

HYPMO Project Photo Identification Guide

**HYPMO
PROJECT**

Hyperoodon movements in the Northeast Atlantic

Version 1.2

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Background Information

The “Hyperoodon Movements in the Northeast Atlantic” (HYPMO) project is a research project dedicated to understanding the movement ecology of the elusive northern bottlenose whale (*Hyperoodon ampullatus*) in the Northeast Atlantic. We aim to achieve this objective by using different research methodologies, including photo identification (photo ID) of distinctive individuals to study their long-term movement patterns and site fidelity. This document has been created for anyone working with the HYPMO Photo ID catalogue, and its main purpose is to ensure consistency in photo processing and matching of photos of individuals across analysts.

To date, the majority of archived photographs in the database were collected during dedicated research surveys around Jan Mayen between 2013 and 2016 led by the University of St Andrews. Additionally, photographs were gathered opportunistically by researchers, whale-watching guides and the public around Iceland and other areas of the Northeast Atlantic. The approach described in this guide is based on the photo ID protocol developed by the Whitehead Lab at Dalhousie University, who has studied northern bottlenose whales since 1988 (Feyrer et al., 2020).

We would like to thank Patrick Miller, Eilidh Siegal and Saana Isojunno from the University of St Andrews for allowing us to continue and build upon their initial photo ID efforts. Furthermore, we express our gratitude to Laura Feyrer from Dalhousie University/DFO for her insights and advice on the topic. And most importantly, a big thank you goes out to all photographers who have contributed to this work.

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ID Guide

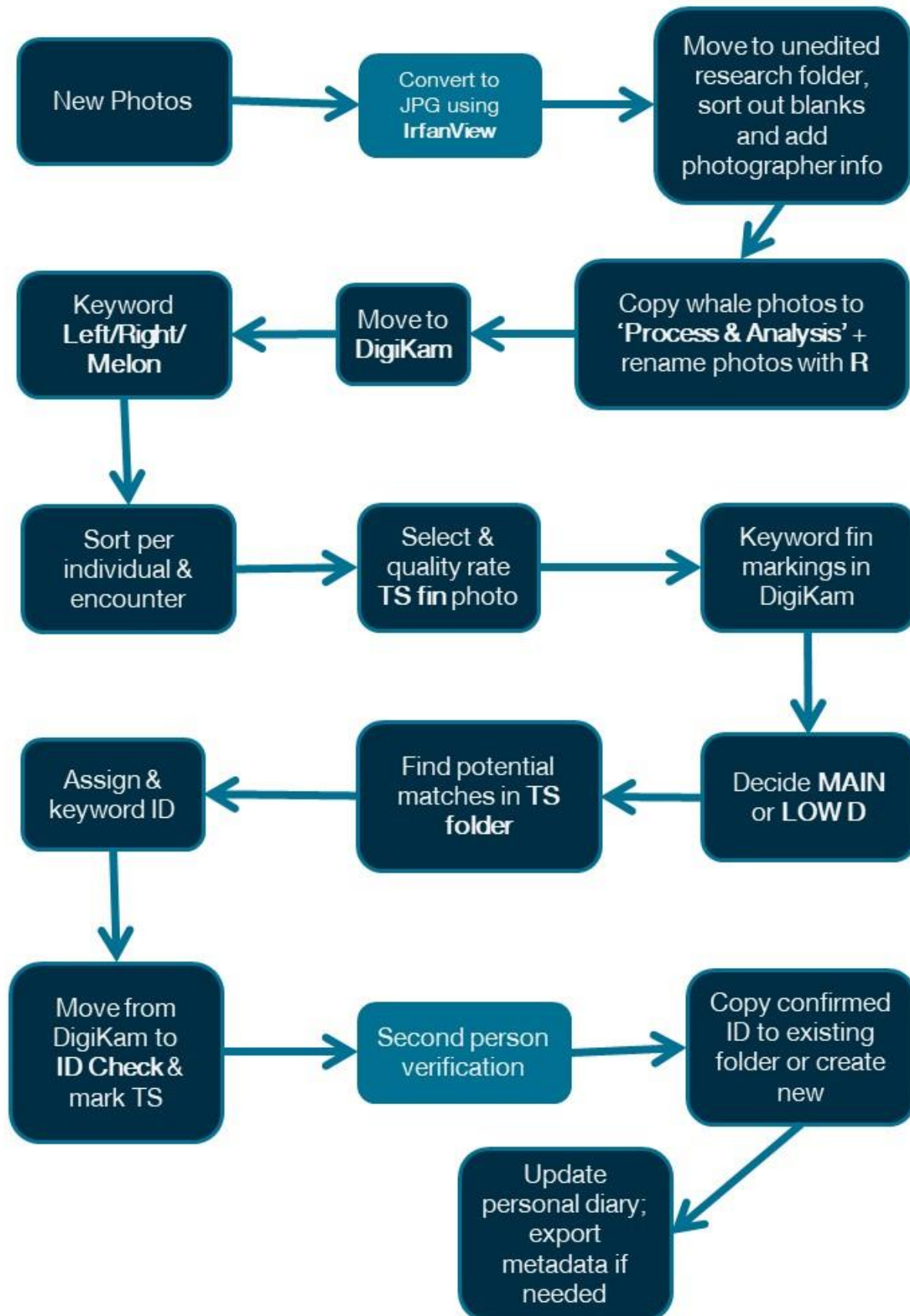
Key Terms and Abbreviations

NBW	Northern bottlenose whale
ID	Identification
Dorsal skirt	Area around the dorsal fin used for photo identification of individuals
Marking	A visual feature on the whale's body that is used for identification
HYPMO	Hyperoodon ampullatus movements in the Northeast Atlantic
Match	When the same individual is photographed twice
DigiKam	The photo management software used for processing
Meta data	Information attached to an image such as GPS position and time
Keyword or tag	A text attribute assigned to an image
Type specimen	Best photo of an individual in the catalogue
Catalogue	Collection of photos from individuals identified from the markings in their dorsal skirt
Distinctiveness	Individual distinctiveness based on number and type of markings
Quality	Photo quality based on focus, resolution, exposure/lighting and angle of photographer to the whale

General Rules of Thumb

- Follow the steps suggested in this guide.
- Always ask if you have questions or doubts.
- The catalogue is always work-in-progress, so document and correct mistakes and suggest improvements to the protocol.
- Work on copies of the photographs, do NOT delete.
- Rather assign too many keywords than too few.

Workflow



HYPMO Photo ID Data Set

The master catalogue is accessible via Microsoft Sharepoint [HI-Hypmo - Photo ID - All Documents \(sharepoint.com\)](#) and is updated on a regular basis. At the start of a project, copy the photo ID data you are going to work with to an (external) hard drive and make a note of the date for version control.

The photo ID folder is structured in the following way:

--- All photos ---	Contains all photos unchanged (raw data)
--- Archive ---	Holds previous versions
--- Catalogue ---	Current catalogue, left and right sides, including type specimens
Documents`	Various documentation related to photo ID
Process & Analysis	New photos that still need to be processed
Workflow	R scripts, manuals and such, needed for IDing and matching

Structure of Catalogue folder

DTAG	Best photo of each whale tagged with a DTAG
ID CHECK	Identified individuals that need verification by second person
LOW D	“Low distinctiveness” dorsal fin catalogue containing whales with fewer markings
MAIN	Main dorsal fin catalogue with reliably marked whales
MELON	Best photo of each whale that has a melon photo
TO SORT OUT	Notes on work in progress, issues to sort out

Structure of the Main folder

LEFT	Left sides catalogue
RIGHT	Right sides catalogue
LEFT Type Specimen	Best photo of each identified whale - left
RIGHT Type Specimen	Best photo of each Identified whale - right

Adding New Images

Images can come from a variety of sources including field studies or members of the public. It is important to keep record of original photos and photographers' contact details for possible encounter and copyright questions.

