as follows:

- 1) Go to: 'Data' → 'Import Metadata'
- 2) Choose the type of metadata you want to import
- 3) Download the 'Sample CSV file' and carefully read the file description
- 4) Fill out, at least, all mandatory fields in the CSV file and save the file on your PC
- 5) Browse for the file
- 6) Start the import

Once the import is completed you will be informed whether the import was successful or not. When successful, you will be able to review the imported data. By clicking on a specific record, you are directed to the metadata management form from that record where you can review the metadata and edit if needed.

In case the import was not successful you will be informed what caused the failure. Most common failures will be related to duplicate import, missing mandatory fields, data not comma-separated, unknown user group, date-time format not correct. Carefully review the data to be imported and adapt where necessary. When failure persists, contact the ETN administrators.

For date-time format, the standard ISO 8601 is used [https://en.wikipedia.org/wiki/ISO\\_8601](https://en.wikipedia.org/wiki/ISO_8601). If your format is not correct you should adapt it to “yyyy-mm-ddThh:mm:ssZ”.

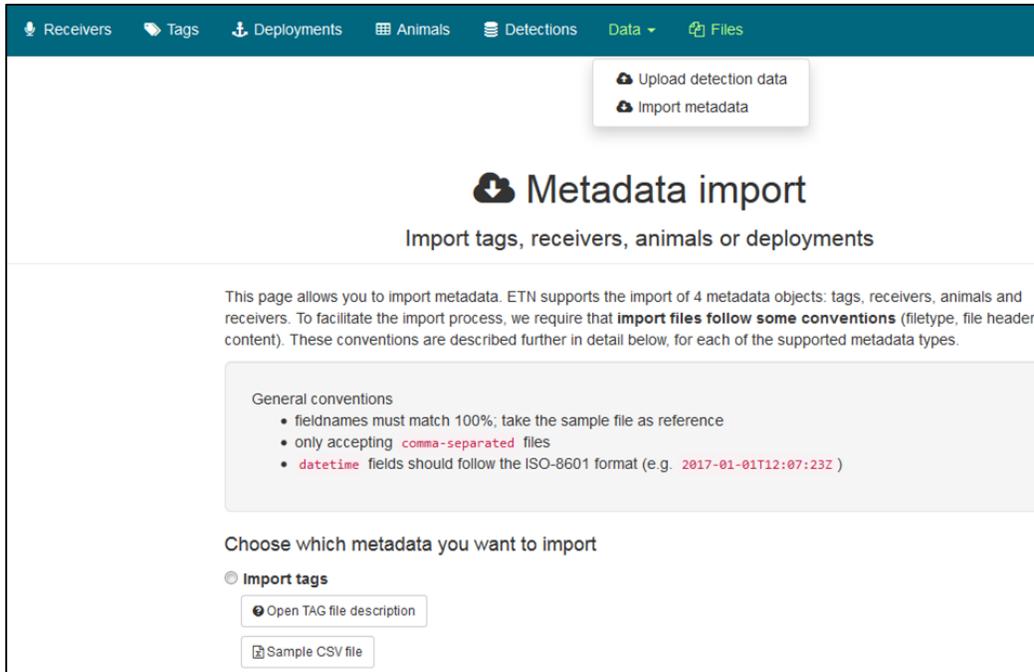


Figure 2 – Screenshot of the metadata import tab.

## C) Detection data upload

Once all the metadata is uploaded, the detection data can be entered into the system. Detection are uploaded per deployment, thus each deployment has one detection file.

To upload data:

