

Coastal feeding patterns based on a spatial distribution of released Korean chum salmon, (*Oncorhynchus keta*) fingerings



KOREA FISHERIES
RESOURCES AGENCY

Ju Kyoung Kim, O-Nam Kwon, and Kwan Eui Hong

1. Yangyang Salmon Station, Korea Fisheries Resources Agency, Yangyang, 215-821, Korea
2. Gangneung-Wonju National University, East Coastal Life Science Institute, Gangneung Korea, 210-702

INTRODUCTION

Chum salmon, *Oncorhynchus keta* has been mainly belonged in a species out of Family Salmonidae came back in Korea. The artificially hatched salmon juvenile has been releasing to almost Buk stream in Goseong, Namdae stream in Yangyang and Oship stream in Samchuk. A worldwide research about a Salmonidae has been conducting with pink salmon *O. gorbuscha*, sockeye salmon *O. nerka* and chinook salmon *O. tshawytscha* included in chum salmon, *O. keta*. Released salmon juveniles in several countries affiliated on North Pacific Anadromous Fish Commission(NPAFC)are preparing for a migration for spawning with eating and growing in the Bering Sea also now.

So specific feeding strategy of chum salmon was researched several researchers, but comparative feeding strategy and pattern of the salmon as comparison with juvenile and adult of snakehead not yet are. Therefore, we conducted the coastal survey to feeding strategy investigation of chum salmon juvenile targeted the released juvenile in Namdae stream on end of March in Yangyang, Korea on April and May, 2010 and 2011. Also we investigated the feeding pattern due to a distance of the releasing point and coastal area.

RESULTS AND DISCUSSION

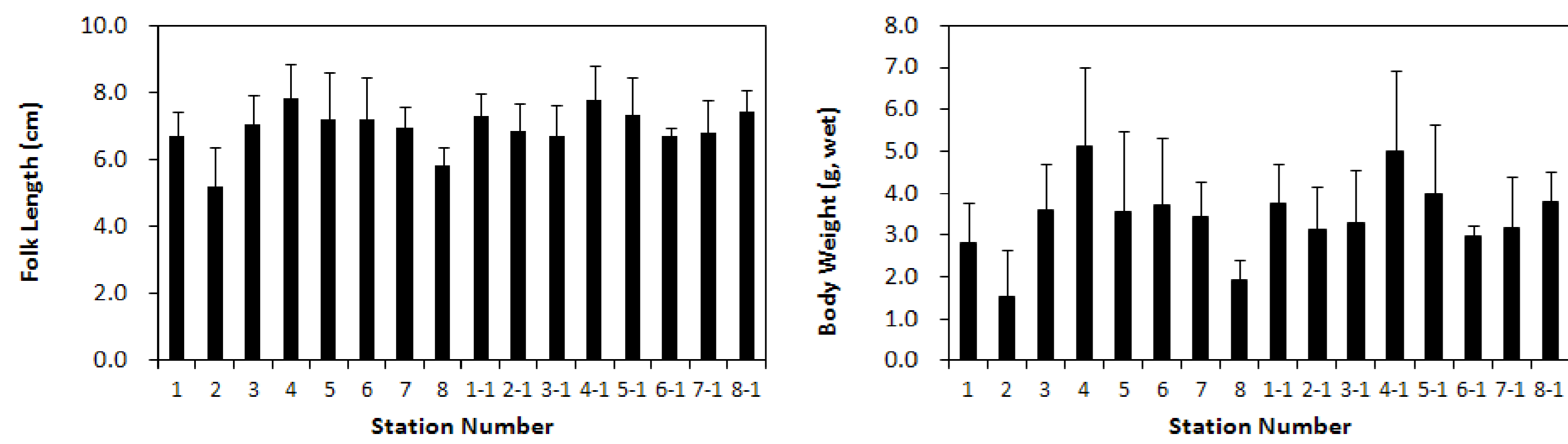


Fig. 1. Folk length (cm) and body weight (g) of chum salmon, *Oncorhynchus keta* collected on Spring (April to June) 2010.

A spatial folk length and body weight of the released salmon were not significantly differed to 5.2-7.8 cm and 1.5-5.1 g.

Table 1. Appearances of Zooplankton (ind./ton) of the station collected chum salmon, *Oncorhynchus keta* on Spring (April to June) 2010.

