<Reference>
November 30, 2012
Tokyo Electric Power Company

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 1/6 >

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling （Place No.） | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Cs-134 (Approx. 2 years) | Cs-137 (Approx. 30 years) | Total |
| Blue crab (Whole) | Around 1km Offshore of Ota River (T-S1) | November 8, 2012 | ND | ND | ND |
| Sea raven (Muscle) | Around 1km Offshore of Ota River (T-S1) | November 8, 2012 | 56 | 80 | 136 |
| Common skete (Muscle) | Around 1km Offshore of Ota River (T-S1) | November 8, 2012 | 100 | 190 | 290 |
| Ovalipes unctatus (Whole) | Around 1km Offshore of Ota River (T-S1) | November 8, 2012 | ND | ND | ND |
| Blue crab (Whole) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | ND | ND | ND |
| Sea raven (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 110 | 190 | 300 |
| Common skete (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 47 | 78 | 125 |
| Chum salmon (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | ND | ND | ND |
| Sea bass (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 20 | 44 | 64 |
| Drumfish (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 14 | 22 | 36 |

* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  Cs-134: Approx. 4.5Bq/kg (Raw), Cs-137: Approx. 4.0Bq/kg (Raw)
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.
* Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg
* Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 2/6 >

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling （Place No.） | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Cs-134 (Approx. 2 years) | Cs-137 (Approx. 30 years) | Total |
| Ovalipes unctatus (Whole) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 4.4 | 9.2 | 13.6 |
| Flatfish (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 19 | 30 | 49 |
| Smooth dogfish (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | ND | 6.6 | 6.6 |
| Dory (Muscle) | Around 3km Offshore of Odaka Ward (T-S2) | November 8, 2012 | 4.5 | 11 | 15.5 |
| Common skete (Muscle) | Around 2km Offshore of Kido River (T-S5) | November 15, 2012 | 200 | 350 | 550 |
| Pennahia argentata (Muscle) | Around 2km Offshore of Kido River (T-S5) | November 15, 2012 | 5.7 | 8.9 | 14.6 |
| Flatfish (Muscle) | Around 2km Offshore of Kido River (T-S5) | November 15, 2012 | 51 | 92 | 143 |
| Marbled sole (Muscle) | Around 2km Offshore of Kido River (T-S5) | November 15, 2012 | 44 | 75 | 119 |
| Greenling (Muscle) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | November 15, 2012 | 160 | 270 | 430 |
| Stingray (Muscle) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | November 15, 2012 | 13 | 28 | 41 |

* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.

  Cs-134: Approx. 3.9Bq/kg (Raw)

  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.

* Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg

* Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 3/6 >

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling （Place No.） | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Cs-134 (Approx. 2 years) | Cs-137 (Approx. 30 years) | Total |
| Blue crab (Whole) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | November 15, 2012 | ND | ND | ND |
| Angel shark (Muscle) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | November 15, 2012 | 150 | 270 | 420 |
| Common skete (Muscle) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | November 15, 2012 | 250 | 410 | 660 |
| Flatfish (Muscle) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | November 15, 2012 | 30 | 52 | 82 |
| Greenling (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 55 | 89 | 144 |
| Blue crab (Whole) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 5.4 | 9.4 | 14.8 |
| Angel shark (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 42 | 73 | 115 |
| Sea raven (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 150 | 260 | 410 |
| Common skete (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 110 | 190 | 300 |
| Drumfish (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 9.8 | 18 | 27.8 |

* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.

  Cs-134: Approx. 4.4Bq/kg (Raw), Cs-137: Approx. 3.9Bq/kg (Raw)

  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.

* Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg

* Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 4/6 >

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling （Place No.） | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Cs-134 (Approx. 2 years) | Cs-137 (Approx. 30 years) | Total |
| Ovalipes unctatus (Whole) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | ND | 4.2 | 4.2 |
| Flatfish (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 38 | 62 | 100 |
| Smooth dogfish (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 11 | 26 | 37 |
| Flathead (Platycephalus sp.) (Muscle) | Around 4km Offshore of Kumagawa (T-S8) | November 10, 2012 | 53 | 85 | 138 |
| Stone flounder (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 25 | 39 | 64 |
| Angel shark (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 38 | 84 | 122 |
| Common skete (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 78 | 140 | 218 |
| Microstoms achne (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 60 | 100 | 160 |
| Flatfish (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 19 | 37 | 56 |
| Sea robin (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 5.3 | 6.0 | 11.3 |

* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.

