2017

DOKE Field Work Report
Focal Survey Genetic 2017

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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 genetic survey, carried out from the 3rd to the 12th of January 2017. This document is part of a series of reports summarizing the DOKE fieldwork, including: the Biopsy Report 2017 (submitted by Scott Baker), the Focal Survey 1 – Summer 2016, the Focal Survey 2 – Winter 2017, the Aerial Survey Report 18 March – 8 May 2017, the Condor Survey Report 21 February – 1 March 2017, the Focal Survey 3 – Summer 2017, the Focal Survey 4 – Autumn 2018, the Focal Survey 5 – Winter 2018 and the Cetacean Observations between the Falkland Islands and South Georgia conducted on board of the HMS Enterprise from the 21st to the 31st of January 2017. Information about the study area, the boat, material and methods are found in the 'Focal Survey 1' report and in the 'Focal Survey Protocol Data Collection' file, also available on the SAERI website (http://www.south-atlantic-research.org/research/current-research/dolphins-of-the-kelp).

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Summary

The field work was conducted from the 3rd to the 12th of January 2017 in the three areas selected at the beginning of the project for the Focal surveys: A. Port Stanley, Port Williams, Berkeley Sound; B. Choiseul Sound; C. Port Howard/Many Branch. In total, 8 days were spent at sea of which 3 days were in area A, 2 days in area B and 3 days in area C (**Figure 1**). The rigid hull inflatable boat (hereafter RHIB) *Baltic Warrior* of the Shallow Marine Survey Group was used during the; the skipper was Steve Cartwright.

Navigation was carried out for 362.8 km for a total of about 37 hours, of which 173.5 km were done in 'positive' effort, looking for dolphins. About 22 hours were spent in close association with cetaceans, taking photo-identification data.