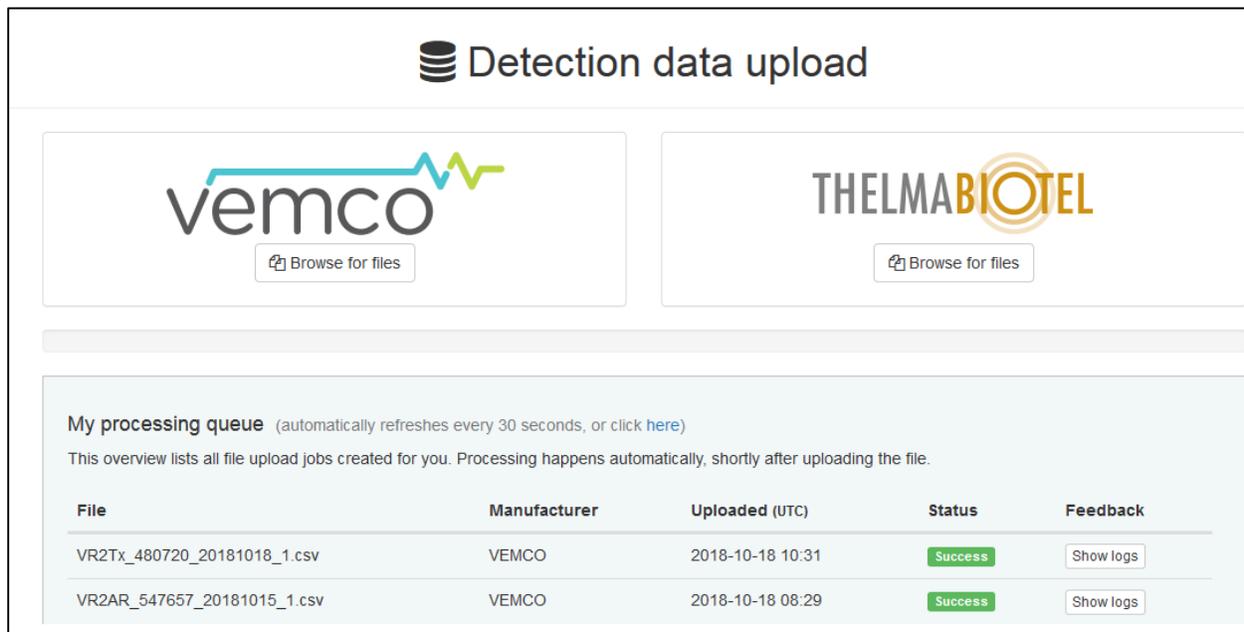
- 1) go to 'Data' → 'Upload detection data'
- 2) click 'Browse for files' under the correct brand (currently Vemco and Thema are supported, but this will be extended in the future)
- 3) Browse for your files (multiple files can be uploaded at once)

Once the selection is made the upload is processed and you will be informed whether the upload was successful.

A successful upload will have performed three actions:

- 1) Attached the detections to the correct deployment
- 2) Closed this deployment
- 3) Opened a new deployment with the same metadata as the previous one.

This last step means, that some manual checks need to be performed (e.g. Is there a new deployment?; is it still the same receiver?; Battery end date correct? ) and some edits performed if necessary.



**My processing queue** (automatically refreshes every 30 seconds, or click [here](#))

This overview lists all file upload jobs created for you. Processing happens automatically, shortly after uploading the file.

File	Manufacturer	Uploaded (UTC)	Status	Feedback
VR2Tx_480720_20181018_1.csv	VEMCO	2018-10-18 10:31	Success	Show logs
VR2AR_547657_20181015_1.csv	VEMCO	2018-10-18 08:29	Success	Show logs

Figure 3 – Screenshot of the detection import tab.

## D) Metadata folders

There are four folders available to store, manage, visualise and download the metadata on receivers, tags, deployments and animals. All information given in this section applies to the four metadata folders. Figures and examples are based on the 'Receivers' folder.

If you click on the header, you go to the overview page of the respective folder (fig. 4).

At the overview page several actions can be performed to manage, visualize and download the metadata (fig. 5).