- Create new subfolder in the respective region folder (--- All photos ---\Region); choose Outside NE Atlantic for areas outside of Northeast Atlantic.
- Use the format **YYMMDD**_Photographer_Location for the folder name.
- Add all images regardless of quality or content.
- If required, adjust time stamps and other metadata using GeoSetter (Appendix A).
- Copy folder to "Process & Analysis" and YOUR DigiKam work directory.
- Add photographer name and contact details to "Photo ID Database Tables.xlsx" in Photo ID\Documents. The photographer code consists of 3 initials. If the photographer has only two initials (no second or middle name) use the second letter of the last name.

Renaming Photos

All photos are named following the format below:

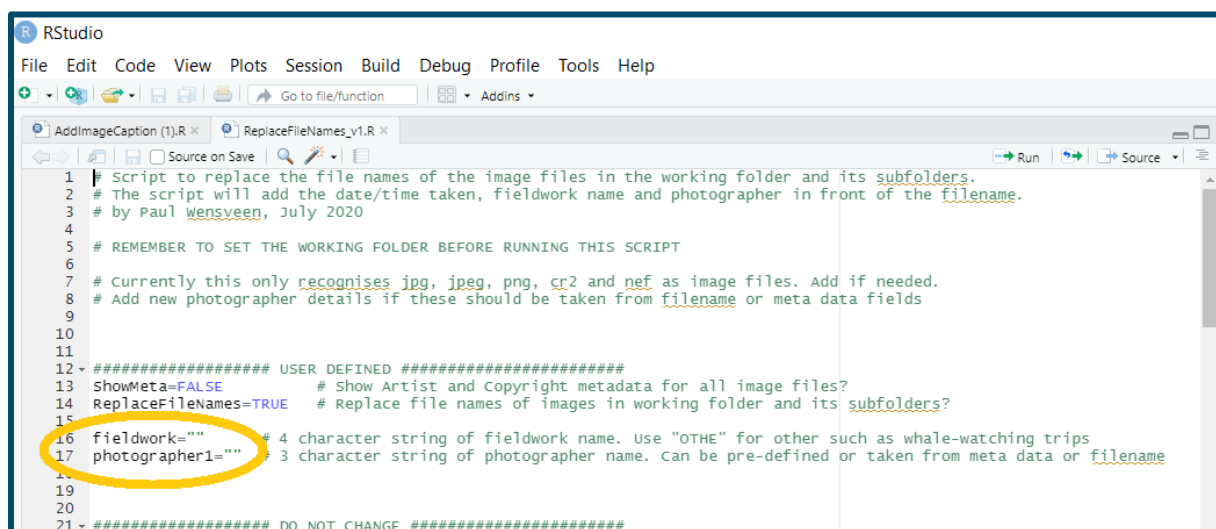
YYMMDD_HHMMSS_Fieldwork_Photographer_OriginalFilename

e.g., 160622_195432_JM16_NEU_Picture 056

YYMMDD	Date photo was taken
HHMMSS	Time photo was taken
Fieldwork	4-digit Fieldwork code (e.g., JM16=Jan Mayen 2016 cruise)
Photographer	3-digit Photographer code (list of photographers; UNK=Unknown)
Original Filename	Original file name of photo

To rename all photos in bulk a “ReplaceFileNames” R code has been created that is available in the folder Photo ID\Workflow.

- Open R and set working directory, e.g. `setwd("D:/new photos")`
- Change to respective photographer and fieldwork codes (see Figure 1).
- Run code on a copy of the folder.
- Check if all photos have been renamed correctly.



```

1 # Script to replace the file names of the image files in the working folder and its subfolders.
2 # The script will add the date/time taken, fieldwork name and photographer in front of the filename.
3 # by Paul Wensveen, July 2020
4
5 # REMEMBER TO SET THE WORKING FOLDER BEFORE RUNNING THIS SCRIPT
6
7 # currently this only recognises jpg, jpeg, png, cr2 and nef as image files. Add if needed.
8 # Add new photographer details if these should be taken from filename or meta data fields
9
10
11
12 ##### USER DEFINED #####
13 ShowMeta=FALSE # Show Artist and Copyright metadata for all image files?
14 ReplaceFileNames=TRUE # Replace file names of images in working folder and its subfolders?
15
16 fieldwork="" # 4 character string of fieldwork name. Use "OTHE" for other such as whale-watching trips
17 photographer1="" # 3 character string of photographer name. Can be pre-defined or taken from meta data or filename
18
19
20
21 ##### DO NOT CHANGE #####

```

Figure 1: R code to rename photos

*** Contact Paul if you experience trouble with R ***

DigiKam Environment

DigiKam is an open-source photo managing software which is used by the HYPMO project to organize, tag and quality rate images in the photo ID catalogue. It can be downloaded for free here: [digiKam - Download](#)

It is possible to customize many features of DigiKam but only those needed for photo ID work are explained here. The DigiKam handbook, available in pdf in the folder Photo ID\Workflow, is a resourceful tool that the user might want to investigate further.

First Use

Before opening DigiKam for the first time, create a designated folder on your computer to be used as your work directory. You can also choose the Process & Analysis folder. When asked by DigiKam, select your work directory. Every time DigiKam is opened, it will automatically scan the folder for updates and incorporate them. Hence, it is fine to make changes to the images in the folder outside of DigiKam.

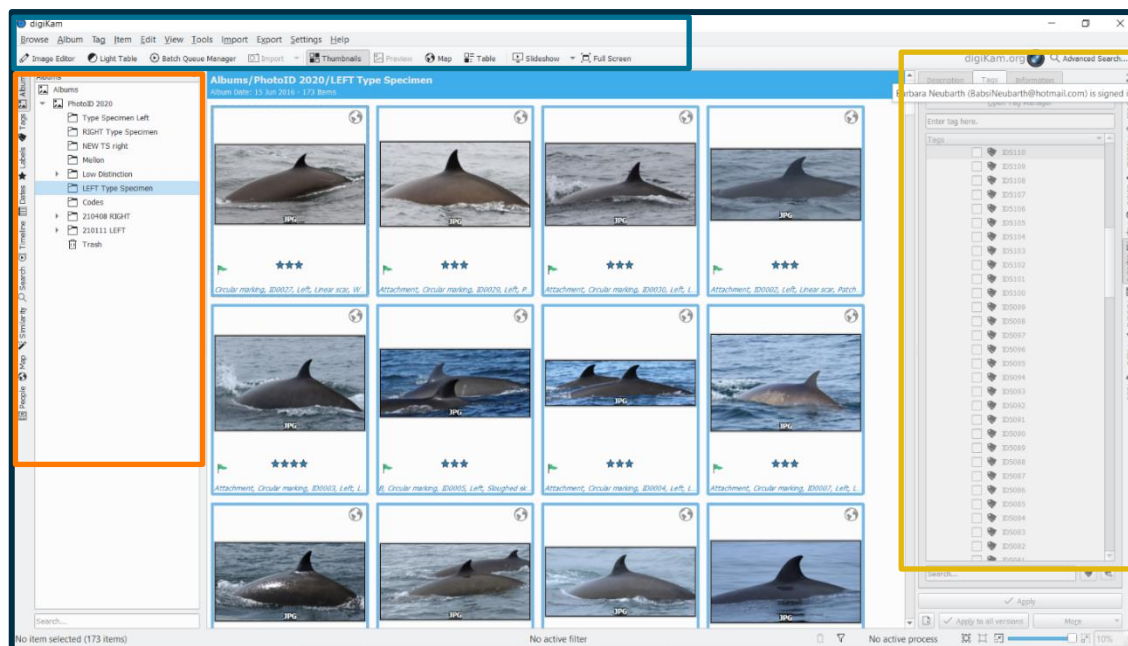


Figure 2: The standard layout which can be adjusted according to personal preferences.

