Resolving the ecosystem effects of the winter krill fishery (*Winter Krill Project*)

Survey Report March/April 2023 v 1.0




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NATURAL ENVIRONMENT RESEARCH COUNCIL

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Contents

1. Introduction

The main objectives of the *Winter Krill* project are to obtain information on i) the distribution and abundance of *Euphausia superba* (Antarctic krill) during the winter; and ii) overlap between the distribution of krill-dependent predators and krill in the South Georgia (SG) fishery area. The motivation behind this is that the commercial krill fishery around SG operates exclusively during the winter period, yet information on the stock dynamics and distribution of krill during this period are sparse. Although Marine Protected Area (MPA) restrictions include a 30 km no-take zone around the SG coast, there is evidence to suggest that the foraging habits of krill-dependent predators such as penguins and seals vary depending on the abundance of krill, and that this may result in overlap between them and the krill fishery, particularly during low krill years. There is also evidence of baleen whales returning to SG in large numbers during the summer and of some remaining during the winter, with the increased prey demand potentially further increasing competition for krill resources. Our project will address this gap in winter data, in turn improving management of the SG ecosystem and enabling the ecosystem-based management of the krill fishery.

Following the fit of a scientific echosounder system to the *MV Pharos SG* in early 2022, a key part of the project is to undertake acoustic transects to estimate krill biomass and distribution at the beginning (May), middle (July) and end (September) of the krill fishing season. The acoustic transects are accompanied by seabird/ marine mammal observations, with additional cetacean observations carried out in July and September. In addition, gentoo penguins are tracked from Bird Island and Maiviken during winter to investigate foraging overlap with krill distribution, the krill fishery and the limits of the MPA No-take Zone.

Following the success of the Winter Krill surveys in 2022, short surveys are now to be incorporated into the routine KEP Science Plan. During alternate months, four transects in the ECB will be occupied for acoustic surveys, supported by CTDs, plankton tows and cetacean observations (no seabird observations). The first such survey was planned for January 2023, but for logistic reasons was deferred until February. This survey also provided a training opportunity for the new KEP marine biologists.

2. Fieldwork summary

Due to changes in the dry-dock schedule for Pharos SG, the Winter Krill Project survey planned for May 2023 was brought forward to March/April. There was no dedicated seabird or cetacean observer on board for the transects, so the survey was not able to achieve all objectives.

Our main priorities were achieved as we undertook acoustic transects of the Western Core Box 1 & 2 during our first excursion and then the Eastern Core Box 1-6 on the second excursion. All acoustic transects were conducted in daylight and in darkness to assess difference in krill behaviour and aggregation.

Each transect was approximately 35 nautical miles long, extending from the coast to beyond the shelf break. Transects were undertaken at around 8-10 knots, or the optimal speed to achieve the cleanest data, with two transects completed each day.

During each daylight transect marine mammal observations were undertaken by the survey team from the bridge.

The CTD was deployed at the inshore end of each transect and equidistant between the offshore ends between WCB 1&2, ECB 1&2, ECB 3&4 and ECB 5&6.

RMT1 net hauls were deployed during the hours of darknesss at the inshore ends of each transect and targeted net hauls were undertaken when surface krill swarms were detected on the acoustics after the completion of the acoustic transects.

The Event Log summary can be found in Section 10: Appendix 1.

