

Nuclide Analysis Results of Fish and Shellfish (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS)

[Categorized by the radioactive cesium level (by fish species, Since October 2012)]

- Total amount of radioactive cesium 134 and 137
Unit: Bq/kg (Raw)
- Sampling period: October 9 - November 30, 2012
- Guideline value (April 1, 2012 and later): 100Bq/kg

[20km Radius of Fukushima Daiichi NPS (exclude In the Port of Fukushima Daiichi NPS)]

Fish	Maximum	Minimum	Number of measurements (Measurement results exceeding the guideline value)	Fish	Maximum	Minimum	Number of measurements
Schlegel's black rockfish	1470	—	1 (1)	Carcharhinus	20.2	5.6	3
Common skete	780	53	21 (18)	Littlemouth flounder	20	9.4	4
Greenling	450	15	15 (6)	Common horse mackerel	18.9	4.2	3
Angel shark	420	8.7	7 (5)	Yellowtail	16.3	ND	4
Sea raven	410	136	4 (4)	Pennahia argentata	14.6	8.9	3
Flatfish	350	25.3	24 (10)	Crimson sea bream	12.9	ND	6
Microstomus achne	320	160	3 (3)	Striped jewfish	12.1	4.9	2
Marbled sole	290	26	13 (3)	Lepidotrigla microptera	7.7	6.4	5
Banded dogfish	270	—	1 (1)	Oplegnathus punctatus	ND	—	1
Stone flounder	212	22.6	8 (1)	Southern mackerel	ND	—	1
Stingray	178	6.4	6 (2)	Arothron hispidus	ND	—	1
Spotted halibut	165	—	1 (1)	Chum salmon	ND	—	1
Flathead (Platycephalus sp.)	138	31.9	5 (3)				
Smooth dogfish	121	6.6	11 (1)	Squids	Maximum	Minimum	Number of measurements
Sea bass	86	43	4	Loliginid	ND	—	2
Sea robin	76	6.4	8	Loligo bleekeri	ND	—	1
Acanthopagrus schlegeli	75	—	1				
Drumfish	57	27.4	9	Octopuses	Maximum	Minimum	Number of measurements
Ridged-eye flounder	46	5.5	3	Octopus (Enteroctopus dofleini)	ND	—	1
Takifugu snyderi	38	—	1				
Cynoglossus joyneri	34	—	1	Crustacea	Maximum	Minimum	Number of measurements
Dasyatis matsubarai	34	ND	4	Blue crab	37	ND	14
Common Japanese conger	32	13.7	2	Ovalipes punctatus	19.9	ND	5
Dory	32	4.2	10				
Pagrus major	29	ND	6				

(Remark) ND for Cs134: approx. 3.1Bq/kg, Cs137: approx. 3.2Bq/kg

Number of samples	42
Samples with cesium exceeding 100Bq/kg	14 (33%)
Number of measurements	228
Number of measurement results exceeding 100Bq/kg	59 (26%)

* Figures in parenthesis are ratios over 100 Bq/kg.

[Categorized by the radioactive cesium level (by fish species, March - September)]

- Total amount of radioactive cesium 134 and 137
Unit: Bq/kg (Raw)
- Sampling period: March 29 - September 19, 2012
- Guideline value (April 1, 2012 and later): 100Bq/kg

