SUPPLEMENTARY MATERIALS

Health Risk Assessment and Driving Factors of Trace Metal Elements in Commercial Fish Species of the Ecuadorian Amazon

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Table S1. Percentage of recovery of each trace element based on the standard and their certified values (mg/kg).

Trace element	% Recovery	Method	Certified values	
			Fish muscle	Tuna fish
Aluminium (Al)	89.63	Axial		
Arsenic (As)	89.63	Axial	12.7	
Cadmium (Cd)	89.63	Axial	0.0075	
Chromium (Cr)	89.28	Axial		
Copper (Cu)	89.28	Axial	0.16	
Iron (Fe)	98.16	Radial	9.4	
Manganese (Mn)	98.41	Radial	0.368	
Nickel (Ni)	89.28	Axial		
Lead (Pb)	88.6	Axial		
Zinc (Zn)	88.6	Radial	16	
Mercury (Hg)	88.62	Axial	0.601	5.24

Table S2. Mean DII of eleven trace elements for 13 fish commercial species sold in El Coca Market, and individual values *for Brachyplatystoma juruense*, *Duopalatinus peruanus*, *Pseudoplatystoma tigrinum*, and *Sorubimichthys planiceps*.

	Mean DII																					
	Al		As		Cd		Cr		Cu		Fe		Mn		Ni		Pb		Zn		Hg	
Species	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI
Brachyplatystoma juruense	0.0147	0.0368	**0.0004**	**0.0010**	0.0000	0.0000	0.0001	0.0002	0.0016	0.0040	0.0129	0.0324	0.0002	0.0006	0.0000	0.0000	**0.0001**	**0.0002**	0.0185	0.0466	**0.0040**	**0.0101**
Brachyplatystoma platynema	0.0435	0.1093	**0.0003**	**0.0007**	0.0000	0.0001	0.0000	0.0001	0.0006	0.0015	0.0064	0.0162	0.0002	0.0004	0.0000	0.0000	**0.0002**	**0.0001**	0.0064	0.0160	**0.0049**	**0.0123**
Brachyplatystoma rousseauxii	0.0230	0.0578	**0.0002**	**0.0005**	0.0000	0.0000	0.0000	0.0001	0.0009	0.0024	0.0067	0.0168	0.0002	0.0005	0.0000	0.0000	**0.0001**	**0.0003**	0.0156	0.0392	**0.0056**	**0.0141**
Calophysus macropterus	0.0459	0.1153	**0.0001**	**0.0004**	0.0001	0.0001	0.0000	0.0001	0.0009	0.0023	0.0079	0.0199	0.0001	0.0004	0.0000	0.0001	**0.0002**	**0.0004**	0.0071	0.0179	**0.0027**	**0.0067**
Duopalatinus peruanus	0.0578	0.1453	**0.0002**	**0.0005**	0.0001	0.0003	0.0001	0.0002	0.0004	0.0010	NA	NA	0.0000	0.0001	0.0000	0.0001	**0.0003**	**0.0008**	0.0007	0.0017	**NA**	**NA**
Phractocephalus hemioliopterus	0.0201	0.0505	**0.0003**	**0.0007**	0.0000	0.0001	0.0001	0.0001	0.0012	0.0030	0.0094	0.0235	0.0003	0.0006	0.0000	0.0000	**0.0002**	**0.0005**	0.0180	0.0452	**0.0030**	**0.0075**
Pimelodina flavipinnis	0.1385	0.3482	**0.0001**	**0.0003**	0.0001	0.0001	0.0000	0.0001	0.0004	0.0010	0.0004	0.0009	0.0000	0.0001	0.0001	0.0002	**0.0002**	**0.0004**	0.0006	0.0015	**0.0024**	**0.0060**
Pimelodus jivaro	0.0551	0.1384	**0.0001**	**0.0004**	0.0000	0.0001	0.0001	0.0003	0.0021	0.0052	0.0184	0.0462	0.0005	0.0012	0.0000	0.0001	**0.0002**	**0.0005**	0.0123	0.0309	**0.0002**	**0.0004**
Pinirampus pirinampu	0.0348	0.0876	**0.0001**	**0.0002**	0.0001	0.0002	0.0000	0.0001	0.0011	0.0028	0.0055	0.0139	0.0002	0.0005	0.0001	0.0001	**0.0001**	**0.0003**	0.0129	0.0325	**0.0043**	**0.0107**
Platynematichthys notatus	0.0200	0.0503	**0.0002**	**0.0004**	0.0000	0.0001	0.0000	0.0001	0.0016	0.0039	0.0074	0.0186	0.0003	0.0009	0.0000	0.0000	**0.0001**	**0.0003**	0.0135	0.0340	**0.0022**	**0.0056**
Platystomatichthys sturio	0.0735	0.1846	**0.0001**	**0.0002**	0.0001	0.0003	0.0000	0.0001	0.0006	0.0016	NA	NA	0.0001	0.0001	0.0004	0.0011	**0.0004**	**0.0011**	0.0004	0.0011	NA	NA
Prochilodus nigricans	0.0309	0.0776	**0.0002**	**0.0004**	0.0000	0.0001	0.0001	0.0001	0.0017	0.0043	0.0148	0.0373	0.0011	0.0028	0.0000	0.0001	**0.0001**	**0.0003**	0.0164	0.0412	NA	NA
Pseudoplatystoma punctifer	0.0270	0.0678	**0.0002**	**0.0005**	0.0000	0.0001	0.0000	0.0001	0.0012	0.0029	0.0083	0.0208	0.0003	0.0007	0.0000	0.0000	**0.0002**	**0.0005**	0.0183	0.0459	**0.0010**	**0.0026**
Pseudoplatystoma tigrinum	0.0130	0.0327	**0.0002**	**0.0005**	0.0000	0.0001	0.0000	0.0001	0.0019	0.0047	0.0142	0.0357	0.0003	0.0007	NA	NA	**NA**	**NA**	0.0258	0.0648	**0.0023**	**0.0057**
Sorubim lima	0.0372	0.0935	**0.0001**	**0.0002**	0.0000	0.0001	0.0000	0.0001	0.0017	0.0042	0.0122	0.0307	0.0004	0.0009	0.0000	0.0000	**0.0002**	**0.0005**	0.0131	0.0328	**0.0007**	**0.0018**
Sorubimichthys planiceps	0.0660	0.1659	**0.0001**	**0.0003**	0.0000	0.0001	0.0000	0.0001	0.0011	0.0026	0.0133	0.0335	0.0003	0.0008	0.0000	0.0000	**NA**	**NA**	0.0292	0.0734	**0.0011**	**0.0029**
Zungaro zungaro	0.0252	0.0634	**0.0002**	**0.0004**	0.0000	0.0000	0.0001	0.0001	0.0013	0.0033	0.0096	0.0241	0.0003	0.0007	0.0000	0.0000	**0.0001**	**0.0002**	0.0133	0.0334	**0.0019**	**0.0047**

