

(News Release)
The Results of Radioactive Material Monitoring Surveys of Aquatic Organisms
(2012 Spring Samples)

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In accordance with the Comprehensive Radiation Monitoring Plan determined by the Monitoring Coordination Meeting, the Ministry of the Environment (MOE) is continuing radioactive materials monitoring in surface water and its sediment (rivers, lakes and headwaters, and coasts).

Samples of aquatic organisms taken mainly in Fukushima Prefecture (spring: sampling period: June 3-July 11, 2012) have been measured as part of MOE's efforts to monitor radioactive materials; the results have been compiled and are released here.

The monitoring results of radioactive materials in surface water bodies carried out to date can be found at the following web page: <http://www.env.go.jp/jishin/rmp.html#monitoring>

1. Survey Overview

(1) Survey Locations

Type	Surveyed Areas		Survey Locations, etc.	Survey Date
Rivers	A	Abukumagawa River	Near Shinfunabashi Bridge, Harasegawa River (Tributary)	June 20, July 11, 2012
	B		Taishobashi Bridge, Surikamigawa River (Tributary),	June 19, 2012
	C	Niidagawa River		June 8, 2012
	D	Manogawa River		June 6-8, 2012
Lakes	E	Hayamako Lake (Mano Dam)		June 6, 7, 28, 2012
	F	Akimotoko Lake		June 3, 4, 2012
	G	Inawashiroko Lake	North Shore	June 5, 2012
	H		South Shore	June 4, 5, 2012
Sea areas	I	Offshore of Iwakishi City (Hisanohama Beach Offshore)		July 6, 2012
	J	Offshore of Somashi City (Matsukawaura Lake)		June 19, 2012
	K	Offshore of Abukumagawa River Estuary		June 28, 2012

(Map attached)

(2) Survey Method

Samples of aquatic organisms (aquatic insects, algae, crustaceans, shellfish, fishes, etc.) were collected and the concentration of radioactive materials (radioactive cesium (Cs-134 and Cs-137), etc.) in each type of organisms was measured.

2. Survey Results Summary (See Annex for details)

(1) Rivers and Lakes (Lower row in each case shows the results of 2011 winter surveys)

Since samples' stages of growth and types are different between the winter and spring surveys, it is generally difficult to compare the results of these two surveys. However, even though there are variations between each body of water and the types of organism collected, in general, the levels of radioactive cesium found are about the same as those found in the winter survey.

Unit: Bq/kg-wet

			Plants (algae)	Aquatic insects	Crustacean	Shellfish	Fish	Amphibians	CPOM (dry leaves, etc.)
Abukumagawa River System	Abukumagawa River A	Spring 2012	740 (algae)	52 (4 species mixed)	181	170	50-167 (7 species)	290-420 (5 species)	-
		Winter 2011	-	340 (3 species mixed)	156	-	61-171 (3 species)	-	920
	Abukumagawa River B	Spring 2012	550 (algae)	-	-	-	76-650 (10 species)	280, 370 (2 species)	-
		Winter 2011	-	330 (4 species mixed)	-	-	115-680 (3 species)	-	1,120
Manogawa River System	Hayamako Lake E (Mano Dam)	Spring 2012	1,870 (algae)	510 (7 species mixed)	-	-	280-4,400 (4 species)	-	3,200
		Winter 2011	-	520 (5 species mixed)	-	-	91-1,010 (5 species)	-	800
	Manogawa River D	Spring 2012	260 (algae)	198 (14 species mixed))	223	182	20-970 (4 species)	-	1,410
		Winter 2011	-	670 (3 species mixed)	-	-	190-2,600 (4 species)	-	-
Niidagawa River C		Spring 2012	-	-	-	-	440-11,400 (5 species)	-	-
Akimotoko Lake F		Spring 2012	46 (Spermatophyta)	-	183	-	88-470 (7 species)	540	250
		Winter 2011	-	-	180	-	167-510 (8 species)	-	-
Inawashiroko Lake	Inawashiroko Lake G (North Shore)	Spring 2012	500 (algae)	-	-	-	77-380 (6 species)	-	-
	Inawashiroko Lake H (South Shore)	Spring 2012	9 (Spermatophyta)	-	-	-	46-430 (6 species)	-	-

*As for monitored specimen, including fish, the entire organism is used.

For those aquatic insects with small number of samples, they are mixed by body of water or location to measure radioactive material concentrations.

(2) Sea Areas (lower row in each case shows the results of 2013 winter surveys)

Since samples' stages of growth and types are different between the winter and spring surveys, it is generally difficult to compare the results of these two surveys. However, in general, the levels of radioactive cesium found are about the same as those found in the winter survey. The concentrations of radioactive cesium in sea areas are relatively lower than in rivers and lakes.

