



# **ECOTAXA**

## Manual

## **Quantitative Imaging Platform of Villefranche sur Mer (PIQv)**

piqv@imev-mer.fr http://piqv.imev-mer.fr

## Jalabert Elineau

Operators	Modif. date
Amanda Elineau	20210223
Laëtitia Jalabert	20211122
Laëtitia Jalabert	20220211

## Sommaire

1	Re	gistrationgistration	5
2	Pre	esentation of Ecotaxa	6
	2.1	Main page	6
	2.2	How is built an Ecotaxa window ?	7
	2.3	Status of images	8
3	Exp	plore images page	9
	3.1	Topper bar	9
	3.2	Toolbar	9
	3.3	Filters bar	10
	3.4	Image page	11
4	Co	ontribute to a project page	12
	4.1	Main page	12
	4.2	Access to the whole list of projects hosted into Ecotaxa	13
5	Му	y project	14
	5.1	Create a new project	14
	5.2	The different rights according to projects (viewer, annotator, manager)	15
	5.3	Import Images and/or Metadata	16
	5.3	3.1 File Transfer Protocol FTP	16
	Į	5.3.1.1 FTP connexion	16
	Į	5.3.1.2 Procedures and organization of data into FTP	17
	į	5.3.1.3 Memory management	18
	5.3	3.2 Import Images + Metadata	18
	Į	5.3.2.1 Maintain PkID Validation	18

	5.3.2	2.2 Importation procedure into Ecotaxa	20
	5.3.3	Import Images only	23
	5.3.4	Update Metadata	24
5	5.4 Ho	wwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwwww	27
	5.4.1	Status of the project and privileges	28
	5.4.2	Preset of classification list	29
	5.4.3	Tools for classification	31
5	5.5 To	pper bar	32
5	5.6 To	olbar	32
5	5.7 Filt	ters bar	33
6	Predict	tion	34
7	Validat	ion	38
7	'.1 Sel	lect or unselect images	38
	7.1.1	Select or unselect some images	38
	7.1.2	Select or unselect all images	38
7	'.2 Va	lidate some images	39
	7.2.1	Assign category by writing and validation: option 1	39
	7.2.2	Assign category by writing and validation: option 2	41
	7.2.3	Assign category by drag-and-drop and validation	42
	7.2.4	Validate Selection button	44
7	'.3 Ma	assively validation of images	45
8	Extract	subset	47
9	Merge	projects	49
10	Edit or	erase annotations massively	51

11	Tips		. 53
	11.1	Comment an image and last buttons	. 53
		Taxonomy filter : bonus	
	11.3	Select sample on the map	. 57
	11.4	How to create a new category	. 59
		I do not know this organism, where do I classify it?	
	11.5.1	Save as dubious	. 60
	11.5.2	2 Temporary categories and share page	. 62
	11.6	Keyboard shortcut summary and new ones	. 64
12	Expor	t data	. 65
13	Delet	e objects or project	. 68

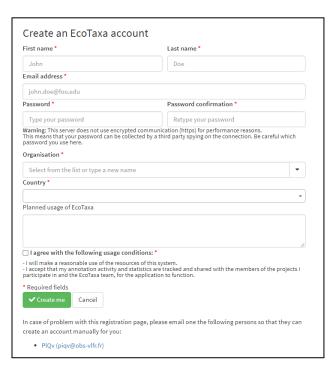
## 1 Registration

Go to Ecotaxa application: https://ecotaxa.obs-vlfr.fr/

Click on "log in / register", then on "Create your Ecotaxa account":

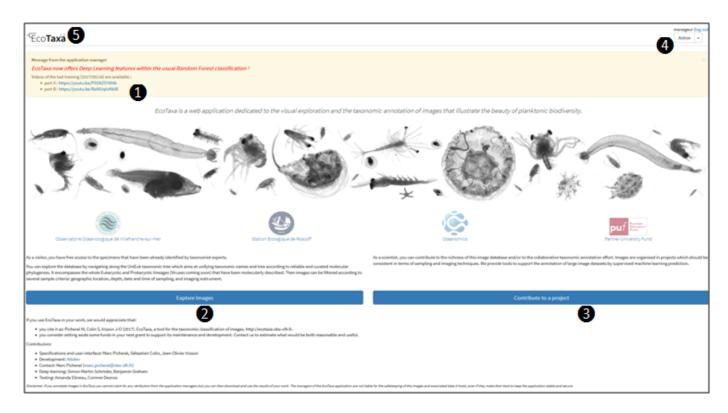


Fill in the form:

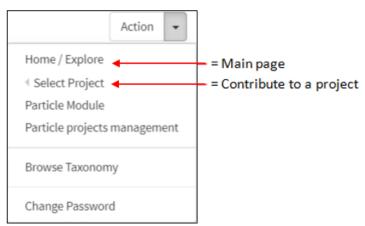


#### 2 Presentation of Ecotaxa

#### 2.1 Main page



- 1 Video Tutorial 2 Explore images
  - no need to have an account to access to this function
- 3 Contribute to a project
  - need to have an account to access to this function
- 4 "Action" button
- 5 Shortcut to the main page



#### 2.2 How is built an Ecotaxa window?

Eco <b>Taxa</b>	Topper bar
	Toolbar Toolbar
Filters bar	Image page

## 2.3 Status of images

Status of the images	Action	Status color
Unclassified	Image just uploaded into the project	None
Predicted	Image just predicted by learning	Centropagidae
Validation in process	Image not yet validated, just assigned	Centropagidae (Calanoida)
Validated	Image validated	Centropagidae
Dubious	Image classified in dubious	Copepoda (Maxillopoda)

All = Unclassified + Predicted + Validated + Dubious

Not Validated = Unclassified + Predicted + Dubious

Classified = Predicted + Validated + Dubious

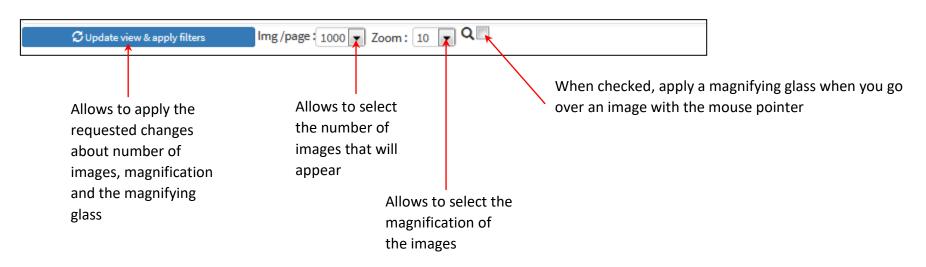
## 3 Explore images page

Viewing a batch of validated images taken randomly from all projects (around 1000 images) hosted on Ecotaxa

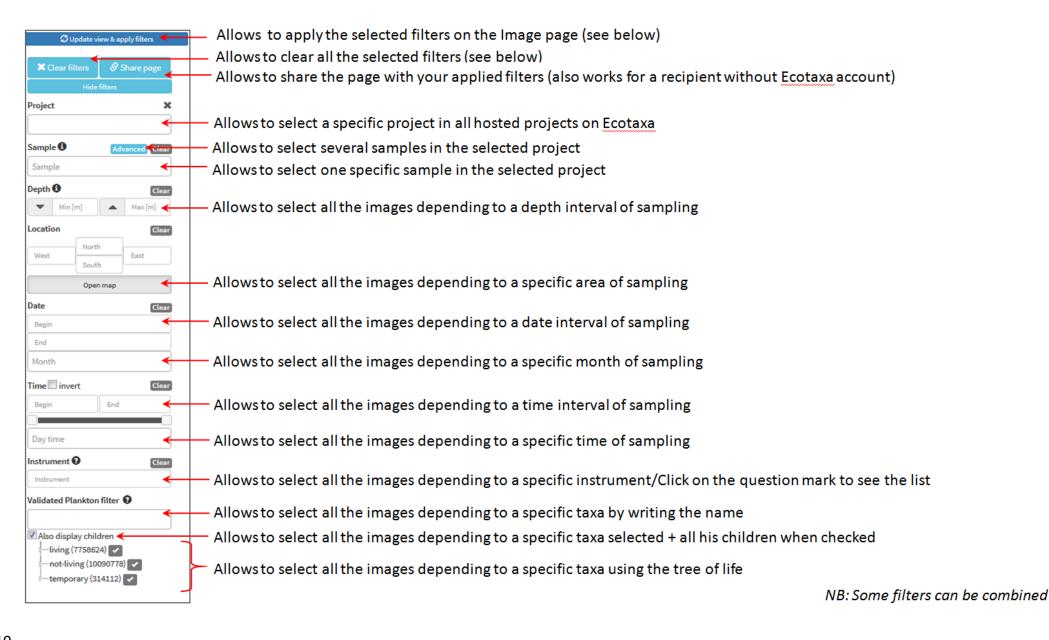
#### 3.1 Topper bar



#### 3.2 Toolbar



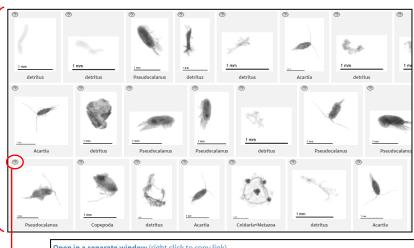
#### 3.3 Filters bar

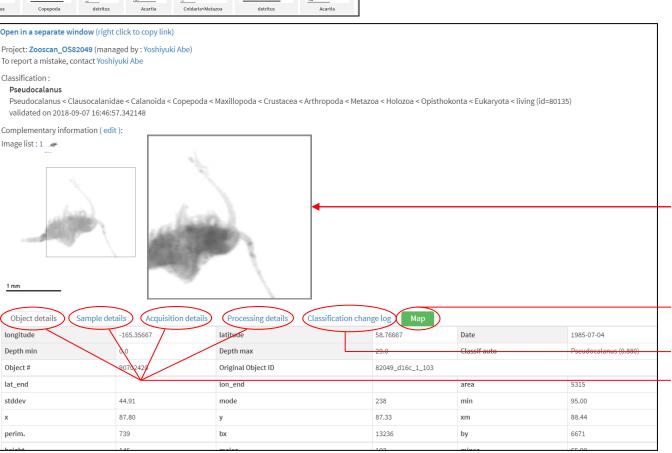


#### 3.4 Image page

Result of the selected filters

If you click on the eye, you have more details of object





Allows to zoom when you pass your mouse in the image

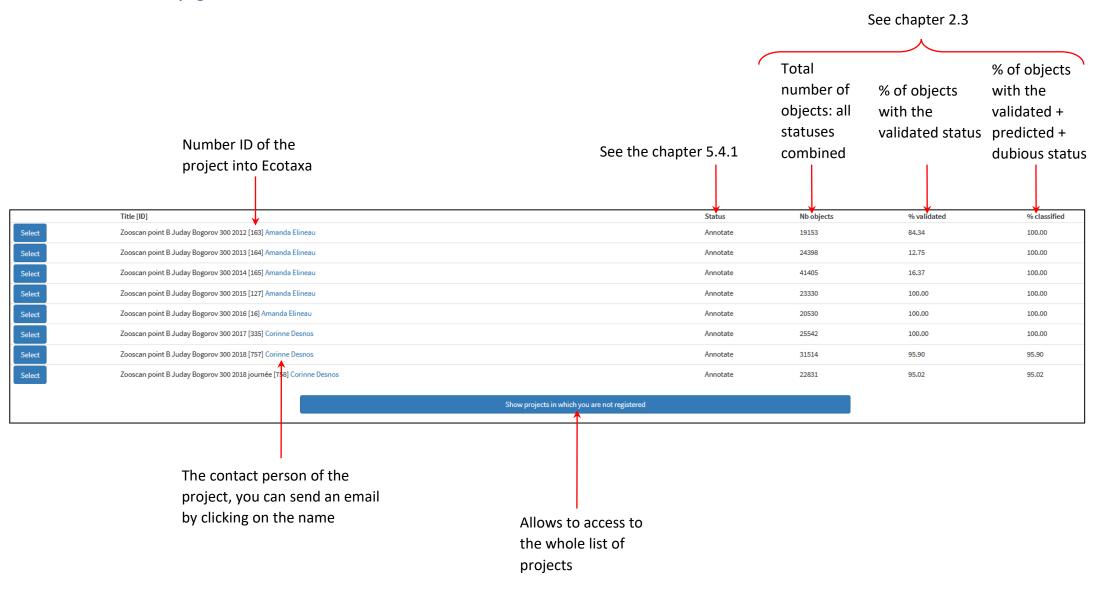
Allows to open a map that shows where the image was sampled

