**TABLE S1** | Locations and coordinates of the sampled lakes.

| LOCATION | MUNICIPALITY | INTERCOMMUNITY | LAKE | COORDINATES |
|---|---|---|---|---|
| Rio Juruá | Carauari. AM | Lago Serrado | Lago comprido | 4.743442 S/66.71421 W |
| RDS Piagaçu-Purus | Beruri. AM | Itapuru | Itapuru-mirim | 4.265156 S/61.882034 W |
| | | | Lago botinho | 4.294266 S/61.894227 W |
| | | | Lago Envira | 4.270312 S/61.931236 W |
| Alto Solimões | Tonantins. AM | Caité | Lago Tuiuca | 2.580091 S/67.411516 W |
| Santarém-PA | Santarém. PA | Urucurituba | Lago comprido | 2.026407 S/54.823956 W |

**TABLE S2** | Deposit codes of the *Arapaima gigas* COI sequences used in this study.

| Sample code | Country | State | Drainage/River | Locality | Genbank code |
|---|---|---|---|---|---|
| TNT5188 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835496 |
| TNT5187 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835497 |
| TNT5186 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835498 |
| TNT5185 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835499 |
| TNT5184 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835500 |
| TNT5179 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835501 |
| TNT5177 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835502 |
| TNT5175 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835504 |
| TNT5172 | Brazil | Amazonas | Alto Solimões | Tonantins-AM, Comunidade Caité, Lago Tuiuca | PP835505 |
| PPR5169 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835963 |
| PPR5164 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835964 |
| PPR5163 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835965 |
| PPR5162 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835966 |
| PPR5161 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835967 |
| PPR5160 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835968 |
| PPR5159 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835969 |
| PPR5158 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835970 |
| PPR5157 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835971 |
| PPR5156 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835972 |
| PPR5154 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835973 |
| PPR5153 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835974 |
| PPR5148 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835975 |
| PPR5147 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835976 |
| PPR5146 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835977 |
| PPR5145 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835978 |
| PPR5142 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835979 |
| PPR5140 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835980 |
| PPR5137 | Brazil | Amazonas | Rio Purus | Beruri-AM, Comunidade Itapuru, RDS Piagaçu-Purus, Lago Botinho | PP835981 |

**TABLE S2 I** (Continued)

| Sample code | Country | State | Drainage/River | Locality | Genbank code |
|---|---|---|---|---|---|
| UNI008 | Brazil | Amazonas | Rio Unini | Novo Airão-AM, Resex Rio Unini | PQ429071 |
| UNI007 | Brazil | Amazonas | Rio Unini | Novo Airão-AM, Resex Rio Unini | PQ429072 |
| UNI006 | Brazil | Amazonas | Rio Unini | Novo Airão-AM, Resex Rio Unini | PQ429073 |
| UNI001 | Brazil | Amazonas | Rio Unini | Novo Airão-AM, Resex Rio Unini | PQ429074 |
| JRA5128 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831202 |
| JRA5127 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831203 |
| JRA5125 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831204 |
| JRA5124 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831205 |
| JRA5123 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831206 |
| JRA5122 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831207 |
| JRA5116 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831208 |
| JRA5113 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831209 |
| JRA5111 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831210 |
| JRA5108 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831211 |
| JRA5107 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831212 |
| JRA5106 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831213 |
| JRA5105 | Brazil | Amazonas | Rio Juruá | Carauari-AM, Comunidade Lago Serrado, Lago Comprido | PP831214 |
| STM3644 | Brazil | Pará | Rio Amazonas | Santarém-PA, Comunidade Urucurituba, Lago Comprido | PP836390 |
| STM3645 | Brazil | Pará | Rio Amazonas | Santarém-PA, Comunidade Urucurituba, Lago Comprido | PP836391 |
| STM3646 | Brazil | Pará | Rio Amazonas | Santarém-PA, Comunidade Urucurituba, Lago Comprido | PP836392 |
| STM3660 | Brazil | Pará | Rio Amazonas | Santarém-PA, Comunidade Urucurituba, Lago Comprido | PP836393 |
| AMP022 | Brazil | Amapá | Rio Sucuriju | REBIO Lago Piratuba, Comunidade Sucuriju, Lago Piratuba | PQ429020 |
| AMP013 | Brazil | Amapá | Rio Sucuriju | REBIO Lago Piratuba, Comunidade Sucuriju, Lago Piratuba | PQ429021 |
| AMP012 | Brazil | Amapá | Rio Sucuriju | REBIO Lago Piratuba, Comunidade Sucuriju, Lago Piratuba | PQ429022 |
| AMP005 | Brazil | Amapá | Rio Sucuriju | REBIO Lago Piratuba, Comunidade Sucuriju, Lago Piratuba | PQ429023 |
| AMP004 | Brazil | Amapá | Rio Sucuriju | REBIO Lago Piratuba, Comunidade Sucuriju, Lago Piratuba | PQ429024 |
| AMP001 | Brazil | Amapá | Rio Sucuriju | REBIO Lago Piratuba, Comunidade Sucuriju, Lago Piratuba | PQ429025 |
| MEX001 | Brazil | Pará | Mouth of the Amazonas | Chaves-PA, ilha da Mexiana | PQ429026 |
| MEX002 | Brazil | Pará | Mouth of the Amazonas | Chaves-PA, ilha da Mexiana | PQ429027 |
| MEX003 | Brazil | Pará | Mouth of the Amazonas | Chaves-PA, ilha da Mexiana | PQ429028 |
| MEX005 | Brazil | Pará | Mouth of the Amazonas | Chaves-PA, ilha da Mexiana | PQ429029 |
| MEX006 | Brazil | Pará | Mouth of the Amazonas | Chaves-PA, ilha da Mexiana | PQ429030 |
| MEX007 | Brazil | Pará | Mouth of the Amazonas | Chaves-PA, ilha da Mexiana | PQ429031 |
| TUC01 | Brazil | Pará | Rio Tocantins | Tucuruí-PA, rio Tocantins | PX940749 |
| TUC03 | Brazil | Pará | Rio Tocantins | Tucuruí-PA, rio Tocantins | PX940748 |
| TUC04 | Brazil | Pará | Rio Tocantins | Tucuruí-PA, rio Tocantins | PX940747 |
| TUC07 | Brazil | Pará | Rio Tocantins | Tucuruí-PA, rio Tocantins | PX940746 |
| PER001 | Peru | Iquitos | Rio Marañon | Fernando Playas, Rio Pastaza | MG911737 |
| PER002 | Peru | Iquitos | Rio Marañon | C.P Ullpayacu, Rio Pastaza, Lago Rimachi | MH411282 |
| PER003 | Peru | Iquitos | Rio Marañon | C.P Ullpayacu, Rio Pastaza, Lago Rimachi | OM453708 |
| PER004 | Peru | Iquitos | Rio Marañon | Fernando Playas, Rio Pastaza | MG911736 |
| PER005 | Peru | Iquitos | Rio Marañon | Fernando Playas, Rio Pastaza | MG911735 |

**TABLE S3** | Pairwise genetic distances between individuals, PER: Iquitos, Peru; UNI: rio Unini; TUC: Tucuruí; TNT: Alto Solimões. STM: Santarém, PA; PPR: RDS Piagaçu-Purus; MEX: Ilha da Mexiana; JRA: Carauari; AMP: REBio Lago Piratuba. AP.

| | MG911737_PER | MH411282_PER | MG911736_PER | MG911735_PER | OM453708_PER | UNI_008 | UNI_007 | UNI_006 | UNI_001 | TUC_007 | TUC_004 | TUC_003 | TUC_002 | TUC_001 | TNT_5188 | TNT_5187 | TNT_5186 | TNT_5185 | TNT_5184 | TNT_5179 | TNT_5176 | TNT_5175 | TNT_5172 | STM_3660 | STM_3646 | STM_3645 | STM_3644 | PPR_5169 | PPR_5164 | PPR_5163 | PPR_5162 | PPR_5161 | PPR_5160 | PPR_5159 | PPR_5158 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MG911737_PER | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MH411282_PER | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MG911736_PER | 0.002 | 0.004 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MG911735_PER | 0.002 | 0.004 | 0.004 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OM453708_PER | 0.002 | 0 | 0.004 | 0.004 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNI_008 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNI_007 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNI_006 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UNI_001 | 0 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TUC_007 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| TUC_004 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| TUC_003 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| TUC_002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| TUC_001 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | |
| TNT_5188 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | |
| TNT_5187 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | |
| TNT_5186 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | | | | |
| TNT_5185 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0 | | | | | | | | | | | | | | | | | |
| TNT_5184 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0 | | | | | | | | | | | | | | | | |
| TNT_5179 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | |
| TNT_5176 | 0.003 | 0.005 | 0.005 | 0.005 | 0.005 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 | 0.003 | 0.003 | 0.003 | 0 | | | | | | | | | | | | | | |
| TNT_5175 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0 | | | | | | | | | | | | | |
| TNT_5172 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0 | | | | | | | | | | | | |
| STM_3660 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | |
| STM_3646 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.005 | 0.005 | 0.005 | 0.002 | 0 | | | | | | | | | | |
| STM_3645 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.005 | 0.005 | 0.005 | 0.002 | 0.002 | 0 | | | | | | | | | |
| STM_3644 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | |
| PPR_5169 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | |
| PPR_5164 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | |
| PPR_5163 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | |
| PPR_5162 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | |
| PPR_5161 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | |
| PPR_5160 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | |
| PPR_5159 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | |
| PPR_5158 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 |

