

Krill Morphometric Data from NBP2205 at the Western Antarctic Peninsula in June 2022

Website: <https://www.bco-dmo.org/dataset/1009232>

Data Type: Cruise Results

Version: 1

Version Date: 2026-10-07

Project

» [CAREER: "The Omnivore's Dilemma": The Effect of Autumn Diet on Winter Physiology and Condition of Juvenile Antarctic Krill](#) (Omnivores Dilemma)

Contributors	Affiliation	Role
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Abstract

These data include the morphological measurements of Antarctic krill (*Euphausia superba*) from two distinct regions along the Western Antarctic Peninsula; the Gerlache Strait region and the Marguerite Bay region. These data were collected onboard the RVIB Nathaniel B. Palmer in the early austral winter (June) of 2022. Onboard equipment and instruments included an Isaacs-Kidd Midwater Trawl and Bongo Trawl. This dataset includes shipboard body composition measurements (Standard Length and Weight). This project sought to determine *E. superba* physiology, dietary history, and regional food-web structure. These data were collected by Dr. Kim Bernard of Oregon State University.

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Coverage

Location: Gerlache Strait and Marguerite Bay, Western Antarctic Peninsula

Spatial Extent: N:-64.240867 E:-61.67488 S:-69.066818 W:-72.682

Temporal Extent: 2022-06-01 - 2022-06-17

Methods & Sampling

Randomly selected sub-samples of krill collected with the IKMT were measured for total length (Standard Length 1, SL1, Mauchline 1980) then lightly blotted with a KimWipe and then frozen in individual cryovials and placed in a -80°C for later measurement of wet weight and dry weight. In the laboratory, krill samples were thawed and their wet mass was measured on an analytical balance to the nearest 0.1 mg. The krill were then dried at 60°C for 24 hours prior to re-weighing for dry mass.

Data Processing Description

No additional data processing by the dataset authors was used to report these data before the data was submitted to BCO-DMO.

BCO-DMO Curation Notes

- Loaded the original author-submitted file, NBP2205_Morphometrics.csv
- "NA" values in the original file have been set to "no data values" in schema and present as blank values ("") in the published primary data file.
- Renamed columns: Length.mm to Length_mm, WW.mg to WW_mg, DW.mg to DW_mg
- Set column types: DW_mg, Latitude, Length_mm, Longitude, WW_mg as number; KrillID as integer; Region and Station as string
- Updated column metadata with descriptions, standard name IDs, and supplied units for DW_mg, KrillID, Latitude, Length_mm, Longitude, Region, Station, WW_mg; marked Latitude and Longitude as primary parameters
- Saved the processed data file 1009232_v1_nbp2205_krill_morphometrics.csv; this file is published as the primary data file of this dataset.

Problem Description

No issues or problems associated with the creation of this data have been reported by the dataset authors.

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Parameters

Parameter	Description	Units
Region	Region of the Western Antarctic Peninsula.	unitless
Station	Station name	unitless
Latitude	Latitude	decimal degrees
Longitude	Longitude	decimal degrees
KrillID	Individual krill identification number	unitless
Length_mm	Standard length of the krill.	millimeters (mm)
WW_mg	Wet weight of the krill.	milligrams (mg)
DW_mg	Dry weight of the krill.	milligrams (mg)

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Deployments

NBP2205

Website	https://www.bco-dmo.org/deployment/1008483
Platform	RVIB Nathaniel B. Palmer
Start Date	2022-05-19
End Date	2022-06-26

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Project Information

CAREER: "The Omnivore's Dilemma": The Effect of Autumn Diet on Winter Physiology and Condition of Juvenile Antarctic Krill (Omnivores Dilemma)

Coverage: Western Antarctic Peninsula; Palmer Station

NSF Award Abstract:

Antarctic krill are essential in the Southern Ocean as they support vast numbers of marine mammals, seabirds and fishes, some of which feed almost exclusively on krill. Antarctic krill also constitute a target species for industrial fisheries in the Southern Ocean. The success of Antarctic krill populations is largely determined by the ability of their young to survive the long, dark winter, where food is extremely scarce. To survive the long-dark winter, young Antarctic krill must have a high-quality diet in autumn. However, warming in certain parts of Antarctica is changing the dynamics and quality of the polar food web, resulting in a shift in the type of food available to young krill in autumn. It is not yet clear how these dynamic changes are affecting the ability of krill to survive the winter. This project aims to fill an important gap in current knowledge on an understudied stage of the Antarctic krill life cycle, the 1-year old juveniles. The results derived from this work will contribute to the development of improved bioenergetic, population and ecosystem models, and will advance current scientific understanding of this critical Antarctic species. This CAREER project's core education and outreach objectives seek to enhance education and increase diversity within STEM fields. An undergraduate course will be developed that will integrate undergraduate research and writing in way that promotes authentic scientific inquiry and analysis of original research data by the students, and that enhances their communication skills. A graduate course will be developed that will promote students' skills in communicating their own research to a non-scientific audience. Graduate students will be supported through the proposed study and will gain valuable research experience. Traditionally underserved undergraduate students will be recruited to conduct independent research under the umbrella of the larger project. Throughout each field season, the research team will maintain a weekly blog that will include short videos, photographs and text highlighting the research, as well as their experiences living and working in Antarctica. The aim of the blog will be to engage the public and increase awareness and understanding of Antarctic ecosystems and the impact of warming, and of the scientific process of research and discovery.

In this 5-year CAREER project, the investigator will use a combination of empirical and theoretical techniques to assess the effects of diet on 1-year old krill in autumn-winter. The research is centered on four hypotheses: (H1) autumn diet affects 1-year old krill physiology and condition at the onset of winter; (H2) autumn diet has an effect on winter physiology and condition of 1-year old krill under variable winter food conditions; (H3) the rate of change in physiology and condition of 1-year old krill from autumn to winter is dependent on autumn diet; and (H4) the winter energy budget of 1-year old krill will vary between years and will be dependent on autumn diet. Long-term feeding experiments and in situ sampling will be used to measure changes in the physiology and condition of krill in relation to their diet and feeding environment. Empirically-derived data will be used to develop theoretical models of growth rates and energy budgets to determine how diet will influence the overwinter survival of 1-year old krill. The research will be integrated with an education and outreach plan to (1) develop engaging undergraduate and graduate courses, (2) train and develop young scientists for careers in polar research, and (3) engage the public and increase their awareness and understanding.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

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Funding

Funding Source	Award
NSF Office of Polar Programs (formerly NSF PLR) (NSF OPP)	OPP-1753101

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