

◦ Results of Radioactive Material Monitoring of Aquatic Organisms (Location D along the Mano River)

< Location D along the Mano River: Samples collected >

Items Locations	General items		Radioactive materials			
	Water	Sediment	Water (Cs)	Water (Sr)	Sediment (Cs)	Sediment (Sr)
D-1	○	○	○	○	○	○
D-2	○	○	○	○	○	○
D-3	○	○	○	○	○	○
D-4a	○	○	○	○	○	○
D-4b	○	○	○	○	○	○
D-5	○	○	○	○	○	○

< Location D along the Mano River: Site measurement item >

Items Locations	Latitude and longitude of the location		Survey date and time			Water		Sediment				Other	
	Latitude	Longitude	Date	Time (water)	Time (sediment)	Water temperature (degrees C)	Sediment temperature (degrees C)	Property	Color	Odor	Contaminants	Water depth (m)	Transparency (cm)
D-1	37.733150°	140.925417°	2013/10/10	10:14	10:30	20.1	20.4	Sand	2.5Y5/2	Faint drain	Some plant fragments, lampern, fresh water clam	0.40	>50
D-2	37.709333°	140.956517°		12:35	12:45	20.8	20.9	Sand	2.5Y4/6	None	Some plant fragments, small pebbles	0.41	>50
D-3	37.704983°	140.962150°		13:13	13:25	20.6	20.7	Sand	2.5Y4/3	None	Some plant fragments	0.55	>50
D-4a	37.730867°	140.907933°		8:32	8:42	18.8	18.9	Sand/sediment	2.5Y4/3	None	Plant	0.30	>50
D-4b	37.731083°	140.909550°		9:25		19.1						0.23	>50
D-5	37.721717°	140.889883°		7:45	7:53	18.4	18.5	Sand/sediment	2.5Y4/2	None	Some plant fragments	0.51	>50

< Location D along the Mano River: General survey items/Analysis of radioactive materials Water >

Items Locations	Latitude and longitude of the location		Survey date and time		pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)	Electrical conductivity (mS/m)	Salinity	TOC (mg/L)	SS (mg/L)	Turbidity (FNU)	Cs-134 (Bq/L)	Cs-137 (Bq/L)	Sr-90 (Bq/L)
	Latitude	Longitude	Date	Time												
D-1	37.733150°	140.925417°	2013/10/10	10:14	7.8	0.6	2.6	11.3	10.6	0.06	1.3	<1	1.0	0.023	0.057	0.0016
D-2	37.709333°	140.956517°		12:35	7.5	0.5	2.8	10.5	12.0	0.07	1.3	1	1.4	0.024	0.051	—
D-3	37.704983°	140.962150°		13:13	7.1	0.5	2.6	10.3	12.9	0.07	1.1	2	1.5	0.017	0.039	—
D-4a	37.730867°	140.907933°		8:32	7.4	<0.5	2.9	9.5	10.5	0.06	1.3	<1	1.1	0.030	0.064	—
D-4b	37.731083°	140.909550°		9:25	7.6	0.5	2.8	10.2	10.4	0.06	1.3	<1	1.0	0.036	0.083	—
D-5	37.721717°	140.889883°		7:45	7.7	<0.5	3.0	10.0	9.2	0.05	1.5	2	1.3	0.042	0.091	—

< Location D along the Mano River: General survey items/Analysis of radioactive materials Sediment >

Items Locations	Latitude and longitude of the location		Survey date and time		pH	Redox potential E _{NHE} (mV)	Water content (%)	IL (%)	TOC (mg/g-dry)	Soil particle density (g/cm ³)	Grain size distribution					Median grain diameter (mm)	Maximum grain diameter (mm)	Cs-134 (Bq/kg-dry)	Cs-137 (Bq/kg-dry)	Sr-90 (Bq/kg-dry)		
	Latitude	Longitude	Date	Time							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) (%)	
D-1	37.733150°	140.925417°	2013/10/10	10:30	6.7	390	27.7	2.5	3	2.720	9.0	9.6	58.9	16.8	2.7	3.0	0.42	19	640	1,500	1.9	
D-2	37.709333°	140.956517°		12:45	6.6	397	24.5	2.1	3	2.679	14.0	19.3	47.8	11.1	2.9	4.9	0.58	19	210	500	—	
D-3	37.704983°	140.962150°		13:25	7.0	391	19.5	1.6	<1	2.689	2.9	39.8	80.5	3.8	1.4	1.6	0.77	9.5	68	130	—	
D-4a	37.730867°	140.907933°		8:42	6.9	397	33.3	4.0	6	2.724	12.1	8.3	30.0	28.2	7.1	14.3	0.25	19	810	1,900	—	
D-4b	37.731083°	140.909550°																				
D-5	37.721717°	140.889883°		7:53	7.0	404	24.5	2.2	1	2.706	13.0	23.8	52.2	6.2	2.1	2.7	0.68	19	570	1,300	—	

Note) N.D. means to be below the detection limit.