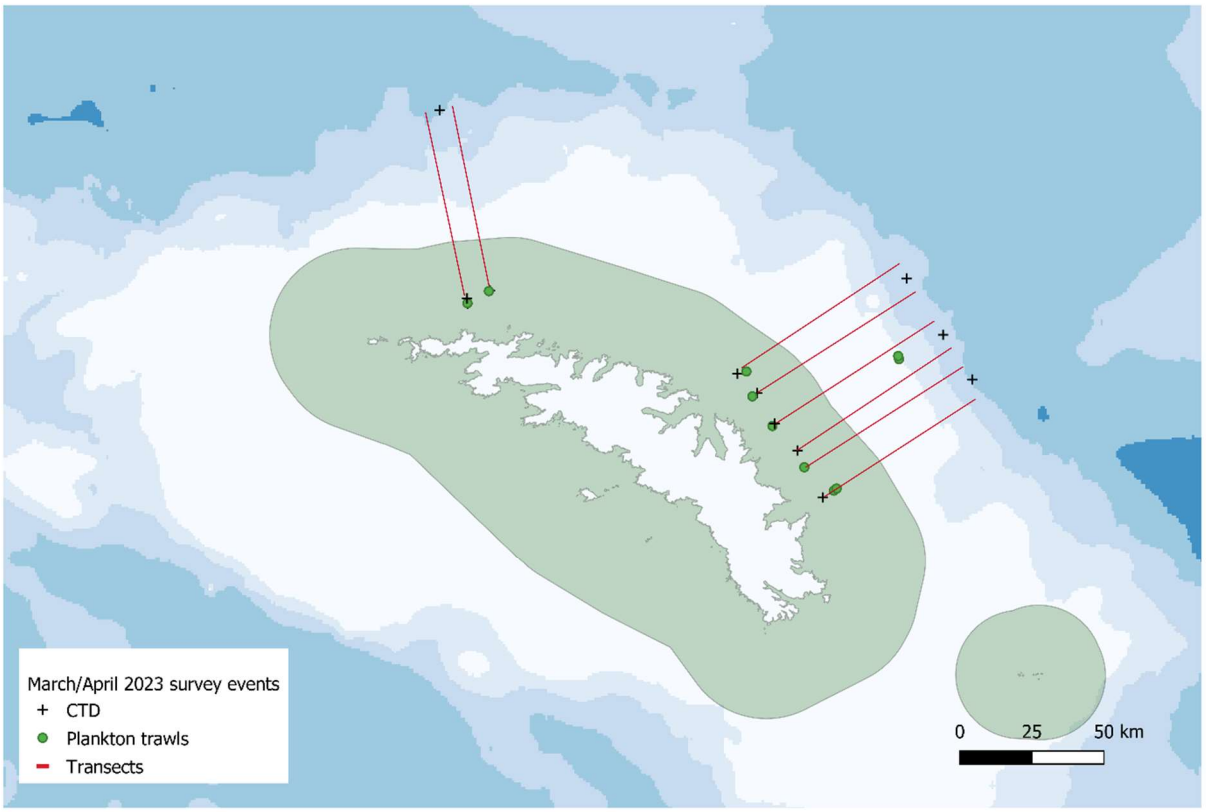

Figure 1. Map of the survey area during the March/April 2023 krill acoustic survey. Shaded green area shows the No Take Zone.

2.1. Fieldwork narrative

Sunday 26th March — Pharos SG departed Cumberland Bay with Phil Hollyman (PH), Carrie Gunn (CG), James Sinclair (JS) and Codie Wardlow (CW) onboard. Other fieldwork was carried out on Prion Island in the morning and we were in position to begin at the Western Core Box (WCB) at dusk. The CTD was deployed to 90m (event 1) and a non-target trawl was undertaken (event 2) but no krill were observed in the catch. WCB1 and WCB2 acoustic transects were conducted overnight (events 3 & 4).

Overnight winds blowing from the NW force 6/7 and the sea state was recorded at 5.

Please note that all events occurred after daylight saving began in the UK, so all local times are GMT–2.

Monday 27th March — The CTD was deployed to 90m (event 5) at the start of WCB1 at 5:17am. The observers then took to the warmth of the bridge to begin the cetacean observations during the acoustic transect (event 6).

A number of seals were spotted but no whales.

Midway between WCB1 and WCB2 transects the CTD was deployed to 300m (event 7). WCB2 (event 8) proved similar findings to WCB1 with lots of seals and no whales.

With WCB2 transect completed by mid-afternoon, we repeated the CTD to 90m (event9) and net haul (event 10) at the inshore end of the transect. No krill were present in the sample or on the acoustics.

