

Figure S1. Number of recognizable food items in the stomach content per individual polar cod (*Boreogadus saida*), visually analysed using microscopy. * = empty stomachs, ** =stomach empty apart from the food items indicated. The first half of the fish ID represents the station number where the fish was caught.

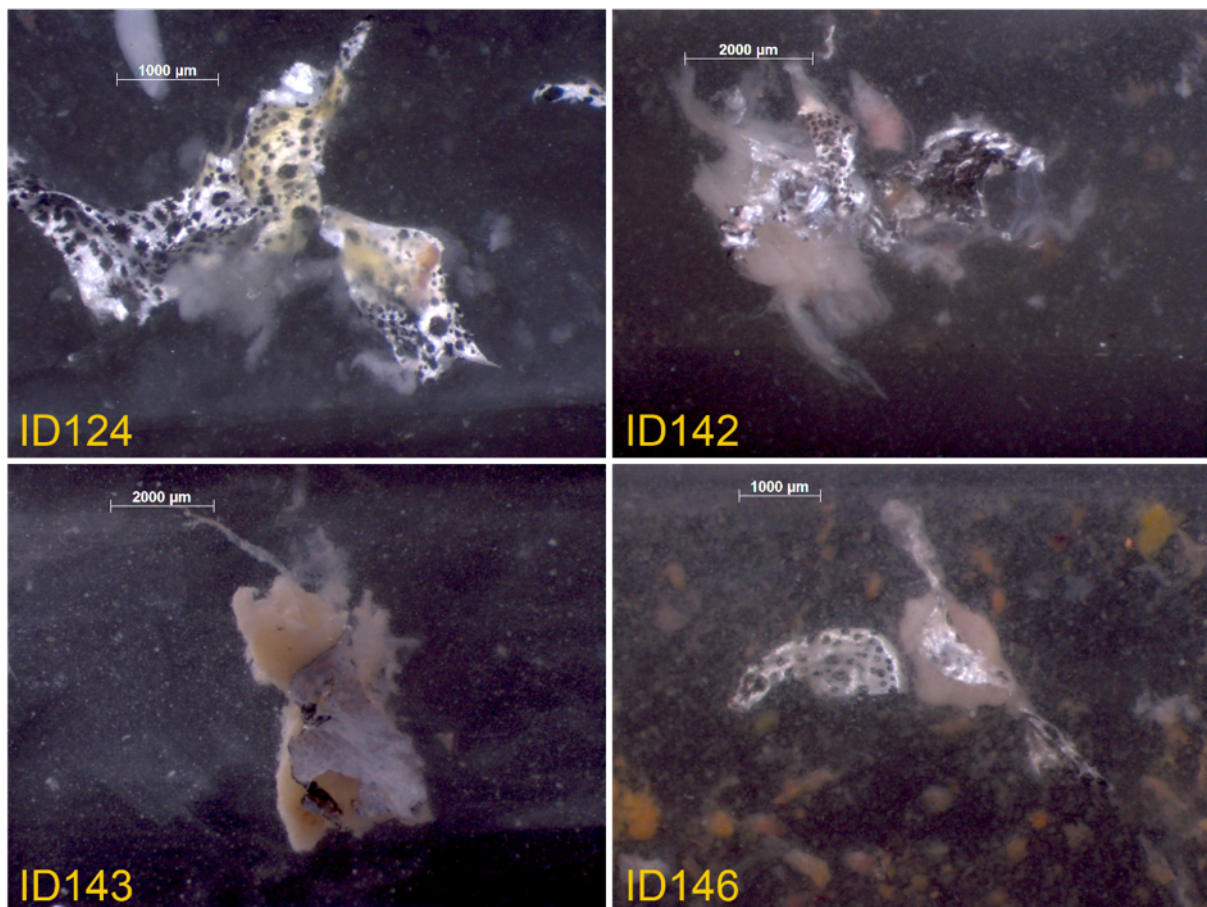


Figure S2. Example of pieces of fish tissue found in the polar cod (*Boreogadus saida*) stomachs using microscopy. The yellow number in the bottom left of each picture represents the fish ID.

