SUPPLEMENTARY MATERIAL

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SHORT NOTE: The risks to human health of metals and metalloids in muscle tissue of *Synodontis zambezensis* Peters, 1852 from Flag Boshielo Dam, Limpopo Province, South Africa

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Abstract
The muscle tissue of 63 *Synodontis zambezensis,* collected during bimonthly surveys from January to November 2013 at Flag Boshielo Dam, were analysed for metals and metalloids for a desk-top human health risk assessment. The hazard quotient based on a weekly meal of 67 g of fish muscle exceeded the maximum acceptable level of one for lead, cobalt, cadmium, mercury, arsenic and selenium. Compared to previous bioaccumulation studies on other fish from Flag Boshielo Dam, concentrations of these elements were higher than those previously recorded for other species and they may pose a long-term health risk if consumed regularly by impoverished rural communities reliant on fish as a protein supplement.

Keywords: average daily dose, fish, human health risk, metal contaminants, Olifants River

Table S1: Concentration of selected metals in 63 *Synodontis zambezensis* from Flag Boshielo Dam in 2013.
SL = standard length (mm), TL = total length (mm), LM = live mass (g) of specimens sampled

Specimen parameters				Metal species (mg kg^{-1} dw)																	
No.	SL (mm)	TL (mm)	LM (g)	Al	As	Ba	B	Cd	Cr	Co	Cu	Pb	Mn	Hg	Mo	Ni	Se	Ag	Sr	V	Zn
1	16.50	19.50	85.60	2 357	42	109	286	102	18.0	99	583	26	151	26	23	76	336	73	73	52	2 971
2	16.60	20.50	103.86	2 255	26	59	210	22	6.2	69	745	15	216	46	11	117	324	99	99	32	2 673
3	16.80	20.50	80.14	1 754	38	115	284	76	7.0	79	545	8	219	11	12	75	329	18	155	43	2 809
4	12.50	15.00	34.57	2 715	35	140	330	59	6.0	106	420	8	471	13	32	75	327	3	548	58	2 157
5	14.50	18.00	137.90	1 564	52	47	272	112	8.0	85	545	5	142	55	15	72	401	33	90	36	3 068
6	11.50	13.80	108.86	3 878	56	100	617	74	3.0	191	623	10	159	23	81	104	253	5	81	112	2 587
7	13.00	16.00	71.38	2 549	50	133	574	108	10.0	108	732	17	182	63	40	118	284	53	140	54	5 773
8	16.00	20.50	120.50	1 643	38	47	329	56	4.7	85	369	23	117	23	33	52	282	68	89	47	2 005
9	13.00	16.50	53.50	3 660	52	103	670	180	5.2	165	325	52	206	52	67	108	258	119	155	103	2 294
10	13.00	16.00	48.10	2 672	30	116	563	52	3.7	119	560	37	127	37	37	86	261	52	90	82	3 097
11	14.00	16.50	63.30	5 311	38	129	886	614	7.6	227	530	76	129	76	76	136	227	129	114	136	2 727
12	13.00	16.00	46.90	4 637	36	107	839	411	6.0	185	476	60	155	60	60	113	238	36	107	119	2 202
13	13.00	16.80	49.50	3 682	36	188	693	385	5.2	182	313	68	500	52	52	94	260	99	625	99	2 344
14	12.50	15.80	48.70	3 731	37	56	611	222	9.3	167	370	46	181	46	46	74	278	83	120	93	1 852
15	13.50	15.30	48.00	3 500	31	71	673	270	5.1	143	204	51	158	51	51	77	255	97	97	107	2 041
16	12.50	16.00	43.20	5 423	49	169	739	500	7.0	261	563	70	289	113	70	387	211	190	127	148	2 746
17	12.00	16.00	46.90	4 116	63	116	768	152	8.9	295	357	89	188	89	89	188	179	134	143	188	2 589
18	13.00	17.00	53.10	4 891	52	526	521	146	10	193	990	52	411	52	2 656	203	260	47	813	120	3 854
19	12.50	16.00	41.10	5 822	52	144	649	75	5.7	201	690	57	230	57	2 011	316	230	80	115	126	3 161
20	13.00	17.00	52.90	4 031	42	70	322	66	7.0	126	524	35	199	35	70	105	280	59	108	63	2 657
21	14.00	17.00	59.30	7 036	63	188	857	134	8.9	286	982	89	473	89	268	250	268	170	214	170	4 464
22	16.00	19.30	84.00	4 650	55	132	273	91	9.1	136	395	45	182	45	68	136	264	82	91	132	3 273
23	13.40	19.00	64.20	2 922	46	55	172	2.9	8.6	115	402	29	144	29	14	86	221	37	57	86	1 695
24	13.00	16.00	47.90	6 332	64	158	248	5	9.9	149	391	50	248	50	25	149	203	163	149	114	2 970