Table S3. Mean CDI of eleven trace elements for 13 fish commercial species sold in El Coca Market, and individual values *for Brachyplatystoma juruense*, *Duopalatinus peruanus*, *Pseudoplatystoma tigrinum*, and *Sorubimichthys planiceps*.

	Mean CDI																					
	Al		As		Cd		Cr		Cu		Fe		Mn		Ni		Pb		Zn		Hg	
Species	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI	Lower FI	Upper FI
Brachyplatystoma juruense	0.0111	0.0368	**0.0003**	**0.0010**	0.0000	0.0000	0.0001	0.0002	0.0012	0.0040	0.0097	0.0324	0.0002	0.0006	0.0000	0.0000	**0.0001**	**0.0002**	0.0140	0.0466	**0.0030**	**0.0101**
Brachyplatystoma platynema	0.0328	0.1093	**0.0002**	**0.0007**	0.0000	0.0001	0.0000	0.0001	0.0004	0.0015	0.0049	0.0162	0.0001	0.0004	0.0000	0.0000	**0.0002**	**0.0001**	0.0048	0.0160	**0.0037**	**0.0123**
Brachyplatystoma rousseauxii	0.0174	0.0578	**0.0002**	**0.0005**	0.0000	0.0000	0.0000	0.0001	0.0007	0.0024	0.0051	0.0168	0.0002	0.0005	0.0000	0.0000	**0.0001**	**0.0003**	0.0118	0.0392	**0.0042**	**0.0141**
Calophysus macropterus	0.0346	0.1153	**0.0001**	**0.0004**	0.0000	0.0001	0.0000	0.0001	0.0007	0.0023	0.0060	0.0199	0.0001	0.0004	0.0000	0.0001	**0.0001**	**0.0004**	0.0054	0.0179	**0.0020**	**0.0067**
Duopalatinus peruanus	0.0436	0.1453	**0.0002**	**0.0005**	0.0001	0.0003	0.0001	0.0002	0.0003	0.0010	NA	NA	0.0000	0.0001	0.0000	0.0001	**0.0002**	**0.0008**	0.0005	0.0017	NA	NA
Phractocephalus hemioliopterus	0.0152	0.0505	**0.0002**	**0.0007**	0.0000	0.0001	0.0000	0.0001	0.0009	0.0030	0.0071	0.0235	0.0002	0.0006	0.0000	0.0000	**0.0001**	**0.0005**	0.0136	0.0452	**0.0022**	**0.0075**
Pimelodina flavipinnis	0.1045	0.3482	**0.0001**	**0.0003**	0.0000	0.0001	0.0000	0.0001	0.0003	0.0010	0.0003	0.0009	0.0000	0.0001	0.0001	0.0002	**0.0001**	**0.0004**	0.0005	0.0015	**0.0018**	**0.0060**
Pimelodus jivaro	0.0415	0.1384	**0.0001**	**0.0004**	0.0000	0.0001	0.0001	0.0003	0.0016	0.0052	0.0139	0.0462	0.0004	0.0012	0.0000	0.0001	**0.0002**	**0.0005**	0.0093	0.0309	**0.0001**	**0.0004**
Pinirampus pirinampu	0.0263	0.0876	**0.0001**	**0.0002**	0.0000	0.0002	0.0000	0.0001	0.0008	0.0028	0.0042	0.0139	0.0002	0.0005	0.0000	0.0001	**0.0001**	**0.0003**	0.0097	0.0325	**0.0032**	**0.0107**
Platynematichthys notatus	0.0151	0.0503	**0.0001**	**0.0004**	0.0000	0.0001	0.0000	0.0001	0.0012	0.0039	0.0056	0.0186	0.0003	0.0009	0.0000	0.0000	**0.0001**	**0.0003**	0.0102	0.0340	**0.0017**	**0.0056**
Platystomatichthys sturio	0.0554	0.1846	**0.0001**	**0.0002**	0.0001	0.0003	0.0000	0.0001	0.0005	0.0016	NA	NA	0.0000	0.0001	0.0003	0.0011	**0.0003**	**0.0011**	0.0003	0.0011	NA	NA
Prochilodus nigricans	0.0233	0.0776	**0.0001**	**0.0004**	0.0000	0.0001	0.0000	0.0001	0.0013	0.0043	0.0112	0.0373	0.0008	0.0028	0.0000	0.0001	**0.0001**	**0.0003**	0.0124	0.0412	NA	NA
Pseudoplatystoma punctifer	0.0203	0.0678	**0.0001**	**0.0005**	0.0000	0.0001	0.0000	0.0001	0.0009	0.0029	0.0062	0.0208	0.0002	0.0007	0.0000	0.0000	**0.0002**	**0.0005**	0.0138	0.0459	**0.0008**	**0.0026**
Pseudoplatystoma tigrinum	0.0098	0.0327	**0.0001**	**0.0005**	0.0000	0.0001	0.0000	0.0001	0.0014	0.0047	0.0107	0.0357	0.0002	0.0007	NA	NA	**NA**	**NA**	0.0194	0.0648	**0.0017**	**0.0057**
Sorubim lima	0.0280	0.0935	**0.0001**	**0.0002**	0.0000	0.0001	0.0000	0.0001	0.0013	0.0042	0.0092	0.0307	0.0003	0.0009	0.0000	0.0000	**0.0001**	**0.0005**	0.0098	0.0328	**0.0005**	**0.0018**
Sorubimichthys planiceps	0.0498	0.1659	**0.0001**	**0.0003**	0.0000	0.0001	0.0000	0.0001	0.0008	0.0026	0.0101	0.0335	0.0002	0.0008	0.0000	0.0000	**NA**	**NA**	0.0220	0.0734	**0.0009**	**0.0029**
Zungaro zungaro	0.0190	0.0634	**0.0001**	**0.0004**	0.0000	0.0000	0.0000	0.0001	0.0010	0.0033	0.0072	0.0241	0.0002	0.0007	0.0000	0.0000	**0.0001**	**0.0002**	0.0100	0.0334	**0.0014**	**0.0047**

Table S4. Mean HRI of eleven trace elements for 13 fish commercial species sold in El Coca Market, and individual values *for Brachyplatystoma juruense*, *Duopalatinus peruanus*, *Pseudoplatystoma tigrinum*, and *Sorubimichthys planiceps,* for two standards of RfDs and two fish daily intake rates. Values above 1 indicate high health risk and are highlighted in bold.

