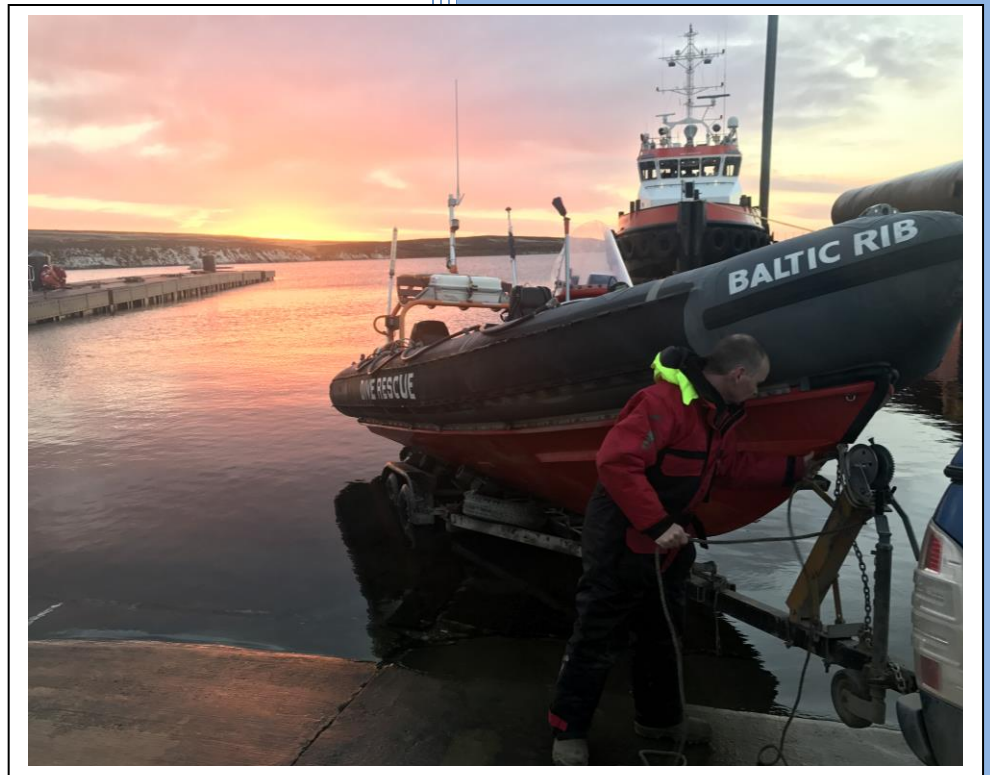




2017

DOKE Field Work Report Focal Survey #1 – Summer 2016



Marina Costa
SAERI
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Grant Munro
Austral biodiversity

Background

South Atlantic Environmental Research Institute (SAERI) is leading a multi-partner project entitled 'Dolphins of the Kelp: Data priorities for Falkland's inshore cetaceans' (hereinafter DOKE), which is funded by the UK Government's Darwin Plus Funding scheme and the Falkland Islands Government (FIG). The project partners are Falklands Conservation (FC), Shallow Marine Surveys Group (SMSG), Austral Biodiversity, Oregon State University, and University of St Andrews. The aim of DOKE is to establish baseline data on the abundance, distribution, natural history and genetic diversity of the Falklands inshore cetacean populations to provide a scientific basis for conservation and ecosystem-based marine management initiatives. The target species are the Commerson's (*Cephalorhynchus commersonii*) and Peale's dolphins (*Lagenorhynchus australis*) although all cetaceans encountered are recorded.

The project is delivered through three complimentary work programmes: 1. island-wide transect survey, using line transect methods to estimate abundance of both species; 2. focal studies, carried out in three areas (A. Port Stanley – Port Williams – Berkeley Sound; B. Choiseul Sound; C. Port Howard – Many Branch) and using photo-identification and passive acoustic monitoring methods; 3. tissue sampling to determine genetic diversity, local population structure, and relationship to SW Atlantic contiguous continental stocks.