RECEIVER	DEPLOYMENTS	INS_MODEL_NUMBER	INS_SERIAL_NUMBER	QUICK ACTIONS
VR2AR	DEPLOYMENTS	INS_MODEL_NUMBER	INS_SERIAL_NUMBER	QUICK ACTIONS
VR2AR-545564	<ul style="list-style-type: none"> <li>Belreef 2 (2015-02-25)</li> <li>500m (2015-01-21)</li> </ul>	VR2AR	545564	<ul style="list-style-type: none"> <li>+</li> <li>-</li> </ul>
VR2AR-545588	<ul style="list-style-type: none"> <li>BPNS-Belreef1 (2015-03-05)</li> <li>WS-250m (2015-01-20)</li> <li>WS-250m (2014-12-19)</li> </ul>	VR2AR	545588	<ul style="list-style-type: none"> <li>+</li> <li>-</li> </ul>
VR2AR-545718	<ul style="list-style-type: none"> <li>bpns-C05AR1Belwind (2016-01-19)</li> <li>bpns-C05AR1Belwind (2015-04-28)</li> <li>bpns-CNB05 (2016-04-04)</li> <li>bpns-CNB05 (2016-09-20)</li> <li>PC4C-C05-1 (2017-07-04)</li> </ul>	VR2AR	545718	<ul style="list-style-type: none"> <li>+</li> <li>-</li> </ul>
VR2AR-545719	<ul style="list-style-type: none"> <li>bpns-C05AR2Belwind (2015-04-28)</li> </ul>	VR2AR	545719	<ul style="list-style-type: none"> <li>+</li> <li>-</li> </ul>
VR2AR-545720	<ul style="list-style-type: none"> <li>bpns-CNB05 (2016-09-20)</li> <li>PC4C-C05-2 (2017-07-04)</li> <li>bpns-CNB05 (2016-04-04)</li> <li>bpns-C05AR3Belwind (2015-04-28)</li> <li>bpns-C05AR3Belwind (2015-12-28)</li> </ul>	VR2AR	545720	<ul style="list-style-type: none"> <li>+</li> <li>-</li> </ul>
VR2AR-546043	<ul style="list-style-type: none"> <li>bpns-CNB02 (2016-04-04)</li> <li>bpns-RTNZ01 (2016-02-18)</li> <li>PC4C-C05-3 (2017-07-04)</li> </ul>	VR2AR	546043	<ul style="list-style-type: none"> <li>+</li> <li>-</li> </ul>

Figure 4 – Screenshot of the “Overview page of one of the metadata folders (example from receivers)

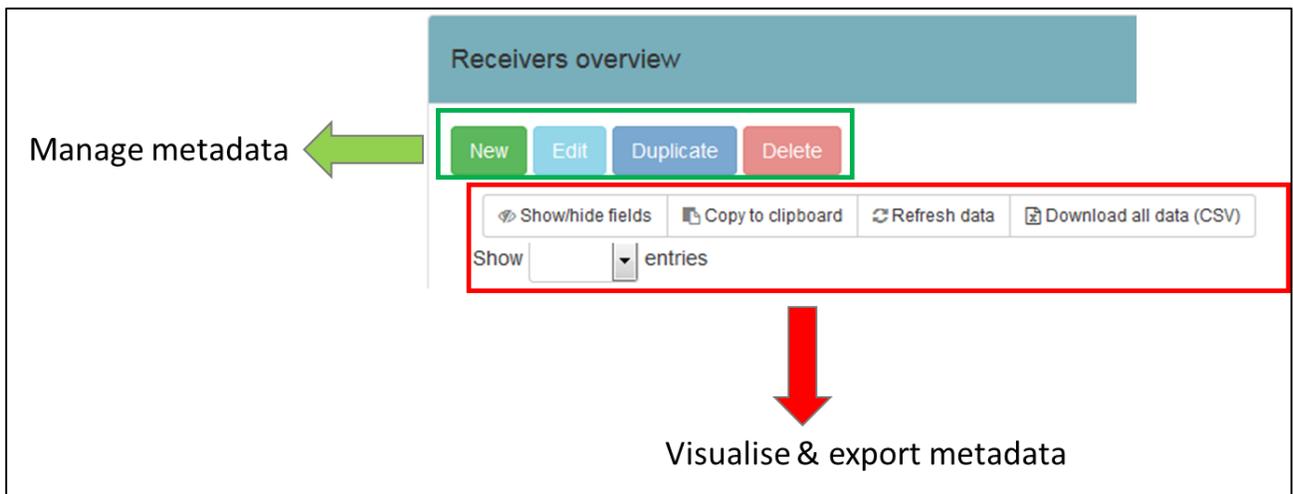


Figure 5 – Overview of the data actions that can be performed for each type of metadata (example from receivers)

### B.1 Manage metadata

There are four options to manage the metadata:

- ‘New’: a new record can be made.
- ‘Edit’: an existing record can be edited.

- ‘Duplicate’: an existing record is duplicated and user is directed to edit the record. Note: if nothing is changed, a warning is set and can be viewed in the logs. (see further).
- ‘Delete’: an existing record will be deleted (after confirmation).