**TABLE S3** | (Continued)

| | MG911737_PER | MH411282_PER | MG911736_PER | MG911735_PER | OM453708_PER | UNI_008 | UNI_007 | UNI_006 | UNI_001 | TUC_007 | TUC_004 | TUC_003 | TUC_002 | TUC_001 | TNT_5188 | TNT_5187 | TNT_5186 | TNT_5185 | TNT_5184 | TNT_5179 | TNT_5176 | TNT_5175 | TNT_5172 | STM_3660 | STM_3646 | STM_3645 | STM_3644 | PPR_5169 | PPR_5164 | PPR_5163 | PPR_5162 | PPR_5161 | PPR_5160 | PPR_5159 | PPR_5158 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PPR_5157 | 0.004 | 0.006 | 0.006 | 0.002 | 0.006 | 0 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0.005 | 0.002 | 0.002 | 0.002 | 0.005 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5156 | 0.002 | 0.004 | 0.004 | 0 | 0.004 | 0.002 | 0.003 | 0 | 0 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0 | 0.002 | 0 | 0 | 0 | 0.003 | 0.003 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PPR_5154 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0 | 0.002 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 |
| PPR_5153 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0 | 0.003 | 0.003 | 0.003 | 0.007 | 0 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| PPR_5148 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5147 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5146 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5145 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5142 | 0.003 | 0.003 | 0.003 | 0.002 | 0.003 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5140 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| PPR_5137 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| MEX_007 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.007 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| MEX_006 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| MEX_005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| MEX_003 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| MEX_002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.002 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.007 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| MEX_001 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5128 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.005 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5127 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.005 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5125 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.005 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5124 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.005 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5123 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5122 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5116 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5113 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5111 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5108 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5107 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5106 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| JRA_5105 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| AMP_022 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| AMP_013 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| AMP_012 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| AMP_005 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| AMP_004 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| AMP_001 | 0.002 | 0.004 | 0.004 | 0.002 | 0.004 | 0 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |

**TABLE S3** | (Continued)

| | PPR_5157 | PPR_5156 | PPR_5154 | PPR_5153 | PPR_5148 | PPR_5147 | PPR_5146 | PPR_5145 | PPR_5142 | PPR_5140 | PPR_5137 | MEX_007 | MEX_006 | MEX_005 | MEX_003 | MEX_002 | MEX_001 | JRA_5128 | JRA_5127 | JRA_5125 | JRA_5124 | JRA_5123 | JRA_5122 | JRA_5116 | JRA_5113 | JRA_5111 | JRA_5108 | JRA_5107 | JRA_5106 | JRA_5105 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PPR_5157** | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5156** | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5154** | 0.003 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5153** | 0.005 | 0.003 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5148** | 0.002 | 0 | 0.002 | 0.003 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5147** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5146** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5145** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5142** | 0 | 0 | 0.002 | 0.002 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | |
| **PPR_5140** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | | |
| **PPR_5137** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | | | | | | | | | | | | | | | | | | | |
| **MEX_007** | 0.005 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 | 0.002 | 0.003 | 0 | | | | | | | | | | | | | | | | | | |
| **MEX_006** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | | | | | | | | | | | | | | | | | | |
| **MEX_005** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | | | | | | | | | | | | | | | | | |
| **MEX_003** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | | | | | | | | | | | | | | | | |
| **MEX_002** | 0.005 | 0.003 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 | 0.002 | 0.003 | 0 | 0.003 | 0.003 | 0.003 | 0 | | | | | | | | | | | | | | |
| **MEX_001** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | 0 | 0.003 | | | | | | | | | | | | | | |
| **JRA_5128** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | 0 | 0.003 | 0 | | | | | | | | | | | | | |
| **JRA_5127** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | | | | | | | | | | | | |
| **JRA_5125** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | | | | |
| **JRA_5124** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | | | | | | | | | | |
| **JRA_5123** | 0.002 | 0 | 0 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0.002 | 0.002 | 0 | | | | | | | | | |
| **JRA_5122** | 0.002 | 0 | 0 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | | | | | | | | |
| **JRA_5116** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | | | | | | | |
| **JRA_5113** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | | | | | | |
| **JRA_5111** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | | | | |
| **JRA_5108** | 0.002 | 0 | 0.002 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0 | 0.003 | 0 | 0 | 0 | 0.003 | 0 | 0 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | | | |
| **JRA_5107** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0.002 | 0 | 0.002 | 0 | | |
| **JRA_5106** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0 | |
| **JRA_5105** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0 | 0 |

**TABLE S3** | (Continued)

| | PPR_5157 | PPR_5156 | PPR_5154 | PPR_5153 | PPR_5148 | PPR_5147 | PPR_5146 | PPR_5145 | PPR_5142 | PPR_5140 | PPR_5137 | MEX_007 | MEX_006 | MEX_005 | MEX_003 | MEX_002 | MEX_001 | JRA_5128 | JRA_5127 | JRA_5125 | JRA_5124 | JRA_5123 | JRA_5122 | JRA_5116 | JRA_5113 | JRA_5111 | JRA_5108 | JRA_5107 | JRA_5106 | JRA_5105 | AMP_022 | AMP_013 | AMP_012 | AMP_005 | AMP_004 | AMP_001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AMP_022** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | | | | | | |
| **AMP_013** | 0.002 | 0.002 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | | | | | |
| **AMP_012** | 0.003 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0 | | | | |
| **AMP_005** | 0.003 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| **AMP_004** | 0.003 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| **AMP_001** | 0.003 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0 | 0.002 | 0.002 | 0.002 | 0 | 0 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