  Cs-134: Approx. 4.6Bq/kg (Raw)

  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.

* Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg

* Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 5/6 >

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling （Place No.） | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Cs-134 (Approx. 2 years) | Cs-137 (Approx. 30 years) | Total |
| Dasyatis matsubarai (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | ND | ND | ND |
| Marbled sole (Muscle) | Around 10km Offshore of Fukushima Daiichi NPS (T-B3) | November 5, 2012 | 23 | 41 | 64 |
| Stone flounder (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 7.6 | 15 | 22.6 |
| Common skete (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 83 | 140 | 223 |
| Takifugu snyderi (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 12 | 26 | 38 |
| Flatfish (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 42 | 73 | 115 |
| Sea robin (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | ND | 6.4 | 6.4 |
| Dasyatis matsubarai (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 4.1 | 5.7 | 9.8 |
| Smooth dogfish (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 15 | 21 | 36 |
| Marbled sole (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 25 | 39 | 64 |

* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.

Cs-134: Approx. 4.2Bq/kg (Raw), Cs-137: Approx. 3.5Bq/kg (Raw)

As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.

* Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg

* Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 6/6 >

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling （Place No.） | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Cs-134 (Approx. 2 years) | Cs-137 (Approx. 30 years) | Total |
| Pagrus major (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | ND | 4.3 | 4.3 |
| Dory (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 13 | 19 | 32 |
| Ridged-eye flounder (Muscle) | Around 10km Offshore of Fukushima Daini NPS (T-B4) | November 5, 2012 | 19 | 27 | 46 |
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* When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.

  Cs-134: Approx. 4.1Bq/kg (Raw)

  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.

* Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg

* Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 1/3 >

[ Measurement result of fish and selfish where radioactive materials other than Cs were detected ]

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling (Place No.) | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Ag-110m (Approx. 250 days) | Sr-90 * (Approx. 29 years) | Total |
| Blue crab (Whole) | Around 1km Offshore of Ota River (T-S1) | August 1, 2012 | 14 | – | 22.7 |
| Blue crab (Whole) | Around 1km Offshore of Ota River (T-S1) | September 5, 2012 | 16 | – | 14 |
| Blue crab (Whole) | Around 3km Offshore of Odaka Ward (T-S2) | August 1, 2012 | 18 | – | 5.6 |
| Blue crab (Whole) | Around 3km Offshore of Odaka Ward (T-S2) | September 5, 2012 | 12 | – | ND |
| Blue crab (Whole) | Around 3km Offshore of Ukedo River (T-S3) | July 18, 2012 | 10 | – | 12.5 |
| Blue crab (Whole) | Around 3km Offshore of Ukedo River (T-S3) | August 8, 2012 | 14 | – | 14.5 |
| Blue crab (Whole) | Around 3km Offshore of Ukedo River (T-S3) | September 19, 2012 | 17 | – | 4.8 |
| Blue crab (Whole) | Around 2km Offshore of Kido River (T-S5) | August 11, 2012 | 21 | – | 13 |
| Blue crab (Whole) | Around 2km Offshore of Kido River (T-S5) | September 15, 2012 | 28 | – | 6.6 |
| Blue crab (Whole) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | July 15, 2012 | 16 | – | 25.3 |

- " - " : Out of scope.
- When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  Cs-134: Approx. 4.9Bq/kg (Raw), Cs-137: Approx. 4.1Bq/kg (Raw)
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.
- Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg
- Ag-110m: Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc., Sr-90: Analyzed by THE GENERAL ENVIRONMENTAL TECHNOS Co., LTD.