When you click on a field of an existing record, you are also in the edit modus.

After selecting ‘New’, ‘Edit’ or ‘Duplicate’ the user is directed to a metadata management form where information can be added/updated (fig. 6). The form is subdivided in several topics. By clicking on the header of a topic, the metadata fields become available and can be filled out. Some metadata fields are mandatory (yellow colour) and should be filled out before information can be stored (a notification is given to inform the user if mandatory fields are missing).

For each field, there is a help function (the  behind the heading). The help functionality provides a short description of what type of data is expected for a specific field. In addition, the format of the field and an example are given (fig. 7).

The screenshot shows a web interface for managing receiver metadata. The top navigation bar includes 'ETN', 'Acoustic telemetry', 'Receivers', 'Tags', 'Deployments', 'Animals', 'Detections', and 'Upload data'. The main form area contains the following fields:

- RCV\_MANUFACTURER** (with help icon): A dropdown menu currently showing 'VEMCO'.
- INS\_SERIAL\_NUMBER** (with help icon): A text input field.
- INS\_MODEL\_NUMBER** (with help icon): A text input field.
- RCV\_MODEM\_ADDRESS** (with help icon): A text input field.
- RCV\_EXPECTED\_BATTERY\_LIFE** (with help icon): A text input field.
- RCV\_OWNER\_ORGANISATION** (with help icon): A text input field.
- RCV\_BUILT\_IN\_TAG\_CODE\_SPACE** (with help icon): A text input field.
- RCV\_STATUS** (with help icon): A dropdown menu.

At the bottom of the form, there is a blue bar labeled 'Acoustic release' and a green button labeled 'Create new receiver'.

Figure 6 – Screenshot of the “Metadata management form” (example from receivers)

In the management forms a distinction is made between read and write functionality. By default, you have read-only access, which means you can view the metadata but cannot make any changes. If you have write access, edits can be performed. For each project the Principal investigator defines who gets write access.

The screenshot shows a web form for creating a receiver. The form includes several fields:
 

- RCV\_MANUFACTURER**: A dropdown menu with 'VEMCO' selected.
- INS\_SERIAL\_NUMBER**: A text input field with a lock icon on the right.
- INS\_MODEL\_NUMBER**: A text input field.
- RCV\_MODEM\_ADDRESS**: A text input field with a help icon (question mark) to its left. A tooltip is open over this field, providing a definition and a units/format example.
- RCV\_EXPECTED\_BATTERY\_LIFE**: A text input field.
- RCV\_OWNER\_ORGANISATION**: A text input field.
- RCV\_BUILT\_IN\_TAG\_CODE\_SPACE**: A text input field with a help icon to its right.
- RCV\_STATUS**: A dropdown menu.

 Below the form is a blue bar with the text 'Acoustic release' and a green button labeled 'Create new receiver'.

**RCV\_MODEM\_ADDRESS** tooltip content:

**Definition**  
 This field is mandatory for Vemco VR4UWM receivers. It is a three-digit code from 001 to 249, as provided by the manufacturer, that is used to communicate with the Benthos modem. For VR4 receivers manufactured prior to September 2011, the modem address is

**Units/format example**  
 format: 3-digit code from 001 to 249; as in 121

Figure 7 – Screenshot of the “Help functionality” (example from receivers)

## B.2 Visualise and export metadata

Several functionalities are available to visualise and explore the metadata. At the left upper corner of the overview page (see fig. 5) the user can select specific fields with the ‘show/hide fields’ button. In addition, you can select the number of rows you want to see per page (with ‘show entries’ button) and copy a selection to the clipboard. After changes were made, click ‘Refresh data’ to update the view.

To further select a subset of data, the user can filter and sort the data (fig. 8). To filter, specify the needs of a specific metadata field in the filter box. To sort, click on the arrows behind the headings. Clicking once, will sort ascending, clicking twice will sort descending.

Metadata information can be exported/downloaded. By clicking the ‘copy to clipboard’ button the data from the current page is copied and can be pasted in a spreadsheet. When you click ‘Download all data (CSV)’, a CSV-file, containing all metadata of the specific folder, is generated. This file will only contain data from user groups you have access to.