Allows to see the historical classification

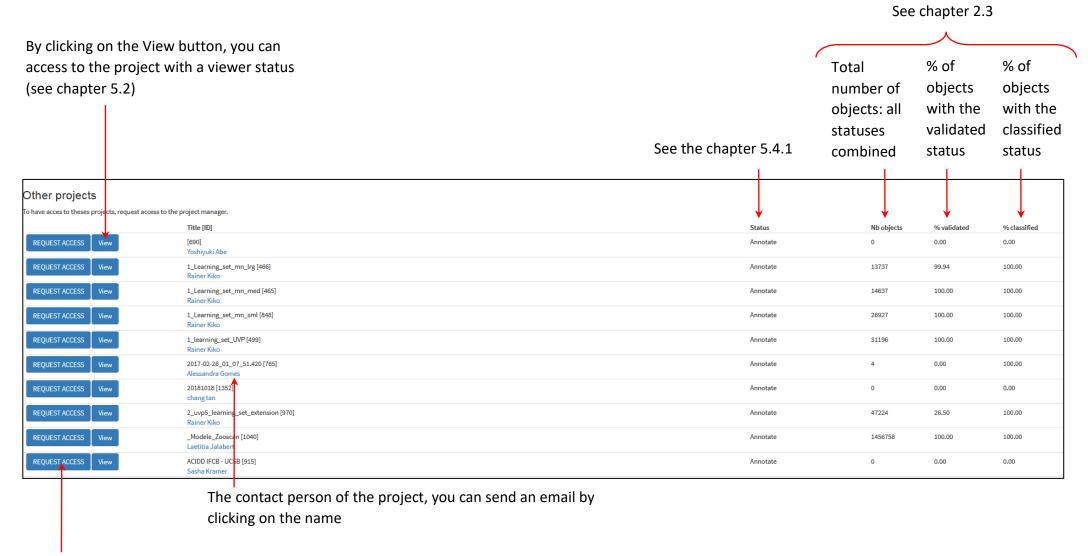
This four tabs correspond to the columns of the .tsv table : "object\_" + "acq\_" + "process\_" + "sample\_"

## 4 Contribute to a project page

#### 4.1 Main page



#### 4.2 Access to the whole list of projects hosted into Ecotaxa

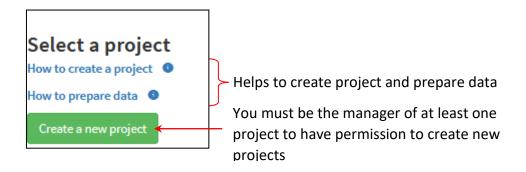


By clicking on the Request Access button, you will send an automatic email to the manager of the project to ask an access

## 5 My project

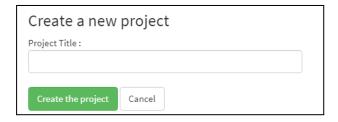
#### **5.1** Create a new project

Note: This step is possible only if you have **project creator status**. You can ask it at: piqv@imev-mer.fr Go to the main page of "contribute to a project"



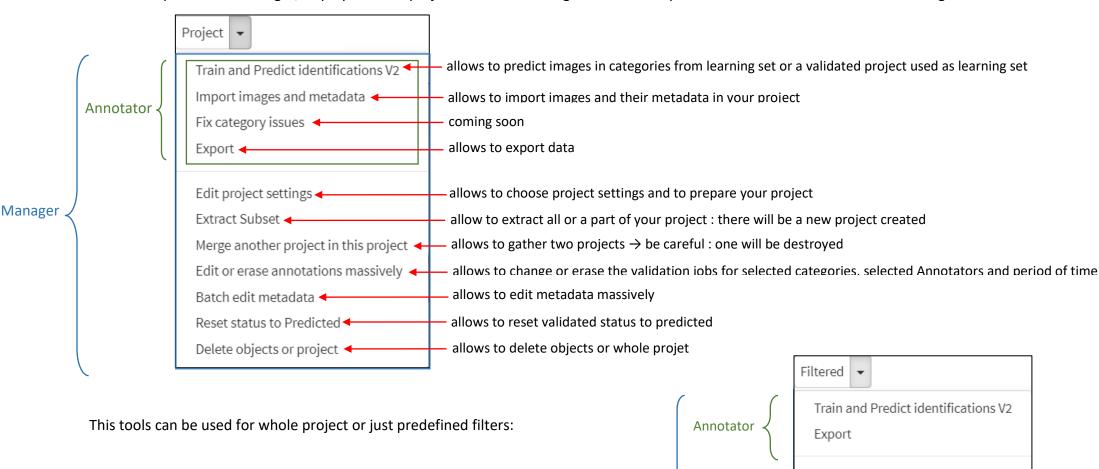
#### Choose a project title

N.B.: the project title must start with the name of the imaging instrument used to acquire the images (Zooscan, UVP, Zoocam, Flowcam, IFCB,...)



#### 5.2 The different rights according to projects (viewer, annotator, manager)

- Viewers can view the project even when it is private; the project is listed in their project list
- Annotators can predicts, import images and metadata, classify objects and export data
- Managers have the same rights as annotators but they can edit project settings, create subset, merge projects, edit metadata, resest status of images and deteta objects or project
- The contact person is a Manager, displayed in the project table and serving as the contact point for other users and EcoTaxa's managers



Manager

Extract Subset

Delete objects

Batch edit metadata

Reset status to Predicted

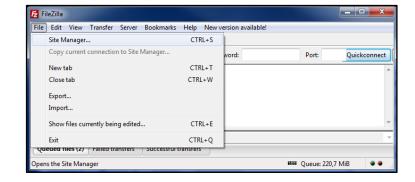
#### 5.3 Import Images and/or Metadata

Note: This step is possible only if you are Manager or Annotator (see chapter 5.2)

5.3.1 File Transfer Protocol FTP

#### 5.3.1.1 FTP connexion

- Download and install FileZilla (https://filezilla-project.org/)
- Select File > Site Manager...



• Create a New Site called : Ecotaxa\_VLFR

In General tag :

Host: plankton.obs-vlfr.fr

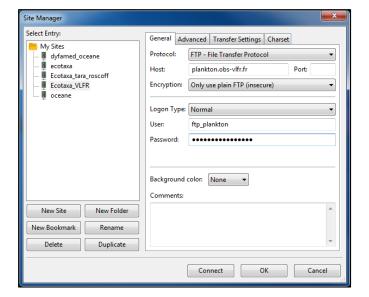
Protocol: FTP – File Transfer Protocol

Encryption: Only use plain FTP (insecure)

Logon Type: Normal

User: ftp\_plankton

Password: Pl@nkt0n4Ecotaxa



NB: You will have a direct access by the main window

Host: plankton.obs-vlfr.fr

Username: ftp\_plankton

Password: Pl@nkt0n4Ecotaxa



#### 5.3.1.2 Procedures and organization of data into FTP

#### FlowCam & ZooScan

- Create a folder starting with your Institute name
- Drag and drop in this folder:

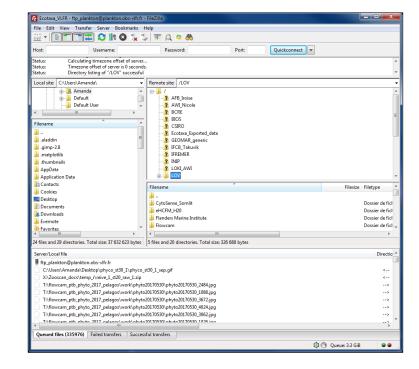
\*Not validated data:

the **\_work** folder from your Zooprocess project

\*Validated data (from PKId):

the ecotaxa folder from your Zooprocess project

NB: Check that all your metadata have been correctly documented before this step.



#### <u>UVP</u>

- Create a folder starting with your Institute name
- Drag and drop in this folder your WHOLE PROJECT. It will permit to import both the images and the particle data in the Particle module of Ecotaxa.

NB: Check that all your metadata have been correctly fill in before this step.

#### 5.3.1.3 Memory management

After the importation and the checking of your data in Ecotaxa, delete your folder from the FTP.

Anyone having these writing permissions on our FTP can load and download any data from this FTP. It is thus IMPORTANT to remove your data as soon as it has been imported into Ecotaxa.

#### 5.3.2 Import Images + Metadata

#### 5.3.2.1 Maintain PkID Validation

You have some projects already predicted/classified with PkID and you want to export them into Ecotaxa keeping the classification. (If your projects are unclassified, see directly the next chapter).

#### At this step:

- There is 1 dat1.pid file per sample in the folder: Zooscan\_nameoftheproject/PID\_process/Pid\_results
- There is 1 subfolder called "nameofthesample\_validated" in the folder:

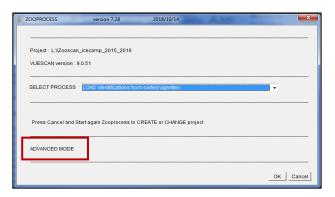
  Zooscan\_nameoftheproject/PID\_process/Sorted\_vignettes
  In each subfolder you have all the images .jpg + 1 .txt file called "Analysis nameofthesample dat1.txt"

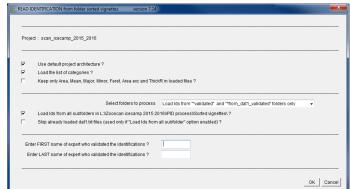
NB: The number of objects between the pid file and the Analysis txt file must be the same

#### Open Zooprocess in Advanced Mode:

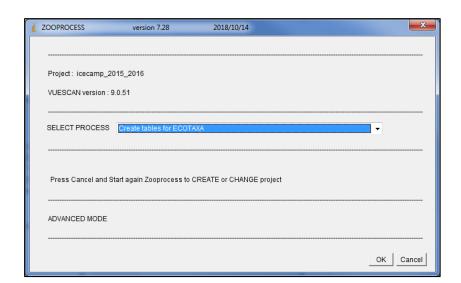
• Load identifications from sorted vignettes

It will create 2 .txt files per sample in the folder: Zooscan\_nameoftheproject/PID\_process/Pid\_results/ Dat1\_validated





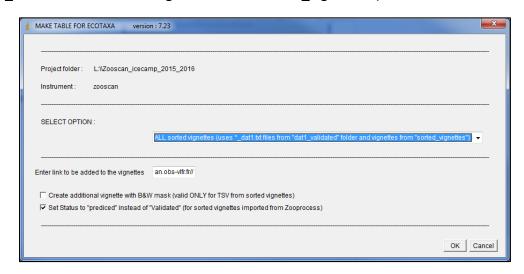
Select Create tables for Ecotaxa



• Select ALL sorted vignettes (uses\*\_dat1.txt files from "dat1\_validated" folder and vignettes from "sorted\_vignettes")

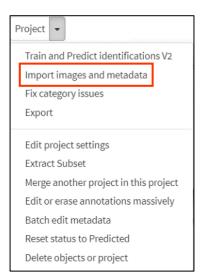
It will create 1 subfolder per sample in the folder:

Zooscan nameoftheproject/ecotaxa



#### 5.3.2.2 Importation procedure into Ecotaxa

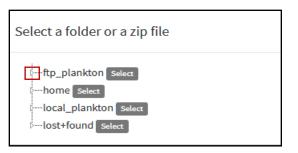
- Put your images + tsv files on the FTP: see chapter 5.3.1.
- Select Project > Import images and metadata



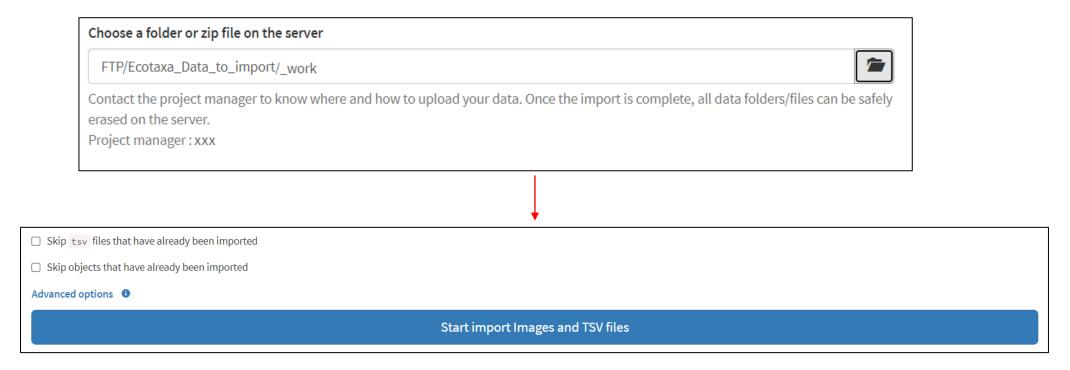
• Select the folder icon



- Access to your folder by clicking on the arrow ftp\_plankton
- For FlowCAM, ZooScan and UVP5:
   Open your project by clicking on the arrow
   Then you can select the work or ecotaxa folders that you imported.