The purpose of this report is to describe the field work related to the first focal survey of the project, carried out in summer 2016. This report will be made available on the SAERI website.

Study area

The study area includes three locations (**Figure 1**): A. Port Stanley, Port Williams, Berkeley Sound; B. Choiseul Sound; C. Port Howard/Many Branch. The three areas were selected based on: previous knowledge about the presence of at least one of the two target species; area accessibility; and survey feasibility during both seasons (considering limited daylight hours in winter).

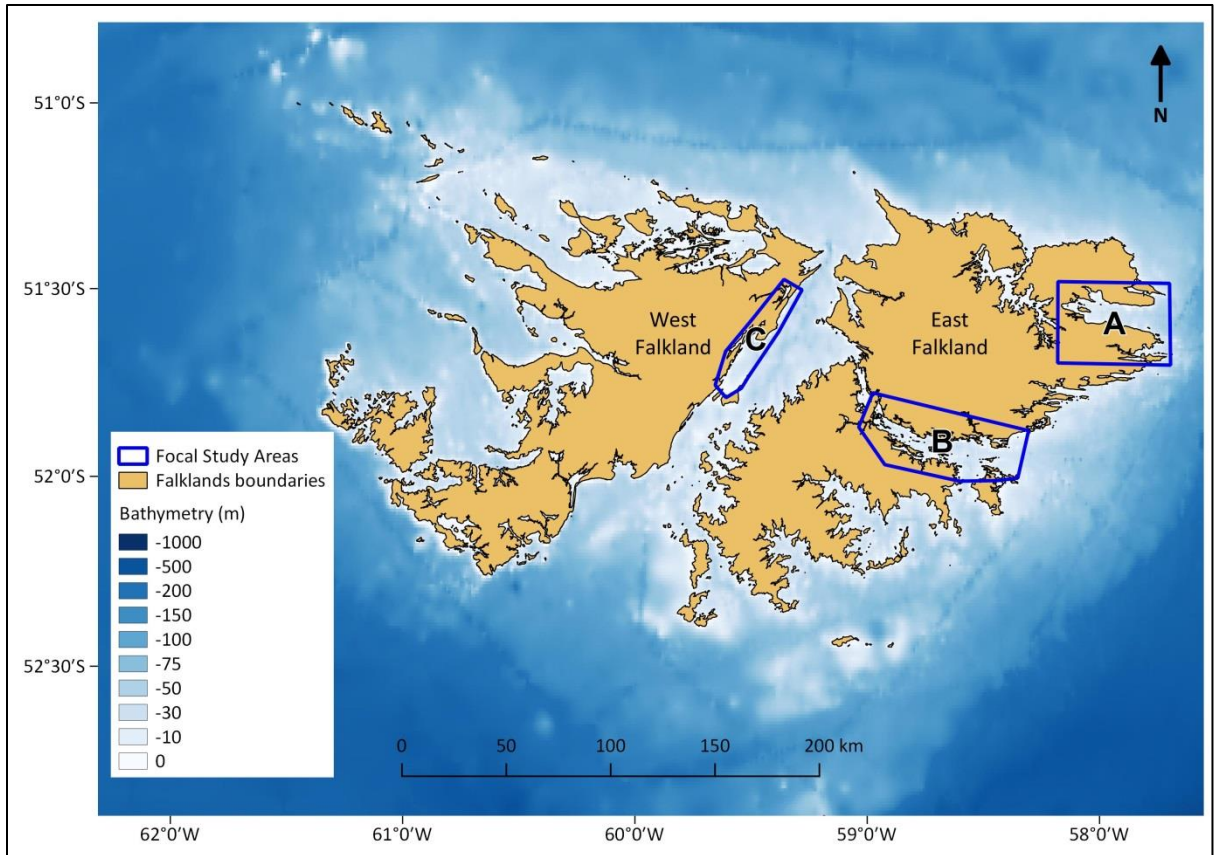


Figure 1 - Map of the Falkland Islands showing the three selected areas for the focal survey (in blue): A. Port Stanley – Port Williams – Berkeley Sound; B. Choiseul Sound; C. Port Howard – Many Branch. Map generated with QGIS 2.18.4. Falkland shapefile obtained from SAERI. Bathymetry obtained from GEBCO2014.