Fish	Maximum	Minimum	Number of measurements (Measurement results exceeding the guideline value)	Fish	Maximum	Minimum	Number of measurements
Greenling	25800	ND	86 (44)	Chub mackerel	14.3	ND	2
Sebastes cheni	1880	540	6 (6)	Sand eel	12.9	ND	4
Barfin flounder	1670	690	2 (2)	Balloonfish	10.2	ND	2
Sea bass	1610	33	17 (11)	Pointhead flounder	8.3	4.1	2
Banded dogfish	1430	4.4	9 (3)	Yellowtail	6.5	ND	5
Microstomus achne	1260	ND	36 (22)	Pelagic thresher	6	—	1
Flatfish	1190	5.6	51 (30)	Korean flounder	4.8	ND	2
Common skete	1000	168	47 (47)	Flathead flounder	4.1	—	1
Marbled sole	920	21.3	42 (23)	Zenopsis nebulosa	ND	—	2
Spotbelly rockfish	830	—	1 (1)	Alaska pollack	ND	—	1
Starry flounder	810	580	2 (2)	Japanese butterfish	ND	—	1
Sea raven	670	25	7 (5)				
Schlegel's black rockfish	620	410	4 (4)	Squids	Maximum	Minimum	Number of measurements
Stingray	460	55	7 (5)	Andrea cuttlefish	ND	—	5
Stone flounder	390	29	10 (4)	Loliginid	ND	—	9
Angel shark	222	66	4 (3)	Loligo bleekeri	ND	—	3
Dasyatis matsubarae	205	ND	10 (2)				
Flathead (Platycephalus sp.)	187	140	3 (3)	Octopuses	Maximum	Minimum	Number of measurements
Smooth dogfish	169	4.7	10 (2)	Chestnutoctopus	9.1	ND	6
Acanthopagrus schlegeli	160	94	2 (1)	Octopus (Enteroctopus) dofleini	7.7	ND	13
Drumfish	127	38	15 (4)	Common Octopus	ND	—	1
Sea robin	107	19.9	6 (1)				
Pacific cod	107	16.7	11 (1)	Crustacea	Maximum	Minimum	Number of measurements
Littlemouth flounder	103	10	8 (1)	Blue crab	40	ND	16
Carcharhinus	93	4.6	8	Ovalipes punctatus	26	ND	16
Pennahia argentata	69	15	7				
Common Japanese conger	66	21.4	2				
Dory	63	12.5	11				
Roundnose flounder	57	4.5	8				
Lepidotrigla microptera	53	6.4	21				
Ridged-eye flounder	53	—	1				
Northern dogfish	50	ND	15				
Long shanny	47	16.4	3				
Lophius litilon	42	ND	17				
Common horse mackerel	38	10.7	5				
Pagrus major	38	ND	8				
Slippery sole	36	21.6	4				
Crimson sea bream	26	ND	4				
Salangichthys ishikawae	23	—	1				
Shark-skin flounder	17	ND	2				

Number of samples	59
Samples with cesium exceeding 100Bq/kg	24 (41%)
Number of measurements	605
Number of measurement results exceeding 100Bq/kg	227 (38%)

* Figures in parenthesis are ratios over 100 Bq/kg.

(Remark) ND for Cs134: approx. 3.1Bq/kg, Cs137: approx. 3.3Bq/kg

[Table 1 - 1. Results obtained at Each Measurement Point (1)]