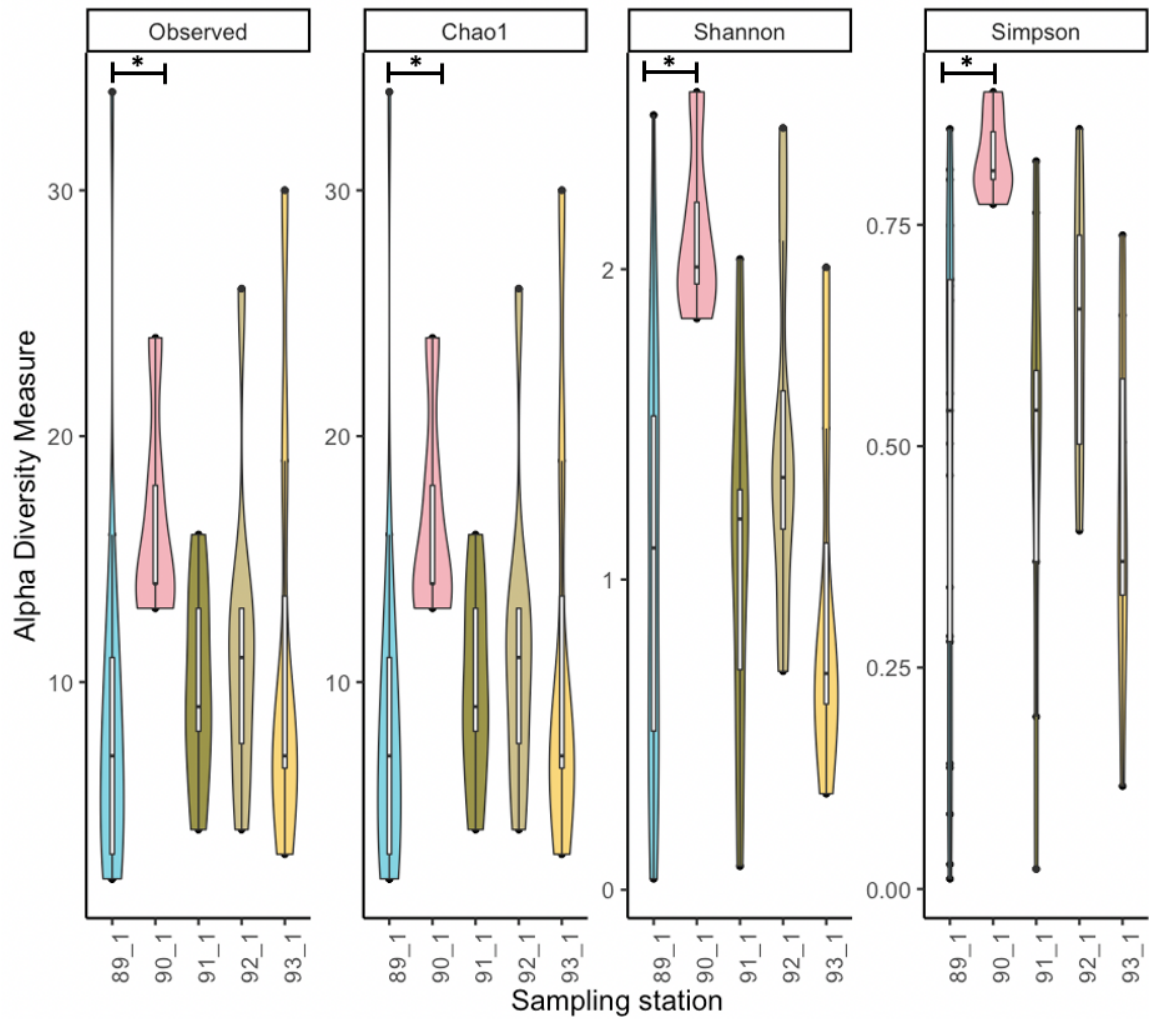


Figure S3. Violin plot representing alpha diversity measures (Observed, Chao1, Shannon and Simpson diversity) per station of prey observed in polar cod. Significant differences ($p < 0.05$) within diversity indices between stations are indicated by an asterisk (*). The boxes indicate interquartile range of 25th to 75th percentiles. The median value is indicated with a line in the box.

