WILD BLUE

Version 2015.12.09

Blue Whale Study: Photo ID Training Guide

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What is Wild Blue?

Wild Blue is the first long-term Citizen Science initiative studying Blue whales in Sri Lanka.

Identify
Using photo identification (Photo ID), we are able to identify the Blue Whales as individuals. We distinguish the whales in two ways, first using the individualistic scars and marks on the tail flukes, and the second by using the dorsal fin and the unique mottling patterns found along their sides.

Re-sight and Track
When a new whale is identified, their ID image (a clear shot of the tail flukes and/or dorsal fin area) is included in a catalogue of individuals. This allows us to recognize whales in future sightings and track their movements, all without causing any disturbance to the animals themselves. Over time, Photo ID can reveal information such as population estimates, seasonal movements, sex ratios, age classes and much more, helping us to build a better picture of this population while allowing the whales to remain undisturbed.

As the Photo ID catalogue continues to grow, we expect that the project will emulate other large Citizen Science Photo ID initiatives, where a team of remote cataloguers will be able to assist the administrators with the analysing of images via an online system.

An Inclusive Approach to Marine Science

The project employs a public-access ethos, promoting an inclusive approach towards marine science and engaging the public in all aspects of the study. This project also breaks away from the established terminology such as dorsal fluke and ventral fluke, and instead substitutes them with every day terms such as tail upperside and tail underside.

This project has been made possible by the support of a number of individuals who have extended support and advice since it was launched in 2013, and of course by those who have kindly shared their images for use in the catalogue.

The Blue Whale Study: Your Role

The Blue Whale Study, in partnership with Mirissa Water Sports, is a unique opportunity for individuals wanting to gain experience in marine mammal Citizen Science and the study of Sri Lanka's Blue Whales.

Your Role

Photo ID and Field Observation: As a participant, you will gain hands-on experience with cetacean Photo ID, joining daily whale watching trips to observe and photograph Blue Whales for the purpose of photo identification.

Naturalist Guide and Guest Engagement: When at sea you will also have the opportunity to engage with whale watching clients as a guest naturalist and provide them with information about the local marine life (don't worry, we will provide you with information to support you).

Uploading Images and Inputting Data: At the end of each day you need to upload all images to an online designated folder in Google Drive, as well as fill out a simple sightings data sheet in Excel in an office space provided.

What is Photo ID?

Photographic Identification: (or Photo ID) is a form of passive research that allows non intrusive data collection using a ‘Mark-recapture’ method.

What species can it be applied to: Any species where individuals display characteristics (whether patterning, scars, colouration etc.) that are unique enough to differentiate an animal from other individuals of the same species. This is widely used in Cetology (the study of cetaceans).

How does it work: By taking a photograph of an individual’s identifying features, it allows researchers to have an ID record for that animal. When new photos are taken in the field, researchers can cross reference the new images against a catalogue of already identified animals and potentially match that individual.

What can be learnt: The great thing about photo ID is it is non invasive. It is simple, inexpensive and can have many data contributors (encouraging a community based effort). The longevity of this method far surpasses others and given time the catalogue can hold 100’s of individuals which we can learn a considerable amount of information from.

…And what could it reveal: The photo IDs could potentially reveal age estimates, sexes, feeding behaviours, movements, births, deaths, threats and most importantly- **population estimates**.

Photographing a Blue Whale for Photo ID

In this document we will provide a guide to photographing Blue Whales for the purpose of Photo ID.

The image angles (ID shots) used for identifying a Blue Whale include;
1. Tail flukes – Both upperside and underside.
2. Dorsal fin and surrounding area – Both left and right side.

Ideally, a full ID profile would include all 4 possible ID shots, however we understand that it may not always be possible to photograph the whale from all angles. But when the opportunity arises, this guide will help you to achieve the best images possible.