Material and methods

The survey was carried out on board of the rigid-hulled inflatable boat (RHIB) “Baltic Warrior” (**Figure 2**) owned by the Shallow Marine Surveys Group (SMSG); the skipper was Steve Cartwright, co-founder, director and chairman of the SMSG. Between three and five days were planned in each location. Surveys were carried out only in good sea conditions¹ (Beaufort<4). Navigation was conducted *ad libitum* (i.e. not following pre-established routes), with the exception of the area A where transects were followed. When at least two observers were looking for cetaceans a speed ranged from 13 km/h to

¹ Forecasts from: www.windfinder.com/forecast/mount_pleasant_falkland, www.passageweather.com/maps/capehorn/m_gfs.htm, and [www.yr.no/place/Falkland_Islands_\(Malvinas\)/Other/Port_Howard](http://www.yr.no/place/Falkland_Islands_(Malvinas)/Other/Port_Howard)

22 km/h (from 7 to 12 knots), navigation was considered as 'Positive' otherwise navigation was considered as 'Negative'; navigation around animals was considered as 'Cetacean'. A detailed protocol is available on the SAERI website (www.south-atlantic-research.org/research/doke/191public-outreach).

A cetacean detection was recorded as 'Encounter' when navigation was not interrupted and only species and group size were recorded and as 'Sighting' when navigation was temporally interrupted and animals were approached to collect photo-identification data (see the Photo-Identification protocol available on the SAERI website - www.south-atlantic-research.org/research/doke/191public-outreach). Species, behaviour/reaction to the vessel, group size and group composition (number of adult and calves) were recorded at each encounter/sighting.



Figure 2 - The Baltic Warrior used for the focal area study.

Summary

Eleven days were spent at sea from the 21st of November to the 22nd of December 2016, four days in both area A and C, and three days in area B (**Figure 3**). Total effort was 898 km for a total time of 66 hours and 11 minutes spent at sea (about 6 hours per day). The total time spent with dolphins was 29 hours and 45 minutes. **Table 1** summarizes total and 'Positive' effort in kilometers and hours, area and crew on board for per each survey day.

Table 1 - Date, area, crew on board and effort (total and 'Positive' kilometres, and time) for each day of survey. MCOS=Marina Costa; MTAY= Maria Taylor; CWEI= Caroline Weir; MGAR= Maria Garcia.

Date	Area	Crew	Effort		
			Total (km)	Pos (km)	Time (hh:mm)
21/11/2016	A	MCOS, MTAY	70	43	04:01
23/11/2016	A	MCOS, CWEI	128	90	07:19
24/11/2016	A	MCOS, CWEI	132	81	07:29
25/11/2016	A	MCOS, CWEI	57	40	04:34
30/11/2016	B	MCOS, MGAR	79	57	05:11
05/12/2016	B	MCOS, MGAR, CWEI	94	70	06:50
06/12/2016	B	MCOS, MGAR, CWEI	93	82	05:46
19/12/2016	C	MCOS, MGAR, CWEI	74	45	06:12
20/12/2016	C	MCOS, MGAR, CWEI	56	22	06:51
21/12/2016	C	MCOS, MGAR, CWEI	76	55	05:57
22/12/2016	C	MCOS, MGAR	38	12	05:57
11 days		Total	898	597	66:11

Dolphins were observed in 103 occasions of which 79 (77%) were Commerson's dolphins and 24 (23%) were Peale's dolphins (**Figure 3**). **Table 2** summarizes the number of dolphin detections subdivided by encounter and sighting per the two species by area and the number of pictures collected during photo-identification.

Table 2 – Number of dolphin detections for each species, Commerson's and Peale's dolphins, for each area.