Toolbars

Figures 3 to 5 highlight and explain useful tools which are used for photo ID analysis.

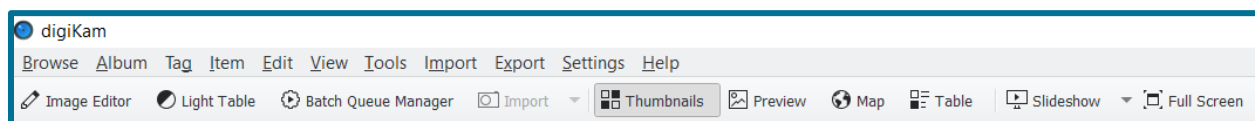


Figure 2: DigiKam Toolbar TOP

Image Editor	to crop photos, adjust lighting, exposure etc.
Light Table	opens a separate window where multiple photos can be compared (see Appendix D).
Batch Q Manager	useful for changing or working with large amounts of photos.
Thumbnails	general overview of photos.
Map	creates a map based on GPS location of chosen images.
Settings	change of work directory and automatic import options.

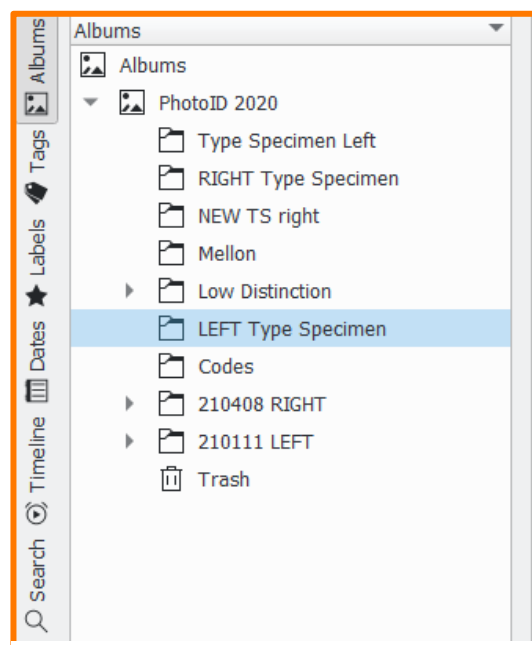


Figure 3: DigiKam Tool Bar LEFT

Albums shows the folders in the assigned work directory.

Tags shows the tag manager where all keywords can be adjusted, or new ones can be created.

Labels star ratings used by HYPMO as quality levels or flagged images.

Dates shows photos by date taken (useful for matching left and right fins).

Timeline shows photos taken within a certain period (useful to filter by e.g., fieldwork).

Search advanced search option where photos can be filtered by multiple attributes like tags and time stamp.

- Properties** show general photograph, file and DigiKam properties.
- Metadata** summarizes all associated meta data with one image in different styles (e.g. Exif).
- Captions** most relevant for photo ID work.
- Descriptions** comments can be added.
- Tags** assigned keywords can be viewed and added.
- Filters** allow filtering through folders by tag, text, file type and geolocation.

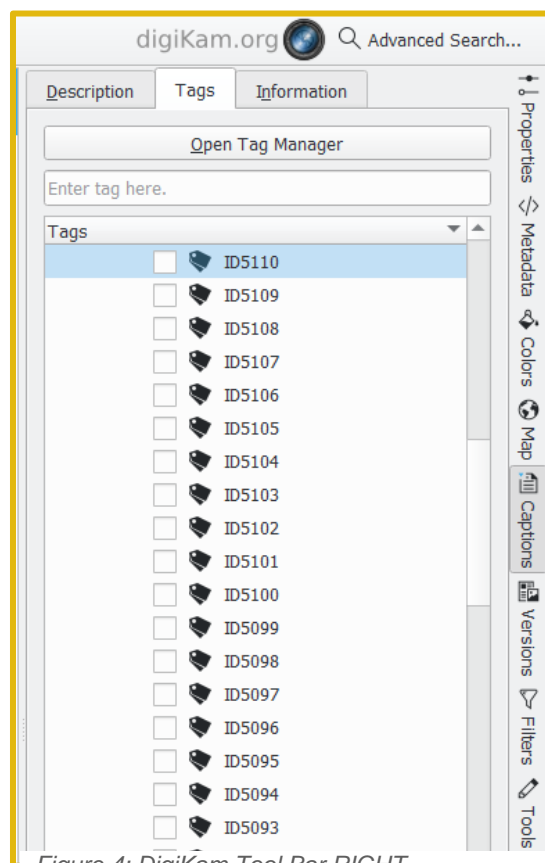
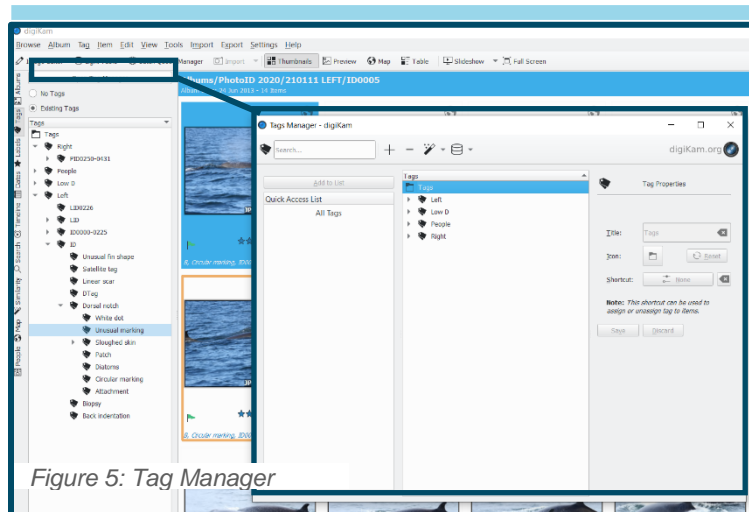


Figure 4: DigiKam Tool Bar RIGHT

Keyword Management

Every image should receive keywords, or “tags”, in DigiKam, based on visible markings on the body of the whale (described in detail later). Keywords can be added, changed or deleted with the help of the **Tag Manager** (Figure 6). Within DigiKam keywords can be ordered into hierarchies which do not show outside of the program. Hence, the keyword hierarchy can be useful for keeping your own DigiKam environment organized.



NOTE DigiKam automatically imports tags attached to an image!

ID Area

HYPMO uses the dorsal fin and the area within one fin-base width (dorsal skirt) for photo identification. Left and right sides are kept in separate catalogues but are matched where possible. Dorsal fins are the focal area for identification because they are the easiest and most likely to be photographed. The melon (forehead) of the whale is also an important part of the body as it is used for age-sex classification, but not for individual identification. Examples below illustrate dorsal fins from both sides, melon and ID area.



