

PHOTO-ID PROTOCOL: Consortium for the Conservation of the Atlantic humpback dolphin



IN THE FIELD

The [CCAHD Field survey protocol](#) document has a much more detailed explanation of the required camera settings and protocols for taking photos. Here are just a few basic reminders:

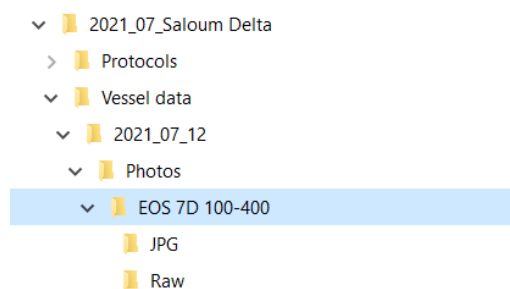
1. Cameras are some of the most expensive equipment on the boat. Protect them from splashes, knocks, sand and dust at all costs.
2. Make sure date and time are synchronised with the local time and the GPS that you will be using to record tracks and waypoints.
3. Make sure you start with a clean/empty SD or Compact Flash card each day.
4. Use the Shutter priority setting (Tv) so that you can capture a fast-moving animal with minimal blur. Shutter speed ideally 2500 or higher, down to 1200 if necessary – Aperture ideally 6.3, down to 5.6 if needed – ISO automatic – AF Servo – Burst or High-speed burst – Photo quality highest JPEG (L) and Raw– Lens AF and 3–∞. More experienced photographers may also opt for M mode, and manually set both speed and aperture (with ISO auto).
5. Photos for identification – try to make sure that at least one ‘good’ photograph of each of the following is obtained for **each animal in each group**, well framed, **perpendicular to the feature**, with the feature central to the image.
 - a. Left dorsal (LDF)
 - b. Right dorsal (RDF)

- c. Any unusual injuries, scars, or marks on other parts of the body.
6. Try to be selective in the images that you take, as more images will take more time to process. At the same time, take each opportunity that you can to photograph as many body parts of each individual as you can.
 7. Try to capture interesting behaviours (jumps, socialising, catching prey, bowriding). Also try to capture nice shots with interesting things next to dolphins or in the background (boats, trawlers, coastline, towns, birds). These photos can be good for PR/Social Media/awareness raising.
 8. When you begin working one group of dolphins, take 3 'spacer' photos of something on the boat that is clearly intentionally taken, but not something that could be of interest, like a person or a bird. These three photos will help you to quickly see where the photos from one group finish and the next group starts. You can also take a photo of the completed sighting form at the end of each sighting, as an additional blank, which also serves as a back-up for the data on the form.



