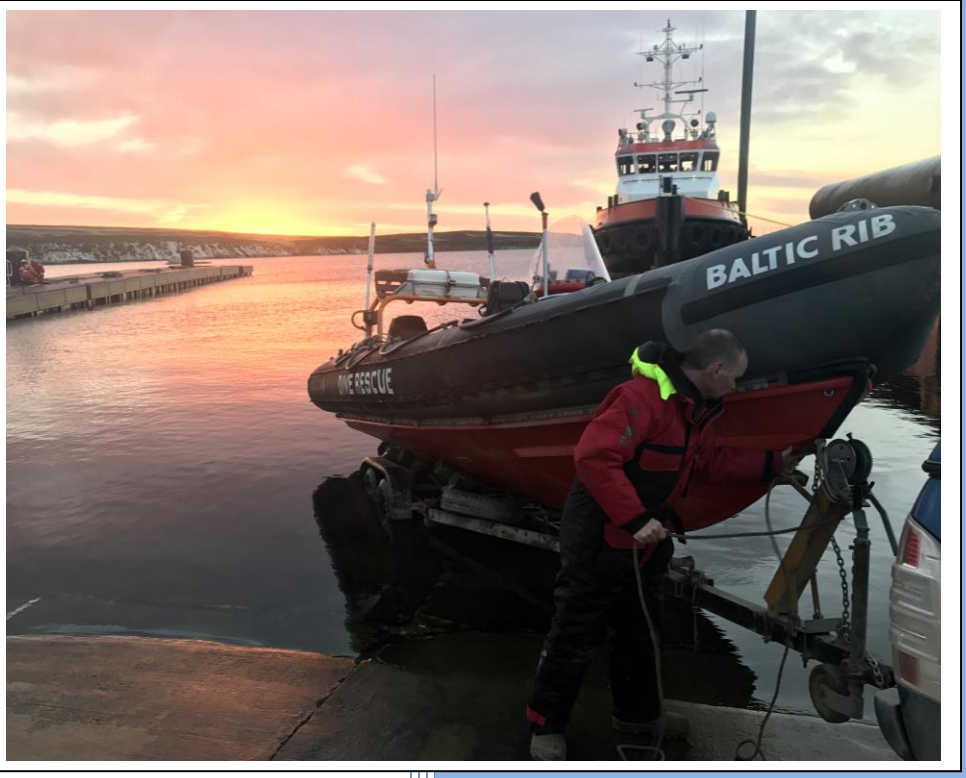
2018

DOKE Field Work Report
Focal Survey #4 – Autumn 2018



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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).