Image 3: Right Side



Image 2: Left Side



Image 1: Melon

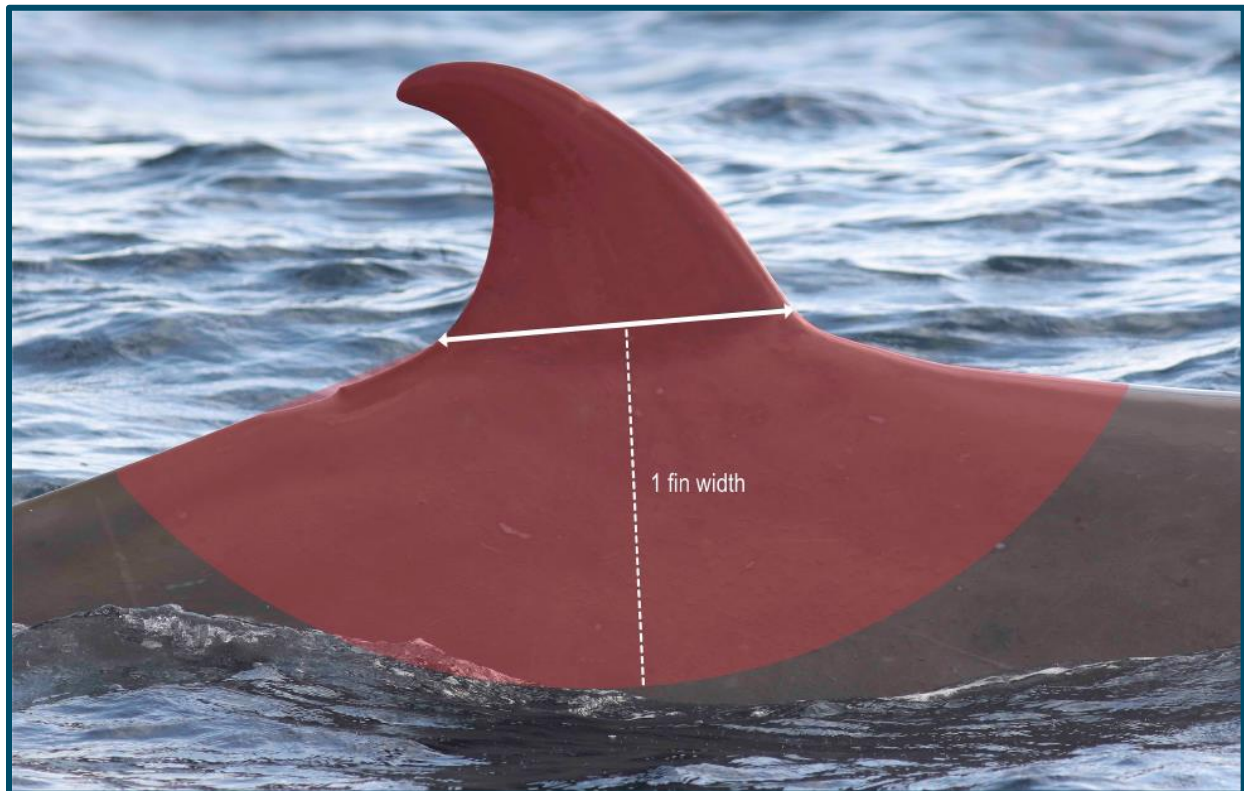


Image 4: Area within 1 fin width (dorsal skirt) used for identification. Taken from (Feyrer et al., 2021)

Quality Rating

Dorsal skirt images are quality rated to select those photos suitable for identification. Ratings range from Q=1 (very poor) to Q=4 (very good). Quality is independent of visual markings (Distinctiveness) to reduce bias toward highly marked individuals. Four aspects determine the quality of a dorsal skirt image:

1. Focus / resolution after cropping
2. Angle of dorsal fin (90 degrees is best)
3. Amount of ID area visible
4. Exposure / lighting

In brief, Q=4 is when all four criteria are met, Q=3 when two or three criteria are met, Q=2 when only one criteria is met and Q=1 essentially a completely useless photo.



Image 5: Q=4

Q = 4

- Photos are well-lit and in focus, the fin is parallel to the observer (90°), and the entire fin as well as the body surrounding the fin (at least one fin-width away) is visible.
- Most detailed and most reliable photos for analysis, matching and identification.



Image 6: Q=3

Q = 3

- Photos are good but lack one or two key criteria from Q4 photos (too dark, water splashes, out of focus, blurry, poor angle, fin not entirely in frame, etc.).
- Shows detail but may not be as useful for matching/identification.



Image 7: Q=2

Q = 2

- Photos are generally poor, but whales may still be identifiable, however fine details are lost.
- Photos may be very blurry and/or out of focus, the fin is almost entirely covered in water, the angle is poor (i.e. whale is swimming towards or away from camera)



Image 8: Q=1

Q = 1

- Photos are very poor, and whales are usually completely unidentifiable. May include only a tip of a fin, be completely out of focus or the whale is too far away.

Use the star function to assign quality ratings in DigiKam. It can be found underneath each picture in 'Thumbnail' mode:

- Simply click on the respective amount of stars ★ Q=1 ★★ Q=2
★★★ Q=3 ★★★★★ Q=4. Note that DigiKam has a five-star option.
- By selecting all and changing one photo's star rating, DigiKam will automatically adapt all selected images.

NOTE OF CAUTION: It is very easy to change Q ratings by mistake in DigiKam. Simply moving the mouse over the stars might already do it!

Keywording Photos

Once photos have been quality rated, they should be keyworded in DigiKam. First, body parts such as melon, left (left side dorsal) or right (right side dorsal) are attributed, followed by specific categories of visible markings (see section Markings, below). Adding a keyword to an image in DigiKam can be done in a few simple steps:

- Click on the image.
- Open the **Captions** bar on the right panel.
- If sure choose one keyword per marking. If unsure rather assign two keywords.
- Select the keywords using the checkboxes.
- Press **Apply** (Figure 7).
- By selecting multiple images, DigiKam will keyword all of them.
- NOTE if multiple images are selected, a check sign will only appear next to a keyword if all images have it; alternatively, a grey square will appear next to a tag if the tag is only assigned to a few images out of the selection (Figure 8).
- TIP grey squares and check signs can be a useful tool to verify that all tags have been assigned correctly.

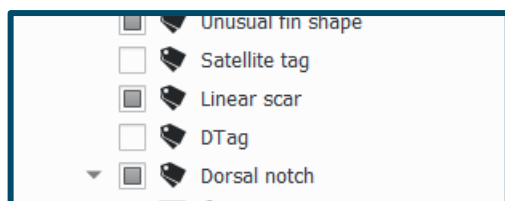


Figure 7: Keywords assigned to some images only

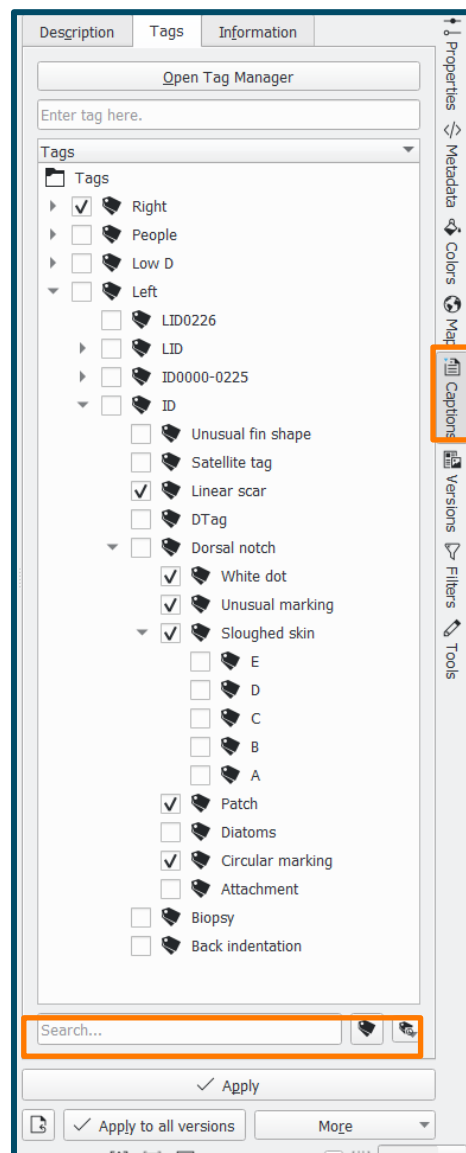


Figure 6: Assigning keywords in DigiKam

Changing and Adding New Keywords

Keywords can be changed, deleted, or added through the **Tag Manager**. If a keyword is changed, DigiKam automatically adjusts all previously assigned keywords. Tag manager can be opened through the **Tag** bar on the left side or through **Captions** on the right (Figure 9).