Area	All species		Commerson's dolphin		Peale's dolphin	
	Sighting	Photos	Sighting	Photos	Sighting	Photos
A	32	1,729	9	981	23	748
B	16	1,532	15	1,529	1	3
C	55	6,007	55	6,007		
Total	103	9,268	79	8,517	24	751

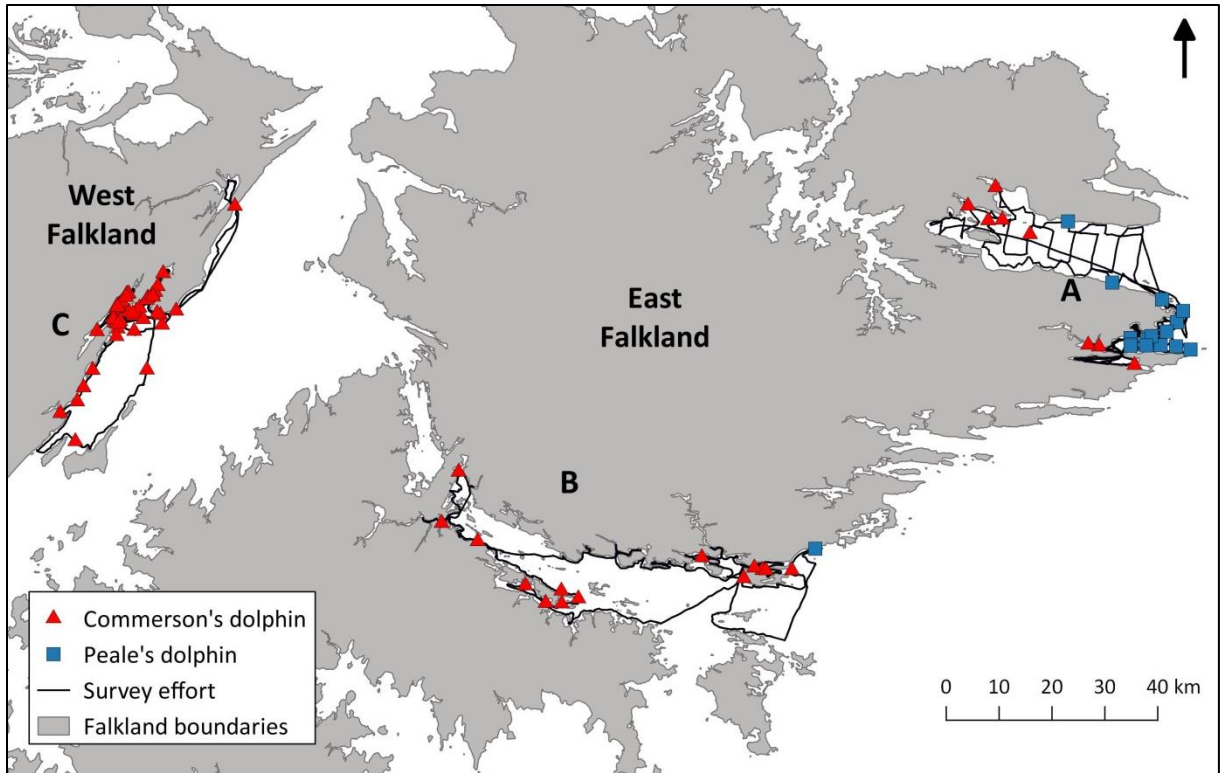


Figure 3 – Survey effort and dolphin detections (red triangle: Commerson’s dolphin; blue square: Peale’s dolphin) carried out from the 21st of November to the 22nd of December 2016, in the three focal areas. A. Port Stanley, Port Williams, Berkeley Sound; B. Choiseul Sound; C. Port Howard/Many Branch.