Once folder selected, click on "Start import Images and TSV files" button

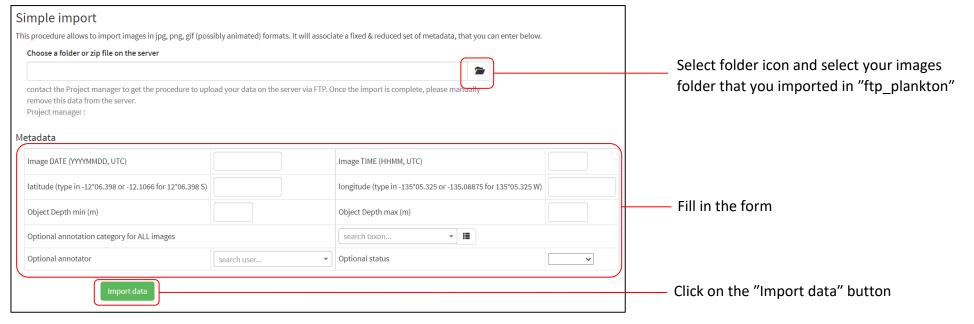


#### 5.3.3 Import Images only

Note: This step is possible only if you are **Manager or Annotator** (see chapter 5.2)

- Put your images on the FTP: see chapter 5.3.1.
- Select "Import images and metadata" then "Start Images only"

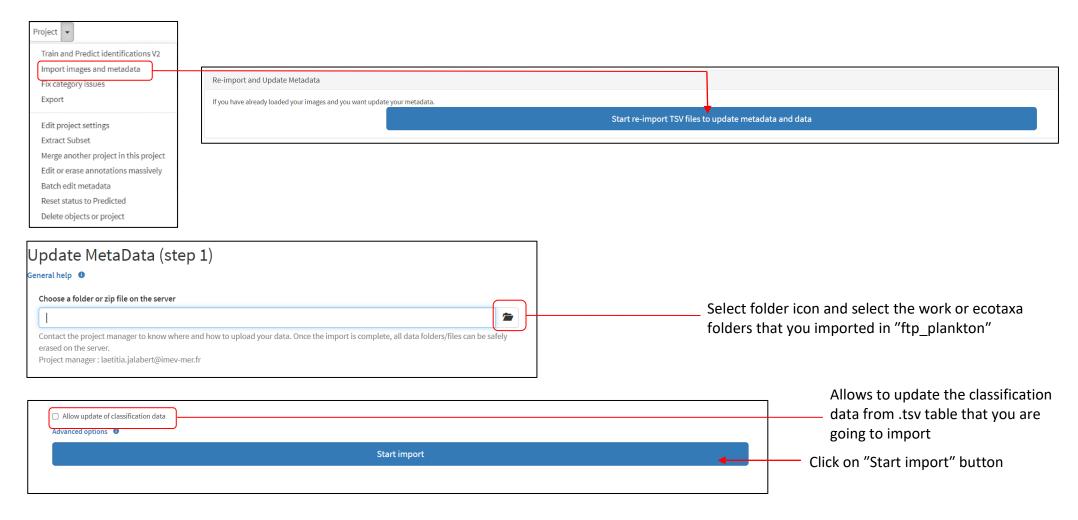




#### 5.3.4 Update Metadata

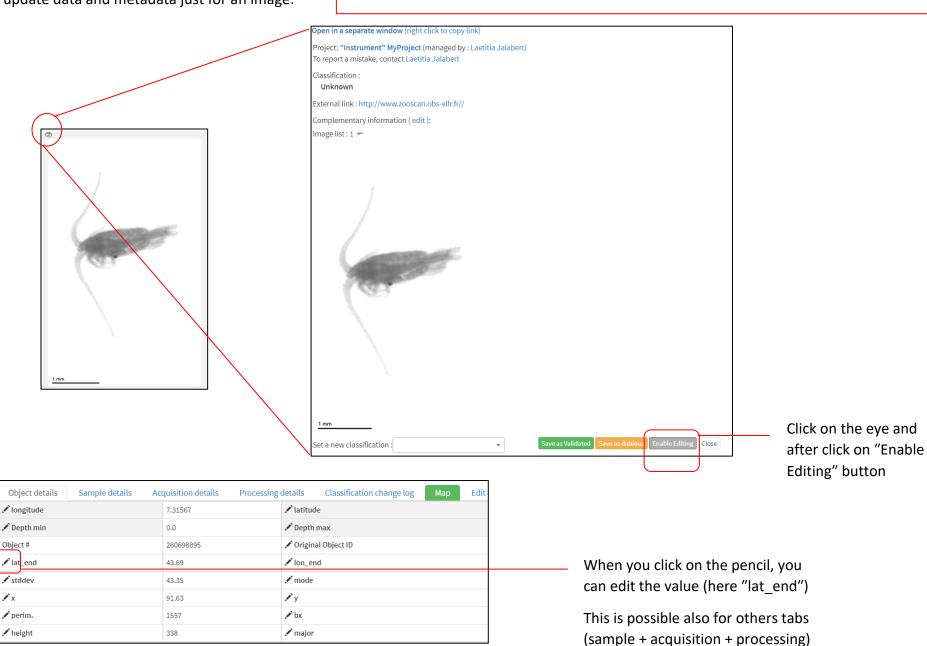
Note: This step is possible only if you are Manager or Annotator (see chapter 5.2)

- Put your tsv files on the FTP: see chapter 5.3.1.
- Select "Import images and metadata" then "Start re-import TSV files to update metadata and data"



## WARNING: the PIQv strongly advises not to use these three N.B. and to use the "Import images metadata" -> "Update MetaData" tools

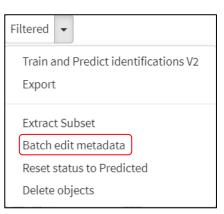
N.B.: 1) You can update data and metadata just for an image:



2) You can use the "Project" button → "Batch edit metadata":



3) You can batch edit metadata with just predefined filters rather than whole project

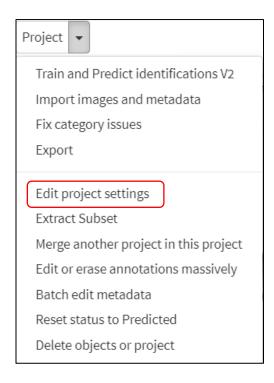


#### 5.4 How to prepare my new project? -> Edit project settings (for a manager account)

Note: This step is possible only if you are **Manager** (see chapter 5.2)

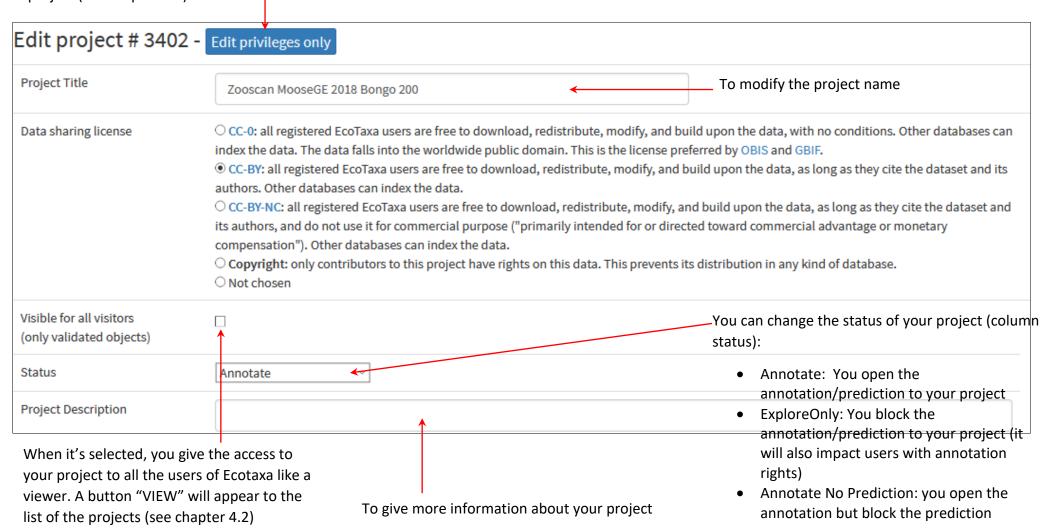
At this step you already have created your project and named it (see chapter 5.1)

"Project" button -> "Edit project settings" tool



#### 5.4.1 Status of the project and privileges

Access button to invite new users to work on your project (see chapter 5.2)





#### 5.4.2 Preset of classification list

A preset is a list of classification and you can create it before starting the prediction/annotation. It gives a logical meaning to your list. If you miss this step, the categories will be classify by alphabetic order and will make the classification more difficult. It is important to create some "parents" categories in the preset even if they stay empty to regroup the child categories below.

Ex:

▼ Appendicularia	0
Fritillariidae	365
Oikopleuridae	245
head < Appendicularia	21
tail < Appendicularia	111

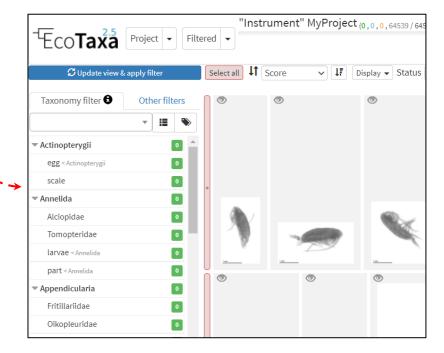
#### To create your preset

Fill in the taxonomy field yourself 1 OR you can use the preset of another project with the button "Pick from others projects" 2

The Taxonomy filter list will be modified automatically

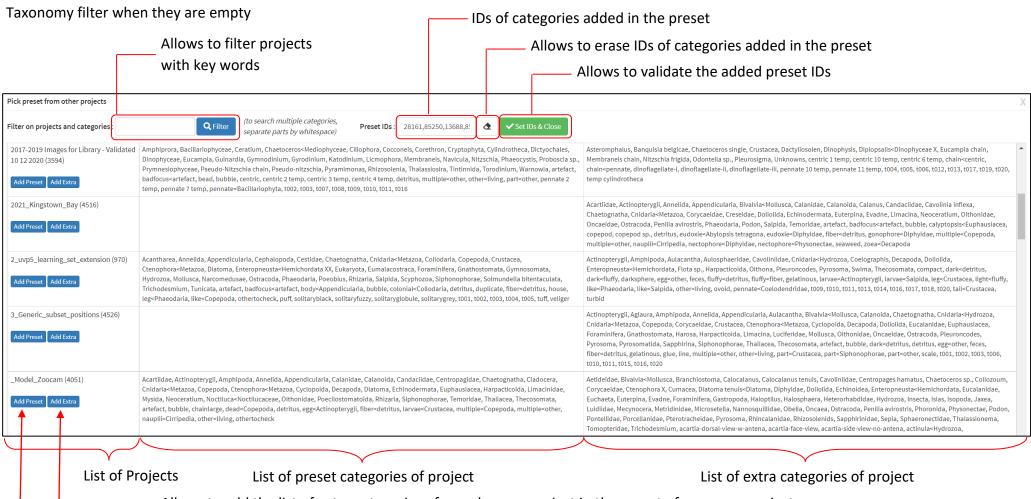






If you choose the 2<sup>nd</sup> option, you will have the choice to utilize the preset list from another project and/or the extra categories from this other project <u>Preset categories</u> = categories listed in the preset field into the Edit project settings of the other project

<u>Extra categories</u> = categories created when an image is identified in these categories but they are absent of the preset list, these categories disappear of the