* Measured by the whole fish.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 2/3 >

[ Measurement result of fish and selfish where radioactive materials other than Cs were detected ]

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling (Place No.) | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Ag-110m (Approx. 250 days) | Sr-90 * (Approx. 29 years) | Total |
| Blue crab (Whole) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | August 11, 2012 | 26 | – | 40 |
| Blue crab (Whole) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | September 15, 2012 | 35 | – | 8.2 |
| Common skete (Muscle) | Around 2km Offshore of Kido River (T-S5) | June 16, 2012 | ND | 0.48 | 1000 |
| Sebastes cheni (Muscle) | Around 2km Offshore of Kido River (T-S5) | July 15, 2012 | ND | 0.61 | 1630 |
| Ovalipes unctatus (Whole) | Around 3km Offshore of Odaka Ward (T-S2) | August 1, 2012 | 16 | – | 12.5 |
| Ovalipes unctatus (Whole) | Around 3km Offshore of Odaka Ward (T-S2) | September 5, 2012 | 11 | – | 6.6 |
| Ovalipes unctatus (Whole) | Around 3km Offshore of Ukedo River (T-S3) | July 18, 2012 | 20 | – | 5.7 |
| Ovalipes unctatus (Whole) | Around 3km Offshore of Fukushima Daiichi NPS (T-S4) | August 8, 2012 | 25 | – | 5.0 |
| Ovalipes unctatus (Whole) | Around 2km Offshore of Kido River (T-S5) | August 11, 2012 | 30 | – | 21.5 |
| Ovalipes unctatus (Whole) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | August 11, 2012 | 43 | – | 17.6 |

- " - " : Out of scope.
- When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  Ag-110m: Approx. 11Bq/kg (Raw), Cs-134: Approx. 4.7Bq/kg (Raw)
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.
- Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg
- Ag-110m: Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc., Sr-90: Analyzed by THE GENERAL ENVIRONMENTAL TECHNOS Co., LTD.

* Measured by the whole fish.

# Nuclide Analysis Results of Fish and Shellfish
# (The Ocean Area Within 20km Radius of Fukushima Daiichi NPS) < 3/3 >

[ Measurement result of fish and selfish where radioactive materials other than Cs were detected ]

(Data summarized on November 30)

| Name of Sample (Region) | Place of Sampling (Place No.) | Date of Sampling | Radioactivity Density [Bq/kg (Raw)] (Half-life) | | |
|---|---|---|---|---|---|
| | | | Ag-110m (Approx. 250 days) | Sr-90 * (Approx. 29 years) | Total |
| Barfin flounder (Muscle) | Around 2km Offshore of Fukushima Daini NPS (T-S7) | July 15, 2012 | ND | 0.81 | 1670 |
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- " - " : Out of scope.
- When the measurement value is below the detection limit, "ND" is marked. The detection limits are as follows.
  Ag-110m: Approx. 10Bq/kg (Raw)
  As the detection limit may vary depending on the detectors and sample properties, there are cases where nuclides below the detection limit are detected.
- Standard Value (after April 1, 2012) Cs-134+Cs-137: 100Bq/kg
- Ag-110m: Analyzed by Tokyo Electric Power Environmental Engineering Co., Inc., Sr-90: Analyzed by THE GENERAL ENVIRONMENTAL TECHNOS Co., LTD.

* Measured by the whole fish.

# Investigation Report of Fish and Shellfish Sampled in the Ocean Area Within 20km Radius of Fukushima Daiichi NPS

(Sampling period: July – September, 2012)

November 30, 2012

TEPCO

# 1. Purpose of the Investigation

## (1) To understand radioactive cesium density by fish species

- Comparison with the food standard value (total cesium amount: 100Bq/kg)

## (2) To understand the geographical distribution of radioactive cesium density of fish and shellfish

- Sampling at fixed measurement points (gill net fishing, trawl net fishing)

## (3) To understand the change of radioactive cesium density of fish and shellfish over time

- Accumulating basic data in order to forecast trends

# 2-1. Investigation Results (Radioactive Cesium Density by Fish Species)

- **Approx. 60% of all the fish species and measurement results was below the standard value .**

| | Sampling period: July – September, 2012 | | Sampling period: March – June, 2012 | |
|---|---|---|---|---|
| Number of fish species | 49 | [Top 3 Density Levels] (Unit: Bq/kg (Raw) | 53 | [Top 3 Density Levels] (Unit: Bq/kg (Raw) |
| Fish species with cesium exceeding the standard value | 19 | 1, Greenling 25,800<br>2, Barfin flounder 1,670<br>3, Sebastes cheni 1,630 | 20 | 1, Sebastes cheni 1,880<br>2, Sea bass 1,610<br>3, Microstoms achne 1,260 |
| Number of measurements | 293 | [Samples below the detection limit (measured more than once)] | 312 | [Samples below the detection limit (measured more than once)] |
| Number of measurement results exceeding the standard value | 113 | 1, Zenopsis nebulosa<br>2, Enteroctopus dofleini | 114 | 1, Loliginid<br>2, Andrea cuttlefish<br>3, Loligo bleekeri |