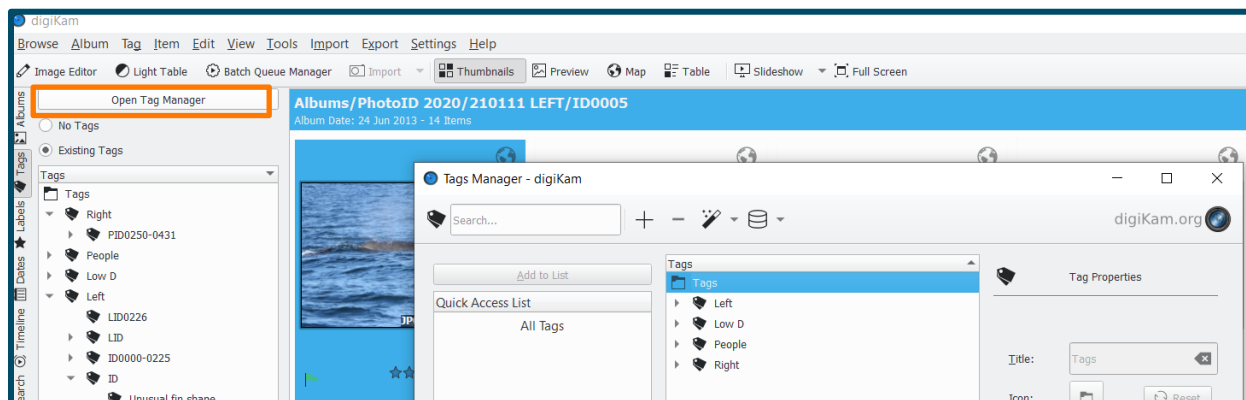


Figure 8: Tag Manager

Change a keyword (Figure 10):

- Click on the keyword.
- Make the desired changes in **Title**.
- Press **Save** and **Okay** if DigiKam asks if these changes should be applied to all.

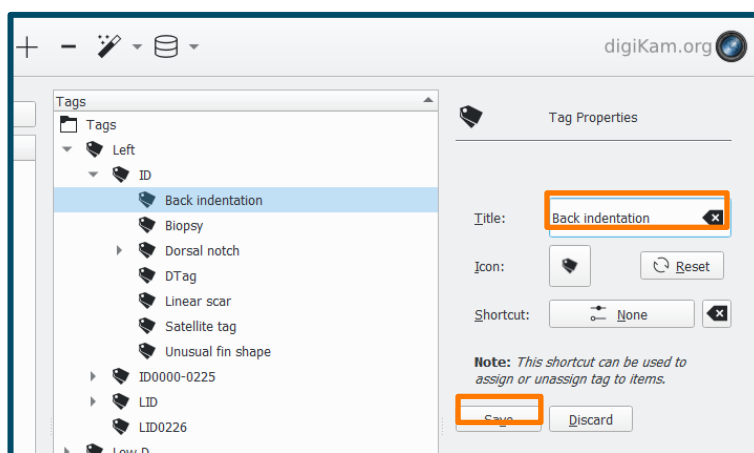


Figure 9: Change Keywords

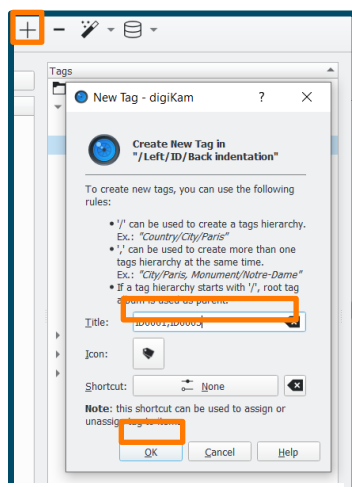


Figure 10: Adding new tags

Add new keywords (Figure 11):

- Press the **plus** symbol.
- Add the name of the keyword in **Title**.
- Separate keywords with a comma to add more.
- Press **OK** to save the new keyword.

Delete unassigned keywords:

DigiKam can automatically delete unassigned keywords. The option is available via the **Wand** symbol in tag manager.

Multiple Whales in One Image

If an image shows multiple whales, a letter (A, B, C, etc.) is added as a keyword to indicate which individual in the frame it is. The closest whale to the photographer is **A**, the second one **B** and so on.



Image 9: Multiple whales in one image

Catalogue Criteria

Only photos of well, reliably marked whales with quality ratings 3 or 4 are currently included in the MAIN catalogue. Clean, non-descript animals (i.e. those not showing markings) cannot be properly identified over time. Only dorsal notches and back indentations are considered reliable markings as they are unlikely to disappear, but it is possible that the number of notches and indentations increase throughout the years. The MAIN catalogue consists of individuals that fulfil at least one of three criteria:

1. At least **1** reliable marking (dorsal notch or back indentation)
2. At least **3** other markings used for identification including a linear scar or an unusual marking.
3. At least **4** other markings used for identification.

Additionally, we keep a 'Low Distinctiveness' (or 'Low D') catalogue with whales which are marked but do not fulfil the above criteria for inclusion in the main catalogue. New photos should be compared to both the Main (high D) and low D catalogues.

Markings

Reliable Markings

Back Indentation: Indentation or notch along the spine of the whale; Can be posterior or anterior (rare) to dorsal fin; Depth of the indentation may vary from small nicks to large gashes.



Image 10: Back indentation

Dorsal Notch: Any dorsal fin notch or where a chunk of fin has been removed; includes very small nicks as well as severe fin mutilation; White scarring may occur around edges; Notches are permanent and will not grow back.



Image 11: Dorsal notch

Less Reliable but Used for Identification

Linear Scar: Any linear scars; white to grey in colour; will vary in length and thickness.



Image 12: Linear scar

Unusual Marking: Markings or scars that are very unique and difficult to classify.



Image 13: Unusual marking

Circular Marking: Any circular marking(s) (very common).

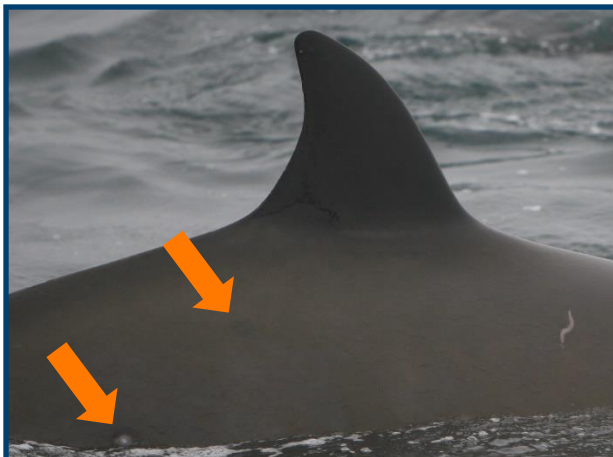


Image 14: Circular marking

White Dot: Small white dot; often in small clusters.