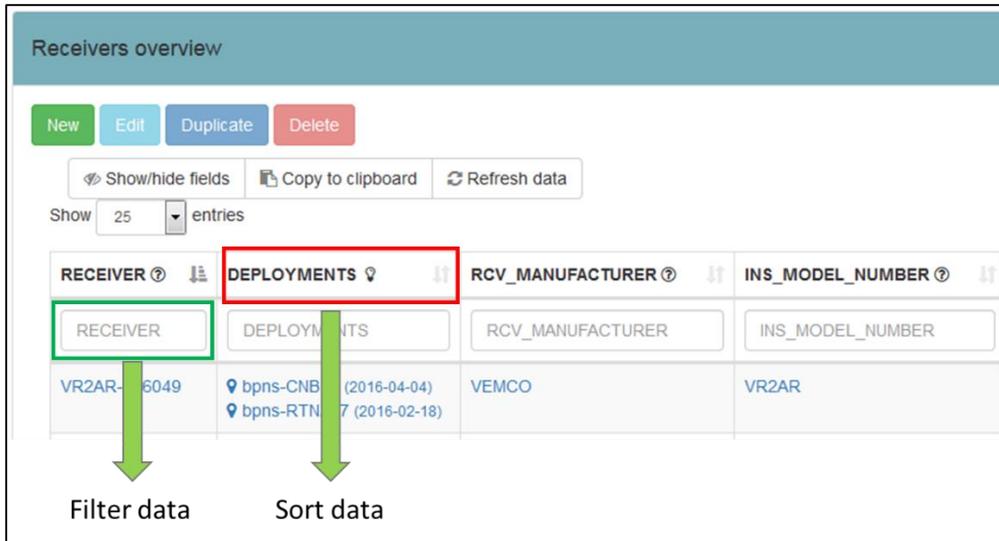


Figure 8 – Filter and sort options (example from receivers)

## E. Queried views

On the 'Detections' page queried views of detections can be made (fig. 9). These queries give an overview of all detections (from all receivers involved) that are linked to a specific network and/or animal project. Data can be further subsetted with the filter option as mentioned above.

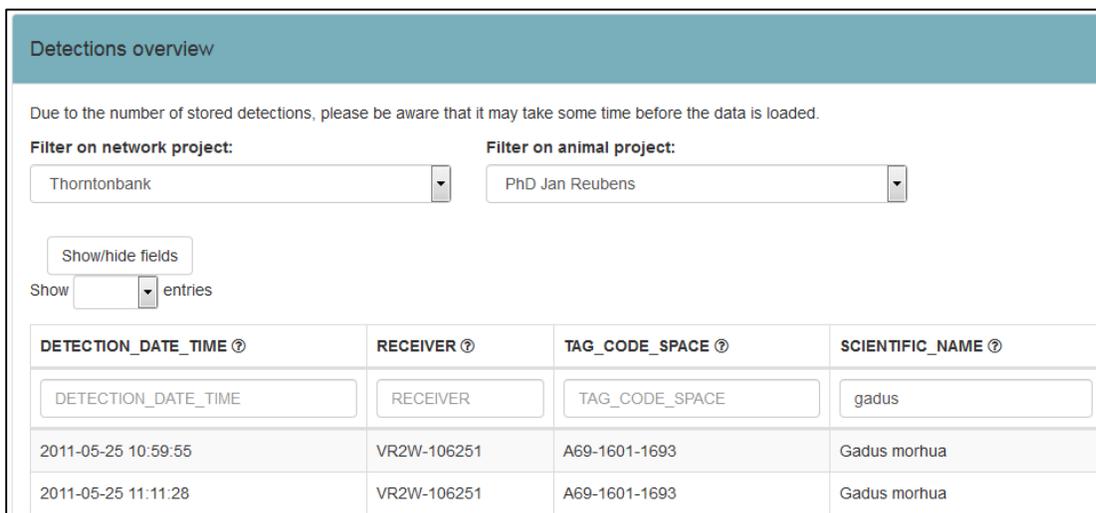


Figure 9 – Screenshot of the Detections query. In this example we filtered for the network project 'Thorntonbank' and animal project 'PhD Jan Reubens'. Data was further subsetted by filtering for 'Gadus'.

