DIGITAL APPENDIX 1

Bibliographic review for species that prey on *Cryphiops caementarius* in the study area (see Fig. 1)

|  |  |  |
| --- | --- | --- |
| **Rivers systems / abbreviations** | **Hydrographic zones** | **Bibliographic references** |
| Peru |  |   |
| Peruvian rivers \* (Pe) | CRPP | Hartmann (1958); Hernández (1974); Viacava et al. (1978); Morales (2019) |
| Cañete River (Ca) | CRPP | Valle (2010) |
| Majes-Camaná River (M-C) | CRPP | Elías (1960) |
| Tambo River (Ta) | CRPP | Bocardo, Morales, & Yipita (2007); Apaza (2018); Concha (2018) |
| Chile |  |   |
| Chilean rivers \*\* (Chi) | SRAZ-RMSZ | Busse & Schlatter (1965); Castro (1966); Bahamonde & Vila (1971); Morales & Meruane (2013a, 2013b) |
| Loa River (Lo) | SRAZ | Alfaro et al. (1980); López, Segovia, & Alfaro (1986); De los Ríos-Escalante et al. (2010) |
| El Culebrón estuary (Cu) | RMSZ | Norambuena (1977); Avilés et al. (2018) |
| Limarí River (Li) | RMSZ | Tello et al. (2007); this study |
| Illapel and Choapa rivers (I-C) | RMSZ | Cortés (1999); this study |

\* = Pativilca, Pisco, Ocoña, Majes-Camaná and Tambo rivers.

\*\* = Lluta, Camarones, Loa, Copiapó, Huasco, Elqui, Limarí, Illapel, Choapa, La Ligua and Aconcagua rivers.

DIGITAL APPENDIX 2

Taxonomic composition of the predator’s species of *Cryphiops caementarius*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Guild of predators / family / species | Zoogeographic origin | Trophic functional group | Phenotypicattribute | Riverzones |
| **Perú** | **Chile** |
| Macroinvertebrates |   |   |   |   |   |
| Leeches |   |   |   |   |   |
| Glossiphonidae |   |   |   |   |   |
| *Helobdella* spp*.* | - | Native  | Omnivore | Opportunistic | R |
|  |  |  |  |  |  |
| Prawns |   |   |   |   |   |
| Palaemonidae |   |   |   |   |   |
| *Cryphiops caementarius* (Molina, 1782) \* | Native | Native  | Omnivore | Opportunistic | E, P, R |
|  |  |  |  |  |  |
| Number species = 2 |   |   |   |   |   |
|   |   |   |   |   |   |
| Vertebrates |   |   |   |   |   |
| Fish |   |   |   |   |   |
| Cichlidae |   |   |   |   |   |
| *Australoheros facetus* (Jenyns, 1842) | - | Exotic | Omnivore | Opportunistic | E, P |
| Cyprinidae |   |   |   |   |   |
| *Cyprinus carpio* (Linnaeus, 1758)  | Exotic | Exotic | Omnivore | Opportunistic | E, P, R |
| Poeciliidae |   |   |   |   |   |
| *Gambusia affinis* (Baird & Girard, 1853)  | Exotic | Exotic | Omnivore | Opportunistic | E, P |
| Salmonidae |   |   |   |   |   |
| *Oncorhynchus mykiss* (Walbaum, 1792) | Exotic | Exotic | Carnivore | Opportunistic | E, P, R |
| *Salmo trutta* (Linnaeus, 1758)  | Exotic | Exotic | Carnivore | Opportunistic | E, P, R |
| Atherinidae |   |   |   |   |   |
| Silversides | Native | Native | Omnivore | Opportunistic | E, P, R |
|   |   |   |   |   |   |
| Frogs |   |   |   |   |   |
| Calyptocephalellidae |   |   |   |   |   |
| *Calyptocephalella gayi* (Duméril & Bibron, 1841) | - | Native | Carnivore | Opportunistic | E, P, R |
| Pipidae |   |   |   |   |   |
| *Xenopus laevis* (Daudin, 1802) | - | Exotic | Carnivore | Opportunistic | E, P, R |
|  |   |   |   |   |   |
| Waterfowls |   |   |   |   |   |
| Ardeidae |   |   |   |   |   |
| *Ardea alba* (Linnaeus, 1758)  | Native | Native | Carnivore | Opportunistic | E, P, R |
| *Ardea cocoi* (Linnaeus, 1766) | Native | Native | Carnivore | Opportunistic | E, P, R |
| *Egretta thula* (Molina, 1782) | Native | Native | Carnivore | Opportunistic | E, P, R |
| *Nycticorax nycticorax* (Linnaeus, 1758) | Native | Native | Carnivore | Opportunistic | E, P, R |
| Laridae |   |   |   |   |   |
| *Larus dominicanus* (Lichtenstein, 1823) | Native | Native | Carnivore | Opportunistic | E, P, R |
| *Leucophaeus modestus* (Tschudi, 1843) | Native | Native | Carnivore | Opportunistic | E, P, R |
| Phalacrocoracidae |   |   |   |   |   |
| *Phalacrocorax brasilianus* (Gmelin, 1789) | Native | Native | Carnivore | Opportunistic | E, P |
| Phoenicopteridae |   |   |   |   |   |
| *Phoenicopterus chilensis* (Molina, 1782) | Native | Native | Omnivore | Selective | E |
| Anatidae |   |   |   |   |   |
| *Anas cyanoptera* (Vieillot, 1816) | Native | Native | Herbivore | Opportunistic | E, P |
|  |   |   |   |   |   |
| Mammals |   |   |   |   |   |
| Hominidae |   |   |   |   |   |
| *Homo sapiens* (Linnaeus, 1758) | Cosmopolitan | Cosmopolitan | Omnivore | Selective | E, P, R |
| Mustelidae |   |   |   |   |   |
| *Lontra felina* (Molina, 1782) | Native | Native | Carnivore | Selective | E |
|  |   |   |   |   |   |
| Number species = 19 |   |   |   |   |   |
| Total number species = 21 |   |   |   |   |   |