See ID images below as an example:

Tail Fluke- Upperside

Tail Fluke- Underside

Dorsal Fin - Right

Dorsal Fin- Left

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ID Shots: Tail Flukes

The tail flukes are used in the Photo ID study of many species of large whale, including in populations of Blue Whales from the North Atlantic, Antarctic and most notably, the Pacific. The whales in these populations tend not to lift their tails when diving (Fluke-up) frequently enough for their flukes to be a reliable primary feature for ID. Therefore images of the dorsal area are used instead.

In Sri Lanka however, the Blue Whales fluke-up on most of their dives making the tail flukes an easier and reliable way of identifying individuals.

Tail Fluke- Upperside (TUP)

Tail Fluke- Underside (TUN)

ID Shots: Tail Flukes

Tail Upperside (TUP): This is a shot of the upperside or topside of the Blue Whale's tail.

Tail Underside (TUN): This is a shot when the Blue Whale raises its tail straight up, vertically into the air, displaying the full **underside** of the tail-fin as it dives.

ID Shots: Dorsal Area

The dorsal fin and surrounding area: This is an image of the blue whale's side showing the dorsal fin (back fin) and a large portion of the flank either side. Ideally, this shot will be taken when the whale is perfectly side-on to the photographer. Both left and right sides of the whale will eventually be stored in the catalogue for better identification of individuals. The dorsal fin's shape and nicks are used to ID the whale as well as the mottled pattering on the whale's skin which is unique to each individual.

The best images for ID are taken when the whale arches its back, ready to dive, displaying a large portion of the back and dorsal area. Where possible, you should try to get an image of both the left and right side of the whale, however this will not always be possible as you may have only been positioned to one side of the whale during a whale watch.

Camera Settings

Fast Shutter Speed: In order for images to be useful for ID, they must clearly show very small details. To achieve this, the image must be sharp and in focus. Therefore, you will need to use a fast shutter speed (1/500 or **faster**). If your SLR has a ‘Sports’ or ‘Action’ setting this is generally the best option, or if not, set the camera at the widest possible aperture in the ‘aperture priority’ mode.

Multiple images in sequence: Unless you are familiar with photographing whales, it may be best to set your camera to shoot several images in one go (holding down the shutter button). This way, although you may end up with some empty water shots, you will ensure that you have at least one useful shot of the whale. This is especially useful for taking fluke shots, as sequential images will capture both the upperside and underside of the fluke (so long as the whale is facing away from the boat). **Take blank “break” images** to distinguish when you think you’ve seen a new whale for your own use (these will not be uploaded at the end of the day).

Date & Time: Make sure your camera is set to the correct date and time in Sri Lanka.

Observe the whales to take better images: Photographing whales is something that takes practice. Learn to watch for the ‘wheel’ motion that forewarns the whale is about to dive.

