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Supplement

Sandra M. Granquist and Erlingur Hauksson 2016.

Diet of harbour seals in a salmon estuary in North-West Iceland.

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Supplement Table S1. Relationships between otolith length in mm (OL)-fish length in cm (FL) and otolith length in mm (OL)-fish weight in grams (FW), used for the species during the diet analyses (R^2=coefficient of determination).

Species	OL – FL, R^2	OL – FL, R^2
Gadus morhua[1]	$FL = 1.800OL^{1.247}$, 0.95	$FW=0.049OL^{3.780}$, 0.94
Limanda limanda[2]	$FL=3.209OL^{1.285}$, 0.76	$FW=0.326OL^{3.868}$, 0.68
Ammodytes marinus[2]	$FL=12.812OL^{0.872}$, 0.64	$FW=5.475OL^{2.875}$, 0.51
Pleuronectes platessa[2]	$FL=4.110OL^{1.099}$, 0.85	$FW=1.219OL^{3.036}$, 0.83
Hippoglossoides platessoides[2]	$FL=4.255OL^{1.045}$, 0.92	$FW=0.299OL^{3.560}$, 0.90
Anarhichas lupus[2]	$FL=6.414OL^{1.625}$, 0.95	$FW=1.653OL^{5.070}$, 0.94
Pollachius virens[2]	$FL=0.810OL^{1.570}$, 0.92	$FW=0.008OL^{4.530}$, 0.91
Melanogrammus aeglefinus[2]	$FL=1.026OL^{1.341}$, 0.92	$FW=0.004OL^{4.320}$, 0.93
Merlangius merlangus[3]	FL=-11.936 + 19.700OL, 0.98	$FW=0.017OL^{3.535}$, 0.98
Clupea harengus[2]	$FL=10.663OL^{0.702}$, 0.86	$FW=8.871OL^{2.217}$, 0.86
Mallotus villosus[3]	FL=14.830 + 45.580OL, 0.81	$FW=1.163OL^{2.742}$, 0.85

[1)] Bogasson unpublished, [2)] Hauksson unpublished, [3)] Härkönen (1986)

Supplement Table S2. Occurrence by number for the different prey species (% of total), divided into sampling months for each year. Results of the Pearson χ^2 test of independence of frequency (with Yate's correction) for differences between years as well as differences between months.

Months	**Occurrence by number in % (n)**				**χ^2 (df) *p***
Food groups	2009[1]	2010[2]	2011	2009 - 2011	
May					
Ammodytidae	-	-	71.7 (86)	71.7 (86)	-
Mallotus villosus	-	-	22.5 (27)	22.5 (27)	-
Anarhichas lupus	-	-	0.8 (1)	0.8 (1)	-
Flatfish	-	-	0.0 (0)	0.0 (0)	-
Gadoids	-	-	0.8 (1)	0.8 (1)	-
Clupea harengus	-	-	0.0 (0)	0.0 (0)	-
Invertebrates	-	-	1.7 (2)	1.7 (2)	-
Cyclopterus lumpus	-	-	0.0 (0)	0.0 (0)	-
Sebastes sp.	-	-	0.0 (0)	0.0 (0)	-
Skate	-	-	0.0 (0)	0.0 (0)	-
Unident. & other fish	-	-	2.5 (3)	2.5 (3)	-
Total	-	-	100.0 (120)	100.0 (120)	-