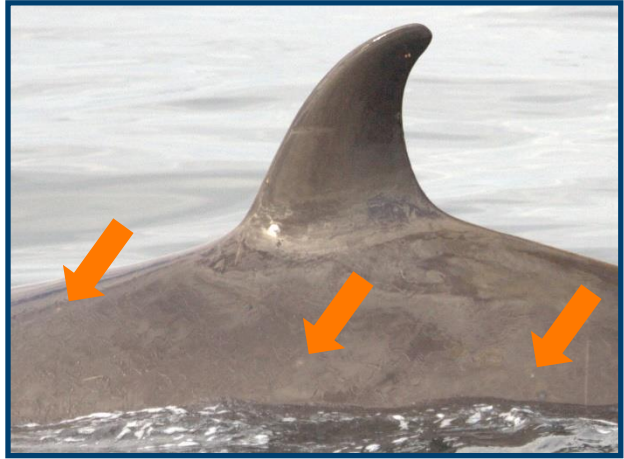
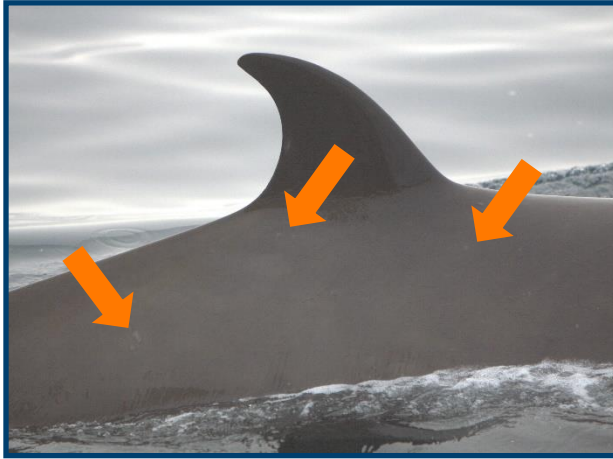


Image 15: White dot

Patch: Blotchy white or mottled patches of various shapes, usually on the body of the whale. *Not to be confused with sloughed skin, which are irregular in shape and change rapidly.

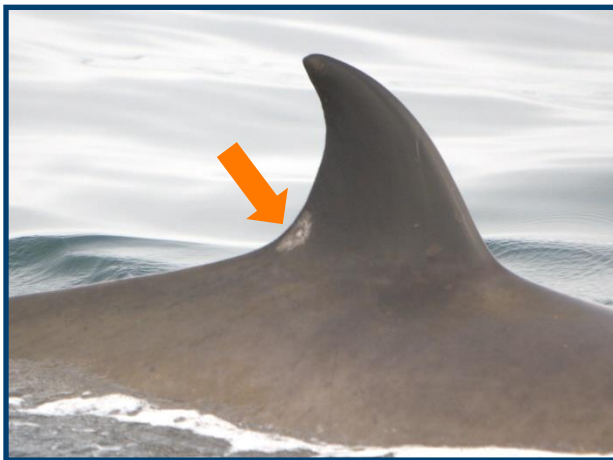


Image 16: Patch

Unusual Fin Shape: Any fin that shows unique curving or shape. Usually fins that are low and wide or with very curved and elongated tip.



Image 17: Unusual fin shape

Not Used for Identification

Some marking types are not used for identification, but may still be useful for other purposes such as matching photos of individuals within encounters, matching left and right sides or keeping track of tagged or biopsied individuals.

Attachment: Small, white crustaceans usually found near the tip of the dorsal fin, can be mites, lice or barnacles. Includes markings that remained after crustaceans fell off.

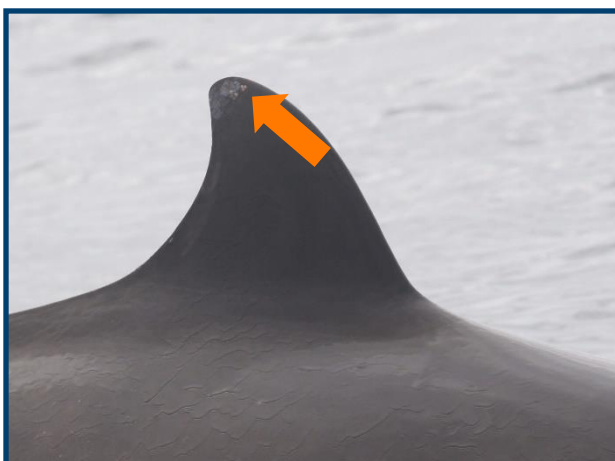


Image 18: Attachment

Sloughed Skin: Peeling skin on the body or fin; changes rapidly, not used for identification. *Not to be confused with patches, which are permanent and blotchy or mottled.

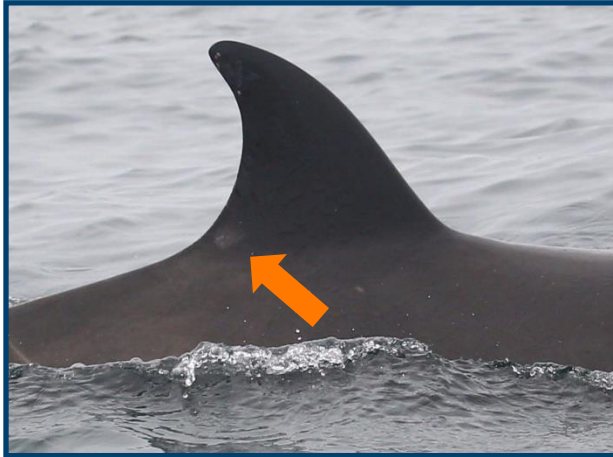


Image 19: Sloughed Skin

Diatoms: Brown patches caused by diatoms; Change shape rapidly.

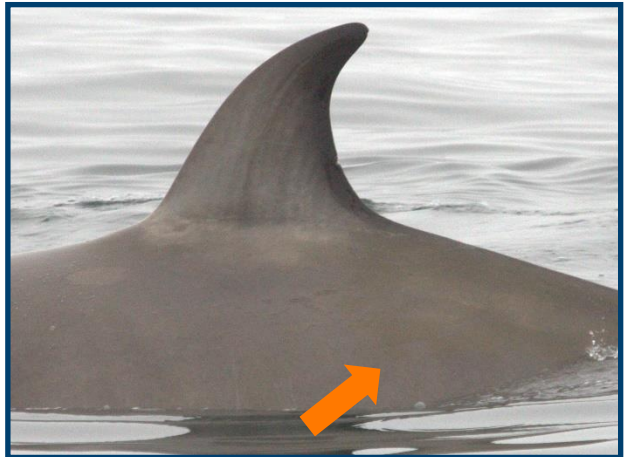


Image 20: Diatoms

DTAG: Whales that have been tagged with a DTAG multisensor data logger.

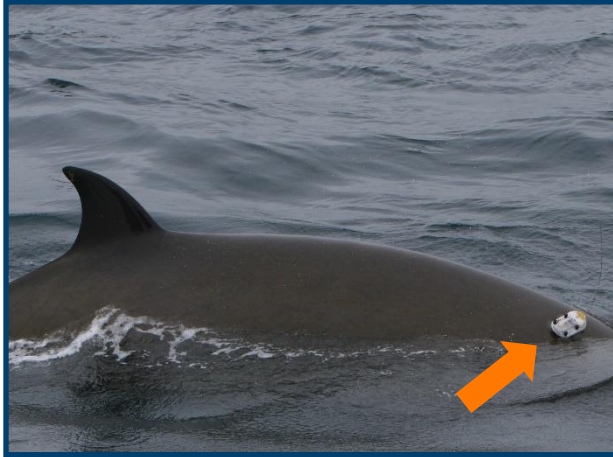


Image 21: DTag



Satellite Tag: Whales that have been tagged with a satellite transmitter.