<< Location D along the Mano River: Analysis 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 (Bq/kg-wet)	Cs-137 (Bq/kg-wet)	Sr-90 (Bq/kg-wet)	
	Latitude	Longitude										Growth stage	Stomach contents				
D-1	37.733150°	140.925417°	2013/10/30	Arthropod	Malacostraca	Decapoda	Grapsidae	<i>Eriocheir japonica</i>	Japanese mitten crab	18	2.0	Imago	—	17	40	5.6	
Vertebrata				Osteichthyes	Osmertiiformes	Osmertiidae	<i>Plecoglossus altivelis</i>	Sweetfish (natural upstream)	61	1.2	Mature fish	Some (details unknown)	19	42	—		
Vertebrata				Osteichthyes	Cypriniformes	Cyprinidae	<i>Tribolodon hakonensis</i>	Japanese dace	12	0.56	1-year-old fish	Some (details unknown)	16	34	—		
Vertebrata	37.709333°	140.956517°		Osteichthyes	Siluriformes	Siluridae	<i>Silurus asotus</i>	Amur catfish	3	2.6	Mature fish	Some (details unknown)	560	1,300	0.72		
D-4a D-4b	37.730867° 37.731083°	140.907933° 140.909550°	2013/10/29	Algae/plant	—	—	—	—	Attached algae	—	0.016	—	—	150	310	—	
				Streptophyta	Zygnematomyxaceae	Zygnematales	Zygnemataceae	<i>Spirogyra sp.</i>	Spirogyra	—	0.099	—	—	N.D.(<1.1)	N.D.(<0.86)	—	
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche marmorata</i>	<u>Stenopsyche marmorata</u>	124	0.010	Larva	—	130	280	—	
				Arthropod	Insecta	Trichoptera	Stenopsychidae	<i>Stenopsyche sauteri</i>	<u>Stenopsyche sauteri</u>	Parastenopsyche sauteri	—	—	—	—	—	—	
				Arthropod	Insecta	Megaloptera	Corydalidae	<i>Parachauliodes continentalis</i>	<u>Parachauliodes continentalis</u> Weele	Parachauliodes continentalis Weele	70	0.036	Larva	—	19	48	—
				Arthropod	Insecta	Megaloptera	Corydalidae	<i>Protothermes grandis</i>	<u>Protothermes grandis</u>	Protothermes grandis	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Cordulegastridae	<i>Anotogaster sieboldii</i>	<u>Anotogaster sieboldii</u>	Anotogaster sieboldii	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius nanus</i>	<u>Davidius nanus</u>	Davidius nanus	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Gomphidae	<i>Davidius sp.</i>	<u>Davidius sp.</u>	Davidius sp.	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Gomphidae	<i>Onychogomphus viridicostus</i>	<u>Onychogomphus viridicostus</u>	Onychogomphus viridicostus	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sieboldius albardae</i>	<u>Sieboldius albardae</u>	Sieboldius albardae	38	0.023	Larva	—	25	60	—
				Arthropod	Insecta	Odonata	Gomphidae	<i>Sinogomphus flavolimbanus</i>	<u>Sinogomphus flavolimbanus</u>	Sinogomphus flavolimbanus	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Gomphidae	<i>Stylogomphus suzukii</i>	<u>Stylogomphus suzukii</u>	Stylogomphus suzukii	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Libellulidae	<i>Crocothemis servilia mariannae</i>	<u>Crocothemis servilia mariannae</u>	Scarlet Skimmer	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Aeshnidae	<i>Anax nigrofasciatus nigrofasciatus</i>	<u>Anax nigrofasciatus nigrofasciatus</u>	Anax nigrofasciatus nigrofasciatus	—	—	—	—	—	—	
				Arthropod	Insecta	Odonata	Aeshnidae	<i>Anax parthenope julius</i>	<u>Anax parthenope</u>	Anax parthenope	—	—	—	—	—	—	
				Arthropod	Malacostraca	Decapoda	Procambarus	<i>Procambarus clarkii</i>	<u>Procambarus clarkii</u>	Red swamp crawfish	7	0.15	Imago	—	100	240	—
				Arthropod	Malacostraca	Decapoda	Atyidae	<i>Atyidae</i>	<u>Atyidae</u>	Freshwater shrimp	404	0.037	Imago	—	52	120	—
				Mollusca	Gastropoda	Sorbeconcha	Pleuroceridae	<i>Semislucospira libertina</i>	<u>Semislucospira libertina</u>	Semislucospira libertina	36	0.064	Imago	—	22	47	—
				Vertebrata	Osteichthyes	Cypriniformes	Cyprinidae	<i>Zacco platypus</i>	<u>Zacco platypus</u>	Zacco platypus	15	0.16	2-year-old fish	Some (details unknown)	21	49	—
Vertebrata	Osteichthyes	Salmoniformes	Salmonidae	<i>Oncorhynchus keta</i>	<u>Oncorhynchus keta</u>	Salmon	1	2.5	4-year-old fish	None	N.D.(<0.66)	N.D.(<0.64)	N.D.(<0.019)				
Vertebrata	Osteichthyes	Perciformes	Gobiidae	<i>Rhinogobius sp.</i>	<u>Rhinogobius sp.</u>	R. sp. CB	11	0.029	Mature fish	—	64	140	—				
Vertebrata	Amphibia	Anura	—	—	—	—	7	0.011	Larva	—	140	320	—				

Note 1) When multiple types of aquatic organisms were collected, a sample was prepared by mixing them.

Note 2) For species with stomach contents as indicated in the note column, all stomach contents were removed for conducting the analysis.

Note 3) Underlined names in the English name column indicate species largest in number in the respective samples.

Note 4) A statement in red in the "Growth stage" column shows the age assessed based on squama or otolith.

Note 5) N.D. means to be below the detection limit.