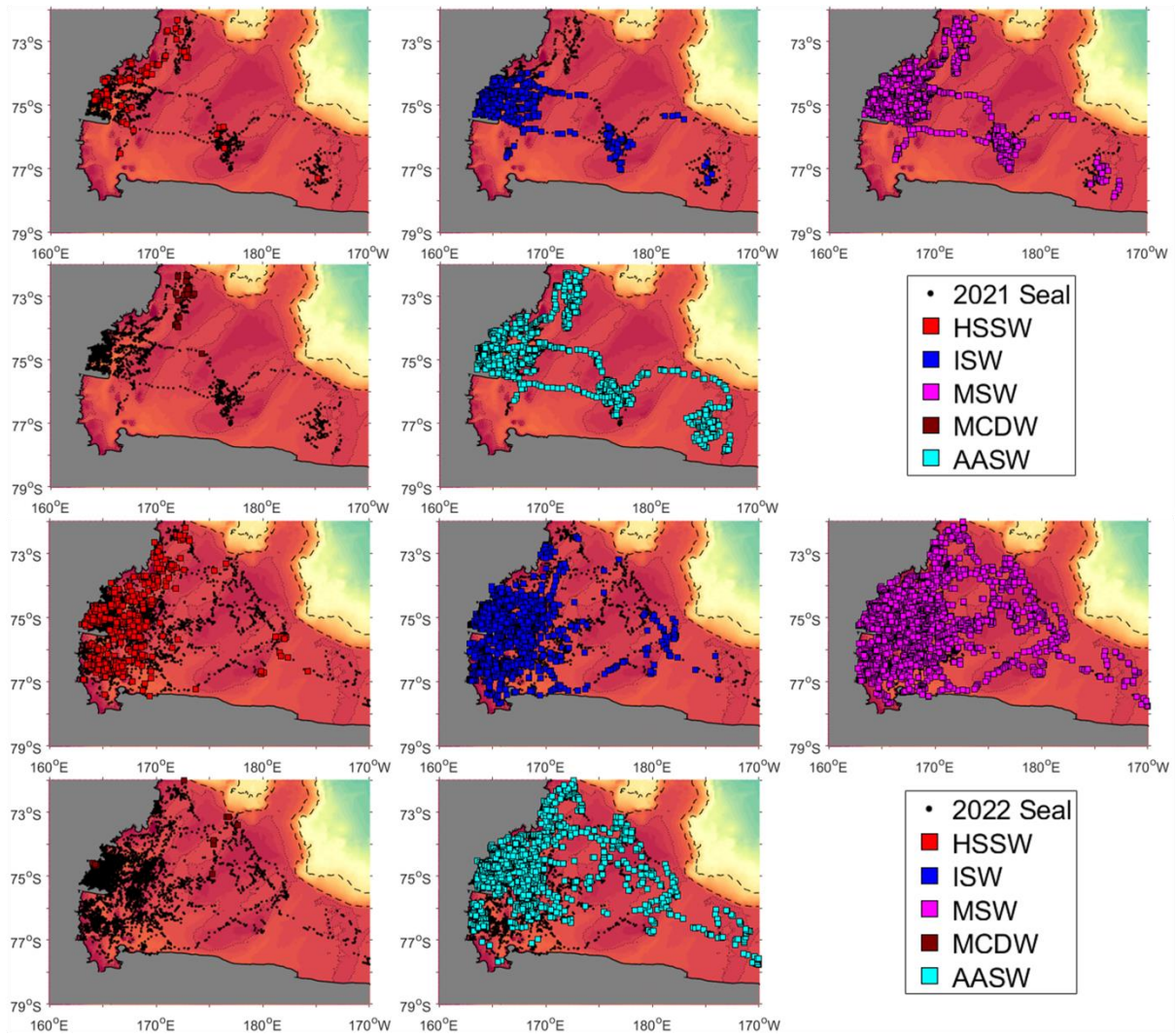
