

Stable Isotope Data ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) for Invertebrates and Marine Sediments in the Western Canadian Arctic

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2026

**Canadian Data Report of
Fisheries and Aquatic Sciences 1491**



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Cat. Fs97-13/1491E-PDF

ISBN 978-1-100-00360-3

ISSN 1488-5395

Correct citation for this publication:

Dares, L.E., Allison, C., Ehrman, A., Majewski, A., Woodard, K., Niemi, A. 2026. Stable Isotope Data ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) for Invertebrates and Marine Sediments in the Western Canadian Arctic. Can. Data Rep. Fish. Aquat. Sci. 1491: viii + 63 p.

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ABSTRACT

Dares, L.E., Allison, C., Ehrman, A., Majewski, A., Woodard, K., Niemi, A. 2026. Stable Isotope Data ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) for Invertebrates and Marine Sediments in the Western Canadian Arctic. Can. Data Rep. Fish. Aquat. Sci. 1491: viii + 63 p.

This report provides stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) for marine sediments and 10 species of marine invertebrates collected in the Western Canadian Arctic by the Beaufort Sea Marine Fishes Project (BSMFP) and Canadian Beaufort Sea Marine Ecosystem Assessment (CBS-MEA) programs from 2012-2024. These data are summarized by species, year, station, and region to provide information on individual, species, spatial, and temporal variability of primary and secondary consumers in benthic and pelagic habitats in the Canadian Beaufort Sea and Amundsen Gulf system. These data provide critical baselines for the interpretation of trophic shifts and food web linkages because they reflect differences in species-level feeding ecologies and functional traits as well as variable resource input to the marine system in the western Canadian Arctic.

RÉSUMÉ

Dares, L.E., Allison, C., Ehrman, A., Majewski, A., Woodard, K., Niemi, A. 2026. Stable Isotope Data ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) for Invertebrates and Marine Sediments in the Western Canadian Arctic. Can. Data Rep. Fish. Aquat. Sci. 1491: viii + 63 p.

Ce rapport fournit des données sur les isotopes stables ($\delta^{13}\text{C}$ et $\delta^{15}\text{N}$) pour les sédiments marins et 10 espèces d'invertébrés marins prélevés dans l'ouest de l'Arctique canadien dans le cadre du Projet sur les poissons marins de la mer de Beaufort (BSMFP) et de l'Évaluation des écosystèmes marins de la mer de Beaufort au Canada (CBS-MEA) de 2012 à 2024. Ces données sont résumées par espèce, année, station et zone afin de fournir des renseignements sur la variabilité individuelle, spécifique, spatiale et temporelle des consommateurs primaires et secondaires dans les habitats benthiques et pélagiques de la mer de Beaufort canadienne et du réseau du golfe Amundsen. Ces données fournissent des bases de référence essentielles pour l'interprétation des changements trophiques et des liens avec le réseau trophique car elles reflètent les différences dans les écologies et les traits fonctionnels de l'alimentation au niveau des espèces, ainsi que l'apport variable de ressources dans le système marin de l'ouest de l'Arctique canadien.

Acknowledgements

The research of the BSMFP and CBS-MEA projects have been developed with the Inuvialuit Game Council and Fisheries Joint Management Committee. We appreciate the valuable input into study objectives, and the multiple efforts of councils and community members that have supported field work. We also thank the crew and management team of the F/V *Frosti* for their excellent support. We thank Alexis Burt, Judy Li, Mia Grabovac, Alyssa Goertz, Sarah Rauf, Lira Facuri, Jaypee Aguilar, and Camille Daeninck for their assistance in preparing invertebrate and sediment stable isotope samples at the Freshwater Institute (Winnipeg) for laboratory analysis, and Mark Ouellette for BSMFP and CBS-MEA cruise data QA/QC.

Funding for BSMFP and CBS-MEA was provided by the Beaufort Regional Environmental Assessment (Crown-Indigenous Relations and Northern Affairs Canada), Regional Strategic Environmental Assessment (Crown-Indigenous Relations and Northern Affairs Canada), Environmental Studies Research Fund (Natural Resources Canada), Program of Energy Research and Development (Natural Resources Canada), ArcticNet, and various internal Fisheries and Oceans Canada sources, notably the Marine Conservation Targets program.

1.0 Introduction

Stable isotopes are important tools in ecology, facilitating investigations of species habitat use, diet, and ecological niche. In marine ecosystems, carbon stable isotopes can be used to distinguish between pelagic and terrestrial or sympagic (i.e., ice-associated) carbon sources (Peterson and Fry 1987, Fischer 1991), and nitrogen stable isotope ratios can be used to determine trophic level (Post 2002). In rapidly changing ecosystems like the Canadian Arctic, long-term stable isotope records are invaluable in detecting shifts in habitat use, foraging ecology, and trophic dynamics in culturally and ecologically important species such as Arctic char, polar bears, beluga whales, and seals, as well as forage species like Arctic cod. However, reliable estimation of trophic level as well as spatial and temporal comparisons of consumer stable isotope ratios require the consideration of carbon and nitrogen stable isotope ratios in the environment across years and study sites. Knowledge of the spatial and temporal variability in stable isotope values at the base of the food web is important to discern whether differences in upper consumer nitrogen or carbon signals are due to shifts in prey or habitat use, or simply variability in these baseline values (Post 2002).

Stable isotope baselines in food web studies are best represented by primary consumers, which integrate carbon and nitrogen from their surrounding environment over longer timescales than primary producers, marine sediments, or particulate organic matter (Vander Zanden and Rasmussen 2001, Post 2002). When considering trophic levels or habitat use of secondary or tertiary consumers that forage on both pelagic and benthic prey, it is important to account for isotopic baselines in both habitats (Vander Zanden and Rasmussen 1999). Ideally, baseline values for prey across habitats and functional feeding traits (e.g., filter versus deposit feeders) would be considered. However, accessing such a range of baseline prey is challenging, especially for highly mobile predators that feed over a large geographical area. In addition, the isotopic signal of species of interest caught nearshore (e.g., Arctic char) may reflect some offshore prey that are not logistically accessible to coastal or community-based sampling programs. A comprehensive baseline stable isotope dataset is consequently an invaluable resource for interpreting consumer stable isotope data and improving ecological inferences.

In the western Canadian Arctic (WCA), Fisheries and Oceans Canada (DFO) has conducted a baseline survey of offshore marine biological communities since 2012, under the Beaufort Sea Marine Fishes Project (BSMFP; 2012-2014) and Canadian Beaufort Sea Marine Ecosystem Assessment (CBS-MEA; 2017-2026) programs. Repeated sampling at stations located across the Mackenzie Shelf and Amundsen Gulf system have produced a long-term record of pelagic and marine invertebrates that have been analyzed for carbon and nitrogen stable isotopes. These data facilitate research and monitoring of the Arctic marine food web in the region. In this report, we summarize stable isotope ratios for 10 species of pelagic and benthic invertebrates, as well as marine sediment, that represent important baseline components of the Arctic marine food web, including filter-, deposit-, and opportunistic feeders. We also include some frequently-sampled secondary consumer species (e.g., *Themisto* spp., carnivorous benthic shrimps) that are important prey for some fish species in the region. Their inclusion further improves spatial and temporal coverage of pelagic- and benthic-derived stable isotope baselines where primary consumers may not have been available for sampling.

2.0 Methods

2.1 Field Sampling

The study area sampled by the BSMFP and CBS-MEA programs is located in the southern Canadian Beaufort Sea and Amundsen Gulf region (Fig. 1). Sampling was conducted aboard the stern trawler F/V *Frosti* during the open water period from early August to early September of 2012-2014, 2017-2019, and 2021-2024.

Sampling and processing protocols for fish, zooplankton, epifauna, infauna, and sediments collected by the BSMFP and CBS-MEA programs are described in detail in Majewski et al. (2016) and basic biological data for fish caught during these surveys is available in other DFO Data Reports (i.e., Atchison et al. 2022, Woodard et al. 2024, 2025, Woodard et al. 2026). Briefly, epifaunal invertebrates were collected at each station using one or both of: 1) a modified Atlantic Western IIA benthic otter trawl, with successive mesh sizes of 127 and 114 mm, and 102 mm with a 12.7 mm liner in the intermediate and cod end; and 2) a 3 m High-Rise Benthic Beam Trawl with a 6.3 mm mesh cod end liner. Macrozooplankton were collected by oblique tows of a bongo net (0.25 m², and 500 µm mesh) through the upper 200 m of the water column, or a near-bottom to surface tow in waters less than 200 m deep. Marine sediments and infauna were collected using a 0.5 m² box core; sediments for stable isotope analysis were scraped from the top ~1 cm of the box core, and up to a maximum of ~20-30 cm of the remaining half of the box core was sieved through a 1 mm stainless steel mesh to collect infaunal invertebrates. Invertebrate species included in this report were identified onboard by trained technicians based on physical characteristics; specimens for which taxonomic uncertainty existed were not processed for stable isotope analysis. Biota and sediments were frozen immediately onboard at - 50°C. Scientific names were standardized to those currently accepted in the World Register of Marine Species (WoRMS Editorial Board 2026).

2.2 Stable Isotope Monitoring Species

Since 2012, the BSMFP and CBS-MEA programs have assessed stable isotopes for taxa across the offshore food web (e.g., Stasko et al. 2017). In this report, we focus on marine sediments and 10 species of invertebrates that have been included in a monitoring set, providing baselines for both pelagic and benthic food webs (Table 1).

Table 1 – Habitat use, feeding ecology, and sample processing information for marine invertebrates and sediment included in this report.

Habitat	Feeding Guild	Species	Tissue	Treatment
Pelagic	Primary consumer (herbivore)	<i>Calanus hyperboreus</i> (Adult females)	Bulk bodies	None
	Secondary consumer (carnivore)	<i>Themisto abyssorum</i> (<0.5-1.5 cm)	Bulk bodies	None
		<i>Themisto libellula</i> (<0.5-2.5 cm)	Bulk bodies	None
Benthic	Primary consumer (filter feeder)	<i>Heliometra glacialis</i>	Whole body	Acidified with 10% HCl and neutralized prior to $\delta^{13}\text{C}$ analysis
		<i>Similipecten greenlandicus</i>	Shells removed where possible; whole bodies including shells processed for small specimens	Samples with shells removed not treated; whole body samples acidified with 10% HCl and neutralized prior to $\delta^{13}\text{C}$ analysis
	Secondary consumer	<i>Eualus gaimardii belcheri</i>	Tail muscle	None
		<i>Lebbeus Polaris</i>	Tail muscle	None
		<i>Sabinea septemcarinata</i>	Tail muscle	None
	Detritivore/primary consumer (deposit feeder/ filter feeder)	<i>Ophiacantha bidentata</i>	Radial arm	Acidified with 10% HCl and neutralized prior to $\delta^{13}\text{C}$ analysis
		<i>Ophiopleura borealis</i>	Radial arm	Acidified with 10% HCl and neutralized prior to $\delta^{13}\text{C}$ analysis
N/A	N/A	Sediment	N/A	Acidified with 10% HCl and neutralized prior to $\delta^{13}\text{C}$ analysis

2.3 Stable Isotope Sample Processing and Laboratory Analysis

Specimens of the 10 invertebrate species included in this report were dissected for slow-turnover tissues. Where possible, muscle tissue was used, or the exoskeleton was removed and only internal viscera used for stable isotope analysis. Smaller individuals that could not be separated from their exoskeleton were analyzed whole, and zooplankton (*Calanus hyperboreus* and *Themisto* spp.) and sediment were analyzed as a single bulk sample for each species at each station.

Zooplankton, infauna, and epifauna samples were freeze- or oven-dried, and sediments were oven-dried at 50°C. Tissues were then ground to a fine homogenate using a mortar and pestle. Subsamples of sediment and invertebrates that contained excessive calcareous exo- or endoskeletons (see Table 1) were acidified with 10% HCl to remove inorganic carbon following the method described by Jacob et al. (2005). Untreated and acidified samples were analyzed for C and N isotopic composition using a Delta Plus (Thermo-Finnigan), Thermo Advantage V Plus (Thermo Scientific), or Delta V Advantage (Thermo Scientific) continuous flow isotope mass spectrometer at the Environmental Isotopes Laboratory (Waterloo, Canada), DFO Biotracers Laboratory (Winnipeg, Canada), or University of Windsor-Chemical Tracers Lab (Windsor, Canada) respectively, coupled with a 4010 Elemental Analyzer (Costech Instruments). Data comparability between labs had been previously verified (Rosenberg et al. 2015). Stable isotope ratios were expressed in standard delta (δ) notation in parts per thousand (‰) as the ratio of heavy to light isotope relative to the international standards Vienna Pee Dee Belemnite for C and atmospheric N₂ for N (Craig 1957, Mariotti 1983). Working laboratory standards for animal tissues included two standards of (NH₄)₂SO₄ for $\delta^{15}\text{N}$ and cellulose for $\delta^{13}\text{C}$ at the Environmental Isotopes Laboratory, and two standards of glutamic acid (USGS 40 and 41) and in-house fish tissue standard at the DFO Biotracers Laboratory and Chemical Tracers Lab. All working laboratory standards were cross calibrated to the international standard materials mentioned above. Analytical error for $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ did not exceed 0.3 and 0.2‰ per run, respectively, based on repeated measurements of laboratory standard material, comprising no less than 20% of each run. Repeatability based on duplicate measurements of sample material included in this report was 0.14‰ and 0.13‰ for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, respectively.

2.4 Data Analysis

2.4.1 Correction of $\delta^{15}\text{N}$ for Body Size and Sampling Depth

Sampling depth influences $\delta^{15}\text{N}$ values in benthic marine consumers (Stasko et al. 2018) due to preferential mineralization of ^{14}N by bacteria in the water column, which increases the $\delta^{15}\text{N}$ of sinking organic matter prior to deposit on the seafloor (Sigman and Casciotti 2001). Consumer $\delta^{15}\text{N}$ may also be influenced by age class or body size, as some taxa undergo ontogenetic dietary changes (e.g., Noyon et al. 2012), or larger individuals may consume larger prey with higher $\delta^{15}\text{N}$ (e.g., Al-Maslamani et al. 2007, Romanuk et al. 2011). Relationships between body size and $\delta^{15}\text{N}$ vary across invertebrate taxa (Jennings et al. 2008), so we assessed the effect of individual wet mass and station depth on $\delta^{15}\text{N}$ of benthic invertebrates and sediments using linear mixed-effects models implemented in the lme4 package in R (Bates et al. 2015). Models for each benthic invertebrate species and marine sediments containing station depth (m) and/or body mass (g) as fixed effects and station or station nested within year as random intercepts were compared using AICc. To facilitate spatiotemporal comparisons of $\delta^{15}\text{N}$

among regions in the study area and across years in which sampling of individuals of varying size was conducted at varying depths, the model with the smallest AICc that contained one or both of station depth or mass was used to correct $\delta^{15}\text{N}$ to the median depth and/or mass for each species using the slope of the fixed effect(s) (Table A1). When ΔAICc between two competing models was < 2 , the simplest model (i.e., containing the fewest parameters) was selected.

Zooplankton were omitted from depth analysis since sampling was integrated across depths (e.g., 0-200 m). Multiple individuals of each zooplankton species of similar size were often combined in a sample to ensure enough tissue for stable isotope analysis. Only adult female *C. hyperboreus* were selected for analysis across the study period, however *T. libellula* and *T. abyssorum* samples comprised multiple individuals selected within size categories (i.e., 0-0.5 cm, 0.5-1 cm, 1-1.5 cm, 2-2.5 cm). Differences in $\delta^{15}\text{N}$ among size classes for *T. libellula* and *T. abyssorum* were assessed using linear mixed effects models, including sampling station as a random intercept. Type III ANOVAs indicated no significant differences ($p > 0.05$) among size classes for either *T. libellula* or *T. abyssorum*, so samples across size classes were pooled in summaries.

2.4.2 Lipid-Extraction

Lipids were not extracted from tissues or sediment prior to analysis. Lipids have more negative $\delta^{13}\text{C}$ values relative to protein (De Niro and Epstein 1981), such that removing lipids from a sample can have a significant effect on the stable isotope value measured (e.g., Choy et al. 2016). Varying lipid content in tissues among individuals can therefore confound attempts to determine the isotopic variability that is due to habitat use or resource availability rather than lipid content. To assess the influence of lipid content of invertebrate and sediment samples on $\delta^{13}\text{C}$ values, we compared the relationship between C:N (a proxy for lipid content; e.g., Jardine et al. 2009) and $\delta^{13}\text{C}$ with robust regression models. For all species with calcareous exo- or endoskeleton (see Table 1), C:N from an untreated subsample were used in lipid-determination models. Model significance was determined using f-tests comparing each regression against null models, and model fit assessed based on R^2 (see Table A2). Although models for some invertebrate species were significant according to f-tests ($\alpha = 0.05$), r-squared values indicated poor fit ($R^2 < 0.11$) for the majority of species, with the exception of *T. abyssorum* ($R^2 = 0.37$). Poor model fit suggests lipid extraction would not have had a significant effect on stable isotope values reported here, and previous studies have cautioned against the application of mathematical models to invertebrate stable isotope data without lipid-extracted samples for comparison (Kiljunen et al. 2006). Thus, in the absence of extracted samples, here we report uncorrected $\delta^{13}\text{C}$ for all invertebrate species and marine sediments, and advise caution when comparing these values against other datasets where $\delta^{13}\text{C}$ values have been corrected for lipid content.

3.0 Results and Discussion

A total of 2,036 samples collected in the WCA between 2012 and 2024 were analyzed for $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ in this report. Stable isotope data for each invertebrate species and marine sediments are reported by year and sampling station in Table A3. The data are organized by marine regions identified in Figure 1. Mean carbon stable isotope values by year and station ranged from -30.89‰ in the pelagic amphipod *T. libellula* collected in Darnley Bay in 2017, to -7.08‰ in the benthic deposit-feeding brittle star *O. borealis* collected in the Beaufort Sea in 2022. The lowest $\delta^{15}\text{N}$ value occurred in marine sediments (1.13‰) collected in the Beaufort Sea in 2019, while the highest (18.72‰) was observed in the largest benthic decapod shrimp *S. septemcarinata*

collected in Darnley Bay in 2014. Spatiotemporal variability in $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ for each invertebrate species and marine sediment is shown in Figures 2-21. Interannual variability within each region (Fig. 1) is presented relative to the long-term mean calculated from all available data for a species within that specific marine region.

Spatiotemporal variability in $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ data for the pelagic zooplankton species *C. hyperboreus* (n = 235), *T. abyssorum* (n = 108), and *T. libellula* (n = 225) are shown in Figures 2-3, 4-5, and 6-7, respectively. Stable isotope data from adult female *C. hyperboreus* (Fig. 2) and *T. libellula* ranging in size from <0.5-2.5 cm (Fig. 4) were available from the majority of the regions within the study area in at least one year during the 2012-2024 study period, while data from *T. abyssorum* (<0.5-1.5 cm) were available in comparatively fewer regions (Fig. 3). *C. hyperboreus* $\delta^{13}\text{C}$ ranged from a minimum of -28.89‰, recorded in Dolphin and Union Strait in 2022, to a maximum of -24.20‰ in the Mackenzie Shelf Coast region in 2013. $\delta^{15}\text{N}$ for *C. hyperboreus* ranged from a minimum of 7.87‰, recorded in the Mackenzie Shelf Coast in 2023, to a maximum of 13‰ in the Beaufort Sea in 2014. *T. libellula* $\delta^{13}\text{C}$ ranged from a minimum of -30.95‰, recorded in the Beaufort Sea in 2019, to a maximum of -23.03‰ in Dolphin and Union Strait in 2019, and $\delta^{15}\text{N}$ varied from a minimum of 8.68‰ in the Mackenzie Shelf Coast in 2024 to a maximum of 12.42‰ in Amundsen Gulf in 2013. *T. abyssorum* $\delta^{13}\text{C}$ ranged from a minimum of -30.89‰, recorded in Darnley Bay in 2017, to a maximum of -23.71‰ in Minto Inlet in 2024. *T. abyssorum* $\delta^{15}\text{N}$ ranged from a minimum of 9.81‰, in the Beaufort Sea in 2012 to a maximum of 12.84‰ in Amundsen Gulf in 2013.

Stable isotope data for benthic primary consumers – the crinoid *H. glacialis* (n = 85) and scallop *S. greenlandicus* (n = 132) – sampled between 2014 and 2022 are shown in Figures 8-9 and 10-11, respectively. Although both species are filter feeders that consume particulate organic matter from the water column (Baumiller 2008, Renaud et al. 2015), *H. glacialis* had less negative (i.e., more benthic) $\delta^{13}\text{C}$ values, and higher average $\delta^{15}\text{N}$ values (Fig. 5) than *S. greenlandicus* (Fig. 6). *H. glacialis* $\delta^{13}\text{C}$ ranged from a minimum of -26.96‰, recorded in the Beaufort Sea in 2022, to a maximum of -16.33‰ in Amundsen Gulf in 2017. *H. glacialis* $\delta^{15}\text{N}$ varied from a minimum of 12.25‰, in Franklin Bay in 2017, to a maximum of 14.82‰ in Amundsen Gulf in 2018. Minimum $\delta^{13}\text{C}$ for *S. greenlandicus* was -24.00‰, observed in Darnley Bay in 2021, and the maximum value of -27.86‰ was recorded in Franklin Bay in 2018. *S. greenlandicus* $\delta^{15}\text{N}$ ranged from 9.58‰, recorded in Franklin Bay in 2018, to 12.22‰ in Prince Albert Sound in 2021.

Stable isotope data from three benthic decapod shrimp species, *E. gaimardii belcheri* (n = 356; Figs. 12-13), *L. polaris* (n = 263; Figs. 14-15), and *S. septemcarinata* (n = 246; Figs. 16-17) indicate inter-species variability in isotopic signatures. *E. gaimardii belcheri* and *L. polaris* were low-trophic epibenthic predators (Birkely and Gulliksen 2003), and generally had more negative $\delta^{13}\text{C}$ (i.e., more pelagic) and lower $\delta^{15}\text{N}$ values than *S. septemcarinata*, which also consumes infauna (Kobiakov 2024). *E. gaimardii belcheri* $\delta^{13}\text{C}$ ranged from -21.88‰ in Dolphin and Union Strait in 2024 to -19.97‰ in Franklin Bay in 2019, and $\delta^{15}\text{N}$ ranged from 13.00‰ in Amundsen Gulf in 2024 to 15.65‰ in Dolphin and Union Strait in 2014. *L. polaris* $\delta^{13}\text{C}$ varied from -21.85‰ in Dolphin and Union Strait in 2022 to -19.68‰ in Darnley Bay in 2014, and $\delta^{15}\text{N}$ ranged from 13.37‰ in Dolphin and Union Strait in 2024 to 15.59‰ in Amundsen Gulf in 2014. For *S. septemcarinata*, $\delta^{13}\text{C}$ ranged from -21.97‰ in the Beaufort Sea in 2014 to -14.76‰ in Franklin Bay in 2014, and $\delta^{15}\text{N}$ varied from a minimum of 11.43‰, recorded in Amundsen Gulf in 2024, to a maximum of 18.72‰ in Darnley Bay in 2014.

Values of both $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of brittle star species *O. bidentata* (n = 102; Figs. 18-19) and *O. borealis* (n = 99; Figs. 20-21) were highly variable, likely due to the ability of both species to opportunistically switch between filter- and deposit-feeding depending on resource availability (Yunda-Guarin et al. 2022). For *O. bidentata*, $\delta^{13}\text{C}$ ranged from -21.81‰ in the Beaufort Sea in 2018 to -9.02‰ in Darnley Bay in 2014, and $\delta^{15}\text{N}$ ranged from 14.16‰ in Dolphin and Union Strait in 2017 to 17.26‰ in the Beaufort Sea in 2018. *O. borealis* $\delta^{13}\text{C}$ varied from -22.80‰ in Amundsen Gulf in 2018 to -7.08‰ in the Beaufort Sea in 2022.

Stable isotope data for marine sediments were available for each station sampled between 2014 and 2022 (n = 185; Figs. 22-23). Long-term means of both $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ differed among regions. Some regions (e.g., Amundsen Gulf, Beaufort Sea, Franklin Bay) exhibited high variability within years due to differences among stations within the same region, suggesting spatial heterogeneity in deposits of organic matter on the seafloor within regions. A minimum $\delta^{13}\text{C}$ value of -27.98‰ for marine sediments was recorded in Franklin Bay in 2019, and a maximum of -22.70‰ was recorded in Amundsen Gulf in 2014. Sediment $\delta^{15}\text{N}$ ranged from 1.13‰ in the Beaufort Sea in 2019 to 11.59‰ along the Mackenzie Shelf Coast in 2014.

Carbon and nitrogen stable isotope values were variable among species, years, and regions. Some individual samples exceeded two standard deviations from the long-term mean, however the year-to-year variability in median $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ across species and sediments was within the two standard deviation threshold when at least two stations were sampled in a region in the same year.

This multi-year dataset identifies individual, species, spatial, and temporal variability of primary and secondary consumer isotopic signals that should be considered when assessing food webs in the western Canadian Arctic. These data provide critical baselines for the interpretation of trophic shifts and food web linkages, reflecting variable resource input to the system, as well as differences in species-level feeding ecologies and functional traits.