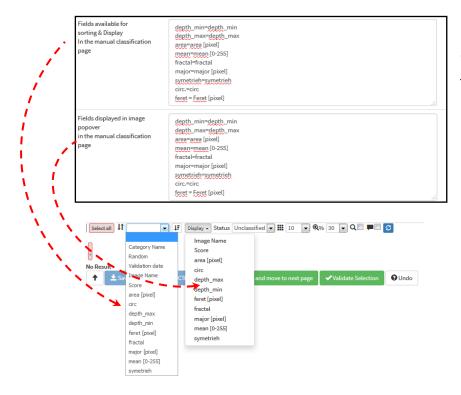


Allows to add the list of extra categories of one choosen project in the preset of your own project

- Allows to add the list of preset categories of one choosen project in the preset of your own project



#### 5.4.3 Tools for classification



By filling in these fields, you will add more tools for classification assistance (see chapter 5.6): sort tools + informations on the image popover

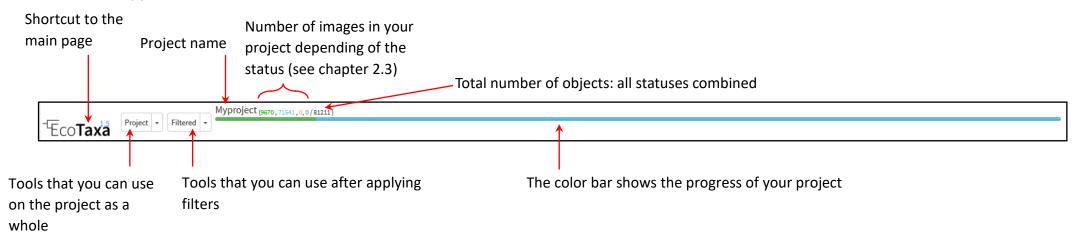
This list corresponds to the variables that you have imported into the .tsv tables

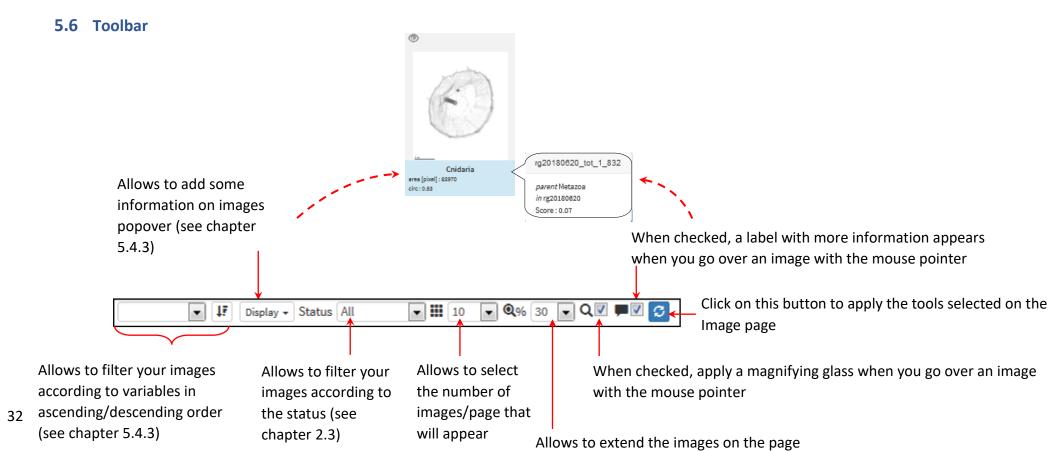
You have to select the SCN corresponding to your instrument to benefit from the use of the Deep learning for prediction (see chapter 6).



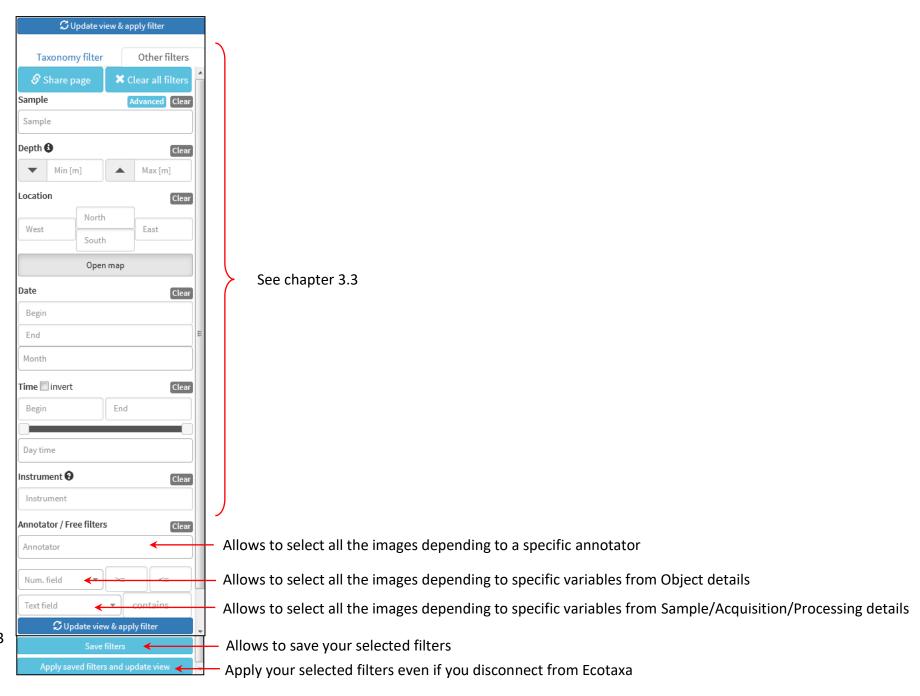


#### 5.5 Topper bar





#### 5.7 Filters bar

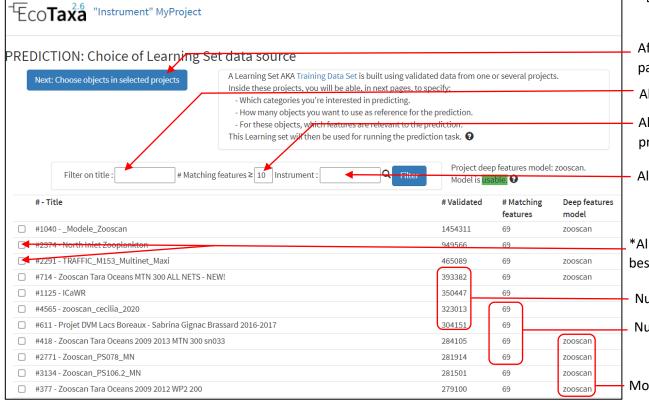


#### 6 Prediction

Note: This step is possible only if you are **Manager or Annotator** (see chapter 5.2)

• Click on "Project" button, then "Train and Predict identifications":

• Choose your learning set:



Train and Predict classifications
Import images and metadata
Fix category issues
Export

Edit project settings
Extract Subset
Merge another project in this project
Edit or erase annotations massively
Batch edit metadata
Reset status to Predicted
Delete objects or project

After choosing a project like a learning set\*, allows to pass to the next page of prediction

Allows to filter projects thanks to key word on the title

Allows to filter from the number of common features between your project and the learning set

Allows to filter projects by instrument

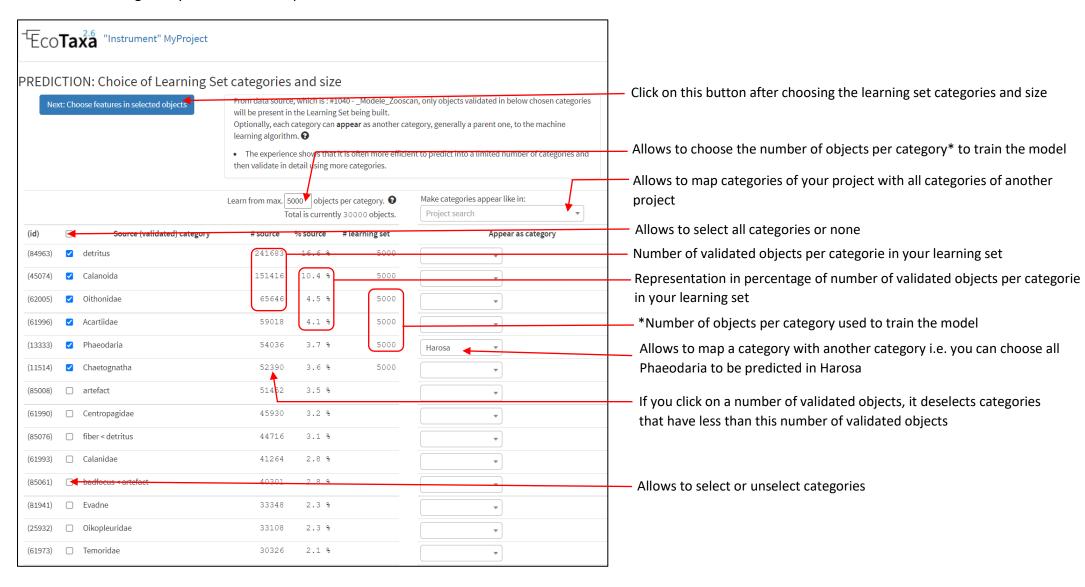
\*Allows to select one or some project to constitute a learning set : the best is proposed first

Number of validated objects

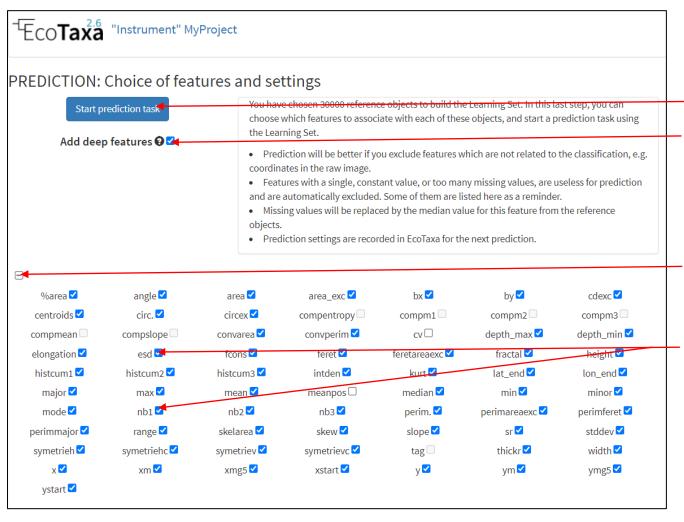
Number of matching features with your project

Model of deep features used for your prediction

• Select categories you would like to predict



#### • Choose prediction settings



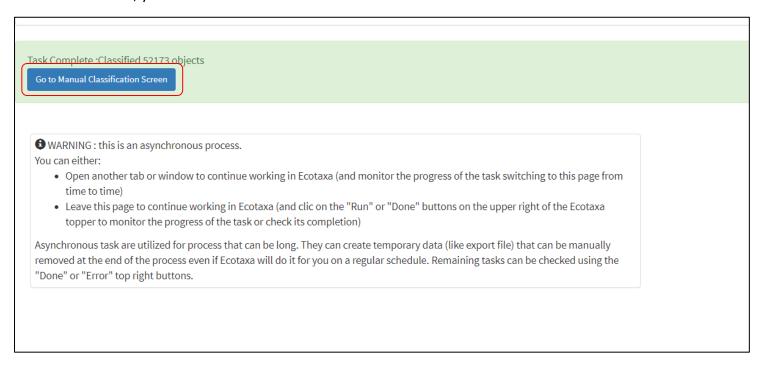
Allows to launch the prediction

Allows to use deep features to predict your project (possible only if SCN Network is defined (see chapter 5.4.3)

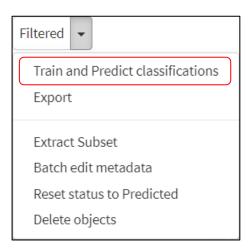
Allows to select or unselect all variables

Allows to select the variables one by one

### When it is finished, you can click on "Go to Manual Classification Screen" to start validation:



N.B.: You can launch prediction with just predefined filters rather than whole project