\* = intraespecific predation / River zones = Estuary (E), Potamon (P), Rhithron (R).

DIGITAL APPENDIX 3

Taxonomic composition of the predator’s species of *Cryphiops caementarius*

|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **OF** | **RF** | **Study area** |
| **CRPP** |  | **\*** |  | **SRAZ** |  | **RMSZ** |
| **Pe** | **Ca** | **M-C** | **Ta** |  | **Chi** |  | **Lo** |  | **Cu** | **Li** | **I-C** |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| *Helobdella* spp*.* | 11.1 | 1.6 |   |   |   |   |   |   |   |   |   |   | X |   |
| *Cryphiops caementarius*  | 55.6 | 8.2 | X |   |   |   |   | X |   | X |   | X |   | X |
| *Australoheros facetus*  | 11.1 | 1.6 |   |   |   |   |   |   |   |   |   | X |   |   |
| *Cyprinus carpio*  | 22.2 | 3.3 |   |   |   |   |   | X |   |   |   |   |   | X |
| *Gambusia affinis*  | 44.4 | 6.6 |   |   |   | X |   | X |   | X |   | X |   |   |
| *Oncorhynchus mykiss*  | 44.4 | 6.6 | X |   |   |   |   | X |   | X |   |   |   | X |
| *Salmo trutta*  | 11.1 | 1.6 |   |   |   |   |   |   |   | X |   |   |   |   |
| Silversides | 22.2 | 3.3 | X | X |   |   |   |   |   |   |   |   |   |   |
| *Calyptocephalella gayi*  | 22.2 | 3.3 |   |   |   |   |   | X |   |   |   |   |   | X |
| *Xenopus laevis*  | 11.1 | 1.6 |   |   |   |   |   |   |   |   |   |   | X |   |
| *Ardea alba*  | 66.7 | 9.8 | X |   | X | X |   | X |   |   |   | X |   | X |
| *Ardea cocoi*  | 11.1 | 1.6 |   |   |   |   |   |   |   |   |   |   |   | X |
| *Egretta thula*  | 55.6 | 8.2 |   |   | X | X |   | X |   |   |   | X |   | X |
| *Nycticorax nycticorax*  | 55.6 | 8.2 | X |   | X |   |   | X |   |   |   | X |   | X |
| *Larus dominicanus*  | 11.1 | 1.6 |   |   | X |   |   |   |   |   |   |   |   |   |
| *Leucophaeus modestus*  | 11.1 | 1.6 | X |   |   |   |   |   |   |   |   |   |   |   |
| *Phalacrocorax brasilianus*  | 44.4 | 6.6 |   |   |   | X |   | X |   |   |   | X |   | X |
| *Phoenicopterus chilensis*  | 11.1 | 1.6 | X |   |   |   |   |   |   |   |   |   |   |   |
| *Anas cyanoptera*  | 33.3 | 4.9 |   |   | X | X |   | X |   |   |   |   |   |   |
| *Homo sapiens*  | 100.0 | 14.8 | X | X | X | X |   | X |   | X |   | X | X | X |
| *Lontra felina*  | 22.2 | 3.3 | X |   |   | X |   |   |   |   |   |   |   |   |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Total number species = 21 |   |   | 9 | 2 | 6 | 7 |   | 11 |   | 5 |   | 8 | 3 | 10 |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|  |

For each species is indicated occurrence frequency (OF; %) and relative frequency (RF; %). Rivers names abbreviations in the column header are the same as in Table 1 and are grouped by hydrographic zone (see Fig. 1).

\* = includes two hydrographic zones (SRAZ-RMSZ).



**Digital Appendix 4.** Historical landing of *Cryphiops caementarius* in central-Northern Chile. Data correspond to official records of the National Service for Fisheries and Aquaculture (Sernapesca; https://www.sernapesca.cl) between 1984-1994. Since 1994, there is no official updating in landings data.