DOWNLOADING PHOTOGRAPHS

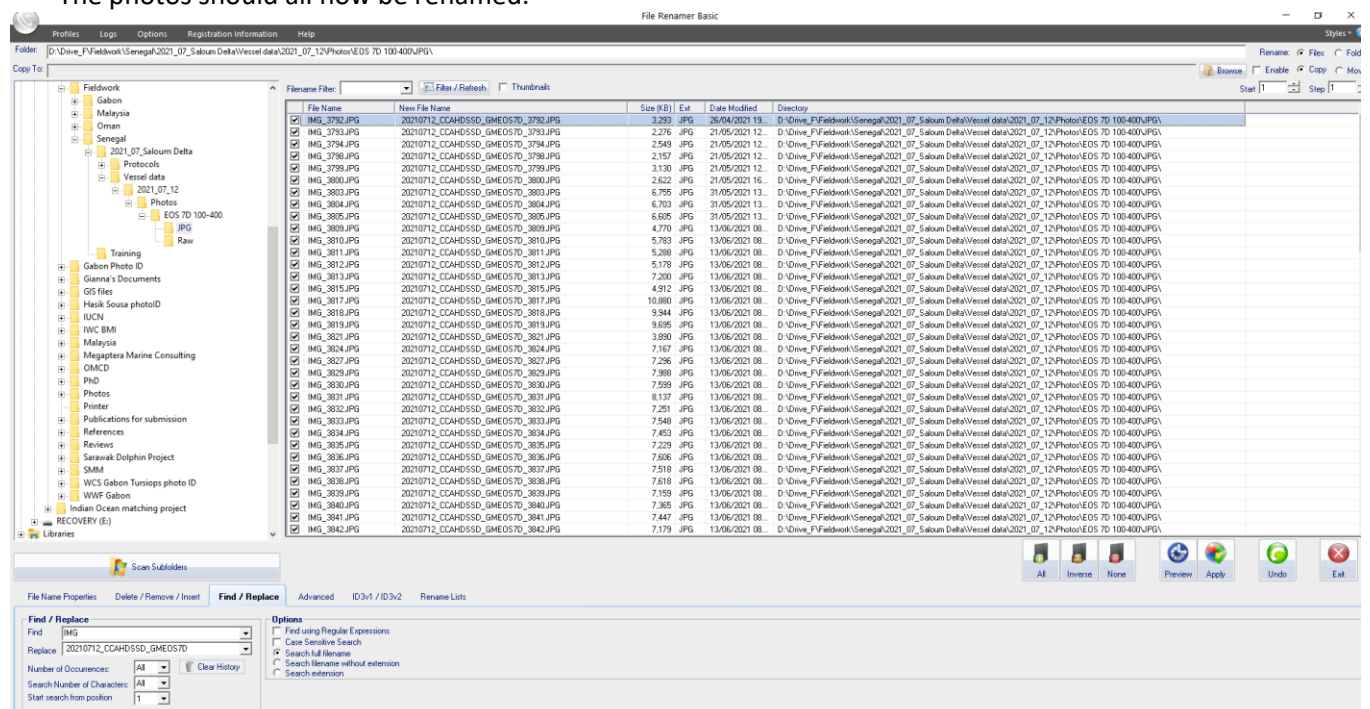
Photographs should be downloaded from each camera used on the boat using a cable or card reader. They should be stored on the dedicated project laptop, and then backed up onto an external hard drive using the following folder structure and naming conventions:



Photos should be renamed in bulk, using the photo management software specific to the camera being used (e.g. the Canon EOS Utility) or a freely available programme like [FileRenamer](#) so that every photo file is easily linked to the survey, survey date, camera and photographer associated with the photo:

1. Open "File Renamer". Use the left hand folder view menu bar to navigate to your newly created folder of photos for the day.
2. Highlight the group folder so that all the image files appear in the main table on the right of the screen.

3. Choose the “Find/Replace” tab at the bottom of the screen. In the “find” field, type in “IMG” or “DSC” – whatever abbreviation your camera assigns to photo file names. In the Replace section, type in the following text: 20210712_CCAHDSSD_EOS5D where:
 - a. 20210712 = four digits for the year and 2 for the month and day
 - b. CCAHDGUI = a four-letter code for the research project (CCAHD) or tour operator and a two or three letter code for the survey area (e.g. GUI for Guinea)
 - c. EOS5D = a 5 character code for the camera (in this case EOS 5D). If you have multiple cameras of the same model – add 1-2 letters or numbers to distinguish between them – like the owner’s or project’s initials.
4. Click on the blue “preview button in the middle of the screen to preview how the change would affect all your file names, and check to make sure it looks right. If it looks ok – click on “apply”. The photos should all now be renamed.



5. Use the Delete/Remove/Insert tab to click ‘start from the end of the file name’ and to insert __XXxx at the end of each file name, where XX are the first and last initials of the photographer, and xx are the second and third letters of the photographer’s last name. See the screenshot below, where GMIN (for Gianna Minton) has been added to the end of each file name. This will retain the correct order of photos even if the camera is passed between photographers in the middle of a survey day.



Profiles Logs Options Registration Information Help

Folder: D:\Drive_F\fieldwork\Senegal\2022_03_Saloum Delta\Vessel Data\2022_03_19\Photos\CCAHD_CAN\NEOSD7\jpg\

Copy To:

Filename Filter: Filter / Refresh Thumbnails

File Name	New File Name	Size (KB)	Ext	Date
20220319_CCAHDSSD_GMEOS7D_4491.JPG	20220319_CCAHDSSD_GMEOS7D_4491_GMin.JPG	6.954	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4492.JPG	20220319_CCAHDSSD_GMEOS7D_4492_GMin.JPG	6.535	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4493.JPG	20220319_CCAHDSSD_GMEOS7D_4493_GMin.JPG	6.672	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4494.JPG	20220319_CCAHDSSD_GMEOS7D_4494_GMin.JPG	6.960	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4495.JPG	20220319_CCAHDSSD_GMEOS7D_4495_GMin.JPG	7.074	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4496.JPG	20220319_CCAHDSSD_GMEOS7D_4496_GMin.JPG	6.695	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4497.JPG	20220319_CCAHDSSD_GMEOS7D_4497_GMin.JPG	6.686	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4498.JPG	20220319_CCAHDSSD_GMEOS7D_4498_GMin.JPG	6.703	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4499.JPG	20220319_CCAHDSSD_GMEOS7D_4499_GMin.JPG	6.096	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4500.JPG	20220319_CCAHDSSD_GMEOS7D_4500_GMin.JPG	6.158	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4501.JPG	20220319_CCAHDSSD_GMEOS7D_4501_GMin.JPG	6.054	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4502.JPG	20220319_CCAHDSSD_GMEOS7D_4502_GMin.JPG	6.074	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4503.JPG	20220319_CCAHDSSD_GMEOS7D_4503_GMin.JPG	5.917	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4504.JPG	20220319_CCAHDSSD_GMEOS7D_4504_GMin.JPG	5.177	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4505.JPG	20220319_CCAHDSSD_GMEOS7D_4505_GMin.JPG	5.658	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4506.JPG	20220319_CCAHDSSD_GMEOS7D_4506_GMin.JPG	5.617	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4507.JPG	20220319_CCAHDSSD_GMEOS7D_4507_GMin.JPG	5.536	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4508.JPG	20220319_CCAHDSSD_GMEOS7D_4508_GMin.JPG	5.835	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4509.JPG	20220319_CCAHDSSD_GMEOS7D_4509_GMin.JPG	6.544	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4510.JPG	20220319_CCAHDSSD_GMEOS7D_4510_GMin.JPG	6.690	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4511.JPG	20220319_CCAHDSSD_GMEOS7D_4511_GMin.JPG	6.585	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4512.JPG	20220319_CCAHDSSD_GMEOS7D_4512_GMin.JPG	5.863	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4513.JPG	20220319_CCAHDSSD_GMEOS7D_4513_GMin.JPG	6.297	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4514.JPG	20220319_CCAHDSSD_GMEOS7D_4514_GMin.JPG	6.051	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4515.JPG	20220319_CCAHDSSD_GMEOS7D_4515_GMin.JPG	6.222	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4516.JPG	20220319_CCAHDSSD_GMEOS7D_4516_GMin.JPG	6.241	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4517.JPG	20220319_CCAHDSSD_GMEOS7D_4517_GMin.JPG	6.229	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4518.JPG	20220319_CCAHDSSD_GMEOS7D_4518_GMin.JPG	6.095	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4519.JPG	20220319_CCAHDSSD_GMEOS7D_4519_GMin.JPG	6.151	JPG	19/03
20220319_CCAHDSSD_GMEOS7D_4520.JPG	20220319_CCAHDSSD_GMEOS7D_4520_GMin.JPG	6.150	JPG	19/03

Scan Subfolders

File Name Properties Delete / Remove / Insert Find / Replace Advanced ID3v1 / ID3v2 Rename Lists

Starting Position
Start from position 0 ☒ Start from the end of the filename

Delete / Remove
Remove 0 character(s)

Insert
Insert text GMin

6. If you have time, look through all the photos and take notes/make drawings in a designated notebook to:

- Make sure that each group is separated by spacer photos. If not, make a “READ ME” file in the photo folder to explain where one group starts and another group ends.
- Try and distinguish one dolphin from another and/or earmark the best right dorsal fin (RDF) and left dorsal fin (LDF) shots for various individuals. Start to give them individual designations – a combination of a number (to correspond to the sighting group number) and a letter - starting with A for the first individual and moving up sequentially through B, C. etc. for each individual in the group.

Doing this will help you to become familiar with the individuals you have seen, and recognize them if they are seen again during the survey. However, a more systematic cropping, labelling and matching process will take place after the survey to confirm matches and build a proper photo-identification catalogue.