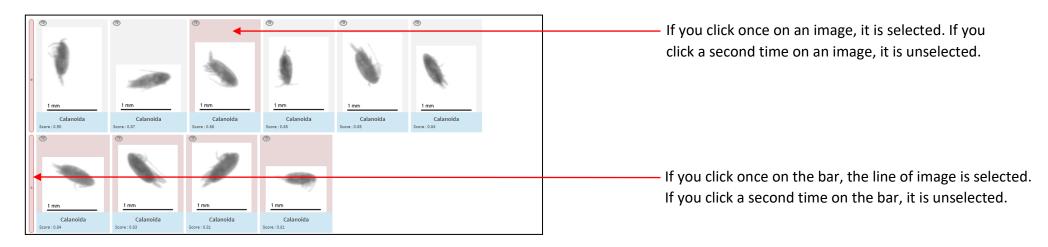


### 7 Validation

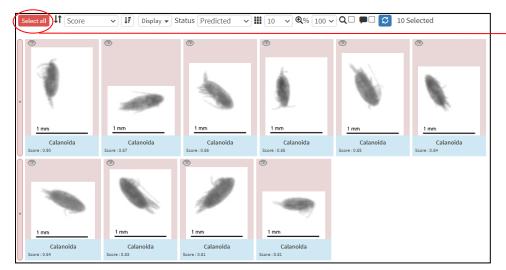
Note: This step is possible only if you are **Manager or Annotator** (see chapter 5.2)

## **7.1** Select or unselect images

#### 7.1.1 Select or unselect some images



## 7.1.2 Select or unselect all images



Allows to select all images

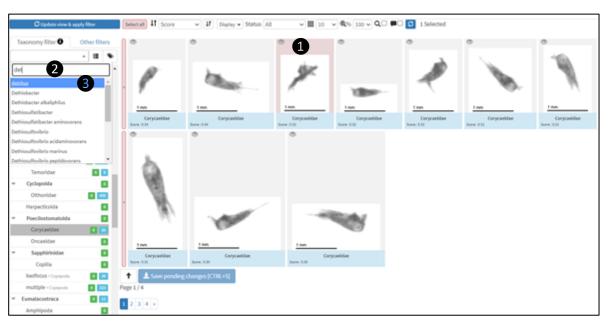
## **Keyboard shortcut: ctrl+a**

To unselect images, you can:

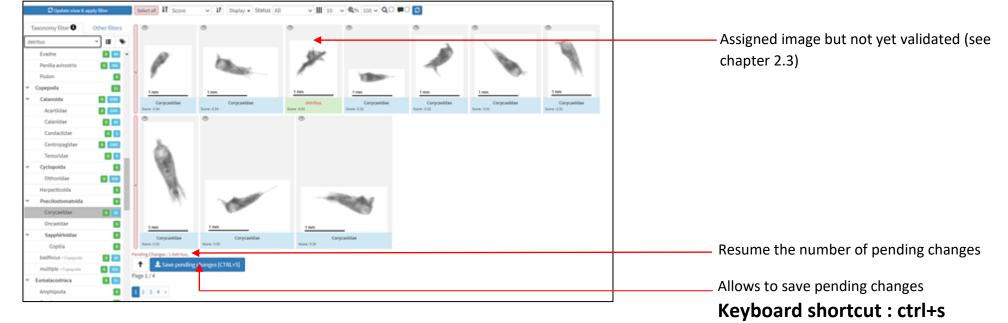
- Hold shift key and click again on "select all" button
- press "ctrl" button on your keyboard and click on a image. This image will be the only one selected. Unselect it by clicking on it again

## 7.2 Validate some images

7.2.1 Assign category by writing and validation: option 1



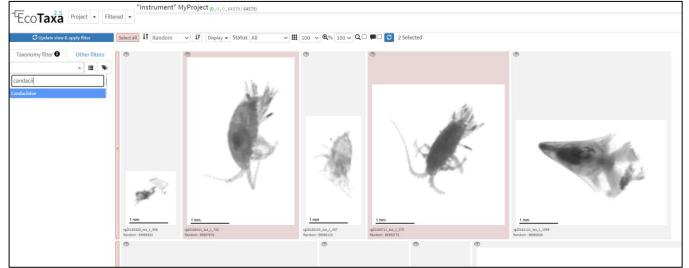
- 1 Select one image (see chapter 7.1.1)
- Write the first three letters of the category
  No need to click on the search taxonomic bar before because
  your keyboard is automatically link it
  If the desired category has been previously entered in the
  project preset, it will appear underlined and first in the list of
  choices (see chapter 5.4.2)
- 3 Either you click or you press enter on the desired category



After saving pending changes, the image is validated in its category (in the example: detritus) and does not appear anymore in the previous category (in the example: Corycaeidae):



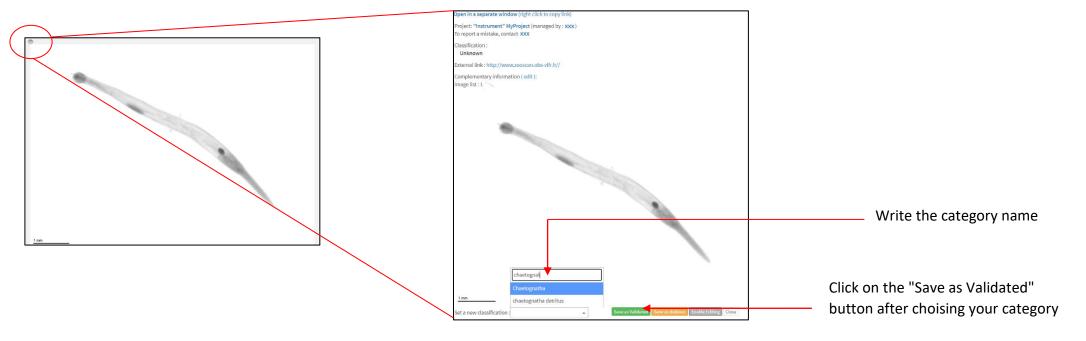
You can also validate unclassified objects (see chapter 2.3) with the same method:



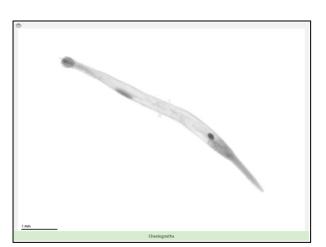
If you validate enough images (about 100) in each category of the taxonomic list that you have defined for your project, you can use your own project as a learning set to predict the rest of images (see chapter 6).

## 7.2.2 Assign category by writing and validation: option 2

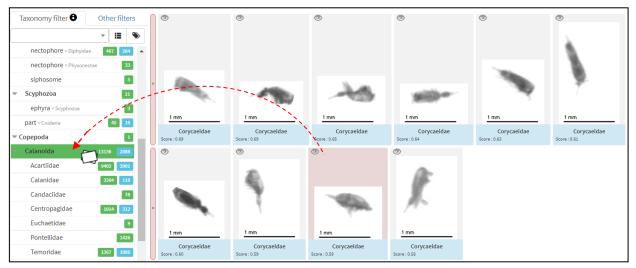
Click on the eye at the top left corner of the predicted or unclassified image (see chapter 2.3)



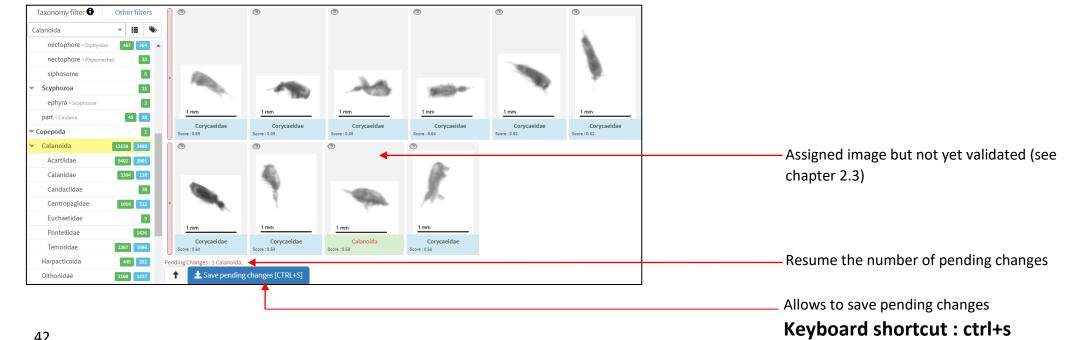
After this steps, your image has the validated status (see chapter 2.3):



### 7.2.3 Assign category by drag-and-drop and validation



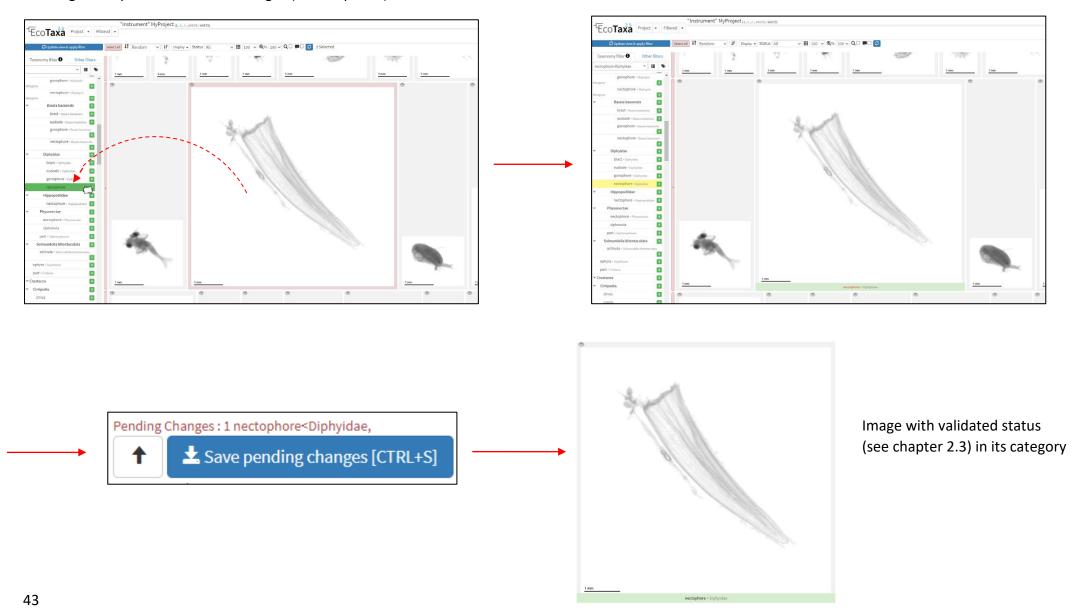
Select your image (see chapter 7.1.1) and drag and drop to assign your category



42

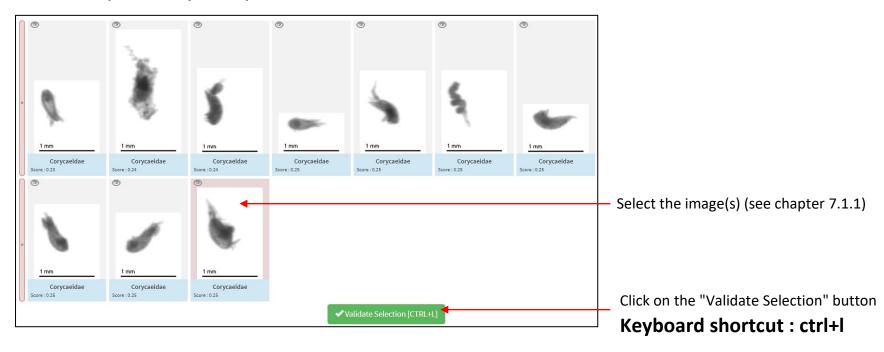
You can also validate unclassified objects (see chapter 2.3) with the same method.

If you validate enough images (about 100) in each category of the taxonomic list that you have defined for your project, you can use your own project as a learning set to predict the rest of images (see chapter 6).