(Remark) Sampling region of fish and octopuses (except for salangichthys ishikawae, sand eel and lophius litilon): Muscle, Others: Whole

- **Samples with tendency to exceed the standard value:**
  **Common skete, Microstoms achne, Greenling, Marbled sole, etc.**
- **Samples with tendency to fall below the standard value:**
  **Dory, Lepidotrigla microptera, Pagrus major, Littlemouth flounder, etc.**

# 2-2. Investigation Results

## (Geographical Distribution of Radioactive Cesium Density of Fish and Shellfish)

- The proportion of samples obtained at the trawl net measurement points (offshore) exceeding the standard value was lower than that of samples obtained at the gill net measurement points (coast). Especially, none of the samples obtained at T-B1 and T-B2 in the second quarter exceeded the standard value.

| | | Sampling period: July – September, 2012 | | Sampling period: March – June, 2012 | |
|---|---|---|---|---|---|
| | | Number of measurements | Number of measurement results exceeding the standard value | Number of measurements | Number of measurement results exceeding the standard value |
| Trawl Net | T-B1 | 6 | 0 | 42 | 4 |
| | T-B2 | 8 | 0 | 48 | 1 |
| | T-B3 | 26 | 6 | 37 | 10 |
| | T-B4 | 29 | 8 | 38 | 10 |
| Gill Net | T-S1 | 77 | 29 | 21 | 10 |
| | T-S2 | 30 | 7 | 23 | 12 |
| | T-S3 | 28 | 13 | 19 | 15 |
| | T-S4 | 25 | 13 | 27 | 13 |
| | T-S5 | 22 | 14 | 28 | 19 |
| | T-S6 | | | 12 | 7 |
| | T-S7 | 24 | 12 | 17 | 13 |
| | T-S8 | 18 | 11 | | |

# 2-3. Investigation Results

## (Change of Radioactive Cesium Density of Fish and Shellfish Over Time)

### [Tendency of Radioactive Cesium Level of Fish and Shellfish Sampled within a 20km Radius of Fukushima Daiichi NPS]

- The radioactive cesium levels of fish and shellfish sampled in 20km radius of Fukushima Daiichi NPS were almost similar to those sampled outside of 20km radius (measurement conducted by Fukushima Prefecture), however they tend to be slightly higher.

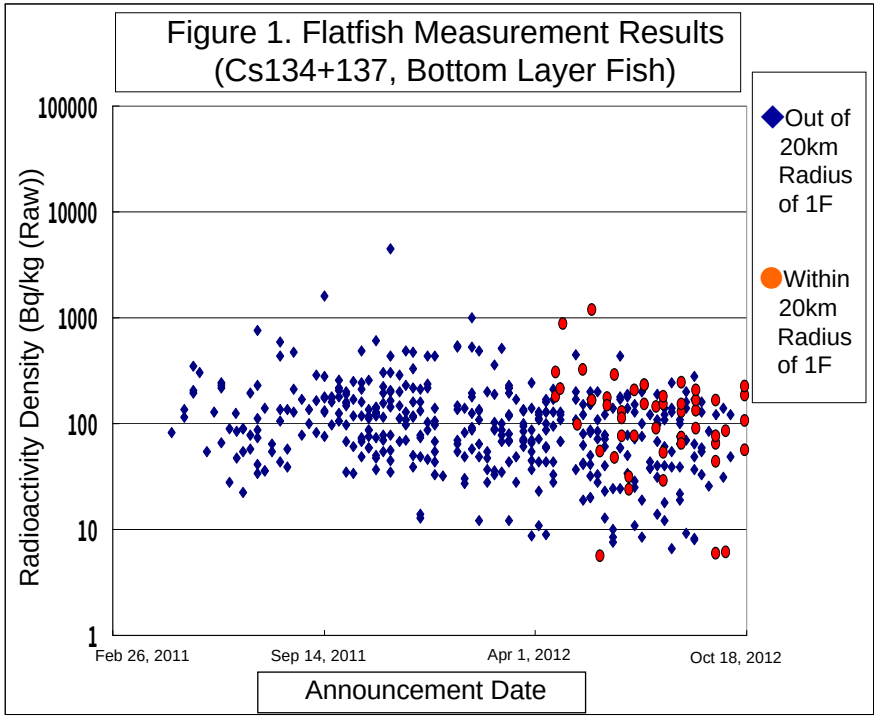
### [Tendency of Radioactive Cesium Levels of Fish and Shellfish Sampled Outside a 20km Radius of Fukushima Daiichi NPS]