Unit: Bq/kg-wet

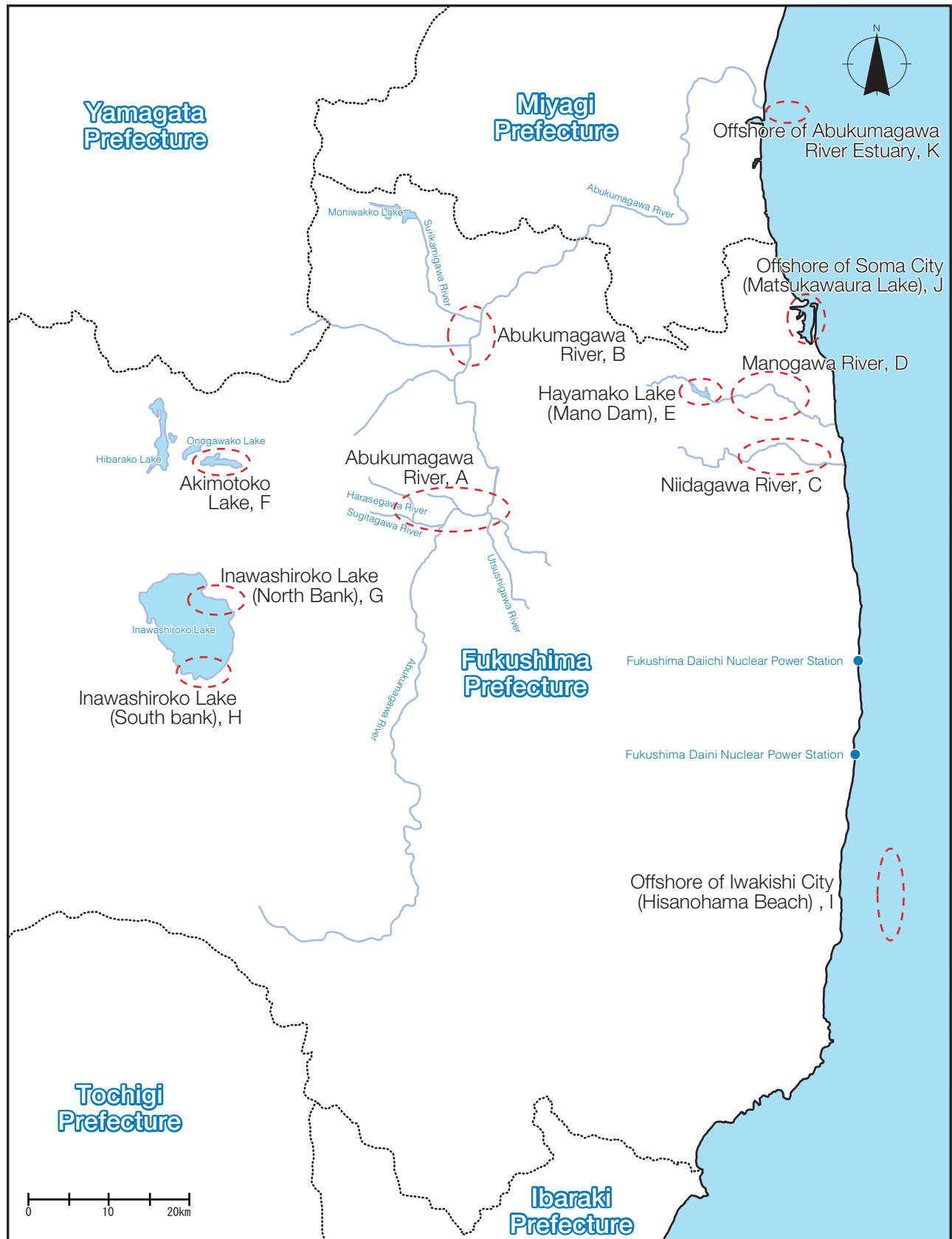
		Plants (algae)	Sea urchin, starfish, sea cucumber	Crustacean	Shellfish		Squid, Octopus	Fishes
					Without shell	Shell		
Iwakishi City Offshore I (Hisanohama Beach Offshore)	Spring 2012	22, 33 (Algae 2 species)	21, 97 (Sea urchin 2 species)	-	13	24	-	7.6-290 (8 species)
	Winter 2011	27, 150 (Algae 2 species)	7.1-212 (4 species (Sea urchin, starfish, sea cucumber))	-	42, 67 (2 species)	4.7, 27 (2 species)	6.8-18.0 (5 species)	12.2-260 (19 species)
Somashi City Offshore J (Matsukawaura Lake)	Spring 2012	13, 102 (Algae 2 species) 14 (Spermatophyta)	-	12-87 (4 species)	4.1, 5.7 (2 species)	9, 56 (2 species)	-	11-166 (5 species)
	Winter 2011	-	-	-	20	3.6	-	2.15
Offshore of Abukumagawa River Estuary K	Spring 2012	-	-	8.4, 21 (2 species)	-	-	-	11-42 (5 species)
	Winter 2011	-	-	-	20	3.6	-	2.15

*As for monitored specimen, including fish, the entire organism is used.