POST FIELDWORK PHOTO-ID PROCESSING

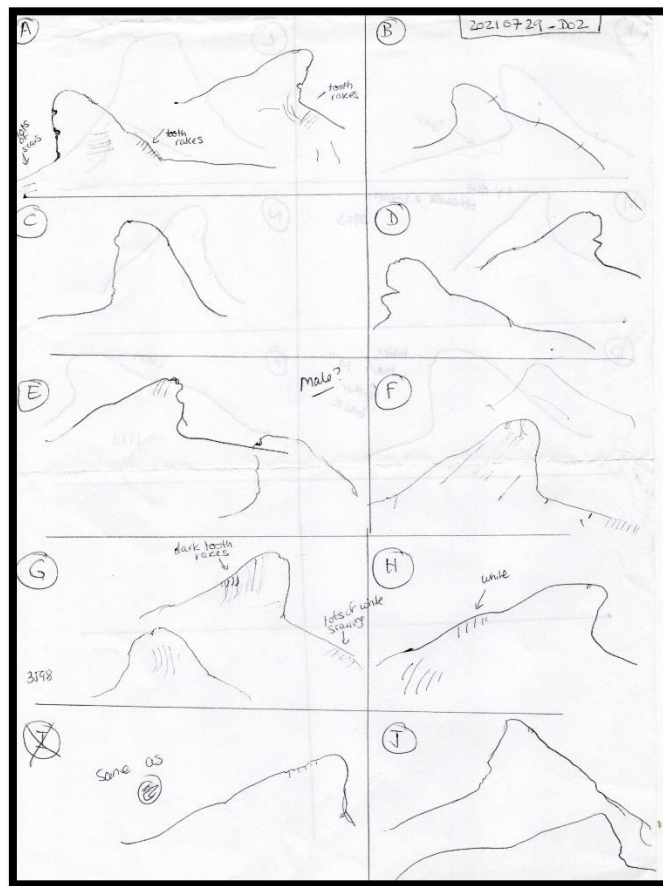
The next phase of photo-ID processing is very time- and labour intensive. It is best undertaken when the researcher has several hours at a time to become immersed in the work without interruption.

1. Create a dedicated folder called XXX_XXXX_XX_Sousateuszii_PhotoID, where XXX_XXXX_XX is replaced by (a shortened) name of your study site followed by the year and month for which you are processing photo_ID photos (e.g. SALOUM_2022_02 – to designate Saloum Delta, February 2022).
2. CCAHD survey protocols will have ensured that sightings made during the survey were given a designated sighting number, e.g. 20220221_D01, which represents the 21 Feb 2022, first dolphin group sighting in that day. For each sighting that was made during the survey, create a folder called “_INDIVIDUALS” - e.g. “20220221_D01_INDIVIDUALS”, “20220221_D02_INDIVIDUALS”, etc.
3. Within each “_INDIVIDUALS” folder, create sub-folders for all individuals within that sighting. Assign individuals in the group letters, starting with A and moving toward Z. All sub-folder names for individuals are in CAPITAL letters, e.g. “20220221_D01_A”, “20220221_D01_B”.

▼ SALOUM_2021_07_Sousateuszii_PhotoID

- > 20210718_D01_Individuals
- ▼ 20210728_D01_Individuals
 - 20210728_D01_A
 - 20210728_D01_B
 - 20210728_D01_C
- > 20210728_D02_Individuals
- > 20210728_D03_Individuals
- > 20210728_D04_Individuals
- > 20210728_D06_Individuals
- > 20210729_D01_Individuals
- > 20210729_D02_Individuals

4. Go through photographs of each group one by one and try to identify individual dolphins within the group. This is an exercise that takes a bit of practice, and can be helped by drawing dorsal fins and highlighting the most distinctive features of each dorsal fin.