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5.0 Figures and Tables

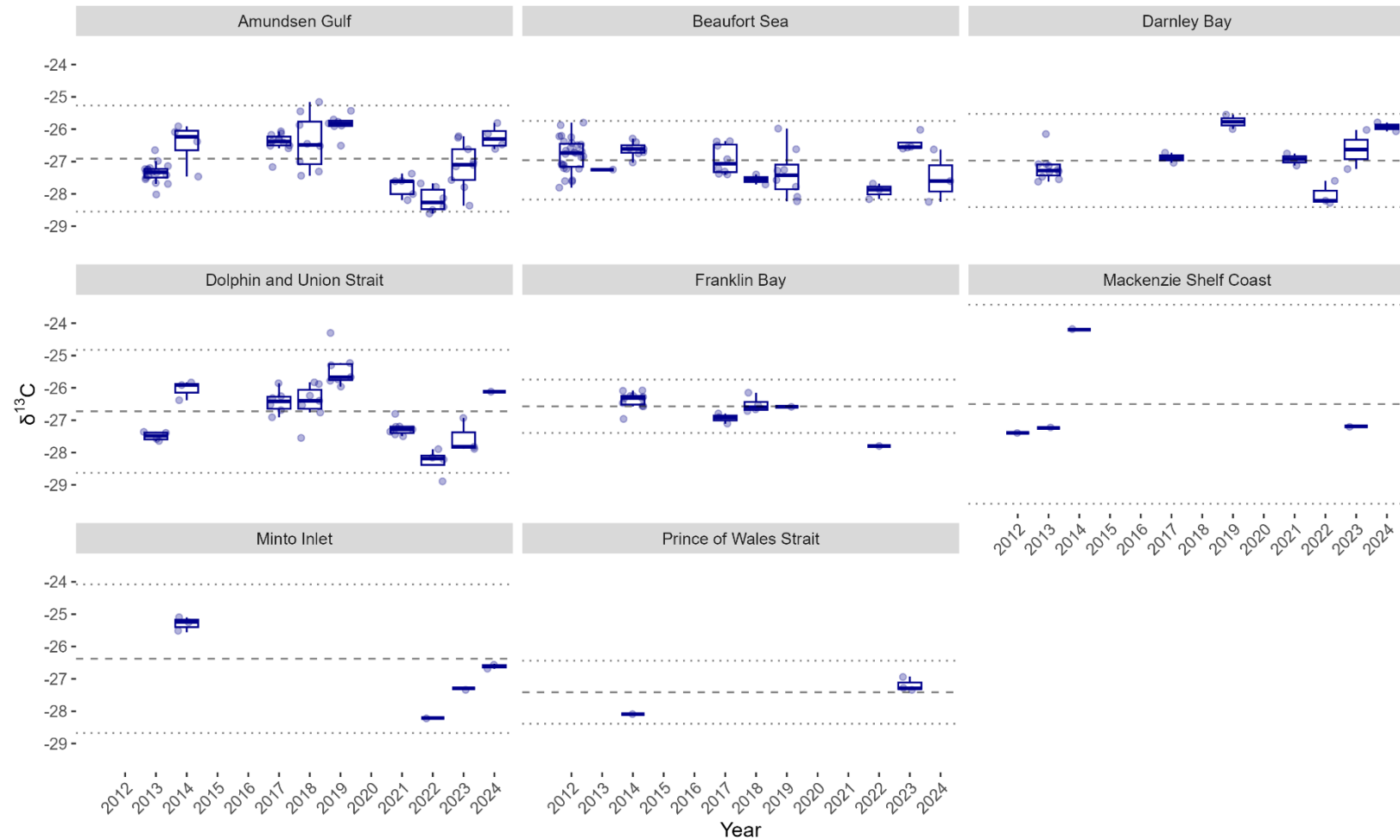


Figure 2 – Spatial and temporal variability in *Calanus hyperboreus* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

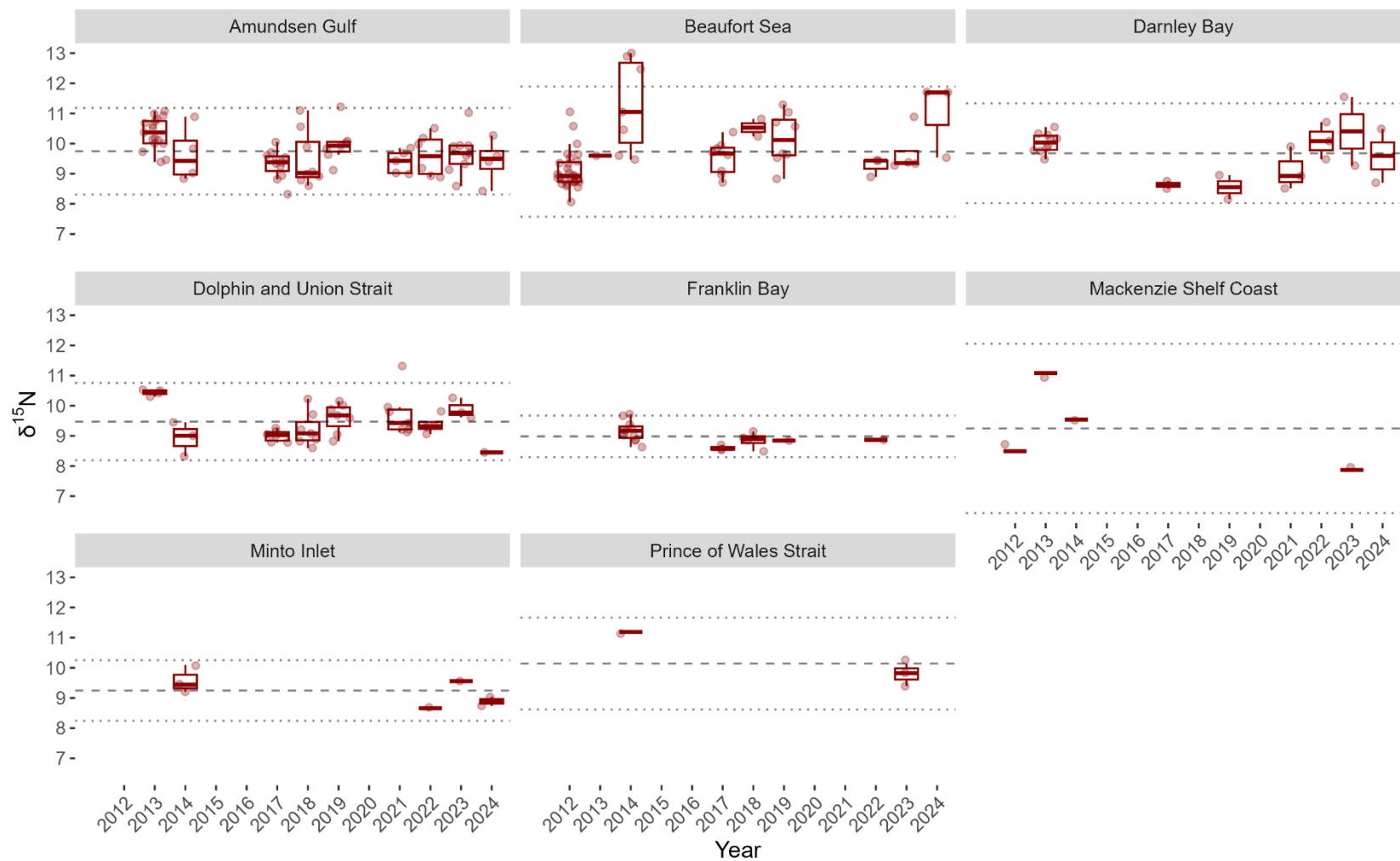


Figure 3 – Spatial and temporal variability in *Calanus hyperboreus* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

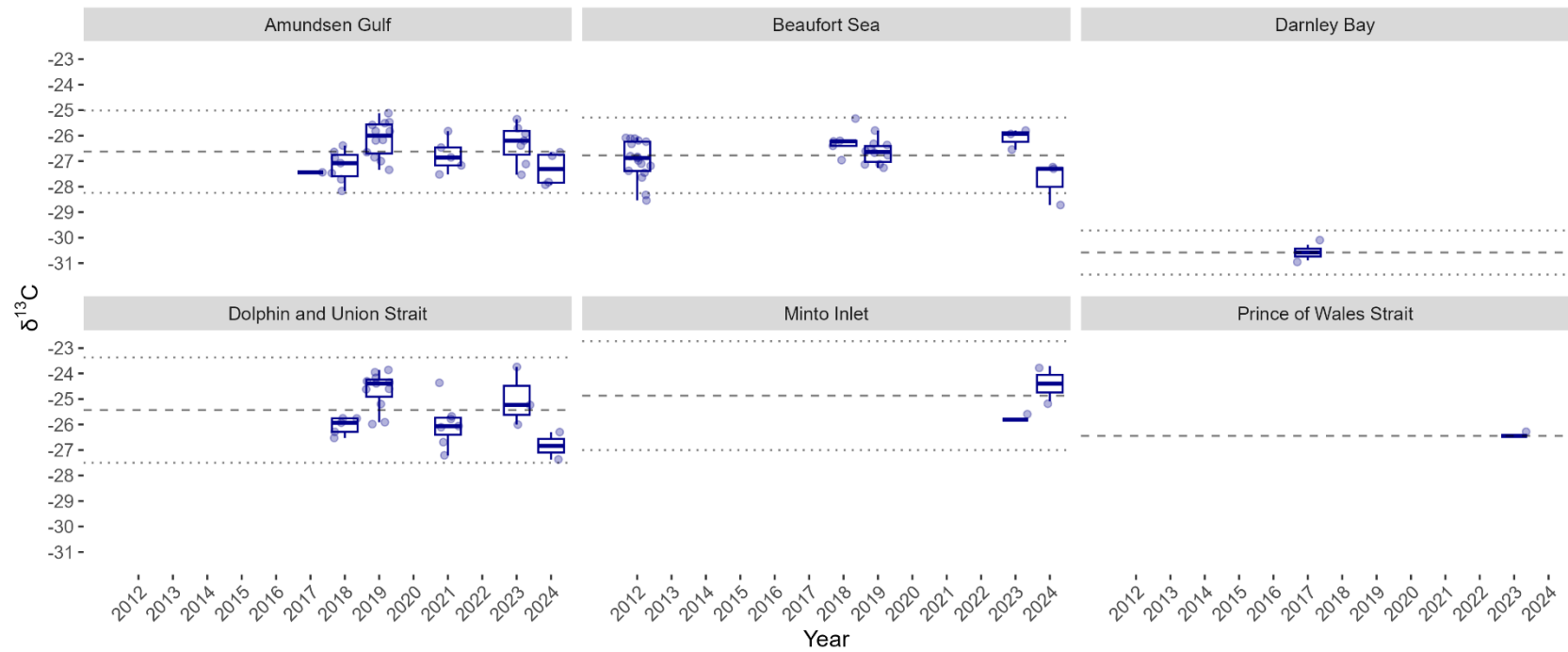


Figure 4 - Spatial and temporal variability in *Themisto abyssorum* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

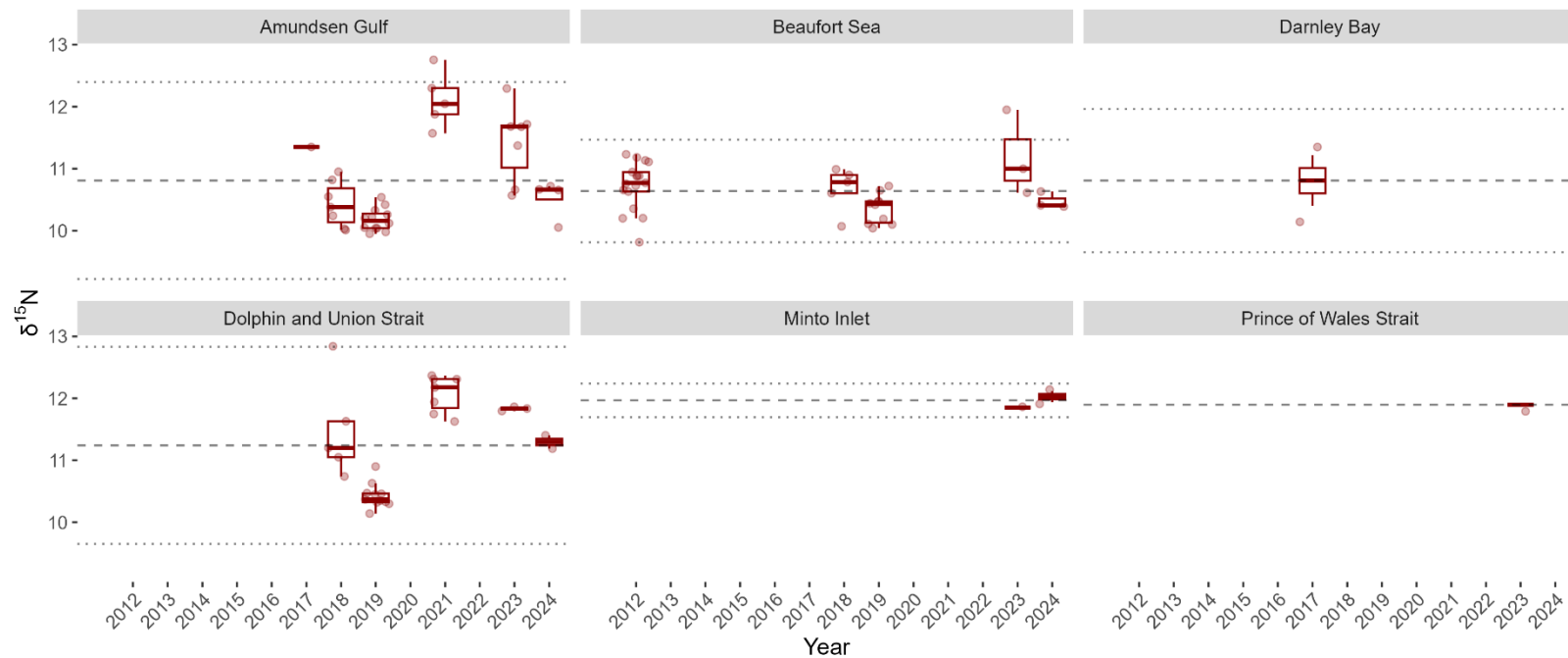


Figure 5 – Spatial and temporal variability in *Themisto abyssorum* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

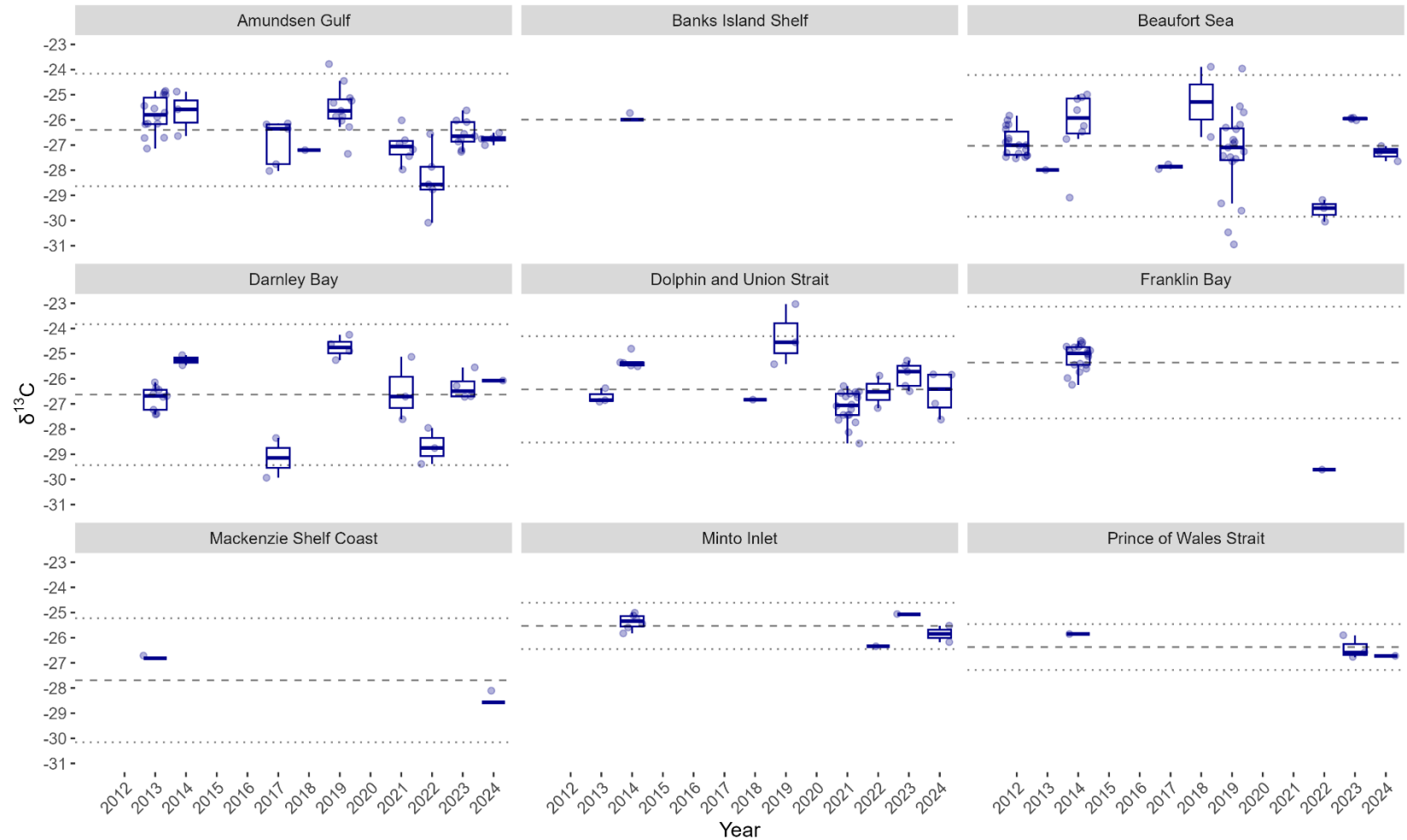


Figure 6 – Spatial and temporal variability in *Themisto libellula* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Size categories have been pooled in each year. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

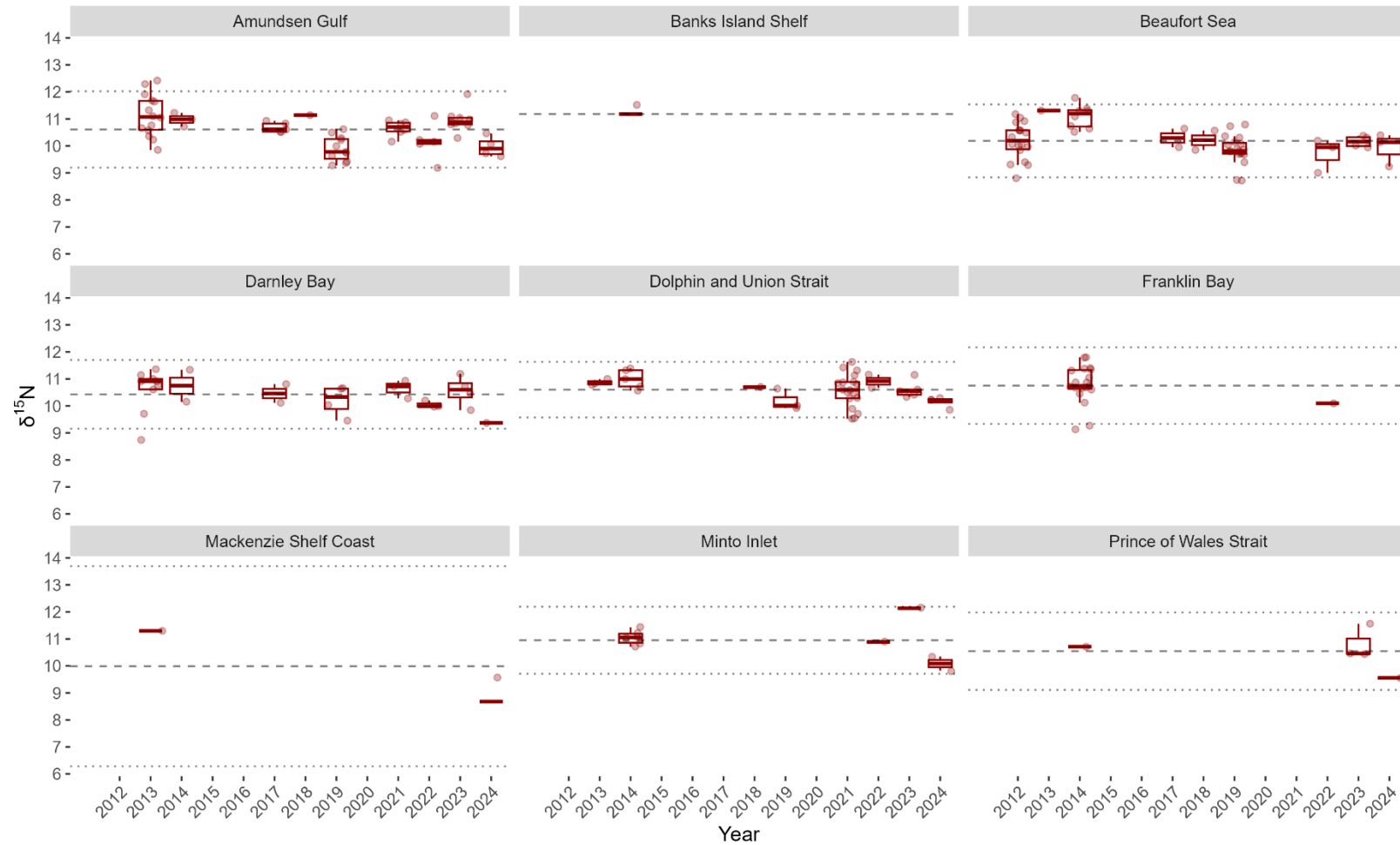


Figure 7 – Spatial and temporal variability in *Themisto libellula* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Size categories have been pooled in each year. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

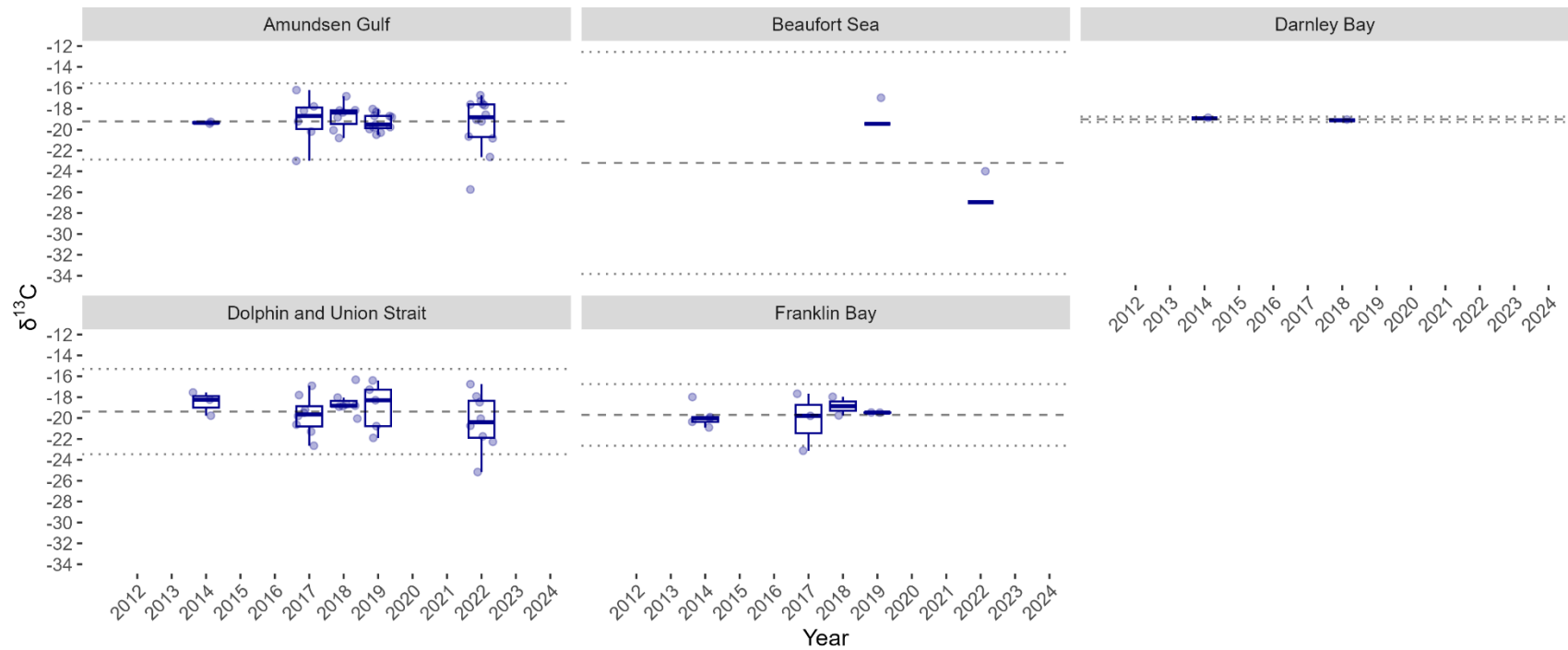


Figure 8 – Spatial and temporal variability in *Heliometra glacialis* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

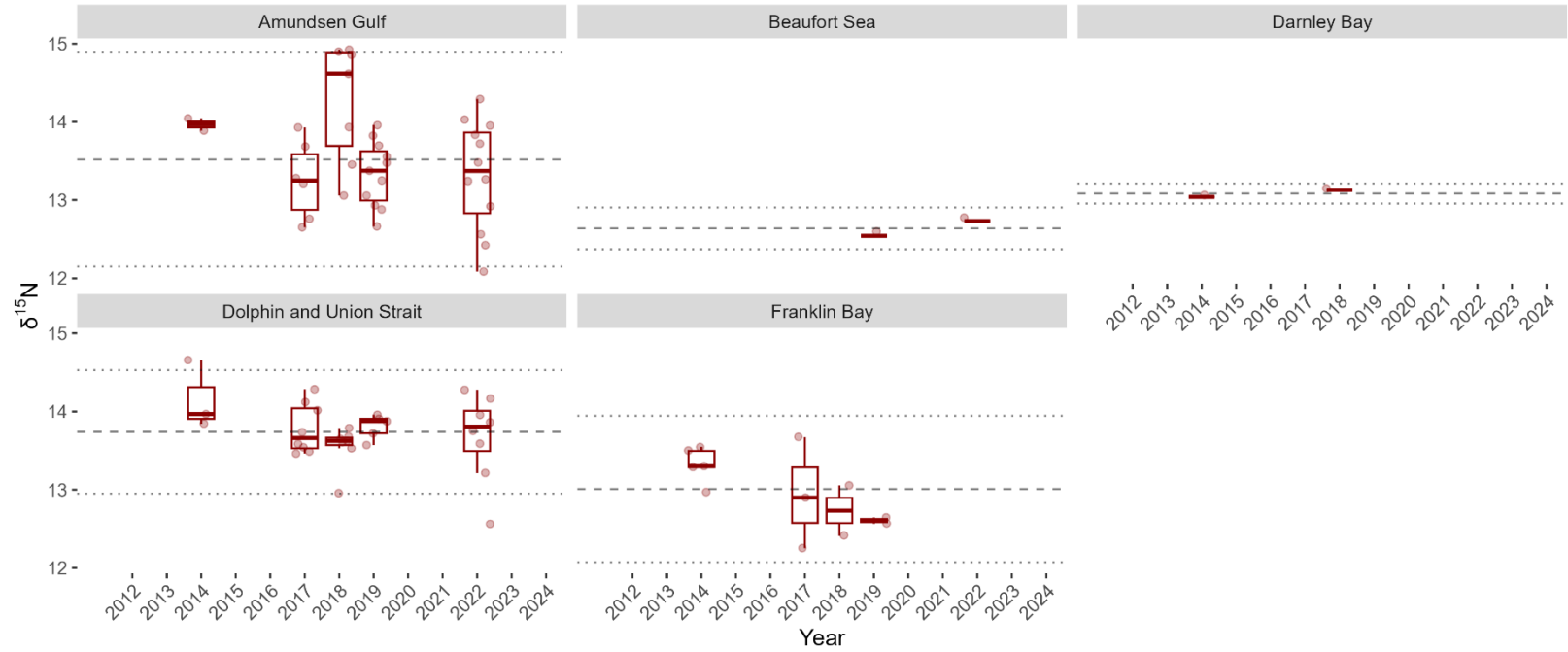


Figure 9 – Spatial and temporal variability in *Heliometra glacialis* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1. N.B. $\delta^{15}\text{N}$ values have been corrected to the median depth across all stations and the median mass of all *H. glacialis* samples.

