**○Results of Radioactive Material Monitoring of Aquatic Organisms (Locations A and B along the Abukuma River)**

< Locations A and B along the Abukuma River: Samples collected>

| Items | General items | | Radioactive materials | | | |
|---|---|---|---|---|---|---|
| Locations | Water | Sediment | Water (Cs) | Water (Sr) | Sediment (Cs) | Sediment (Sr) |
| A-1 | ○ | ○ | ○ | ○ | ○ | ○ |
| A-2 | ○ | ○ | ○ | — | ○ | — |
| B-1 | ○ | ○ | ○ | — | ○ | — |
| B-2 | ○ | ○ | ○ | — | ○ | — |
| B-3 | ○ | ○ | ○ | — | ○ | — |

< Locations A and B along the Abukuma River: Site measurement item >

| Items | Latitude and longitude of the location | | Survey date and time | | | Water | Sediment | | | | Other | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Locations | Latitude | Longitude | Date | Time (water) | Time (sediment) | Water temperature (degrees C) | Sediment temperature (degrees C) | Property | Color | Contaminants | Water depth (m) | Transparency (cm) |
| A-1 (Surface layer) | 37.621000° | 140.521783° | 2014/6/24 | 9:50 | 8:55 | 21.9 | 21.3 | Sediment with sand | 2.5Y3/2 | Leaves, roots, branches | 7.15 | 47.0 |
| A-1 (Deep layer) | | | | 9:30 | | 21.7 | | | | | | (1.1m)* |
| A-2 | 37.567333° | 140.394567° | | 11:50 | 12:02 | 19.1 | 19.2 | Sand | 10YR4/3 | Pebbles | 0.77 | >50.0 |
| B-1 | 37.784333° | 140.492417° | | 16:19 | 16:28 | 23.2 | 23.0 | Sediment with sand | 2.5Y3/2 | Roots, pebbles | 0.30 | 37.5 |
| B-2 | 37.812100° | 140.505783° | | 15:11 | 15:26 | 21.9 | 21.4 | Fine sand | 2.5Y4/3 | Plant | 0.41 | 43.0 |
| B-3 | 37.818200° | 140.467883° | | 13:59 | 14:06 | 19.2 | 19.3 | Sand | 2.5Y4/3 | Pebbles | 0.42 | >50.0 |

* The numbers in ( ) indicates the degree of transparency

< Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Water >

| Items | Latitude and longitude of the location | | Survey date and time | | pH | BOD | COD | DO | Electrical conductivity | Salinity | TOC | SS | Turbidity | Cs-134 | Cs-137 | Sr-90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Locations | Latitude | Longitude | Date | Time | | (mg/L) | (mg/L) | (mg/L) | (mS/m) | | (mg/L) | (mg/L) | (FNU) | (Bq/L) | (Bq/L) | (Bq/L) |
| A-1 (Surface layer) | 37.621000° | 140.521783° | 2014/6/24 | 9:50 | 7.7 | 1.2 | 4.3 | 8.9 | 16.4 | 0.09 | 2.1 | 14 | 6.0 | 0.025 | 0.068 | 0.0012 |
| A-1 (Deep layer) | | | | 9:30 | 7.5 | 1.2 | 4.8 | 9.1 | 17.9 | 0.09 | 2.1 | 13 | 5.7 | 0.024 | 0.059 | — |
| A-2 | 37.567333° | 140.394567° | | 11:50 | 7.5 | 0.6 | 3.2 | 9.6 | 10.9 | 0.06 | 1.2 | 17 | 4.4 | 0.029 | 0.077 | — |
| B-1 | 37.784333° | 140.492417° | | 16:19 | 7.5 | 0.8 | 4.5 | 9.7 | 16.7 | 0.09 | 2.0 | 12 | 7.0 | 0.024 | 0.061 | — |
| B-2 | 37.812100° | 140.505783° | | 15:11 | 7.5 | 1.2 | 4.3 | 9.3 | 16.2 | 0.08 | 1.8 | 12 | 6.7 | 0.096 | 0.26 | — |
| B-3 | 37.818200° | 140.467883° | | 13:59 | 7.6 | 0.7 | 3.0 | 9.9 | 8.0 | 0.05 | 1.2 | 4 | 2.3 | 0.0060 | 0.015 | — |