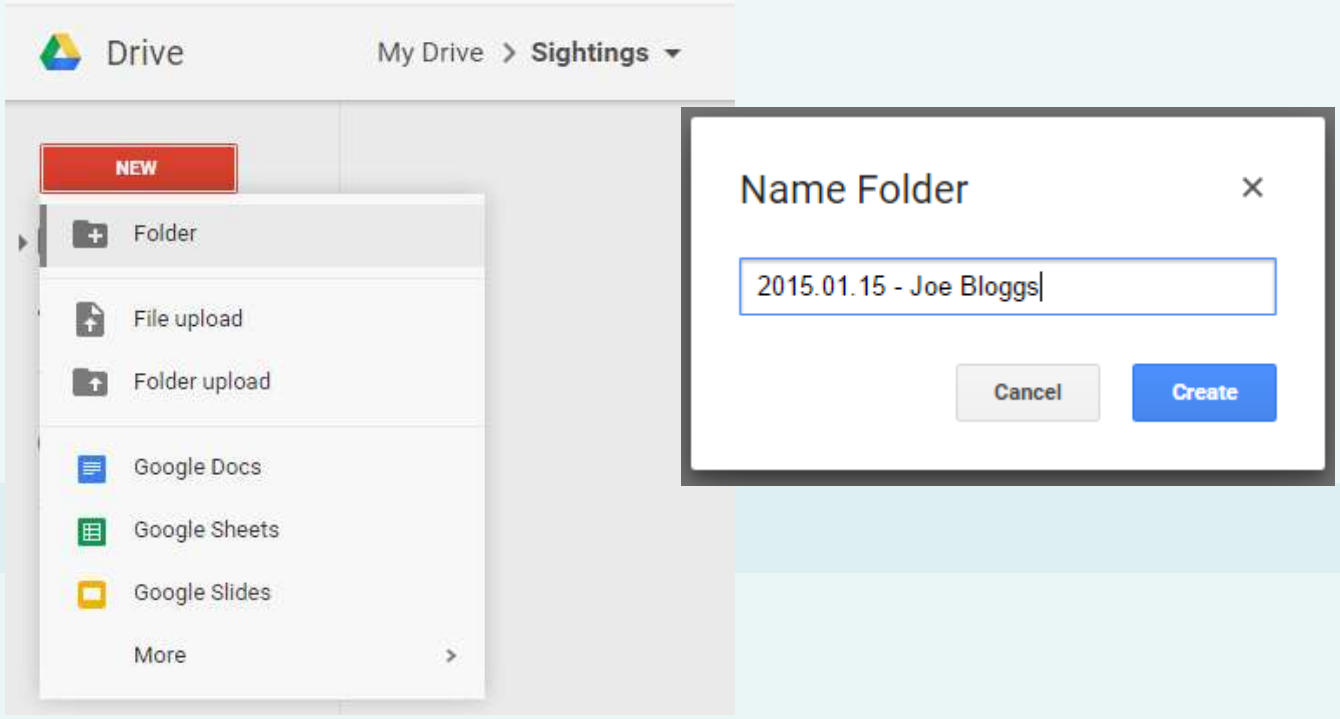
1.1 Upload Images

Uploading sighting images is one of your main tasks and should be completed DAILY.

Log in to Google Drive using Wild Blue's username and Password (this will be emailed to you by the admin team). Open the Sightings folder and complete the following 3 steps.

Step 1. Create a new folder for the day by clicking on the drop-down tab 'New' on the left hand side of the screen and selecting 'Folder'. Name the new folder using the following format:

YYYY.MM.DD – Your Name.