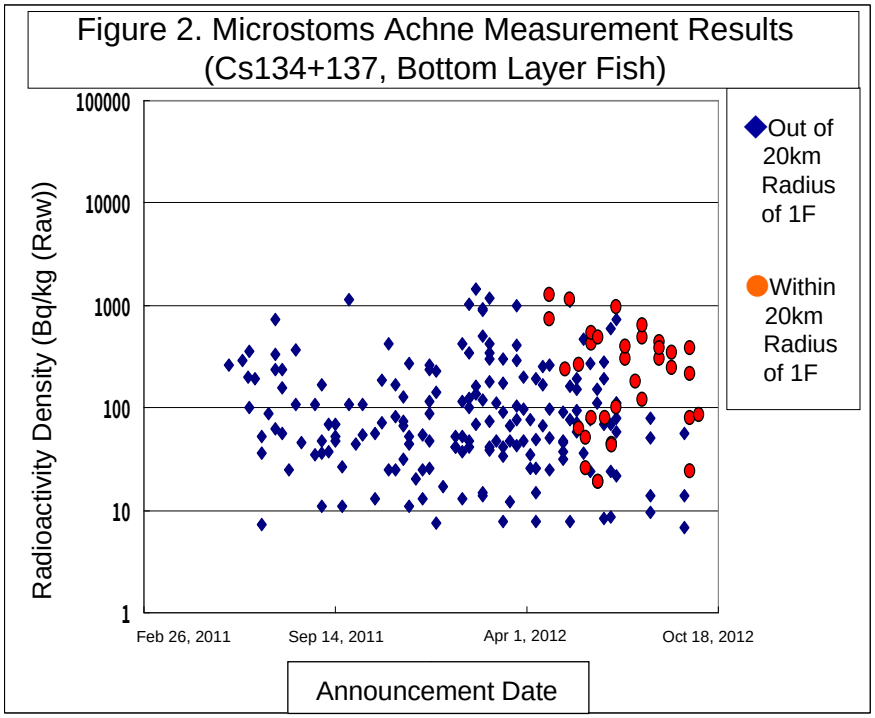
- Fish species whose radioactive cesium levels have been decreasing over time: Flatfish, etc.
- Fish species whose radioactive cesium levels have not been decreasing over time: Microstoms achne, etc.

*** Further accumulation of the measurement results of fish and shellfish sampled within a 20km radius of Fukushima Daiichi NPS is needed.**

*** Though the cause of change in the radioactive cesium levels of fish and shellfish over time is estimated to be related to food, environment (seawater, marine soil, etc.) and ecological characteristics, the mechanism of the change needs to be clarified.**

# (Reference) Change of Radioactive Cesium Density of Flatfish and Microstoms Achne Over Time




(Remark) The measurement results of "Out of 20km radius of 1F" were obtained from the Japan Meteorological Agency website.

The measurement values below the detection limit are not plotted in these graphs.

# 2-5. Radioactive Density Measurement Results of Nuclide Other Than Cesium

(Unit: Bq/kg (Raw)

| Nuclide (Half-life) | Sampling period: July – September, 2012 | | Sampling period: March – June, 2012 | |
|---|---|---|---|---|
| | Number of samples | Measurement results | Number of samples | Measurement results |
| *1 Ag-110m (Approx. 250 days) | 18 (Blue crab: 12 Ovalipes unctatus: 6) | Maximum: 43 Minimum: 10 Average: 21 | 18 (Ovalipes unctatus: 9 Blue crab: 4 Andrea cuttlefish: 4 Loliginid: 1) | Maximum: 69 Minimum: 5.4 Average: 25 |
| *2 Sr-90 (Approx. 29 years) | 2 *3 (Sebastes cheni:1 Barfin flounder:1) | Maximum: 0.81 Minimum: 0.61 Average: 0.71 | 7 (Microstoms achne:2 Sebastes cheni:2 Flatfish:1 Sea bass:1 Common skete:1 *4) | Maximum: 1.5 Minimum: 0.12 Average: 0.62 |