Strong winds of force 6 continued throughout the day from the W & SW, a sea state of 5 recorded all day. Visibility was patchy throughout the transects and heavy rain showers passed through frequently.

Tuesday 28th March — Pharos SG moored alongside at King Edward Point in the morning.

Saturday 1st April — As the Sir David Attenborough was alongside, Pharos SG deployed their RIB to come alongside and collect the team of Phil Hollyman (PH), Carrie Gunn (CG) and Nestor Santana (NS) by mid-morning. We sailed out to be in position to begin the Eastern Core Box (ECB) at dusk. The CTD was deployed to 250m (event 1) and a non-target trawl (event 2) was hauled. No krill were present in the sample. Overnight the acoustic transects of ECB1 and ECB2 were carried out (events 3 & 4).

Wind strength lessened from force 5 to force 3 overnight, the sea stated dropped from 4 to 3.

Sunday 2nd April — The morning began with the transect of ECB1 (event 5). Large numbers of whales recorded with some humpback pectoral fin slapping observed. Fur seals seen in good numbers with one adult blonde morph recorded.

Winds were light at force 2 & 3 and variable in direction.

Equidistant between ECB1 and ECB2 the CTD was deployed to 300m (event 6). ECB2 transect (event 7) was conducted.

ECB2 kicked off with a whale and albatross feeding frenzy. An observation of note was a single elephant seal.

Winds settled into a NW direction, force 2 with the sea state calming from 3 to 2 by the end of the ECB2 transect.

At the end of ECB2 the CTD was deployed to 200m (event 8) and a non-target trawl hauled (event 9), again with no krill present in the catch.

The ship continued eastward and ran the ECB3 (event 10) and ECB4 (event 11) overnight.

Monday 3rd April — A non-target trawl was hauled at nautical twilight (event 12) and the CTD was deployed to 120m (event 13) before sunrise. Whale observations were fruitful during ECB3 with a large feeding frenzy of whales and seals (event 14) so after deploying the CTD to 300m

between the two transects (event 15) we repositioned back to the krill swarm for a targeted trawl (event 16). As no krill were observed in the first target trawl, another was attempted (event 17) but with the same outcome! The highlight of the transect for all came in the form of a single blue whale sighting (Figure 2).

We continued back to the start of ECB4 (event 18) and carried out the transect. Many whales were seen, mostly fins or blows just out of identification range. The CTD was deployed to 150m (event 19) at the end of ECB4.

Weather for the day transects was a NE & E force 2, sea state of 2 and excellent visibility. Wonderful conditions for the observations.

With enough hours in the day left, we repositioned to the start of ECB5 and deployed the CTD to 100m (event 20). With promising data from the EK80 we carried out a targeted trawl (event 21) but still did not recover any krill in the sample.

Overnight the ship carried out transects ECB5 and ECB6 (event 22 & 23).

Figure 2. Record identification photograph of the single blue whale

Tuesday 4th April

Similar to yesterday, the EK80 findings at the beginning of ECB5 looked promising so we carried out a targeted trawl (event 24) and this time managed to collect 11 Antarctic krill in the nets! Excited to finally find some catchable krill, we deployed the net again for a second targeted trawl (event 25) but failed to catch any more individuals.

We continued the day with transect ECB5 (event 26). Fewer whales than on previous transects; mostly fins, humpbacks and unidentified baleen but a delightful sighting of a pod of 9 dolphins. The CTD was sent down to 300m at the offshore end between the two transects (event 27). We carried out our final observations during ECB6 (event 28). Five whales were seen. Completing the fieldwork with a final CTD deployment at the inshore end of ECB6 (event 29) down to 100m.

Weather for the transects remained fair, with force 2 – 3 winds from variable directions and a sea state of 2. Visibility was excellent for the second day in a row.

The Pharos SG continued on her patrol and anchored for the evening by Gold Harbour

Wednesday 5th April — The Pharos SG returned to King Edward Point and the team were taken ashore by BAS jetboat transfer, as the SDA had returned to KEP and was alongside for the day.