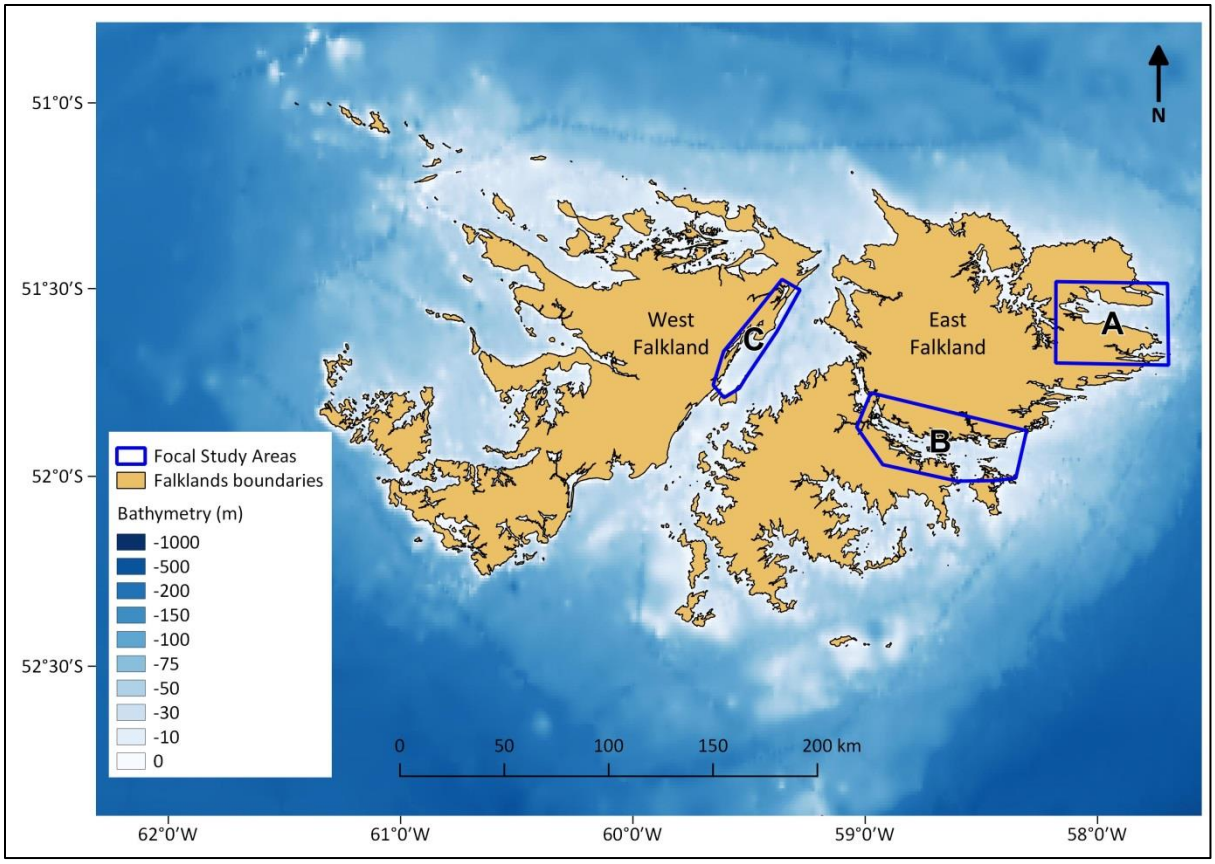

Figure 1 - Map of the Falkland Islands showing the three selected areas for the focal survey (in blue): A. Port Stanley – Port Williams – Berkeley Sound; B. Choiseul Sound; C. Port Howard – Many Branch. Map generated with QGIS 2.18.4. Falkland shapefile obtained from SAERI. Bathymetry obtained from GEBCO2014.

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 conditions[1] (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 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 recoded 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-

[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

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

Twelve days were spent at sea from the 5th of February to the 23rd of March 2018, five days in area A, one day in area B and six days in area C (**Figure 3**). Navigation covered 754.1 km with 532.7 km of positive effort for a total time of 64 hours and 57 minutes (about 5 hours 30 minutes per day). The total time spent with cetaceans was 32 hours and 32 minutes. **Table 1** summarizes total and 'Positive' effort in kilometers and hours, area and people on board for per each survey day.

People on board included crew members (MCOS, MTAY and MCAZ), volunteers (FKUE, PVWE and JSOL) and PhD students (JHAR and JMIN). One media operator (MWIN, from FITV) was also present in one occasion. Crew members provided training to volunteers and students on the following topics: use of GPS, use of DLR camera and underwater action camera; cetacean sighting and photo identification; group size estimation;

introduction to research protocols; health & safety and good practices on board of small boats. The duration of the surveys reported in **Table 1** accounts for the training hours of the trainees.

Table 1 - Date, area, people on board and effort (total and 'Positive' kilometers, and time) for each day of survey. MCOS=Marina Costa; MTAY= Maria Taylor; FKUE=Frithjof Kuepper; JHAR= Jacob Hargreaves; PVWE=Pieter van West; MWIN=Michelle Winnard; MCAZ=Marcello Cazzola; JMIN=Jess Minnet; JSOL=Jenni Sol.

Date	Area	Crew	Effort		
			Total (km)	Pos (km)	Time (hh:mm)
05/02/2018	A	MCOS, MTAY	79.6	48.9	08:30
08/02/2018	A	MCOS, MTAY, FKUE	88.3	66.6	06:49
16/02/2018[1]	A	MCOS	42.8	39.1	01:46
17/02/2018	A	MCOS, JHAR, PVWE	124.6	107.2	07:23
18/02/2018	A	MCOS, MWIN	133.2	114.0	05:56
03/03/2018	B	MCOS, MCAZ, JMIN	82.6	67.6	06:55
17/03/2018[2]	C	MCOS, MCAZ	7.6	-	02:09
18/03/2018	C	MCOS, MCAZ	30.9	3.4	05:58
19/03/2018	C	MCOS, MCAZ	8.2	0.9	02:28
20/03/2018	C	MCOS, MCAZ	50.2	23.7	05:13
21/03/2018	C	MCOS, MCAZ, JSOL	11.9	4.2	01:49
23/03/2018	C	MCOS, MCAZ	94.1	57.1	10:02
12 days		**Total**	**754.1**	**532.7**	**64:57**

Notes [1]: Aborted survey due to bad weather; [2]: One sight outside Port Howard jetty with very bad weather.

Cetaceans were observed in 136 occasions of which 47 (63%) were Commerson's dolphins, 24 (32%) Peale's dolphins, 3 (4%) sei whale and 1 (1%) minke whales (**Figure 3**). **Table 2** summarizes the number of dolphin sightings per the four species by area and the number of pictures collected during photo-identification.

Table 2 – Number of cetacean detections for each species, Commerson's and Peale's dolphins, sei and minke whales for each area.