3. Future Plans

MOE will continue to measure the concentration of radioactive materials in aquatic organisms (organisms collection conducted 3-4 times each year).

Radioactive Material Monitoring Survey Locations of Aquatic Organisms



Results of Aquatic Organisms Radionuclides Survey (Rivers 1)

Stn No.	Aquatic organism and others		Weight (kg-wet)	Sample number	Radioactive cesium (Bq/kg-wet)			Sr-90 (Bq/kg-wet)	Remarks	
					Total	Cs-134	Cs-137			
A A b u k u m a g a w a R i v e r	Alga	Spirogyra sp.	0.12	-	740	300	440	-	Tributary (Harasegawa River)	
	Aquatic insect	Boyeria maclachlani	0.11	100	52	20	32	-	-	Juvenile Tributary (Harasegawa River)
		Clubtail dragonfly (Sieboldius albardae)								
		Golden-ringed dragonfly								
		Appasus sp.								
	Crustacean	Japanese swamp shrimp	0.11	694	181	71	110	-	Adult Tributary (Harasegawa River)	
	Shellfish	Japanese freshwater snail	0.03	15	170	70	100	-	Adult/young Tributary (Harasegawa River)	
	Fish	Amur minnow	0.020	8	73	30	43	-	Adult Tributary (Harasegawa River)	
		Oriental weather loach	0.080	43	74	29	45	-	Adult Tributary (Harasegawa River)	
		Channel catfish	0.22	11	67	28	39	-	Young fish	
		Smallmouth bass	1.5	2	167	67	100	-	Adult	
		Barbel steed	1.6	37	40	16	24	-	Young fish	
		Gin-buna	2.7	2	102	40	62	-	Adult	
		Japanese dace	0.12	5	50	20	30	-	Young fish	
		Amphibian	Japanese fire belly newt	0.030	5	420	170	250	-	Adult Tributary (Harasegawa River)
	Japanese tree frog		0.28	54	290	120	170	-	-	Adult Tributary (Harasegawa River)
	Wrinkled frog									
	Tokyo daruma pond frog		0.15	113	320	130	190	-	-	Juvenile Tributary (Harasegawa River)
	Frog and toad (tadpole)									
	B	Alga	Spirogyra sp.	0.070	-	550	220	330	-	Tributary (Surikamigawa River)
Fish		Stone loach	0.050	5	76	29	47	-	Adult Tributary (Surikamigawa River)	
		Oriental weather loach	0.13	31	113	45	68	-	Adult Tributary (Surikamigawa River)	
		Amur catfish	2.8	2	650	260	390	-	Adult	
		Channel catfish	2.2	1	600	240	360	0.27	Adult	
		Japanese eel	0.42	2	320	130	190	-	Adult	
		Smallmouth bass	1.6	2	490	190	300	-	Adult	
		Common carp	3.7	1	280	110	170	-	Adult	
		Barbel steed	1.4	1	530	220	310	-	Adult	
		Japanese dace	1.6	4	340	140	200	-	Adult	
		Ayu (run-up)	1.9	(Large numbers)	147	60	87	0.16	Young fish	
Amphibian		American bullfrog	0.43	1	370	150	220	-	Adult Tributary (Surikamigawa River)	
		Wrinkled frog	0.020	3	280	110	170	-	Adult Tributary (Surikamigawa River)	

*Aquatic organisms were sampled in multiple numbers in principle, and all of them (entirely) were used for analysis.

*Stomach contents shown in Remarks were removed before analysis, and all remaining parts of all samples were used for analysis.