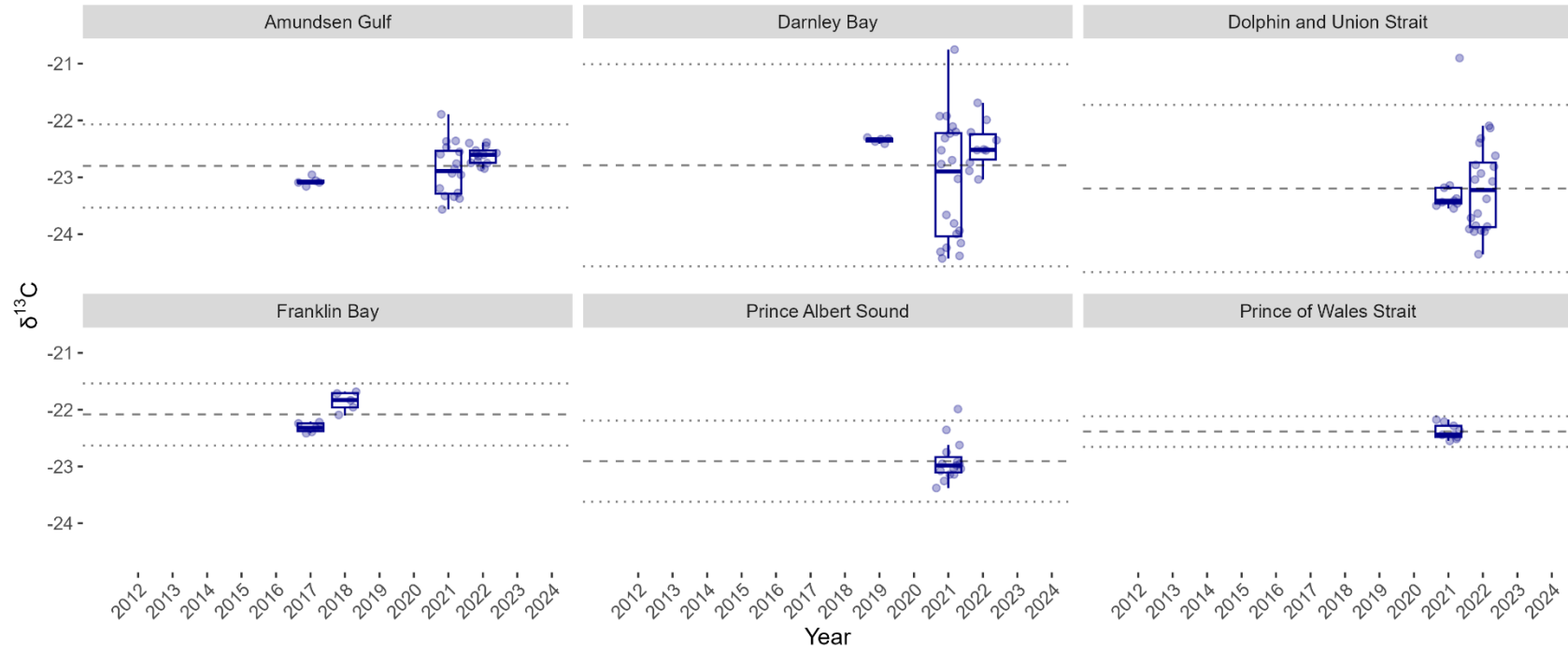


Figure 10 – Spatial and temporal variability in *Similipecten greenlandicus* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

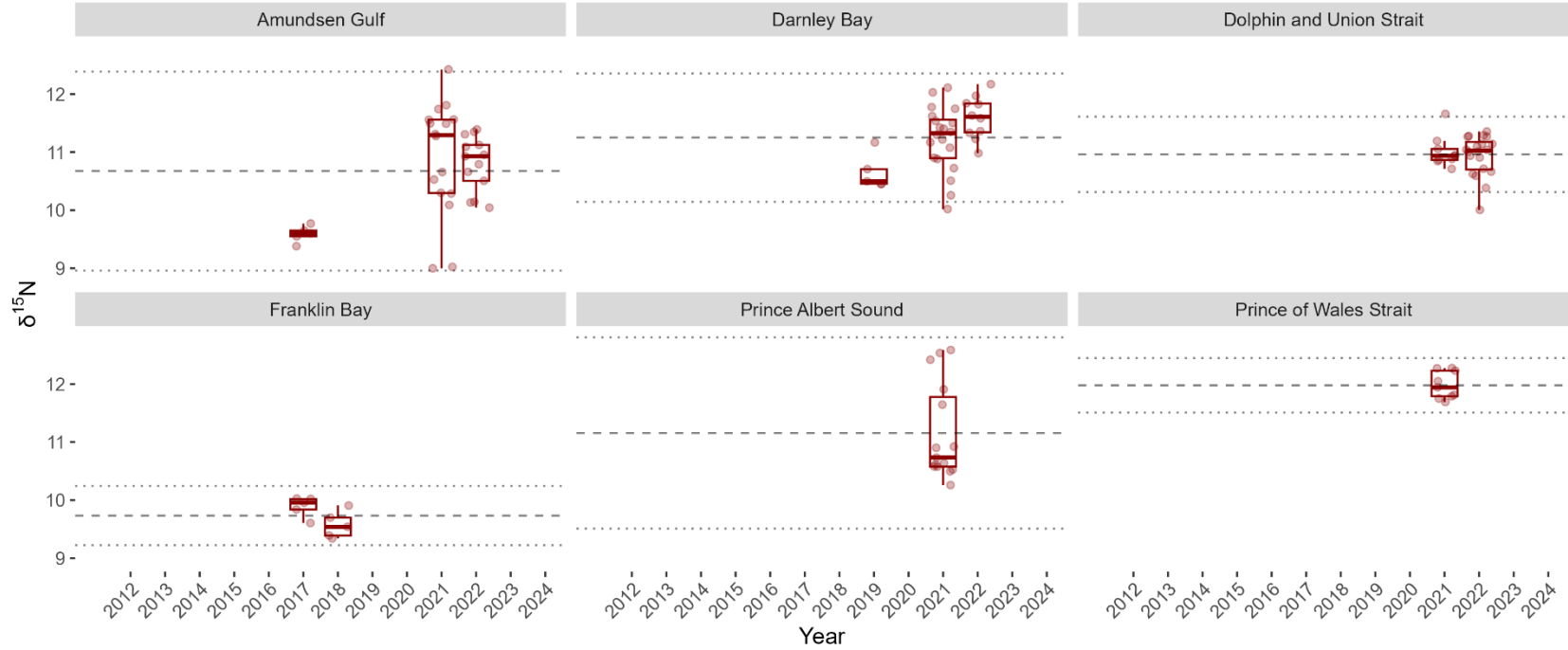


Figure 11 – Spatial and temporal variability in *Similipecten greenlandicus* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1. N.B. $\delta^{15}\text{N}$ values have been corrected to the median depth across all stations at which *S. greenlandicus* was sampled.

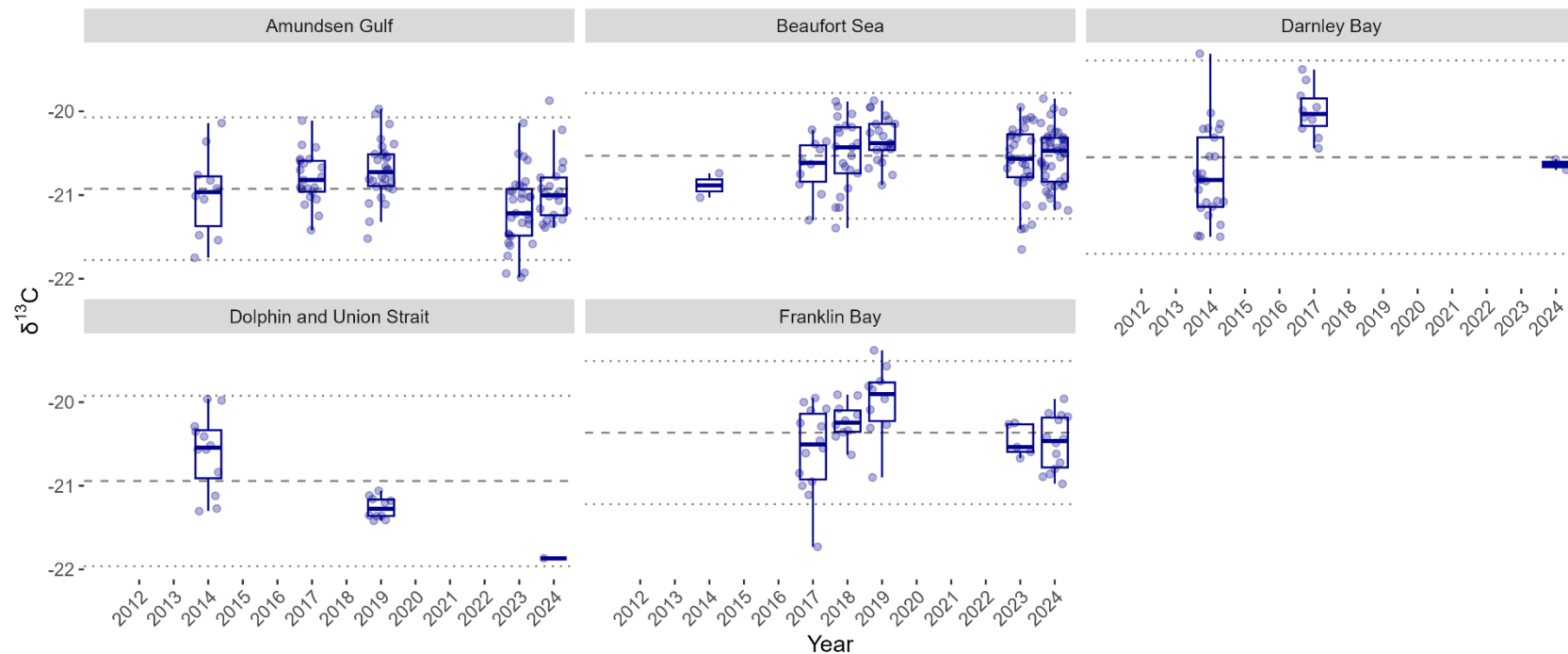


Figure 12 – Spatial and temporal variability in *Eualus gaimardii belcheri* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

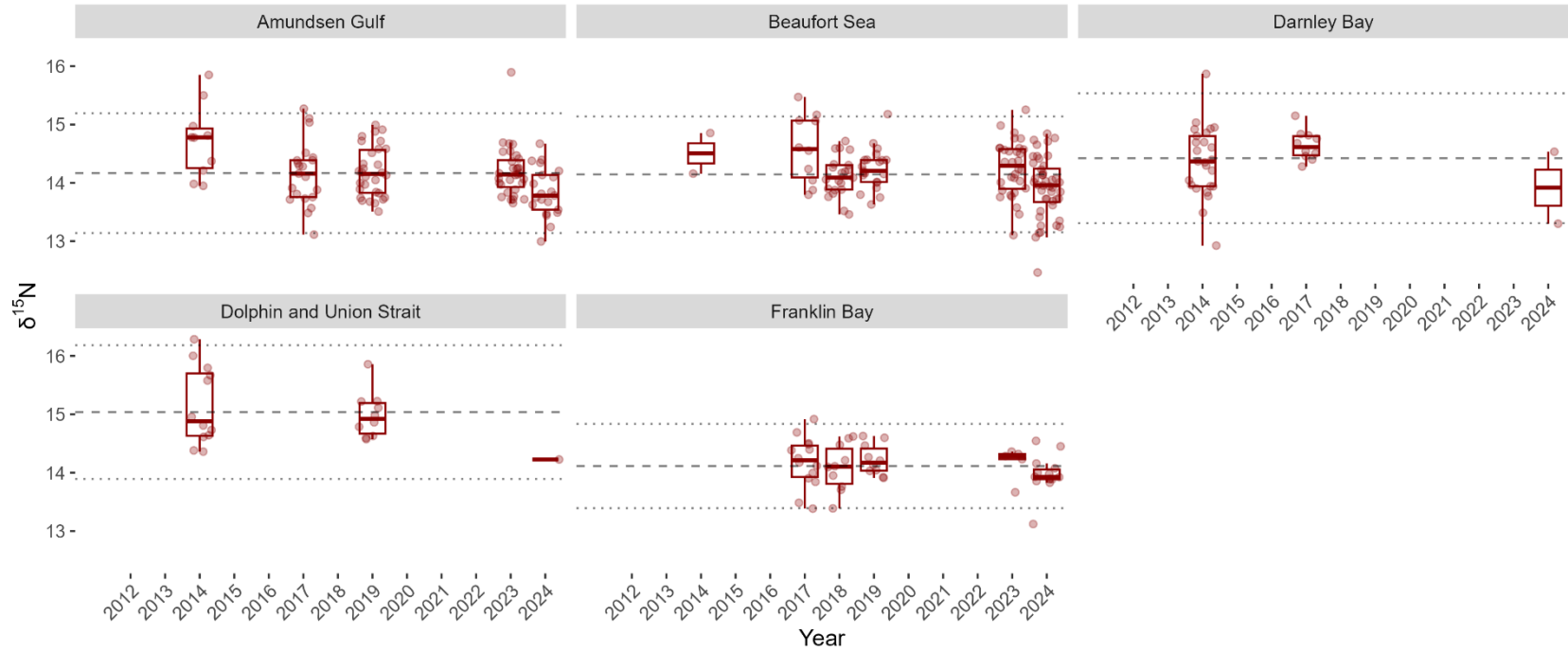


Figure 13 – Spatial and temporal variability in *Eualus gaimardii belcheri* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1. N.B. $\delta^{15}\text{N}$ values have been corrected to the median depth across all stations and median mass of all *E. gaimardii belcheri* samples.

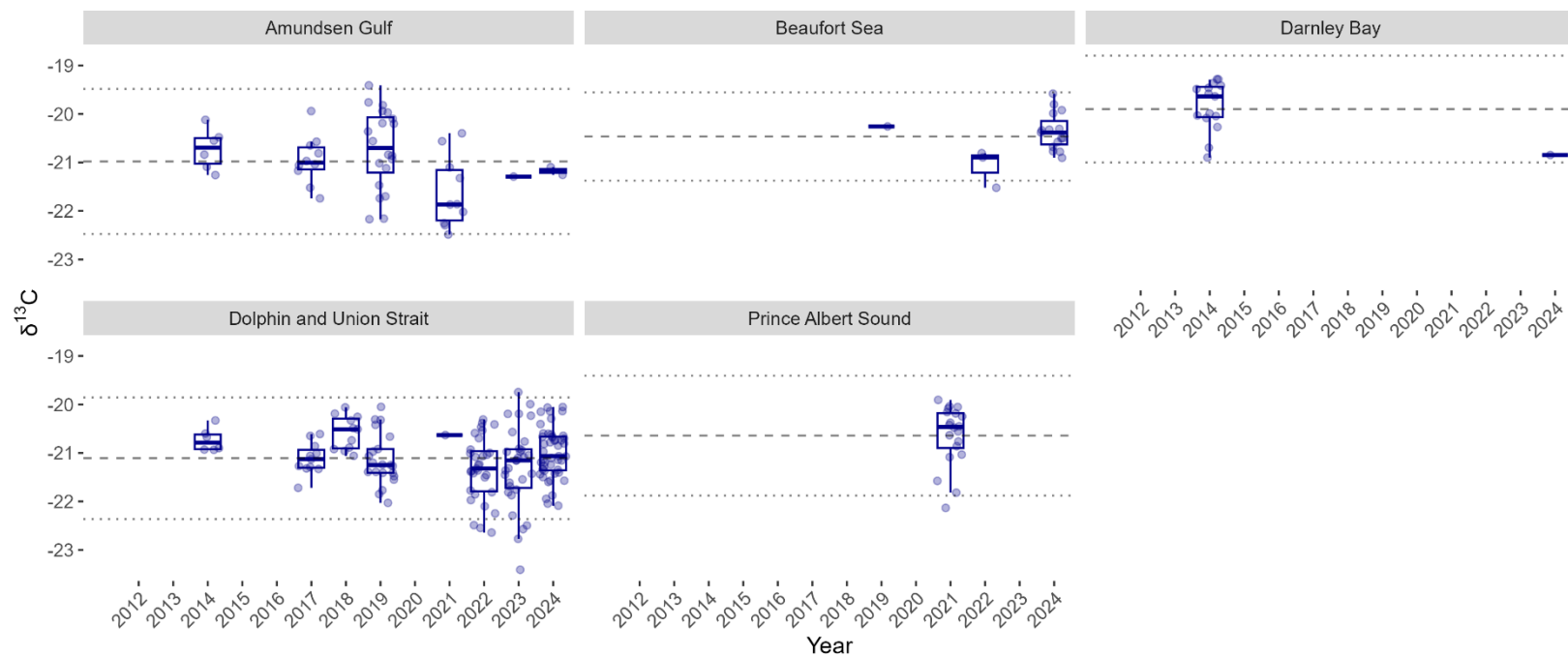


Figure 14 – Spatial and temporal variability in *Lebbeus polaris* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

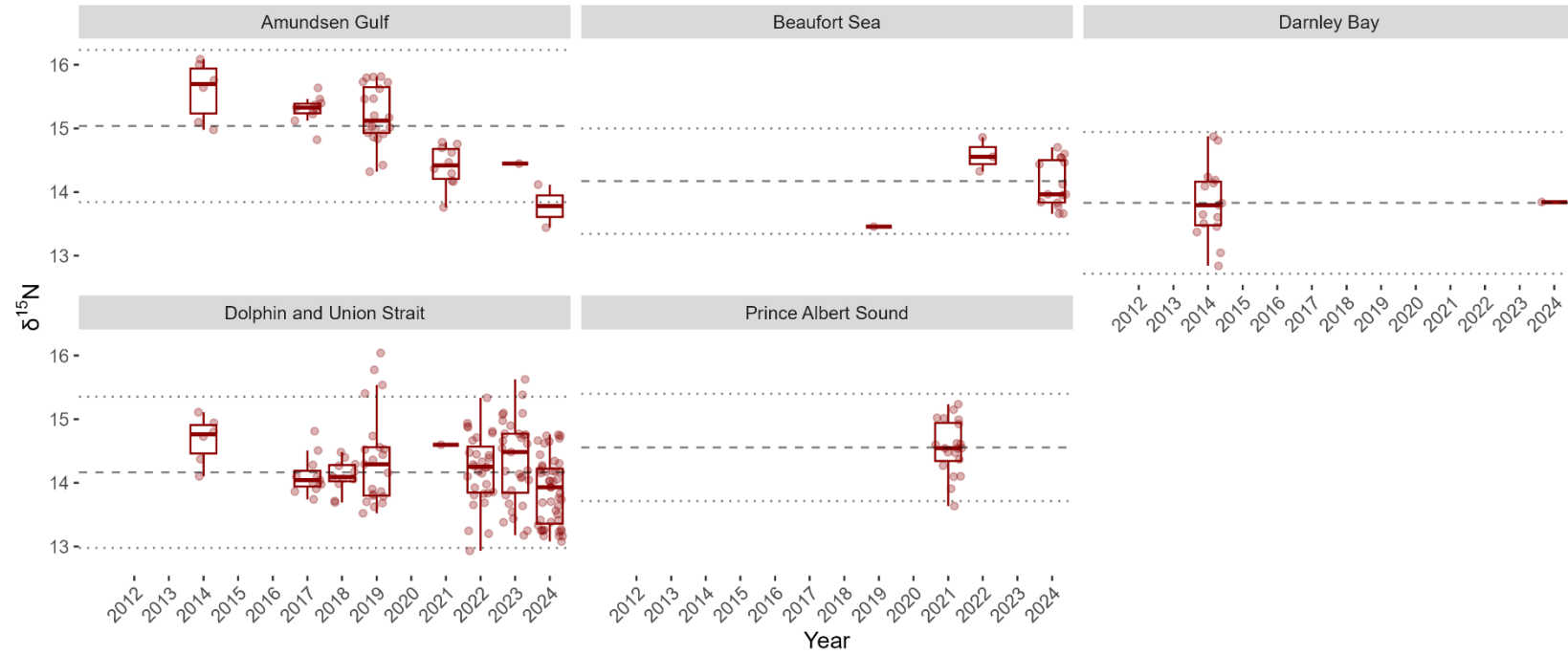


Figure 15 – Spatial and temporal variability in *Lebbeus polaris* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1. N.B. $\delta^{15}\text{N}$ values have been corrected to the median depth across all stations and median mass of all *L. polaris* samples.