5. **Copy** and paste all *useful* photos of each individual into their respective folders (make sure you don't cut and paste, as you want to retain the photos in their original field data files). This could be best dorsal fin shots, but also any other useful shots for that individual (e.g. face, sex, lesions, etc.). Note that the definition of useful requires a little bit of experience. As a guide, do not waste time on photos that are too blurred or too low resolution to ever allow you to recognise the features of an individual. Some research projects say that the portion of the photo showing the dolphin/dorsal fin should fill at least 10% of the frame to be useful for photo-ID. With cameras increasing in resolution, and with some distinctive individuals, photos taken from further away with the animals could still be of use.
6. Review all the photos that have been pasted into the folder to make sure they are definitely all the same individual.
7. When you have finished copying photos into each individual dolphin's folder, select the best photos of the left- and right- sides of the dorsal fin of each individual and use a photo-editing software to crop and enhance the photo so that the dorsal fin fits the full frame of the photo and the contrast is as high as possible without distorting the colour balance. Rename this photo manually by clicking on the file name until it is highlighted and adding the group and individual designation to the end of the file name. The photo on the left below was originally 2021_07_29_CCAHDS_DEOS7D3546.JPG but the cropped and enhanced version would become 2021_07_29_CCAHDS_DEOS7D3546_D02_E.jpg



8. If you wish, while you are sorting photos, you can also copy and paste photos into general folders, depending on what is on the photo so that you can easily find various categories of photos when you need them for presentations, proposals, or publicity. Categories for folders can include:
- FISHING EFFORT (with dolphins or without)
 - BEST PHOTOS (AKA MONEY SHOTS): includes jumps, great bowriding shots, pretty newborns, etc.
 - INJURIES, LESIONS, DEFORMITIES (includes weird deformations, open wounds, fungal lesions, tattoo-like skin lesions, etc., but NOT normal scarring).
 - PREY (dolphins with prey in mouth, dolphins tossing prey, prey escaping in front of dolphins)
 - UNUSUAL (any unusual aspects of dolphins, either behaviourally, visually or otherwise)
 - LANDMARKS (nice shots of dolphins with prominent landmarks in the background, etc.)
 - BOATS (dolphins with various boats observing or following them or coming straight towards them)
 - SHIPS (photos of large ships, with or without dolphins)
 - TURTLES
 - MANATEES
 - BIRDS
 - WILDLIFE (jellyfish, tuna, sharks, anything not a dolphin, turtle, manatee or bird)
 - TEAM (Shots of the team working on the boat or with local stakeholders)

CREATING A CATALOGUE

1. Create a folder called XXX_ PHOTO-ID CATALOGUE, where XXX is the (shortened) name for your study area.
2. Start with your first dolphin group of the survey, and begin to assign permanent IDs to each dolphin that was identified. The first individual will be assigned an ID of something like SALOUM21-001, where SALOUM indicates the study site (Delta Saloum, Senegal), 21 indicates the year that the animal was first identified, and 001 indicates that it was the first individual identified that year. Copy and paste the original and cropped and enhanced version of the best right and left sides of the individual's dorsal fin into this folder. Also include photographs depicting sex or other peculiar markings/scars etc.
3. Open the CCAHD Sousa teuszii Photo ID [Excel Sheet Template](#). Save it with a filename like 'SALOUM Sousa teuszii Photo ID catalogue.xlsx', and make sure it is stored in your XXX_ PHOTO-ID CATALOGUE. This is important if you want the hyperlinks to photos in the catalogue to work.

« Drive_F » Fieldwork » Senegal » SALOUM_PHOTO-ID CATALOGUE			▼	↺	🔍 Si
ud Files	^	Name	▼	Date modified	
		 SALOUM Sousa teuszii Photo ID catalogue_2022_09_05.xlsx		05/09/2022 12:52	
ache		 SALOUM21-032		05/09/2022 12:50	
327.10.WWF		 SALOUM21-031		05/09/2022 12:47	
I Whaling C		 SALOUM21-030		05/09/2022 12:46	
ook - Docu		 SALOUM21-029		05/09/2022 12:36	
International		 SALOUM21-028		05/09/2022 12:31	
its		 SALOUM21-027		05/09/2022 12:29	
Personal		 SALOUM21-026		05/09/2022 12:17	
		 SALOUM21-025		05/09/2022 12:15	
		 SALOUM21-024		05/09/2022 12:13	
		 SALOUM21-023		05/09/2022 11:52	

4. Start to populate the first row of the Excel sheet. Under Permanent ID, paste the ID of the individual (e.g. SALOUM21-001). Place your cursor over the cell in the column 'Hyperlink to best representative photo-Right'. Right click, select the option to 'link' at the bottom of the drop-down menu, and navigate to the folder where you have just copied the best photos of that individual, and select the enhanced cropped images that you created for both the right and left sides.
5. Move to the next column and enter the date for the sighting that you are working with, using the date format that is recognised by your version of Excel and is consistent with your other data.
6. Enter the latitude and longitude coordinates for the sighting, using decimal degrees with a minimum of 6 places after the decimal point. This will allow you to map individual dolphins' sighting locations over time, and to calculate home ranges.