2.2. Fieldwork personnel

Phil Hollyman	BAS, Marine Ecologist	phyman@bas.ac.uk
Carrie Gunn	BAS, Marine Biologist - KEP	kpscience@bas.ac.uk
James Sinclair	GSGSSI, Government Officer - KEP	go@gov.gs
Codie Wardlow	BAS, Electrician - KEP	kpelec@bas.ac.uk
Nestor Santana	GSGSSI, Government Officer - KEP	go@gov.gs

3. Acoustic surveys

3.1. Introduction

The *MV Pharos SG* was fitted with a Simrad EK80 split-beam echosounder, with 38 and 120 kHz transducers in March 2022 with the aim of collecting acoustic data to accompany all predator observations and net tows during the Winter Krill project surveys. The transducers are mounted within a blister on the ship's hull enabling data collection through the water column while underway at speeds up to 10 knots. While Simrad EK80 WBTs are able to operate in both continuous wave (CW) and/or frequency modulated (FM; wide frequency band chirp) transmission modes, the EK80 was operated in CW mode only, as CW meets project aims and generates smaller data files.

The EK80 was run continuously on transits between the Falkland Islands and South Georgia, as well as during dedicated Western Core Box (WCB) and Eastern Core Box (ECB) survey transects (see Figure 1). During March 2023, two WCB transects were run day and night. During April 2023, six ECB transects were run day and night (see Section 10: Appendix for details).

3.2. EK80 operation and performance

During EK80 operation all other ships echosounders were turned off to reduce interference. The EK80 was operated using Simrad EK80 v. 21.15.1 software from the bridge of the *MV Pharos SG*. The .raw data files were written directly to an external hard drive and backed up at the end of the survey. Raw data were collected to a range of 1200 m, with a ping interval of 2 seconds, see Table 2 for details of additional settings.

Table 1. EK80 settings used throughout acoustic surveys.

Variable	38 kHz	120 kHz
Mode	Active	Active
Transmit pulse duration (ms)	1.024	1.024
Transmit power (W)	2000	250
Pulse type	CW	CW
Range (m)	1200	1200
Ping interval (ms)	2000	2000

Sea state, swell, wind, and vessel speed all affected acoustic data quality. While the echosounder performed best in flat calm conditions, wind on the beam was better than head on, with vessel pitching resulting in considerable amounts of transient noise and poor data quality. Wind speed of ≤20 kts and swell ≤2 m resulted

in reasonable quality data. Higher vessels speeds of 9-9.5 kts often produced less noisy data as the vessel was more stable. However, all of these factors interact. In general, good conditions for conducting seabird and marine mammal observations also result in good quality acoustic data.

3.3. File locations

All raw data collected were saved in a folder labelled with the start of the survey transect dates '2023------. All files were prefixed with 'Pharos_SG'.

3.4. EK80 calibration

The EK80 calibration was carried out on 12th February 2023 in Stromness Bay. It was decided that no further calibration was required as this survey was close in time to the previous calibration and conditions were similar.

4. CTD Operations

4.1. Introduction

Whenever conditions allowed, a conductivity temperature depth profiler (CTD) was deployed before the start of daytime transects (on-shelf), *en route* between daytime transects (off-shelf) and at the end of daytime transects (on-shelf) (see Figure 1). The CTD was typically deployed to a depth of 200 m or a few metres above the seabed at shallower stations. These CTD profiles will be used to derive estimates of temperature, salinity and hence sound speed and absorption coefficient to apply calibration files to acoustic data during processing for the survey.

4.2. Methods

A Ruskin RBR*concerto* fast 8 logger CTD, depth rated to 750 m, was used to measure temperature and salinity. The CTD was mounted in a steel frame formed of 10 mm rods (see May 2022 Survey Report) and deployed from a deck-mounted winch using 6 mm cable (Figure 3). While it is advised not to place metal within a 15 cm radius of the CTD sensor, the manufacturers have provided a correction factor to account for use of the CTD in the frame.

Table 2. CTD Data collection parameters.