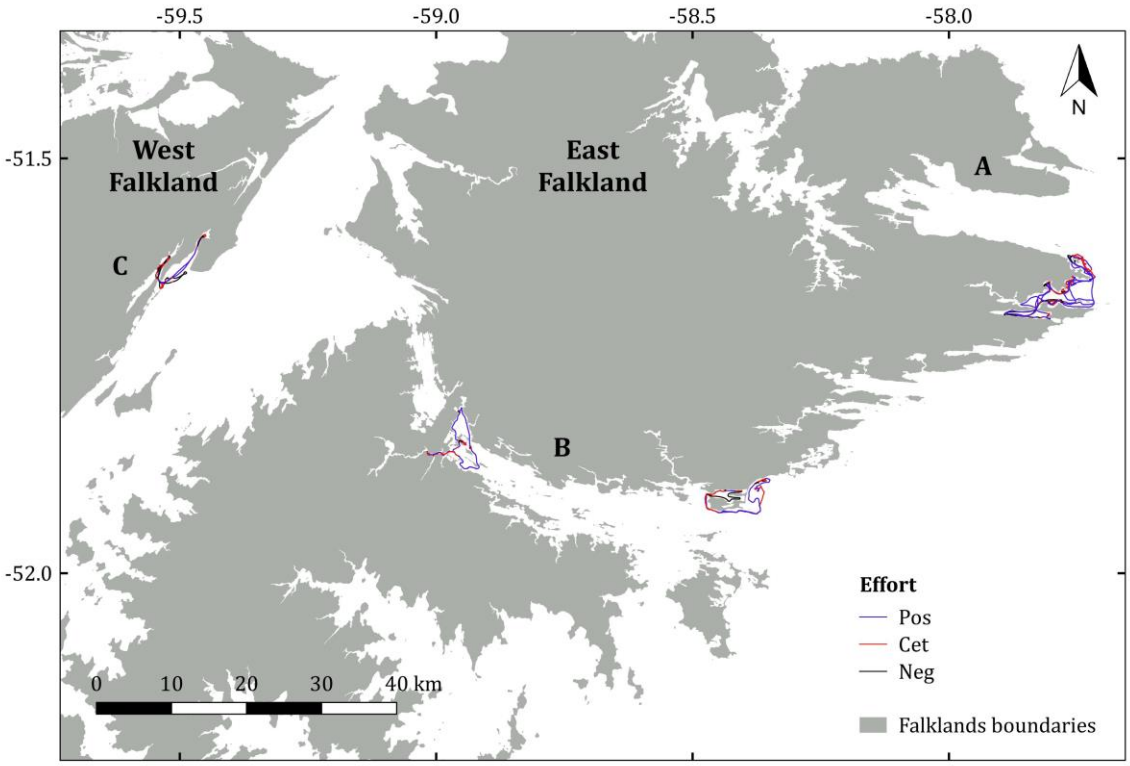

Figure 1 - Survey effort carried out during the Genetic survey from the 3rd to the 12th of January 2018, in the three focal areas. A. Port Stanley, Port Williams, Berkeley Sound; B. Choiseul Sound; C. Port Howard/Many Branch.

Cetaceans were observed in 67 occasions with three species encountered, including Commerson's dolphin, Peale's dolphin, and orca (**Table 2**). Commerson's dolphin was the only species observed in the three areas, Peale's dolphin was not observed in area C while orca was only observed in area A (**Figure 2**).

Table 1 - Date, area, crew on board, and effort (total and 'Positive' kilometers, and total time) for each day of survey. Crew code: MCOS=Marina Costa; MGAR= Maria Garcia; SBAK=Scott Baker; SPOI= Steve Pointing.

Date	Area	Crew	Effort		
			Total (km)	Positive (km)	Total time (hh:mm)
03/01/2017	C	MCOS, MGAR, SBAK	12.6	2.2	04:25
04/01/2017	C	MCOS, MGAR, SBAK, SPOI	24.7	-	04:02
05/01/2017	C	MCOS, MGAR, SBAK	36.3	14.5	04:55
06/01/2017	B	MCOS, MGAR, SBAK	40.1	24.0	04:10
08/01/2017	B	MCOS, MGAR, SBAK	62.1	26.2	05:10
09/01/2017	A	MCOS, MGAR, SBAK	46.3	25.4	03:29
10/01/2017	A	MCOS, MGAR, SBAK	59.0	36.6	04:52

12/01/2017	A	MCOS, MGAR, SBAK	81.8	44.6	06:33
13 days		**Total**	**362.8**	**173.5**	**37:36**

Table 2 - Number of cetacean sightings for each species and for each area.

Area	All	Commerson's dolphin	Peale's dolphin	Orca
A	11	1	9	1
B	11	10	1	0
C	6	6	0	0
Total	**28**	**17**	**10**	**1**