Image 22: Satellite tag



Biopsy: Individuals that have been biopsy sampled.



Image 23: Biopsy



Whale IDs

A separate 4-digit ID number is assigned per individual and side in the MAIN or Low D catalogues. Having the same number for the left side and right side implies they are same whale. ID numbers were not assigned chronologically.

Main Catalogue

Number locations 0001-4999 are part of the MAIN catalogue.

IDXXXX

Low Distinctiveness

ID number locations 5000-9999 are part of the Low D catalogue. If an individual is moved from the Low D to the MAIN catalogue a new ID is assigned.

ID5XXX

Type Specimens & Matching Individuals

HYPMO keeps separate Type Specimen (TS) folders for each side. The TS folder contains the best, cropped image of each identified individual and enables a quick, efficient search for potential matches. An ideal TS photo has been rated Q=4, is recent, and shows many markings. TS photos can either be cropped in DigiKam or through any other software as long as it does not reduce the resolution of cropped area.



Image 24: Initial TS photo



Image 25: Cropped version

Matching Individuals

Throughout the keywording and IDing process, it is recommended to either keep separate folders for each individual or to use flags and color symbols within DigiKam (Appendix B).

To look for matches within the HYPMO catalogue:

- Choose the respective TS folder, left or right.
- Use **Light Table** for easy comparison (Appendix D).
- Filter photos by keywords to limit the search initially, but make sure not to miss individuals due to filters. Keep in mind that individuals accumulate markings over time, some markings might be invisible, and lighting and angle can severely change appearance and fin shape.
- If a potential match is found, assign green or orange flags for confidence level (Appendix B).
- If the individual is new:
 - assign a new ID number.
 - Add or create new keyword with respective ID number.
 - Create or rename folder with ID number and move to **ID Check**.
 - For new individuals choose and crop a photo for the TS folder.
- Put any relevant notes and comments in **Captions** or add a word note.

ID Check

To ensure consistency and accuracy, every match and new individual is checked by at least one catalogue admin. Once a match or new ID has been confirmed, the photos are removed from the ID Check folder and moved to the HYPMO catalogue.

Record of Matches

Should an individual have been matched, the matching record needs to be updated. ID Number, date and location are added. It can be accessed via [Photo ID\Work Flow \HYPMO](#).

Overview of Progress

To keep track of progress, issues, and tasks, an excel sheet labelled **Overview of Progress** is kept in the Documents folder. While working on your own project it is highly recommended to document your progress e.g., in a weekly updated journal.

References

- Feyrer, L. J., Steward, M., & Yeung, J. (2020). *Northern Bottlenose Whale Photo ID Guide*. Whitehead Lab.
- Gowans, S., & Whitehead, H. (2006). Photographic identification of northern bottlenose whales (*Hyperoodon ampullatus*): Sources of heterogeneity from natural marks. *Marine Mammal Science*, 17, 76–93. <https://doi.org/10.1111/j.1748-7692.2001.tb00981.x>
- Hooker, S. K., De Soto, N. A., Baird, R. W., Carroll, E. L., Claridge, D., Feyrer, L., Miller, P. J. O., Onoufriou, A., Schorr, G., Siegal, E., & Whitehead, H. (2019). Future Directions in Research on Beaked Whales. *Frontiers in Marine Science*, 5, 514. <https://doi.org/10.3389/fmars.2018.00514>

Appendices

Appendix A: Correct the Date Taken of photos by a time offset in GeoSetter

Paul Wensveen, 26 March 2021

- Go to file \ Settings \ File Options. For file types that are used (probably JPEG and Canon), check “Overwrite Original file when Saving Changes” and uncheck “Save data in XMP sidecar files”.
- Go to main folder and click the icon next to the path bar “show images in subfolders”. Now all the photos in the subfolders are also showing in the main folder and it should say “Flat Mode activated”
- Select all photos in which you want to change the Date Taken field, right click on them and Edit Data.
 - Go to the tab Date. Select Time Shift and fill in the number of days, hours, minutes or seconds. This will change the Target Date underneath.
 - Select Time Zone. Use (UTC) Atlantic / Reykjavik for Iceland and Jan Mayen (although technically JM is CET)
 - At the bottom, click “Set Current Values For All Selected Images” and make sure Taken Date is checked and press OK.
 - All file names in the Edit Data window will become bold (meaning there is a change). Press OK.
- Go to Edit \ Save Changes. If you get a message about Missing Time Zone, select “(UTC) Atlantic / Reykjavik”. Now the program will start writing the meta data.

DigiKam Option

Alternatively, date and time can also be manually adjusted in DigiKam. **Ctrl+Shift+D** opens the **Time and Date Editor**.

Appendix B: DigiKam Labels & Tips

Flags and colors are useful for sorting photos or highlighting correlations during the identification process. Every photo can be color marked or flagged within DigiKam. The meaning of different colors below is just a suggestion and can be adjusted to personal preference in DigiKam.



Flags

Icon	Meaning	Short-cut
	Accepted	Alt+3
	Pending	Alt+2
	Rejected	Alt+1
	n.a.	Alt+0

Colors

Icon	Meaning	Short-cut
(Red)	Fin/ID Area	Ctrl+Alt+1
(Yellow)	Type Specimen	Ctrl+Alt+3
(Green)	Melon	Ctrl+Alt+4
(Purple)	Other markings outside of ID area and melon	Ctrl+Alt+6

Bottom Bar

The DigiKam layout shows the selected image's name, active filters, and the progress of active processes in the lower bar at the bottom of the screen!

Appendix C: Light Table

Light Table is an option in DigiKam that can be useful for image comparison or keeping a separate selection of multiple images during the matching process. Especially when working on one screen, it enables the user to compare fins side by side.

- Choose Light Table in the top bar to open the separate Light Table window.
- By pressing **CTRL+L** a selected image will automatically be put on Light Table.
- Add pictures for comparison.
- Disable the **Synchronize** option.
- Start comparison.