Area	All species		Commerson's dolphin		Peale's dolphin		Sei whale		Minke whales	
	Sighting	Photos	Sighting	Photos	Sighting	Photos	Sighting	Photos	Sighting	Photos
A	39	3443	13	985	23	2284	2	159	1	15
B	9	1845	8	1771	1	74	0	-	0	-
C	27	10335	26	10267	0	-	1	68	0	-
Total	**75**	**15623**	**47**	**13023**	**24**	**2358**	**3**	**227**	**1**	**15**

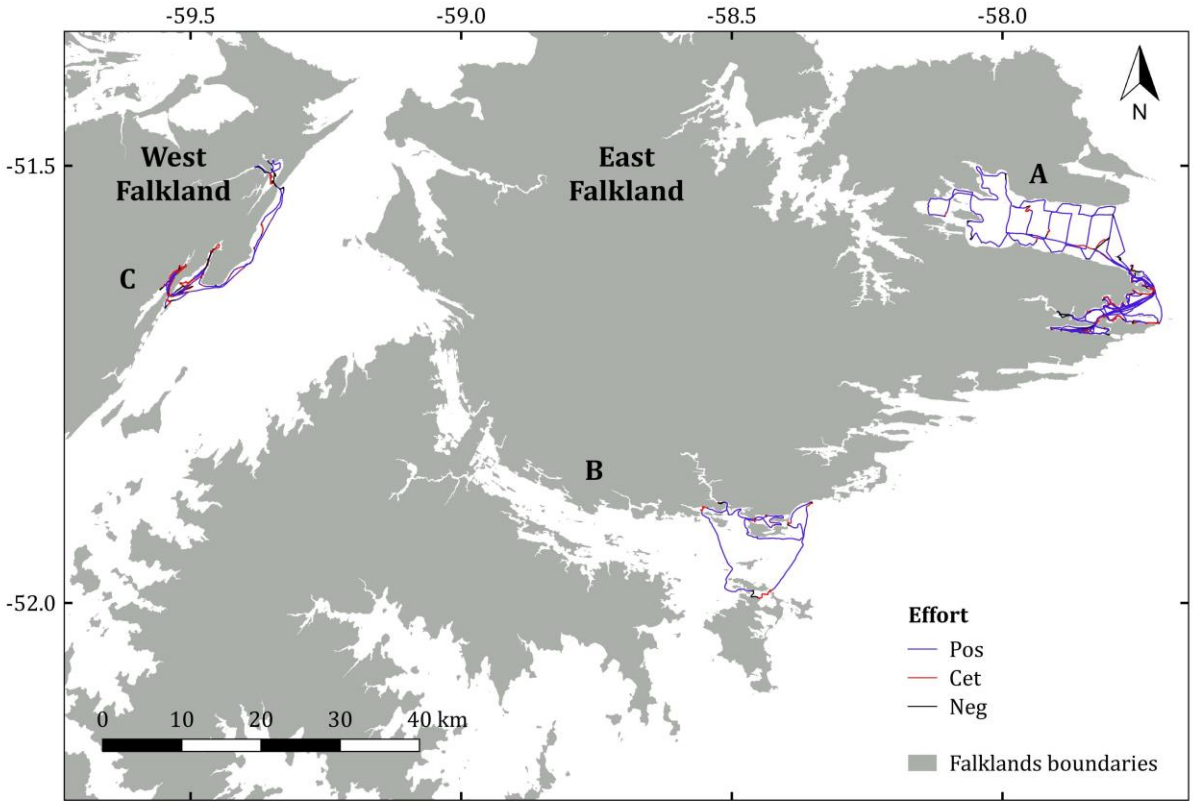

Figure 3 – Survey effort carried out from the 5th of February to the 23rd of March 2018, in the three focal areas. A. Port Stanley, Port Williams, Berkeley Sound; B. Choiseul Sound; C. Port Howard/Many Branch.

Average group size estimated at sighting was 15.5 (SD=17.3) for Commerson's dolphin and 5.1 (SD=3.5) 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, sei whales (Bb) and minke whales (BaBbn) for each area.

Area	Cc				La				Bb				BaBbn			
	n	**mean**	**SD**	**range**	**n**	**mean**	**SD**	**range**	**n**	**mean**	**SD**	**range**	**n**	**mean**	**SD**	**range**
A	13	3.9	2.6	1-10	23	5.2	3.6	1-12	2	2	1.4	1-3	1	2	na	2
B	8	10.1	10.8	2-33	1	4	na	4	0	-	-	-	0	-	-	-
C	26	23	19.4	2-90	0	-	-	-	1	2	na	2	0	-	-	-
Total	**47**	**15.5**	**17.3**	**1-90**	**24**	**5.1**	**3.5**	**1-12**	**3**	**2**	**1**	**1-3**	**1**	**2**	**na**	**2**

C-POD

On the 23rd of March 2018, the service to the three C-PODs deployed in Many Branches bay was carried out. C-POD were recovered, batteries and cards replaced, and re-deployed in the same positions. All units showed evident growth of marine invertebrates and vegetation, they were cleaned before redeployment (see example in **Error! Reference source not found.** and **5**).