**TABLE S4** | Standard length and proportions of standard length for all specimens used in morphometric analyses. TNT = Alto Solimões; STM = Santarém. PA; PPR = RDS Piagaçu-Purus; JRA = Carauari; M = Males. F = Females. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| SAMPLE NUMBER | SEX | LOCATION | SL (cm) | PDL | DBL | ABL | PAL | PPL | PPD | PPeL | BDPe | PDd | LRD | LAR | CPD | CPL | CFD | HL | HDOc | HDOr | OD | POL | IO4L | pOL | UML | HWop | IOD | IND | SKL | SnL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A5144 | M | STM | 115.97 | 66.20 | 29.02 | 25.69 | 68.19 | 23.01 | 37.26 | 58.66 | 18.95 | 20.55 | 10.44 | 6.18 | 6.88 | 5.20 | 10.47 | 28.65 | 12.74 | 8.28 | 2.03 | 1.86 | 11.01 | 23.04 | 6.68 | 13.52 | 6.97 | 4.15 | 17.96 | 6.07 |
| A5145 | F | STM | 113.38 | 74.94 | 32.81 | 28.38 | 76.86 | 25.28 | 41.97 | 66.32 | 21.19 | 22.88 | 7.64 | 7.70 | 6.73 | 4.60 | 10.62 | 24.79 | 10.66 | 7.07 | 1.70 | 1.88 | 9.52 | 20.08 | 5.83 | 13.91 | 6.71 | 4.33 | 17.76 | 5.88 |
| A5146 | M | STM | 107.15 | 68.78 | 28.80 | 25.50 | 74.25 | 22.84 | 42.14 | 64.04 | 19.19 | 20.28 | 8.12 | 7.69 | 6.82 | 5.25 | 10.65 | 22.83 | 9.68 | 5.15 | 1.32 | 1.44 | 8.84 | 19.13 | 5.22 | 14.66 | 6.74 | 4.28 | 19.05 | 6.13 |
| A5147 | M | STM | 124.22 | 73.43 | 30.96 | 27.13 | 79.27 | 25.45 | 42.41 | 67.15 | 21.30 | 23.52 | 7.07 | 7.33 | 6.64 | 4.79 | 11.13 | 26.18 | 11.54 | 7.86 | 2.02 | 1.87 | 10.66 | 20.40 | 6.58 | 12.52 | 6.25 | 3.95 | 16.74 | 5.32 |
| A5170 | F | TNT | 125.17 | 67.55 | 26.09 | 25.88 | 72.19 | 21.66 | 40.18 | 61.13 | 17.85 | 19.71 | 11.57 | 9.29 | 7.68 | 6.72 | 12.24 | 25.92 | 11.41 | 4.90 | 1.47 | 2.51 | 10.17 | 21.26 | 4.83 | 15.23 | 8.00 | 5.24 | 20.95 | 7.98 |
| A5171 | M | TNT | 129.13 | 67.35 | 26.94 | 24.38 | 70.85 | 23.50 | 38.57 | 60.21 | 18.47 | 20.36 | 8.60 | 8.60 | 6.52 | 6.42 | 12.59 | 25.90 | 10.85 | 5.49 | 1.59 | 2.45 | 10.04 | 21.24 | 4.70 | 14.89 | 7.53 | 4.56 | 18.84 | 6.40 |
| A5172 | M | TNT | 134.06 | 67.76 | 26.25 | 26.77 | 70.78 | 22.34 | 38.73 | 60.30 | 16.97 | 19.08 | 8.85 | 6.97 | 6.60 | 6.18 | 13.25 | 26.74 | 11.26 | 5.34 | 1.42 | 2.44 | 10.14 | 22.36 | 4.68 | 13.34 | 7.20 | 4.66 | 18.36 | 6.23 |
| A5173 | M | TNT | 130.36 | 68.98 | 26.91 | 25.34 | 74.17 | 21.63 | 41.55 | 62.41 | 19.10 | 21.18 | 7.31 | 6.58 | 6.70 | 5.46 | 11.86 | 25.23 | 10.84 | 5.28 | 1.42 | 2.20 | 9.98 | 21.00 | 5.37 | 13.47 | 7.00 | 4.45 | 17.80 | 5.91 |
| A5174 | F | TNT | 137.20 | 69.38 | 26.40 | 27.52 | 72.28 | 22.26 | 41.30 | 63.16 | 19.54 | 20.70 | 9.71 | 9.83 | 6.79 | 5.66 | 11.23 | 27.70 | 11.84 | 5.18 | 1.43 | 2.20 | 10.97 | 22.93 | 5.38 | 15.84 | 8.17 | 5.04 | 19.80 | 6.68 |
| A5175 | F | TNT | 142.81 | 70.51 | 28.58 | 28.46 | 75.34 | 21.91 | 42.57 | 63.84 | 19.17 | 20.87 | 9.51 | 8.66 | 7.22 | 6.15 | 13.62 | 24.49 | 10.35 | 4.53 | 1.33 | 1.82 | 9.44 | 20.24 | 4.98 | 14.67 | 6.44 | 3.97 | 15.99 | 4.85 |
| A5176 | M | TNT | 131.39 | 76.58 | 28.45 | 28.02 | 80.96 | 24.46 | 45.73 | 69.71 | 19.64 | 21.20 | 9.26 | 9.79 | 7.31 | 6.03 | 13.81 | 26.17 | 10.97 | 4.82 | 1.43 | 2.01 | 10.36 | 22.22 | 4.63 | 13.60 | 7.26 | 4.40 | 18.09 | 6.03 |
| A5177 | M | TNT | 140.57 | 68.84 | 28.13 | 24.99 | 73.92 | 23.44 | 41.30 | 62.93 | 18.33 | 20.17 | 8.43 | 8.27 | 6.53 | 5.27 | 10.93 | 25.24 | 10.47 | 4.87 | 1.45 | 2.13 | 9.50 | 20.98 | 4.81 | 12.67 | 6.63 | 4.49 | 17.67 | 5.82 |