Instrument	RBR Concerto Fast 8
Serial	209870
Mode	Continuous
Frequency	8Hz
Firmware	1.138

Figure 3. The CTD being deployed at the inshore end of ECB4.

Once the CTD was set up for deployment at the beginning of the survey, the unit was kept sealed throughout the survey to reduce potential for any leaks. Data were downloaded from the instrument after each deployment via WiFi directly to a laptop. Only when the CTD unit was ashore at KEP was the unit end cap opened.

Data were downloaded and processed from the instrument using Ruskin Software and exported as .xlsx files. CTD data were assigned survey (Krill-Mar-23) and event numbers and redundant (above water) data deleted. Data were collated in an Access Database (*South Georgia CTD*).

We carried out four CTD deployments during the WCB and nine deployments during ECB surveys. The details of all CTD deployments can be found in Section 10. Appendix.

5. Plankton trawls

To monitor the zooplankton community and gain an estimate of krill length-frequency (Figure 4) required to calculate krill biomass, a series of plankton trawls were conducted before sunrise and after sunset. The trawls were conducted at the near shore end of transects. A rectangular mid-water trawl with a 1 m^2 mouth opening and a cod end mesh size of 610 µm was used to sample zooplankton and target surface krill swarms. The net was deployed and recovered open via a winch from the poop deck of the MV *Pharos SG*. Once 110 m of wire was paid out, the net was towed for 30 minutes for non-target nets and for ~15 mins for target nets. With a vessel speed of 2-2.5 kts, the net is assumed to fish at an approximate depth of 20-25 m. This is based on the depth of similar net deployments, when the net was fitted with temperature depth loggers. The plankton trawl is regularly deployed from the MV *Pharos SG*, as part of long-term plankton monitoring at KEP.

During the WCB transects, one non-target and one target trawl were conducted. Neither caught any krill. During the ECB transects, three non-target and five target trawls were conducted but only one target trawl

(Event 24) caught krill. This net produced 11 specimens, all of which were measured fresh on laminated graph paper from the front of the eye to the tip of the telson (Figure 4) in accordance with CCAMLR guidelines (CCAMLR, 2011). All specimens were individually frozen in trays at -20℃ in the on-board science freezer but transferred to plastic bags and placed in the KEP -80℃ freezer at the end of each survey period. The rest of the catch was preserved and will be identified and quantified at KEP. Data from plankton trawls will be collated in an MS Access database.

Figure 4. All eleven Antarctic krill measured prior to being frozen.

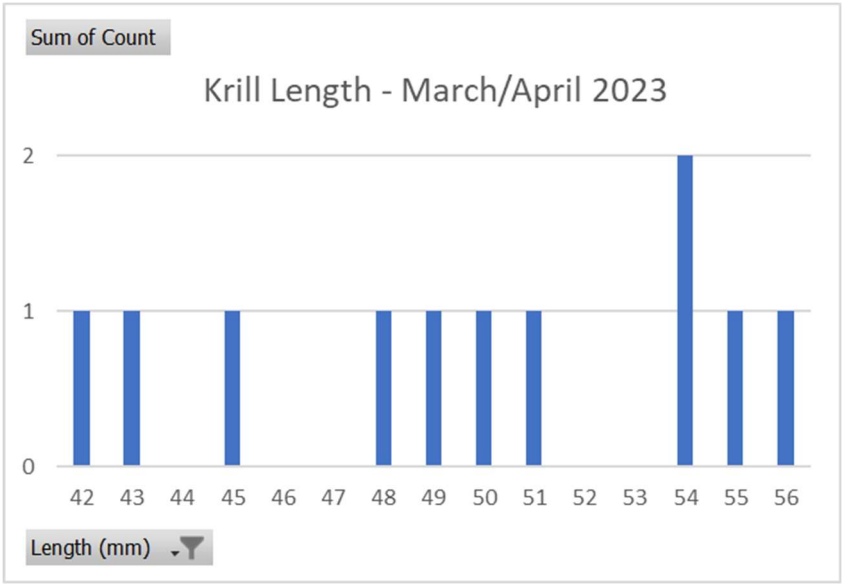

Figure 4. Length frequency of Antarctic Krill (*Euphausia superba*) caught in the March/April survey, n = 11

6. Seabird and marine mammal observations

Marine mammal observations were collected by the team along transects occupied during the March/April survey. However, due to this survey being moved forward at short notice due to the MV *Pharos SG* having to go into dry dock at the planned survey time, there was no dedicated seabird observer on board.