	Al		As		Cd		Cr		Cu		Fe		Mn		Ni		Pb		Zn		Hg	
	Lower fish intake rate limit																					
Species	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**	**Fl1-Sl**	**Fl1-S2**
Brachyplatystoma juruense	0.05	0.01	0.19	**6.35**	0.02	0.01	0.00	0.11	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02 -	0.00	0.06	**3.35**	**8.05**
Brachyplatystoma platynema	0.15	0.04	0.14	**4.64**	0.05	0.04	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.02	**4.08**	**9.79**
Brachyplatystoma rousseauxii	0.08	0.02	0.11	**3.52**	0.02	0.01	0.00	0.05	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.05	**4.68**	**11.23**
Calophysus macropterus	0.16	0.05	0.07	**2.32**	0.07	0.06	0.00	0.04	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.02	**2.21**	**5.31**
Duopalatinus peruanus	0.20	0.06	0.10	**3.41**	0.14	0.11	0.00	0.09	0.00	0.01	NA	NA	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	NA	NA
Phractocephalus hemioliopterus	0.07	0.02	0.13	**4.36**	0.03	0.03	0.00	0.06	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.06	**2.47**	**5.93**
Pimelodina flavipinnis	0.48	0.14	0.07	**2.28**	0.07	0.06	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	**1.99**	**4.78**
Pimelodus jivaro	0.19	0.06	0.07	**2.46**	0.04	0.03	0.00	0.12	0.00	0.05	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.13	0.32
Pinirampus pirinampu	0.12	0.03	0.05	**1.56**	0.08	0.06	0.00	0.06	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.04	**3.55**	**8.53**
Platynematichthys notatus	0.07	0.02	0.09	**2.89**	0.03	0.02	0.00	0.05	0.00	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.05	**1.84**	**4.42**
Platystomatichthys sturio	0.25	0.07	0.04	**1.43**	0.14	0.11	0.00	0.05	0.00	0.02	NA	NA	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	NA	NA
Prochilodus nigricans	0.11	0.03	0.08	**2.57**	0.04	0.03	0.00	0.06	0.00	0.04	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.05	NA	NA
Pseudoplatystoma punctifer	0.09	0.03	0.09	**3.06**	0.03	0.02	0.00	0.04	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.06	0.86	**2.06**
Pseudoplatystoma tigrinum	0.04	0.01	0.09	**3.08**	0.03	0.03	0.00	0.05	0.00	0.05	0.00	0.02	0.00	0.00	NA	NA	NA	NA	0.00	0.09	**1.89**	**4.52**
Sorubim lima	0.13	0.04	0.04	**1.46**	0.03	0.02	0.00	0.06	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.58	**1.40**
Sorubimichthys planiceps	0.23	0.07	0.07	**2.22**	0.04	0.03	0.00	0.05	0.00	0.03	0.00	0.02	0.00	0.00	0.00	0.00	NA	NA	0.00	0.10	0.95	**2.28**
Zungaro zungaro	0.09	0.03	0.08	**2.71**	0.02	0.02	0.00	0.06	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.04	**1.55**	**3.72**
	Upper fish intake rate limit																					
Species	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**	**Fl2-S1**	**Fl2-S2**