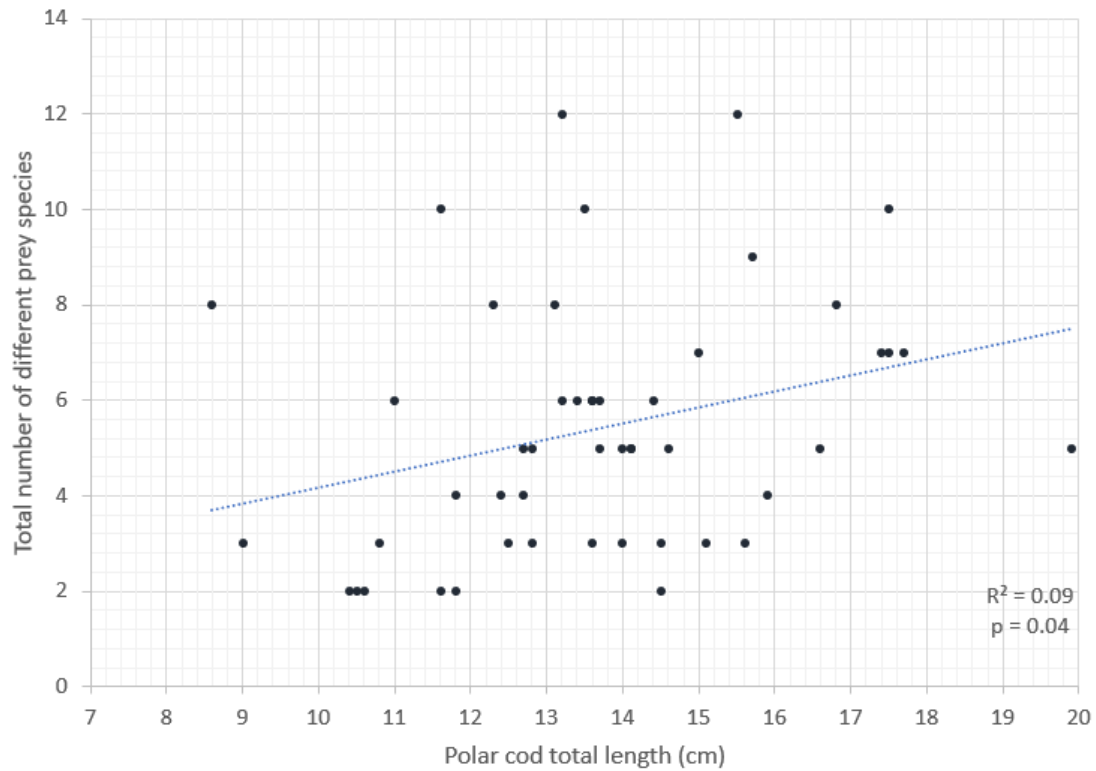


Figure S4. Regression model of total number of different prey species and polar cod total length (in cm) with $R^2 = 0.09$ and $p = 0.04$.

Table S1. Total number of replicates (n) depending on total volume stomach content. When retaining taxa observed twice in at least 1 % of the samples, 54 mismatches (M) were found of which 29 taxa were represented by less than 20 reads (indicated by brackets). When retaining taxa seen twice in at least 5 % of the samples, 42 mismatches were found of which 20 taxa were represented by less than 20 reads.