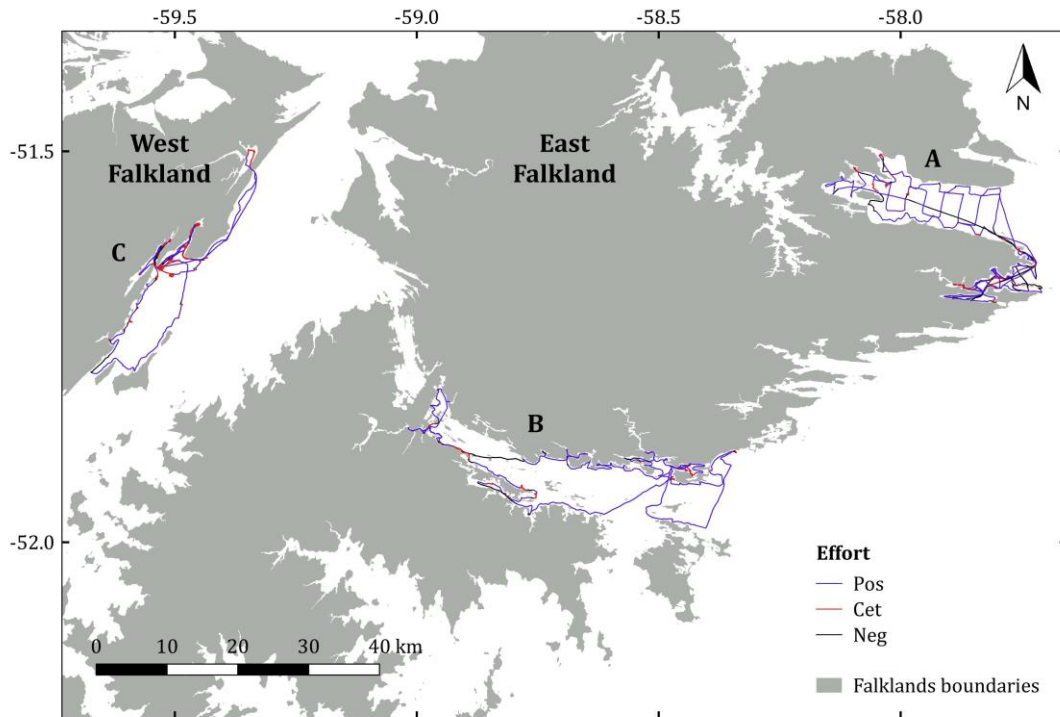


Figure 4 – Survey effort carried out from the 21st of November to the 22nd of December 2016, in the three focal areas. A. Port Stanley, Port Williams, Berkeley Sound; B. Choiseul Sound; C. Port Howard/Many Branch.

Average group size estimated at sighting was 12.5 (SD=13.64) for Commerson’s dolphin and 3.9 (SD=3.15) for Peale’s dolphins (**Table 3**). The large group-size estimate for Commerson’s dolphins in area C was due to the presence of several small groups that were simultaneously attracted to the boat, resulting in artificial larger aggregation.

Table 3 – Number of sightings (n), mean group size, standard deviation (SD), and range for Commerson’s (Cc) and Peale’s (La) dolphin, for each area.

Area	Cc				La			
	n	mean	SD	range	n	mean	SD	range
A	9	5.6	3.91	1-13	16	4.1	3.22	1-10
B	15	5.1	4.40	1-18	1	2.0		
C	31	18.2	15.71	2-55				
Total	55	12.5	13.64	1-55	17	3.9	3.15	1-10

Age classes identification based on the relative proportion with adult body size was attempted. However it was not possible to clearly identify the presence of yearly individuals (animal born within less than year) for both species. Newborns (individuals less than half of an adult body size, presenting foetal folds on each body-side, and swimming in close association with an adult – presumably the mother) were also not observed for both species. Several possibly pregnant individuals of Commerson’s dolphins were observed in Port Howard. This might indicate the presence of a unique, short and synchronized reproductive period and that the survey was conducted before and possibly not far from that period.