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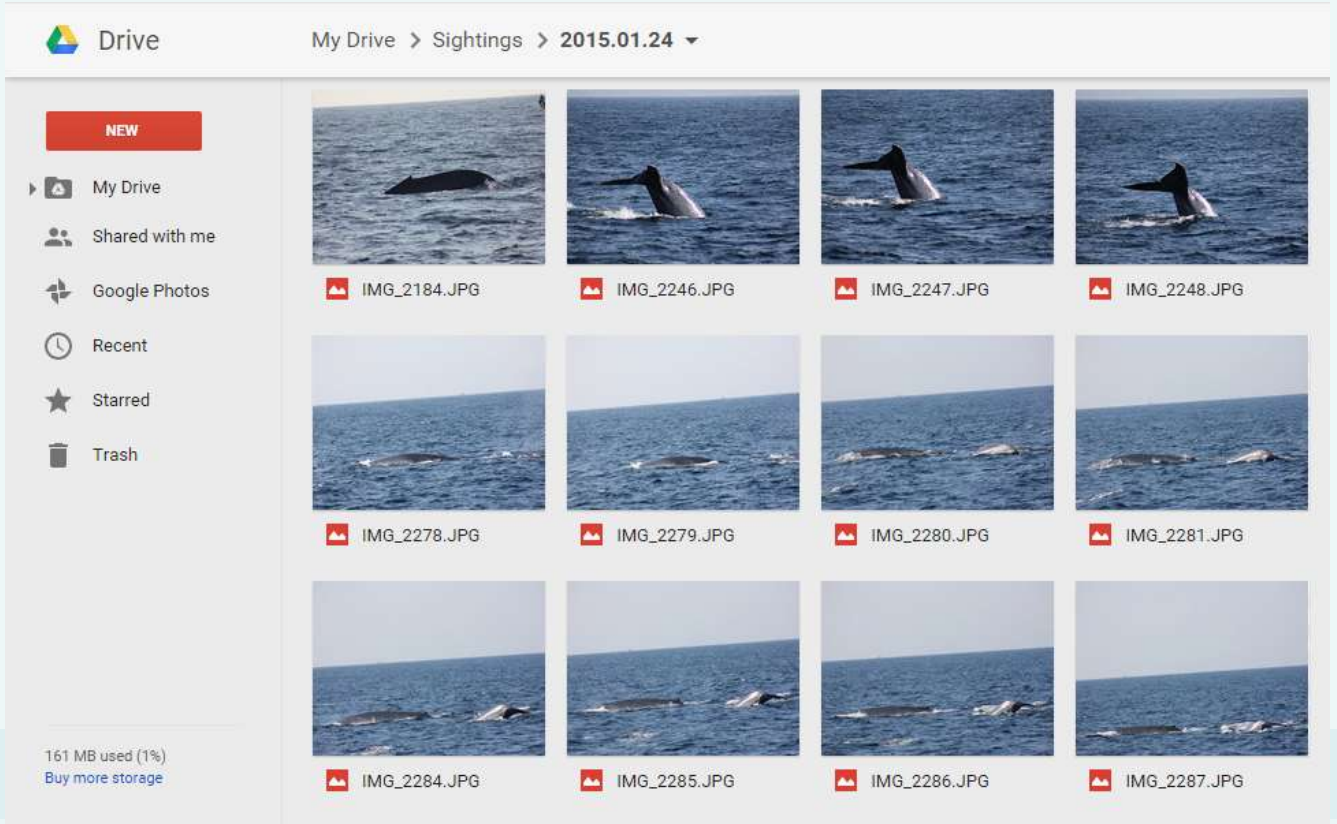
1.2 Upload Images

Step 2. Open the folder as well as your camera folder, select the images you want to upload, then drag and drop into the Google Drive folder. An upload screen will appear and show the progress.

Please only select the best ID images of Blue Whales…empty water shots or images of other cetaceans/marine life are not needed and can create more work for the cataloguing team.
If you have software that allows you to add your name into the filename of the JPEG, please use this.
All images uploaded must be in JPEG format and no larger than 10MB.

1.3 Upload Images

Step 3. When the upload is complete, please double check that all uploads have been successful. If not, then please repeat the upload process until all images are displayed in the folder. On days where internet speed is slow, we suggest that you upload images in small batches of 30-50 at a time.



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2.1 Record Sightings in Excel

Another key task to be completed daily after each whale watching trip.

It is quite possible you will be encountering several Blue Whales each day. To aid the cataloguing team that will sort through your images at a later date, maintain a simple spreadsheet that records the image ranges for each unique whale you encounter.

The headings on the spreadsheet are the date, the individual number (this is the order number assigned to each whale you encounter eg: the first, second, third etc) and the image range. The image range is the file numbers for the photographs showing only that specific whale. This will help to avoid confusion at a later stage. The GPS location for each sighting should also be included where possible. Even if you do not have a GPS enabled camera, you can ask for the coordinates from the boat's wheelhouse.

	A	B	C	D
1	**Date**	**Individual #**	**Photo File Range**	**GPS**
2	24.01.2015	1	2177-2200	N5 46 790 E80 26 561
3	24.01.2015	2	2238-2256	N5 45 838 E 80 27 609
4	24.01.2015	3	2278-2287	N 5 45 694 E 80 27 632
5	25.01.2015	1	2292-2310	N5 45 441 E80 27 525
6	24.01.2015	2	2315-2320	N5 47 381 E80 26 537

We ask for this log to be updated and uploaded everyday.