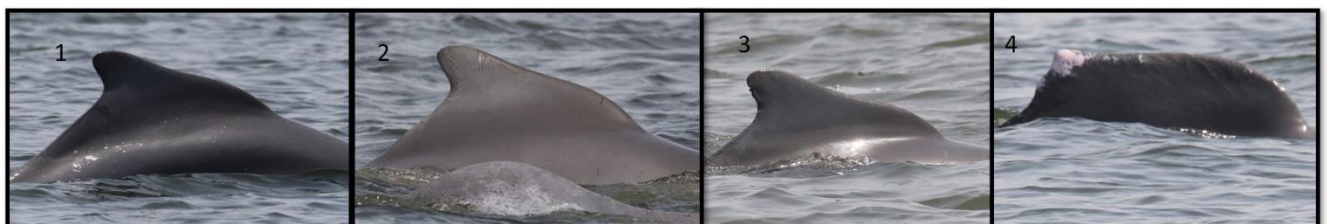
7. Enter scores for the quality of the photos of the right side of the dorsal fin and the left side of the dorsal fin, using the definitions below (see examples below):



Photo quality	
0	No photo
1	Poor -blurred, low resolution, or poor angle
2	Fair - only features of a prominently scarred individual likely discernible
3	Good - angle is perpendicular, resolution and lighting are clear
4	Excellent- all features are crisp and clear and in good light, and angle is perfectly perpendicular



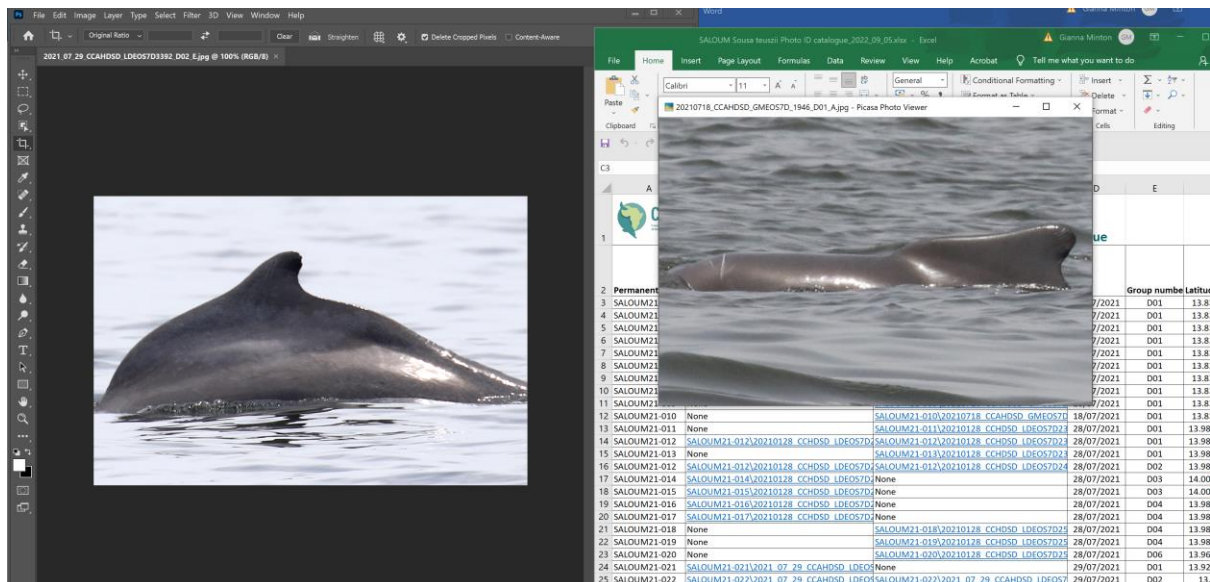
8. Enter a score for the distinctiveness of the markings on the dolphin's dorsal fin. Note that *distinctiveness is separate from photo quality*. This can sometimes be difficult to separate because a better quality photo will allow you to see features more clearly, but try to apply these definitions objectively.