< Locations A and B along the Abukuma River: General survey items/Analysis of radioactive materials Sediment >

| Items | Latitude and longitude of the location | | Survey date and time | | pH | Redox potential $E_{NHE}$ | Water content | IL | TOC | Soil particle density | Grain size distribution | | | | | | | | Cs-134 | Cs-137 | Sr-90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Gravel (2-75mm) | Coarse sand (0.85-2mm) | Medium sand (0.25-0.85mm) | Fine sand (0.075-0.25mm) | Silt (0.005-0.075mm) | Clay (Less than 0.005mm) | Median grain diameter | Maximum grain diameter | | | |
| Locations | Latitude | Longitude | Date | Time | | (mV) | (%) | (%) | (mg/g-dry) | (g/cm3) | (%) | (%) | (%) | (%) | (%) | (%) | (mm) | (mm) | (Bq/kg-dry) | (Bq/kg-dry) | (Bq/kg-dry) |
| A-1 | 37.621000° | 140.521783° | 2014/6/24 | 8:55 | 6.8 | 110 | 28.1 | 2.7 | 10.1 | 2.717 | 1.1 | 7.9 | 54.9 | 15.5 | 7.3 | 13.3 | 0.34 | 19 | 140 | 400 | N.D.(0.17) |
| A-2 | 37.567333° | 140.394567° | | 12:02 | 6.6 | 12 | 17.8 | 1.8 | 6.1 | 2.788 | 32.1 | 34.6 | 26.9 | 3.6 | 1.1 | 1.7 | 1.3 | 19 | 83 | 220 | — |
| B-1 | 37.784333° | 140.492417° | | 16:28 | 7.1 | 98 | 24.0 | 2.1 | 3.4 | 2.707 | 7.2 | 36.2 | 16.4 | 22.2 | 7.5 | 10.5 | 0.40 | 9.5 | 280 | 860 | — |
| B-2 | 37.812100° | 140.505783° | | 15:26 | 7.0 | 130 | 27.0 | 2.2 | 2.1 | 2.754 | 1.5 | 7.3 | 63.2 | 24.1 | 1.5 | 2.4 | 0.35 | 19 | 110 | 280 | — |
| B-3 | 37.818200° | 140.467883° | | 14:06 | 6.7 | 76 | 18.4 | 1.2 | 1.5 | 2.689 | 50.4 | 34.2 | 13.0 | 1.5 | 0.2 | 0.7 | 2.0 | 19 | 37 | 120 | — |

Note) N.D. means to be below the detection limit and figures in parentheses show the detection limit.