June					
Ammodytidae	51.8 (255)	19.9 (72)	70.8 (379)	50.9 (706)	223.70 (2) < 0.001
Mallotus villosus	5.3 (26)	64.5 (233)	13.3 (71)	23.8 (330)	456.46 (2) < 0.001
Anarhichas lupus	0.0 (0)	1.1 (4)	0.4 (2)	0.4 (6)	6.01 (2) 0.05[3]
Flatfish	18.1 (89)	1.7 (6)	4.1 (22)	8.4 (117)	93.82 (2) < 0.001
Gadoids	1.0 (5)	1.1 (4)	2.1 (11)	1.4 (20)	2.33 (2) 0.31
Clupea harengus	23.8 (117)	0.0 (0)	0.2 (1)	8.5 (118)	228.74 (2) < 0.001
Invertebrates[4]	-	5.8 (21)	1.5 (8)	2.1 (29)	11.51 (1) 0.001
Cyclopterus lumpus	0.0 (0)	0.0 (0)	0.4 (2)	0.2 (2)	-
Sebastes sp.	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Skate	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Unident. & other fish[5]	-	5.8 (21)	7.3 (39)	4.3 (60)	0.53 (1) 0.47
Total	**100.0 (492)**	**100.0 (361)**	**100.0 (535)**	**100.0 (1388)**	**1023.10 (14) < 0.001**
July					
Ammodytidae	60.3 (123)	52.9 (279)	70.0 (156)	58.5 (558)	19.03 (2) < 0.001
Mallotus villosus	1.5 (3)	11.0 (58)	0.4 (1)	6.5 (62)	39.54 (2) < 0.001
Anarhichas lupus	0.0 (0)	0.8 (4)	0.9 (2)	0.6 (6)	1.69 (2) 0.43[3]
Flatfish	28.4 (58)	14.8 (78)	9.0 (20)	16.4 (156)	31.58 (2) < 0.001
Gadoids	5.4 (11)	5.9 (31)	0.4 (1)	4.5 (43)	11.22 (2) 0.004
Clupea harengus	4.4 (9)	3.8 (2)	12.1 (27)	4.0 (38)	56.48 (2) < 0.001
Invertebrates[4]	-	9.7 (51)	6.3 (14)	6.8 (65)	1.88 (1) 0.17
Cyclopterus lumpus	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Sebastes sp.	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Skate	0.0 (0)	0.2 (1)	0.0 (0)	0.1 (1)	-
Unident. & other fish[5]	-	4.4 (23)	0.9 (2)	2.6 (25)	4.82 (1) 0.03
Total	**100.0 (204)**	**100.0 (527)**	**100.0 (223)**	**100.0 (954)**	**166.24 (14) < 0.001**
August					
Ammodytidae	17.8 (38)	0.0 (0)	43.1 (62)	26.2 (100)	37.75 (2) < 0.001
Mallotus villosus	9.4 (2)	4.0 (1)	0.7 (1)	1.0 (4)	2.30 (2) 0.32[3]

Anarhichas lupus	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Flatfish	54.5 (116)	48.0 (12)	30.6 (44)	45.0 (172)	19.93 (2) < 0.001
Gadoids	15.5 (33)	4.0 (1)	9.7 (14)	12.6 (48)	4.39 (2) 0.11[3]
Clupea harengus	11.3 (24)	0.0 (0)	0.7 (1)	6.5 (25)	17.58 (2) < 0.001[3]
Invertebrates[4]	-	20.0 (5)	7.6 (11)	4.2 (16)	2.49 (1) 0.11[3]
Cyclopterus lumpus	0.0 (0)	0.0 (0)	2.1 (3)	0.8 (3)	-
Sebastes sp.	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Skate	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	-
Unident. & other fish[5]	-	24.0 (6)	5.6 (8)	3.7 (14)	7.26 (1) 0.007[3]
Total	**100.0 (213)**	**100.0 (25)**	**100.0 (144)**	**100.0 (382)**	**97.7 (12)** **< 0.001**
September					
Ammodytidae	-	0.0 (0)	13.7 (23)	13.2 (23)	-
Mallotus villosus	-	0.0 (0)	0.0 (0)	0.0 (0)	-
Anarhichas lupus	-	16.7 (1)	0.0 (0)	0.6 (1)	-
Flatfish	-	0.0 (0)	44.6 (75)	43.1 (75)	-
Gadoids	-	16.7 (1)	19.0 (32)	19.0 (33)	-
Clupea harengus	-	0.0 (0)	1.8 (3)	1.7 (3)	-
Invertebrates	-	50.0 (3)	9.5 (16)	10.9 (19)	6.04 (1) 0.01[3]
Cyclopterus lumpus	-	16.6 (1)	0.6 (1)	1.2 (2)	-
Sebastes sp.	-	0.0 (0)	1.2 (2)	1.2 (2)	-
Skate	-	0.0 (0)	0.0 (0)	0.0 (0)	-
Unident. & other fish	-	0.0 (0)	9.5 (16)	9.2 (16)	-
Total	**-**	**100.0 (6)**	**100.0 (168)**	**100.0 (174)**	**-**
May - September					
Ammodytidae	45.8 (416)	38.2 (351)	59.3 (706)	48.8 (1473)	97.52 (2) < 0.001
Mallotus villosus	3.4 (31)	31.8 (292)	8.4 (100)	14.0 (423)	356.41 (2) < 0.001
Anarhichas lupus	0.0 (0)	1.0 (9)	0.4 (5)	0.5 (14)	9.57 (2) 0.008[3]
Flatfish	28.9 (263)	10.4 (96)	13.5 (161)	17.2 (520)	128.38 (2) < 0.00)
Gadidae	5.4 (49)	4.0 (37)	5.0 (59)	4.8 (145)	1.96 (2) 0.38
Clupea harengus	16.5 (150)	0.2 (2)	2.7 (32)	6.1 (184)	251.51 (2) < 0.001
Invertebrates[4]	-	8.8 (80)	4.3 (51)	4.3 (131)	-