Of the 17 sightings of Peale’s dolphins for which pictures were collected, matching and photo-identification work has been concluded, resulting in 37 marked individuals identified in 16 sightings (in one sighting pictures were not considered of good quality for analyses). Of the 37 marked individuals, 6 were considered as high marked (HM) and 31 as low marked (LM) (see Photo-id protocol available on SAERI website for detail). Seven individuals (19%) were recaptured, suggesting that mark-recapture analyses are possible.

The cumulative numbers of newly identified individuals (HM and LM) of Peale’s dolphins showed an increasing trend indicating that not all the marked dolphins using the area have been identified in the study period (**Figure 5**).

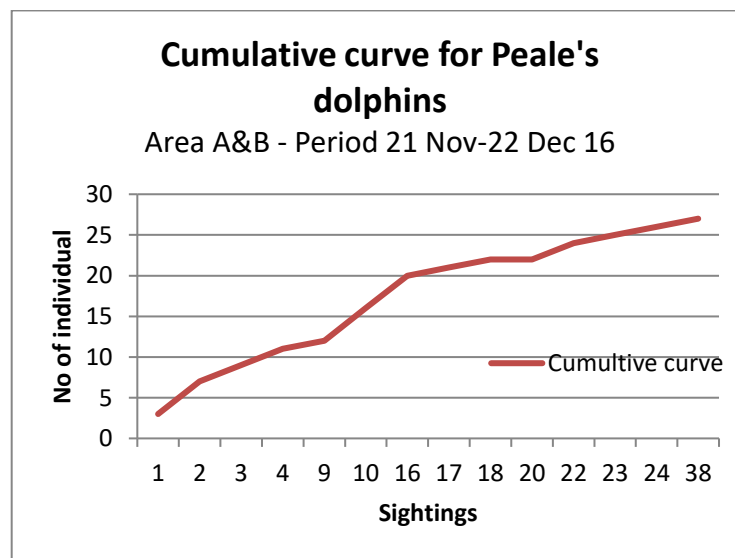


Figure 5 - Cumulative curve of marked Peale's dolphins identified in area A and B during the first focal study conducted from the 21st of November to the 22nd of December 2016.

Photo-identification catalogues for Peale's and Commerson's dolphins have been produced and are available on SAERI website (**Figure 6**).

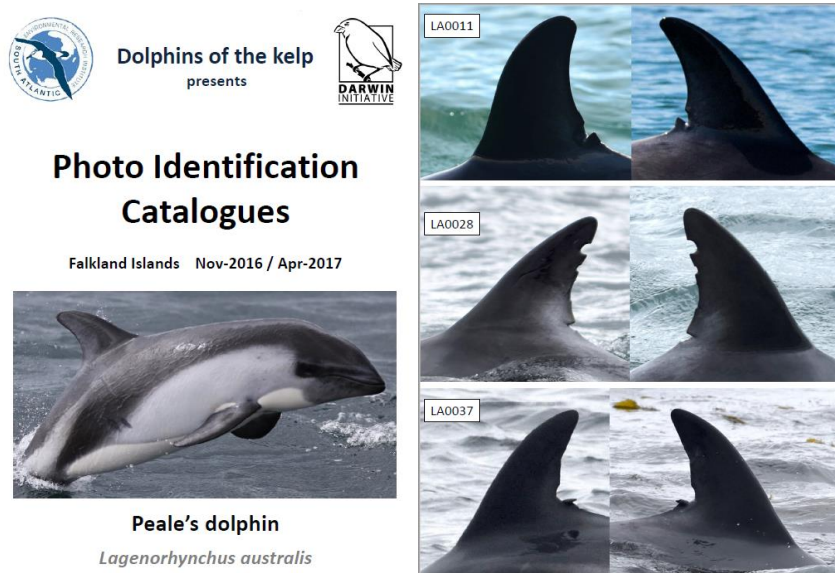


Figure 6 - Example of the Photo-identification catalogue for Peale's dolphins in areas A and B.

