## Instructions to setup and run the haddock detector

## X. Mouy 26 May 2021

- 1. Download the folder "Haddock" on DropBox: https://www.dropbox.com/sh/zerx7tqh5gupq52/AACMf7WLitgowHHWV3ILJRvka?dl=0
- 2. Download and install Anaconda: https://www.anaconda.com/products/individual

## 3. Launch Anaconda Navigator



4. Click the Tab "Environments" on the left and click the "create" button at the bottom.



5. Create a new environment with Python 3.8

Create new	environment				x
Name:	Haddock_det	tector			
Location:	C:\Users\xavier.m	ouy\Anaconda3	\envs\Haddock_a	letector	
Packages:	<ul> <li>Python</li> </ul>	3.8	~		
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6. Once the new environment is created (it can take several minutes), click on the green triangle at the right of the new environment and select "Open Terminal".

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Environments	base (root)		Name
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Community	Haddock_detector	Open	Terminal
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	Test_bugfix	Open v	with Jupyter Notebook
	ecosound		🗹 100 python_abi
			100 setuptools

- 7. In the terminal type these command lines to install all the dependencies (one at a time):
  - pip install fastdtw
  - pip install soundfile
  - pip install matplotlib
  - pip install scipy
  - pip install pandas
  - pip install numba
- 8. In the terminal, change the current directory to the location of the "Haddock" folder (see step 1) using the **cd** command, eg.:

cd C:\Users\xavier.mouy\Documents\Perso\NOAA\Haddock

9. In the terminal, type **python main.py -h**. If everything works well, it should display the instructions to run the detector:

C:\Windows\system32\cr	nd.exe - conda install matplotlib	_		×
(Haddock_detector) C:∖ usage: main.py [-h] [- main.py: error: the fo	Users\xavier.mouy\Documents\Perso\NOAA\Haddock>python mai r] [-of] [-op] [-or] input output cfgfile templatefile llowing arguments are required: input, output, cfgfile, t	in.py cemplat	efile	^
(Haddock_detector) C:∖ usage: main.py [-h] [-	Users\xavier.mouy\Documents\Perso\NOAA\Haddock>python mai r] [-of] [-op] [-or] input output cfgfile templatefile	in.py -	h	
positional arguments: input output cfgfile templatefile	File or directory to process Output directory Configuration file Template file for DTW			
optional arguments: -h,help -r,recursive -of,outputfolder -op,pamlab -or,raven (Haddock_detector) C:\	show this help message and exit Process files in input directory recursively Outputs results in station/recorder folder structure Outputs results in the PAMlab annotation format Outputs results in the RAVEN annotation format Users\xavier.mouy\Documents\Perso\NOAA\Haddock>python mai	in.py -	h	
				~

- 10. Run the detector by typing in the terminal **python main.py** followed by the following arguments (in that order:
  - a. The input folder were the audio data are
  - ${\tt b}\,.\,\,$  the output folder were the results will be written
  - ${\tt c}$  . the path of the configuration file
  - ${\tt d}$  . the path of the template file
  - e. -raven

Each argument should be between double quotes and separated by a single space. The configuration file is in the config.ini file in the config folder (see step 1). The template file is the template\_2006.csvfile in the config folder (see step 1). If you need to process data that are located in several nested subfolders you can add the **-recursive** and **-outputfolder** arguments at the end. The latter will recreate the folder structure when writing the detections files.

## Example:

```
python main.py "C:\Users\xavier.mouy\Documents\Perso\NOAA\Haddock\data"
"C:\Users\xavier.mouy\Documents\Perso\NOAA\Haddock\results"
"C:\Users\xavier.mouy\Documents\Perso\NOAA\Haddock\config\config.ini"
"C:\Users\xavier.mouy\Documents\Perso\NOAA\Haddock\config\template_2006.csv" --raven
```

Note that the detector can run on only one channel at the time. So, if you want to process several channels, you will need to rerun the detector for each channel. The channel to process can be changed in the config.ini file (config folder).

11. The detection results are written as txt files that can be imported in Raven as annotation tables.

A Raven Pro 1.6.1			- 🗆 ×
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>P</u> lay T <u>a</u> ble <u>W</u> indow <u>T</u> ools <u>H</u> elp			
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Scrollbars	0.000 600.000 C:\Users\x 0.7346	haddock k 69.46213151927 FS PK	DTWDet 6.6014598847382 13.5242
Selection Borders	0.000 600.000 C:\Users\x 0.9332	haddock k 69.46213151927 FS PK	DTWDet 12.6444/1141/89 7.4/684
Selection Control Points	0.000 600.000 C.\Users\x 2.2102	haddock k 69 46213151927 FS PK	DTWDet 14.305861803618 4.39852
Lavout 7 1 1 2.5411 2.5638	0.000 600.000 C:\Users\x 2.5411	haddock k 69.46213151927 FS PK	DTWDet 20.545911395471 7.10740
8 1 1 35600 35827	0.000 600.000 C:\Users\x 3.5600	haddock k69.46213151927FS PK	DTWDet 12.5707928492518.81414 👻
Linkage Selection			
Linkage Selection Review Playback			· · · · · · · · · · · · · · · · · · ·

If there are too many false alarms to review manually, it is possible to filter the detections using the "Distortion (DTW)" and "Kurtosis" fields. True positives are more likely to have a large kurtosis value and a small DTW distortion (typically < 20).

12. I included a short recording with haddock sounds in the data folder (see step 1).