#### 7.2.4 Validate Selection button

## This button is possible only after a prediction



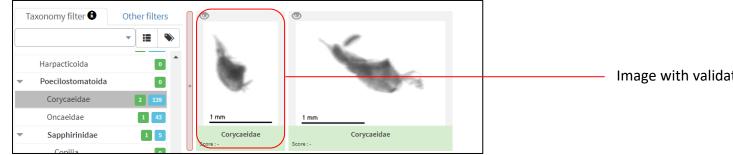
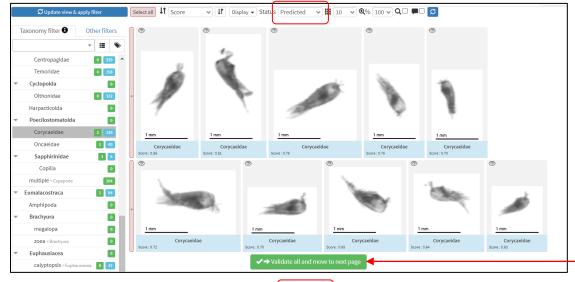
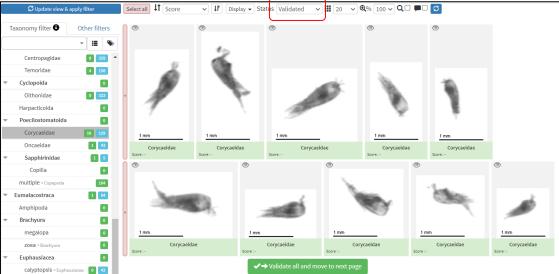


Image with validated status in its category (see chapter 2.3)

## 7.3 Massively validation of images

This button is possible only after a prediction. If you agree with the prediction on an entire page, you can validate all images at the same time:

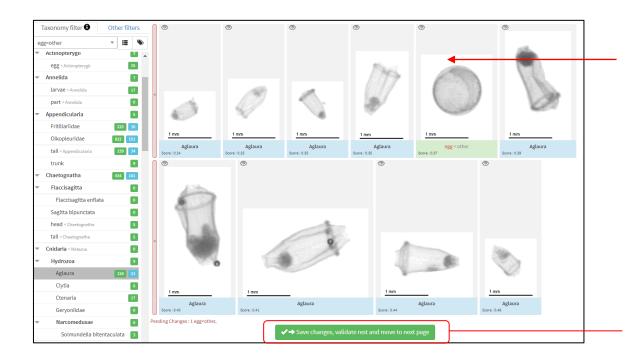




Allows to validate all images of this page and move to the next page of predicted images

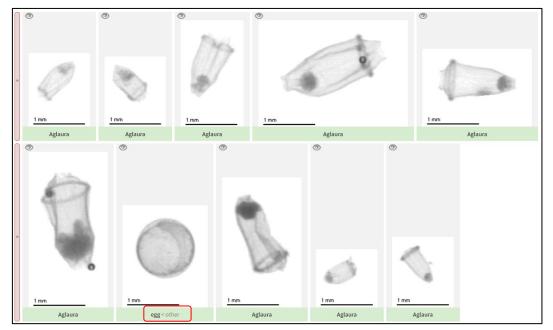
After clicking on this button, your images have a validated status on its category (see chapter 2.3)

If you agree with the prediction on the page but you see some errors, you can make changes and validate the rest:



Assigned image but not yet validated (see chapter 2.3)

After making your changes (see points **1 2 3** chapter 7.2.1 and chapter 7.2.2 and chapter 7.2.3) you can click on this button. It Allows to save changes, validate the rest of images and move to the next page



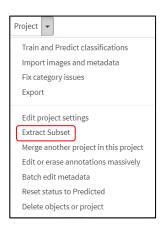
Images are the validated status (see chapter 2.3) in each of their categories

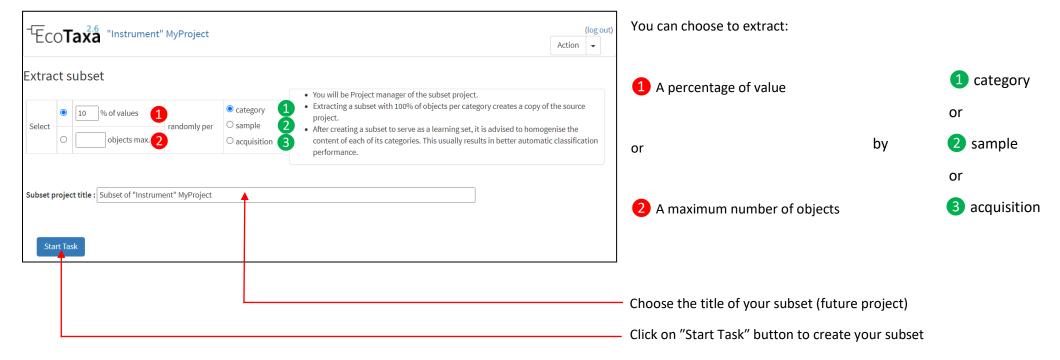
## 8 Extract subset

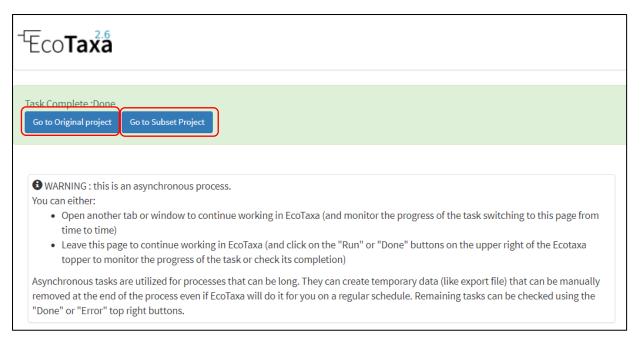
Note: This step is possible only if you are **Manager** (see chapter 5.2)

When you extract a subset of your project, you create a new project.

"Project" button -> "Extract Subset" tool

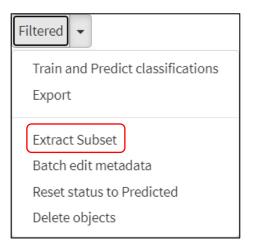






When it is finished, you can go to original project or to your subset project

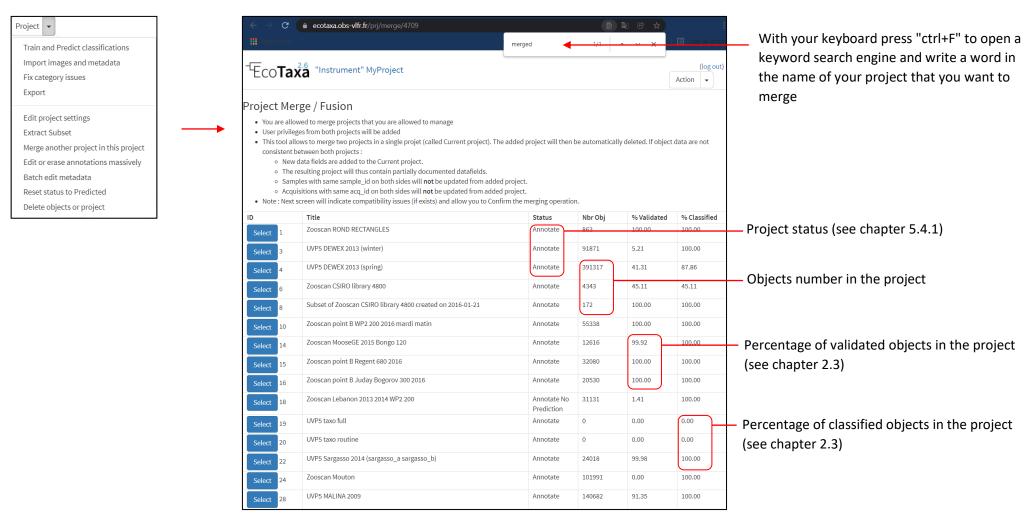
N.B.: You can extract subset with just predefined filters rather than whole project. For example, if you want extract just Copepoda



## 9 Merge projects

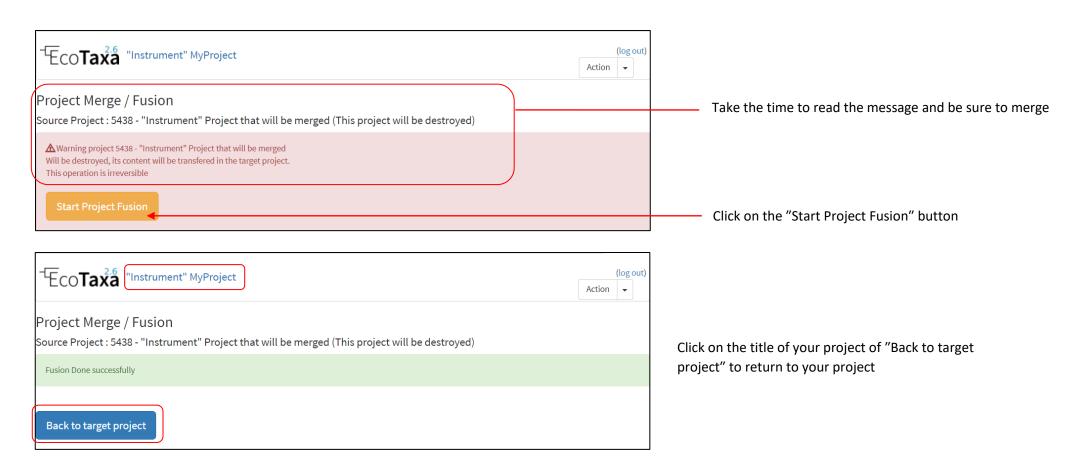
Note: This step is possible only if you are **Manager** (see chapter 5.2)

"Project" button -> "Merge another project in this project" tool





Click on the "Select" button

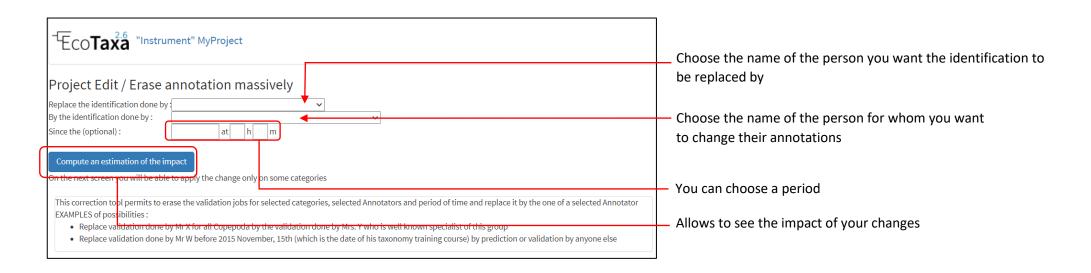


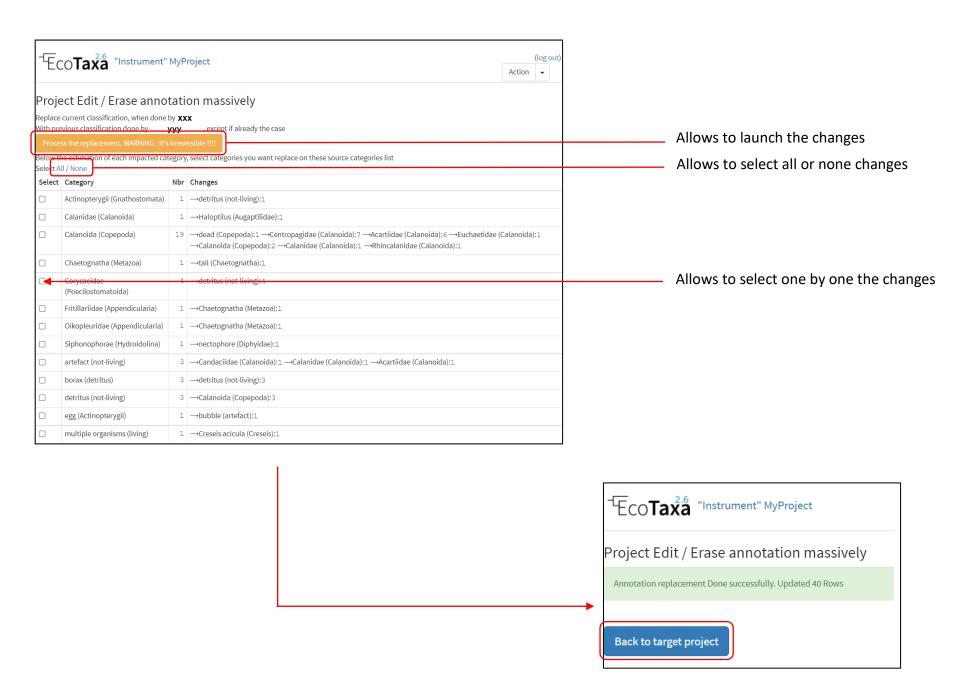
## 10 Edit or erase annotations massively

Note: This step is possible only if you are **Manager** (see chapter 5.2)