## 5. Additional functionalities of the web application

### A. Logs

To keep track of the history of actions performed, a table with the logs is available. These logs provide the necessary information on what has been performed and/or on what error occurred. For most actions the log 'type' is binary (success or error). Some actions may have an informational message, for example when a data upload results in some QC errors (and in which case the log "type" equals to "info"). In the case of a success, an update/adaptation has been performed. An error refers to an action that could not be performed for a specific reason. The 'message' provides more information on what has/has not been done and the 'Time' provides a time stamp (Date and time) to the log.

### B. Quality controls

There are several quality controls in place on different levels that help to improve data quality and avoid human errors.

#### Implemented Quality Controls:

QC on Detections	Searching for detections falling before animal release date
QC on Detections	Searching for detections falling before deployment date
QC on Detections	Searching for detections falling after deployment recovery date
QC on Deployments	No overlapping deployments of a same receiver allowed
QC on Tag reuse	Searching for tag reuse but no animal recapture information

Additional QCs are planned to be added in future versions.

### C. Mystery tags

On a periodic basis, the system searches in the ETN database for so-called mystery tags: detections from tags we cannot link to known (animal) metadata within our ETN database. That result (a tag list) is available as a Geoserver layer, ready to use when other partners (e.g. Ocean Tracking Network) want to compare that list with their own database.

The ETN system also compares (on a regular basis) mystery tag lists from other partners with the own ETN database. When the system finds a mystery tag from another partner in the ETN database, the researcher who owns the tag will be informed and instructed to contact the partner for further information.

## 6. Data Policy

By signing up to ETN new users automatically agree to ETN [Data Policy](#).

### 6.1 Access to ETN

ETN makes a distinction between Restricted and Unrestricted Data. Unrestricted Data is all data that is not under moratorium. This data can be publicly accessed through the R-shiny data explorer: <http://rshiny.lifewatch.be/ETN%20data/>.

Restricted Data is all data under moratorium. Access to this data is restricted to Data Collaborators that submitted the data and is in accordance with the moratorium rules as outlined in section 6.2.

### 6.2 Moratorium rules

- ❖ Receiver moratorium: there is no moratorium for receiver information.
- ❖ Tag moratorium: there is no moratorium for tag information.
- ❖ Deployment moratorium: there is no moratorium for deployment information. All metadata is made publicly available immediately after installation. All open deployments (i.e. without an end date) will be visualized on a map on the ETN Data Portal. In exceptional cases, a deployment moratorium can be requested, with the ETN Data Committee reviewing requests.
- ❖ Animal moratorium: metadata related to tagged animals are by default placed under moratorium, in accordance with moratorium rule 5 of this policy.
- ❖ Detection data moratorium: detection data are by default placed under moratorium following a three-tier process:
  - ❖ Tag owner: has access to all detections of his/her tags (also from receivers that do not belong to the tag owner);
  - ❖ Receiver owner: all detections on the device are shown with species information (also from tags than do not belong to the receiver owner);
  - ❖ Others: no access to detection information from data under moratorium.
- ❖ Moratorium period is by default set at 4 years, starting from the moment a tag is attached to an animal. The moratorium period can be extended on request, but earlier release of data is highly desirable. Principal Investigators may request extension to this moratorium period by one year increments, with the ETN Data Committee reviewing requests.
- ❖ Only detections from tags that are known by the database (i.e. tags that are linked to a specific project) will be listed.

### 6.3 Use of Public Data

Any use of ETN Data in a publication, product or commercial application shall provide proper attribution to ETN.

ETN should be cited as 'European Tracking Network – data management platform. Flanders Marine Institute, [year-of-data-download], [data-access-URL], accessed [date-of-access]' (e.g. 'European Tracking Network – data management platform. Flanders Marine Institute, 2017, <http://www.lifewatch.be/etn/>, accessed 20-12-2017').

ETN should be acknowledged as 'Data was sourced from the European Tracking Network data portal (<http://www.lifewatch.be/etn/>), developed by the Flanders Marine Institute as part of the Flemish contribution to LifeWatch.'

Use of the ETN-provided data confers responsibility for investigating and understanding the limitations of the datasets. Neither ETN nor the Data Collaborators will be held responsible for any inaccuracies in the provided data. Any problems with the ETN datasets provided should be reported for investigation.