Results of Aquatic Organisms Radionuclides Survey (Rivers 2)

Stn No.	Aquatic organism and others		Weight (kg-wet)	Sample number	Radioactive cesium (Bq/kg-wet)			Sr-90 (Bq/kg-wet)	Remarks	
					Total	Cs-134	Cs-137			
N i d v a w a	C	Fish	Salvelinus sp.	0.17	2	11,400	4,700	6,700	-	Adult/young
			Japanese dace	0.79	16	620	250	370	-	Adult
			Pale chub	0.090	9	440	180	260	-	Adult
			Ayu (run-up)	3.1	(Large numbers)	740	290	450	0.89	Young fish
			Rhinogobius sp.	0.015	5	460	190	270	-	Adult/young
M a n o g a w a	D	CPOM (leaves, etc.)		1.6	-	1,410	580	830	-	-
		Alga	Spirogyra sp.	0.13	-	260	100	160	-	-
		Aquatic insect	Isoneychia japonica	0.12	297	198	78	120	-	Juvenile
			Calopteryx cornelia							
			Boyeria maclachlani							
			Planaeschna milnei							
			Davidius sp.							
			Club-tailed dragonfly							
			Clubtail dragonfly (Sieboldius albardae)							
			Sinogomphus flavolimbatus							
			Stylogomphus suzukii							
			Macromia amphigena amphigena							
			Dobsonfly							
			Sialis japonica							
			Stenopsyche marmorata							
		Tipula sp.								
		Crustacean	Japanese swamp shrimp	0.12	411	223	93	130	-	Adult
Shellfish	Japanese freshwater snail	0.19	104	182	72	110	-	Adult/young		
Fish	Rhinogobius sp.	0.14	35	970	390	580	-	Adult		
	Gin-buna	3.8	1	470	190	280	-	Adult		
	Japanese dace	1.2	3	226	86	140	0.22	Adult		
	Ayu (run-up)	1.6	(Large numbers)	202	82	120	1.8	Young fish		

*Aquatic organisms were sampled in multiple numbers in principle, and all of them (entirely) were used for analysis.

*Stomach contents shown in Remarks were removed before analysis, and all remaining parts of all samples were used for analysis.

Results of Aquatic Organisms Radionuclides Survey (Lakes)

Stn No.	Aquatic organism and others		Weight (kg-wet)	Sample number	Radioactive cesium (Bq/kg-wet)			Sr-90 (Bq/kg-wet)	Remarks		
					Total	Cs-134	Cs-137				
H a y a m a k o L a k e (M a n o D a m)	E	CPOM (leaves, etc.)		2.1	-	3,200	1,300	1,900	-	-	
		Alga	Spirogyra sp.	0.13	-	1,870	770	1,100	-	-	
		Aquatic insect	Isonychia japonica		0.079	193	510	210	300	-	Juvenile
			Club-tailed dragonfly								
			Clubtail dragonfly (Sieboldius albardae)								
			Dobsonfly								
			Stenopsyche marmorata								
			Stenopsyche sauteri								
			Stenopsyche marmorata (chrysalis)								
		Fish	Smallmouth bass		2.7	4	4,400	1,800	2,600	1.0	Adult
			Rainbow trout		1.5	4	280	110	170	-	Adult
			Amur catfish		1.8	2	3,000	1,200	1,800	-	Adult
			Gin-buna		12	10	1,250	500	750	-	Adult
A k i m o t o k o L a k e	F	CPOM (leaves, etc.)		2.5	-	250	100	150	-	-	
		Seed plant	Nuttall's waterweed	2.0	-	46	19	27	-	-	
		Crustacean	Signal crayfish	0.75	12	183	73	110	-	Adult	
		Fish	Smallmouth bass		4.6	13	410	160	250	1.1	Adult
			Salvelinus sp.		3.8	7	470	190	280	0.36	Adult
			Cherry salmon		0.50	5	153	61	92	-	Adult/young
			Common carp		7.0	2	88	31	57	-	Adult
			Barbel steed		1.6	5	178	68	110	-	Adult
			Gin-buna		5.6	17	186	76	110	1.0	Adult
			Japanese dace		3.3	24	300	120	180	-	Adult
Amphibian	Montane brown frog (tadpole)	0.75	(Large numbers)	540	220	320	-	Juvenile			
I n a w a s h i r o k o L a k e	G s h o r e (N o r t h	Alga	Spirogyra sp.	0.20	-	500	200	300	-	-	
		Fish	Amur catfish		2.3	1	95	38	57	-	Adult
			Salvelinus sp.		4.8	7	380	150	230	0.12	Adult
			Masu salmon		5.0	6	350	140	210	-	Adult
			Smallmouth bass		3.0	4	170	70	100	0.30	Adult
			Gin-buna		2.1	6	77	31	46	-	Adult
			Japanese dace		4.0	(Large numbers)	149	60	89	-	Young fish
	H (S o u t h s h o r e	Seed plant	Japanese spatterdock	2.7	-	9.0	3.5	5.5	-	-	
		Fish	Salvelinus sp.		4.8	8	380	150	230	-	Adult
			Masu salmon		1.7	6	430	180	250	-	Adult
			Barbel steed		2.6	18	140	56	84	-	Adult
			Gin-buna		2.2	(Large numbers)	98	38	60	-	Young fish
			Japanese dace		2.2	8	46	19	27	0.30	Adult
Goby minnow			0.30	12	49	20	29	-	Adult		

*Aquatic organisms were sampled in multiple numbers in principle, and all of them (entirely) were used for analysis.