Brachyplatystoma juruense	0.13	0.04	0.48	**15.95**	0.05	0.04	0.00	0.08	0.00	0.10	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.16	**8.43**	**20.24**

Brachyplatystoma platynema	0.38	0.11	0.35	**11.66**	0.13	0.11	0.00	0.03	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.05	**10.26**	**24.61**
Brachyplatystoma rousseauxii	0.20	0.06	0.27	**8.86**	0.04	0.04	0.00	0.04	0.00	0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.13	**11.76**	**28.22**
Calophysus macropterus	0.40	0.12	0.18	**5.84**	0.19	0.15	0.00	0.03	0.00	0.06	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.06	**5.57**	**13.36**
Duopalatinus peruanus	0.50	0.15	0.26	**8.56**	0.35	0.28	0.00	0.07	0.00	0.02	NA	NA	0.00	0.00	0.00	0.01	0.00	0.19	0.00	0.01	NA	NA
Phractocephalus hemioliopterus	0.17	0.05	0.33	**10.96**	0.08	0.07	0.00	0.04	0.00	0.08	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.15	**6.22**	**14.92**
Pimelodina flavipinnis	**1.20**	0.35	0.17	**5.73**	0.17	0.14	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.10	0.00	0.01	**5.01**	**12.03**
Pimelodus jivaro	0.48	0.14	0.19	**6.18**	0.09	0.07	0.01	0.09	0.00	0.13	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.13	0.00	0.10	0.34	0.81
Pinirampus pirinampu	0.30	0.09	0.12	**3.92**	0.20	0.16	0.00	0.04	0.00	0.07	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.07	0.00	0.11	**8.93**	**21.44**
Platynematichthys notatus	0.17	0.05	0.22	**7.26**	0.07	0.06	0.00	0.04	0.00	0.10	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.07	0.00	0.11	**4.63**	**11.10**
Platystomatichthys sturio	0.64	0.18	0.11	**3.60**	0.35	0.28	0.00	0.04	0.00	0.04	NA	NA	0.00	0.00	0.00	0.06	0.00	0.26	0.00	0.00	NA	NA
Prochilodus nigricans	0.27	0.08	0.19	**6.46**	0.09	0.07	0.00	0.05	0.00	0.11	0.00	0.05	0.00	0.02	0.00	0.00	0.00	0.08	0.00	0.14	NA	NA
Pseudoplatystoma punctifer	0.23	0.07	0.23	**7.69**	0.07	0.05	0.00	0.03	0.00	0.07	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.13	0.00	0.15	**2.16**	**5.17**
Pseudoplatystoma tigrinum	0.11	0.03	0.23	**7.74**	0.08	0.07	0.00	0.04	0.00	0.12	0.00	0.05	0.00	0.01	NA	NA	NA	NA	0.00	0.22	**4.74**	**11.37**
Sorubim lima	0.32	0.09	0.11	**3.67**	0.08	0.06	0.00	0.04	0.00	0.10	0.00	0.04	0.00	0.01	0.00	0.00	0.00	0.12	0.00	0.11	**1.47**	**3.53**
Sorubimichthys planiceps	0.57	0.17	0.17	**5.58**	0.10	0.08	0.00	0.04	0.00	0.07	0.00	0.05	0.00	0.01	0.00	0.00	NA	NA	0.00	0.24	**2.39**	**5.74**
Zungaro zungaro	0.22	0.06	0.20	**6.81**	0.06	0.05	0.00	0.04	0.00	0.08	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.06	0.00	0.11	**3.90**	**9.35**

Table S5. Mean THQ and HI of eleven trace elements for 13 fish commercial species sold in El Coca Market, and individual values *for Brachyplatystoma juruense*, *Duopalatinus peruanus*, *Pseudoplatystoma tigrinum*, and *Sorubimichthys planiceps,* for two standards of RfDs and two fish daily intake rates.