Figure 4 – Recovered C-POD unit 2020 showing thick cover of marine invertebrates (e.g. Tunicata).

Figure 5 – C-POD unit 2020 cleaned before redeployment.

Faecal sampling

During the Focal survey 4 samples of faeces from Commerson's dolphins were collected in one occasion in Port Howard area (C). Samples were collected on March 18th during sighting n. 293 counting around 90 individuals (rough group size). Sighting lasted from 09:09am to 12:00am. No faecal events were observed before 11.00 and samples were collected at 11.34 at approximate location -51.61675 S; -59.52031 W.

A faeces net mesh size 0.4mm (courtesy of BAS) was used for the sampling. Samples were qualitatively collected sweeping the net over the sea surface multiple times where faecal traces were present. Faecal traces were easily identifiable from the boat as reddish mucous lumps of approximately 0.5-3 cm. Samples were collected through tweezers from the net surface, transferred into vials and preserved in ethanol 96% (**Figure 6** and **7**).

Preserved samples were observed on 26/06/2018 under stereomicroscope. Samples contained mostly fragments of crustacean carapaces, tentatively assigned to species *Munida gregaria*, *Thymops birsteini* and unidentified copepods. Identified taxa could be considered as transitional food, i.e. part of the diet of the dolphins' preys.

Thanks to Tom Busbridge (SAERI/FIFD), Zhanna Shcherbich (FIFD) and Alexander Arkhipkin (FIFD) for samples diagnosis.

Figure 6 - Faecal samples transferred to the vials from the net

Figure 7 – Detail of faecal traces in the net

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

Focal survey 4 was completed successfully. No problem was experienced in terms of logistic or transportation. One survey (16th Feb) in area A was aborted due to bad weather, nonetheless about 2 hours of navigation and one sighting were carried out.
Age classes identification based on the relative proportion with adult body size was attempted. Tentatively, newborn individuals were indentified in two sightings in area A

and C. Also, calves probably born this year were observed in area B and C in a total of 5 sightings.

As observed in previous seasons, Commerson's dolphin sightings in area C (Port Howard) were often characterized by small groups simultaneously attracted to the boat causing larger aggregations and disrupting the estimation of the group size. As a general consideration for area C in this season: surveys could be carried out in an acceptable way also in rough sea conditions; dolphins were in some cases sighted immediately after the departure from the jetty rapidly gathering around the boat in large numbers. Weather seems not to be a limiting factor except for safety if calves are present. Also as additional note on this area: during the navigation towards Port Howard approximately 40 whales were sighted from the ferry in the Falkland Sound; pictures were taken and species identified as sei whales.

The next survey (the last winter survey) will be carried out in winter 2018 (June-August).

Acknowledgements

We would like to give our most profound gratitude to all the Falkland Islands' residents who supported our work with enthusiasm and dedication. In particular we thank you: Bill Pole-Evans & Shirley at Bold Cove for the support in the field work and the logistic; Myles & Karen Lee and Critta & Beccy Lee at Port Howard for the support with the accommodation, the anchoring system for the vessel and other logistic issues; Karen Jones at Bold Cove farm; Steven & Chris Poole at Lively Island; Ken & Bonnie (Bonita) Greenland at Darwin for the logistic support and the amazing coffee and tea that are waiting us when we are back from the field; Keith Alazia manager of Goose Green farm for logistic support; Gilberto Castro &Suzie Clarke mangers at Fitzroy Farm; Bobby & Lindsay Short at Walker Creek; Andy Pollard the General Manager of Falklands Landholdings who own Goose Green and Fitzroy farms; Vernon Lee for his huge help in all the logistic issues, field work, and engine maintenance. Thank you to the observers Amy Guest, Katie Bridge, Jenni Sol, Ness Smith, Sasha Cleminson, and Pamela Jelbes. Thank you to the Commander W. Dawson of the Royal Navy at East Cove Military Port for his cordiality, logistic support, and contagious enthusiasm for the wildlife. Huge thanks to iLaria for her support with GIS and the development of an app to record wildlife presence. Big thanks to the project partners: Nick Rendell from the Falkland Islands Government; Grant Munro from Austral Biodiversity and Premier Oil; Andy Stanworth and Esther Bertram from Falklands Conservation; Scott Baker from Oregon State University (OSU); Sonja Heinrich from the University of St Andrews; Paul Brewin and Steve Cartwright from the Shallow Marine Surveys Group. A particular massive thank to

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