*Stomach contents shown in Remarks were removed before analysis, and all remaining parts of all samples were used for analysis.

Results of Aquatic Organisms Radionuclides Survey (Sea Areas)

Stn No.	Aquatic organism and others		Weight (kg-wet)	Sample number	Radioactive cesium(Bq/kg-wet)			Sr-90 (Bq/kg-wet)	Remarks	
					Total	Cs-134	Cs-137			
O f f s h o r e (H i s a n o h a m a B e a c h)	I	Alga	Brown alga	3.5	-	33	13	20	-	-
		Sea oak	2.8	-	22	8.6	13	-	-	
	Sea urchin	Northern sea urchin	2.9	18	21	8.3	13	-	Adult	
		Sea urchin	2.4	60	97	39	58	-	Adult	
	Shellfish	Haliotis sp. (Shell)	1.3	8	24	10	14	-	Adult	
		(Without shell)	0.40		13	5.0	7.7	-		
	Fish	Crimson sea bream	1.1	2	10	4.0	6.3	-	Adult	
		John dory	1.6	2	11	4.3	6.6	-	Adult	
		Fat greenling	4.3	7	290	120	170	0.36	Adult	
		Bastard halibut	3.5	5	7.6	3.0	4.6	0.022	Adult	
		Marbled sole	3.1	5	66	26	40	-	Adult	
		Bluefin searobin	0.60	1	35	14	21	-	Adult	
		Starspotted smooth-hound	2.5	2	51	19	32	-	Adult	
		Ocellate spot skate	3.2	4	216	86	130	-	Adult	
	Stomach contents (Crab)	0.30	-	35	14	21	-	-		
O f f s h o r e (M a t s u k a w a L a k e)	J	Alga	Monostruma nitidum	2.6	-	102	40	62	-	-
		Ulva pertusa Kjellman	2.6	-	13	5.1	7.6	-	-	
	Seed plant	Eelgrass	1.6	-	14	5.4	8.5	-	-	
	Crustacean	Japanese mitten crab	0.59	7	87	34	53	-	Adult	
		Grapsid crab	0.40	232	40	16	24	-	Adult	
		Freshwater prawn	0.28	359	12	4.9	6.9	-	Adult	
		Mysidaceas	0.64	(Large numbers)	24	9.7	14	-	Adult	
	Shellfish	Pacific oyster (Shell)	4.0	(Large numbers)	56	23	33	0.55	Adult	
		(Without shell)	1.2		4.1	1.6	2.5	-		
		Manila clam (Shell)	1.4	(Large numbers)	9	3.8	5.5	2.3	Adult	
		(Without shell)	0.90		5.7	2.3	3.4	-		
	Fish	Pleuronectidae	0.040	14	26	9.8	16	-	Juvenile	
		Flathead mullet	0.030	14	166	69	97	-	Young fish	
		Yellowfin goby	0.080	6	25	10	15	-	Adult	
Whitelimbed goby		0.16	94	13	5.3	8.0	-	Adult		
Tidepool gunnel		0.040	24	11	4.2	6.5	-	Adult/young		
R i A O v b f e u f r k s u h E m o s a r t g e u a a w o r a f y	K	Crustacean	Swimming crab (Portunus trituberculatus)	2.8	8	21	8.4	13	0.18	Adult
		Swimming crab (Ovalipes punctatus)	1.8	9	8.4	3.4	5.0	-	Adult	
	Fish	Japanese sea bass	2.4	1	42	16	26	0.041	Adult	
		Bastard halibut	2.5	3	38	15	23	-	Adult	
		Marbled sole	1.4	3	11	4.5	6.7	-	Adult	
		Stone flounder	1.4	3	40	15	25	-	Adult	
		White croaker	2.3	7	31	12	19	-	Adult	
	Stomach contents (Shrimp)	0.10	-	16	6.6	9.5	-	-		

*Aquatic organisms were sampled in multiple numbers, and all of them (entirely) were used for analysis.

* Stomach contents, shown in Remarks above, were removed before analysis and all remaining parts were used for analysis.