**TABLE S4** | (Continued)

| SAMPLE NUMBER | SEX | LOCATION | SL (cm) | PDL | DBL | ABL | PAL | PPL | PPD | PPeL | BDPe | PDd | LRD | LAR | CPD | CPL | CFD | HL | HDOc | HDOr | OD | POL | I04L | pOL | UML | HWop | IOD | IND | SKL | SnL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A5178 | M | TNT | 142.67 | 66.84 | 28.62 | 26.49 | 72.95 | 20.61 | 40.90 | 60.80 | 18.24 | 19.63 | 9.51 | 7.72 | 6.65 | 6.23 | 11.46 | 22.71 | 9.53 | 4.56 | 1.12 | 1.77 | 8.82 | 18.84 | 3.99 | 14.97 | 7.08 | 4.60 | 18.74 | 6.51 |
| A5179 | M | TNT | 134.21 | 69.08 | 27.32 | 25.92 | 73.77 | 23.25 | 41.07 | 62.89 | 18.15 | 19.62 | 9.09 | 6.86 | 7.09 | 4.78 | 12.98 | 23.63 | 9.75 | 4.56 | 1.35 | 1.89 | 9.15 | 19.55 | 4.70 | 13.28 | 6.95 | 4.45 | 18.92 | 6.13 |
| A5180 | F | TNT | 157.70 | 68.22 | 25.83 | 25.42 | 72.16 | 20.61 | 40.93 | 60.86 | 17.67 | 18.93 | 8.79 | 6.84 | 6.74 | 5.23 | 13.69 | 24.71 | 10.30 | 4.77 | 1.28 | 2.03 | 9.67 | 20.66 | 4.48 | 13.82 | 6.96 | 4.44 | 19.15 | 6.01 |
| A5181 | F | TNT | 130.25 | 73.20 | 25.92 | 22.79 | 76.20 | 24.60 | 42.67 | 65.42 | 18.16 | 20.24 | 8.93 | 6.93 | 7.07 | 6.02 | 12.70 | 24.09 | 10.60 | 4.85 | 1.21 | 1.77 | 9.08 | 20.33 | 4.03 | 12.29 | 7.38 | 5.04 | 20.20 | 7.20 |
| A5182 | M | TNT | 124.38 | 71.76 | 29.56 | 26.16 | 78.21 | 22.90 | 44.55 | 66.09 | 19.82 | 21.48 | 9.16 | 8.50 | 6.79 | 5.94 | 12.65 | 27.13 | 11.21 | 4.87 | 1.48 | 2.17 | 10.22 | 22.72 | 4.80 | 14.34 | 6.84 | 4.26 | 18.26 | 5.72 |
| A5183 | M | TNT | 125.92 | 70.78 | 29.98 | 25.73 | 78.60 | 23.94 | 42.70 | 65.64 | 18.46 | 20.24 | 9.72 | 7.02 | 6.89 | 6.29 | 12.84 | 25.15 | 10.65 | 5.10 | 1.47 | 1.99 | 9.77 | 20.98 | 4.74 | 14.57 | 6.64 | 4.26 | 17.44 | 5.25 |
| A5184 | F | TNT | 122.94 | 69.69 | 27.28 | 25.28 | 76.26 | 22.17 | 43.84 | 64.63 | 18.12 | 19.59 | 9.45 | 8.46 | 6.53 | 5.62 | 12.41 | 24.99 | 10.17 | 4.70 | 1.12 | 1.97 | 9.08 | 20.89 | 4.17 | 15.68 | 6.61 | 4.26 | 18.11 | 5.06 |
| A5185 | F | TNT | 119.51 | 71.29 | 27.23 | 26.73 | 78.46 | 26.61 | 42.84 | 67.69 | 18.83 | 20.54 | 9.25 | 8.36 | 7.17 | 6.13 | 13.26 | 29.25 | 12.57 | 5.78 | 1.74 | 2.18 | 11.22 | 23.89 | 5.13 | 15.02 | 7.50 | 4.86 | 20.27 | 6.32 |
| A5186 | F | TNT | 123.92 | 71.82 | 28.08 | 27.06 | 78.88 | 24.88 | 44.90 | 67.56 | 19.39 | 21.32 | 8.44 | 6.71 | 7.47 | 5.61 | 12.11 | 27.88 | 11.98 | 5.85 | 1.76 | 2.24 | 10.81 | 22.89 | 5.60 | 13.69 | 6.90 | 4.55 | 18.97 | 6.11 |
| A5187 | M | TNT | 128.51 | 68.90 | 27.91 | 25.87 | 75.18 | 21.02 | 43.14 | 63.18 | 18.37 | 20.03 | 8.98 | 7.53 | 6.59 | 6.82 | 12.40 | 25.41 | 10.94 | 4.93 | 1.37 | 1.98 | 10.08 | 21.31 | 4.66 | 15.32 | 6.92 | 4.44 | 17.16 | 5.51 |
| A5188 | M | TNT | 154.72 | 72.94 | 28.03 | 27.23 | 78.78 | 22.86 | 43.87 | 65.38 | 18.32 | 20.80 | 9.60 | 7.97 | 6.86 | 6.12 | 12.41 | 25.39 | 10.79 | 5.44 | 1.38 | 1.98 | 10.32 | 21.23 | 5.21 | 13.45 | 6.38 | 3.92 | 15.88 | 5.39 |
| A5189 | F | TNT | 118.63 | 70.74 | 27.69 | 22.81 | 75.53 | 22.89 | 43.40 | 65.15 | 20.47 | 21.66 | 9.59 | 6.68 | 6.82 | 6.25 | 11.50 | 22.64 | 9.73 | 4.03 | 1.21 | 1.67 | 8.39 | 19.18 | 4.25 | 14.21 | 6.14 | 3.80 | 15.36 | 5.26 |
| A5190 | M | TNT | 113.17 | 69.42 | 28.54 | 25.09 | 75.33 | 21.55 | 43.39 | 64.40 | 20.76 | 22.41 | 7.39 | 6.63 | 7.02 | 5.49 | 11.66 | 26.85 | 11.42 | 4.82 | 1.52 | 2.00 | 10.59 | 22.28 | 5.01 | 16.46 | 7.55 | 4.79 | 20.83 | 6.46 |
| A5191 | F | TNT | 114.04 | 71.71 | 26.64 | 27.41 | 75.59 | 22.84 | 41.96 | 64.09 | 19.80 | 21.91 | 9.00 | 7.98 | 6.70 | 5.98 | 12.48 | 27.25 | 11.44 | 5.58 | 1.84 | 2.14 | 10.61 | 22.02 | 5.77 | 14.87 | 6.82 | 4.15 | 16.87 | 5.23 |
| A5137 | M | PPR | 129.74 | 70.66 | 25.55 | 24.11 | 73.68 | 23.64 | 41.27 | 64.34 | 18.61 | 19.59 | 7.91 | 7.57 | 5.49 | 4.98 | 12.94 | 30.08 | 13.52 | 6.92 | 1.90 | 2.57 | 11.17 | 23.84 | 6.71 | 16.01 | 7.22 | 4.46 | 18.37 | 6.47 |
| A5138 | F | PPR | 140.13 | 68.92 | 28.13 | 28.27 | 72.71 | 21.37 | 41.76 | 62.41 | 18.70 | 19.93 | 7.16 | 7.20 | 5.83 | 4.59 | 10.43 | 29.24 | 13.28 | 6.27 | 1.79 | 2.41 | 9.46 | 23.01 | 6.75 | 14.38 | 6.79 | 4.20 | 18.27 | 6.18 |
| A5139 | M | PPR | 145.10 | 70.17 | 28.47 | 25.41 | 72.66 | 22.01 | 41.68 | 63.04 | 17.98 | 19.66 | 7.07 | 5.09 | 5.44 | 4.93 | 11.76 | 29.20 | 12.95 | 6.71 | 1.85 | 2.28 | 11.05 | 22.90 | 6.58 | 15.36 | 7.12 | 4.33 | 17.66 | 6.19 |
| A5141 | F | PPR | 153.04 | 69.22 | 27.94 | 27.45 | 72.83 | 21.90 | 41.44 | 63.18 | 19.79 | 21.16 | 8.65 | 6.94 | 5.87 | 5.11 | 11.14 | 28.66 | 12.93 | 6.42 | 1.59 | 2.39 | 11.41 | 22.57 | 6.80 | 16.47 | 7.25 | 4.70 | 20.17 | 6.80 |
| A5142 | F | PPR | 152.12 | 73.85 | 29.25 | 29.09 | 77.84 | 21.49 | 44.82 | 66.14 | 19.53 | 21.02 | 7.77 | 6.81 | 6.22 | 4.57 | 10.90 | 26.82 | 12.78 | 6.11 | 1.62 | 2.26 | 10.38 | 20.96 | 6.19 | 14.39 | 6.72 | 4.46 | 18.02 | 6.36 |
| A5148 | M | PPR | 163.97 | 70.24 | 26.83 | 24.29 | 73.23 | 20.92 | 42.56 | 63.20 | 18.48 | 20.40 | 8.13 | 7.16 | 7.13 | 4.72 | 14.16 | 22.90 | 10.97 | 4.76 | 1.26 | 2.20 | 9.28 | 18.41 | 5.27 | 13.51 | 6.75 | 4.49 | 18.80 | 6.18 |
| A5149 | M | PPR | 153.76 | 67.14 | 27.06 | 25.29 | 70.65 | 22.73 | 39.39 | 61.39 | 16.54 | 18.43 | 10.46 | 6.25 | 6.62 | 5.38 | 12.91 | 27.47 | 11.14 | 5.23 | 1.51 | 2.23 | 10.97 | 22.40 | 6.02 | 12.84 | 6.83 | 4.27 | 18.48 | 6.12 |
| A5150 | M | PPR | 142.04 | 69.17 | 28.80 | 26.32 | 73.63 | 22.32 | 40.08 | 62.41 | 19.46 | 21.65 | 9.82 | 6.38 | 6.62 | 5.82 | 9.57 | 27.38 | 11.44 | 5.70 | 1.40 | 2.38 | 10.72 | 22.39 | 5.61 | 13.08 | 6.79 | 4.26 | 17.37 | 6.28 |
| A5151 | M | PPR | 151.92 | 68.98 | 29.23 | 25.81 | 73.54 | 23.18 | 41.56 | 63.59 | 19.06 | 20.85 | 9.12 | 6.92 | 6.53 | 5.48 | 13.19 | 27.74 | 12.42 | 5.79 | 1.55 | 2.27 | 10.91 | 23.07 | 5.83 | 14.25 | 7.16 | 4.52 | 19.07 | 6.16 |
| A5152 | F | PPR | 152.78 | 68.56 | 27.48 | 27.24 | 73.48 | 21.17 | 42.98 | 63.93 | 19.45 | 20.53 | 8.94 | 8.21 | 5.50 | 4.75 | 8.46 | 22.28 | 10.54 | 5.40 | 1.18 | 2.35 | 9.26 | 18.10 | 4.37 | 13.06 | 6.67 | 4.29 | 18.30 | 6.20 |
| A5153 | M | PPR | 148.45 | 71.16 | 28.57 | 26.95 | 77.51 | 22.96 | 43.12 | 65.60 | 18.25 | 19.99 | 10.14 | 7.07 | 7.09 | 5.65 | 13.88 | 26.65 | 11.36 | 5.14 | 1.25 | 2.11 | 10.17 | 22.37 | 5.10 | 12.67 | 6.74 | 4.37 | 17.94 | 6.09 |