＜Locations A and B along the Abukuma River: Survey items Aquatic organisms＞

| Location | | Latitude and longitude of the location | | Sampling Date | Division | Class | Order | Family | Species name | English name | Population | Sample weight (kg-wet) | Note | | | Cs-134 | Cs-137 | Sr-90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Latitude | Longitude | | | | | | | | | | Growth stage | Stomach contents | Measurement site | (Bq/kg-wet) | (Bq/kg-wet) | (Bq/kg-wet) |
| A-1 | Abukuma River mainstream | 37.621000° | 140.521783° | 2014/7/23 | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Hemibarbus barbus* | Hemibarbus barbus | 5 | 0.20 | Immature fish (1-year-old) | Some (details unknown) | Viscera removed | 1.5 | 5.5 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Tribolodon hakonensis* | Japanese dace | 4 | 0.072 | Mature fish (1-year-old) | Some (details unknown) | Viscera removed | 2.8 | 7.3 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Zacco platypus* | Pale chub | 9 | 0.098 | Mature fish (1-year-old) | Some (details unknown) | Viscera removed | 3.1 | 8.0 | – |
| | | | | 2014/7/27 | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Carassius auratus* | Carassius auratus langsdorfii | 1 | 0.86 | Mature fish (6-year-old) | Some (details unknown) | Viscera removed | 4.4 | 12 | – |
| | | | | | Vertebrata | Osteichthyes | Perciformes | Centrarchidae | *Micropterus dolomieu* | Small mouth bass | 1 | 0.35 | Mature fish (2-year-old) | Some (details unknown) | Viscera removed | 5.9 | 16 | – |
| | | | | | Vertebrata | Osteichthyes | Siluriformes | Ictaluridae | *Ictalurus punctatus* | Channel catfish | 1 | 1.8 | Mature fish | Insecta | Viscera removed | 17 | 49 | 0.39 |
| A-2 | Harase River | 37.567333° | 140.394567° | 2014/6/25 | Algae/plant | – | – | – | – | River bottom materials (incl. algae) | Considerable number | 0.060 | – | – | – | 140 | 460 | – |
| | | | | | Arthropod | Insecta | Trichoptera | Stenopsychidae | *Stenopsyche marmorata* | Stenopsyche marmorata | 88 | 0.035 | Larva | – | – | 29 | 80 | – |
| | | | | | Arthropod | Insecta | Odonata | Gomphidae | *Sieboldius albardae* | Albardae | 102 | 0.081 | Larva (dragonfly) | – | – | 4.5 | 11 | – |
| | | | | | Arthropod | Malacostraca | Decapoda | Atyidae | *Atyidae* | Freshwater shrimp | 1,582 | 0.17 | Imago | – | – | 9.2 | 27 | – |
| | | | | | Mollusca | Gastropoda | Sorbeoconcha | Pleuroceridae | *Semisulcospira libertina* | Semisulcospira libertina | 51 | 0.073 | Imago | – | Molluscan body | 7.7 | 22 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Phoxinus lagowskii steindachneri* | Amur Minnow | 20 | 0.12 | Mature fish (1,2-year-old) | Some (details unknown) | Viscera removed | 4.2 | 11 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Tribolodon hakonensis* | Japanese dace | 3 | 0.020 | Mature fish (1-year-old) | – | Viscera removed | 4.0 | 11 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cobitidae | *Misgurnus anguillicaudatus* | Oriental weatherfish | 5 | 0.042 | Immature fish | – | – | 5.1 | 15 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cobitidae | *Misgurnus anguillicaudatus* | Oriental weatherfish | 33 | 0.042 | Mature fish | Some (details unknown) | Viscera removed | 3.9 | 11 | – |
| | | | | | Vertebrata | Osteichthyes | Salmoniformes | Salmonidae | *Oncorhynchus masou* | Seema | 1 | 0.27 | Mature fish (2-year-old) | Fish | Viscera removed | 7.9 | 23 | – |
| | | | | | Vertebrata | Amphibia | Anura | Ranidae | *Rana rugosa* | P. p. porosus | 3 | 0.012 | Imago | – | – | 5.7 | 18 | – |
| | | | | | Vertebrata | Amphibia | Anura | – | – | Frogs | 50 | 0.076 | Larva (tadpoles) | – | – | 74 | 200 | – |