	1	2	3	4	5	6	7	8	1-1	2-1	3-1	4-1	5-1	6-1	7-1	8-1
Noctilucales	1.5 (10.9)	-	-	-	2.8 (11.6)	0.3 (1.8)	-	-	-	-	-	2.7 (18.5)	2.3 (15.7)	-	-	-
Amphipoda	3.5 (25.3)	1.4 (11.1)	11.7 (50.3)	2.0 (10.4)	-	2.2 (14.5)	-	3.7 (10.7)	0.5 (3.0)	3.4 (10.8)	0.6 (3.8)	4.4 (29.5)	-	1.4 (7.4)	-	-
Copepoda	9.6 (69.0)	9.1 (71.8)	11.1 (47.7)	12.2 (64.3)	19.6 (80.8)	9.4 (61.1)	4.4 (95.1)	27.6 (79.9)	11.6 (74.6)	26.0 (82.5)	13.1 (89.1)	8.5 (57.1)	13.6 (62.5)	15.7 (81.9)	2.8 (100.0)	4.6 (76.6)
Decapoda	0.2 (1.4)	0.8 (6.3)	-	3.1 (16.4)	0.9 (3.8)	-	-	0.3 (1.0)	2.5 (16.3)	1.7 (5.4)	0.4 (3.1)	0.8 (5.6)	8.1 (37.5)	-	-	-
Annelida	-	0.6 (4.6)	-	-	-	0.9 (6.2)	-	-	-	-	-	-	-	-	-	1.4 (23.4)
Arthropoda	-	-	-	0.4 (2.0)	-	-	-	-	-	-	-	-	-	-	-	-
Cnidaria	-	-	-	0.9 (4.9)	2.5 (16.4)	-	0.3 (1.0)	-	-	-	-	-	-	-	0.5 (2.4)	-
Chaetognatha	-	-	0.5 (2.1)	0.4 (2.0)	0.9 (3.8)	0.3 (1.8)	-	2.6 (7.5)	0.5 (3.0)	-	0.4 (3.1)	1.2 (7.8)	-	1.0 (5.3)	-	-
Echinodermata	-	-	-	-	2.8 (11.6)	-	0.2 (4.9)	-	0.0	-	0.1 (0.9)	-	-	0.0	-	-
Chordata (egg)	0.6 (4.3)	0.8 (6.3)	-	-	-	-	-	-	0.5 (3.0)	0.4 (1.3)	-	-	-	0.6 (2.9)	-	-
No. of Ind. (ton)	13.8	12.6	23.3	18.9	24.0	15.3	5.0	34.6	15.5	31.5	14.7	14.9	22.0	19.2	3.0	6.0

Arthropoda was included a Order Cladocera in Phylum Arthropoda Parenthesis were indicated percentage occupied in number of total individuals on each station Especially, Sum of number in the parenthesis on Station 1 over a hundred, because of a average three collection information.