**TABLE S4** | (Continued)

| SAMPLE NUMBER | SEX | LOCATION | SL (cm) | PDL | DBL | ABL | PAL | PPL | PPD | PPeL | BDPe | PDd | LRD | LAR | CPD | CPL | CFD | HL | HDOc | HDOr | OD | POL | I04L | pOL | UML | HWop | IOD | IND | SKL | SnL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A5154 | M | PPR | 156.06 | 69.78 | 27.74 | 25.73 | 75.03 | 22.83 | 41.40 | 62.88 | 19.52 | 21.36 | 7.78 | 7.10 | 6.17 | 4.60 | 10.95 | 26.34 | 11.24 | 5.13 | 1.40 | 2.30 | 10.79 | 21.44 | 5.81 | 12.81 | 6.64 | 4.49 | 18.43 | 6.28 |
| A5155 | F | PPR | 143.33 | 71.20 | 29.53 | 28.68 | 76.92 | 23.67 | 43.73 | 66.16 | 19.40 | 21.09 | 7.60 | 3.97 | 5.63 | 4.42 | 10.29 | 26.61 | 11.12 | 5.58 | 1.72 | 2.25 | 9.96 | 21.56 | 5.74 | 13.59 | 7.18 | 4.39 | 18.02 | 6.18 |
| A5156 | F | PPR | 155.33 | 69.81 | 28.24 | 27.14 | 73.95 | 23.03 | 41.57 | 63.47 | 19.91 | 21.20 | 8.44 | 5.94 | 6.17 | 5.22 | 11.16 | 28.57 | 12.79 | 5.73 | 1.51 | 2.37 | 11.21 | 23.61 | 6.05 | 12.46 | 6.75 | 4.26 | 18.16 | 5.89 |
| A5157 | M | PPR | 136.68 | 71.68 | 27.25 | 25.35 | 76.21 | 25.85 | 40.73 | 65.69 | 19.54 | 21.04 | 10.14 | 10.26 | 6.78 | 5.99 | 11.57 | 29.14 | 12.87 | 5.95 | 1.75 | 2.67 | 11.43 | 24.03 | 6.21 | 13.55 | 7.28 | 4.80 | 18.42 | 6.61 |
| A5159 | M | PPR | 143.47 | 71.25 | 28.31 | 27.18 | 76.71 | 25.13 | 43.91 | 67.03 | 18.56 | 20.43 | 7.92 | 5.49 | 5.93 | 4.53 | 10.10 | 25.64 | 10.79 | 5.53 | 1.55 | 2.19 | 10.00 | 20.99 | 4.94 | 11.51 | 6.33 | 4.01 | 17.17 | 5.83 |
| A5160 | M | PPR | 134.20 | 69.98 | 27.77 | 24.02 | 76.04 | 23.53 | 42.70 | 64.63 | 20.12 | 21.54 | 11.53 | 7.89 | 7.77 | 5.97 | 12.77 | 28.04 | 12.40 | 6.26 | 1.72 | 2.39 | 11.27 | 22.98 | 5.86 | 13.25 | 6.92 | 4.22 | 18.39 | 6.06 |
| A5161 | F | PPR | 152.67 | 71.39 | 28.55 | 27.84 | 76.53 | 23.88 | 42.09 | 62.67 | 23.29 | 22.77 | 12.01 | 6.84 | 6.96 | 6.10 | 11.77 | 28.74 | 12.57 | 5.83 | 1.65 | 2.51 | 10.85 | 23.49 | 5.95 | 13.05 | 6.91 | 4.57 | 18.71 | 6.14 |
| A5162 | M | PPR | 162.39 | 71.92 | 28.57 | 23.83 | 76.59 | 23.03 | 42.31 | 64.79 | 16.98 | 19.16 | 9.93 | 7.39 | 6.52 | 6.39 | 12.74 | 25.80 | 10.65 | 5.41 | 1.41 | 2.38 | 10.43 | 21.01 | 5.30 | 13.00 | 6.62 | 4.30 | 17.76 | 5.96 |
| A5163 | M | PPR | 149.27 | 71.70 | 25.91 | 23.84 | 74.74 | 23.83 | 41.88 | 64.84 | 19.21 | 20.92 | 10.06 | 8.39 | 6.33 | 4.81 | 10.08 | 26.62 | 10.82 | 5.50 | 1.60 | 2.19 | 10.61 | 21.47 | 6.32 | 13.01 | 6.45 | 4.30 | 17.85 | 6.04 |
| A5164 | F | PPR | 161.80 | 69.90 | 27.73 | 26.36 | 74.41 | 21.95 | 42.07 | 63.11 | 18.78 | 20.78 | 9.24 | 6.04 | 7.06 | 5.62 | 11.55 | 26.94 | 11.61 | 5.47 | 1.44 | 2.58 | 10.88 | 21.97 | 5.82 | 13.01 | 6.65 | 4.25 | 17.88 | 5.91 |
| A5165 | F | PPR | 134.78 | 69.76 | 28.78 | 26.76 | 75.11 | 23.26 | 41.70 | 63.64 | 19.71 | 21.96 | 10.97 | 7.22 | 6.97 | 5.95 | 12.46 | 30.11 | 13.13 | 6.38 | 1.79 | 2.44 | 11.67 | 24.36 | 6.83 | 12.00 | 7.17 | 4.80 | 19.29 | 6.63 |
| A5166 | F | PPR | 138.57 | 71.53 | 27.62 | 25.75 | 74.69 | 23.58 | 40.68 | 63.87 | 18.94 | 21.09 | 8.13 | 6.36 | 7.02 | 6.12 | 12.02 | 27.90 | 11.72 | 6.37 | 1.67 | 2.52 | 11.37 | 22.02 | 6.74 | 13.63 | 7.06 | 4.58 | 19.01 | 6.41 |
| A5167 | F | PPR | 137.86 | 72.71 | 26.43 | 24.56 | 74.10 | 23.81 | 40.74 | 63.78 | 18.85 | 21.22 | 9.58 | 6.49 | 7.01 | 5.47 | 11.93 | 26.45 | 11.23 | 5.44 | 1.69 | 2.29 | 10.37 | 21.42 | 5.88 | 12.43 | 6.34 | 4.03 | 17.31 | 5.59 |
| A5168 | F | PPR | 134.79 | 70.56 | 25.81 | 26.01 | 74.16 | 22.14 | 42.41 | 63.96 | 20.40 | 22.11 | 9.35 | 7.10 | 7.28 | 5.28 | 11.43 | 28.46 | 12.14 | 5.90 | 1.79 | 2.34 | 10.96 | 23.00 | 6.19 | 13.24 | 6.59 | 4.10 | 17.52 | 5.81 |
| A5169 | M | PPR | 157.86 | 74.20 | 26.79 | 26.19 | 76.16 | 23.86 | 42.92 | 65.68 | 19.17 | 21.95 | 9.76 | 7.34 | 6.81 | 5.87 | 12.11 | 25.34 | 10.87 | 5.36 | 1.41 | 2.26 | 10.29 | 20.73 | 5.48 | 12.25 | 6.50 | 4.03 | 17.54 | 5.93 |
| A5106 | M | JRA | 139.01 | 68.59 | 27.65 | 25.19 | 75.03 | 23.55 | 42.72 | 64.60 | 17.98 | 19.79 | 5.14 | 6.10 | 5.44 | 4.35 | 9.89 | 25.34 | 11.65 | 6.02 | 1.56 | 2.04 | 10.07 | 20.09 | 5.30 | 13.08 | 6.29 | 4.02 | 16.74 | 5.48 |
| A5107 | M | JRA | 141.08 | 71.30 | 25.37 | 26.71 | 75.64 | 24.03 | 43.39 | 66.03 | 18.69 | 21.28 | 6.72 | 6.38 | 5.87 | 5.21 | 11.51 | 26.53 | 12.00 | 5.81 | 1.98 | 2.09 | 10.61 | 20.84 | 5.40 | 13.66 | 6.70 | 4.23 | 17.93 | 5.90 |
| A5108 | F | JRA | 130.99 | 68.93 | 29.11 | 25.86 | 75.24 | 23.83 | 41.04 | 63.40 | 17.43 | 20.15 | 6.83 | 7.06 | 6.10 | 4.16 | 8.62 | 26.83 | 11.76 | 5.80 | 1.94 | 2.10 | 10.75 | 21.18 | 5.88 | 13.86 | 7.00 | 4.62 | 19.09 | 5.89 |
| A5109 | M | JRA | 141.90 | 68.51 | 28.23 | 24.54 | 72.92 | 21.17 | 41.92 | 61.89 | 17.99 | 19.63 | 9.27 | 7.09 | 6.56 | 5.00 | 13.29 | 28.83 | 13.43 | 6.66 | 2.03 | 2.24 | 11.24 | 22.42 | 6.81 | 13.64 | 7.00 | 4.53 | 18.87 | 6.06 |
| A5110 | M | JRA | 135.22 | 68.51 | 28.30 | 25.20 | 72.19 | 21.68 | 41.79 | 62.74 | 17.74 | 19.30 | 7.88 | 6.61 | 6.52 | 5.54 | 12.92 | 25.39 | 11.14 | 5.45 | 1.90 | 1.97 | 10.03 | 19.34 | 6.26 | 13.31 | 6.60 | 4.37 | 17.53 | 6.06 |
| A5111 | M | JRA | 130.54 | 69.94 | 26.90 | 23.05 | 74.11 | 21.06 | 41.49 | 61.70 | 18.03 | 20.66 | 10.09 | 6.43 | 6.50 | 5.42 | 12.05 | 27.84 | 12.66 | 6.20 | 2.03 | 2.27 | 10.68 | 21.71 | 6.09 | 14.11 | 6.69 | 4.28 | 18.26 | 6.11 |
| A5112 | F | JRA | 127.45 | 69.17 | 27.56 | 25.42 | 74.21 | 22.28 | 42.24 | 63.83 | 17.87 | 19.66 | 8.65 | 7.10 | 6.49 | 5.36 | 13.89 | 28.81 | 13.28 | 6.14 | 2.00 | 2.32 | 11.35 | 22.70 | 6.34 | 14.17 | 6.75 | 4.31 | 19.23 | 6.10 |
| A5113 | M | JRA | 121.80 | 73.75 | 23.35 | 22.47 | 75.63 | 24.76 | 42.31 | 65.36 | 18.83 | 22.32 | 9.82 | 8.59 | 7.08 | 6.64 | 13.80 | 29.68 | 13.28 | 6.63 | 1.95 | 2.44 | 11.60 | 23.09 | 6.61 | 16.14 | 7.76 | 4.79 | 21.60 | 6.86 |
| A5114 | M | JRA | 140.24 | 71.62 | 25.74 | 20.88 | 77.69 | 26.22 | 42.59 | 67.96 | 17.61 | 19.06 | 8.79 | 8.49 | 6.89 | 5.15 | 13.54 | 29.29 | 13.23 | 6.39 | 1.94 | 2.47 | 11.63 | 23.09 | 6.36 | 15.81 | 7.62 | 4.98 | 20.20 | 6.76 |
| A5115 | M | JRA | 147.10 | 71.44 | 26.75 | 23.93 | 73.53 | 22.80 | 41.06 | 63.25 | 17.34 | 19.50 | 8.78 | 9.16 | 6.55 | 5.26 | 11.83 | 27.10 | 12.11 | 6.19 | 1.71 | 2.18 | 11.17 | 21.75 | 5.64 | 13.69 | 6.57 | 4.46 | 18.57 | 5.82 |