"Project" button -> "Edit or erase annotations massively" tool

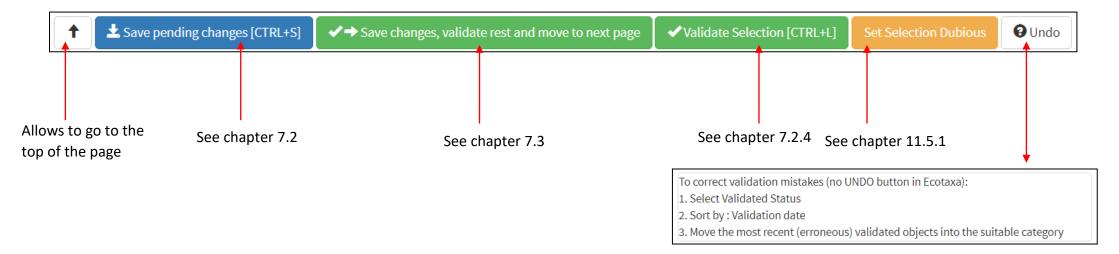




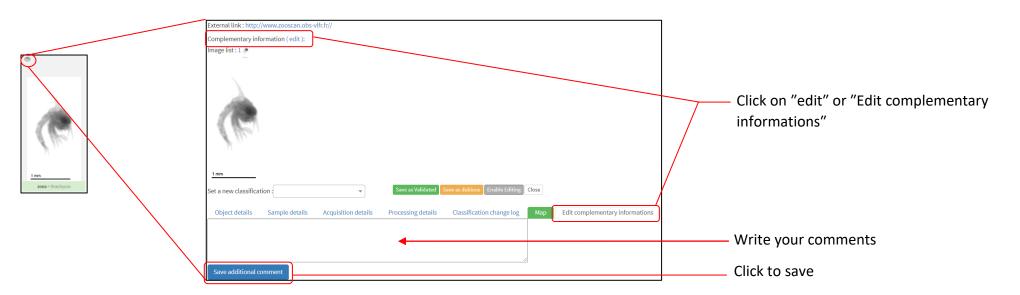


## 11 Tips

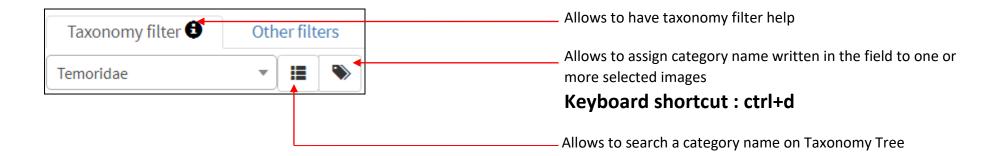
## 11.1 Comment an image and last buttons

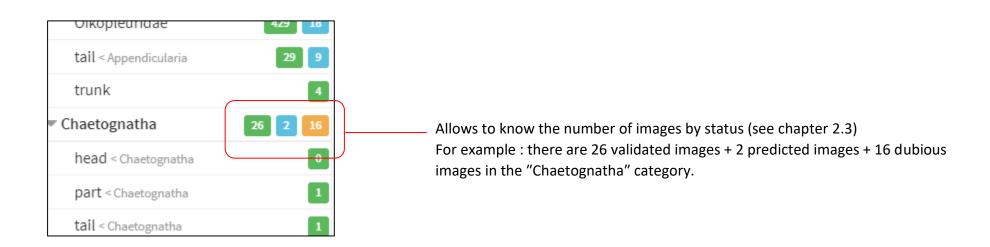


You can add a comment for an image. Click on the eye:

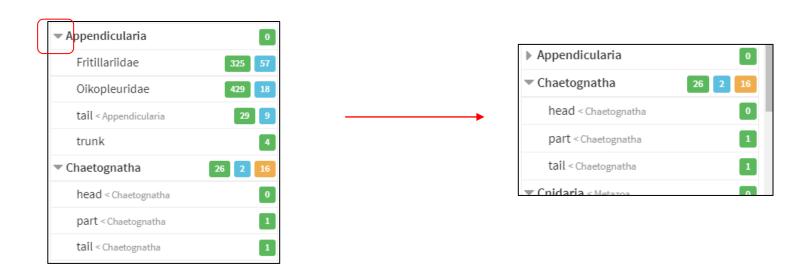


## 11.2 Taxonomy filter: bonus





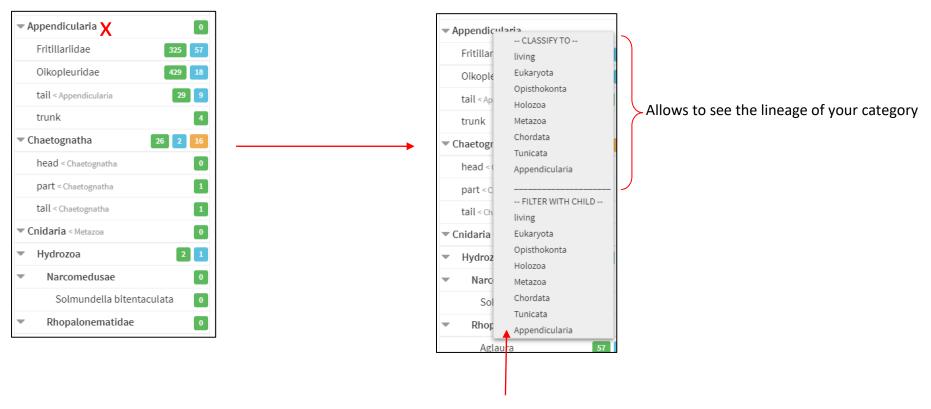
If you click on this arrow, it allows to hide children categories:



To hide all empty categories, you can click on this button at the bottom:

Hide empty categories

If you right click (X) on a category, you can see the lineage (Classify to). You can also filter with child:



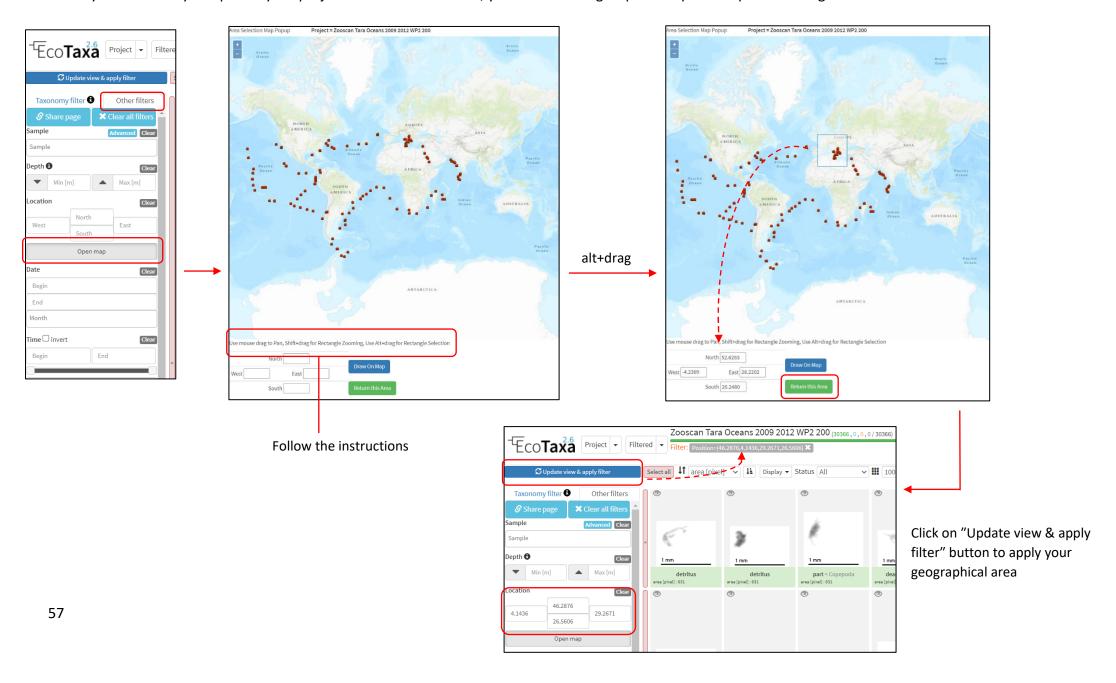
If you click on Appendicularia, it creates a filter "Appendicularia with child":



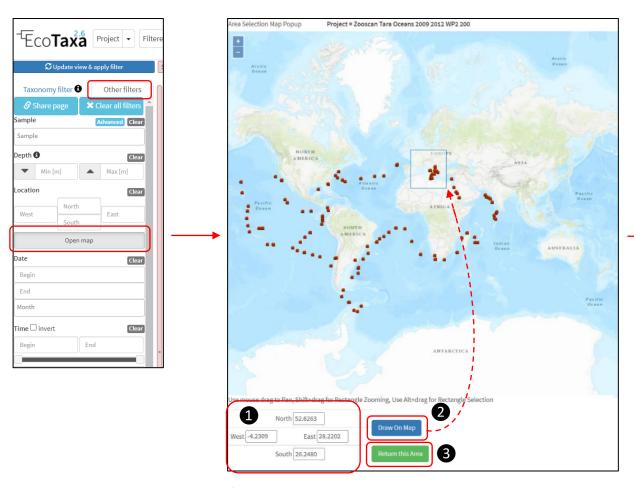
In this example, the images Appendicularia + Fritillariidae + Oikopleuridae + tail + trunk will be visibles

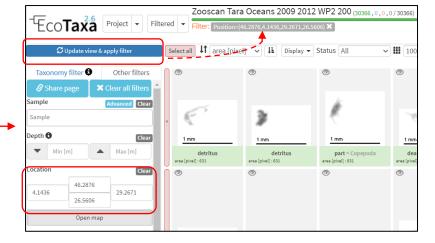
## 11.3 Select sample on the map

When you have many samples in your project all around the world, you can select a group of samples in a particular region.



If you already know the GPS coordinates of your geographical area, you can enter them directly:





Click on "Update view & apply filter" button to apply your geographical area

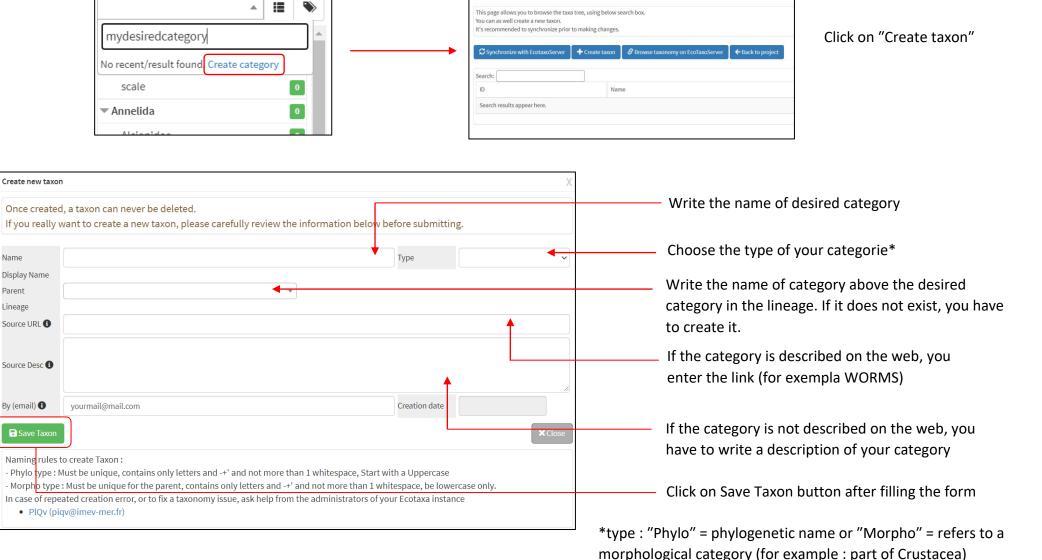
- 1 Write the GPS coordinates of your geographical area
- 2 Click on "Draw on Map" button to check the entered zone
- 3 Click on "Return the Area" button to keep your zone in your filters

## 11.4 How to create a new category

Taxonomy filter 6

Other filters

If you do not find your category because it does not exist in ecotaxa, you can create it by clicking on "Create category":



EcoTaxa

No update needed, Taxonomy was in sync already.