| | | | | | Vertebrata | Amphibia | Caudata | Salamandridae | *Cynops pyrrhogaster* | Cynops pyrrhogaster | 20 | 0.15 | Imago | – | – | 4.1 | 12 | – |
| | | | | | Coarse particulate organic matters (CPOMs) | – | – | – | – | Fallen leaves | Considerable number | 0.48 | – | – | – | 83 | 230 | – |
| B-2 | Abukuma River mainstream | 37.812100° | 140.505783° | 2014/7/17 | Vertebrata | Osteichthyes | Osmeriformes | Osmeridae | *Plecoglossus altivelis* | Sweetfish | 59 | 1.9 | Mature fish | Some (details unknown) | Viscera removed | 5.1 | 13 | 0.19 |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Hemibarbus barbus* | Hemibarbus barbus | 3 | 0.79 | Immature fish (4-year-old) | Some (details unknown) | Viscera removed | 3.8 | 11 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Hemibarbus barbus* | Hemibarbus barbus | 5 | 7.8 | Mature fish (6-year-old) | Empty stomach | Viscera removed | 11 | 35 | 0.37 |
| | | | | | Vertebrata | Osteichthyes | Perciformes | Centrarchidae | *Micropterus dolomieu* | Small mouth bass | 4 | 0.90 | Mature fish (2,3-year-old) | Fish (Stone moroko) | Viscera removed | 9.6 | 28 | – |
| | | | | | Vertebrata | Osteichthyes | Perciformes | Centrarchidae | *Micropterus dolomieu* | Small mouth bass | 1 | 0.77 | Mature fish | Some (details unknown) | Viscera removed | 10 | 28 | – |
| | | | | 2014/7/21 | Vertebrata | Osteichthyes | Siluriformes | Ictaluridae | *Ictalurus punctatus* | Channel catfish | 2 | 3.0 | Mature fish | Insecta | Viscera removed | 12 | 35 | 0.25 |
| | | | | 2014/7/23 | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Tribolodon hakonensis* | Japanese dace | 4 | 0.082 | Mature fish (1-year-old) | Some (details unknown) | Viscera removed | 4.3 | 12 | 0.31 |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Zacco platypus* | Pale chub | 7 | 0.15 | Mature fish (2-year-old) | Some (details unknown) | Viscera removed | 5.6 | 16 | – |
| | | | | | Vertebrata | Osteichthyes | Perciformes | Centrarchidae | *Micropterus dolomieu* | Small mouth bass | 2 | 1.7 | Mature fish (3-year-old) | Some (details unknown) | Viscera removed | 12 | 37 | 0.20 |
| | | | | 2014/7/27 | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Cyprinus carpio* | Common carp | 1 | 2.7 | Mature fish (6-year-old) | Some (details unknown) | Viscera removed | 8.7 | 25 | 0.25 |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Tribolodon hakonensis* | Japanese dace | 5 | 1.8 | Mature fish (5-year-old) | Algae | Viscera removed | 13 | 38 | – |
| B-3 | Surikami River | 37.818200° | 140.467883° | 2014/6/27 | Algae/plant | – | – | – | – | River bottom materials (incl. algae) | Considerable number | 0.056 | – | – | – | 52 | 150 | – |
| | | | | | Angiospermae | Monocotyledoneae | Alismatales | Potamogetonaceae | *Potamogeton crispus* | Curly-leaf pondweed | Considerable number | 0.70 | – | – | – | 4.4 | 12 | – |
| | | | | | Arthropoda | Insecta | Ephemeroptera | Ephemerellidae | *Drunella cryptomeria* | Ephemerella cryptomeria | 588 | 0.025 | Larva | – | – | 10 | 29 | – |
| | | | | | Arthropoda | Insecta | Ephemeroptera | Ephemeroptera | *Heptageniidae* | Heptageniidae | 45 | 0.012 | Larva | – | – | 7.4 | 16 | – |
| | | | | | Arthropod | Insecta | Trichoptera | Stenopsychidae | *Stenopsyche marmorata* | Stenopsyche marmorata | 1,047 | 0.28 | Larva | – | – | 35 | 97 | – |
| | | | | | Arthropod | Insecta | Odonata | Corduliidae | *Macromia amphigena amphigena* | Macromia amphigena | 225 | 0.10 | Larva (dragonfly) | – | – | 4.1 | 10 | – |
| | | | | | Arthropod | Insecta | Odonata | Cordulegastridae | *Anotogaster sieboldii* | Anotogester sieboldii | | | | | | | | |