**TABLE S4** | (Continued)

| SAMPLE NUMBER | SEX | LOCATION | SL (cm) | PDL | DBL | ABL | PAL | PPL | PPD | PPeL | BDPe | PDd | LRD | LAR | CPD | CPL | CFD | HL | HDOc | HDOr | OD | POL | l04L | pOL | UML | HWop | IOD | IND | SKL | SnL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A5116 | M | JRA | 139.72 | 68.67 | 29.68 | 24.36 | 71.76 | 20.98 | 41.14 | 61.64 | 19.07 | 20.71 | 8.40 | 9.00 | 6.90 | 5.42 | 12.41 | 28.61 | 13.15 | 5.65 | 1.67 | 2.21 | 11.74 | 22.63 | 6.67 | 14.14 | 6.87 | 4.46 | 19.18 | 6.08 |
| A5117 | M | JRA | 143.35 | 68.99 | 26.58 | 24.39 | 73.95 | 22.29 | 42.31 | 63.64 | 17.02 | 19.55 | 8.28 | 7.81 | 6.23 | 5.81 | 11.46 | 27.11 | 12.63 | 6.34 | 1.62 | 2.25 | 10.96 | 21.70 | 5.98 | 14.24 | 7.16 | 4.48 | 18.31 | 6.34 |
| A5118 | M | JRA | 130.97 | 71.63 | 25.54 | 26.18 | 73.25 | 22.93 | 38.58 | 61.17 | 19.05 | 21.57 | 11.00 | 7.71 | 6.77 | 6.15 | 13.49 | 29.75 | 13.87 | 6.24 | 2.24 | 2.34 | 11.41 | 22.16 | 7.74 | 15.12 | 7.46 | 4.54 | 19.91 | 6.57 |
| A5119 | M | JRA | 128.31 | 72.15 | 24.24 | 24.94 | 73.31 | 22.24 | 42.17 | 64.04 | 16.86 | 18.74 | 7.96 | 8.28 | 6.32 | 5.81 | 13.16 | 26.68 | 12.61 | 5.79 | 1.84 | 2.08 | 10.95 | 21.40 | 5.68 | 14.97 | 6.64 | 4.14 | 19.06 | 6.46 |
| A5120 | F | JRA | 128.58 | 72.26 | 25.31 | 23.98 | 75.63 | 24.18 | 43.47 | 67.06 | 19.52 | 20.67 | 8.66 | 9.28 | 6.43 | 5.43 | 13.84 | 28.83 | 13.19 | 6.44 | 2.03 | 2.41 | 11.00 | 22.01 | 7.13 | 15.23 | 7.35 | 4.40 | 18.31 | 6.62 |
| A5121 | F | JRA | 131.15 | 71.13 | 26.42 | 24.64 | 73.61 | 23.94 | 41.18 | 64.50 | 18.11 | 19.28 | 8.49 | 7.69 | 6.19 | 5.87 | 13.37 | 26.80 | 11.34 | 6.00 | 1.78 | 1.90 | 10.33 | 20.82 | 6.40 | 13.84 | 6.53 | 4.20 | 17.52 | 5.76 |
| A5122 | M | JRA | 129.14 | 70.40 | 27.93 | 21.79 | 75.26 | 23.92 | 41.59 | 64.79 | 17.39 | 18.65 | 9.94 | 7.36 | 6.23 | 5.70 | 13.36 | 28.99 | 12.80 | 6.22 | 1.84 | 2.30 | 11.50 | 22.51 | 7.42 | 14.27 | 7.19 | 4.60 | 18.98 | 6.42 |
| A5123 | M | JRA | 125.44 | 71.27 | 25.96 | 23.26 | 78.59 | 23.49 | 41.59 | 64.39 | 17.76 | 20.59 | 9.05 | 6.65 | 6.84 | 5.47 | 14.54 | 28.15 | 12.78 | 6.20 | 1.99 | 2.09 | 10.38 | 22.09 | 6.75 | 14.99 | 7.45 | 4.84 | 18.87 | 7.06 |
| A5125 | F | JRA | 133.69 | 70.48 | 26.50 | 25.15 | 73.83 | 21.69 | 40.62 | 61.80 | 17.64 | 20.30 | 8.27 | 7.28 | 6.68 | 4.72 | 11.73 | 28.07 | 12.42 | 6.04 | 2.00 | 2.07 | 11.19 | 21.70 | 6.97 | 15.10 | 7.05 | 4.62 | 18.24 | 6.26 |
| A5126 | M | JRA | 124.14 | 69.31 | 28.06 | 24.42 | 74.23 | 22.80 | 40.15 | 62.03 | 16.59 | 19.68 | 11.46 | 8.67 | 6.93 | 5.91 | 14.35 | 29.90 | 13.35 | 6.29 | 2.27 | 2.25 | 11.47 | 22.41 | 7.81 | 15.78 | 7.38 | 4.68 | 19.30 | 6.56 |
| A5127 | F | JRA | 125.42 | 70.96 | 26.03 | 25.06 | 74.00 | 23.69 | 43.45 | 66.57 | 18.46 | 19.74 | 7.15 | 7.08 | 6.15 | 4.90 | 10.43 | 27.84 | 12.29 | 5.87 | 2.04 | 2.02 | 10.79 | 21.13 | 7.34 | 14.07 | 6.89 | 4.20 | 18.20 | 6.15 |
| A5128 | M | JRA | 125.10 | 69.72 | 28.25 | 26.70 | 71.68 | 21.50 | 39.74 | 60.50 | 17.97 | 20.18 | 7.95 | 7.70 | 6.01 | 4.37 | 11.87 | 29.59 | 13.16 | 6.78 | 1.95 | 2.47 | 11.32 | 23.12 | 7.02 | 14.98 | 7.40 | 4.83 | 20.60 | 6.95 |
| A5129 | M | JRA | 139.72 | 70.08 | 26.66 | 25.38 | 73.77 | 21.85 | 41.42 | 63.04 | 18.19 | 19.51 | 5.94 | 8.00 | 5.67 | 4.74 | 11.16 | 26.96 | 12.10 | 6.25 | 1.71 | 2.19 | 10.15 | 21.01 | 5.93 | 14.21 | 6.99 | 4.30 | 17.45 | 6.12 |
| A5130 | F | JRA | 130.97 | 70.90 | 25.61 | 24.32 | 74.57 | 24.30 | 41.31 | 65.07 | 17.32 | 18.95 | 7.69 | 7.42 | 5.55 | 4.61 | 11.37 | 28.29 | 12.56 | 5.76 | 1.95 | 2.08 | 10.81 | 21.69 | 6.80 | 15.41 | 7.13 | 4.61 | 20.54 | 6.46 |
| A5131 | M | JRA | 134.09 | 71.78 | 24.46 | 23.78 | 74.80 | 23.61 | 41.48 | 64.60 | 18.38 | 20.08 | 7.78 | 7.27 | 5.62 | 4.82 | 11.46 | 26.75 | 12.11 | 5.65 | 1.95 | 2.01 | 10.72 | 20.87 | 6.60 | 14.11 | 6.74 | 4.42 | 17.89 | 5.84 |
| A5132 | M | JRA | 135.00 | 70.95 | 27.23 | 22.48 | 75.27 | 25.27 | 40.59 | 65.02 | 17.58 | 18.94 | 6.48 | 7.89 | 5.40 | 4.77 | 11.08 | 27.30 | 12.41 | 5.62 | 1.77 | 2.26 | 10.71 | 21.18 | 6.34 | 14.15 | 6.48 | 4.24 | 18.42 | 5.95 |
| A5133 | F | JRA | 127.24 | 70.23 | 27.60 | 25.73 | 72.05 | 23.10 | 40.33 | 62.59 | 17.62 | 19.48 | 7.82 | 5.86 | 6.02 | 4.46 | 11.31 | 27.85 | 12.53 | 5.70 | 1.98 | 2.10 | 11.17 | 21.96 | 6.24 | 14.37 | 7.15 | 4.64 | 19.45 | 6.36 |
| A5134 | F | JRA | 121.19 | 72.13 | 25.73 | 23.28 | 74.51 | 24.12 | 41.92 | 65.14 | 17.90 | 19.48 | 7.08 | 7.75 | 5.47 | 4.99 | 11.08 | 27.87 | 12.52 | 6.01 | 2.20 | 2.17 | 10.82 | 21.26 | 6.87 | 14.01 | 6.60 | 4.23 | 18.28 | 5.94 |
| A5135 | M | JRA | 131.85 | 70.21 | 26.20 | 25.72 | 73.23 | 23.00 | 41.13 | 63.52 | 18.32 | 19.78 | 7.99 | 8.00 | 6.02 | 4.81 | 12.62 | 27.82 | 12.52 | 6.04 | 1.93 | 2.17 | 10.66 | 22.21 | 6.55 | 14.75 | 6.74 | 4.34 | 18.52 | 6.22 |
| A5136 | M | JRA | 130.40 | 70.24 | 27.40 | 23.99 | 73.30 | 24.45 | 41.65 | 64.94 | 18.47 | 19.57 | 7.35 | 6.58 | 5.63 | 4.84 | 12.44 | 27.58 | 12.47 | 5.66 | 1.90 | 2.16 | 10.45 | 21.20 | 6.92 | 14.78 | 6.80 | 4.48 | 17.89 | 5.82 |