59

Name

Parent

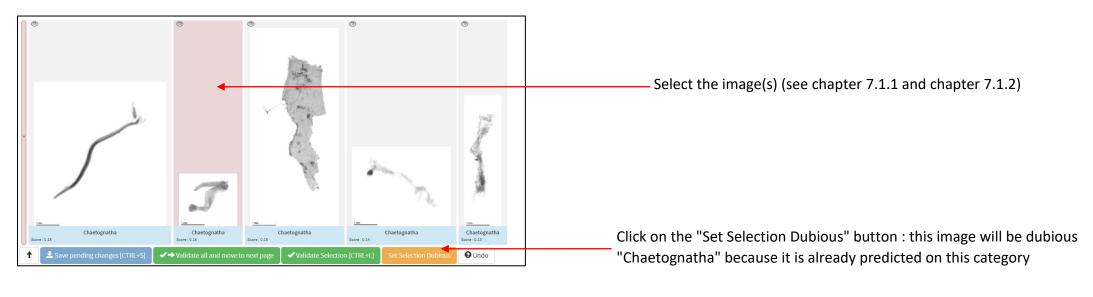
## 11.5 I do not know this organism, where do I classify it?

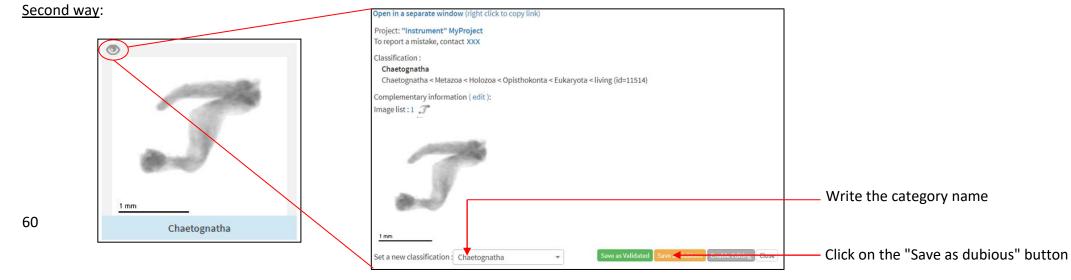
#### 11.5.1 Save as dubious

Note: This step is possible only if you are **Manager or Annotator** (see chapter 5.2)

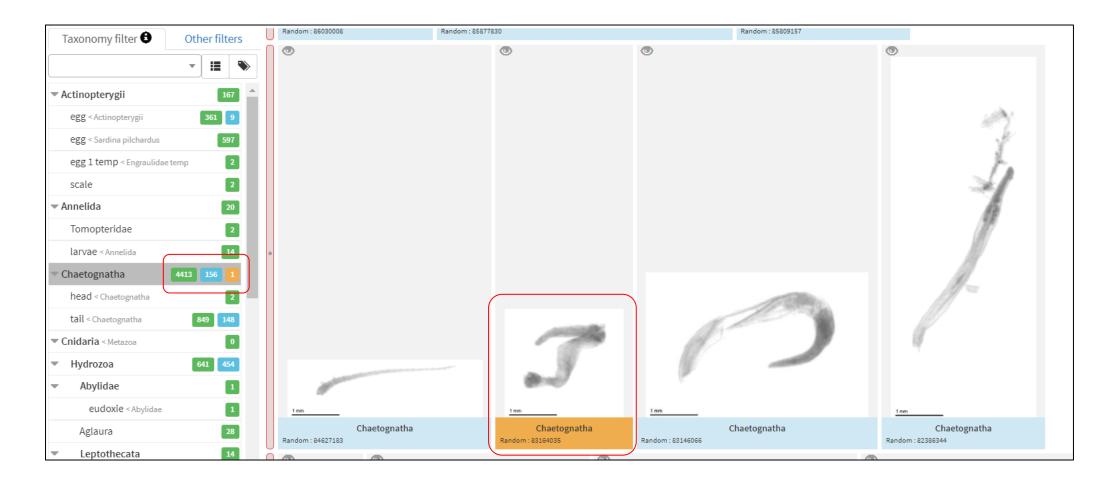
When you are not sure which category to put an image in, you can classify it as dubious: You have 2 options

### First way:





#### Result:



Your image has the dubious status (orange color; see chapter 2.3)

### 11.5.2 Temporary categories and share page

• If you have several images that you do not know how to classify and which **do not have** common morphological characteristics, you can put them in "othertocheck" or "other":



• If you have several images that you do not know how to classify and which **have** common morphological characteristics, you can put them in temporary categories (t001, t002, t003,....):





• After your sorting, you want help on unknown temporary categories. For this, you can share your page with colleague or a taxonomic expert:

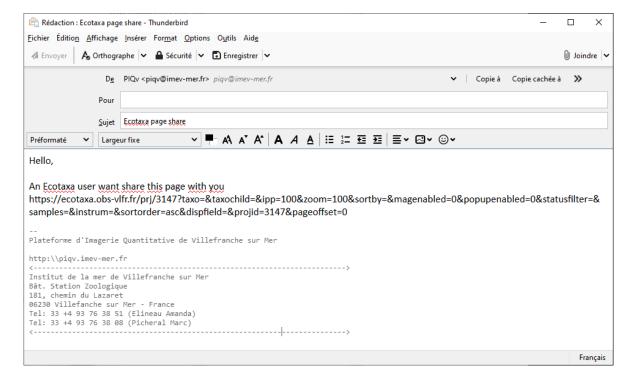
Define your filters:



Click on "Other filters", then "Share page" button:



An email page opens and you can share you page to have an opinion on your images

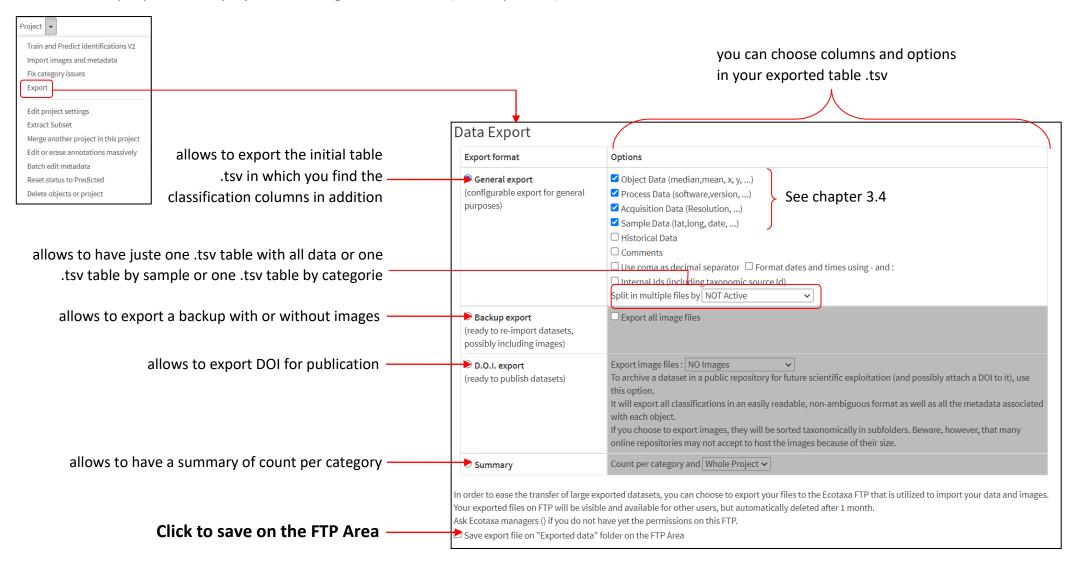


# 11.6 Keyboard shortcut summary and new ones

Action	Keyboard shortcut	Chapters
Select all	ctrl+a	7.1.2
Assign category name	ctrl+d	7.2
Save validation	ctrl+s	7.2
Validate selected image	ctrl+l	7.2.4
Move from one image to another	ctrl+ $\leftarrow$ or ctrl+ $↑$ or ctrl+ $→$	none

## 12 Export data

Note: This step is possible only if you are **Manager or Annotator** (see chapter 5.2)



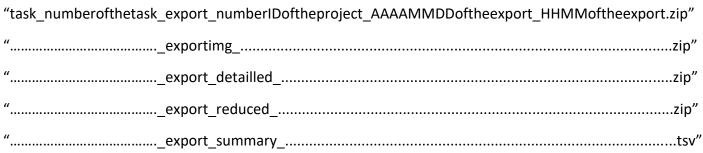


Task Complete: Export successfull: File 'task\_15591\_export\_582\_20181029\_1038.zip' is available on the 'Exported\_data' FTP folder

Show Task

Your data is compressed in a zip or a tsv file named automatically depending to the format that you selected:

"took a week and be a selected as a selected



#### Connect your FTP

Host: plankton.obs-vlfr.fr

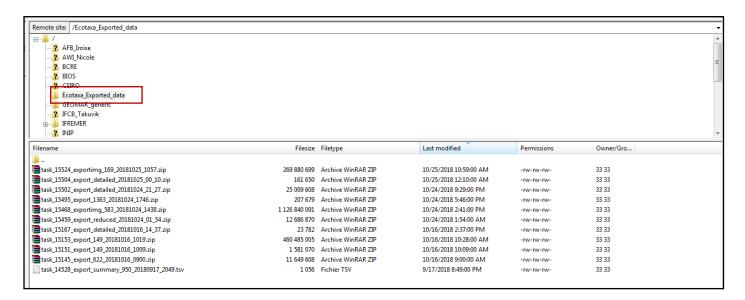
Username : ftp\_plankton

Password: Pl@nkt0n4Ecotaxa



Access to your data by clicking on Ecotaxa Exported data folder

Drag and drop your file into your computer

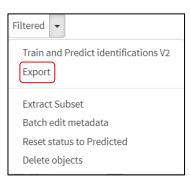


Memory management

After the exportation of your data, delete your files from the FTP.

Anyone having these writing permission on our FTP can load and download any data from this FTP. It is thus IMPORTANT to remove your data as soon as it has been exported.

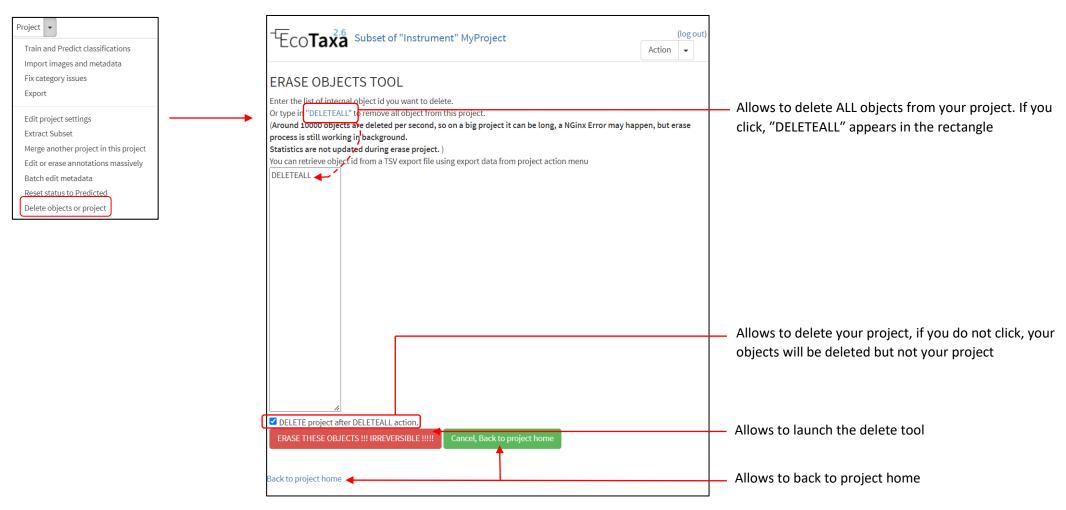
N.B.: you can export data by using predefined filters rather than whole project

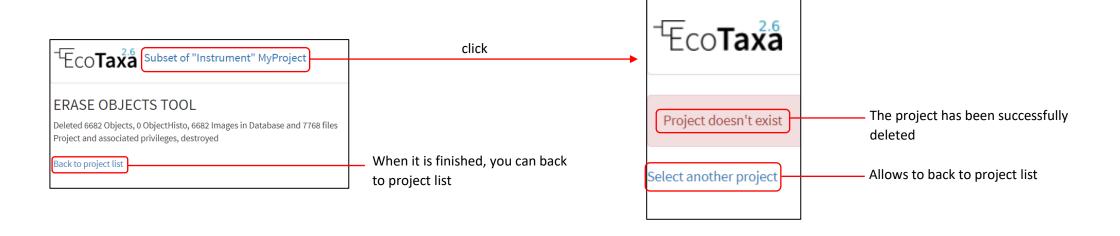


## 13 Delete objects or project

Note: This step is possible only if you are **Manager** (see chapter 5.2)

"Project" button -> "Delete objects or project" tool





N.B.: you can delete objects by using predefined filters rather than whole project for example a sample