ID	N	%	M	> 20 reads	<i>Apherusa glacialis</i>	<i>Cucumaria frondosa</i>	<i>Calanus glacialis</i>	<i>Calanus hyperboreus</i>	<i>Eualus gaimardii</i>	<i>Gammarus wilkitzkii</i>	<i>Hybocodon prolifer</i>	<i>Liparis bathyarticus</i>	<i>Liparis fabricii</i>	<i>Liparis helicina</i>	<i>Lumpeus lampraeiformis</i>	<i>Megamycitophanes norvegica</i>	<i>Onisimus litoralis</i>	<i>Onisimus nansenii</i>	<i>Pseudocalanus ascupes</i>	<i>Parasagitta elegans</i>	<i>Platichthys flesus</i>	<i>Pleuronectes platessa</i>	<i>Pleuronectes sp.</i>	<i>Rhachotropis aculeata</i>	<i>Semibalanus balanoides</i>	<i>Syrrhoë crenulata</i>	<i>Sabinea septemcarinata</i>	<i>Tisbe furcata</i>	<i>Thysanoessa inermis</i>	<i>Themisto libellula</i>	<i>Thysanoessa longicaudata</i>	<i>Thysanoessa raschii</i>	
70	3	1	6	2	(X)				X			(X)							(X)	X												(X)	
	3	5	4	2	(X)	X			X			(X)																					
111	2	1	1	0																													(X)
	2	5	3	2		X	X																										(X)
114	2	1	0	0																													
	2	5	0	0																													
123	2	1	8	1								(X)	(X)	(X)								X		(X)	(X)	(X)		(X)	(X)	(X)	(X)	(X)	
	2	5	4	0					(X)			(X)												(X)				(X)					
125	2	1	0	0																													
	2	5	0	0																													
126	3	1	5	5			X	X							X								X	X									
	3	5	3	3	X			X							X																		
132	2	1	2	1				(X)	X																								
	2	5	2	1				(X)	X																								
134	2	1	0	0																													
	2	5	0	0																													
135	2	1	4	2				(X)													X	X											(X)
	2	5	3	1				(X)													X												(X)
136	2	1	3	2																	X	X					(X)						
	2	5	3	2					(X)												X	X											
139	2	1	2	2		X																					X						
	2	5	1	1																							X						
145	2	1	3	3												X	X				X	X											
	2	5	3	3												X	X				X	X											
146	2	1	1	0										(X)																			
	2	5	1	0										(X)																			
151	2	1	6	1	(X)	(X)				(X)	X		(X)									(X)											
	2	5	3	1	(X)							X										(X)											
153	2	1	2	0	(X)																					(X)							
	2	5	2	0	(X)																					(X)							
154	2	1	8	4	X			(X)	X		X	(X)				(X)									(X)			X					
	2	5	6	4	X			(X)	X		X	(X)																X					
159	2	1	3	2								(X)			X	X																	
	2	5	4	2								(X)			X										(X)			X					

Table S2. Overview of polar cod (*Boreogadus saida*) prey composition in the northern Barents Sea identified by visual analysis (visual) and metabarcoding (DNA). Frequency of occurrence (FOO) and relative read abundance (RRA) are given in percentages for the molecular data. Prey represented by less than 20 reads are indicated with an asterisk (*). The results found in this study are compared with polar cod dietary data in the Barents Sea (including Svalbard) based on literature review: A) Lønne and Gulliksen (1989); B) Węśławski and Kuliński (1989); C) Ajiad and Gjørseter (1990); D) Orlova et al. (2009); E) Bogstad et al. (2011); F) Cusa et al. (2019); G) Eriksen et al. (2020); H) Renaud et al. (2011); I) Aune et al. (2021).