Mean THQ

	Al		As		Cd		Cr		Cu		Fe		Mn		Ni		Pb		Zn		Hg		HI	
Lower fish intake rate limit																								
Species	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S2**	**FI1-SI**	**FI1-S3**
Brachyplatystoma juruense	0.0381	0.0111	0.1436	4.7851	0.0137	0.0110	0.0014	0.0796	0.0001	0.0303	0.0001	0.0139	0.0002	0.0013	0.0000	0.0004	0.0002	0.0466	0.0001	10.1191	2.5298	15.0983	2.7273	15.0983
Brachyplatystoma platynema	0.1131	0.0328	0.1050	3.4985	0.0402	0.0321	0.0006	0.0338	0.0000	0.0111	0.0000	0.0069	0.0001	0.0009	0.0000	0.0007	0.0000	0.0160	0.0000	12.3072	3.0768	15.9400	3.3359	15.9400
Brachyplatystoma rousseauxii	0.0598	0.0174	0.0798	2.6581	0.0132	0.0105	0.0007	0.0367	0.0001	0.0178	0.0001	0.0072	0.0002	0.0012	0.0000	0.0002	0.0003	0.0392	0.0001	14.1095	3.5274	16.8976	3.6814	16.8976
Calophysus macropterus	0.1193	0.0346	0.0525	1.7507	0.0559	0.0447	0.0006	0.0308	0.0001	0.0175	0.0001	0.0085	0.0001	0.0008	0.0000	0.0012	0.0004	0.0179	0.0001	6.6790	1.6698	8.5824	1.8984	8.5824
Duopalatinus peruanus	0.1503	0.0436	0.0770	2.5679	0.1064	0.0851	0.0012	0.0676	0.0000	0.0074	NA	NA	0.0000	0.0002	0.0000	0.0018	0.0008	0.0017	0.0000	NA	NA	2.7752	0.3350	2.7752
Phractocephalus hemioliopterus	0.0523	0.0152	0.0986	3.2879	0.0250	0.0200	0.0008	0.0449	0.0001	0.0229	0.0001	0.0101	0.0002	0.0014	0.0000	0.0003	0.0005	0.0452	0.0001	7.4582	1.8646	10.9059	2.0422	10.9059
Pimelodina flavipinnis	0.3603	0.1045	0.0516	1.7188	0.0523	0.0418	0.0003	0.0171	0.0000	0.0077	0.0000	0.0004	0.0000	0.0002	0.0000	0.0026	0.0004	0.0015	0.0000	6.0133	1.5033	7.9079	1.9678	7.9079
Pimelodus jivaro	0.1432	0.0415	0.0557	1.8546	0.0275	0.0220	0.0016	0.0891	0.0002	0.0389	0.0001	0.0198	0.0004	0.0026	0.0000	0.0009	0.0005	0.0309	0.0001	0.4041	0.1010	1.5261	0.2786	1.5261
Pinirampus pirinampu	0.0906	0.0263	0.0352	1.1757	0.0605	0.0484	0.0007	0.0415	0.0001	0.0209	0.0000	0.0060	0.0002	0.0011	0.0000	0.0019	0.0003	0.0325	0.0001	10.7207	2.6802	12.0743	2.8677	12.0743
Platynematichthys notatus	0.0521	0.0151	0.0653	2.1770	0.0225	0.0180	0.0006	0.0351	0.0001	0.0296	0.0001	0.0080	0.0003	0.0019	0.0000	0.0002	0.0003	0.0340	0.0001	5.5504	1.3876	7.8691	1.5289	7.8691
Platystomatichthys sturio	0.1910	0.0554	0.0324	1.0812	0.1052	0.0841	0.0007	0.0369	0.0000	0.0117	NA	NA	0.0000	0.0003	0.0000	0.0168	0.0011	0.0011	0.0000	NA	NA	1.2875	0.3304	1.2875
Prochilodus nigricans	0.0803	0.0233	0.0581	1.9371	0.0270	0.0216	0.0009	0.0485	0.0001	0.0321	0.0001	0.0159	0.0008	0.0060	0.0000	0.0010	0.0003	0.0413	0.0001	NA	NA	2.1265	0.1678	2.1265
Pseudoplatystoma punctifer	0.0701	0.0203	0.0692	2.3068	0.0198	0.0159	0.0006	0.0310	0.0001	0.0217	0.0001	0.0089	0.0002	0.0016	0.0000	0.0000	0.0005	0.0459	0.0001	2.5865	0.6466	5.0385	0.8074	5.0385
Pseudoplatystoma tigrinum	0.0338	0.0098	0.0696	2.3211	0.0245	0.0196	0.0007	0.0386	0.0001	0.0354	0.0001	0.0153	0.0002	0.0016	NA	NA	NA	0.0648	0.0002	5.6865	1.4216	8.1926	1.5509	8.1926
Sorubim lima	0.0967	0.0280	0.0330	1.1000	0.0235	0.0188	0.0008	0.0418	0.0001	0.0313	0.0001	0.0132	0.0003	0.0020	0.0000	0.0002	0.0005	0.0328	0.0001	1.7641	0.4410	3.0323	0.5961	3.0323
Sorubimichthys planiceps	0.1716	0.0498	0.0502	1.6750	0.0309	0.0247	0.0007	0.0366	0.0001	0.0199	0.0001	0.0144	0.0002	0.0017	0.0000	0.0007	NA	0.0734	0.0002	2.8680	0.7170	4.7641	0.9710	4.7641
Zungaro zungaro	0.0656	0.0190	0.0613	2.0429	0.0182	0.0145	0.0008	0.0427	0.0001	0.0248	0.0001	0.0103	0.0002	0.0015	0.0000	0.0005	0.0002	0.0334	0.0001	4.6749	1.1687	6.2985	1.2982	6.2985
Upper fish intake rate limit																								
Species	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**	**FI2-S1**	**FI2-S2**
Brachyplatystoma juruense	0.1270	0.135	0.4785	4.462	0.0457	0.037	0.0048	0.114	0.0004	0.059	0.0003	0.046	0.0006	0.0056	0.0000	0.0013	0.0007	NA	0.0005	0.0003	8.4326	102.0924	9.0911	106.9529
Brachyplatystoma platynema	0.3769	0.046	0.3499	10.93	0.1339	0.048	0.0020	0.116	0.0001	0.077	0.0002	0.028	0.0004	0.0047	0.0000	0.0011	0.0003	NA	0.0002	0.0015	10.2560	146.4615	11.1197	157.7167