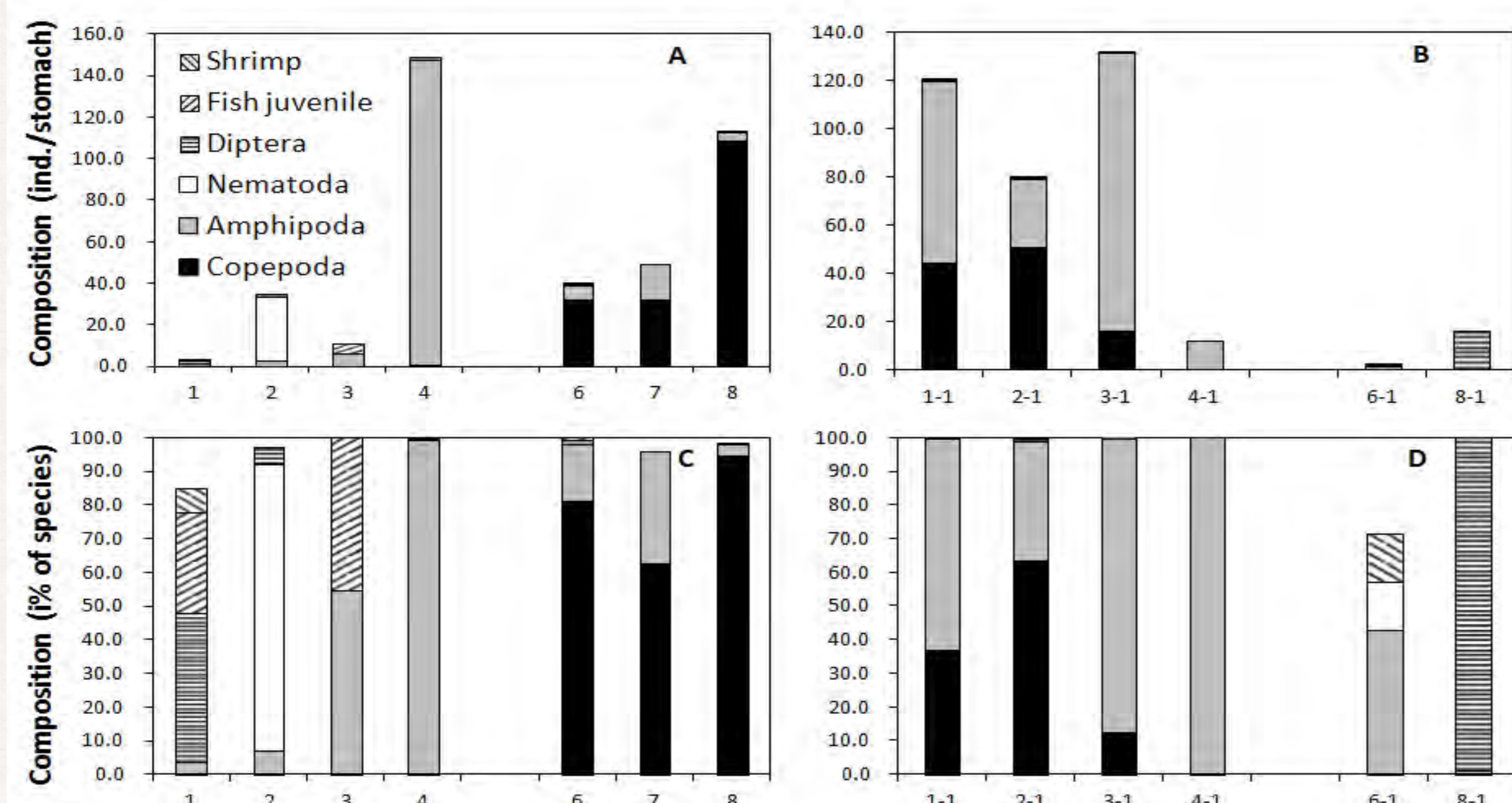


Fig. 2. Stomach contents (ind./stomach) of chum salmon, *Oncorhynchus keta* collected on Spring (April to June) 2010. Others, Decapoda, Euphausia, Pteropoda, fish egg, Crab larvae and hydrolysate.

MATERIALS AND METHODS

- Sample collection
 - Site : 20 stations, Yangyang coast ~ Goseong coast
 - Period : Mar. 14 ~ May. 24
- Environmental Data : water temperature, pH, DO, and salinity (CTD)
- Zooplankton collection : 3 m surface depth to 200 μ m norpac net, towing enforced to 2.0 knots for 5 min
- Salmon juvenile catch
 - Fishing gears : Bottom pair trawl (towing enforced to 2.0 knots for 20 min)
 - Length (TL, FL, BL) and weight were measured
 - Stomach content