2.2 Record Sightings in Excel

Record all sightings (all cetaceans encountered) in a sightings data spreadsheet. At the end of each whale watching trip, the boat's crew will also have logged the day's sightings. You can enter the day's sightings into a simple spreadsheet that will then be included in a larger one maintained by the administration team.

The spreadsheet is simple, with the sightings date and then the number of animals encountered for each species. We ask for this log to be updated and uploaded everyday.
This will then be combined into a larger database containing data from as far back as 2008.

3	Date	Blue Whale	Fin Whale	Bryde's Whale	Minke Whale	Humpback Whale	Sperm Whale	Pygmy Sperm Whale	Dwarf Sperm Whale	Cuvier's Beaked Whale	Ginkgo-toothed Beaked Whale	Southern Bottlenose Whale	Killer Whale
433	16-Feb-2015			1									
434	17-Feb-2015			1									
435	18-Feb-2015	2											
436	19-Feb-2015	1											
437	20-Feb-2015	1											
438	21-Feb-2015	2											
439	22-Feb-2015	1											
440	23-Feb-2015	5											
441	24-Feb-2015	3											
442	25-Feb-2015	1											
443	26-Feb-2015	2											
444	27-Feb-2015	2											
445	28-Feb-2015	3											
446	01-Mar-2015	1											
447	02-Mar-2015	3											
448	03-Mar-2015	1		1									

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3.1 How the Blue Whales are Catalogued: Tail Flukes

The text below describes how the uploaded Tail Fluke images are used. Blue Whales are catalogued according to the type of photos available for ID. There are 4 categories, one for each Photo Type.

Tail Underside (TUN), **Tail Upperside (TUP)**, **Dorsal (L)** and **Dorsal (R).**

Inside each folder are '**Feature Folders**'. Categories for Tail Flukes include:

Category	Description
Nicked	A very small chunk, nicked out of the flesh or trailing edge (tail outline).
Notched	This denotes a small - medium chunk missing from the flesh or trailing edge.
Chunk Missing	Where a large portion of flesh or tail is clearly missing.
Patterned	This denotes the sometimes light coloured dashes, or patches of lighter pigment on the whale's tail.
Spotted	This includes clear round spots, or Cookie Cutter injuries (pink fleshy potholes)
Blunt-Edged	When the tip of the tail-fins (flukes) appear to have a blunt edge suitable for identifying
Clean	Whales who have a clear smooth tail

3.2 How the Blue Whales are Catalogued: Dorsal Fins

The Dorsal images are catalogued in a similar way to the Tail Flukes, but with different feature categories (for left and right) based on the characteristics of the Dorsal fin and level of mottling present on the flank.

Category	Description
Dorsal Fin Categories	
Hooked	A very tightly hooked fin that curls backwards.
Triangular	A small triangular shaped dorsal fin, that is more vertical in shape than a falcate.
Falcate	A windswept, gently curving shape. Like that of a typical dolphin fin.
Nub (or missing)	A very damaged, sawn-off fin…or completely missing.
Nicked	A small nick or tear in the fin.
Mottling and Patterning (for Flank area) Categories	
Dark shade	A whale that is notably dark in colour.
Light shade	A whale that is notably pale in colour.
Heavy Mottling	A whale that has heavy mottling pattern around the dorsal region.
Light Mottling	A whale with very little mottling patter around the dorsal region.
Scarred or injured	A whale that has injuries or scarring around the dorsal region.

3.3 How the Blue Whales are Catalogued: Multiple Categories

In order to make matching/comparing process most efficient, any individual who exhibits more than one ‘characteristic feature’ will be repeated in each category. In some cases, whales may fit multiple categories, with features visible in some shots but not in others. An example of a multiple category whale is shown below, with the underside of the fluke being used.