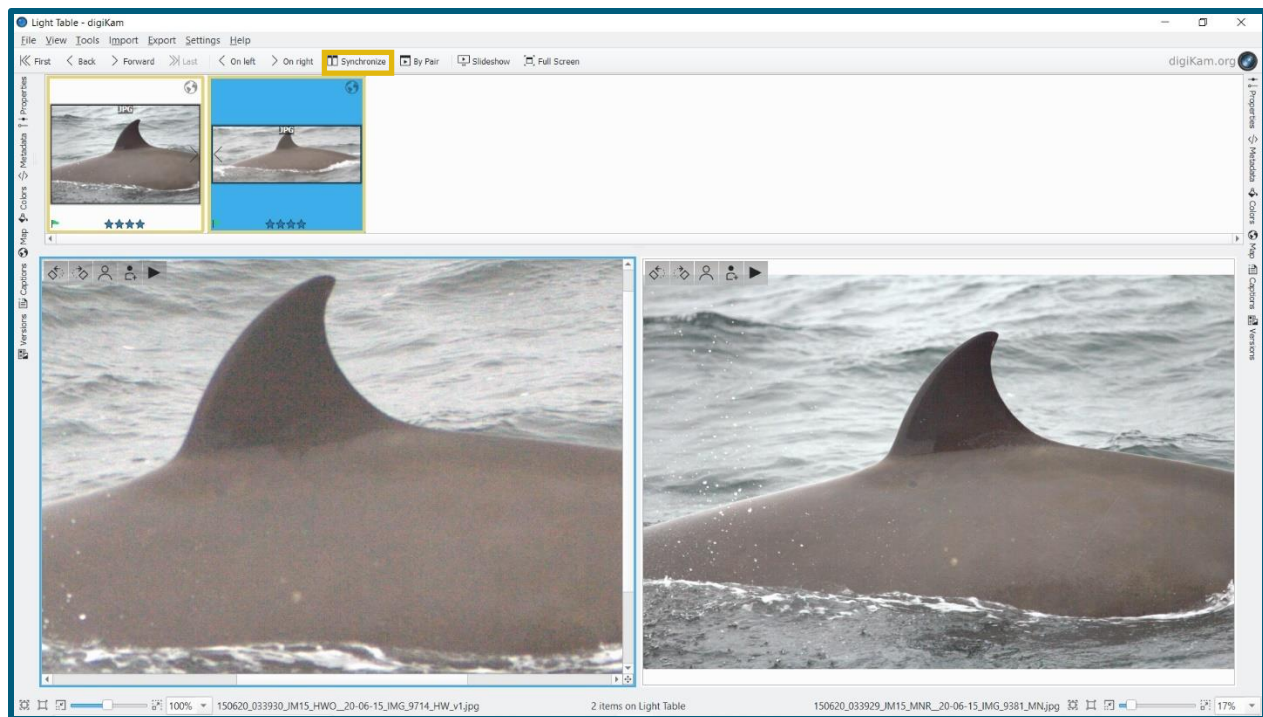


Figure 11: Light Table

Appendix D: Adding GPS Location Manually in DigiKam

The Geolocation Editor in DigiKam can manually add or change GPS locations of submitted photos.

- Select images.
- Press **Ctrl+Shift+G** to open the Geolocation Editor.
- Use the **search** function to find a pre-known location.
- Or click on **details** to add coordinates manually.
- Press **apply**.
- An earth icon should now appear above the right op corner of your picture.

Adding same coordinates to multiple images:

- Select images.
- Open Geolocation Editor.
- Search or type in coordinates.
- Mark all photos in the left window.
- Click right on selected location and press **apply to all**.

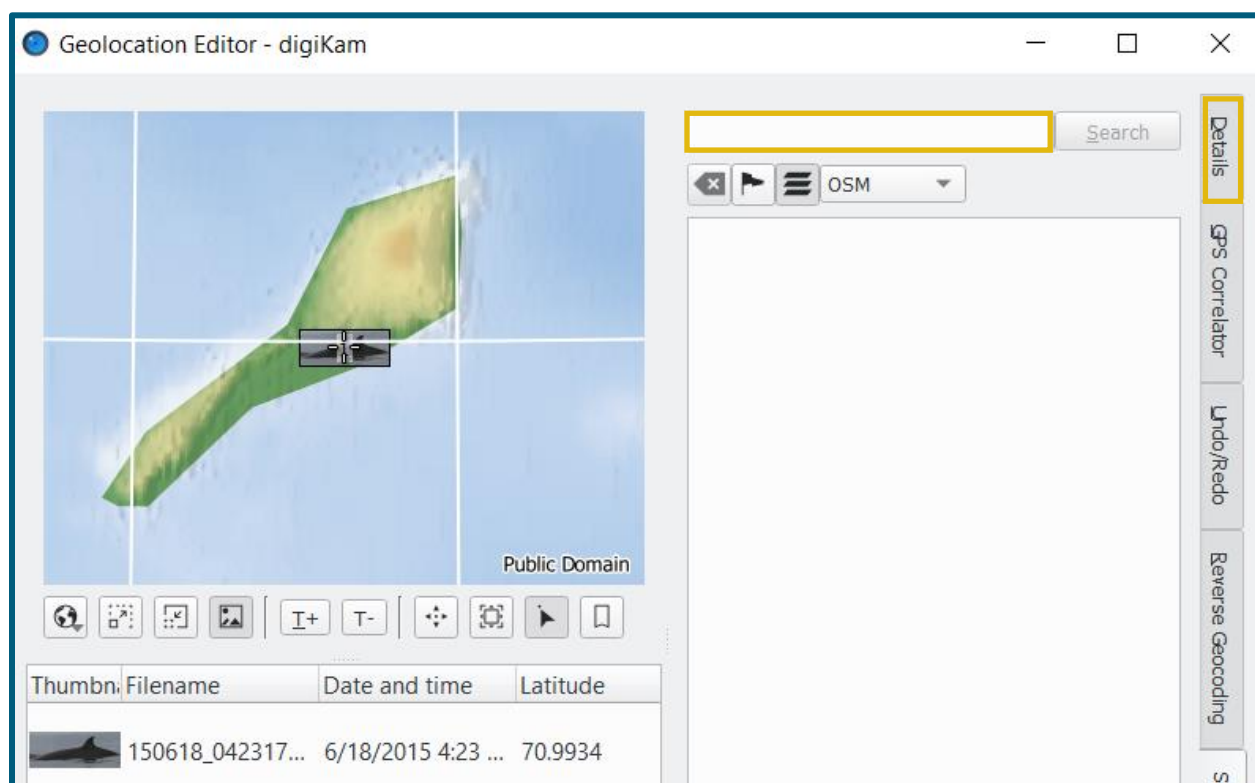


Figure 12: Geolocation Editor

Appendix E: Metadata Export

Metadata from all photos for different analysis can be exported in a variety of ways. This can be either done with the help of an R code (Photo ID/Workflow) or through a free software called **Filelist** (<https://www.jam-software.com/filelist/>).

This Youtube video explains the metadata export to an excel spreadsheet step by step and can be accessed here:

[Export detailed metadata from Windows Explorer to Excel Spreadsheet - YouTube](#)

To export HYPMO relevant metadata, this code can be used:

```
FileList.exe/USECOLUMNS
```

```
NAME,FULLPATH,LASTCHANGE,EXTENSION,AUTHORS,System.Keywords,System.
```

```
Rating,System.Photo.DateTaken > metadatatrial.txt
```

Appendix F: Matching Left & Right Sides

- Whales where we know both sides of the fin, get the same ID number assigned in the LEFT and RIGHT sides catalogue.
- Both sides should be copied into all ID folders and kept in both catalogues.
- If a whale is matched at a later stage and has two ID numbers, the lower number is used. Keywords should be updated accordingly.
- If one side shows LOW D and the other side MAIN quality, a LOW D number is preferred.
- Add 'Both Sides' to the folder ID (i.e., ID0266 Both Sides).
- Update the Left & Right sides excel list.

Appendix G: Current Status

Date: 15.05.2021
 MAIN Catalogue: [173/145](#)
 LOW Distinctiveness: [110/170](#)
 Number of resights:
 Areas represented: Jan Mayen, Iceland

Checklist for Adding and IDing New Photos

- Save images as JPEG in --- **All Photos** ---
- Add photographer information and details to excel sheet.
- Sort out blank photos.
- Copy whale images to **Process & Analysis**.
- Tag photos with left, right, melon.
- Sort photos by individuals within encounter.
- Quality rate and select TS photos.
- Keyword markings in DigiKam.
- Decide LOW D or MAIN.
- Look for possible matches in TS folder.
- Assign and tag ID number.
- Create TS photo for new IDs.
- Move folders to **ID CHECK**.
- Once verified, add individuals to catalogue.
- Keep track of your own progress.