Brachyplatystoma rousseauxii	0.1994	0.038	0.2658	8.465	0.0438	0.047	0.0022	0.087	0.0002	0.061	0.0002	0.022	0.0005	0.0040	0.0000	0.0004	0.0008	NA	0.0004	0.0018	11.7579	121.2425	12.2714	129.9681
Calophysus macropterus	0.3976	0.104	0.1751	8.088	0.1863	0.099	0.0018	0.13	0.0002	0.069	0.0002	0.03	0.0004	0.0042	0.0000	0.0019	0.0014	NA	0.0002	0.0011	5.5658	107.8257	6.3279	116.3516
Duopalatinus peruanus	0.5009	0.097	0.2568	8.277	0.3548	0.053	0.0041	0.174	0.0001	0.082	NA	0.037	0.0001	0.0048	0.0000	0.0026	0.0025	NA	0.0000	NA	1.1192	97.3183	1.1167	106.0469
Phractocephalus hemioliopterus	0.1742	0.105	0.3288	4.547	0.0832	0.069	0.0027	0.112	0.0003	0.097	0.0002	0.038	0.0006	0.0225	0.0000	0.0037	0.0016	NA	0.0005	0.0007	6.2152	191.7893	6.8074	196.7645
Pimelodina flavipinnis	1.2008	0.076	0.1719	4.378	0.1742	0.07	0.0010	0.125	0.0001	0.112	0.0000	0.052	0.0001	0.0060	0.0000	0.0015	0.0014	NA	0.0000	0.0017	5.0111	163.9562	6.5593	168.7750
Pimelodus jivaro	0.4774	0.112	0.1854	4.024	0.0917	0.167	0.0053	0.14	0.0005	0.066	0.0005	0.023	0.0012	0.0033	0.0000	0.0333	0.0017	NA	0.0003	0.0020	0.3545	70.2641	0.9287	74.1071
Pinirampus pirinampu	0.3020	0.084	0.1176	5.64	0.2015	0.076	0.0025	0.172	0.0003	0.083	0.0001	0.04	0.0005	0.0040	0.0000	0.0043	0.0009	NA	0.0003	0.0009	8.9339	65.5783	9.5592	69.7855
Platynematichthys notatus	0.1734	0.114	0.2177	8.516	0.0750	0.078	0.0021	0.272	0.0004	0.148	0.0002	0.073	0.0009	0.0112	0.0000	NA	0.0009	NA	0.0003	0.0017	4.6253	128.6415	5.0962	133.5978
Platystomatichthys sturio	0.6367	0.069	0.1081	5.949	0.3506	0.046	0.0022	0.12	0.0002	0.066	NA	0.032	0.0001	0.0046	0.0000	0.0014	0.0035	NA	0.0000	0.0011	1.1014	107.6944	1.1014	113.9823
Prochilodus nigricans	0.2677	0.107	0.1937	6.629	0.0900	0.064	0.0029	0.214	0.0004	0.103	0.0004	0.053	0.0028	0.0077	0.0000	0.0016	0.0010	NA	0.0004	0.0016	0.5593	100.6568	0.5593	105.6281
Pseudoplatystoma punctifer	0.2338	0.043	0.2307	9.417	0.0661	0.054	0.0019	0.16	0.0003	0.079	0.0002	0.034	0.0007	0.0037	0.0000	0.0014	0.0017	NA	0.0005	0.0006	2.1554	131.4581	2.6912	141.2504
Pseudoplatystoma tigrinum	0.1127	0.165	0.2321	NA	0.0817	0.068	0.0023	0.312	0.0005	0.14	0.0004	0.102	0.0007	0.0108	NA	0.0054	NA	NA	0.0006	0.0008	4.7387	112.8750	5.1698	113.6734
Sorubim lima	0.3223	0.343	0.1100	4.368	0.0784	0.096	0.0025	0.206	0.0004	0.095	0.0003	0.033	0.0009	0.0043	0.0000	0.0086	0.0016	NA	0.0003	0.0012	1.4701	56.2023	1.9869	61.3570
Sorubimichthys planiceps	0.5720	0.172	0.1675	4.609	0.1030	0.293	0.0022	0	0.0003	0.026	0.0003	NA	0.0008	0.0007	0.0000	0.0078	NA	NA	0.0007	0.0027	2.3900	4.3904	3.2368	9.5026
Zungaro zungaro	0.2186	0.137	0.2043	8.661	0.0606	0.159	0.0026	0.191	0.0003	0.071	0.0002	0.04	0.0007	0.0047	0.0000	0.0044	0.0008	NA	0.0003	0.0020	3.8957	75.5805	4.3274	81.8109