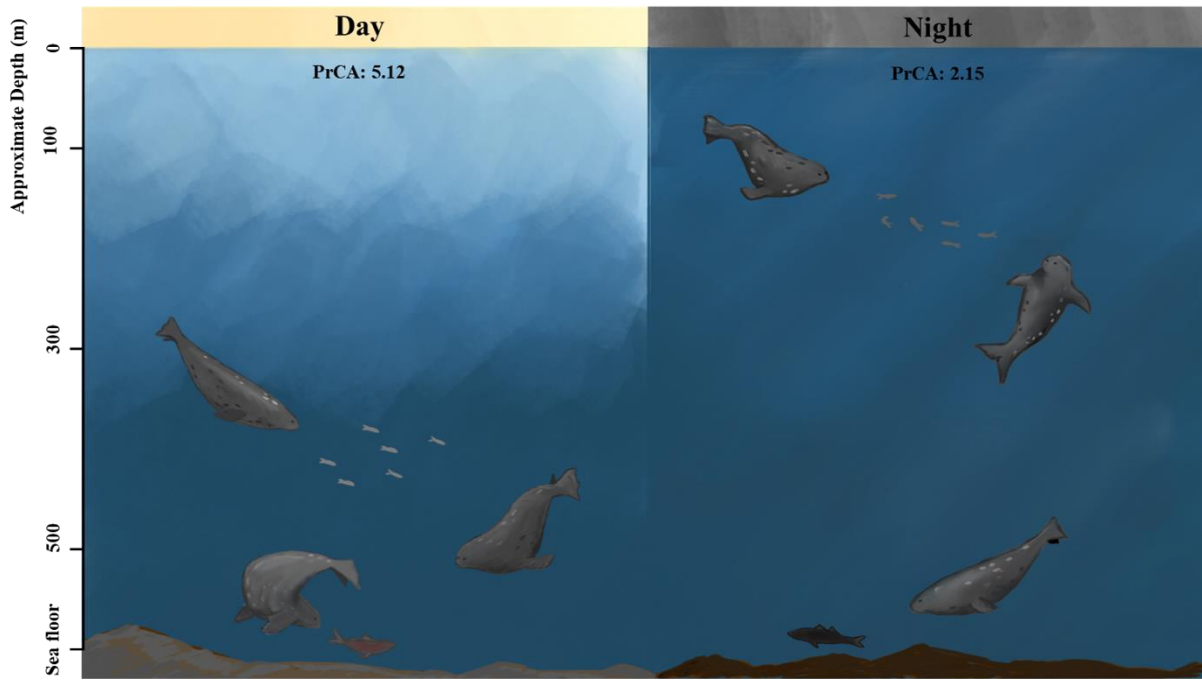
Supplementary Materials