Phylum	Class	Order	Family	Genus	Species	Visual	DNA	FOO	RRA	Literature
Annelida										
	Polychaeta									F
	Polychaeta	Spionida	Spionidae	<i>Spio</i>	<i>Spio CMC02</i>		X	4	0.1	
Arthropoda										
	Hexanauplia	Calanoida								A,C,D,F,G
			Calanidae	<i>Calanus</i>		X				E,G,B,H,I
			Calanidae	<i>Calanus</i>	<i>C. glacialis</i>	X	X	34	7.4	A,G,H
			Calanidae	<i>Calanus</i>	<i>C. finmarchicus</i>		X	2	<0.1	A,G,H,I
			Calanidae	<i>Calanus</i>	<i>C. hyperboreus</i>		X	14	1.7	G
			Centropagidae	<i>Limnocalanus</i>						I
			Clausocalanidae	<i>Pseudocalanus</i>						H,I
			Clausocalanidae	<i>Pseudocalanus</i>	<i>P. acuspes</i>		X	8	0.5	
			Clausocalanidae	<i>Pseudocalanus</i>	<i>P. elongatus</i>					I
			Euchaetidae	<i>Paraeuchaeta</i>	<i>P. norvegica</i>					I
			Metridinidae	<i>Metridia</i>	<i>M. longa</i>					G
		Cyclopoida	Oithonidae	<i>Oithona</i>	<i>O. similis</i>					I
		Harpacticoida								B
			Ectinosomatidae	<i>Microsetella</i>	<i>M. norvegica</i>		X*	6	<0.1	
			Tisbidae	<i>Tisbe</i>	<i>T. furcata</i>		X	8	0.2	
	Malacostraca	Amphipoda								C,G
			Calliopiidae	<i>Apherusa</i>	<i>A. glacialis</i>		X	80	27.2	A
			Eusiridae	<i>Rhachotropis</i>	<i>R. aculeata</i>		X	6	0.6	
			Hyperiididae			X				E,C,D,I
			Hyperiididae	<i>Hyperia</i>	<i>H. galba</i>		X	2	<0.1	B,F
			Hyperiididae	<i>Themisto</i>		X				C,G,D,H,I
			Hyperiididae	<i>Themisto</i>	<i>T. libellula</i>	X	X	14	0.1	A,B,F,G,H,I
			Hyperiididae	<i>Themisto</i>	<i>T. abyssorum</i>					G,B,F,H
			Ischyroceridae	<i>Ischyrocerus</i>						B
			Ischyroceridae	<i>Ischyrocerus</i>	<i>I. anguipes</i>		X*		<1	
			Gammaridae							G,D,H
			Gammaridae	<i>Gammarellus</i>	<i>G. homari</i>					B

		Gammaridae	<i>Gammarus</i>	<i>G. wilkitzkii</i>		X	30	4.4	A
		Oedicerotidae	<i>Acanthostephea</i>	<i>A. malmgreni</i>		X*	2	<0.1	
		Oedicerotidae	<i>Arrhis</i>	<i>A. phyllonyx</i>		X*	2	0.1	F
		Oedicerotidae	<i>Bathymedon</i>	<i>B. obtusifrons</i>		X*	2	<0.1	
		Oedicerotidae	<i>Deflexilodes</i>	<i>D. tenuirostratus</i>		X*	2	<0.1	
		Stegocephalidae	<i>Andaniexis</i>	<i>A. lupus</i>		X	2	<0.1	
		Uristidae	<i>Onisimus</i>						A
		Uristidae	<i>Onisimus</i>	<i>O. litoralis</i>		X	20	5.3	
		Uristidae	<i>Onisimus</i>	<i>O. nanseni</i>		X*	2	<0.1	
	Cumacea								F
	Decapoda				X				A,C,E,I
		Crangonidae	<i>Pontophilus</i>	<i>P. norvegicus</i>					C
		Crangonidae	<i>Sabinea</i>	<i>S. septemcarinata</i>		X	8	1.3	F
		Hippolytidae	<i>Lebbeus</i>	<i>L. polaris</i>					F
		Oregoniidae	<i>Hyas</i>	<i>H. araneus</i>		X*	2	<0.1	B
		Pandalidae	<i>Pandalus</i>	<i>P. borealis</i>					C,F
	Euphausiacea	Thoridae	<i>Eualus</i>	<i>E. gaimardii</i>		X	36	8.1	
									B,C,D,E,F,G,H,I
		Euphausiidae	<i>Meganyctiphanes</i>	<i>M. norvegica</i>		X	6	0.5	D,G
		Euphausiidae	<i>Thysanoessa</i>		X				G
		Euphausiidae	<i>Thysanoessa</i>	<i>T. inermis</i>	X	X	70	20.3	G
		Euphausiidae	<i>Thysanoessa</i>	<i>T. longicaudata</i>					
		Euphausiidae	<i>Thysanoessa</i>	<i>T. rachii</i>		X	8	0.1	I
	Isopoda								C,F
		Dajidae	<i>Dajus</i>	<i>D. mysidis</i>					B
		Munnopsidae	<i>Eurycope</i>	<i>E. inermis</i>		X*	2	<0.1	
	Mysida								F
	Mysida	Mysidae	<i>Mysis</i>	<i>M. oculata</i>					B
	Thecostraca	Balanomorpha	Balanidae	<i>Semibalanus</i>		X	26	6.2	
			Balanidae	<i>Balanus</i>		X	20	1.8	
	Ostracoda								A
Chaetognatha									A,E,F
	Sagittoidea	Aphragmophora	Sagittidae	<i>Parasagitta</i>					B,D,G,I
			Sagittidae	<i>Parasagitta</i>	<i>P. elegans</i>	X	10	0.4	
Chordata									G
	Actinopterygii								E,F
		Gadiformes	Gadidae	<i>Boreogadus</i>	<i>B. saida</i>	(X)			D,F,G,I
		Osmeriformes	Osmeridae	<i>Mallotus</i>	<i>M. villosus</i>				G,I
		Perciformes	Stichaeidae	<i>Leptoclinus</i>					F