Specimen parameters				Metal species (mg kg^{-1} dw)																	
No.	SL (mm)	TL (mm)	LM (g)	Al	As	Ba	B	Cd	Cr	Co	Cu	Pb	Mn	Hg	Mo	Ni	Se	Ag	Sr	V	Zn
25	14.00	16.70	67.30	4 395	45	91	227	45	9.1	182	518	45	182	59	68	136	209	159	91	123	2 773
26	13.40	16.50	47.20	4 075	51	84	234	4.7	9.3	140	271	47	374	47	28	140	196	51	140	136	1 636
27	16.00	19.00	168.30	4 323	43	184	452	56	9.0	237	397	3	1 491	46	35	80	340	39	132	46	3 635
28	17.00	23.30	145.70	1 135	29	70	318	23	4.1	62	355	14	180	45	17	47	343	90	90	23	3 419
29	15.80	18.00	91.57	1 498	35	61	418	94	14	141	268	17	105	35	17	63	383	28	85	35	2 422
30	17.00	21.00	107.03	2 417	47	83	722	142	5.6	108	356	28	194	28	31	86	278	14	94	56	2 164
31	14.80	17.70	65.80	2 527	30	99	549	118	19	110	1 118	27	165	41	25	165	247	44	143	55	3 854
32	13.40	16.50	44.26	3 176	54	84	845	152	10	125	625	34	236	34	27	125	304	17	125	68	2 706
33	12.30	15.30	43.97	2 109	36	109	521	50	14	95	742	24	237	24	19	92	332	12	216	47	3 483
34	15.70	17.30	61.16	2 395	47	105	605	124	26	97	537	26	158	42	47	84	289	39	105	53	3 132
35	13.00	16.20	42.16	2 170	28	106	613	212	7.1	87	611	24	142	61	28	83	283	45	97	47	3 976
36	14.30	18.00	63.13	2 160	31	66	469	101	7.0	92	500	23	188	52	47	87	376	38	108	47	2 817
37	13.50	16.00	44.54	3 178	39	70	620	74	7.8	124	516	39	155	39	47	85	233	19	109	78	3 271
38	13.00	16.10	42.77	2 670	37	165	568	111	8.5	116	1 128	131	369	28	28	156	284	14	614	57	2 864
39	11.50	13.80	27.45	4 639	67	134	928	201	5.2	222	510	52	309	103	108	216	258	124	124	103	2 490
40	13.10	16.10	41.59	5 169	51	93	720	174	4.2	297	610	42	212	68	47	153	212	68	102	85	3 047
41	17.00	20.00	110.90	2 033	33	73	451	45	4.1	183	447	41	191	41	41	98	285	65	81	89	2 520
42	15.50	18.50	64.80	3 740	53	67	713	127	6.7	220	467	67	313	67	67	133	267	87	87	153	2 400
43	15.50	19.00	87.60	2 420	38	118	491	14	4.7	156	377	47	401	47	47	99	236	71	858	94	2 217
44	17.50	21.00	121.30	1 796	30	37	367	130	7.4	126	333	37	167	37	37	74	296	52	89	74	2 259
45	15.50	19.30	92.00	1 237	24	77	283	70	2.4	109	314	24	176	24	24	53	362	34	58	57	2 319
46	14.00	16.50	58.50	3 094	24	88	119	102	14	119	401	17	187	26	19	68	308	70	68	49	2 415
47	13.20	16.10	35.40	3 411	40	109	202	4	12	161	835	40	202	40	24	121	230	73	81	117	3 548
48	13.00	15.30	33.90	4 217	49	98	272	54	11	163	402	54	163	54	27	109	212	125	109	163	1 685
49	11.00	13.00	21.20	3 924	54	125	272	54	16	217	418	54	272	54	27	163	239	49	217	174	2 663
50	12.00	14.00	28.10	8 656	94	156	521	417	21	313	573	104	208	104	52	313	260	125	208	333	1 771
51	12.50	15.50	43.90	4 150	45	95	800	190	5	160	475	50	250	50	85	105	250	65	130	100	2 480

Specimen parameters				Metal species (mg kg^{-1} dw)																	
No.	SL (mm)	TL (mm)	LM (g)	Al	As	Ba	B	Cd	Cr	Co	Cu	Pb	Mn	Hg	Mo	Ni	Se	Ag	Sr	V	Zn
52	12.50	15.00	43.70	5 897	45	167	1 026	583	13	250	519	64	192	71	45	167	256	96	141	128	2 808
53	13.50	16.80	57.40	3 346	31	59	630	236	7.9	173	441	39	197	51	35	87	276	55	122	79	2 547
54	14.00	17.50	73.70	4 946	48	97	968	280	5.4	220	462	54	161	54	75	124	269	403	108	108	1 892
55	13.50	17.00	54.00	3 778	37	215	704	241	11	148	567	37	222	270	44	100	296	52	141	74	3 241
56	14.00	18.00	65.30	4 479	47	120	833	443	10	182	516	52	156	109	63	135	260	26	115	104	2 370
57	12.50	15.80	43.00	4 363	44	74	882	240	4.9	172	461	49	196	78	25	93	294	25	98	98	2 167
58	13.70	17.00	50.50	3 102	33	109	547	255	7.3	131	489	36	146	55	66	80	255	44	69	73	2 613
59	13.00	16.50	50.70	2 121	25	58	335	92	11	103	629	22	156	38	20	67	313	29	83	45	2 844
60	13.40	16.30	48.20	5 203	54	68	946	378	6.8	236	392	68	203	101	74	115	270	88	115	135	1 932
61	11.50	14.00	36.00	4 765	59	82	882	294	12	200	618	59	235	76	159	124	235	59	212	118	2 712
62	13.00	16.30	41.20	4 817	41	133	734	404	18	179	532	46	183	55	32	119	275	41	110	138	3 647
63	13.50	16.00	48.70	3 398	39	68	728	364	4.9	165	393	49	194	58	39	92	243	49	102	97	2 330