Cyclopterus lumpus	0.0 (0)	0.1 (1)	0.5 (6)	0.2 (7)	6.53 (2) 0.038[3]
Sebastes sp.	0.0 (0)	0.0 (0)	0.2 (2)	0.1 (2)	-
Skate	0.0 (0)	0.1 (1)	0.0 (0)	0.1 (1)	-
Unident. & other fish[5]	-	5.4 (50)	5.7 (68)	3.9 (118)	-
Total	**100.0 (909)**	**100.0 (919)**	**100.0 (1190)**	**100.0 (3018)**	**-**
χ^2 (df) *p*, by months[6]	**2009**	**2010**	**2011**	**2009-2011**	
Ammodytidae	91.56 (2) < 0.001	118.64 (3) < 0.001[3]	208.21 (4) < 0.001	229.74 (4) < 0.001	-
Mallotus villosus	11.53 (2) 0.003	295.36 (3) < 0.001[3]	92.31 (4) < 0.001	243.27 (4) < 0.001	-
Anarhichas lupus	-	15.80 (3) 0.001[3]	-	2.77 (4) 0.60[3]	-
Flatfish	95.66 (2) < 0.001	78.85 (3) < 0.001[3]	237.99 (4) < 0.001	389.51 (4) < 0.001	-
Gadoids	61.08 (2) < 0.001	15.14 (3) 0.002[3]	101.23 (4) < 0.001	165.25 (4) < 0.001	-
Clupea harengus	44.79 (2) < 0.001	-	94.43 (4) < 0.001[3]	35.20 (4) < 0.001	-
Invertebrates	-	21.30 (3) < 0.001[3]	29.50 (4) < 0.001	51.22 (4) < 0.001	-
Cyclopterus lumpus	-	-	9.10 (4) 0.06[3]	14.34 (4) 0.006[3]	-
Unident. & other fish	-	18.37 (3) < 0.001[3]	18.90 (4) 0.001	18.48 (4) 0.001[3]	-
Approx. total χ^2	**304.62 (10) < 0.001**	**563.46 (21) < 0.001**	**791.67 (32) < 0.001**	**1149.78 (36) < 0.001**	

[1]Comparision in 2009 only possible between June, July and August.

[2] No data in May. Comparison only possible between June, July, August and September.

[3]χ^2 approximation may be incorrect due to low frequency

[4] Invertebrates not collected in 2009. Only 2010 and 2011 were compared.

[5]No records of unidentified fish in year 2009. Only 2010 and 2011 were compared.

[6]Redfish and skate omitted due to low occurrence