Table S6. Mean TCR and CCR of eleven trace elements for 13 fish commercial species sold in El Coca Market, and individual values *for Brachyplatystoma juruense*, *Duopalatinus peruanus*, *Pseudoplatystoma tigrinum*, and *Sorubimichthys planiceps,* for two fish daily intake rates.

	As		Cr		Pb		CCR	
Species	**Lower FI**	**Higher FI**	**Lower FI**	**Higher FI**	**Lower FI**	**Higher FI**	**Lower FI**	**Higher FI**
Brachyplatystoma juruense	0.00919000	0.00919000	0.00003580	0.00003580	0.00000000	0.00000055	0.00922000	0.00922000
Brachyplatystoma platynema	0.00673500	0.00673500	0.00001520	0.00001520	0.00000000	0.00000025	0.00674500	0.00130248
Brachyplatystoma rousseauxii	0.00510500	0.00510500	0.00001649	0.00001649	0.00000000	0.00000064	0.00512250	0.00512250
Calophysus macropterus	0.00336000	0.00336000	0.00001384	0.00001384	0.00000000	0.00000104	0.00337667	0.00202191
Duopalatinus peruanus	0.00493000	0.00493000	0.00003040	0.00003040	0.00000000	0.00000192	0.00496000	0.00003230
Phractocephalus hemioliopterus	0.00631500	0.00631500	0.00002020	0.00002020	0.00000000	0.00000123	0.00633500	0.00633500
Pimelodina flavipinnis	0.00330000	0.00330000	0.00000772	0.00000772	0.00000000	0.00000105	0.00209537	0.00000822
Pimelodus jivaro	0.00356275	0.00356275	0.00004010	0.00004010	0.00000000	0.00000133	0.00182106	0.00241030
Pinirampus pirinampu	0.00225667	0.00225667	0.00001867	0.00001867	0.00000000	0.00000072	0.00227667	0.00190173
Platynematichthys notatus	0.00418000	0.00418000	0.00001580	0.00001580	0.00000000	0.00000070	0.00419500	0.00419500
Platystomatichthys sturio	0.00207525	0.00207525	0.00001660	0.00001660	0.00000000	0.00000268	0.00209175	0.00001927
Prochilodus nigricans	0.00371667	0.00371667	0.00002187	0.00002187	0.00000000	0.00000078	0.00374000	0.00374000
Pseudoplatystoma punctifer	0.00442750	0.00442750	0.00001393	0.00001393	0.00000053	0.00000131	0.00444250	0.00444250
Pseudoplatystoma tigrinum	0.00446000	0.00446000	0.00001740	0.00001740	#¡NUM!	#¡NUM!	0.00001736	0.00001736
Sorubim lima	0.00211350	0.00211350	0.00001880	0.00001880	0.00000000	0.00000126	0.00213150	0.00213200
Sorubimichthys planiceps	0.00322000	0.00322000	0.00001650	0.00001650	#¡NUM!	#¡NUM!	0.00001648	0.00001648
Zungaro zungaro	0.00392143	0.00392143	0.00001921	0.00001921	0.00000000	0.00000062	0.00285414	0.00344843

Table S7. Sensitivity analysis based on Monte Carlo simulations of the HI index for 17 commercial fish species.