Measurement Point (Date of Sampling)	Samples (Sample names in blue letters: 100Bq/kg or less)
T1 (August 28)	Stone flounder, Marbled sole, Microstomus achne, Lepidotrigla microptera, Dory, Crimson sea bream
T1 (October 25)	Flatfish, Greenling, Marbled sole, Sea robin, Striped jewfish, Dory, Crimson sea bream, Yellowtail Common skete, Stone flounder
T1 (November 16)	Stone flounder, Common skete, Marbled sole, Flatfish, Sea robin, Littlemouth flounder, Lepidotrigla microptera, Crimson sea bream
T1 (November 30)	Common skete, Flatfish, Sea bass, Common Japanese conger, Greenling, Marbled sole, Littlemouth flounder, Dory, Lepidotrigla microptera, Crimson sea bream
T2 (August 28)	Dory, Marbled sole, Crimson sea bream, Lepidotrigla microptera, Smooth dogfish, Balloonfish, Littlemouth flounder, Greenling
T2 (October 25)	Flatfish, Marbled sole, Smooth dogfish, Littlemouth flounder, Greenling, Crimson sea bream, Sea robin, Lepidotrigla microptera, Ridged-eye flounder, Striped jewfish, Dory, Loliginid
T2 (November 16)	Stone flounder, Marbled sole, Flatfish, Greenling, Common Japanese conger, Dory, Lepidotrigla microptera, Common horse mackerel, Loliginid, Crimson sea bream, Octopus (Enteroctopus) dofleini, Loligo bleekeri
T2 (November 30)	Sea bass, Common skete, Greenling, Ridged-eye flounder, Flatfish, Marbled sole, Pagrus major, Littlemouth flounder, Crimson sea bream, Smooth dogfish, Dory, Lepidotrigla microptera, Common horse mackerel
T3 (August 20)	Microstomus achne, Stone flounder, Greenling, Lepidotrigla microptera, Dory, Lophius litilon, Flatfish Common skete
T3 (September 10)	Microstomus achne, Marbled sole, Dory, Lepidotrigla microptera, Flatfish Common skete
T3 (October 21)	Angel shark, Stone flounder, Stingray Common skete, Flatfish, Marbled sole
T3 (November 5)	Stone flounder, Marbled sole, Flatfish, Sea robin, Dasyatis matsubarae Common skete, Microstomus achne, Angel shark
T4 (August 20)	Marbled sole, Dory, Flatfish, Stone flounder, Lepidotrigla microptera, Smooth dogfish, Zenopsis nebulosa, Lophius litilon, Pagrus major Common skete, Greenling, Microstomus achne
T4 (September 10)	Flatfish, Dory, Roundnose flounder, Smooth dogfish, Lepidotrigla microptera, Crimson sea bream, Zenopsis nebulosa, Pagrus major Common skete, Stone flounder, Marbled sole
T4 (October 21)	Marbled sole, Stone flounder, Sea robin, Stingray, Pagrus major Common skete, Flatfish, Angel shark
T4 (November 5)	Marbled sole, Ridged-eye flounder, Takifugu snyderi, Smooth dogfish, Dory, Stone flounder, Dasyatis matsubarae, Sea robin, Pagrus major Common skete, Flatfish
G1 (August 1)	Drumfish, Flatfish, Sea bass, Carcharhinus, Blue crab Greenling, Common skete, Stingray
G1 (September 5)	Flatfish, Drumfish, Blue crab Common skete, Stingray, Angel shark
G1 (October 18)	Drumfish, Carcharhinus, Oplegnathus punctatus, Blue crab Common skete, Flatfish, Flathead (Platycephalus sp.)
G1 (November 8)	Blue crab, Ovalipes punctatus Common skete, Sea raven

[Table 1 - 2. Results obtained at Each Measurement Point (2)]