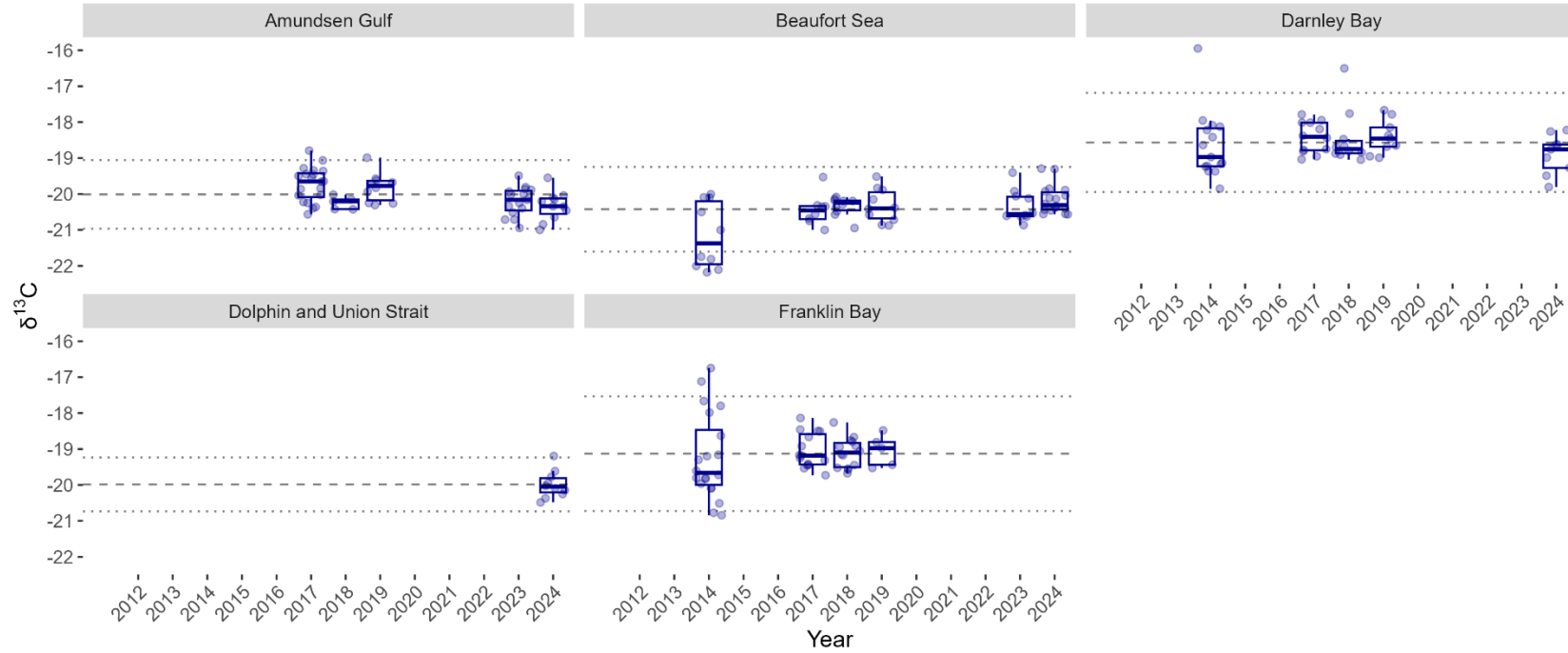


Figure 16 – Spatial and temporal variability in *Sabinea septemcarinata* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

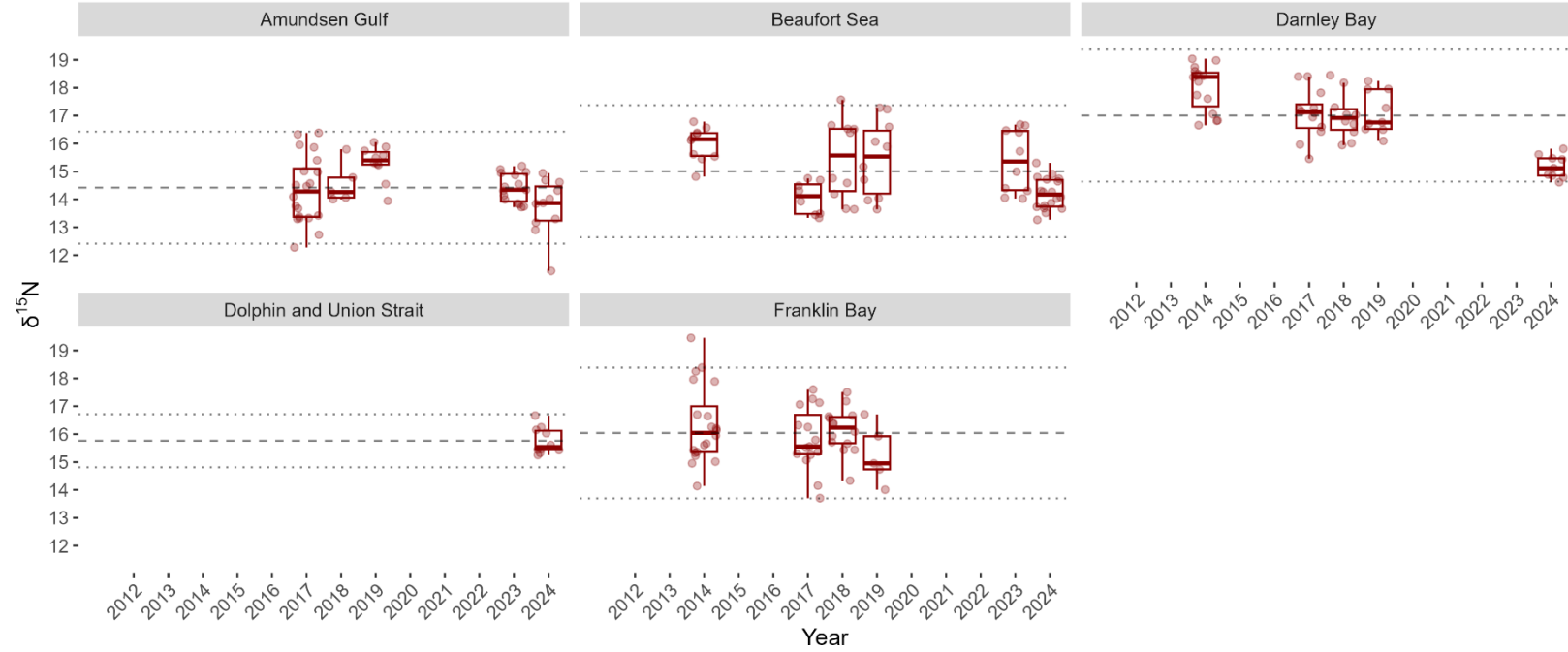


Figure 17 – Spatial and temporal variability in *Sabinea septemcarinata* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1. N.B. $\delta^{15}\text{N}$ values have been corrected to the median depth across all stations and median mass of all *S. septemcarinata* samples.

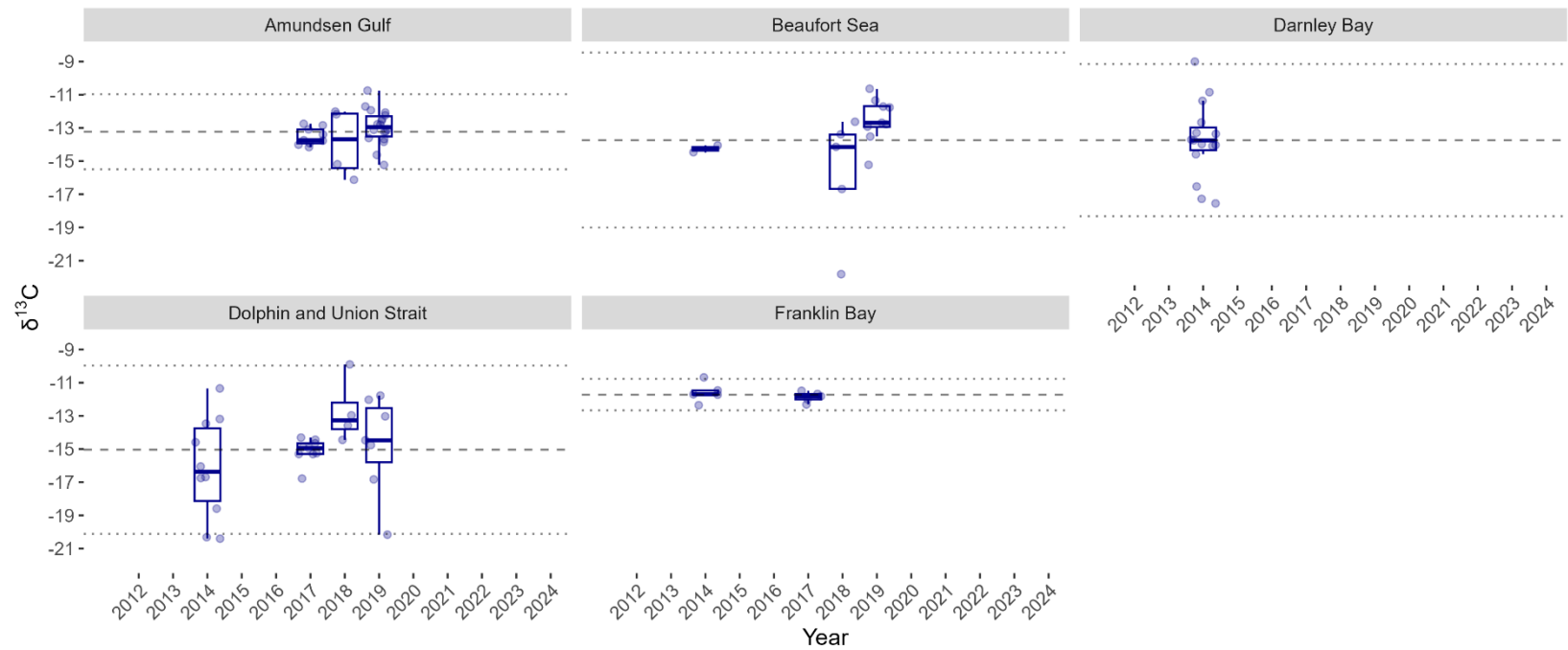


Figure 18 – Spatial and temporal variability in *Ophiacantha bidentata* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

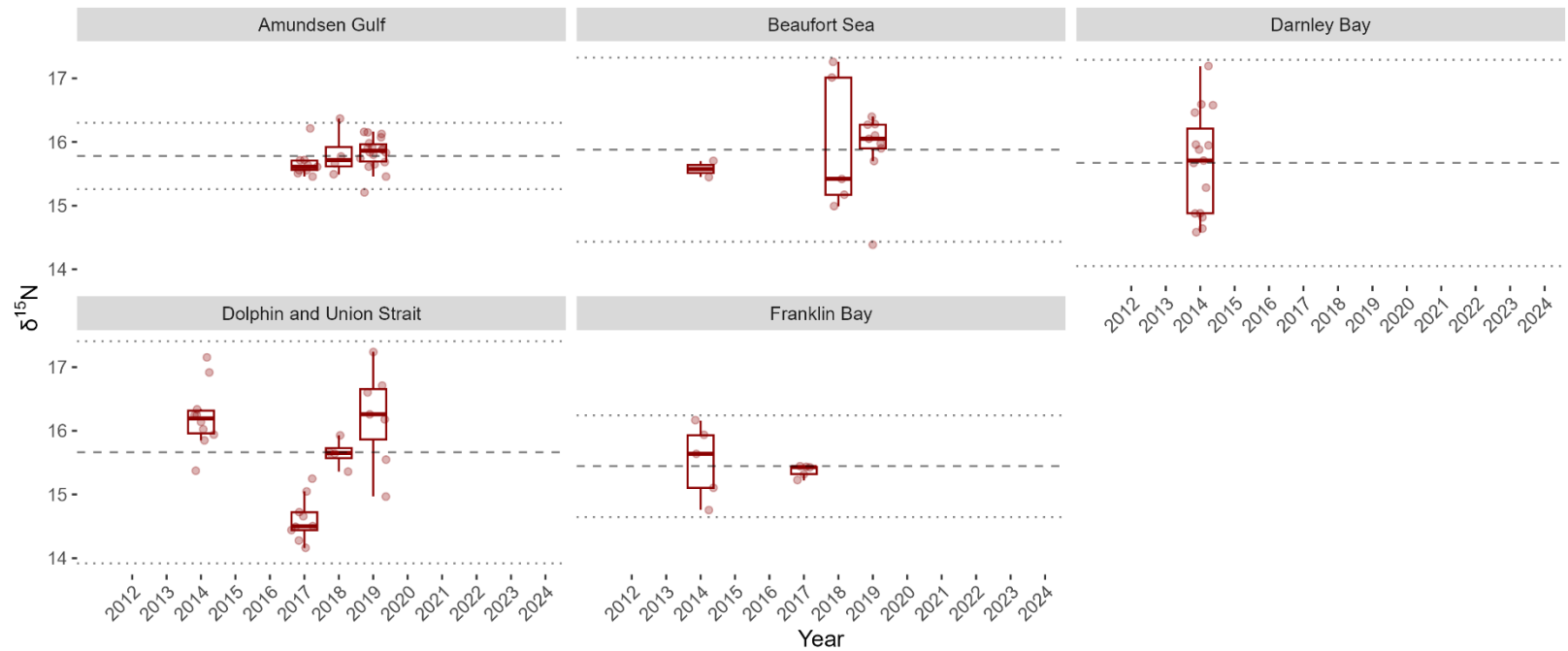


Figure 19 – Spatial and temporal variability in *Ophiacantha bidentata* $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

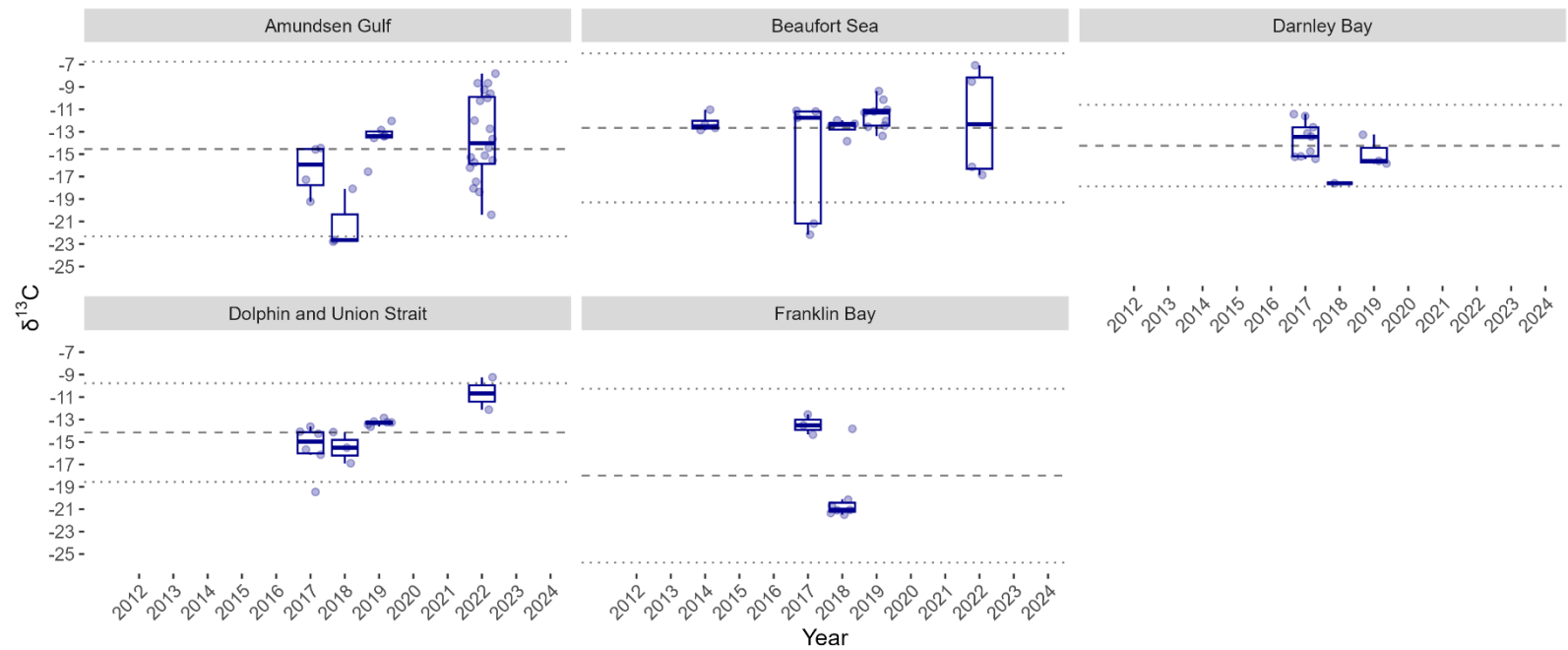


Figure 20 – Spatial and temporal variability in *Ophiopleura borealis* $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

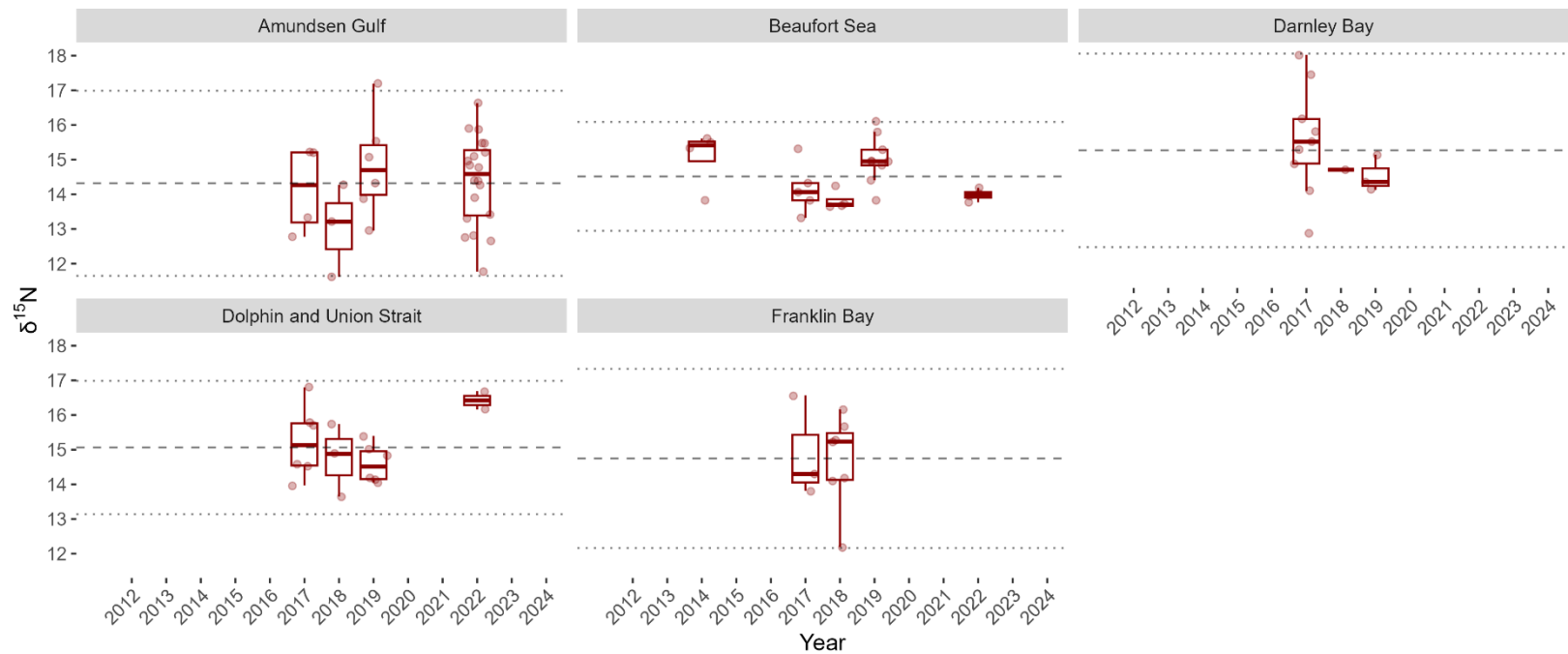


Figure 21 – Spatial and temporal variability in *Ophiopleura borealis* $\delta^{15}\text{N}$ (b) in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1. N.B. $\delta^{15}\text{N}$ values have been corrected to the median mass of all *O. borealis* samples.

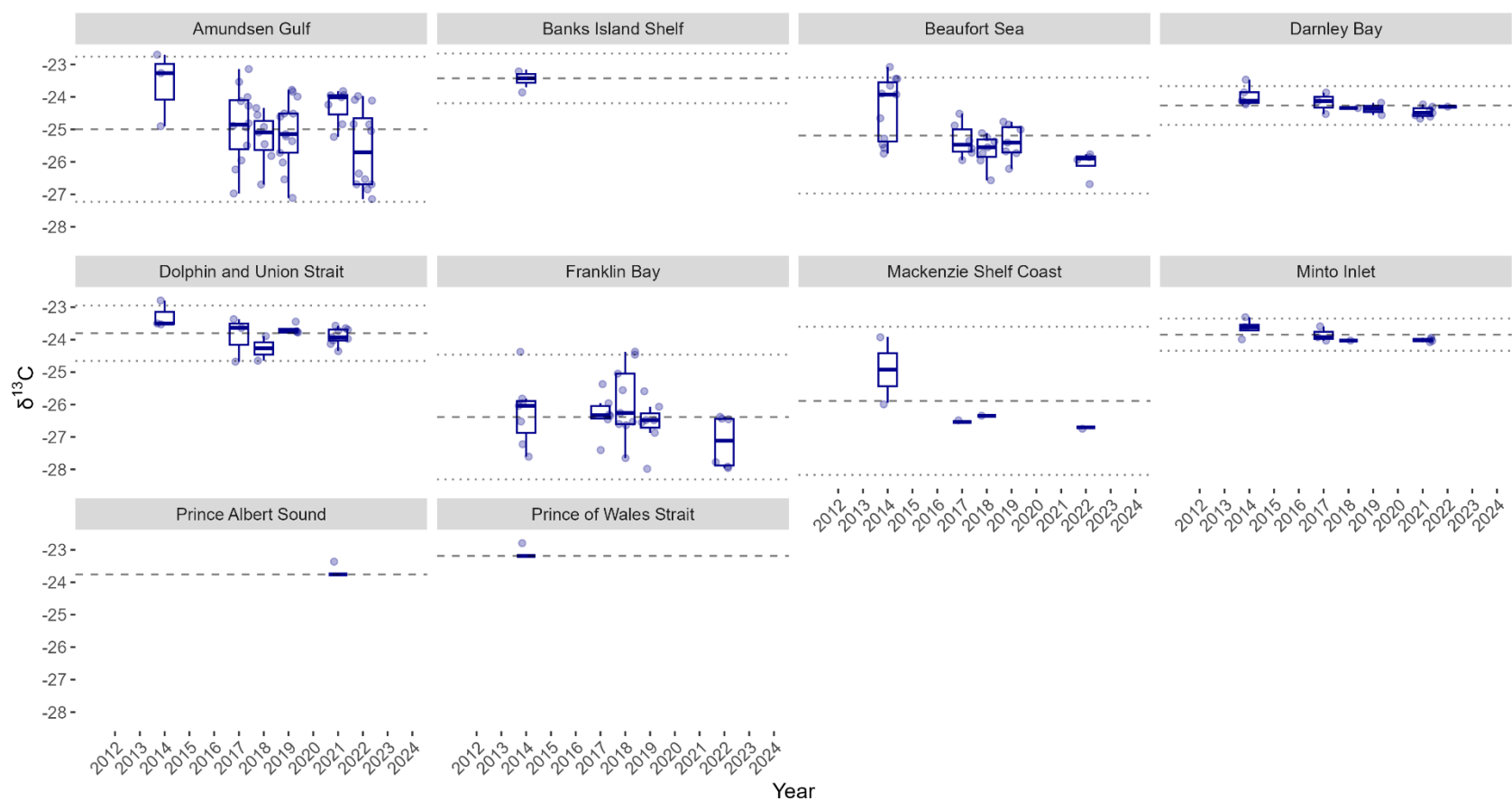


Figure 22 – Spatial and temporal variability in sediment $\delta^{13}\text{C}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. Regions are defined as shown in Figure 1.

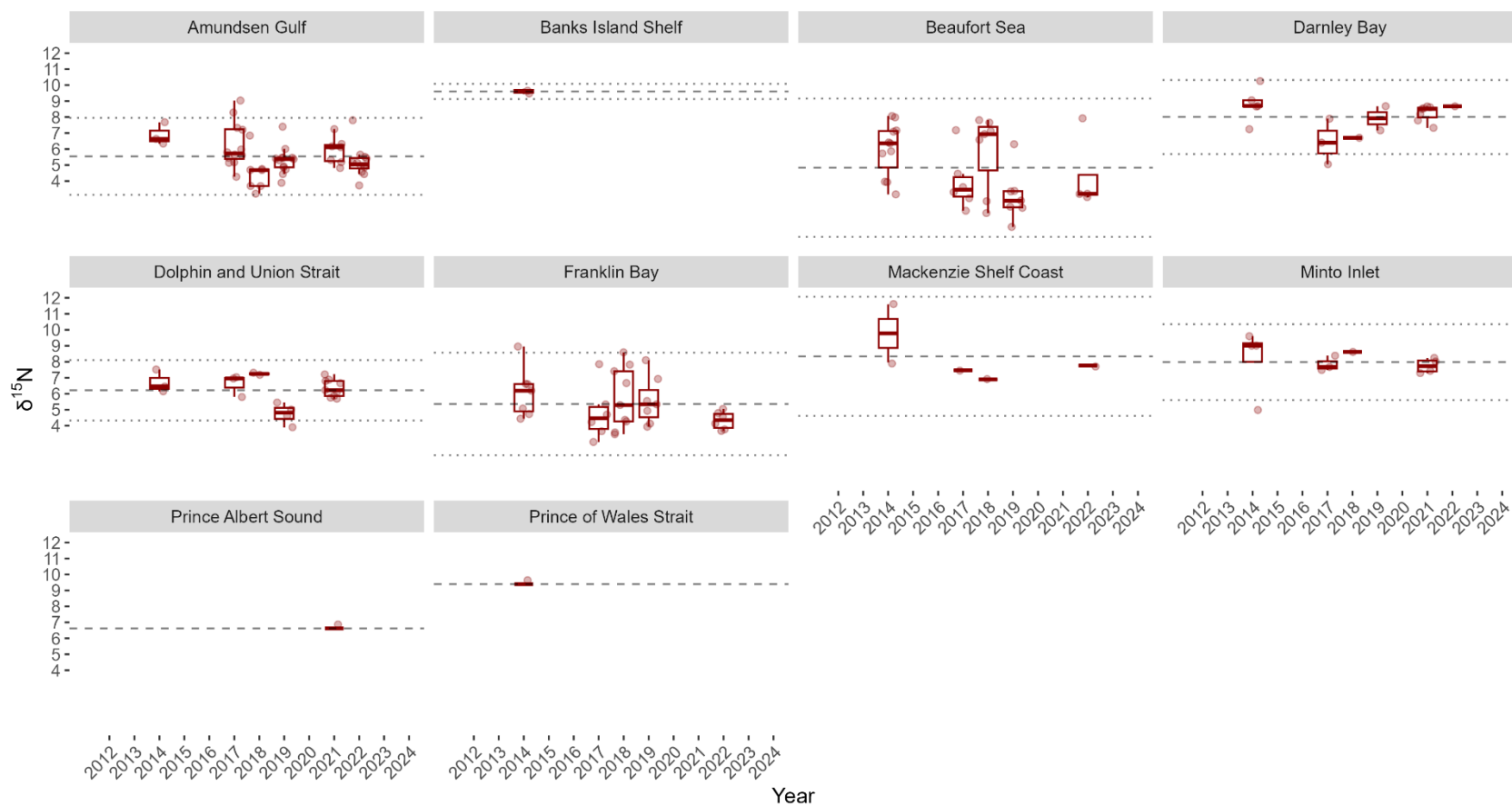


Figure 23 – Spatial and temporal variability in sediment $\delta^{15}\text{N}$ in the Western Canadian Arctic. Dashed lines represent the long-term mean in each region, and dotted lines indicate two standard deviations from the mean. N.B. $\delta^{15}\text{N}$ values have been corrected to the median depth across all stations at which sediment was sampled.

Appendix 1 – Corrections to $\delta^{15}\text{N}$

Table A1 – Parameters of best-performing linear mixed effects models relating $\delta^{15}\text{N}$ to body mass and/or depth at which benthic invertebrates and sediment were sampled, determined by AICc. Mass and depth were log-transformed prior to regression.