Matching for Commerson's dolphins is on-going for area C (about 350 marked individuals have been identified so far) and has been finished for area A and B. A total of 70 marked individuals have been identified of which 46 HM and 24 LM. The construction of the matching database is on-going. One individual (CC0034) has been recaptured from area A and B. A photo-identification catalogue for Commerson's dolphins has been produced and is available on SAERI website (**Figure 7** **Figure 6**).

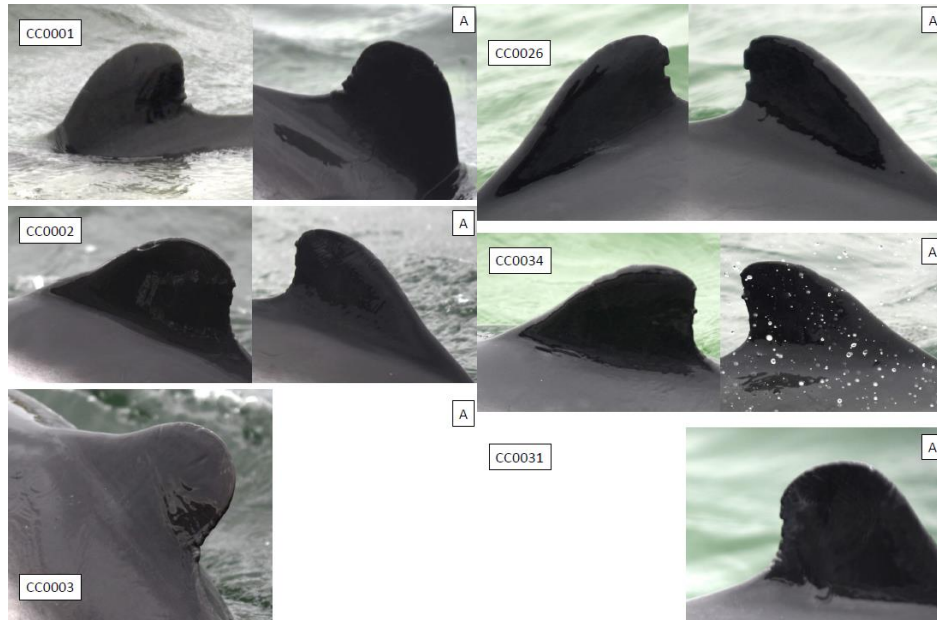


Figure 7 - Example of the Photo-identification catalogue for Commerson's dolphins in areas A and B.

Estimate of unmarked individuals and mark recapture analyses will be carried out as soon as the matching is finished for both species.

Data management

Data management for the project operates in two ways, with the help of the IMS-GIS Data Centre Manager.

- a) Storage: the data (navigation and sighting data) are saved on a secure server and backed up hourly and off-site.
- b) Metadata: the data have been documented using the standard metadata form (19115). Metadata is made available online through the SAERI metadata catalogue (www.south-atlantic-research.org/metadata-catalogue).

In both cases the project is taking into account what is written in the current Falkland Islands data policy (www.south-atlantic-research.org/guide-for-researchers/planning-research-in-the-falkland-islands).

Conclusion and next steps statement

The first focal survey was conducted successfully. The areas selected were relatively easy to reach by car and survey by RHIB, with distances at sea are covered in five-six hours, allowing for the survey to be carried out even during the winter when days are shorter. In the area A (Port Stanley, Port Williams, Berkeley Sound) several groups of Peale's dolphins have been observed and few animals have been recaptured; few small groups of Commerson's dolphins have also been sighted and one individual have been captured twice in Port William. The area B (Choiseul Sound) hosts few groups of Commerson's dolphins; Peale's dolphins have been observed in Bertha's Beach, suggesting that the internal water of the Sound are not red only, respectively. In the area B, both species have been observed but in very few sighting. Commerson's dolphins

The research team was well received by the Falkland Islands' residents and a network of people can be locally contacted in case of emergency. The next survey (the first winter survey) will be carried out in winter 2017 (June-July).

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