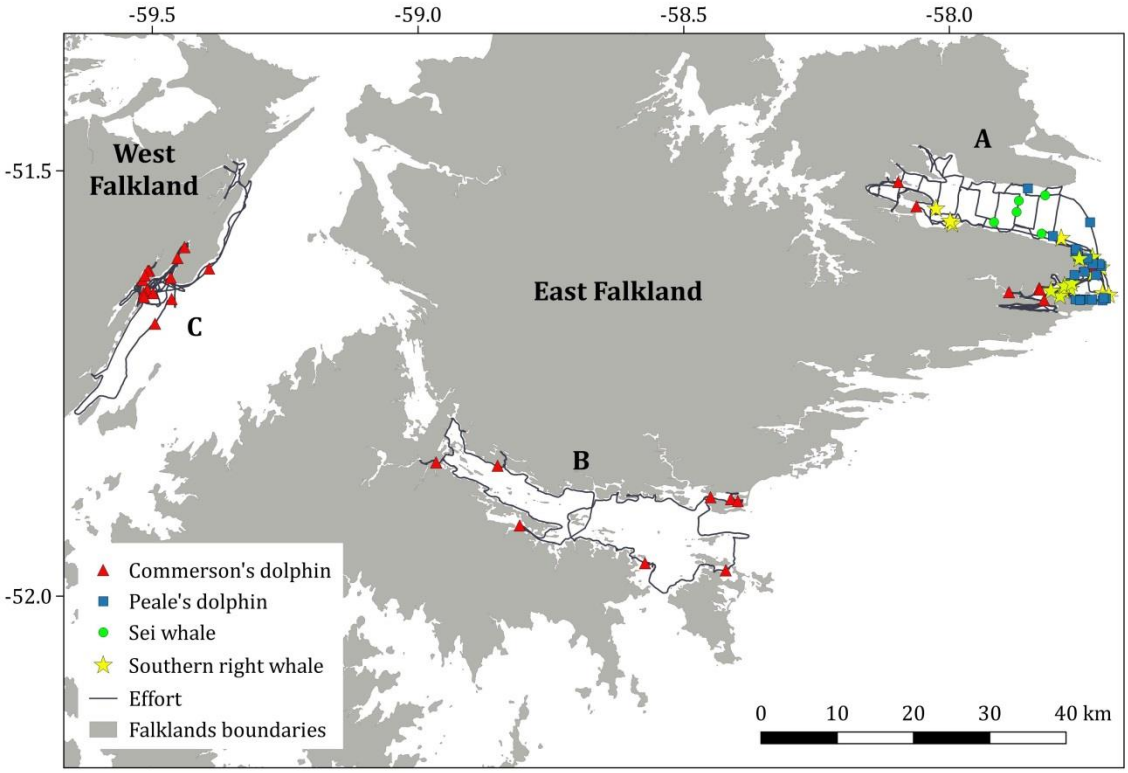

Figure 2 – Sighting distribution of cetaceans species encountered during the genetic survey.

Cetaceans were observed in 28 occasions of which 17 (61%) were Commerson's dolphins, 10 (36%) Peale's dolphins, and 1 (3%) orca (Error! Reference source not found.). Error! Reference source not found. summarizes the number of sightings pre

the three species by area and the number of pictures collected during photo-identification.

Table 3 - Number of cetacean sighting and pictures taken for each species and for each area.

Area	All species		Commerson's dolphin		Peale's dolphin		Orca	
	Sighting	Photos	Sighting	Photos	Sighting	Photos	Sighting	Photos
A	11	1187	1	138	9	904	1	145
B	11	880	10	860	1	20	0	-
C	6	2689	6	2689	0	-	0	-
Total	**28**	**4756**	**17**	**3687**	**10**	**924**	**1**	**145**

Average group size for the four species encountered was calculated for all sightings and for the three areas (**Table 4**).

Table 4 - Mean group size (Mean), standard deviation (SD), range and sum of individuals observed calculated using sightings (n) made in during the **winter** survey, for all the species, and for the three areas.

Species	Area	n	Mean	SD	Range	Sum of individuals
Commerson's dolphin	**A**	1	4	na	4	4
	B	10	3.8	2.7	1-10	38
	C	6	29.3	4.8	24-35	176
Peale's dolphin	**A**	9	4.3	2.4	1-9	39
	B	1	2	na	2	2
Orca	**A**	1	2	na	2	2

Contrary to what happened during the summer survey, only a few sightings of Commerson's dolphin were made in winter in area C. Commerson's sightings and individuals were fewer in winter than summer also for areas B and C although with smaller differences. On the contrary, Peale's sightings and number of individuals were higher in winter than in summer in area A (**Table 4**, **Error! Reference source not found.**).

Tissue sampling

Skin samples for genetic analyses were collected using a minimally intrusive biopsy dart. The dart was attached to a modified veterinary rifle (Paxarm) or to a

lightweight pole deployed by hand. The use of the rifle was limited to few samplings addressed to Commerson's dolphins; the hand deployed pole was generally preferred for being more manageable and producing minimum reaction from dolphins. During the sampling photographs were collected when possible to allow individual photo identification (**Figure 3**).

Figure 3 – Pole biopsy system for genetic sampling of a Commerson's dolphins and individual photo identification.

Conclusion and next steps statement

The genetic survey was conducted successfully. The maximum number (60) of tissue samples was collected for the Commerson's dolphins that are present in the three study areas. Peale's dolphins are present in large number in area A, in low number in area B and have never been observed in area C. Only 29 Peale's tissues samples were therefore collected.

The project includes other four focal surveys that will be carried out in June-July 2017, November-December 2017, February-March 2018, and June-July 2018 respectively.

Acknowledgements

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