6.1. Methods

During daylight transects the team maintained a two-person bridge watch for cetaceans and fur seals, with one watching to port and another to starboard. Each observer maintained a watch in an arc from ahead (and 10° to the other side) to 90° (beam) on their side. A simplified version of the Logger programme was used to record the bearing and distance when a marine mammal was first sighted.

6.2. Results

Table 3. Marine mammals seen during transects ECB1 – 6.

Species	ECB1 & 2	ECB3 & 4	ECB5 & 6	Total
Fur seal	84	45	10	139
Unid large baleen	23	29	10	62
Fin whale	7	47	7	61
Like fin whale	1	3	1	5
Like humpback	1	0	0	1
Humpback	2	6	7	15
Blue whale	0	1	0	1
Like right whale	0	0	1	1
Unid dolphin	0	0	1	1
Southern right	0	0	1	1
Elephant seal	1	0	0	1

7. Discussion

This survey was the first of the second year of winter surveys being carried out under the Darwin Plus funded Winter Krill Project (DPLUS149). This survey was carried out in March/April instead of at the planned time of May (as for the first year) as a result of the vessel, MV *Pharos SG*, having to go into dry dock during May. This means that the timing of the survey does not correspond exactly to the start of the krill fishing season, although it was carried out as late as practicable to mitigate for this. The ECB transects were carried out from 1-4 April which is 6 weeks earlier than the corresponding survey the previous year. The remaining surveys for this season are scheduled to remain as planned in July and September. Beyond this, surveys will be conducted every other month in the ECB as part of the King Edward Point Science Programme.

No swarms of krill were detected on the EK80 during the WCB surveys. During the ECB surveys, numerous krill swarms were detected on the EK80 but after five target trawls only 11 Antarctic krill were brought up in the net. As a result, to obtain sufficient length-frequency data for acoustic data processing, this will be supplemented with data on krill length obtained from predator diets through the CCAMLR Ecosystem Monitoring Programme (CEMP).

The acoustic data will be analysed in detail in Cambridge, but the data collected should allow (i) estimates of krill biomass in the ECB to be calculated; (ii) comparison of day and night vertical distribution of krill; (iii)

determination of spatial overlap between krill and krill predators; and (iv) investigations of the interactions between foraging whales and krill swarms. The data will also provide a useful contrast with data collected during winter.

8. Acknowledgements

We are hugely grateful to the crew of the *MV Pharos SG*. From Captain and officers through to deck crew, catering staff and engineers, all were enthusiastic, interested and keen to support the science being undertaken. Their support has been integral to the success of both surveys.

9. References

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Demer DA, Berger L, Bernasconi M, Bethke E, Boswell K, Chu DD, Reka, Dunford A, Fässler S, Gauthier S, Hufnagle LT, et al. 2015 *Calibration of acoustic instruments*. In ICES Coop Res Rep (ed. Anderson E.D.), p. 133. Copenhagen, Denmark, International Council for the Exploration of the Sea.

10. Appendix I: Event logs WCB & ECB

Each individual event was assigned an event number. Gear is assigned as Conductivity Temperature Depth 'CTD' profiler, acoustic survey 'Transect', or 1m^2 mouth opening plankton net 'RMT1'. Note that marine mammal observations occurred concurrently with daytime acoustic transects only. Times presented are local (UTC -3). Lat and Lon refer to latitude and longitude respectively. Further details of plankton trawls can be found in the KEP plankton trawl database.