Sampling area

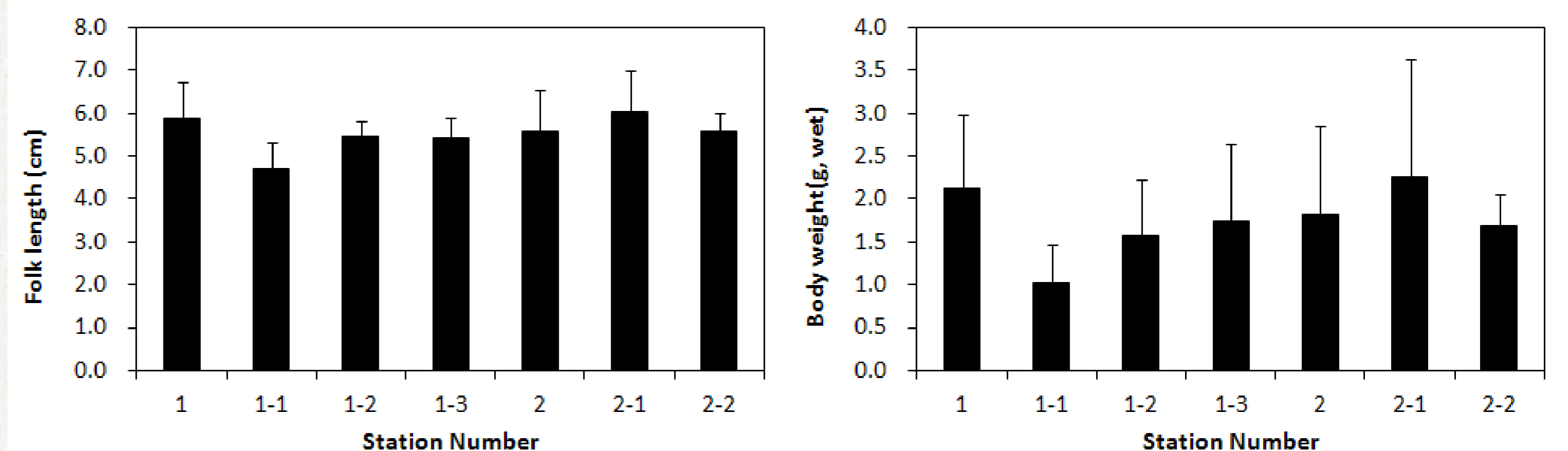
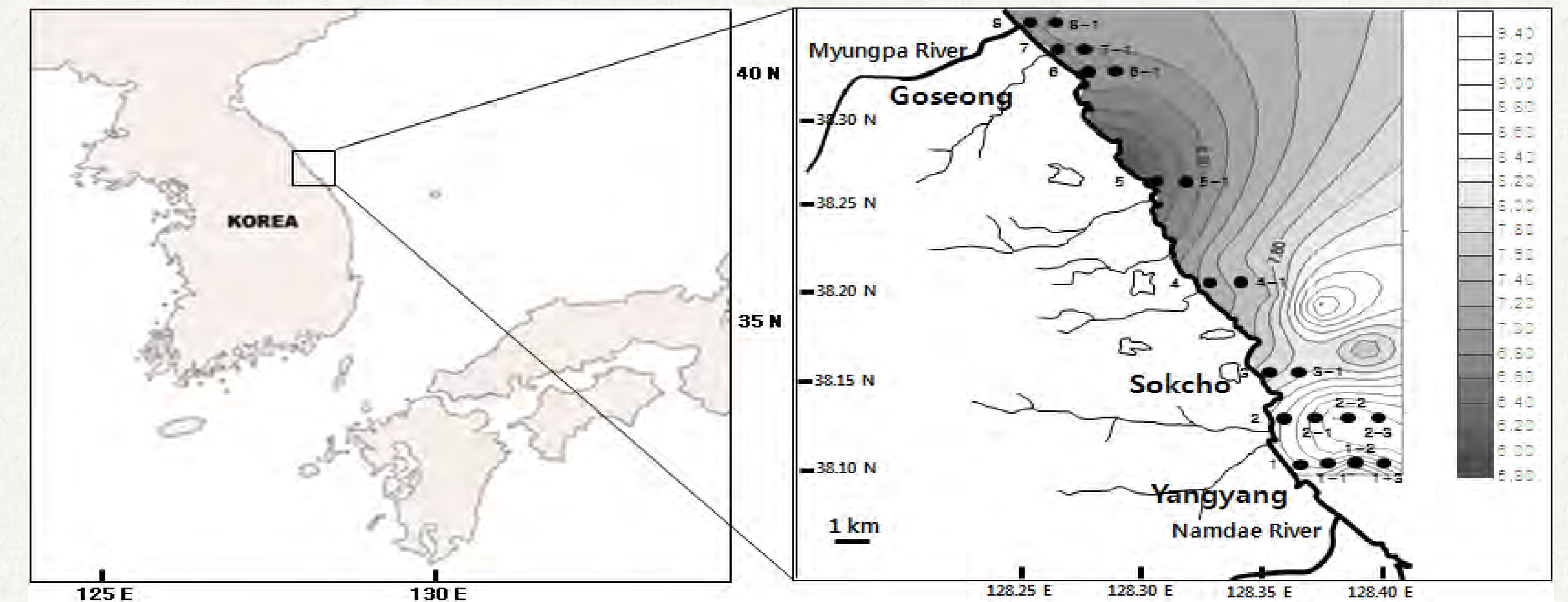


Fig. 3. Folk length (cm) and body weight (g) of chum salmon, *Oncorhynchus keta* collected on Spring (April to June) 2011.

A spatial folk length and body weight of the released salmon were not significantly differed to 4.7-6.0 cm and 1.0-2.1 g

Table 2. Number of Zooplankton (ind./ton) of the station collected chum salmon, *Oncorhynchus keta* on Spring (April to June) 2011.