Supplementary Figure 1 The oceanographic information obtained from the Seal-attached CTDs is spatially represented for the years 2021 and 2022. The information for 2021 is displayed above, while the data for 2022 is shown below. Each color represents a different water mass.

Supplementary Figure 2. Schematic summary of diel changes in diving behaviors. During the day, pelagic preys move to deeper waters, consequently leading to an increase in the diving depth of Weddell seals, with a higher proportion of benthic dives observed.

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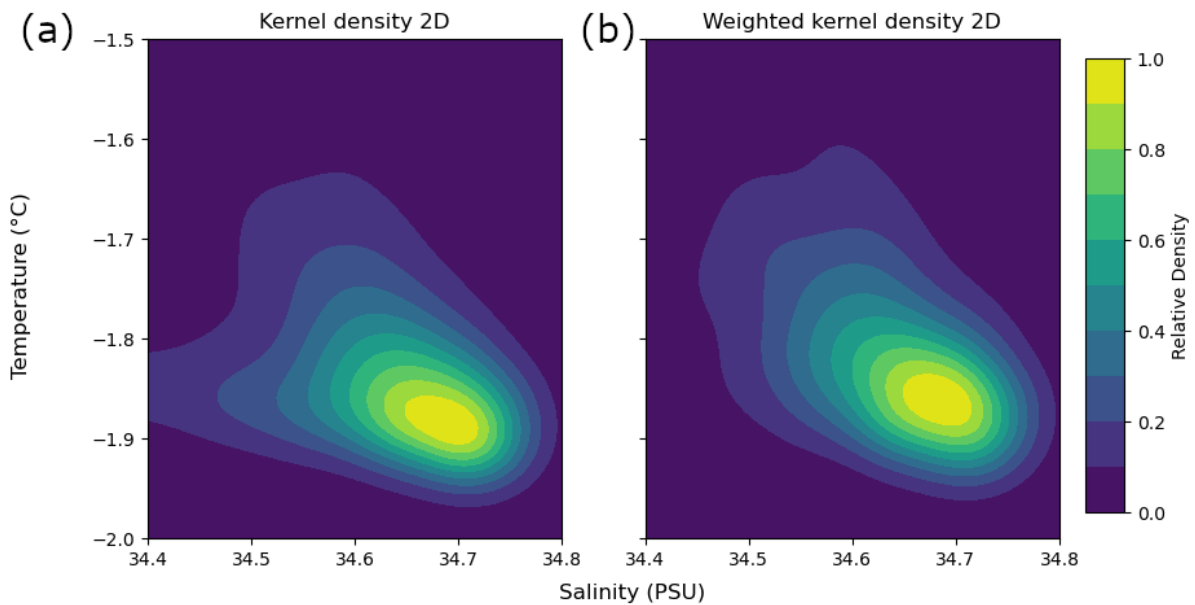
Supplementary Figure 3 Kernel Density Plots of Dive Behavior in TS Diagram. (a) The kernel density plot of water temperature and salinity for each dive, illustrating the distribution of dive in the TS diagram. (b) The weighted kernel density plot, where the density is weighted by the number of PrCA (Prey Capture Attempts) events for each dive. Both plots are based on data collected from seal-attached CTD sensors, which provide temperature, salinity, and PrCA data for each dive. The density was highest around a salinity of 34.7 PSU and a temperature of -1.85 °C for both sides.

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Supplementary Table 1. Metadata for captured Weddell seals

Identification	Age	Sex	Body Length	Capture Date	Logger Type	Tagged Part
329	Adult	F	2.60	2021-02-16	CTD-SRDL	back
330	Adult	M		2021-02-16	CTD-SRDL	back
333	Adult	F	2.00	2021-02-18	CTD-SRDL	head
334	Adult	M	2.20	2021-02-19	CTD-SRDL	head
335	Adult	M	2.00	2021-02-19	CTD-SRDL	head
344	Adult	M	2.50	2021-02-19	CTD-SRDL	head
337	Adult	F	2.50	2021-02-20	CTD-SRDL	head
343	Adult	M	2.40	2021-02-20	CTD-SRDL	head
345	Adult	F	2.10	2021-02-21	CTD-SRDL	head
346	Adult	F	2.30	2021-02-22	CTD-SRDL	head
347	Adult	M	2.30	2021-02-23	CTD-SRDL	head
348	Adult	M	1.90	2021-02-23	CTD-SRDL	head
349	Adult	M	2.30	2021-02-24	CTD-SRDL	head
350	Adult	F	2.20	2021-02-24	CTD-SRDL	head
351	Adult	F	2.50	2021-02-25	CTD-SRDL	head
352	Adult	M	2.40	2021-02-25	CTD-SRDL	head
353	Adult	F	2.40	2021-02-26	CTD-SRDL	head
354	Adult	F	2.50	2021-02-27	CTD-SRDL	head
369	Adult	F	2.20	2021-02-27	CTD-SRDL	head
G5	Adult	M	2.60	2021-03-04	CTD-SRDL with GPS	back
G2	Adult	F	2.50	2021-03-04	CTD-SRDL with GPS	back
G3	Adult	F	2.40	2021-03-04	CTD-SRDL with GPS	back
G4	Adult	F	2.40	2021-03-07	CTD-SRDL with GPS	back
G1	Adult	M	2.40	2021-03-07	CTD-SRDL with GPS	back
553	Adult	M	1.80	2022-02-15	CTD-SRDL	head
551	Adult	F	1.85	2022-02-16	CTD-SRDL	head
552	Adult	M	1.85	2022-02-17	CTD-SRDL	head
G605	Adult	M	1.90	2022-02-18	CTD-SRDL with GPS	back
547	Adult	M	1.90	2022-02-22	CTD-SRDL	head
387	Adult	M	2.20	2022-02-23	CTD-SRDL	head
549	Adult	F	2.00	2022-02-23	CTD-SRDL	head
581	Adult	M	2.30	2022-02-24	CTD-SRDL	head
G606	Adult	M	1.70	2022-02-24	CTD-SRDL with GPS	back