- **The density ratio of Sr-90/Cs-137 was extremely low (0.0002 - 0.002).**

*1 Whole body measurement was done on the samples in which Ag-110m was detected, and all the results were below the food standard value (maximum radioactive cesium density: 40 (Bq/kg (raw).
*2 As for the samples with cesium exceeding 1,000 (Bq/kg (raw), measurement was done after processing the whole fish into ash.
*3 A banded dogfish sampled at T-S7 on September 15, 2012 is currently being measured (the result will be reported next time).
*4 The result is provided in this report since the sample was being measured at the time of the previous report.

# 4. Future Investigation Plans

- Investigation will be continued in order to achieve the following 3 goals.

  (1) Understanding of radioactive cesium density by fish species
  (2) Understanding of the geographical distribution of radioactive cesium density of fish and shellfish
  (3) Understanding of the change of radioactive cesium density of fish and shellfish over time

- Sampling and measurement of fish and shellfish will be conducted once a month at 11 sampling points for the time being.

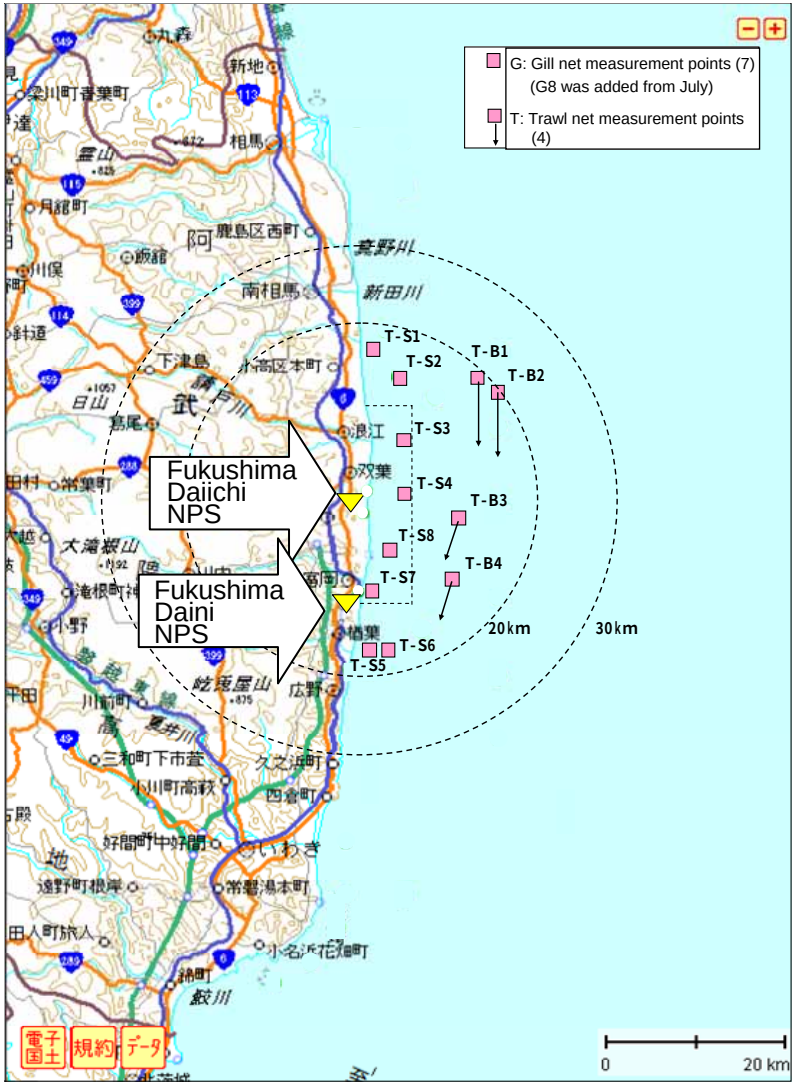



Figure 3. Fish and Shellfish Measurement Points (As of September 2012)

* Sampling at T-S7 has been substituted by that at T-S6 since July.