Name	n	Median Mass (g)	β_{mass}	Intercept	Median Depth (m)	β_{depth}	Marginal R^2
<i>Eualus gaimardii belcheri</i>	356	4.134	0.27	10.2	227	0.67	0.48
<i>Lebbeus polaris</i>	263	2.998	0.38	10.46	272	0.61	0.51
<i>Sabinea septemcarinata</i> *	246	5.004	0.01	2.13	126	2.04	0.6
<i>Heliometra glacialis</i>	85	11.389	0.19	6.26	210	1.25	0.44
<i>Similipecten greenlandicus</i> *	132			2.04	76	2.05	0.63
Sediment	185			2.01	210	2.06	0.64
<i>Ophiopleura borealis</i> *	99	9.766	1.45	11.34			0.21

* Station was included as a random intercept for *O. borealis*, and *S. greenlandicus*. Station and year were included as separate random intercepts for *S. septemcarinata*. Station nested within year was used as a random intercept for all other species and sediments.

Appendix 2 – Influence of Lipid Content (C:N) on $\delta^{13}\text{C}$

Table A2 – Results of robust regression models relating $\delta^{13}\text{C}$ to C:N (a proxy for sample lipid content).

Species Name	Intercept	Slope	R ²	p-value
<i>Calanus hyperboreus</i>	-24.87	-0.98	0.06	< 0.001
<i>Themisto abyssorum</i>	-20.61	-3.18	0.37	< 0.001
<i>Themisto libellula</i>	-22.43	-2.22	0.08	< 0.001
<i>Heliometra glacialis</i>	-20.03	-0.41	0.0003	0.7622
<i>Similipecten greenlandicus</i>	-22.76	-0.03	0	0.9801
<i>Eualus gaimardii belcheri</i>	-18.06	-2.22	0.02	< 0.001
<i>Lebbeus polaris</i>	-16.12	-4.05	0.09	< 0.001
<i>Sabinea septemcarinata</i>	-14.31	-4.48	0.03	< 0.001
<i>Ophiacantha bidentata</i>	-26.40	4.32	0.01	0.0948
<i>Ophiopleura borealis</i>	-16.34	-0.57	0.0004	0.8027
Sediment	-27.67	0.93	0.10	< 0.001

Appendix 3 – Stable Isotope Data

Table A3.1 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Calanus hyperboreus* collected in the Western Canadian Arctic, summarized per station in each year. Only adult female *C. hyperboreus* were analyzed for stable isotopes, and were typically analyzed as a single bulk sample per station. Means and standard deviations are provided when more than one sample was analyzed (N.B - *C. hyperboreus* samples were not treated with 10% HCl prior to stable isotope analysis).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2012	Beaufort Sea	DAL_01	70.5376	-130.84	1	-26.22	8.73	8.99
		DAL_02	71.2049	-131.1919	1	-26.87	8.73	9.43
		DAL_03	71.3312	-131.2177	1	-27.62	8.78	8.42
		DAL_04	71.3717	-131.2397	1	-27.21	8.86	6.95
		DAL_05	71.4328	-131.2775	1	-27.23	9.99	7.6
		DAL_06	71.5998	-131.3508	1	-26.74	9.33	8.26
		DAL_07	71.8638	-131.4968	1	-26.66	10.58	8.82
		GRY_01	69.876	-137.2425	1	-26.71	8.9	9.12
		GRY_02	70.0175	-137.675	1	-26.84	8.73	8.74
		GRY_03	70.1305	-137.0253	1	-26.69	8.76	7.74
		GRY_04	70.2548	-138.4038	1	-26.76	9.54	8.53
		GRY_05	70.302	-138.5495	1	-26.25	8.98	6.93
		GRY_06	70.4408	-138.9822	1	-26.43	9.03	7.59
		GRY_07	70.526	-139.2293	1	-27.07	8.95	8.29
		KUG_02	70.8549	-134.6886	1	-26.48	9.41	6.44
		KUG_03	70.9319	-134.755	1	-26.49	8.66	6.99
		KUG_04	70.9816	-134.8052	1	-27.81	8.55	8.79
		KUG_05	71.0502	-134.8792	1	-27.58	8.06	8.67
		KUG_06	71.1606	-134.9778	1	-27.6	8.59	8.74
		KUG_07	71.2877	-135.1071	1	-27.22	8.93	7.89
		TBS_01	69.9298	-140.3765	1	-26.2	9.17	7.73
		TBS_02	70.2518	-140.3772	1	-25.88	11.05	6.13
		TBS_03	70.281	-140.3778	1	-25.79	9.66	7.72
		TBS_04	70.347	-140.3808	1	-27.11	8.83	9.06
		TBS_05	70.4293	-140.3763	1	-27.09	8.65	9.01
		TBS_06	70.5932	-140.4522	1	-26.58	9.65	6.9
		TBS_07	70.6035	-140.3895	1	-26.38	9.35	8.35
	Mackenzie Shelf Coast	KUG_01A	70.0105	-133.8403	1	-27.39	8.49	9.11
2013	Amundsen Gulf	CBH_01	70.2766	-127.1191	1	-27.42	9.39	8.39
		CBH_02	70.2898	-127.0781	1	-27.2	10.75	7.52
		CBH_03	70.3187	-126.9977	1	-27.66	9.73	7.87
		CBH_04	70.6619	-126.2162	1	-28.02	10.99	6.61

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Beaufort Sea	CBH_05	70.9133	-125.4391	1	-27.33	10.12	6.63
		CBH_06	70.2148	-124.7403	1	-27.5	10.14	6.9
		CBH_07	71.3867	-124.1633	1	-27.23	10.17	6.92
		CPY_03	70.442	-124.5685	1	-27.69	11.08	7.31
		DAR_04	70.2987	-123.411	1	-27.14	10.51	6.64
		DAR_05	70.5755	-123.2185	1	-27.25	10.81	7.06
		DAR_06	70.8238	-123.1179	1	-27.24	10.61	6.83
		DAR_07	71.0457	-123.0109	1	-26.65	10.93	7.38
		DAR_08	71.0595	-122.9152	1	-27.45	10.68	8.46
		ULU_05	70.0016	-118.5159	1	-27.34	10	7.47
		ULU_06	70.3151	-118.1302	1	-26.98	10.01	7.13
		ULU_07	70.4428	-117.8656	1	-27.55	10.37	7.48
		ULU_08	70.604	-117.8513	1	-27.33	9.46	6.89
		DWT_01	70.5993	-138.3339	1	-27.25	9.6	7.66
	Darnley Bay	BPT_01	69.7042	-123.8465	1	-27.3	9.48	7.03
		BPT_01A	69.7025	-123.7914	1	-26.15	10.17	6.28
		BPT_03	69.698	-123.4619	1	-27.08	9.86	7.39
		BPT_04	69.7008	-123.2367	1	-27.13	9.75	6.78
		BPT_05	69.7125	-123.1884	1	-27.47	9.94	8.03
	Dolphin and Union Strait	CPY_01	70.2263	-124.5334	1	-27.62	10.13	7.37
		CPY_02	70.2572	-124.5069	1	-27.25	10.33	7.87
		DAR_01	69.7051	-123.8278	1	-27.07	10.55	7.76
		DAR_02	69.5099	-123.741	1	-27.55	9.77	7.98
		DAR_03	70.1244	-123.4913	1	-27.32	10.29	7.32
		ULU_01	69.3469	-119.5138	1	-27.64	10.53	6.87
		ULU_02	69.3732	-119.503	1	-27.36	10.42	7.41
		ULU_03	69.5629	-119.2585	1	-27.39	10.5	7.52
		ULU_04	69.6421	-119.121	1	-27.58	10.3	7.34
		ESC_01	70.6833	-128.9697	1	-27.24	11.08	5.93
	Amundsen Gulf	ALX_01	71.6212	-120.3355	1	-27.46	10.89	7.77
		AMN_01	70.837	-119.7778	1	-26.38	9.83	7.29
		AMN_02	70.2186	-119.4775	1	-25.91	8.84	9.86
		CPY_03	70.4429	-124.5276	1	-26.09	9.02	3.31
	Beaufort Sea	BNK_02	72.098	-127.4803	1	-26.29	9.47	8.2
		BNK_03	72.0919	-129.9677	1	-26.75	12.89	4.79
		BNK_04	72.0954	-128.8124	1	-26.71	11.05	7.62
		BNK_05	72.9252	-127.7903	1	-27.03	13	4.89
		BNK_07	72.0977	-127.1391	1	-26.4	9.6	9.26
	Dolphin and Union Strait	KUG_03	70.9334	-134.742	1	-26.61	12.47	5.53
		KUG_04	70.978	-134.8077	1	-26.59	10.46	7.73
		DOL_02	69.4318	-118.6822	1	-26.38	9.45	8.95
		DOL_03	69.5355	-118.2157	1	-25.91	9.01	7.51
		DOL_04	69.6413	-117.7896	1	-25.84	8.32	7.41

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2017	Franklin Bay	FRK_01	70.0819	-125.1995	1	-26.56	9.19	9.52
		FRK_02	70.0824	-125.4234	1	-26.28	9.38	9.28
		FRK_03	70.0871	-125.855	1	-26.25	8.63	9.53
		FRK_04	70.0882	-126.0383	1	-26.09	9.25	8.98
		FRK_05	70.0837	-126.4325	1	-26.25	9.17	9.34
		FRK_06	70.0867	-126.772	1	-26.08	8.86	5.06
		FRK_07	70.0896	-126.916	1	-26.57	9	4.4
		FRK_HC1	70.0868	-126.7985	1	-26.32	9.66	7.95
		FRK_HC2	70.0828	-126.2342	2	-26.64 $\pm$ 0.45	9.37 $\pm$ 0.49	4.02 $\pm$ 1.54
		FRK_HC3	70.0839	-125.4484	1	-26.47	8.85	10.5
	Mackenzie Shelf Coast	KUG_01A	70.0157	-133.8284	1	-24.2	9.54	4.27
	Minto Inlet	MNT_01	71.2324	-118.3652	1	-25.24	9.44	3.62
		MNT_03	71.3252	-117.1497	1	-25.56	10.1	4.42
		MNT_05	71.4367	-116.2991	1	-25.1	9.2	3.5
	Prince of Wales Strait	PWS_01	72.1108	-119.4259	1	-28.09	11.19	3.9
	Amundsen Gulf	CPB_02	70.5729	-127.5609	1	-27.17	9.49	5.99
		CPB_03	70.5982	-127.378	2	-26.25 $\pm$ 0.18	9.7 $\pm$ 0.5	6.4 $\pm$ 0.33
		CPB_06	70.6834	-126.8397	2	-26.19 $\pm$ 0.16	9.66 $\pm$ 0.07	6.02 $\pm$ 0.29
		CPB_07	70.81	-126.1052	1	-26.51	8.32	6.22
		CPB_09	71.056	-124.6336	1	-26.17	8.82	6.12
		CPB_10	71.1777	-123.8903	2	-26.35 $\pm$ 0.08	9.46 $\pm$ 0.11	7.33 $\pm$ 0.1
		CPB_11	71.2488	-123.4836	2	-26.55 $\pm$ 0.06	9.09 $\pm$ 0.21	6.6 $\pm$ 0.87
	Beaufort Sea	KUG_03	70.9374	-134.7318	2	-27.39 $\pm$ 0.01	9.03 $\pm$ 0.08	7.48 $\pm$ 0.48
		KUG_04	70.9833	-134.7969	2	-27.26 $\pm$ 0.07	9.82 $\pm$ 0.16	6.69 $\pm$ 0.5
		KUG_05	71.0523	-134.8662	2	-26.65 $\pm$ 0.39	10.11 $\pm$ 0.38	6.54 $\pm$ 0
		KUG_06	71.1579	-134.9814	1	-26.51	8.71	8.32
		KUG_07	71.2771	-135.1241	1	-26.37	9.63	5.83
	Darnley Bay	BPT_01A	69.6986	-123.7724	1	-26.73	8.5	8.72
		BPT_03	69.6988	-123.4349	1	-27.04	8.76	9.63
	Dolphin and Union Strait	DUS_03	69.6549	-120.5734	2	-26.6 $\pm$ 0.12	8.79 $\pm$ 0.01	7.94 $\pm$ 0.45
		DUS_04	69.7215	-119.9483	1	-25.86	9.05	7.04
		DUS_05	69.7839	-119.4045	1	-26.91	9.26	7.51
		DUS_07	69.9037	-118.3279	1	-26.26	9.15	7.22
		DUS_10	69.9954	-117.5173	1	-26.31	9	5.99
	Franklin Bay	FKN_03	70.0019	-126.2671	2	-26.95 $\pm$ 0.22	8.63 $\pm$ 0.09	8.66 $\pm$ 0.17
		FKN_04	69.9988	-125.9761	1	-26.91	8.53	8.83
2018	Amundsen Gulf	CPB_02	70.5679	-127.5573	2	-25.84 $\pm$ 0.96	10.23 $\pm$ 0.47	5.89 $\pm$ 0.65
		CPB_03	70.6093	-127.3878	2	-25.66 $\pm$ 0.3	9.03 $\pm$ 0.05	7.58 $\pm$ 0.07
		CPB_04	70.6316	-127.2053	2	-26.73 $\pm$ 0.39	8.76 $\pm$ 0.22	8.92 $\pm$ 0.7
		CPB_10	71.1781	-123.888	1	-27.31	8.79	7.74
		CPB_11	71.251	-123.4806	1	-27.44	11.1	7.58
	Beaufort Sea	KUG_03	70.9363	-134.7534	1	-27.4	10.82	6.72
		KUG_04	70.9859	-134.8092	1	-27.71	10.24	7.44

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2019	Dolphin and Union Strait	DUS_03	69.6522	-120.5653	2	-26.18 $\pm$ 0.5	9.97 $\pm$ 0.36	5.37 $\pm$ 3.01
		DUS_04	69.7231	-119.9495	2	-26.32 $\pm$ 0.11	8.74 $\pm$ 0.2	9.18 $\pm$ 0.55
		DUS_05	69.7859	-119.4098	1	-26.76	9.08	8.53
		DUS_07	69.9036	-118.3327	1	-27.55	8.82	9.13
		DUS_09	69.9714	-117.7331	1	-25.88	9.21	5.66
	Franklin Bay	FKN_03	70.0031	-126.2552	2	-26.6 $\pm$ 0.1	8.89 $\pm$ 0.06	9.49 $\pm$ 0.21
		FKN_04	70.0042	-125.9627	2	-26.43 $\pm$ 0.4	8.82 $\pm$ 0.47	9.03 $\pm$ 1.05
	Amundsen Gulf	CPB_02	70.5652	-127.5456	1	-26.51	9.12	11.43
		CPB_06	70.6832	-126.8263	1	-25.91	9.93	7.3
		CPB_07	70.8058	-126.1009	1	-25.77	10.09	6.69
		CPB_09	71.057	-124.6319	1	-25.43	9.83	6.7
		CPB_10	71.178	-123.8904	1	-25.89	11.22	5.98
		CPB_11	71.2494	-123.4832	1	-25.7	10.03	7.09
		CPY_03	70.4441	-124.5204	1	-25.82	9.63	7.63
	Beaufort Sea	KUG_03	70.9346	-134.7503	1	-28.23	11.29	5.59
		KUG_04	70.9833	-134.8103	2	-27.09 $\pm$ 0.67	9.93 $\pm$ 1.56	4.59 $\pm$ 0.28
		KUG_05	71.0517	-134.8642	1	-28.09	9.64	7.79
		KUG_06	71.1572	-134.9707	1	-27.28	9.67	6.18
		KUG_07	71.2841	-135.1044	2	-26.88 $\pm$ 1.27	10.12 $\pm$ 0.83	6.57 $\pm$ 0.6
		KUG_08	71.3739	-135.2462	1	-27.26	10.57	6.33
	Darnley Bay	BPT_03	69.6988	-123.4367	1	-25.55	8.15	9.62
		CPY_02	70.2618	-124.4913	1	-25.99	8.95	9.76
	Dolphin and Union Strait	DUS_03	69.6533	-120.5814	1	-25.3	9.05	8.09
		DUS_04	69.7239	-119.9416	1	-25.78	10.01	6.18
		DUS_05	69.7811	-119.3857	1	-25.23	9.88	6.01
		DUS_07	69.9062	-118.3321	1	-25.67	9.68	8.72
		DUS_09	69.9726	-117.7387	1	-25.74	9.59	8.71
		DUS_10	69.994	-117.5149	2	-25.13 $\pm$ 1.17	9.48 $\pm$ 0.94	5.45 $\pm$ 0.2
2021	Franklin Bay	FKN_03	69.9963	-126.2392	1	-26.59	8.84	10
	Amundsen Gulf	AMG_03	70.5546	-122.9122	1	-27.61	8.99	11.06
		CPB_08	70.923	-125.3739	1	-28.19	9.43	10.54
		CPB_09	71.052	-124.6419	1	-27.6	9.68	11.07
		CPB_10	71.1765	-123.8964	1	-27.37	9.85	7.59
		CPB_11	71.2501	-123.4898	1	-28	9.02	11.19
	Darnley Bay	BPT_01A	69.6984	-123.7686	1	-27.12	8.51	15.89
		BPT_03	69.6976	-123.4354	1	-26.93	8.93	11.86
		CPY_02	70.2559	-124.5197	1	-26.75	9.9	7.46
	Dolphin and Union Strait	DUS_02	69.6392	-120.7159	1	-27.2	11.32	8.72
		DUS_03	69.654	-120.5694	1	-27.19	9.43	11.5
		DUS_04	69.7238	-119.9425	1	-27.28	9.95	8.64
		DUS_05	69.7844	-119.3938	1	-27.49	9.21	7.78
		DUS_06	69.8582	-118.7422	1	-27.44	9.13	9.09
		DUS_07	69.9058	-118.341	1	-27.35	9.8	6.81

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2022	Amundsen Gulf	DUS_09	69.9741	-117.7365	1	-26.81	9.22	8.21
		AMG_03	70.5567	-122.9127	1	-28.5	8.93	9.25
		CPB_01	70.5299	-127.7269	1	-28.61	10.18	8.18
		CPB_02	70.5694	-127.56	1	-27.78	9.98	8.65
		CPB_06	70.6854	-126.8406	1	-27.68	10.51	7.08
		CPY_03	70.4454	-124.5308	1	-28.4	8.89	11.08
	Beaufort Sea	CPY_04	70.6406	-124.5183	1	-28.13	9.18	7.01
		KUG_03	70.9357	-134.7565	1	-27.68	9.43	7.77
		KUG_04	70.9845	-134.8067	1	-27.87	8.89	7.86
	Darnley Bay	KUG_05	71.0459	-134.893	1	-28.16	9.45	8.04
		BPT_01A	69.6991	-123.7692	1	-27.6	9.48	7.88
		CPY_01	70.2265	-124.4902	1	-28.28	10.71	7.36
	Dolphin and Union Strait	CPY_02	70.2582	-124.499	1	-28.21	10.08	8.41
		DUS_02	69.6334	-120.7068	1	-28.16	9.34	8.48
		DUS_04	69.7244	-119.9559	1	-27.9	9.06	9.13
		DUS_07	69.9009	-118.3434	1	-28.89	9.81	8.22
	Franklin Bay	DUS_10	69.9974	-117.52	1	-28.22	9.29	9.43
		FKN_03	70.007	-126.247	1	-27.8	8.87	8.47
		Minto Inlet	MTI_05	71.2332	-117.2765	1	-28.21	8.66
2023	Amundsen Gulf	AMG_03	70.5547	-122.9104	1	-28.36	9.91	13.49
		AXL_02	71.6671	-119.7737	1	-27.57	9.69	9.05
		CPB_01	70.5409	-127.7273	1	-26.22	9.93	8.18
		CPB_02	70.566	-127.55	1	-26.62	9.94	6.78
		CPB_03	70.594	-127.367	1	-26.26	9.32	7.33
		CPB_07	70.8077	-126.1041	1	-27.02	9.6	7.89
		CPB_09	71.05	-124.6336	1	-27.8	8.59	10.89
		CPB_11	71.2477	-123.4799	1	-27.15	9.13	9.32
		CPY_03	70.4424	-124.525	1	-27.1	11.03	6.68
	Beaufort Sea	KUG_02	70.8507	-134.6776	1	-26.02	9.27	8.35
		KUG_03	70.9343	-134.7411	1	-26.54	9.38	7.57
		KUG_04	70.982	-134.7849	1	-26.6	10.89	7.35
		KUG_05	71.0554	-134.8694	1	-26.57	9.34	6.44
		Darnley Bay	BPT_03	69.6992	-123.4309	1	-26.02	9.27
	CPY_01		70.2246	-124.4957	1	-27.23	11.55	7.19
	Dolphin and Union Strait	DUS_04	69.7226	-119.949	1	-27.82	10.26	8.93
		DUS_07	69.9011	-118.331	1	-27.88	9.61	10.63
		DUS_09	69.9749	-117.7289	1	-26.93	9.77	8.06
	Mackenzie Shelf Coast	KUG_01	70.0127	-133.8369	1	-27.19	7.87	7.01
	Minto Inlet	MTI_05	71.2349	-117.2667	1	-27.29	9.56	8.58
	Prince of Wales Strait	PWS_01A	72.1097	-119.4401	1	-27.29	9.4	10.54
		PWS_02	72.3163	-118.8634	1	-27.34	10.14	12.5
		PWS_03	72.7286	-118.3912	1	-26.93	9.82	9.63
2024	Amundsen Gulf	AMG_03	70.5545	-122.9002	1	-25.81	8.43	7.59

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
		CPB_02	70.5622	-127.5441	1	-26.14	9.4	8.97
		CPB_03	70.5985	-127.3849	1	-26.47	9.59	8.91
		CPB_06	70.6856	-126.8333	1	-26.61	10.27	7.5
	Beaufort Sea	KUG_03	70.9317	-134.7492	1	-26.63	9.54	6.86
		KUG_04	70.9809	-134.7988	1	-27.6	11.7	6.51
		KUG_05	71.0498	-134.8628	1	-28.25	11.71	6.38
	Darnley Bay	BPT_03	69.6987	-123.4391	1	-26.07	8.7	7.71
		CPY_02	70.2585	-124.4977	1	-25.79	10.49	6.51
	Dolphin and Union Strait	DUS_07	69.9054	-118.3356	1	-26.12	8.45	11.02
	Minto Inlet	MTI_04	71.2988	-117.3336	1	-26.69	9.04	10.89
		MTI_05	71.2365	-117.2641	1	-26.54	8.73	9.14

Table A3.2 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Themisto abyssorum* collected in the Western Canadian Arctic, summarized per station in each year. *T. abyssorum* ranging in size from <0.5-1.5 cm were typically analyzed as a single bulk sample per station. Means and standard deviations are provided when more than one sample was analyzed (N.B – *T. abyssorum* samples were not treated with 10% HCl prior to stable isotope analysis).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2012	Beaufort Sea	DAL_01	70.5376	-130.84	1	-26.8	10.2	8.24
		DAL_04	71.3717	-131.2397	1	-27.38	10.76	5.18
		DAL_05	71.4328	-131.2775	1	-26.88	10.72	5.33
		DAL_07	71.8638	-131.4968	1	-27.18	10.66	4.83
		DAL_HC3	71.293	-131.2343	1	-26.98	11.11	6.51
		GRY_03	70.1305	-137.0253	1	-27.1	10.36	6.95
		GRY_04	70.2548	-138.4038	1	-26.83	10.2	6.39
		GRY_05	70.302	-138.5495	1	-27.64	10.63	9.91
		GRY_06	70.4408	-138.9822	1	-26.11	10.88	6.83
		GRY_07	70.526	-139.2293	1	-26.24	11.13	5.68
		KUG_05	71.0502	-134.8792	1	-27.45	10.95	7.1
		KUG_06	71.1606	-134.9778	1	-28.32	9.81	11.08
		KUG_07	71.2877	-135.1071	1	-28.54	10.88	13.3
		TBS_01	69.9298	-140.3765	1	-26.19	10.77	6.1
		TBS_03	70.281	-140.3778	1	-26.32	11.23	8.17
		TBS_04	70.347	-140.3808	1	-26.09	11.18	7.38
		TBS_05	70.4293	-140.3763	1	-26.11	10.88	6.11
2017	Amundsen Gulf	CPB_10	71.1777	-123.8903	1	-27.44	11.35	5.99
	Darnley Bay	BPT_01A	69.6986	-123.7724	1	-30.28	11.22	8.63
		BPT_03	69.6988	-123.4349	1	-30.89	10.4	15.87
2018	Amundsen Gulf	CPB_02	70.5679	-127.5573	2	-27.29 $\pm$ 0.59	10.13 $\pm$ 0.15	6.24 $\pm$ 0.82
		CPB_03	70.6093	-127.3878	3	-27.57 $\pm$ 0.55	10.4 $\pm$ 0.41	8.71 $\pm$ 0.46
		CPB_10	71.1781	-123.888	1	-26.39	10.95	5.94
		CPB_11	71.251	-123.4806	1	-26.64	10.55	6.35
	Beaufort Sea	KUG_03	70.9363	-134.7534	3	-26.23 $\pm$ 0.83	10.53 $\pm$ 0.42	5.31 $\pm$ 0.39
		KUG_04	70.9859	-134.8092	2	-26.21 $\pm$ 0.02	10.89 $\pm$ 0.14	5.39 $\pm$ 0.14
	Dolphin and Union Strait	DUS_04	69.7231	-119.9495	1	-25.76	11.63	5.4
		DUS_05	69.7859	-119.4098	1	-26.53	11.2	6.24
		DUS_07	69.9036	-118.3327	1	-25.76	11.05	5.92
		DUS_09	69.9714	-117.7331	1	-26.29	10.74	7.05
2019	Amundsen Gulf	DUS_10	69.9925	-117.514	1	-25.93	12.84	5.48
		CPB_02	70.5652	-127.5456	1	-25.58	10.12	5.72
		CPB_03	70.593	-127.3716	2	-26.76 $\pm$ 0.81	9.96 $\pm$ 0.02	5.9 $\pm$ 0.26
		CPB_06	70.6832	-126.8263	2	-26.82 $\pm$ 0.25	10.18 $\pm$ 0.21	5.95 $\pm$ 0.38
		CPB_07	70.8058	-126.1009	2	-25.32 $\pm$ 0.28	10.13 $\pm$ 0.13	5.76 $\pm$ 0.13
		CPB_09	71.057	-124.6319	1	-25.47	10.54	6.09