580	Adult	M	2.05	2022-02-28	CTD-SRDL	head
582	Adult	F	1.80	2022-02-28	CTD-SRDL	head
430	Adult	M	2.20	2022-03-01	CTD-SRDL	head
426	Adult	M	2.15	2022-03-04	CTD-SRDL	head
427	Adult	F	2.20	2022-03-04	CTD-SRDL	head
583	Adult	M	2.00	2022-03-04	CTD-SRDL	head
548	Adult	F	2.00	2022-03-05	CTD-SRDL	head
584	Adult	F	2.15	2022-03-06	CTD-SRDL	head
386	Adult	M	2.15	2022-03-06	CTD-SRDL	head

25 **Supplementary Table 2. Comparison of models predicting prey capture attempts using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) values**

AIC	BIC	Explanatory Variable (Fixed effects)
106134.9	106240.5	WM_f+Benthic+D_Month_f
106138.1	106252.5	WM_f+Benthic+D_Month_f+C_Year
106138.2	106252.5	WM_f+Benthic+Sex+D_Month_f
106141.8	106264.9	WM_f+Benthic+Sex+D_Month_f+C_Year
106301.3	106371.7	WM_f+Benthic
106305.1	106384.2	WM_f+Benthic+Sex
106305.1	106384.3	WM_f+Benthic+C_Year
106309.1	106397.1	WM_f+Benthic+Sex+C_Year
106481.9	106561.1	Benthic+D_Month_f
106483.3	106571.2	Benthic+D_Month_f+C_Year
106484.8	106572.7	Benthic+Sex+D_Month_f
106486.6	106583.4	Benthic+Sex+D_Month_f+C_Year
106583	106679.7	WM_f+D_Month_f
106585.6	106691.2	WM_f+Sex+D_Month_f
106586.1	106691.7	WM_f+D_Month_f+C_Year

106589.2	106703.5	WM_f+Sex+D_Month_f+C_Year
106598.9	106642.9	Benthic
106600.7	106653.4	Benthic+C_Year
106602.1	106654.8	Benthic+Sex
106604.3	106665.9	Benthic+Sex+C_Year
106768.8	106830.4	WM_f
106772.2	106842.6	WM_f+Sex
106772.8	106843.2	WM_f+C_Year
106776.4	106855.6	WM_f+Sex+C_Year
107074.9	107145.2	D_Month_f
107076.1	107155.2	D_Month_f+C_Year
107076.9	107156.1	Sex+D_Month_f
107078.7	107166.6	Sex+D_Month_f+C_Year
107182.8	107226.8	C_Year
107183.5	107227.5	Sex
107185.8	107238.6	Sex+C_Year

Supplementary Table 3. Comparison of models predicting diving depth using AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) values

AIC	BIC	Explanatory Variable (Fixed effects)
584234.3	584322.3	Sex+D_Month_f+C_Year
584239.5	584318.7	Sex+D_Month_f
584241	584320.2	D_Month_f+C_Year
584246.3	584316.7	D_Month_f
584333.3	584386.1	Sex+C_Year
584338.6	584382.6	Sex
584340.2	584384.2	C_Year