	Percentile 5				Percentile 50				Percentile 95			
	Standard 1		Standard 2		Standard 1		Standard 2		Standard 1		Standard 2	
Species	Lower FI	Higher FE	Lower FI	Higher FE	Lower FI	Higher FE	Lower FI	Higher FE	Lower FI	Higher FE	Lower FI	Higher FE
Brachyplatystoma juruense	2.28	12.62	7.59	89.11	2.72	15.08	9.07	106.98	3.18	17.57	10.59	124.43
Brachyplatystoma platynema	2.79	13.32	9.28	131.33	3.34	15.95	11.13	157.91	3.89	18.50	12.99	183.80
Brachyplatystoma rousseauxii	3.08	14.12	10.26	108.70	3.68	16.92	12.26	130.05	4.29	19.73	14.27	150.99
Calophysus macropterus	1.59	7.18	5.27	97.38	1.90	8.56	6.33	116.59	2.21	10.02	7.39	135.67
Duopalatinus peruanus	0.28	2.32	0.93	88.57	0.34	2.78	1.12	106.08	0.39	3.24	1.31	123.59
Phractocephalus hemioliopterus	1.71	9.10	5.73	164.06	2.04	10.90	6.82	196.87	2.38	12.67	7.94	229.15
Pimelodina flavipinnis	1.64	6.59	5.48	141.48	1.97	7.90	6.55	168.97	2.29	9.20	7.63	196.65
Pimelodus jivaro	0.23	1.27	0.78	62.10	0.28	1.52	0.93	74.08	0.32	1.78	1.08	86.36
Pinirampus pirinampu	2.40	10.10	7.99	58.19	2.86	12.09	9.55	69.68	3.34	14.11	11.14	81.34
Platynematichthys notatus	1.28	6.56	4.28	111.54	1.53	7.85	5.11	133.76	1.78	9.14	5.93	155.22
Platystomatichthys sturio	0.27	1.08	0.92	95.16	0.33	1.29	1.10	113.85	0.38	1.50	1.28	131.88
Prochilodus nigricans	0.14	1.77	0.47	88.07	0.17	2.12	0.56	105.42	0.20	2.47	0.65	122.68
Pseudoplatystoma punctifer	0.68	4.23	2.25	118.55	0.81	5.04	2.70	141.28	0.94	5.87	3.14	165.05
Pseudoplatystoma tigrinum	1.30	6.85	4.33	95.19	1.55	8.20	5.17	113.91	1.81	9.52	6.02	132.36
Sorubim lima	0.50	2.53	1.67	51.50	0.60	3.03	1.99	61.45	0.69	3.52	2.32	71.64
Sorubimichthys planiceps	0.81	3.98	2.70	7.92	0.97	4.76	3.24	9.52	1.13	5.54	3.76	11.08
Zungaro zungaro	1.08	5.26	3.62	68.42	1.30	6.30	4.34	81.75	1.51	7.34	5.05	95.12

Table S8. Sensitivity analysis based on Monte Carlo simulations of the CCR index for 17 commercial fish species.

	Percentile 5		Percentile 50		Percentile 95	
Species	**Lower FI**	**Higher FE**	**Lower FI**	**Higher FE**	**Lower FI**	**Higher FE**
Brachyplatystoma juruense	7.71E-06	2.56E-05	9.21E-06	3.06E-05	1.07E-05	3.58E-05
Brachyplatystoma platynema	5.63E-06	7.18E-06	6.72E-06	8.62E-06	7.83E-06	1.00E-05
Brachyplatystoma rousseauxii	4.28E-06	1.43E-05	5.13E-06	1.71E-05	5.97E-06	2.00E-05
Calophysus macropterus	2.82E-06	5.60E-06	3.38E-06	6.74E-06	3.92E-06	7.84E-06
Duopalatinus peruanus	4.16E-06	9.20E-08	4.96E-06	1.10E-07	5.79E-06	1.28E-07
Phractocephalus hemioliopterus	5.29E-06	1.76E-05	6.34E-06	2.11E-05	7.39E-06	2.45E-05
Pimelodina flavipinnis	3.51E-06	4.16E-08	4.19E-06	5.00E-08	4.88E-06	5.84E-08
Pimelodus jivaro	3.00E-06	1.00E-05	3.58E-06	1.20E-05	4.19E-06	1.40E-05
Pinirampus pirinampu	1.90E-06	5.27E-06	2.28E-06	6.34E-06	2.65E-06	7.39E-06
Platynematichthys notatus	3.50E-06	1.17E-05	4.20E-06	1.40E-05	4.90E-06	1.63E-05
Platystomatichthys sturio	1.76E-06	5.05E-08	2.10E-06	6.01E-08	2.45E-06	7.00E-08
Prochilodus nigricans	3.12E-06	1.04E-05	3.74E-06	1.25E-05	4.35E-06	1.45E-05
Pseudoplatystoma punctifer	3.70E-06	1.24E-05	4.44E-06	1.48E-05	5.17E-06	1.72E-05
Pseudoplatystoma tigrinum	0	0	0	0	0	0
Sorubim lima	1.78E-06	5.96E-06	2.13E-06	7.12E-06	2.48E-06	8.28E-06
Sorubimichthys planiceps	0	0	0	0	0	0
Zungaro zungaro	3.17E-06	1.06E-05	3.80E-06	1.27E-05	4.42E-06	1.47E-05