

EVOLUTIONARY HISTORY OF ORESTIAS AGASSIZZI IN THE ALTIPLANO: AN HOLISTIC APPROACH USING MULTIPLE TAXONOMIC EVIDENCE, HYDROLOGICAL HISTORY AND LIMNOLOGICAL INFORMATION.

Abstract. *Orestias* (Teleostei; Cyprinodontidae) is a high Andean specious genus developed all through the Altiplano and some valley areas (14°S-22°S). Among the 47 *Orestias* species described up to now for the whole altiplanic region, at Lake Titicaca, the present remnant of the big paleo lakes, 20 species of *Orestias* are described only there evolving in sympatry. In the southern Altiplano actual unconnected freshwater systems (17°S to 22°S), there have been described six *Orestias* species evolved in allopatry since their habitats have been isolated from the main paleolakes since 12000 to 7000 years bp and, that are included in the agassizzi complex according to Parenti (1984). The size and depth of paleo-lakes until the present Lake Titicaca, their effluents and shallow systems associated would have contributed to the diversity of ecological characteristics promoting this way *Orestias* isolation, diversification and speciation through adaptive radiation (i.e Titicaca lake) and non adaptive in the southern west Chilean altiplanic. Diversification of *Orestias* in the Altiplano may be linked to historical vicariant events and contemporary and historical variation in water level that could have affected the populations from the Plio-Pleistocene until the present and which information should be compiled and evaluated. *Orestias agassizzi* Valenciennes is described as the “most widespread, abundant and variable species and presently distributed throughout Urubamba and Titicaca basin and in northern Chile”. Southern Altiplano karyotypic and phylogenetic analysis show that the *Orestias* described as agassizii does not correspond to the genetics recently described for the syntypes of these species in Bolivia. Also, recent collections from some small isolated systems in the Southern Altiplano, Lauca (Bolivian and Chilean specimens), Isluga, Collacagua rivers and Salar Huasco specimens that could not be assigned to *O. agassizzi* and, have to be re-described. To elucidate this controversy, this proposal will accomplish a study that considerer all distribution species of agassizzi complex. In the context of integrative taxonomy we will perform: a phylogenetics and phylogeographical analyses (mitochondrial and nuclear markers), karyotypical and morphological analysis. The systematic pattern result of integrative taxonomy analysis will be associated to paleogeographic, hydrological and limnological information, in order to propose scenarios of migrations and population divergence in the Altiplano of Chile and Bolivia. For instance, we will evaluate the existence of corridors that connected Lauca river, Huasco salar and its affluent Collacahua with Uyuni salar. According to this we will use: integrative taxonomy approach, limnological, information (i.e. water chemistry), historical and current hydrology of these systems, in order to elucidate the evolution and diversification processes of the *O. agassizzi*.