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)	
2021	Beaufort Sea	CPB_10	71.178	-123.8904	2	-26.34 $\pm$ 0.73	10.31 $\pm$ 0.16	5.99 $\pm$ 0.49	
		CPB_11	71.2494	-123.4832	2	-26 $\pm$ 0.24	10.16 $\pm$ 0.15	6.02 $\pm$ 0.51	
		KUG_03	70.9346	-134.7503	2	-26.81 $\pm$ 0.63	10.45 $\pm$ 0.04	5.44 $\pm$ 0.6	
		KUG_04	70.9833	-134.8103	2	-26.87 $\pm$ 0.36	10.56 $\pm$ 0.13	5.42 $\pm$ 0.51	
		KUG_05	71.0517	-134.8642	2	-26.73 $\pm$ 0.57	10.31 $\pm$ 0.18	5.39 $\pm$ 0.55	
		KUG_06	71.1572	-134.9707	2	-26.72 $\pm$ 0.07	10.38 $\pm$ 0.48	5.43 $\pm$ 0.05	
	Dolphin and Union Strait	KUG_07	71.2841	-135.1044	2	-26.16 $\pm$ 0.52	10.11 $\pm$ 0.01	5.34 $\pm$ 0.38	
		DUS_03	69.6533	-120.5814	2	-24.28 $\pm$ 0.47	10.41 $\pm$ 0.08	5.31 $\pm$ 0.38	
		DUS_04	69.7239	-119.9416	2	-25.19 $\pm$ 1.12	10.34 $\pm$ 0.05	5.64 $\pm$ 0.64	
		DUS_05	69.7811	-119.3857	2	-24.39 $\pm$ 0.3	10.23 $\pm$ 0.13	5.42 $\pm$ 0.15	
		DUS_07	69.9062	-118.3321	2	-24.75 $\pm$ 0.63	10.38 $\pm$ 0.09	5.44 $\pm$ 0.46	
		DUS_09	69.9726	-117.7387	2	-24.88 $\pm$ 1.45	10.77 $\pm$ 0.19	5.31 $\pm$ 1.21	
	Amundsen Gulf	DUS_10	69.994	-117.5149	1	-24.35	10.46	4.94	
		AMG_03	70.5546	-122.9122	1	-26.85	12.76	6.21	
		CPB_08	70.923	-125.3739	1	-27.17	11.57	5.7	
		CPB_09	71.052	-124.6419	1	-25.82	12.05	4.89	
		CPB_10	71.1765	-123.8964	1	-26.47	12.3	5.92	
		CPB_11	71.2501	-123.4898	1	-27.52	11.88	11.69	
	Dolphin and Union Strait	DUS_03	69.654	-120.5694	1	-27.21	11.94	5.81	
		DUS_04	69.7238	-119.9425	1	-26.69	11.63	5.43	
		DUS_05	69.7844	-119.3938	1	-26.06	11.75	5.14	
		DUS_06	69.8582	-118.7422	1	-25.68	12.31	5.25	
		DUS_07	69.9058	-118.341	1	-25.78	12.31	5.14	
		DUS_08	69.9425	-118.0218	1	-26.11	12.37	5.52	
2023	Amundsen Gulf	DUS_09	69.9741	-117.7365	1	-24.37	12.18	4.85	
		AMG_03	70.5547	-122.9104	1	-25.36	11.68	5.14	
		AXL_02	71.6671	-119.7737	1	-27.53	12.29	6.64	
		CPB_03	70.594	-127.367	1	-27.11	10.66	6.29	
		CPB_07	70.8077	-126.1041	1	-25.71	11.72	5.16	
		CPB_09	71.05	-124.6336	1	-26.2	11.68	6.8	
	Beaufort Sea	CPB_11	71.2477	-123.4799	1	-25.92	11.37	5.63	
		CPY_03	70.4424	-124.525	1	-26.39	10.57	5.76	
		KUG_02	70.8507	-134.6776	1	-26.55	11.95	5.31	
		KUG_03	70.9343	-134.7411	1	-25.93	10.61	4.71	
		KUG_05	71.0554	-134.8694	1	-25.8	11	4.64	
		DUS_04	69.7226	-119.949	1	-23.74	11.86	5.02	
	Dolphin and Union Strait	DUS_07	69.9011	-118.331	1	-25.23	11.8	5.38	
		DUS_10	69.9953	-117.5142	1	-26	11.84	5.32	
		Minto Inlet	MTI_05	71.2349	-117.2667	1	-25.81	11.85	5.24
		Prince of Wales Strait	PWS_03	72.7286	-118.3912	1	-26.45	11.9	6.34
		Amundsen Gulf	AMG_03	70.5545	-122.9002	1	-27.93	10.67	14.41

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
		CPB_02	70.5622	-127.5441	1	-26.65	10.05	9.35
		CPB_03	70.5985	-127.3849	1	-26.79	10.66	6.65
		CPB_06	70.6856	-126.8333	1	-27.82	10.72	11.17
	Beaufort Sea	KUG_03	70.9317	-134.7492	1	-27.3	10.39	7.51
		KUG_04	70.9809	-134.7988	1	-27.23	10.41	5.1
		KUG_05	71.0498	-134.8628	1	-28.72	10.63	10.93
	Dolphin and Union Strait	DUS_04	69.7247	-119.9544	1	-26.3	11.19	5.76
		DUS_07	69.9054	-118.3356	1	-27.37	11.4	5.78
	Minto Inlet	MTI_04	71.2988	-117.3336	1	-23.71	11.94	4.48
		MTI_05	71.2365	-117.2641	1	-25.09	12.12	5.77

Table A3.3 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Themisto libellula* collected in the Western Canadian Arctic, summarized per station in each year. *T. libellula* ranging in size from <0.5-2.5 cm were typically analyzed as a single bulk sample per station. Means and standard deviations are provided when more than one sample was analyzed (N.B – *T. libellula* samples were not treated with 10% HCl prior to stable isotope analysis).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2012	Beaufort Sea	DAL_01	70.5376	-130.84	1	-26.18	10.57	6.96
		DAL_02	71.2049	-131.1919	1	-27.47	9.4	8.54
		DAL_03	71.3312	-131.2177	1	-27.42	11.18	4.93
		DAL_04	71.3717	-131.2397	1	-27.41	10.07	6.79
		DAL_05	71.4328	-131.2775	1	-27.18	10.92	6.1
		DAL_06	71.5998	-131.3508	1	-27	10.88	5.08
		DAL_07	71.8638	-131.4968	1	-27.01	10.05	5.84
		GRY_01	69.876	-137.2425	1	-26.89	9.84	7.19
		GRY_02	70.0175	-137.675	1	-27.31	8.8	8.45
		GRY_05	70.302	-138.5495	1	-27.33	10.58	8.15
		GRY_07	70.526	-139.2293	1	-25.83	10.01	6.07
		KUG_03	70.9319	-134.755	1	-27.53	9.97	7.46
		KUG_04	70.9816	-134.8052	1	-27.48	10.33	7.76
		TBS_01	69.9298	-140.3765	1	-26.82	11.04	6.46
		TBS_02	70.2518	-140.3772	1	-26.01	9.31	6.91
		TBS_03	70.281	-140.3778	1	-26.73	9.29	7.92
		TBS_04	70.347	-140.3808	1	-26.21	10.49	7.42
		TBS_05	70.4293	-140.3763	1	-26.38	10.57	5.95
2013	Amundsen Gulf	CBH_01	70.2766	-127.1191	1	-27.14	10.23	5.93
		CBH_02	70.2898	-127.0781	1	-26.72	9.85	4.76
		CBH_05	70.9133	-125.4391	1	-24.85	10.58	5.5
		CBH_06	70.2148	-124.7403	1	-25.01	12.29	4.41
		CBH_07	71.3867	-124.1633	1	-24.9	12.42	4.37
		CPY_03	70.442	-124.5685	1	-26.71	10.66	5.96
		DAR_04	70.2987	-123.411	1	-26.15	11.32	5.93
		DAR_05	70.5755	-123.2185	1	-25.72	11.64	5.46
		DAR_06	70.8238	-123.1179	1	-25.55	11.05	5.7
		DAR_07	71.0457	-123.0109	1	-25	11.91	5.71
		DAR_08	71.0595	-122.9152	1	-25.44	11.1	6.31
		ULU_05	70.0016	-118.5159	1	-26.17	10.36	5.34
		ULU_06	70.3151	-118.1302	1	-25.88	11.68	4.68
		ULU_07	70.4428	-117.8656	1	-26.15	10.76	6.04
	Beaufort Sea	DWT_01	70.5993	-138.3339	1	-27.99	11.31	6.13
	Darnley Bay	BPT_01A	69.7025	-123.7914	1	-27.42	8.74	8.9
		BPT_03	69.698	-123.4619	1	-27.23	10.61	8.03
		BPT_04	69.7008	-123.2367	1	-26.68	10.76	6.1

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Dolphin and Union Strait	BPT_05	69.7125	-123.1884	1	-27.39	9.71	7.27
		CPY_01	70.2263	-124.5334	1	-26.44	11	5.66
		CPY_02	70.2572	-124.5069	1	-26.72	10.91	6.34
		DAR_01	69.7051	-123.8278	1	-26.14	11.14	5.99
		DAR_02	69.5099	-123.741	1	-26.35	10.91	6.29
		DAR_03	70.1244	-123.4913	1	-26.6	11.36	5.99
		ULU_02	69.3732	-119.503	1	-26.91	10.78	6.97
		ULU_03	69.5629	-119.2585	1	-26.37	11	5.03
		ULU_04	69.6421	-119.121	1	-26.85	10.83	5.79
		ESC_01	70.6833	-128.9697	1	-26.82	11.3	5.61
	Amundsen Gulf	ALX_01	71.6212	-120.3355	1	-26.64	10.98	7.05
		ALX_02	71.6618	-119.7754	1	-25.58	10.71	6.8
	Banks Island Shelf	AMN_02	70.2186	-119.4775	1	-24.88	11.22	5.66
		BNK_06	72.9305	-126.3912	1	-25.99	11.18	4.61
	Beaufort Sea	BNK_02	72.098	-127.4803	1	-26.47	11.3	5.55
		BNK_03	72.0919	-129.9677	1	-25.61	11.38	4.78
		BNK_04	72.0954	-128.8124	1	-26.24	11.3	5.52
		BNK_05	72.9252	-127.7903	1	-29.09	10.64	5.8
	Darnley Bay	BNK_07	72.0977	-127.1391	1	-26.76	10.52	6.59
		KUG_02	70.8493	-134.6774	1	-25.1	11.78	4.68
		KUG_03	70.9334	-134.742	1	-25.17	11.09	5.07
		KUG_04	70.978	-134.8077	1	-24.99	10.74	5.46
	Dolphin and Union Strait	BPT_HC1	69.7002	-123.5335	1	-25.46	11.34	5.91
		CPY_01	70.2264	-124.5019	1	-25.06	10.15	6.2
	Franklin Bay	DOL_01	69.3813	-118.7689	1	-25.47	10.56	5.94
		DOL_02	69.4318	-118.6822	1	-25.5	11.39	5.77
		DOL_03	69.5355	-118.2157	1	-24.8	11.32	5.08
		DOL_04	69.6413	-117.7896	1	-25.37	10.72	6.61
		DOL_05	69.735	-117.3879	1	-25.35	10.99	5.82
	Franklin Bay	FRK_01	70.0819	-125.1995	1	-25.4	10.45	6.07
		FRK_02	70.0824	-125.4234	1	-24.92	10.68	5.6
		FRK_03	70.0871	-125.855	1	-24.63	10.67	4.62
		FRK_04	70.0882	-126.0383	1	-25.44	10.69	6.1
		FRK_05	70.0837	-126.4325	1	-24.73	10.72	5.12
		FRK_06	70.0867	-126.772	1	-24.72	10.61	6.03
		FRK_07	70.0896	-126.916	1	-25.03	11.31	6.28
		FRK_HC1	70.0868	-126.7985	3	-24.87 $\pm$ 0.12	11.51 $\pm$ 0.25	4.73 $\pm$ 1.84
		FRK_HC2	70.0828	-126.2342	4	-24.97 $\pm$ 0.58	10.45 $\pm$ 0.89	5.56 $\pm$ 0.98
		FRK_HC3	70.0839	-125.4484	3	-25.88 $\pm$ 0.41	10.09 $\pm$ 0.8	8.24 $\pm$ 1.55
		WIS_01	70.1031	-125.0602	1	-24.88	11.79	7.23
		WIS_02	70.174	-124.8366	1	-25.6	11.4	8.38

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2017	Minto Inlet	MNT_01	71.2324	-118.3652	1	-25.59	10.7	8.42
		MNT_02	71.2602	-117.0807	1	-25.01	10.81	6.2
		MNT_03	71.3252	-117.1497	1	-25.11	11.43	7.2
		MNT_04	71.3951	-117.1981	1	-25.24	11.02	6.92
		WLK_01	71.4775	-118.681	1	-25.44	11.23	8.02
		WLK_03	71.6034	-118.001	1	-25.83	11.09	8.07
	Prince of Wales Strait	PWS_01	72.1108	-119.4259	1	-25.85	10.71	7.7
	Amundsen Gulf	CPB_02	70.5729	-127.5609	1	-28.03	10.53	5.88
		CPB_03	70.5982	-127.378	1	-27.76	10.51	5.24
		CPB_07	70.81	-126.1052	1	-26.18	10.61	4.89
		CPB_09	71.056	-124.6336	1	-26.35	10.93	4.34
		CPB_11	71.2488	-123.4836	1	-26.14	10.83	5.01
	Beaufort Sea	KUG_03	70.9374	-134.7318	1	-27.77	9.95	5.59
		KUG_04	70.9833	-134.7969	1	-27.95	10.64	5.17
	Darnley Bay	BPT_01A	69.6986	-123.7724	1	-28.35	10.11	5.79
		BPT_03	69.6988	-123.4349	1	-29.93	10.81	12.62
2018	Amundsen Gulf	CPB_11	71.251	-123.4806	1	-27.2	11.14	6.93
	Beaufort Sea	KUG_03	70.9363	-134.7534	2	-25.28 $\pm$ 1.97	10.21 $\pm$ 0.51	6.64 $\pm$ 2.1
	Dolphin and Union Strait	DUS_09	69.9714	-117.7331	1	-26.83	10.7	6.92
2019	Amundsen Gulf	CPB_02	70.5652	-127.5456	2	-25.05 $\pm$ 0.84	9.5 $\pm$ 0.18	6.3 $\pm$ 1.61
		CPB_06	70.6832	-126.8263	2	-25.48 $\pm$ 0.5	10.2 $\pm$ 0.59	6.84 $\pm$ 1.69
		CPB_07	70.8058	-126.1009	1	-23.78	10.29	5.53
		CPB_10	71.178	-123.8904	2	-25.59 $\pm$ 0.38	9.51 $\pm$ 0.33	6.33 $\pm$ 1.18
		CPB_11	71.2494	-123.4832	3	-26.21 $\pm$ 1.07	9.88 $\pm$ 0.41	6.72 $\pm$ 2.21
		CPY_03	70.4441	-124.5204	1	-26.28	10.5	6.21
	Beaufort Sea	KUG_03	70.9346	-134.7503	4	-26.91 $\pm$ 0.89	9.75 $\pm$ 0.72	5.64 $\pm$ 1.06
		KUG_04	70.9833	-134.8103	5	-27.95 $\pm$ 2.3	9.84 $\pm$ 0.74	6.48 $\pm$ 1.82
		KUG_05	71.0517	-134.8642	3	-27.16 $\pm$ 0.25	9.82 $\pm$ 0.23	5.6 $\pm$ 0.78
		KUG_06	71.1572	-134.9707	4	-28.34 $\pm$ 1.9	9.83 $\pm$ 0.37	7.3 $\pm$ 0.93
		KUG_07	71.2841	-135.1044	3	-25.74 $\pm$ 1.56	10.1 $\pm$ 0.55	4.98 $\pm$ 1.01
	Darnley Bay	BPT_01A	69.6989	-123.7694	2	-24.57 $\pm$ 0.46	9.74 $\pm$ 0.41	5.52 $\pm$ 0.09
		BPT_03	69.6988	-123.4367	1	-24.62	10.66	6.35
		CPY_02	70.2618	-124.4913	1	-25.26	10.63	4.85
	Dolphin and Union Strait	DUS_03	69.6533	-120.5814	2	-24.23 $\pm$ 1.69	10.32 $\pm$ 0.45	5.07 $\pm$ 1.92
		DUS_09	69.9726	-117.7387	1	-24.55	9.92	5.51
2021	Amundsen Gulf	AMG_03	70.5546	-122.9122	1	-26.8	10.52	5.19
		CPB_08	70.923	-125.3739	2	-27.57 $\pm$ 0.57	10.52 $\pm$ 0.5	5.83 $\pm$ 1.07
		CPB_09	71.052	-124.6419	1	-26.94	10.82	5.46
		CPB_10	71.1765	-123.8964	1	-27.44	10.59	6.88
		CPB_11	71.2501	-123.4898	1	-26.02	10.95	4.65
	Darnley Bay	BPT_01A	69.6984	-123.7686	1	-27.61	10.28	8.51

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2022	Dolphin and Union Strait	BPT_03	69.6976	-123.4354	1	-26.71	10.72	8.06
		CPY_02	70.2559	-124.5197	1	-25.13	10.93	4.64
		DUS_02	69.6392	-120.7159	2	-27.53 $\pm$ 0.14	11.04 $\pm$ 0.83	5.84 $\pm$ 0.5
		DUS_03	69.654	-120.5694	2	-27.58 $\pm$ 0.78	11.1 $\pm$ 0.31	5.72 $\pm$ 0.21
		DUS_04	69.7238	-119.9425	2	-26.67 $\pm$ 0.11	10.18 $\pm$ 0.9	6.1 $\pm$ 0.32
		DUS_05	69.7844	-119.3938	2	-26.68 $\pm$ 0.56	10.66 $\pm$ 1.08	5.6 $\pm$ 0.48
		DUS_06	69.8582	-118.7422	2	-27.57 $\pm$ 1.42	9.91 $\pm$ 0.55	6.04 $\pm$ 1.63
		DUS_07	69.9058	-118.341	2	-27.58 $\pm$ 0.21	10.11 $\pm$ 0.57	5.92 $\pm$ 1.01
		DUS_08	69.9425	-118.0218	2	-26.91 $\pm$ 0.42	10.44 $\pm$ 0.23	5.75 $\pm$ 1.44
		DUS_09	69.9741	-117.7365	2	-26.99 $\pm$ 0.65	10.87 $\pm$ 0.03	5.64 $\pm$ 0.78
	Amundsen Gulf	DUS_10	69.9967	-117.5144	2	-26.6 $\pm$ 0.14	10.86 $\pm$ 0.38	5.57 $\pm$ 0.87
		AMG_03	70.5567	-122.9127	1	-26.56	11.11	4.6
		CPB_02	70.5694	-127.56	1	-30.09	10.16	6.15
		CPB_06	70.6854	-126.8406	1	-28.57	9.19	5.4
		CPY_03	70.4454	-124.5308	1	-28.77	10.07	5.82
	Beaufort Sea	CPY_04	70.6406	-124.5183	1	-27.87	10.22	6.28
		KUG_03	70.9357	-134.7565	1	-29.18	9.95	5.7
		KUG_04	70.9845	-134.8067	1	-30.05	9	6.83
		KUG_05	71.0459	-134.893	1	-29.51	10.19	6.64
	Darnley Bay	BPT_01A	69.6991	-123.7692	1	-27.95	10.2	6.49
		CPY_01	70.2265	-124.4902	1	-28.75	9.99	6.21
		CPY_02	70.2582	-124.499	1	-29.39	9.97	7
	Dolphin and Union Strait	DUS_04	69.7244	-119.9559	1	-27.16	11.16	4.9
		DUS_10	69.9974	-117.52	1	-25.88	10.67	5.19
	Franklin Bay	FKN_03	70.007	-126.247	1	-29.61	10.1	7.08
	Minto Inlet	MTI_05	71.2332	-117.2765	1	-26.34	10.89	5.49
2023	Amundsen Gulf	AMG_03	70.5547	-122.9104	1	-25.62	10.83	5.56
		AXL_02	71.6671	-119.7737	1	-27.2	11.92	6.45
		CPB_02	70.566	-127.55	1	-26.86	10.79	6.05
		CPB_03	70.594	-127.367	1	-26.75	10.88	6.32
		CPB_06	70.6862	-126.8231	1	-27.27	10.29	6.36
		CPB_07	70.8077	-126.1041	1	-26.55	10.98	5.76
		CPB_09	71.05	-124.6336	1	-26.65	11.04	5.11
		CPB_11	71.2477	-123.4799	1	-26.02	11.09	4.91
		CPY_03	70.4424	-124.525	1	-26.08	10.77	5.18
	Beaufort Sea	KUG_02	70.8507	-134.6776	1	-25.97	10.31	6.26
		KUG_03	70.9343	-134.7411	1	-25.92	10.01	6.36
		KUG_04	70.982	-134.7849	1	-26.02	9.94	6.11
		KUG_05	71.0554	-134.8694	1	-25.93	10.38	6.8
	Darnley Bay	ALE_01	69.7474	-124.1951	1	-25.55	10.73	6.64
		BPT_03	69.6992	-123.4309	1	-26.28	10.47	7.29

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)	
2024	Dolphin and Union Strait	CPY_01	70.2246	-124.4957	1	-26.7	9.84	8.36	
		CPY_02	70.2591	-124.5031	1	-26.72	11.19	6.53	
		DUS_02	69.6403	-120.7028	1	-26.49	10.55	6.09	
		DUS_04	69.7226	-119.949	1	-25.28	11.15	5.5	
		DUS_07	69.9011	-118.331	1	-25.48	10.41	5.93	
		DUS_09	69.9749	-117.7289	1	-26.28	10.61	5.81	
	Minto Inlet	DUS_10	69.9953	-117.5142	1	-25.71	10.33	6.96	
		MTI_05	71.2349	-117.2667	1	-25.07	12.14	4.29	
	Prince of Wales Strait	PWS_01A	72.1097	-119.4401	1	-26.78	10.44	8.42	
		PWS_02	72.3163	-118.8634	1	-25.91	11.56	6.15	
	Amundsen Gulf	PWS_03	72.7286	-118.3912	1	-26.59	10.46	7.78	
		AMG_03	70.5545	-122.9002	1	-26.75	9.73	7.12	
		CPB_02	70.5622	-127.5441	1	-26.74	10.47	6.33	
		CPB_03	70.5985	-127.3849	1	-27.01	9.61	6.81	
		CPB_06	70.6856	-126.8333	1	-26.51	10.07	7.38	
		Beaufort Sea	KUG_03	70.9317	-134.7492	1	-27.27	10.4	5.63
			KUG_04	70.9809	-134.7988	1	-27.04	10.14	5.19
	KUG_05		71.0498	-134.8628	1	-27.65	9.24	6.74	
	Darnley Bay	CPY_02	70.2585	-124.4977	1	-26.07	9.37	5.47	
	Dolphin and Union Strait	DUS_02	69.6368	-120.7024	1	-25.82	10.23	6.2	
		DUS_04	69.7247	-119.9544	1	-26.99	10.22	6.05	
	Mackenzie Shelf Coast	DUS_07	69.9054	-118.3356	1	-27.62	9.86	6.68	
		DUS_10	69.9984	-117.5186	1	-25.84	10.29	6.26	
		KUG_01	70.0081	-133.8439	1	-28.56	8.68	7.65	
		Minto Inlet	MTI_04	71.2988	-117.3336	1	-26.18	10.35	6.75
			MTI_05	71.2365	-117.2641	1	-25.52	9.82	6.19
	Prince of Wales Strait	PWS_05	72.3547	-119.0626	1	-26.72	9.56	8.62	