	1	1-1	1-2	1-3	2	2-1	2-2	2-3
Amphipoda	0.0	32.7 (17.9)	0.0	5.1 (3.8)	2.1 (9.4)	28.5 (29.8)	46.6 (54.8)	6.6 (6.2)
Copepoda	5.8 (748)	147.5 (80.9)	892.7 (100.0)	127.2 (96.2)	16.8 (75.6)	63.7 (66.7)	37.0 (43.4)	82.4 (77.3)
Decapoda	2.0 (25.2)	0.0	0.0	0.0	0.7 (3.1)	0.0	0.0	4.4 (4.1)

Others, Cnidaria, Chaetognatha, Chordata (egg and juvenile) Parenthesis were indicated percentage occupied in number of total individuals on each station.

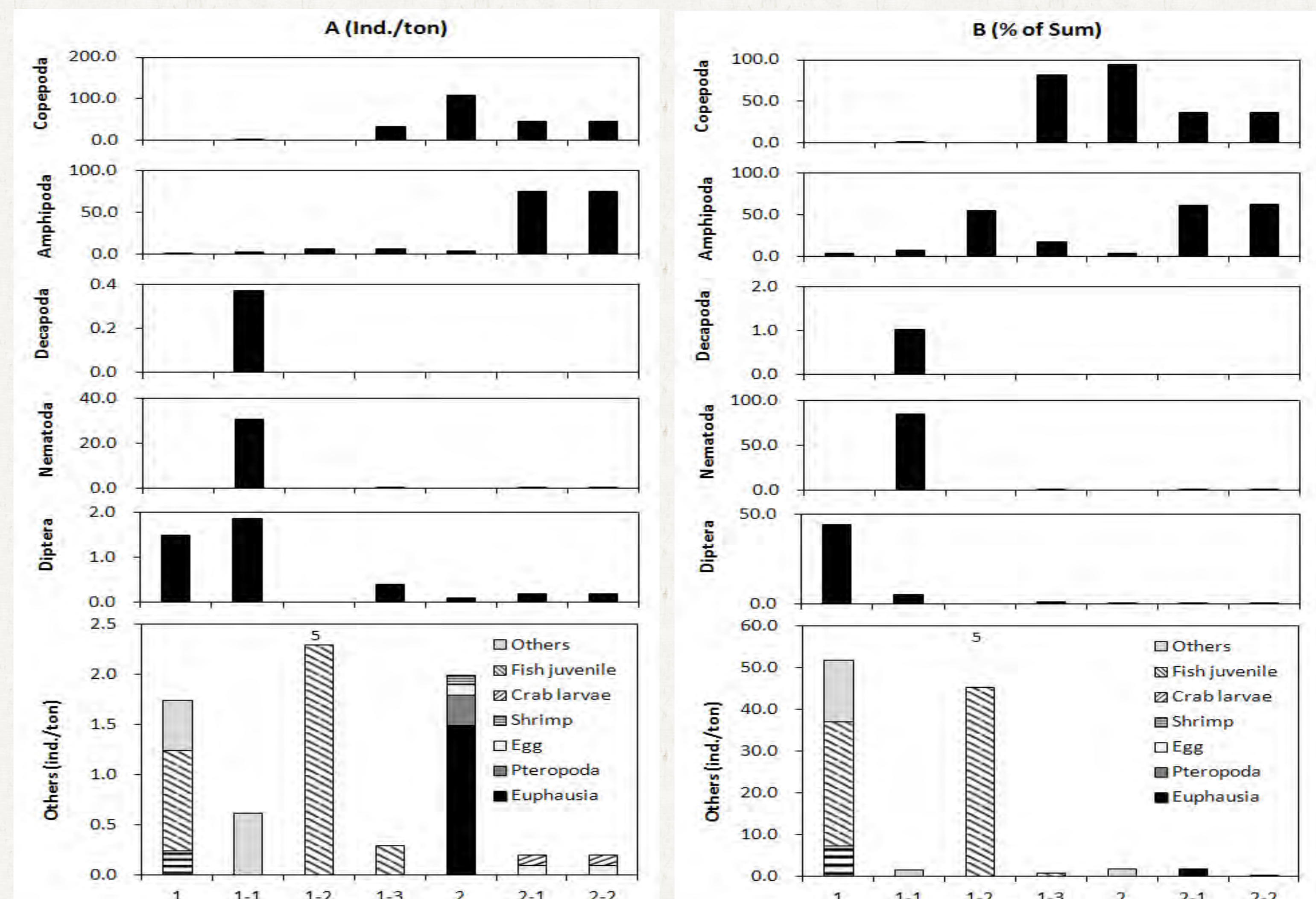


Fig. 4. Stomach contents (ind./stomach) of chum salmon, *Oncorhynchus keta* collected on Spring (April to June) 2011.