**TABLE S5** | Minimum and maximum standard length proportions (% SL) for each morphometric measurement by location. STM = Santarém. PA; TNT = Alto Solimões; PPR = rio Purus; JRA = rio Juruá. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| | STM (min) | STM (max) | TNT (min) | TNT (max) | PPR (min) | PPR (max) | JRA (min) | JRA (max) |
|---|---|---|---|---|---|---|---|---|
| CPD | 66.2 | 74.9 | 66.8 | 76.6 | 67.1 | 74.2 | 68.5 | 73.7 |
| CBND | 28.8 | 32.8 | 25.8 | 30.0 | 25.5 | 29.5 | 23.4 | 29.7 |
| CBNA | 25.5 | 28.4 | 22.8 | 28.5 | 23.8 | 29.1 | 20.9 | 26.7 |
| CPA | 68.2 | 79.3 | 70.8 | 81.0 | 70.7 | 77.8 | 71.7 | 78.6 |
| CPP | 22.8 | 25.4 | 20.6 | 26.6 | 20.9 | 25.9 | 21.0 | 26.2 |
| DNPNP | 37.3 | 42.4 | 38.6 | 45.7 | 39.4 | 44.8 | 38.6 | 43.5 |
| CPPV | 58.7 | 67.1 | 60.2 | 69.7 | 61.4 | 67.0 | 60.5 | 68.0 |
| ACONP | 19.0 | 21.3 | 17.0 | 20.8 | 16.5 | 23.3 | 16.6 | 19.5 |
| DNPND | 20.3 | 23.5 | 18.9 | 22.4 | 18.4 | 22.8 | 18.6 | 22.3 |
| RND | 7.1 | 10.4 | 7.3 | 11.6 | 7.1 | 12.0 | 5.1 | 11.5 |
| RNA | 6.2 | 7.7 | 6.6 | 9.8 | 4.0 | 10.3 | 5.9 | 9.3 |
| APC | 6.6 | 6.9 | 6.5 | 7.7 | 5.4 | 7.8 | 5.4 | 7.1 |
| CPC | 4.6 | 5.2 | 4.8 | 6.8 | 4.4 | 6.4 | 4.2 | 6.6 |
| ANC | 10.5 | 11.1 | 10.9 | 13.8 | 8.5 | 14.2 | 8.6 | 14.5 |
| CCb | 22.8 | 28.7 | 22.6 | 29.3 | 22.3 | 30.1 | 25.3 | 29.9 |
| PCbOC | 9.7 | 12.7 | 9.5 | 12.6 | 10.5 | 13.5 | 11.1 | 13.9 |
| PCbOR | 5.2 | 8.3 | 4.0 | 5.9 | 4.8 | 6.9 | 5.5 | 6.8 |
| DO | 1.3 | 2.0 | 1.1 | 1.8 | 1.2 | 1.9 | 1.6 | 2.3 |
| CPOr | 1.4 | 1.9 | 1.7 | 2.5 | 2.1 | 2.7 | 1.9 | 2.5 |
| CQINF | 8.8 | 11.0 | 8.4 | 11.2 | 9.3 | 11.7 | 10.0 | 11.7 |
| CPOR | 19.1 | 23.0 | 18.8 | 23.9 | 18.1 | 24.4 | 19.3 | 23.1 |
| CMX | 5.2 | 6.7 | 4.0 | 5.8 | 4.4 | 6.8 | 5.3 | 7.8 |
| LCb | 12.5 | 14.7 | 12.3 | 16.5 | 11.5 | 16.5 | 13.1 | 16.1 |
| DIOR | 6.2 | 7.0 | 6.1 | 8.2 | 6.3 | 7.3 | 6.3 | 7.8 |
| DNAR | 3.9 | 4.3 | 3.8 | 5.2 | 4.0 | 4.8 | 4.0 | 5.0 |
| CCRN | 16.7 | 19.0 | 15.4 | 20.9 | 17.2 | 20.2 | 16.7 | 21.6 |
| CFOC | 5.3 | 6.1 | 4.8 | 8.0 | 5.6 | 6.8 | 5.5 | 7.1 |

**TABLE S6** | Morphometric measurement loadings on the first three Principal Components for the population of Santarém, PA. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| | PC 1 | PC 2 | PC 3 |
|---|---|---|---|
| **PDL** | -0.010839 | 0.20166 | 0.15227 |
| **DBL** | 0.023303 | 0.18073 | 0.33723 |
| **ABL** | 0.02116 | 0.14986 | 0.26887 |
| **PAL** | -0.042165 | 0.22724 | -0.083898 |
| **PPL** | 0.041522 | 0.20187 | 0.09723 |
| **PPD** | -0.093068 | 0.17822 | -0.073961 |
| **PPeL** | -0.051956 | 0.20933 | -0.02526 |
| **BDPe** | 0.024468 | 0.22348 | 0.093541 |
| **PDd** | 0.061196 | 0.2576 | 0.054154 |
| **LRD** | 0.14357 | -0.57163 | 0.25131 |
| **LAR** | -0.19157 | 0.251 | 0.094868 |
| **CPD** | -0.003215 | -0.055488 | 0.03033 |
| **CPL** | -0.03294 | -0.20302 | -0.28377 |
| **CFD** | 0.0058382 | 0.075545 | -0.15807 |
| **HL** | 0.22755 | -0.088201 | -0.013349 |
| **HDOc** | 0.27992 | -0.096877 | -0.062394 |
| **HDOr** | 0.51915 | 0.096535 | 0.1641 |
| **OD** | 0.49222 | 0.11188 | -0.13477 |
| **POL** | 0.28412 | 0.16873 | 0.39787 |
| **IO4L** | 0.24402 | -0.022782 | -0.21208 |
| **pOL** | 0.16785 | -0.14562 | 0.059508 |
| **UML** | 0.28039 | 0.021866 | -0.18766 |
| **HWop** | -0.12535 | -0.11974 | 0.2524 |
| **IOD** | -0.0056094 | -0.14287 | 0.23158 |
| **IND** | -0.059673 | -0.045074 | 0.29775 |
| **SKL** | -0.09408 | -0.13001 | 0.091265 |
| **SnL** | -0.064009 | -0.19186 | 0.26909 |