Table A3.4 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) for *Heliometra glacialis* collected in the Western Canadian Arctic, summarized by station in each year. $\delta^{15}\text{N}$ values in this table have been standardized to the median depth and body mass of *H. glacialis* samples. (N.B – $\delta^{13}\text{C}$ values represent an acidified aliquot).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Amundsen Gulf	CPY_03	70.4429	-124.5276	2	-19.35 $\pm$ 0.12	13.97 $\pm$ 0.11	5.74 $\pm$ 0.27
	Darnley Bay	CPY_02	70.2572	-124.5188	1	-18.93	13.04	5.69
	Dolphin and Union Strait	DOL_01	69.3813	-118.7689	3	-18.52 $\pm$ 1.14	14.16 $\pm$ 0.44	6.52 $\pm$ 0.77
	Franklin Bay	FRK_04	70.0882	-126.0383	5	-19.83 $\pm$ 1.11	13.32 $\pm$ 0.23	7.25 $\pm$ 1.53
2017	Amundsen Gulf	CPB_03	70.5982	-127.378	4	-19.06 $\pm$ 2.9	12.98 $\pm$ 0.32	6 $\pm$ 0.27
		CPB_11	71.2488	-123.4836	2	-19.2 $\pm$ 1.41	13.81 $\pm$ 0.17	6.38 $\pm$ 0.23
	Dolphin and Union Strait	DUS_08	69.9401	-118.0201	6	-20.28 $\pm$ 1.66	13.66 $\pm$ 0.25	6.57 $\pm$ 0.79
		DUS_09	69.9747	-117.7312	2	-18.06 $\pm$ 1.64	14.15 $\pm$ 0.19	6.71 $\pm$ 0.39
	Franklin Bay	FKN_03	70.0019	-126.2671	1	-17.68	12.25	6.55
		FKN_05	69.9981	-125.7762	2	-21.45 $\pm$ 2.36	13.29 $\pm$ 0.55	5.77 $\pm$ 0.33
2018	Amundsen Gulf	CPB_03	70.6093	-127.3878	3	-18.35 $\pm$ 1.64	13.48 $\pm$ 0.44	6.66 $\pm$ 0.22
		CPB_11	71.251	-123.4806	4	-19.05 $\pm$ 1.21	14.82 $\pm$ 0.14	7.38 $\pm$ 0.98
	Darnley Bay	BPT_01A	69.6998	-123.7729	1	-19.12	13.13	7.4
	Dolphin and Union Strait	DUS_02	69.6357	-120.7148	6	-18.89 $\pm$ 0.65	13.53 $\pm$ 0.29	6.37 $\pm$ 0.69
		DUS_09	69.9714	-117.7331	1	-16.34	13.65	7.89
	Franklin Bay	FKN_03	70.0031	-126.2552	1	-17.96	12.41	6.88
2019		FKN_07	69.6308	-125.9516	1	-19.75	13.06	6.4
	Amundsen Gulf	CPB_06	70.6832	-126.8263	5	-19.34 $\pm$ 0.9	13.07 $\pm$ 0.44	6.67 $\pm$ 0.61
		CPB_10	71.178	-123.8904	4	-19.57 $\pm$ 0.94	13.67 $\pm$ 0.21	6.01 $\pm$ 0.12
		CPY_03	70.4441	-124.5204	2	-18.7 $\pm$ 0.02	13.31 $\pm$ 0.09	6.61 $\pm$ 0.11
	Beaufort Sea	KUG_04	70.9833	-134.8103	1	-19.44	12.54	7.62
	Dolphin and Union Strait	DUS_02	69.639	-120.7159	2	-19.15 $\pm$ 3.89	13.65 $\pm$ 0.11	6.72 $\pm$ 1.12
		DUS_03	69.6533	-120.5814	1	-17.28	13.96	6.45
		DUS_09	69.9726	-117.7387	2	-19.53 $\pm$ 1.75	13.89 $\pm$ 0.02	7.24 $\pm$ 0.18
	Franklin Bay	FKN_03	69.9963	-126.2392	2	-19.48 $\pm$ 0.02	12.61 $\pm$ 0.06	6.48 $\pm$ 1.16
	Amundsen Gulf	CPB_03	70.5952	-127.3701	4	-19.43 $\pm$ 2.72	13.14 $\pm$ 0.4	7.99 $\pm$ 0.42
2022		CPB_06	70.6854	-126.8406	5	-19.45 $\pm$ 3.59	13.78 $\pm$ 0.52	6.71 $\pm$ 0.69
		CPY_03	70.4454	-124.5308	3	-19.54 $\pm$ 1.17	12.78 $\pm$ 0.93	7.84 $\pm$ 0.55
	Beaufort Sea	KUG_03	70.9357	-134.7565	1	-26.96	12.73	7.72
	Dolphin and Union Strait	DUS_04	69.7244	-119.9559	1	-20.05	14.17	6.67
		DUS_10	69.9974	-117.52	7	-20.44 $\pm$ 2.92	13.6 $\pm$ 0.56	7.67 $\pm$ 0.62

Table A3.5 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Similipecten greenlandicus* collected in the Western Canadian Arctic, summarized by station in each year. $\delta^{15}\text{N}$ values in this table have been standardized to the median depth at which *S. greenlandicus* was sampled. (N.B – $\delta^{13}\text{C}$ values represent those in which excessive inorganic carbon was removed, either by manual removal of shell or acidification with 10% HCl).

						$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	C:N
Year	Region	Station	Latitude	Longitude	n	(mean $\pm$ s.d.)	(mean $\pm$ s.d.)	(mean $\pm$ s.d.)
2017	Franklin Bay	FKN_05	69.9981	-125.7762	5	-22.31 $\pm$ 0.09	9.89 $\pm$ 0.17	3.8 $\pm$ 0.16
2018	Franklin Bay	FKN_05	69.9995	-125.7721	5	-21.86 $\pm$ 0.18	9.58 $\pm$ 0.23	3.84 $\pm$ 0.08
2019	Darnley Bay	BPT_05	69.701	-123.1968	5	-22.35 $\pm$ 0.04	10.65 $\pm$ 0.31	3.79 $\pm$ 0.09
2021	Amundsen Gulf	CPB_11	71.2501	-123.4898	5	-22.84 $\pm$ 0.56	11.76 $\pm$ 0.4	3.81 $\pm$ 0.11
		DES_02	71.3729	-121.578	8	-22.97 $\pm$ 0.47	10.14 $\pm$ 0.78	3.64 $\pm$ 0.33
		ULU_08	70.606	-117.8598	3	-22.62 $\pm$ 0.3	11.54 $\pm$ 0.22	3.63 $\pm$ 0.09
	Darnley Bay	BPT_01A	69.6984	-123.7686	10	-22.14 $\pm$ 0.57	11.33 $\pm$ 0.71	3.94 $\pm$ 0.37
		BPT_05	69.7026	-123.1956	10	-24 $\pm$ 0.42	11.13 $\pm$ 0.36	3.66 $\pm$ 0.18
	Dolphin and Union Strait	DUS_02	69.6392	-120.7159	9	-23.11 $\pm$ 0.84	11.01 $\pm$ 0.28	3.8 $\pm$ 0.11
	Prince Albert Sound	PAS_03	70.392	-116.4402	5	-22.55 $\pm$ 0.4	12.22 $\pm$ 0.42	3.81 $\pm$ 0.2
		PAS_09	70.5521	-114.6707	10	-23.08 $\pm$ 0.15	10.63 $\pm$ 0.19	3.8 $\pm$ 0.09
	Prince of Wales Strait	JES_01	72.2077	-120.0747	9	-22.39 $\pm$ 0.13	11.98 $\pm$ 0.23	3.79 $\pm$ 0.1
	2022	Amundsen Gulf	CPB_02	70.5694	-127.56	9	-22.65 $\pm$ 0.16	10.97 $\pm$ 0.44
CPY_03			70.4454	-124.5308	4	-22.54 $\pm$ 0.1	10.43 $\pm$ 0.34	3.7 $\pm$ 0.26
Darnley Bay		BPT_01A	69.6991	-123.7692	10	-22.45 $\pm$ 0.41	11.59 $\pm$ 0.37	3.52 $\pm$ 0.13
Dolphin and Union Strait		DUS_02	69.6334	-120.7068	10	-23.86 $\pm$ 0.25	11.05 $\pm$ 0.38	3.75 $\pm$ 0.36
		DUS_10	69.9974	-117.52	10	-22.62 $\pm$ 0.36	10.82 $\pm$ 0.28	3.74 $\pm$ 0.1

Table A3.6 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Eualus gaimardii belcheri* collected in the Western Canadian Arctic, summarized by station in each year. $\delta^{15}\text{N}$ values in this table have been standardized to the median depth and body mass of *E. gaimardii belcheri* samples. (N.B – *E. gaimardii belcheri* samples were not treated with 10% HCl prior to stable isotope analysis).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Amundsen Gulf	CPY_03	70.4429	-124.5276	10	-20.98 $\pm$ 0.51	14.72 $\pm$ 0.62	3.3 $\pm$ 0.1
	Beaufort Sea	KUG_04	70.978	-134.8077	1	-21.03	14.16	2.77
		KUG_05	71.0498	-134.8517	1	-20.74	14.85	2.77
	Darnley Bay	BPT_03	69.6986	-123.441	10	-20.73 $\pm$ 0.66	14.85 $\pm$ 0.41	3.26 $\pm$ 0.07
		CPY_01	70.2264	-124.5019	10	-20.53 $\pm$ 0.34	13.96 $\pm$ 0.26	3.25 $\pm$ 0.05
		CPY_02	70.2572	-124.5188	5	-21.29 $\pm$ 0.24	14.25 $\pm$ 0.81	3.32 $\pm$ 0.03
	Dolphin and Union Strait	DOL_01	69.3813	-118.7689	7	-20.72 $\pm$ 0.43	14.79 $\pm$ 0.49	3.26 $\pm$ 0.08
		DOL_02	69.4318	-118.6822	5	-20.43 $\pm$ 0.48	15.65 $\pm$ 0.59	3.25 $\pm$ 0.06
2017	Amundsen Gulf	CPB_03	70.5982	-127.378	10	-20.91 $\pm$ 0.32	14.12 $\pm$ 0.7	3.24 $\pm$ 0.04
	Beaufort Sea	CPB_06	70.6834	-126.8397	11	-20.69 $\pm$ 0.27	14.19 $\pm$ 0.39	3.11 $\pm$ 0.13
		KUG_04	70.9833	-134.7969	9	-20.68 $\pm$ 0.34	14.65 $\pm$ 0.59	3.22 $\pm$ 0.07
	Darnley Bay	KUG_05	71.0523	-134.8662	1	-20.45	14.04	2.76
		BPT_01A	69.6986	-123.7724	10	-20 $\pm$ 0.29	14.64 $\pm$ 0.26	3.37 $\pm$ 0.04
		FKN_03	70.0019	-126.2671	4	-20.63 $\pm$ 0.48	14.65 $\pm$ 0.2	3.23 $\pm$ 0.06
		FKN_04	69.9988	-125.9761	5	-20.13 $\pm$ 0.14	13.83 $\pm$ 0.38	3.23 $\pm$ 0.04
		FKN_05	69.9981	-125.7762	5	-20.95 $\pm$ 0.49	14.16 $\pm$ 0.24	3.32 $\pm$ 0.06
2018	Beaufort Sea	KUG_03	70.9363	-134.7534	10	-20.73 $\pm$ 0.31	14.04 $\pm$ 0.29	3.17 $\pm$ 0.03
		KUG_04	70.9859	-134.8092	11	-20.32 $\pm$ 0.45	14.18 $\pm$ 0.38	3.05 $\pm$ 0.13
	Franklin Bay	FKN_02	69.9968	-126.6656	5	-20.13 $\pm$ 0.22	14.01 $\pm$ 0.56	3.22 $\pm$ 0.06
		FKN_07	69.6308	-125.9516	5	-20.33 $\pm$ 0.2	14.17 $\pm$ 0.2	3.36 $\pm$ 0.03
2019	Amundsen Gulf	CPB_03	70.593	-127.3716	9	-20.79 $\pm$ 0.47	14.52 $\pm$ 0.42	3.21 $\pm$ 0.08
	Beaufort Sea	CPB_06	70.6832	-126.8263	11	-20.64 $\pm$ 0.27	14.16 $\pm$ 0.37	3.11 $\pm$ 0.13
		CPY_03	70.4441	-124.5204	10	-20.69 $\pm$ 0.31	13.93 $\pm$ 0.32	3.24 $\pm$ 0.05
		KUG_03	70.9346	-134.7503	10	-20.47 $\pm$ 0.27	14.14 $\pm$ 0.26	3.24 $\pm$ 0.06
	Dolphin and Union Strait	KUG_04	70.9833	-134.8103	11	-20.21 $\pm$ 0.23	14.33 $\pm$ 0.4	3.18 $\pm$ 0.17
		DUS_09	69.9726	-117.7387	10	-21.26 $\pm$ 0.13	14.98 $\pm$ 0.39	3.2 $\pm$ 0.06
		FKN_03	69.9963	-126.2392	5	-19.97 $\pm$ 0.56	14.09 $\pm$ 0.16	3.25 $\pm$ 0.08
		FKN_04	70.001	-125.9599	5	-20.01 $\pm$ 0.32	14.35 $\pm$ 0.3	3.21 $\pm$ 0.02
2023	Amundsen Gulf	CPB_03	70.594	-127.367	10	-21.24 $\pm$ 0.58	13.97 $\pm$ 0.21	3.33 $\pm$ 0.08
	Beaufort Sea	CPB_06	70.6862	-126.8231	11	-21.08 $\pm$ 0.39	14.11 $\pm$ 0.33	3.18 $\pm$ 0.18
		CPY_03	70.4424	-124.525	10	-21.25 $\pm$ 0.35	14.51 $\pm$ 0.54	3.19 $\pm$ 0.04
		KUG_03	70.9343	-134.7411	10	-21.06 $\pm$ 0.38	14.52 $\pm$ 0.34	3.3 $\pm$ 0.05
	Franklin Bay	KUG_04	70.982	-134.7849	11	-20.37 $\pm$ 0.26	14.05 $\pm$ 0.43	3.17 $\pm$ 0.18
		KUG_05	71.0554	-134.8694	11	-20.39 $\pm$ 0.25	14.21 $\pm$ 0.54	3.16 $\pm$ 0.16
		FKN_03	70.0018	-126.2466	5	-20.46 $\pm$ 0.19	14.17 $\pm$ 0.29	3.2 $\pm$ 0.02
		CPB_02	70.5622	-127.5441	1	-20.79	13	3.37
2024	Amundsen Gulf	CPB_03	70.5985	-127.3849	5	-20.85 $\pm$ 0.57	13.67 $\pm$ 0.2	3.2 $\pm$ 0.05

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
		CPB_06	70.6856	-126.8333	15	-21 $\pm$ 0.33	13.95 $\pm$ 0.41	3.22 $\pm$ 0.07
	Beaufort Sea	KUG_03	70.9317	-134.7492	10	-20.85 $\pm$ 0.24	13.78 $\pm$ 0.61	3.27 $\pm$ 0.24
		KUG_04	70.9809	-134.7988	20	-20.38 $\pm$ 0.28	13.95 $\pm$ 0.35	3.13 $\pm$ 0.07
		KUG_05	71.0498	-134.8628	14	-20.54 $\pm$ 0.32	13.97 $\pm$ 0.66	3.32 $\pm$ 0.15
	Darnley Bay	BPT_03	69.6987	-123.4391	2	-20.63 $\pm$ 0.09	13.92 $\pm$ 0.87	3.33 $\pm$ 0.1
	Dolphin and Union Strait	DUS_07	69.9054	-118.3356	1	-21.87	14.22	2.81
	Franklin Bay	FKN_03	69.9995	-126.2482	14	-20.49 $\pm$ 0.33	13.97 $\pm$ 0.33	3.2 $\pm$ 0.04

Table A3.7 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Lebbeus polaris* collected in the Western Canadian Arctic, summarized by station in each year. $\delta^{15}\text{N}$ values in this table have been standardized to the median depth and body mass of *L. polaris* samples. (N.B – *L. polaris* samples were not treated with 10% HCl prior to stable isotope analysis).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Amundsen Gulf	CPY_03	70.4429	-124.5276	6	-20.72 $\pm$ 0.42	15.59 $\pm$ 0.46	3.4 $\pm$ 0.09
	Darnley Bay	BPT_01	69.7036	-123.8185	5	-20.14 $\pm$ 0.53	13.93 $\pm$ 0.74	3.44 $\pm$ 0.14
		CPY_01	70.2264	-124.5019	10	-19.68 $\pm$ 0.44	13.78 $\pm$ 0.52	3.23 $\pm$ 0.08
	Dolphin and Union Strait	DOL_01	69.3813	-118.7689	5	-20.74 $\pm$ 0.27	14.79 $\pm$ 0.28	3.43 $\pm$ 0.13
		DOL_03	69.5355	-118.2157	1	-20.67	14.1	2.8
2017	Amundsen Gulf	CPB_11	71.2488	-123.4836	10	-20.95 $\pm$ 0.5	15.3 $\pm$ 0.22	3.32 $\pm$ 0.07
	Dolphin and Union Strait	DUS_07	69.9037	-118.3279	1	-20.65	13.74	2.75
		DUS_08	69.9401	-118.0201	10	-21.16 $\pm$ 0.3	14.16 $\pm$ 0.3	3.28 $\pm$ 0.09
2018	Dolphin and Union Strait	DUS_07	69.9036	-118.3327	1	-20.92	14.07	2.74
		DUS_08	69.9435	-118.0134	10	-20.55 $\pm$ 0.35	14.12 $\pm$ 0.27	3.2 $\pm$ 0.07
2019	Amundsen Gulf	CPB_11	71.2494	-123.4832	10	-21.4 $\pm$ 0.52	15.06 $\pm$ 0.47	3.26 $\pm$ 0.08
		CPY_03	70.4441	-124.5204	10	-20.03 $\pm$ 0.33	15.36 $\pm$ 0.41	3.24 $\pm$ 0.09
	Beaufort Sea	KUG_05	71.0517	-134.8642	1	-20.26	13.46	2.72
	Dolphin and Union Strait	DUS_07	69.9062	-118.3321	1	-20.66	13.8	2.72
		DUS_08	69.9443	-118.0239	10	-21.31 $\pm$ 0.23	13.89 $\pm$ 0.36	3.19 $\pm$ 0.07
		DUS_09	69.9726	-117.7387	10	-21.02 $\pm$ 0.71	14.93 $\pm$ 0.68	3.21 $\pm$ 0.08
2021	Amundsen Gulf	CPB_11	71.2501	-123.4898	10	-21.62 $\pm$ 0.73	14.41 $\pm$ 0.32	3.27 $\pm$ 0.14
	Dolphin and Union Strait	DUS_07	69.9058	-118.341	1	-20.63	14.6	2.75
	Prince Albert Sound	PAS_02	70.3241	-117.0572	10	-20.63 $\pm$ 0.49	14.82 $\pm$ 0.33	3.15 $\pm$ 0.05
		PAS_09	70.5521	-114.6707	10	-20.65 $\pm$ 0.75	14.29 $\pm$ 0.34	3.2 $\pm$ 0.05
2022	Beaufort Sea	KUG_01C	70.6575	-134.4914	3	-21.08 $\pm$ 0.39	14.58 $\pm$ 0.27	3.28 $\pm$ 0.07
	Dolphin and Union Strait	DUS_04	69.7244	-119.9559	10	-21.22 $\pm$ 0.69	13.88 $\pm$ 0.16	3.53 $\pm$ 0.12
		DUS_07	69.9009	-118.3434	11	-20.96 $\pm$ 0.37	14.51 $\pm$ 0.25	3.31 $\pm$ 0.21
		DUS_10	69.9974	-117.52	10	-21.85 $\pm$ 0.56	14.21 $\pm$ 0.82	3.47 $\pm$ 0.1
2023	Amundsen Gulf	AMG_03	70.5547	-122.9104	1	-21.29	14.45	2.78
	Dolphin and Union Strait	DUS_04	69.7226	-119.949	10	-20.98 $\pm$ 0.75	13.99 $\pm$ 0.59	3.31 $\pm$ 0.05
		DUS_07	69.9011	-118.331	11	-21.11 $\pm$ 0.43	14.82 $\pm$ 0.38	3.22 $\pm$ 0.17
		DUS_09	69.9749	-117.7289	10	-21.84 $\pm$ 1.04	14.18 $\pm$ 0.69	3.33 $\pm$ 0.12
2024	Amundsen Gulf	AMG_03	70.5545	-122.9002	1	-21.1	14.12	2.72
		CPB_06	70.6856	-126.8333	1	-21.26	13.44	2.7
	Beaufort Sea	KUG_05	71.0498	-134.8628	15	-20.36 $\pm$ 0.39	14.14 $\pm$ 0.37	3.13 $\pm$ 0.09
	Darnley Bay	BPT_03	69.6987	-123.4391	1	-20.85	13.84	3.2
	Dolphin and Union Strait	DUS_02	69.6368	-120.7024	2	-20.94 $\pm$ 0.29	13.37 $\pm$ 0.19	3.38 $\pm$ 0.09
		DUS_04	69.7247	-119.9544	20	-20.84 $\pm$ 0.43	13.66 $\pm$ 0.44	3.21 $\pm$ 0.09
		DUS_07	69.9054	-118.3356	15	-21 $\pm$ 0.63	14.33 $\pm$ 0.4	3.22 $\pm$ 0.05
		DUS_10	69.9984	-117.5186	10	-21.32 $\pm$ 0.45	13.7 $\pm$ 0.45	3.24 $\pm$ 0.07

Table A3.8 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Sabinea septemcarinata* collected in the Western Canadian Arctic, summarized by station in each year. $\delta^{15}\text{N}$ values in this table have been standardized to the median depth and body mass of *S. septemcarinata* samples (N.B – *S. septemcarinata* samples were not treated with 10% HCl prior to stable isotope analysis).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Beaufort Sea	KUG_02	70.8493	-134.6774	5	-21.97 $\pm$ 0.19	16.45 $\pm$ 0.23	3.44 $\pm$ 0.02
		KUG_03	70.9334	-134.742	5	-20.34 $\pm$ 0.42	15.51 $\pm$ 0.47	3.32 $\pm$ 0.09
	Darnley Bay	BPT_01	69.7036	-123.8185	5	-18.81 $\pm$ 0.47	18.72 $\pm$ 0.29	3.44 $\pm$ 0.06
		BPT_03	69.6986	-123.441	5	-19.17 $\pm$ 0.59	17.02 $\pm$ 0.43	3.42 $\pm$ 0.18
		BPT_05	69.7034	-123.1927	5	-17.96 $\pm$ 1.25	18.26 $\pm$ 0.39	3.38 $\pm$ 0.09
	Franklin Bay	FRK_01	70.0819	-125.1995	5	-17.46 $\pm$ 0.51	18.39 $\pm$ 0.63	3.31 $\pm$ 0.07
		FRK_04	70.0882	-126.0383	5	-19.72 $\pm$ 0.35	15.11 $\pm$ 0.6	3.39 $\pm$ 0.05
		FRK_06	70.0867	-126.772	10	-19.87 $\pm$ 0.71	15.91 $\pm$ 0.59	3.38 $\pm$ 0.1
2017	Amundsen Gulf	CPB_02	70.5729	-127.5609	5	-19.55 $\pm$ 0.51	14.39 $\pm$ 0.78	3.31 $\pm$ 0.12
		CPB_03	70.5982	-127.378	10	-19.62 $\pm$ 0.43	13.53 $\pm$ 0.77	3.34 $\pm$ 0.09
		CPB_11	71.2488	-123.4836	5	-20.13 $\pm$ 0.38	15.9 $\pm$ 0.56	3.38 $\pm$ 0.07
	Beaufort Sea	KUG_04	70.9833	-134.7969	8	-20.44 $\pm$ 0.44	14.05 $\pm$ 0.58	3.4 $\pm$ 0.11
	Darnley Bay	BPT_01A	69.6986	-123.7724	7	-18.16 $\pm$ 0.34	17.63 $\pm$ 0.58	3.42 $\pm$ 0.09
		BPT_03	69.6988	-123.4349	5	-18.79 $\pm$ 0.23	16.28 $\pm$ 0.58	3.37 $\pm$ 0.03
	Franklin Bay	FKN_02	70.0014	-126.6799	5	-19.48 $\pm$ 0.17	14.99 $\pm$ 1.04	3.31 $\pm$ 0.09
		FKN_04	69.9988	-125.9761	5	-19.15 $\pm$ 0.29	15.41 $\pm$ 0.27	3.34 $\pm$ 0.11
		FKN_05	69.9981	-125.7762	5	-18.5 $\pm$ 0.28	17.08 $\pm$ 0.47	3.23 $\pm$ 0.08
2018	Amundsen Gulf	CPB_02	70.5679	-127.5573	5	-20.24 $\pm$ 0.18	14.58 $\pm$ 0.74	3.41 $\pm$ 0.04
	Beaufort Sea	KUG_01C	70.6476	-134.4669	5	-20.31 $\pm$ 0.17	16.73 $\pm$ 0.48	3.35 $\pm$ 0.09
		KUG_03	70.9363	-134.7534	5	-20.38 $\pm$ 0.35	14.17 $\pm$ 0.51	3.32 $\pm$ 0.08
	Darnley Bay	BPT_01A	69.6998	-123.7729	5	-18.13 $\pm$ 1.02	17.55 $\pm$ 0.72	3.39 $\pm$ 0.13
		BPT_03	69.6963	-123.4329	5	-18.78 $\pm$ 0.22	16.42 $\pm$ 0.46	3.24 $\pm$ 0.05
	Franklin Bay	FKN_02	69.9968	-126.6656	4	-19.3 $\pm$ 0.3	15.32 $\pm$ 0.73	3.27 $\pm$ 0.05
		FKN_04	70.0042	-125.9627	5	-18.92 $\pm$ 0.2	16.07 $\pm$ 0.44	3.33 $\pm$ 0.05
		FKN_05	69.9995	-125.7721	5	-19.14 $\pm$ 0.61	16.86 $\pm$ 0.47	3.27 $\pm$ 0.01
2019	Amundsen Gulf	CPB_02	70.5652	-127.5456	5	-20.01 $\pm$ 0.26	14.9 $\pm$ 0.64	3.33 $\pm$ 0.04
		CPB_11	71.2494	-123.4832	5	-19.62 $\pm$ 0.45	15.71 $\pm$ 0.28	3.21 $\pm$ 0.06
	Beaufort Sea	KUG_01C	70.6406	-134.4773	5	-20.17 $\pm$ 0.49	16.61 $\pm$ 0.64	3.3 $\pm$ 0.07
		KUG_03	70.9346	-134.7503	5	-20.47 $\pm$ 0.44	14.31 $\pm$ 0.62	3.39 $\pm$ 0.11
	Darnley Bay	BPT_03	69.6988	-123.4367	4	-18.61 $\pm$ 0.26	16.47 $\pm$ 0.28	3.25 $\pm$ 0.03
		BPT_05	69.701	-123.1968	5	-18.25 $\pm$ 0.56	17.63 $\pm$ 0.62	3.22 $\pm$ 0.04
	Franklin Bay	FKN_04	70.001	-125.9599	5	-19.05 $\pm$ 0.44	15.27 $\pm$ 1.06	3.28 $\pm$ 0.11
	Amundsen Gulf	CPB_02	70.566	-127.55	10	-20.13 $\pm$ 0.4	14.29 $\pm$ 0.47	3.28 $\pm$ 0.05
		CPB_11	71.2477	-123.4799	5	-20.35 $\pm$ 0.41	14.62 $\pm$ 0.59	3.29 $\pm$ 0.08
2023	Beaufort Sea	KUG_02	70.8507	-134.6776	5	-20.54 $\pm$ 0.27	16.38 $\pm$ 0.39	3.3 $\pm$ 0.11
		KUG_03	70.9343	-134.7411	5	-20.13 $\pm$ 0.52	14.35 $\pm$ 0.39	3.21 $\pm$ 0.07
2024	Amundsen Gulf	CPB_02	70.5622	-127.5441	10	-20.41 $\pm$ 0.32	13.97 $\pm$ 0.69	3.22 $\pm$ 0.05