Distinctiveness	
0	dorsal fin has absolutely no distinctive features or marks
1	Scars on surface of skin only - not affecting profile of leading or trailing edge of dorsal fin - can be used to recognize individuals within one sighting event, but might disappear over time or not be detected in a poorer quality photo.
2	Dorsal fin has marks on the surface that are deeply etched or raised and likely permanent, but do not affect the shape of the leading or trailing edge of the dorsal fin
3	Scars/Cuts are deeper and lasting and visible on leading or trailing edge of dorsal fin, but subtle and possibly not detected if poor quality photo (not in clear focus or not exactly perpendicular to animal)
4	Scars/disfigurements deep and lasting, clearly affecting profile of leading or trailing edge of dorsal fin and detectable even in poorer quality photo.



Delta Saloum Sousa teuszii Photo ID catalogue									
1									
2	Permanent ID	Hyperlink to best representative photo- Right	Hyperlink to best representative photo- Left	Date	Latitude	Longitude	Quality right dorsal fin	Quality left dorsal Fin	Distinctiveness
3	SALOUM21-001	None	SALOUM21-001\20210718_CCAHSD_GMEOS7D	18/07/2021	13.833802	-16.553236	0	3	2
4									
5									
6									

9. Repeat steps 1-7 for each individual in your first group of the survey.
10. For subsequent individuals in subsequent groups, compare each new photo to the best photos of the individuals already entered into the catalogue before assigning them an ID. You can do this by opening your new photo in one type of photo management software, and clicking on each hyperlink in your Excel sheet in turn, as clicking on the hyperlink will pull up the photos you have already processed and linked to the Excel sheet.



11. If the new photo does not match any of the individuals already in the catalogue, assign the dolphin a new ID, simply adding on sequentially from the last new ID of the year, and repeat steps 1-7 above, creating a new ID and new folder for the individual.
12. If the new photo matches one of the individuals already in the catalogue, a) copy and paste the best photos (including any showing unusual scarring or features) into the existing folder for that individual, b) insert a new row on the Excel sheet under the last entry for that individual. Copy the individual ID, enter a new date, and new latitude and longitude coordinates for the relevant sighting, as well as the appropriate quality and distinctiveness scores.
13. When you finish a session of working with the catalogue, make sure to save the Excel sheet with the day's date added to the end of the file name. Move the previous version you were working with into a folder labelled 'Archive', so that you can always track back to a previous version if you make a mistake.



USING THE CATALOGUE FOR MARK RECAPTURE ANALYSES.

A separate guide will be created to support users who wish to use this database to conduct mark-recapture analysis but the simple procedure below can also be used. Please consult Gianna Minton and/or Tilen Genov for additional support.

- 1) Create an Excel spreadsheet. The first column contains all the dolphin IDs (e.g. SALOUM21-001, SALOUM21-002, etc.), while the first row contains all the sightings (e.g. 17.2.2022, 21.2.2022_01, 21.2.2022_02, etc.).
- 2) Create two sheets, one called "CAPTURES_3" and the other called "CAPTURES_ALL".
- 3) Create a matrix of 0s and 1s, with 0 indicating absence of a particular dolphin in a particular sighting, and 1 indicating presence.
- 4) If photo of grade 3 or higher exists for an individual, mark the presence of that individual by typing 1 into the CAPTURES_3 spreadsheet, as well as into CAPTURES_ALL.
- 5) If only photos of lower quality exist for that individual, mark the presence of that individual into CAPTURES_ALL, but NOT into CAPTURES_3.
- 6) For those dolphins that are not marked as present (1), insert zero (0).
- 7) Calves only go to CAPTURES_3 if they are well-marked. Otherwise, they do NOT go into CAPTURES_3, but they DO go into CAPTURES_ALL. If a calf is not identified (i.e. it only remains as "C01", it does not go into CAPTURES_3 or CAPTURES_ALL).
- 8) These databases are then used for mark-recapture and social network analyses, including the calculation of proportion of marked animals, creation of discovery curves and the creation of capture histories files to feed into MARK, etc.