Measurement Point (Date of Sampling)	Samples (Sample names in blue letters: 100Bq/kg or less)
G2 (August 1)	Dasyatis matsubarae, Pagrus major, Smooth dogfish, Northern dogfish, Banded dogfish, Marbled sole, Ovalipes punctatus, Blue crab Common skete, Flatfish
G2 (September 5)	Dasyatis matsubarae, Flatfish, Drumfish, Dory, Carcharhinus, Ovalipes punctatus, Blue crab, Chub mackerel Sebastes cheni, Common skete
G2 (October 18)	Flatfish, Drumfish, Dasyatis matsubarae, Carcharhinus, Blue crab, Arothron hispidus Stingray, Greenling
G2 (November 8)	Sea bass, Flatfish, Drumfish, Dory, Ovalipes punctatus, Smooth dogfish, Blue crab, Chum salmon Sea raven, Common skete
G3 (August 8)	Drumfish, Pagrus major, Smooth dogfish, Blue crab, Carcharhinus Microstomus achne, Common skete, Flatfish, Sea bass
G3 (September 19)	Carcharhinus, Banded dogfish, Blue crab Common skete, Greenling, Flatfish, Marbled sole
G3 (October 13)	Flathead (Platycephalus sp.) , Sea bass, Drumfish, Blue crab, Cynoglossus joyneri, Smooth dogfish, Pagrus major Common skete, Flatfish, Spotted halibut
G3 (November 21)	Smooth dogfish, Pennahia argentata, Yellowtail, Dory, Blue crab Common skete, Microstomus achne, Flatfish, Angel shark
G4 (August 8)	Chub mackerel, Pagrus major, Ovalipes punctatus Sebastes cheni, Microstomus achne, Greenling, Banded dogfish, Flatfish, Dasyatis matsubarae
G4 (September 19)	Marbled sole, Drumfish, Flatfish, Carcharhinus, Dasyatis matsubarae Stingray, Common skete
G4 (October 13)	Flatfish, Drumfish, Pagrus major, Common horse mackerel, Angel shark, Dasyatis matsubarae, Carcharhinus, Ovalipes punctatus, Yellowtail, Blue crab, Chum salmon Marbled sole, Greenling, Common skete
G4 (November 21)	Flatfish, Stone flounder, Marbled sole, Pagrus major, Sea robin, Yellowtail, Smooth dogfish, Blue crab Microstomus achne, Common skete, Greenling
G5 (August 11)	Ovalipes punctatus, Blue crab, Pelagic thresher, Carcharhinus Common skete, Angel shark, Flatfish
G5 (September 15)	Drumfish, Blue crab Common skete, Stingray, Angel shark, Flathead (Platycephalus sp.) , Flatfish
G5 (October 15)	Drumfish, Blue crab Common skete, Flatfish, Banded dogfish
G5 (November 15)	Pennahia argentata Common skete, Flatfish, Marbled sole
G6 (March 29)	Sand eel
G6 (April 7)	Northern dogfish, Pacific cod, Shark-skin flounder Flatfish, Marbled sole, Sea raven
G6 (April 11)	Northern dogfish Marbled sole, Microstomus achne, Common skete, Pacific cod
G7 (August 11)	Flatfish, Angel shark, Blue crab, Ovalipes punctatus Common skete, Sea bass, Smooth dogfish
G7 (September 15)	Drumfish, Carcharhinus, Blue crab Banded dogfish, Common skete, Flatfish
G7 (October 15)	Acanthopagrus schlegeli, Drumfish, Smooth dogfish, Dory, Blue crab Schlegel's black rockfish, Common skete, Greenling, Flatfish
G7 (November 15)	Flatfish, Stingray, Blue crab Common skete, Greenling, Angel shark
G8 (August 25)	Carcharhinus, Smooth dogfish, Sea robin Common skete, Microstomus achne, Marbled sole, Flatfish, Flathead (Platycephalus sp.)
G8 (October 14)	Stingray, Flatfish, Drumfish, Flathead (Platycephalus sp.) , Ovalipes punctatus, Pennahia argentata, Blue crab Common skete, Smooth dogfish
G8 (November 10)	Flatfish, Smooth dogfish, Drumfish, Blue crab, Ovalipes punctatus Sea raven, Common skete, Stingray, Flathead (Platycephalus sp.), Angel shark
G8 (November 19)	Sea robin, Smooth dogfish, Dory, Blue crab, Southern mackerel, Chum salmon Sea raven, Flatfish, Flathead (Platycephalus sp.)

[Additional sampling of greenling (G1)] Total number sampled: 57

August 29 - October 10 Below the guideline value: 37, Above the guideline value: 20