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
		CPB_03	70.5985	-127.3849	1	-19.55	11.43	3.73
	Beaufort Sea	KUG_03	70.9317	-134.7492	15	-20.25 $\pm$ 0.24	14.29 $\pm$ 0.54	3.23 $\pm$ 0.07
		KUG_04	70.9809	-134.7988	3	-19.72 $\pm$ 0.73	13.7 $\pm$ 0.41	3.35 $\pm$ 0.18
	Darnley Bay	BPT_03	69.6987	-123.4391	9	-18.89 $\pm$ 0.54	15.18 $\pm$ 0.42	3.2 $\pm$ 0.17
	Dolphin and Union Strait	DUS_10	69.9984	-117.5186	10	-19.98 $\pm$ 0.38	15.76 $\pm$ 0.48	3.5 $\pm$ 0.22

Table A3.9 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Ophiacantha bidentata* collected in the Western Canadian Arctic, summarized by station in each year. (N.B – $\delta^{13}\text{C}$ values represent an acidified aliquot).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Beaufort Sea	KUG_02	70.8493	-134.6774	2	-14.26 $\pm$ 0.31	15.57 $\pm$ 0.18	7.35 $\pm$ 0.87
	Darnley Bay	CPY_01	70.2264	-124.5019	10	-13.02 $\pm$ 2.26	15.32 $\pm$ 0.67	8.44 $\pm$ 0.73
		CPY_02	70.2572	-124.5188	5	-15.17 $\pm$ 1.76	16.38 $\pm$ 0.58	9.33 $\pm$ 1.23
	Dolphin and Union Strait	DOL_01	69.3813	-118.7689	10	-16.14 $\pm$ 3.04	16.22 $\pm$ 0.51	7.97 $\pm$ 0.7
	Franklin Bay	FRK_05	70.0837	-126.4325	5	-11.59 $\pm$ 0.6	15.52 $\pm$ 0.58	8.67 $\pm$ 0.74
2017	Amundsen Gulf	CPB_11	71.2488	-123.4836	9	-13.52 $\pm$ 0.52	15.66 $\pm$ 0.22	7.24 $\pm$ 0.44
	Dolphin and Union Strait	DUS_09	69.9747	-117.7312	9	-15.1 $\pm$ 0.73	14.62 $\pm$ 0.35	7.14 $\pm$ 0.4
	Franklin Bay	FKN_05	69.9981	-125.7762	5	-11.86 $\pm$ 0.31	15.37 $\pm$ 0.1	7.58 $\pm$ 0.42
2018	Amundsen Gulf	CPB_11	71.251	-123.4806	4	-13.88 $\pm$ 2.09	15.82 $\pm$ 0.38	7.1 $\pm$ 0.34
	Beaufort Sea	KUG_03	70.9363	-134.7534	5	-15.73 $\pm$ 3.72	15.97 $\pm$ 1.08	7.61 $\pm$ 0.75
	Dolphin and Union Strait	DUS_09	69.9714	-117.7331	4	-12.72 $\pm$ 1.98	15.65 $\pm$ 0.23	6.91 $\pm$ 0.58
2019	Amundsen Gulf	CPB_11	71.2494	-123.4832	9	-13.2 $\pm$ 1.35	15.86 $\pm$ 0.3	7.24 $\pm$ 0.74
		CPY_03	70.4441	-124.5204	9	-12.69 $\pm$ 0.64	15.8 $\pm$ 0.2	7.17 $\pm$ 0.48
	Beaufort Sea	KUG_03	70.9346	-134.7503	9	-12.51 $\pm$ 1.35	15.9 $\pm$ 0.6	7.7 $\pm$ 0.75
	Dolphin and Union Strait	DUS_09	69.9726	-117.7387	7	-14.72 $\pm$ 2.97	16.22 $\pm$ 0.76	7.8 $\pm$ 0.82

Table A3.10 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from *Ophiopleura borealis* collected in the Western Canadian Arctic, summarized by station in each year. $\delta^{15}\text{N}$ value in this table have been standardized to the median mass of *O. borealis* samples. (N.B – $\delta^{13}\text{C}$ values represent an acidified aliquot).

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Beaufort Sea	KUG_04	70.978	-134.8077	4	-12.23 $\pm$ 0.82	15.07 $\pm$ 0.83	6.09 $\pm$ 0.69
2017	Amundsen Gulf	CPB_03	70.5982	-127.378	1	-17.27	15.2	9.16
		CPB_06	70.6834	-126.8397	3	-16.08 $\pm$ 2.72	13.78 $\pm$ 1.28	6.7 $\pm$ 0.67
	Beaufort Sea	KUG_04	70.9833	-134.7969	2	-11.47 $\pm$ 0.4	13.95 $\pm$ 0.17	6.12 $\pm$ 0
		KUG_05	71.0523	-134.8662	2	-21.68 $\pm$ 0.7	13.82 $\pm$ 0.71	7.38 $\pm$ 0.33
		KUG_06	71.1579	-134.9814	1	-11.13	15.31	6.05
	Darnley Bay	BPT_01A	69.6986	-123.7724	4	-14.24 $\pm$ 1.79	15.08 $\pm$ 0.76	6.63 $\pm$ 0.51
		BPT_03	69.6988	-123.4349	5	-13.17 $\pm$ 1.39	15.97 $\pm$ 2.04	7.7 $\pm$ 1.03
	Dolphin and Union Strait	DUS_08	69.9401	-118.0201	4	-16.23 $\pm$ 2.42	14.99 $\pm$ 0.89	7.23 $\pm$ 1.08
		DUS_09	69.9747	-117.7312	2	-14.18 $\pm$ 0.13	15.69 $\pm$ 1.57	7.89 $\pm$ 0.85
	Franklin Bay	FKN_03	70.0019	-126.2671	3	-13.46 $\pm$ 0.9	14.89 $\pm$ 1.47	6.82 $\pm$ 0.99
2018	Amundsen Gulf	CPB_03	70.6093	-127.3878	1	-18.09	13.21	8.19
		CPB_04	70.6316	-127.2053	2	-22.72 $\pm$ 0.11	12.95 $\pm$ 1.88	6.07 $\pm$ 1.45
	Beaufort Sea	KUG_04	70.9859	-134.8092	4	-12.64 $\pm$ 0.82	13.82 $\pm$ 0.28	9.79 $\pm$ 0.64
	Darnley Bay	BPT_03	69.6963	-123.4329	1	-17.59	14.71	9.01
	Dolphin and Union Strait	DUS_09	69.9714	-117.7331	3	-15.51 $\pm$ 1.39	14.75 $\pm$ 1.05	7.8 $\pm$ 0.62
	Franklin Bay	FKN_03	70.0031	-126.2552	4	-19.23 $\pm$ 3.62	14.91 $\pm$ 0.98	6.21 $\pm$ 1.42
		FKN_04	70.0042	-125.9627	3	-20.91 $\pm$ 0.71	14.38 $\pm$ 1.9	7.1 $\pm$ 0.62
2019	Amundsen Gulf	CPB_03	70.593	-127.3716	4	-13.29 $\pm$ 0.3	15.19 $\pm$ 1.75	7.03 $\pm$ 0.59
		CPB_06	70.6832	-126.8263	2	-14.3 $\pm$ 3.2	14.1 $\pm$ 0.32	8.45 $\pm$ 1.93
	Beaufort Sea	KUG_04	70.9833	-134.8103	5	-11.65 $\pm$ 1.03	14.89 $\pm$ 0.32	7.69 $\pm$ 0.48
		KUG_07	71.2841	-135.1044	4	-11.31 $\pm$ 1.64	15.17 $\pm$ 1.02	9.12 $\pm$ 1.68
	Darnley Bay	BPT_03	69.6988	-123.4367	3	-14.9 $\pm$ 1.44	14.55 $\pm$ 0.53	6.83 $\pm$ 0.75
	Dolphin and Union Strait	DUS_03	69.6533	-120.5814	1	-13.19	14.05	7.12
		DUS_08	69.9443	-118.0239	2	-13.06 $\pm$ 0.29	15.2 $\pm$ 0.28	7.08 $\pm$ 1.41
		DUS_09	69.9726	-117.7387	3	-13.44 $\pm$ 0.19	14.39 $\pm$ 0.38	6.72 $\pm$ 0.77
2022	Amundsen Gulf	CPB_03	70.5952	-127.3701	6	-11.41 $\pm$ 3.21	13.44 $\pm$ 1.24	7.67 $\pm$ 1.05
		CPB_06	70.6854	-126.8406	6	-15.91 $\pm$ 2.91	14.34 $\pm$ 1.26	8.6 $\pm$ 1.23
		CPY_04	70.6406	-124.5183	8	-13.16 $\pm$ 4.02	15.16 $\pm$ 0.87	8.23 $\pm$ 1.07
	Beaufort Sea	KUG_04	70.9845	-134.8067	1	-7.08	14.02	8.13
		KUG_05	71.0459	-134.893	3	-13.84 $\pm$ 4.61	13.97 $\pm$ 0.21	9.28 $\pm$ 0.62
	Dolphin and Union Strait	DUS_04	69.7244	-119.9559	2	-10.68 $\pm$ 2.05	16.42 $\pm$ 0.38	6.64 $\pm$ 0.23

Table A3.11 – Stable isotope data ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) from marine sediments collected in the Western Canadian Arctic, summarized by station in each year. Sediments were typically analyzed as a single bulk sample per station, however means and standard deviations are provided when more than one sample was analyzed. $\delta^{15}\text{N}$ values in this table have been standardized to the mean depth at which sediments were sampled. (N.B – $\delta^{13}\text{C}$ values represent an acidified aliquot.)

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2014	Amundsen Gulf	AMN_01	70.837	-119.7778	1	-22.7	7.68	40.32
		AMN_02	70.2186	-119.4775	1	-23.26	6.63	20.95
		CPY_03	70.4429	-124.5276	1	-24.9	6.34	14.99
	Banks Island Shelf	BNK_01	72.1311	-127.0386	1	-23.7	9.78	62.06
		BNK_06	72.9305	-126.3912	1	-23.16	9.44	55.48
	Beaufort Sea	AGK_01	70.1031	-133.8336	1	-25.75	8.07	12.88
		BNK_02	72.098	-127.4803	1	-23.65	6.36	22.6
		BNK_03	72.0919	-129.9677	1	-23.9	5.72	9.73
		BNK_04	72.0954	-128.8124	1	-23.08	6.42	16.7
		BNK_05	72.9252	-127.7903	1	-23.44	7.98	25.72
		BNK_07	72.0977	-127.1391	1	-23.44	7.16	39.97
		KUG_02	70.8493	-134.6774	1	-24.66	7.1	9.86
		KUG_03	70.9334	-134.742	1	-25.57	3.96	12.89
		KUG_04	70.978	-134.8077	1	-25.47	3.92	11.29
		KUG_05	71.0498	-134.8517	1	-25.28	3.16	10.85
	Darnley Bay	NTC_01	71.3144	-126.8871	1	-23.92	5.85	13.52
		BPT_01	69.7036	-123.8185	1	-23.47	10.26	23.53
		BPT_02	69.7019	-123.7828	1	-23.86	9.05	17.16
		BPT_03	69.6986	-123.441	1	-24.23	7.24	14.27
		BPT_04	69.6966	-123.2414	1	-24.12	8.7	24.9
	Dolphin and Union Strait	BPT_05	69.7034	-123.1927	1	-24.18	8.66	34.71
		DOL_01	69.3813	-118.7689	1	-23.53	7.52	36.8
		DOL_03	69.5355	-118.2157	1	-23.5	6.47	18.77
		DOL_04	69.6413	-117.7896	1	-22.79	6.15	22.46
	Franklin Bay	FRK_02	70.0824	-125.4234	1	-25.82	6.6	17.61
		FRK_04	70.0882	-126.0383	1	-26.04	4.73	13.15
		FRK_05	70.0837	-126.4325	1	-25.96	4.43	13.43
		FRK_06	70.0867	-126.772	1	-26.52	5.07	17.28
		FRK_07	70.0896	-126.916	1	-27.22	6.19	19.72
	Mackenzie Shelf Coast	SMO_01	69.859	-126.7435	1	-27.61	6.61	20.07
		WIS_01	70.1031	-125.0602	1	-24.38	8.95	37.44
		ESC_03C	70.3379	-131.0009	1	-23.91	11.59	14.53
	Minto Inlet	KUG_01A	70.0157	-133.8284	1	-25.94	7.96	15.35
		MNT_01	71.2324	-118.3652	1	-23.31	9.01	36.94
		MNT_03	71.3252	-117.1497	1	-23.99	4.98	12.48
		MNT_04	71.3951	-117.1981	1	-23.62	9.6	50.41
		MNT_05	71.4367	-116.2991	1	-23.62	9.01	40.35
	Prince of Wales Strait	PWS_01	72.1108	-119.4259	1	-23.19	9.39	32.35

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2017	Amundsen Gulf	AMG_01	70.0601	-123.24	1	-24.81	5.17	12.02
		AMG_03	70.5557	-122.9053	1	-23.54	5.14	15.19
		CPB_01	70.5369	-127.7332	1	-26.97	8.29	20.75
		CPB_02	70.5729	-127.5609	1	-26.23	5.61	15.69
		CPB_03	70.5982	-127.378	1	-25.95	4.26	13.31
		CPB_06	70.6834	-126.8397	1	-24.89	5.46	10.52
		CPB_07	70.81	-126.1052	1	-24.13	5.65	11.83
		CPB_08	70.925	-125.379	1	-24.27	5.98	14.07
		CPB_09	71.056	-124.6336	1	-25.5	7.21	29.69
		CPB_10	71.1777	-123.8903	1	-24.01	7.33	29.89
		CPB_11	71.2488	-123.4836	1	-24.93	5.8	41.01
	Beaufort Sea	MTI_01	70.8257	-120.9791	1	-23.14	9.04	41.99
		KUG_02	70.8471	-134.6665	1	-25.35	7.19	10.04
		KUG_03	70.9374	-134.7318	1	-25.95	4.45	13.05
		KUG_04	70.9833	-134.7969	1	-25.72	3.62	11.44
		KUG_05	71.0523	-134.8662	1	-25.59	2.92	11.19
		KUG_06	71.1579	-134.9814	1	-24.88	3.31	15.2
		KUG_07	71.2771	-135.1241	1	-24.52	2.15	9.74
	Darnley Bay	BPT_01A	69.6986	-123.7724	1	-23.86	7.9	16.85
		BPT_03	69.6988	-123.4349	2	-24.33 $\pm$ 0.28	5.73 $\pm$ 0.96	25.37 $\pm$ 16.48
	Dolphin and Union Strait	DUS_06	69.8566	-118.7342	1	-23.64	7.02	38.86
		DUS_07	69.9037	-118.3279	1	-24.68	5.8	17.38
		DUS_08	69.9401	-118.0201	1	-23.37	6.95	25.91
	Franklin Bay	FKN_01	69.9974	-126.8021	1	-27.4	2.98	17.74
		FKN_02	70.0014	-126.6799	1	-26.46	4.23	15.13
		FKN_03	70.0019	-126.2671	1	-26.31	3.65	13.3
		FKN_04	69.9988	-125.9761	1	-25.96	4.69	16.18
		FKN_05	69.9981	-125.7762	1	-26.35	5.33	13.46
		FKN_06	70.0023	-125.4109	1	-25.37	7.85	19.62
	Mackenzie Shelf Coast	KUG_01	70.0116	-133.8437	1	-26.54	7.47	16.38
	Minto Inlet	MTI_03	71.3675	-117.4946	1	-23.59	8.38	36.07
		MTI_04	71.2996	-117.3305	1	-24.03	7.67	62.57
		MTI_06	71.4003	-116.5321	1	-23.93	7.49	37.42
2018	Amundsen Gulf	AMG_04	70.3183	-126.4047	1	-25.45	3.68	11.68
		AMG_05	70.4217	-126.4758	1	-25.09	3.69	10.42
		AMG_06	70.5432	-126.5936	1	-24.55	4.7	10.61
		CPB_02	70.5679	-127.5573	1	-26.7	4.75	17.85
		CPB_03	70.6093	-127.3878	1	-25.82	3.21	12.91
		CPB_04	70.6316	-127.2053	1	-24.93	4.68	10.77
		CPB_10	71.1781	-123.888	1	-24.34	6.84	40.13
	Beaufort Sea	DAL_01	70.5384	-130.8419	1	-25.96	7.82	14.04
		DAL_01B	71.0116	-131.0804	1	-25.11	6.59	13.38
		ICE_01	70.8345	-133.2082	1	-25.25	7.13	10

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2019	Darnley Bay	ICE_03	70.9867	-130.2048	1	-25.55	7.65	14.83
		KUG_01C	70.6476	-134.4669	1	-25.37	6.93	9.36
		KUG_03	70.9363	-134.7534	1	-26.57	2	13.24
		KUG_04	70.9859	-134.8092	1	-25.73	2.74	11.23
		BPT_03	69.6963	-123.4329	1	-24.34	6.7	16.3
	Dolphin and Union Strait	DUS_02	69.6357	-120.7148	1	-24.65	7.32	75.8
		DUS_03	69.6522	-120.5653	1	-23.89	7.17	17.9
	Franklin Bay	FKN_01	69.9971	-126.8078	1	-27.65	4.26	21.5
		FKN_02	69.9968	-126.6656	1	-26.6	3.47	16.21
		FKN_03	70.0031	-126.2552	1	-26.26	3.58	14.1
		FKN_05	69.9995	-125.7721	1	-26.53	5.29	14.45
		FKN_06	70.0038	-125.4045	1	-25.05	7.41	19.14
		FKN_07	69.6308	-125.9516	1	-26.64	4.36	14.7
		FRK_02	70.0813	-125.4211	1	-25.56	6.67	25.12
	Mackenzie Shelf Coast	WIS_01	70.1013	-125.0635	1	-24.37	7.82	43.83
		WIS_02	70.1711	-124.8378	1	-24.46	8.59	28.98
		KUG_01	70.0154	-133.8493	1	-26.35	6.9	15.45
		MTI_03	71.3688	-117.4805	1	-24.03	8.61	47.84
	Amundsen Gulf	AMG_01	70.0582	-123.2372	1	-25.21	5.45	12.75
		AMG_02	70.2148	-123.1343	1	-24.51	6.01	11.93
		AMG_03	70.5519	-122.9047	1	-23.84	5.4	14.72
		AMG_04	70.3156	-126.4137	1	-25.72	4.92	11.33
		AMG_05	70.4132	-126.5049	1	-25.36	4.86	11.05
		AMG_06	70.5376	-126.6123	1	-23.78	5.31	10.54
		CPB_01	70.5408	-127.7352	1	-27.11	7.4	24.5
		CPB_02	70.5652	-127.5456	1	-26.54	4.44	19.01
		CPB_03	70.593	-127.3716	1	-26.02	3.89	13.46
		CPB_06	70.6832	-126.8263	1	-24.61	5.37	10.5
		CPB_07	70.8058	-126.1009	1	-23.99	5.45	11.25
		CPB_08	70.9007	-125.4538	1	-24.51	4.73	13.73
		CPY_03	70.4441	-124.5204	1	-25.15	5.45	11.34
	Beaufort Sea	KUG_01C	70.6406	-134.4773	1	-25.41	6.31	14.29
		KUG_03	70.9346	-134.7503	1	-26.21	3.35	13.72
		KUG_04	70.9833	-134.8103	1	-25.73	3.38	11.04
		KUG_05	71.0517	-134.8642	1	-25.68	2.39	10.37
		KUG_06	71.1572	-134.9707	1	-25	2.77	9.69
		KUG_07	71.2841	-135.1044	1	-24.76	2.33	9.38
		KUG_08	71.3739	-135.2462	1	-24.85	1.13	10.69
		BPT_01A	69.6989	-123.7694	1	-24.18	8.68	16.29
	Darnley Bay	BPT_03	69.6988	-123.4367	1	-24.56	7.17	14.9
		DUS_04	69.7239	-119.9416	1	-23.78	5.01	15.8
	Dolphin and Union Strait	DUS_05	69.7811	-119.3857	1	-23.74	3.89	14.82
		DUS_07	69.9062	-118.3321	1	-23.77	4.61	16.4

Year	Region	Station	Latitude	Longitude	n	$\delta^{13}\text{C}$ (‰) (mean $\pm$ s.d.)	$\delta^{15}\text{N}$ (‰) (mean $\pm$ s.d.)	C:N (mean $\pm$ s.d.)
2021	Franklin Bay	DUS_08	69.9443	-118.0239	1	-23.45	5.45	27.47
		FKN_01	70.0015	-126.8148	1	-27.98	4.93	21
		FKN_02	70.0098	-126.6797	1	-26.87	4.13	17.25
		FKN_03	69.9963	-126.2392	1	-26.48	3.94	13.4
		FKN_04	70.001	-125.9599	1	-26.07	5.34	15.05
		FKN_05	69.9988	-125.7662	1	-26.55	6.92	8.98
		FKN_06	69.9989	-125.4042	1	-25.59	8.1	19.37
	Amundsen Gulf	FKN_07	69.6348	-125.9445	1	-26.48	5.55	14.36
		AMG_03	70.5546	-122.9122	1	-23.95	5.18	15.49
		CPB_08	70.923	-125.3739	1	-24.84	4.81	15.08
		CPB_09	71.052	-124.6419	3	-23.92 $\pm$ 0.1	6.2 $\pm$ 0.11	28.9 $\pm$ 3.11
		CPB_10	71.1765	-123.8964	1	-24.24	7.25	39.87
		CPY_ICE1	70.5343	-124.3525	1	-25.23	5.31	14.94
	Darnley Bay	BPT_01A	69.6984	-123.7686	3	-24.31 $\pm$ 0.08	8.45 $\pm$ 0.25	17.19 $\pm$ 0.79
		BPT_03	69.6976	-123.4354	1	-24.49	7.33	14.5
		BPT_05	69.7026	-123.1956	3	-24.61 $\pm$ 0.05	8.32 $\pm$ 0.46	37.23 $\pm$ 3.2
	Dolphin and Union Strait	DUS_03	69.654	-120.5694	1	-24.35	6.87	22.38
		DUS_04	69.7238	-119.9425	1	-23.97	5.85	16.51
		DUS_05	69.7844	-119.3938	1	-23.69	6.66	16.5
		DUS_06	69.8582	-118.7422	1	-24.13	7.22	53.95
		DUS_07	69.9058	-118.341	3	-23.65 $\pm$ 0.08	5.85 $\pm$ 0.23	19.27 $\pm$ 0.3
		DUS_08	69.9425	-118.0218	1	-23.93	6.22	30.86
		DUS_09	69.9741	-117.7365	1	-24.02	6.79	70.37
	Minto Inlet	MTI_03	71.3668	-117.4867	1	-24.04	8.24	42.23
		MTI_05	71.2379	-117.2568	3	-24 $\pm$ 0.07	7.58 $\pm$ 0.39	43.33 $\pm$ 4.78
	Prince Albert Sound	PAS_02	70.3241	-117.0572	1	-23.76	6.63	61.53
2022	Amundsen Gulf	AMG_03	70.5567	-122.9127	3	-24.06 $\pm$ 0.07	5.17 $\pm$ 0.24	15.29 $\pm$ 0.19
		CPB_01	70.5299	-127.7269	1	-27.15	7.8	20.22
		CPB_02	70.5694	-127.56	3	-26.69 $\pm$ 0.15	4.62 $\pm$ 0.22	18.16 $\pm$ 1.64
		CPB_03	70.5952	-127.3701	1	-26.36	3.72	14.6
		CPB_06	70.6854	-126.8406	3	-24.91 $\pm$ 0.12	5.44 $\pm$ 0.26	10.84 $\pm$ 0.22
		CPY_03	70.4454	-124.5308	1	-26.69	4.95	19.49
	Beaufort Sea	KUG_01C	70.6575	-134.4914	1	-25.86	7.92	9.46
		KUG_03	70.9357	-134.7565	1	-26.69	2.99	13.39
		KUG_04	70.9845	-134.8067	1	-25.93	3.21	11.29
		KUG_05	71.0459	-134.893	1	-25.77	3.18	10.63
	Darnley Bay	BPT_01A	69.6991	-123.7692	1	-24.3	8.68	17.03
	Franklin Bay	FKN_01	70.0008	-126.8468	3	-27.88 $\pm$ 0.09	4.8 $\pm$ 0.24	23.72 $\pm$ 3.1
		FKN_03	70.007	-126.247	3	-26.42 $\pm$ 0.04	3.86 $\pm$ 0.24	13.91 $\pm$ 0.11
	Mackenzie Shelf Coast	KUG_01	70.0112	-133.8437	1	-26.7	7.77	14.6