SLBM001’s Tail Fluke (Underside) is repeated in the following ‘feature’ folders found in ‘Tail Underside’

Spotted, Nicked, Notched and Patterned

3.4 How the Blue Whales are Catalogued: Coding Method

Each whale is assigned an **alphanumerical code** (**individual number**) beginning ‘SLB’ (for Sri Lanka Blue) then an additional letter denoting the area they were first sighted:

(T=Trinco, M=Mirissa, K=Kalpitiya or O=Other)

Following the letters is a number correlating the order the individual joined the catalogue. E.g. (SLBM001).

In addition to the official code, each individual is assigned a **common name**. The common name provides a catchy nickname to help generate awareness for tourists and locals through personifying the whales.

Each catalogue image will include the following info in the file name

(Number_WhaleName_ShotType_Photographer_YYYY. MM.DD_Original image number)

(SLBM001_CookieCutter_TUN_GemmellG_2013.01. 25_DSC025)

3.5 How the Blue Whales are Catalogued: ID Spreadsheet

In addition to the catalogue itself, there is also a corresponding Spreadsheet, detailing the whales in the catalogue. Information about the whales include - Individual Number, Name, ID Shots available, Date and Location of first sighting (GPS if available) and Re-sightings/Comments.

	A	B	C	D	E	F	G	H
1	Individual Number	Whale Name	Photos	Date First Recorded	Location	Photographer	GPS	Comments
2	SLBM001	CookieCutter	TUN TUP	2013.01.25	Mirissa	Georgie Gemmell	N5 46 790 E80 26 561	
3	SLBM002	TopSpot	TUN TUP	2013.01.26	Mirissa	Georgie Gemmell	N5 45 838 E 80 27 609	
4	SLBM003	TopCookie	TUP	2013.01.26	Mirissa	Georgie Gemmell	N 5 45 694 E 80 27 632	
5	SLBM004	Notch	TUN	2013.01.26	Mirissa	Georgie Gemmell	N5 45 441 E80 27 525	
6	SLBM005	Polo	TUP	2010.04.16	Mirissa	Riaz Cader	Na	
7	SLBM006	MissingPoint	TUN	2010.12.24	Mirissa	Riaz Cader	N/a	
8	SLBM007	LeftSpot	TUN	2012.04.08	Mirissa	Riaz Cader	N/a	
9	SLBM008	Lefty	TUN	2013.01.25	Mirissa	Georgie Gemmell	N5 47 381 E80 26 537	
10	SLBM009	Tatty	TUP	2008.04.17	Mirissa	Gehan de Silva Wijeyeratne	N/a	
11	SLBM010	NibbledEdge	TUN	2013.01.25	Mirissa	Georgie Gemmell	N5 47 270 E80 26 454	
12	SLBM011	LeftTip	TUN	2008.04.03	Mirissa	Gehan de Silva Wijeyeratne	N/a	
13	SLBM012	TornTail	TUP	2013.01.30	Mirissa	Sampath Gunasinghe	N5 47 473 e80 26 016	
14	SLBM013	WhiteFlash	TUN	2013.01.25	Mirissa	Georgie Gemmell	N5 47 204 E80 26 646	N545 346 E80 27 506 2nd sigl
15	SLBM014	Fathom	TUN TUP	2012.01.21	Mirissa	Riaz Cader	N/a	
16	SLBM015	LittleNick	TUN	2008.04.07	Mirissa	Gehan de Silva Wijeyeratne	N/a	
17	SLBM016	FloppyFin	TUN TUP	2012.03.25	Mirissa	Anushka Eranga Athukorala	N/a	

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Contact Us

Would you like to know more information regarding the project?

Would you like to know more about how to be involved in unlocking the mysteries of the largest animal this planet has ever seen?

Please email the Lead Administrator

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