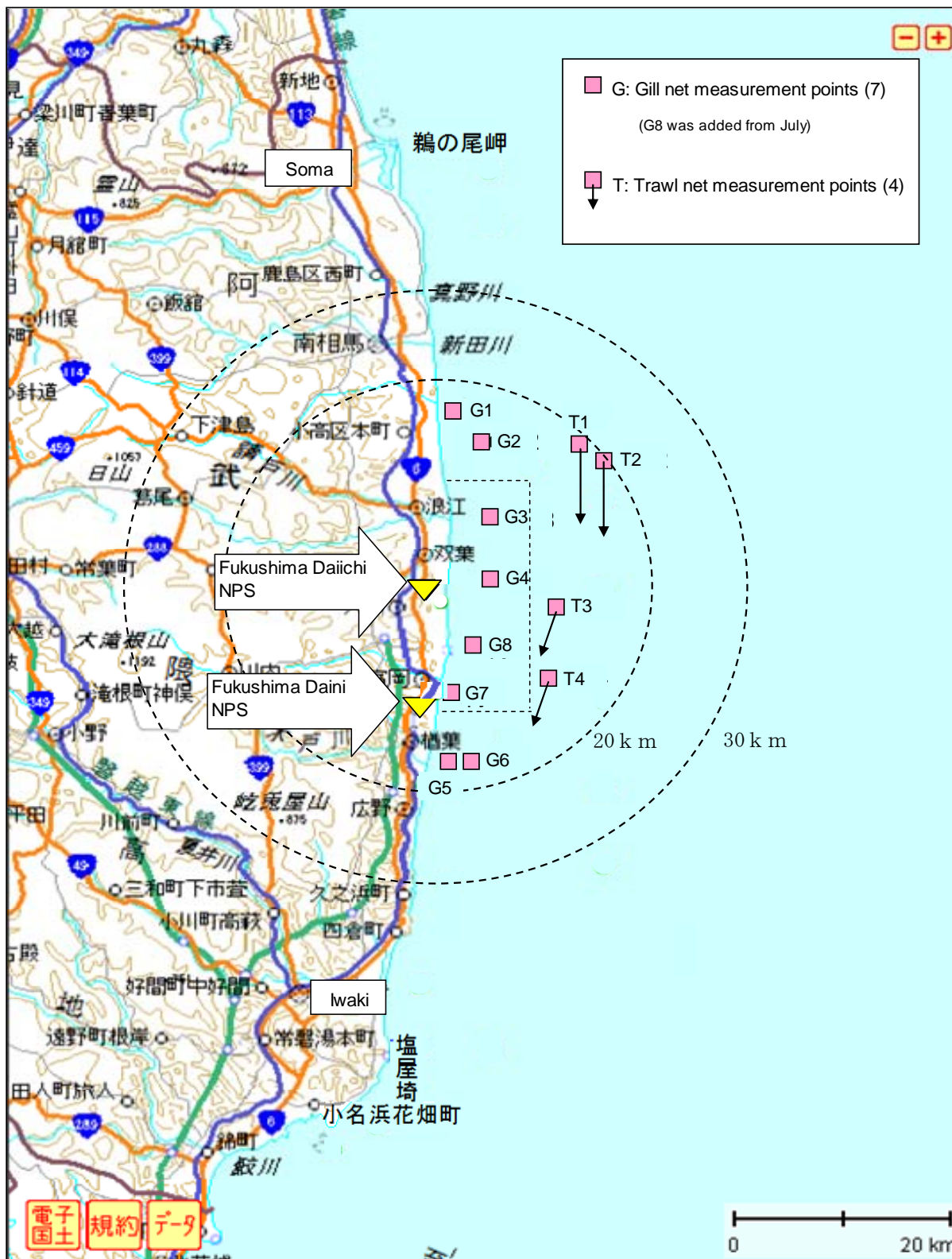
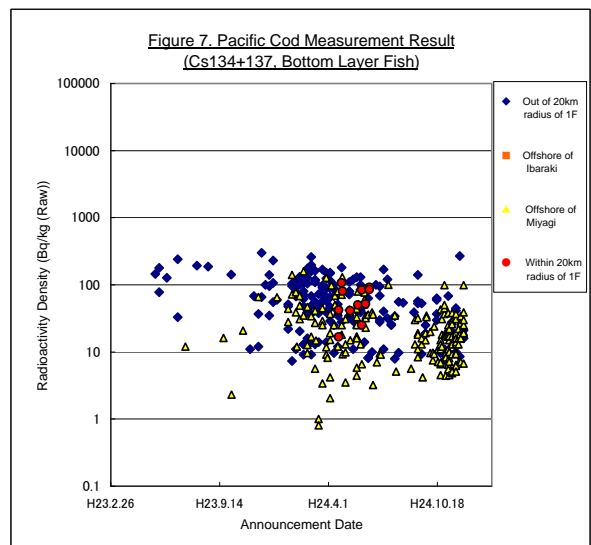
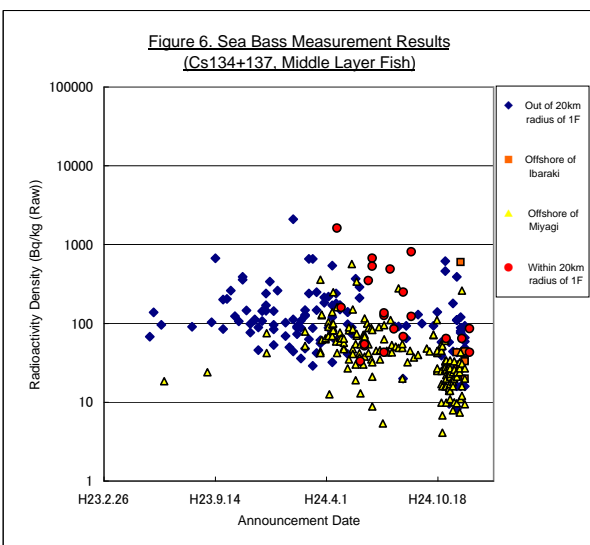
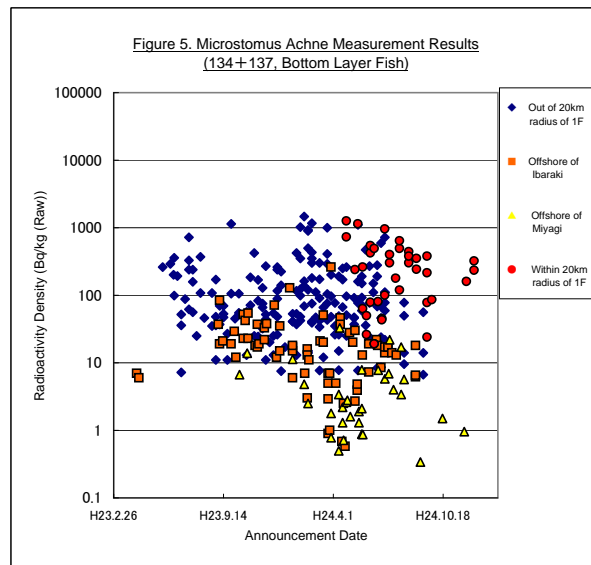
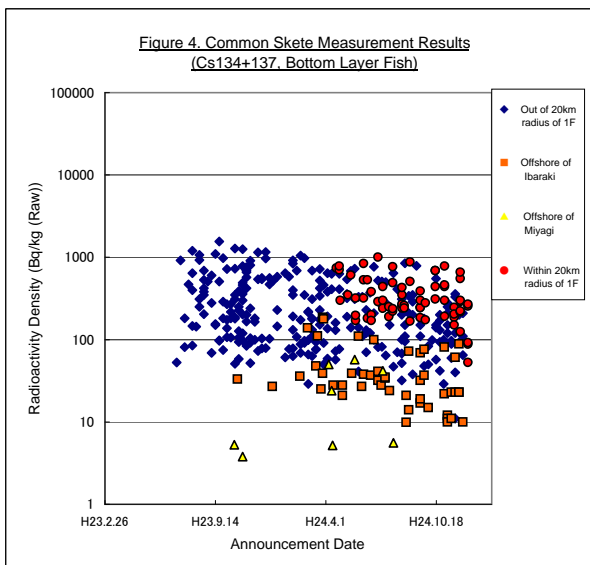
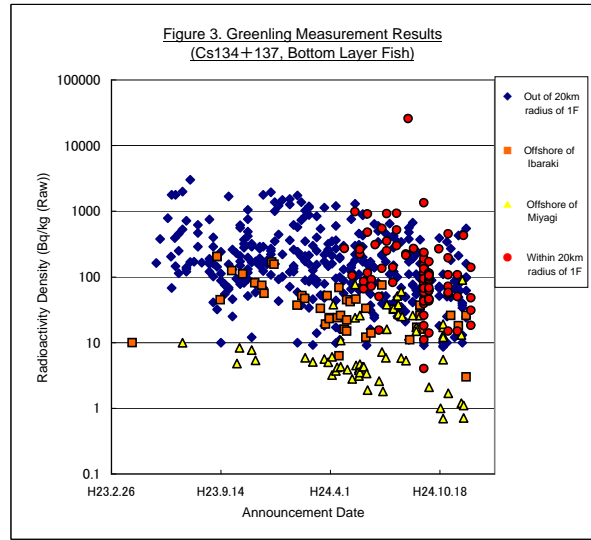
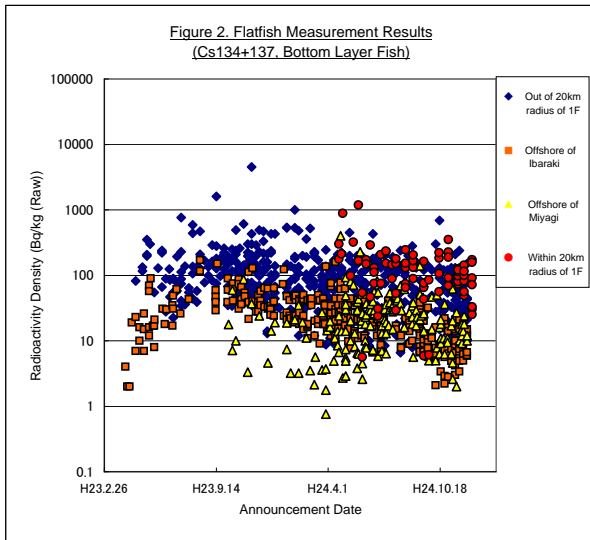
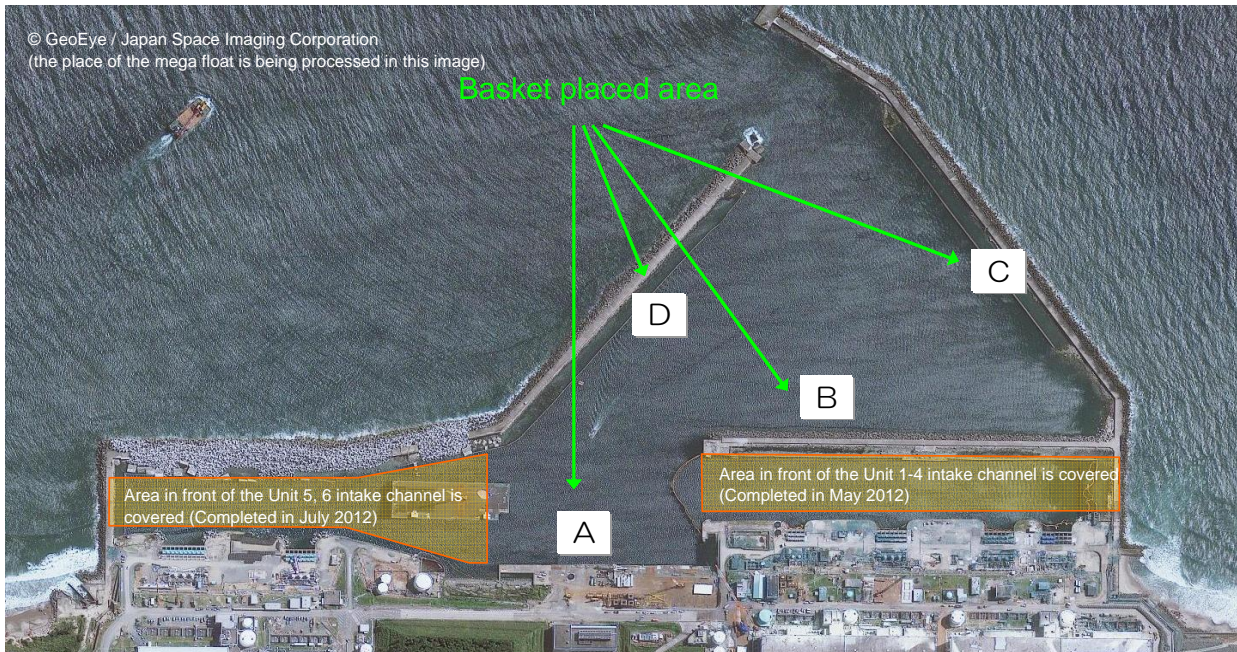


Figure 1. Fish and Shell Fish Measurement Points (As of November 2012)



(Remark) The measurement results of "Out of 20km radius of 1F", "Offshore of Ibaraki" and "Offshore of Miyagi" was obtained from the Japan Meteorological Agency website

Sampling (extermination) using fishing baskets in the port of Fukushima Daiichi NPS



<Preliminary Report> Sampling situation on December 20, 2012

(Sampling at Area A and C, The samples are currently under radioactivity density analysis)

Fish	Number of sampling
Greenling	3
Common Japanese conger	3
Brown hakeling	14
Spotbelly rockfish	9
Amount	29

[Reference] Sampling in the shallow draft quay (area A) on October 10, 2012 (Unit: Bq/kg (Raw))

Common Japanese conger	15500
Brown hakeling	4200
Schlegel's black rockfish	2230, 1760