**TABLE S7** | Morphometric measurements in the first three Principal Components for the rio Purus population. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| | PC 1 | PC 2 | PC 3 |
|---|---|---|---|
| **PDL** | 0.0080035 | -0.0062617 | 0.011665 |
| **DBL** | -0.045605 | 0.011937 | 0.082068 |
| **ABL** | -0.10846 | 0.035746 | 0.012092 |
| **PAL** | 0.011348 | -0.019178 | 0.025716 |
| **PPL** | 0.077763 | 0.023341 | 0.084828 |
| **PPD** | -0.045326 | -0.029421 | -0.0079931 |
| **PPeL** | -0.010246 | -0.013657 | -0.0032379 |
| **BDPe** | 0.065306 | 0.044873 | -0.021312 |
| **PDd** | 0.055017 | 0.0083056 | 0.031787 |
| **LRD** | 0.51079 | -0.20131 | 0.26174 |
| **LAR** | 0.55625 | -0.16086 | -0.74554 |
| **CPD** | 0.29892 | -0.12553 | 0.26683 |
| **CPL** | 0.39153 | -0.026879 | 0.2725 |
| **CFD** | 0.2375 | 0.04835 | 0.29285 |
| **HL** | 0.10806 | 0.28196 | 0.075055 |
| **HDOc** | 0.084417 | 0.2979 | -0.084529 |
| **HDOr** | 0.050631 | 0.35551 | -0.096162 |
| **OD** | 0.0699 | 0.49954 | 0.06892 |
| **POL** | 0.10991 | 0.11466 | -0.069857 |
| **IO4L** | 0.15005 | 0.16566 | 0.099133 |
| **pOL** | 0.1348 | 0.23568 | 0.11722 |
| **UML** | 0.10714 | 0.43021 | -0.0068896 |
| **HWop** | -0.047047 | 0.23049 | -0.22332 |
| **IOD** | 0.029899 | 0.11932 | -0.01536 |
| **IND** | 0.068177 | 0.079425 | -0.07274 |
| **SKL** | 0.043612 | 0.050786 | -0.051126 |
| **SnL** | 0.030578 | 0.087355 | -0.12145 |

**TABLE S8** | Morphometric measurement loadings on the first three Principal Components for the population of Alto rio Solimões. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| | PC 1 | PC 2 | PC 3 |
|---|---|---|---|
| **PDL** | 0.0098828 | -0.079947 | 0.045949 |
| **DBL** | -0.032819 | -0.1112 | 0.056862 |
| **ABL** | 0.10178 | -0.099274 | 0.1645 |
| **PAL** | 0.0056073 | -0.11433 | 0.04783 |
| **PPL** | 0.098086 | -0.079863 | -0.0021195 |
| **PPD** | -0.018271 | -0.11981 | 0.050897 |
| **PPeL** | 0.021247 | -0.10251 | 0.045805 |
| **BDPe** | 0.0211 | -0.12754 | 0.0090385 |
| **PDd** | 0.042 | -0.14039 | -0.010081 |
| **LRD** | -0.028152 | 0.16628 | 0.47116 |
| **LAR** | 0.18648 | 0.13353 | 0.72184 |
| **CPD** | 0.058797 | 0.034602 | 0.033839 |
| **CPL** | 0.032507 | 0.044238 | 0.30294 |
| **CFD** | 0.016017 | -0.041162 | 0.072106 |
| **HL** | 0.247 | -0.070429 | 0.017408 |
| **HDOc** | 0.26713 | -0.040988 | 0.0029295 |
| **HDOr** | 0.30387 | -0.11255 | -0.090065 |
| **OD** | 0.46373 | -0.28989 | -0.095336 |
| **POL** | 0.3644 | 0.089934 | -0.0095489 |
| **IO4L** | 0.28764 | -0.07999 | 0.017006 |
| **pOL** | 0.21685 | -0.06462 | 0.018662 |
| **UML** | 0.29735 | -0.29604 | -0.047107 |
| **HWop** | 0.067865 | 0.022668 | 0.17442 |
| **IOD** | 0.19017 | 0.27474 | -0.016307 |
| **IND** | 0.17912 | 0.35642 | -0.11205 |
| **SKL** | 0.17655 | 0.34051 | -0.16294 |
| **SnL** | 0.20184 | 0.5587 | -0.17037 |

**TABLE S9** | Morphometric measurements in the first three Principal Components for the rio Juruá population. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| | PC 1 | PC 2 | PC 3 |
|---|---|---|---|
| **PDL** | 0.021196 | -0.035203 | 0.034214 |
| **DBL** | -0.041931 | 0.11834 | -0.024897 |
| **ABL** | -0.073896 | 0.13274 | -0.074192 |
| **PAL** | 0.0071556 | -0.017956 | 0.025026 |
| **PPL** | -0.013179 | -0.040699 | 0.15605 |
| **PPD** | -0.024231 | -0.074941 | -0.018284 |
| **PPeL** | -0.015562 | -0.067933 | 0.04537 |
| **BDPe** | 0.0064449 | -0.0029942 | 0.018027 |
| **PDd** | 0.045936 | 0.035639 | -0.0057667 |
| **LRD** | 0.61645 | 0.15484 | -0.28719 |
| **LAR** | 0.22683 | -0.58917 | 0.50122 |
| **CPD** | 0.23898 | -0.059657 | -0.12501 |
| **CPL** | 0.30798 | -0.3979 | -0.37462 |
| **CFD** | 0.36468 | -0.15678 | -0.26395 |
| **HL** | 0.1335 | 0.09997 | 0.15658 |
| **HDOc** | 0.14387 | 0.072931 | 0.1606 |
| **HDOr** | 0.112 | -0.015271 | 0.14459 |
| **OD** | 0.16634 | 0.45551 | 0.001922 |
| **POL** | 0.1452 | -0.021122 | 0.30468 |
| **IO4L** | 0.11394 | 0.017814 | 0.14176 |
| **pOL** | 0.11083 | 0.03442 | 0.16082 |
| **UML** | 0.23551 | 0.35457 | 0.16228 |
| **HWop** | 0.13316 | 0.034273 | 0.19747 |
| **IOD** | 0.13762 | 0.10688 | 0.17972 |
| **IND** | 0.11078 | 0.13847 | 0.161 |
| **SKL** | 0.12993 | 0.08572 | 0.21447 |
| **SnL** | 0.1623 | 0.079208 | 0.16149 |

**TABLE S10** | Morphometric measurements in the first three Principal Components for plotting individuals from the populations of Santarém. PA. Alto rio Solimões. rio Purus and rio Juruá. Predorsal length (PDL), dorsal fin base length (DBL), longest dorsal fin ray (LDR), Preanal length (PAL), anal fin base length (ABL), anal fin longest ray (LAR), prepelvic length (PPeL), prepectoral length (PPL), distance between origin of pectoral to origin of pelvic fin (PPD), body depth at pelvic fin origin (BDPe), distance between origin of pelvic to origin of dorsal fin (PDd), depth of caudal peduncle (CPD), caudal peduncle length (CPL), depth of caudal fin (CFD), head length (HL), head depth at occipital (HDOc), head depth at orbit (HDOr), head width at opercles (HWop), interorbital distance (IOD), internares distance (IND), orbit diameter (OD), snout length (SnL), preorbital length (POL), 4th infraorbital length (IO4L), postorbital length (pOL), skull length (SKL) and upper maxilla length (UML).

| | PC 1 | PC 2 | PC 3 |
|---|---|---|---|
| PDL | 0.18604 | -0.041428 | -0.14182 |
| DBL | 0.19386 | -0.070992 | -0.28979 |
| ABL | 0.21201 | -0.084893 | -0.31762 |
| PAL | 0.18357 | -0.066961 | -0.16579 |
| PPL | 0.16655 | -0.0017061 | -0.13399 |
| PPD | 0.19014 | -0.076525 | -0.21398 |
| PPeL | 0.18418 | -0.047001 | -0.18062 |
| BDPe | 0.17744 | -0.076745 | -0.22219 |
| PDd | 0.17557 | -0.068024 | -0.17408 |
| LRD | 0.23282 | -0.32004 | 0.39181 |
| LAR | 0.1269 | -0.20646 | 0.45681 |
| CPD | 0.18407 | -0.24365 | 0.054648 |
| CPL | 0.16277 | -0.30282 | 0.22845 |
| CFD | 0.18947 | -0.14245 | 0.27878 |
| HL | 0.20203 | 0.13021 | 0.049223 |
| HDOc | 0.21575 | 0.20112 | 0.081228 |
| HDOr | 0.20078 | 0.30918 | -0.013127 |
| OD | 0.12023 | 0.49994 | 0.22337 |
| POL | 0.29292 | 0.073648 | 0.038304 |
| IO4L | 0.21814 | 0.12171 | 0.06238 |
| pOL | 0.2049 | 0.034241 | -0.00034809 |
| UML | 0.19529 | 0.46799 | 0.17192 |
| HWop | 0.1378 | -0.006415 | 0.017326 |
| IOD | 0.18529 | -0.036262 | -0.020945 |
| IND | 0.193 | -0.041171 | -0.032281 |
| SKL | 0.18249 | -0.0092749 | -0.02497 |
| SnL | 0.20722 | 0.007145 | -0.0019333 |

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