		Stichaeidae	<i>Lumpenus</i>						G
		Stichaeidae	<i>Lumpenus</i>	<i>L. lamprettaeformis</i>		X*	2	<0.1	C
	Pleuronectiformes	Pleuronectidae	<i>Platichthys</i>	<i>P. flesus</i>		X	10	0.4	
		Pleuronectidae	<i>Pleuronectes</i>			X	8	0.3	
		Pleuronectidae	<i>Pleuronectes</i>	<i>P. platessa</i>		X	18	1.4	
		Pleuronectidae	<i>Hippoglossoides</i>	<i>H. platessoides</i>					C,G
		Sebastidae	<i>Sebastes</i>						C,F
	Scorpaeniformes	Cottidae	<i>Icelus</i>	<i>I. bicornis</i>		X*	2	<0.1	
		Cottidae	<i>Triglops</i>			X*		<0.1	
		Liparidae	<i>Liparis</i>	<i>L. bathyartcticus</i>		X*	2	<0.1	
		Liparidae	<i>Liparis</i>	<i>L. fabricii</i>		X	46	11.3	
		Liparidae	<i>Liparis</i>	<i>L. liparis</i>		X	4	0.2	
Cnidaria									
	Hydrozoa	Antoathecata	Tubulariidae	<i>Hybocodon</i>	<i>H. prolifer</i>		X*	2	<0.1
Ctenophora									
Echinodermata									
	Holothuroidea	Dendrochirotida	Cucumariidae	<i>Cucumaria</i>	<i>C. frondosa</i>		X*	2	<0.1
	Ophiuroidea								F
Mollusca									
	Gastropoda								I
		Pteropoda							A,G
		Pteropoda	Limacinidae	<i>Limacina</i>					DI
		Pteropoda	Limacinidae	<i>Limacina</i>	<i>L. helicina</i>		X	12	0.1
									G
Platyhelminthes						X			

Table S3. Overview of species detected in stomachs of polar cod (*Boreogadus said*) after metabarcoding with less than 20 reads and/or represented in one polar cod stomach. *Triglops* was classified at the genus-level and was recorded in one stomach.

Species	Number of stomachs	Reads
<i>Acanthostephea malmgreni</i>	1	10
<i>Andaniexis lupus</i>	1	56
<i>Arrhis phyllonyx</i>	1	9
<i>Bathymedon obtusifrons</i>	1	4
<i>Calanus finmarchicus</i>	1	26
<i>Cucumaria frondosa</i>	1	13
<i>Eurycope inermis</i>	1	3
<i>Hyas araneus</i>	1	9
<i>Hybocodon prolifer</i>	1	12
<i>Hyperia galba</i>	1	22
<i>Icelus bicornis</i>	1	13
<i>Ischyrocerus anguipes</i>	1	3
<i>Liparis bathyartcticus</i>	1	12
<i>Lumpenus lampretaeformis</i>	1	3
<i>Microsetella norvegica</i>	3	19
<i>Monoculodes tenuirostratus</i>	1	4
<i>Onisimus nansenii</i>	1	7
<i>Triglops</i> sp.	1	5

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