Survey	Event no.	Gear	Location	Type	Start date	Start time (local)	Start Latitude	Start Longitude	End date	End time (local)	End Latitude	End Longitude
Krill-Mar-23-WCB	1	CTD	WCB1 Start	Night Inshore	26/03/2023	18:21	-53.8957	-37.7123	26/03/2023	17:28	-53.8960	-37.7088
Krill-Mar-23-WCB	2	RMT1	WBC1 Start	Non-target	26/03/2023	18:40	-53.8942	-37.7125	26/03/2023	18:10	-53.8740	-37.7263
Krill-Mar-23-WCB	3	TRANSECT	WBC1	Night	26/03/2023	19:18	-53.8700	-37.7283	26/03/2023	22:35	-53.2983	-37.9150
Krill-Mar-23-WCB	4	TRANSECT	WCB2	Night	26/03/2023	00:10	-53.2833	-37.7817	27/03/2023	03:08	-53.8550	-37.5917
Krill-Mar-23-WCB	5	CTD	WCB1 Start	Day Inshore	27/03/2023	06:17	-53.8793	-37.7137	27/03/2023	05:24	-53.8793	-37.7115
Krill-Mar-23-WCB	6	TRANSECT	WCB1 Start	Day	27/03/2023	06:38	-53.8692	-37.7287	27/03/2023	09:23	-53.2995	-37.9155
Krill-Mar-23-WCB	7	CTD	WCB1 - WCB2	Day Offshore	27/03/2023	10:44	-53.2912	-37.8472	27/03/2023	10:06	-53.2903	-37.8410
Krill-Mar-23-WCB	8	TRANSECT	WCB2	Day	27/03/2023	11:26	-53.2835	-37.7827	27/03/2023	14:06	-53.8533	-37.5925
Krill-Mar-23-WCB	9	CTD	WCB2 END	Day Inshore	27/03/2023	15:12	-53.8562	-37.5928	27/03/2023	14:19	-53.8550	-37.5910
Krill-Mar-23-WCB	10	RMT1	WCB2 END	Target	27/03/2023	15:36	-53.8572	-37.5987	27/03/2023	15:06	-53.8648	-37.6258

Survey	Event no.	Gear	Location	Type	Start date	Start time (local)	Start Latitude	Start Longitude	End date	End time (local)	End Latitude	End Longitude
Krill-Mar-23-ECB	1	CTD	ECB1 Start	Night Inshore	01/04/2023	17:05	-54.1130	-36.2833	01/04/2023	16:28	-54.1137	-36.2782
Krill-Mar-23-ECB	2	RMT1	ECB1 Start	Non-target	01/04/2023	18:34	-54.1065	-36.2357	01/04/2023	18:04	-54.1000	-36.2660
Krill-Mar-23-ECB	3	TRANSECT	ECB1	Night	01/04/2023	19:16	-54.0950	-36.2765	01/04/2023	22:02	-53.7637	-35.4385
Krill-Mar-23-ECB	4	TRANSECT	ECB2	Night	01/04/2023	23:53	-53.8500	-35.3483	02/04/2023	03:01	-54.1725	-36.1775