| | | | | | Arthropod | Insecta | Odonata | Gomphidae | *Onychogomphus viridicostus* | Onychogomphus viridicostus | | | | | | | | |
| | | | | | Arthropod | Insecta | Odonata | Gomphidae | *Sieboldius albardae* | Albardae | | | | | | | | |
| | | | | | Arthropod | Insecta | Megaloptera | Corydalidae | *Protohermes grandis* | Protohermes grandis | 90 | 0.096 | Larva | – | – | 2.1 | 5.7 | – |
| | | | | | Arthropod | Malacostraca | Decapoda | Procambarus | *Procambarus clarkii* | Red swamp crawfish | 13 | 0.22 | Imago | – | – | 8.3 | 24 | – |
| | | | | | Vertebrata | Osteichthyes | Osmeriformes | Osmeridae | *Plecoglossus altivelis* | Sweetfish | 22 | 0.54 | Mature fish | Some (details unknown) | Viscera removed | 3.2 | 10 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Nipponocypris temminckii* | Dark chub | 9 | 0.094 | Mature fish (1,2-year-old) | Inseeta | Viscera removed | 2.7 | 8.2 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Phoxinus lagowskii steindachneri* | Amur Minnow | 5 | 0.024 | Mature fish (1-year-old) | – | – | 5.2 | 10 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cyprinidae | *Tribolodon hakonensis* | Japanese dace | 5 | 0.083 | Mature fish (1-year-old) | Empty stomach | Viscera removed | 4.8 | 15 | – |
| | | | | | Vertebrata | Osteichthyes | Cypriniformes | Cobitidae | *Misgurnus anguillicaudatus* | Oriental weatherfish | 19 | 0.10 | Mature fish | – | – | 6.3 | 17 | – |
| | | | | | Vertebrata | Osteichthyes | Salmoniformes | Salmonidae | *Salvelinus leucomaenis* | Char | 1 | 0.51 | Mature fish (3-year-old) | fish(dace) | Viscera removed | 8.7 | 24 | – |
| | | | | | Vertebrata | Osteichthyes | Salmoniformes | Salmonidae | *Oncorhynchus masou* | Yamame trout | 23 | 0.12 | Immature fish (under 1-year-old) | Stenopsyche marmorata | Viscera removed | 1.9 | 4.6 | – |
| | | | | | Vertebrata | Osteichthyes | Salmoniformes | Salmonidae | *Oncorhynchus masou* | Yamame trout | 8 | 0.21 | Immature fish (1-year-old) | Stenopsyche marmorata | Viscera removed | 1.9 | 6.0 | – |
| | | | | | Vertebrata | Amphibia | Anura | Ranidae | *Rana catesbeiana* | American Bullfrog | 1 | 0.12 | Imago | – | – | 2.4 | 8.4 | – |
| | | | | | Vertebrata | Amphibia | Anura | Ranidae | *Rana rugosa* | Wrinkled Frog | 12 | 0.043 | Imago | – | – | 5.9 | 17 | – |
| | | | | | Vertebrata | Amphibia | Anura | – | – | Frogs | 23 | 0.037 | Larva (tadpoles) | – | – | 64 | 190 | – |
| | | | | | coarse particulate organic matters (CPOMs) | – | – | – | – | fallen leaves | Considerable number | 0.56 | – | – | – | 34 | 98 | – |

*1: Organisms were collected in or around the targeted water areas.
*2: When multiple types of aquatic organisms were collected, a sample was prepared by mixing them.
*3: For a sample made of multiple types of aquatic organisms, the name of the dominant one largest in number is underlined.
*4: Basically, measurement was conducted for all organism samples. Viscera (stomach and bowels) were removed for the measurement when possible so that undigested food and sediments, etc. in the digestive system would be excluded.
*5: A statement in red in the "Growth stage" column shows the age assessed based on squama or otolith
*6: Plankton (suspended algae) is the residue remaining after the filtration of lake water or seawater with a plankton net (40μm-mesh).
*7: River bottom materials (incl. algae) are algae, etc. that were scratched off stones with a brush, etc. and may include very fine particles such as inorganic silt and clay.
*8: N.D. means to be below the detection limit and figures in parentheses show the detection limit.
*9: Activity concentrations include counting errors, but the details are omitted here.