Krill-Mar-23-ECB	5	TRANSECT	ECB1	Day	02/04/2023	06:43	-54.0945	-36.2590	02/04/2023	09:21	-53.7650	-35.4400
Krill-Mar-23-ECB	6	CTD	ECB1/2	Day Offshore	02/04/2023	10:51	-53.8090	-35.3980	02/04/2023	10:12	-53.8065	-35.3955
Krill-Mar-23-ECB	7	TRANSECT	ECB2	Day	02/04/2023	11:36	-53.8483	-35.3515	02/04/2023	14:06	-54.1717	-36.1750
Krill-Mar-23-ECB	8	CTD	ECB2 End	Day Inshore	02/04/2023	15:22	-54.1740	-36.1773	02/04/2023	14:39	-54.1755	-36.1822
Krill-Mar-23-ECB	9	RMT1	ECB2 End	Non-target	02/04/2023	18:46	-54.1838	-36.2028	02/04/2023	18:16	-54.1717	-36.1790
Krill-Mar-23-ECB	10	TRANSECT	ECB3	Night	02/04/2023	20:14	-54.2640	-36.0687	02/04/2023	22:42	-53.9407	-36.2480
Krill-Mar-23-ECB	11	TRANSECT	ECB4	Night	03/04/2023	00:20	-54.0217	-35.1517	03/04/2023	03:08	-54.3510	-35.9610
Krill-Mar-23-ECB	12	RMT1	ECB3 Start	Non-target	03/04/2023	05:24	-54.2753	-36.0940	03/04/2023	04:54	-54.2678	-36.0663
Krill-Mar-23-ECB	13	CTD	ECB3 Start	Day Inshore	03/04/2023	06:17	-54.2675	-36.0823	03/04/2023	05:29	-54.2680	-36.0830
Krill-Mar-23-ECB	14	TRANSECT	ECB3	Day	03/04/2023	06:44	-54.2652	-36.0698	03/04/2023	09:41	-53.9418	-35.2503
Krill-Mar-23-ECB	15	CTD	ECB3/4	Day Offshore	03/04/2023	10:40	-53.9810	-35.1978	03/04/2023	10:02	-53.9808	-35.1985
Krill-Mar-23-ECB	16	RMT1	ECB3/4	Target	03/04/2023	12:19	-54.0602	-35.4275	03/04/2023	11:36	-54.0572	-35.4367
Krill-Mar-23-ECB	17	RMT1	ECB3/4	Target	03/04/2023	12:53	-54.0505	-35.4325	03/04/2023	12:08	-54.0603	-35.4375
Krill-Mar-23-ECB	18	TRANSECT	ECB4	Day	03/04/2023	14:32	-54.0217	-35.1533	03/04/2023	17:05	-54.3510	-35.9607
Krill-Mar-23-ECB	19	CTD	ECB4 End	Night Inshore	03/04/2023	18:24	-54.3503	-35.9575	03/04/2023	17:35	-54.3510	-35.9572
Krill-Mar-23-ECB	20	CTD	ECB5 Start	Night Inshore	03/04/2023	19:05	-54.4022	-35.9203	03/04/2023	18:12	-54.4025	-35.9205
Krill-Mar-23-ECB	21	RMT1	ECB5 Start	Target	03/04/2023	19:28	-54.4025	-35.9208	03/04/2023	18:43	-54.4013	-35.9228
Krill-Mar-23-ECB	22	TRANSECT	ECB5	Night	03/04/2023	20:00	-54.4020	-35.9108	03/04/2023	22:46	-54.0760	-35.0918
Krill-Mar-23-ECB	23	TRANSECT	ECB6	Night	03/04/2023	00:26	-54.1583	-34.9850	04/04/2023	03:12	-54.4940	-35.8110
Krill-Mar-23-ECB	24	RMT1	ECB5 Start	Target	04/04/2023	05:41	-54.4738	-35.7607	04/04/2023	04:56	-54.4692	-35.7482
Krill-Mar-23-ECB	25	RMT1	ECB5 Start	Target	04/04/2023	06:12	-54.4672	-35.7462	04/04/2023	05:28	-54.4723	-35.7553
Krill-Mar-23-ECB	26	TRANSECT	ECB5	Day	04/04/2023	07:20	-54.4010	-35.9102	04/04/2023	09:56	-54.0735	-35.0860
Krill-Mar-23-ECB	27	CTD	ECB5/6	Day Offshore	04/04/2023	11:23	-54.1177	-35.0377	04/04/2023	10:46	-54.1167	-35.0447
Krill-Mar-23-ECB	28	TRANSECT	ECB6	Day	04/04/2023	12:13	-54.1550	-35.0050	04/04/2023	14:57	-54.4940	-35.8115
Krill-Mar-23-ECB	29	CTD	EBC6 End	Night	04/04/2023	16:08	-54.4958	-35.8180	04/04/2023	15:17	-54.4967	-35.8175