

THE ROLE OF THE *BOFEDALES* IN HIGH-ANDEAN WATERSHEDS – EXPERIENCES AND PRELIMINARY RESULTS FROM AN ECOHYDROLOGICAL MONITORING SYSTEM IN ABANCAY (APURIMAC, PERU)

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ABSTRACT

The *bofedales* are a diverse group of hybrid (aquatic-terrestrial) ecosystems, which are found in an altitudinal range from about 3,500-4,900 m.a.s.l. in the humid and dry Puna region of the Central Andes, from the north of Peru to the border between Chile, Bolivia and Argentina. They provide an important set of ecosystem services, among them, the (temporal) retention of freshwater, that is used for livestock farming and other agricultural activities. Apart from the direct anthropogenic impacts (overgrazing, construction of roads and dams, peat digging and extraction, etc.), the *bofedales* and their ecosystem services are also impacted by climate change - causing higher temperatures and changes in the precipitation regime/patterns – what, on the long term, could result in their drying-out, especially when they do not receive glacier meltwater. Under these conditions and in the context of the implementation of a mechanism of payment for ecosystem services (in Peru called *Mecanismo de Retribución por Servicios Ecosistémicos*, MRESE) for the city of Abancay (Apurimac region), an eco-hydrological monitoring system was installed in 2015/2016. This eco-hydrological monitoring system consists of the frequent measurements of hydrological and ecological/botanical key parameters in a total of seven *bofedales*. Six of them are located inside the area called Rontoccocha, where the methodology of paired-watersheds (as it is known from the Regional Initiative of Hydrological Monitoring of Andean Ecosystems, or iMHEA for its Spanish acronym) is applied: one watershed is intervened with recuperation and restoration actions (e.g. creation of small, semi-natural ponds, called *q'ochas*; reforestation of remaining forest patches and repopulation of pastures, including at the slopes), while the other watershed is not intervened and is still receiving the same or similar anthropogenic impacts as years/decades ago. A preliminary analysis shows that in the course of one year of monthly measurements in a total of 18 observation wells (three in each of the six *bofedales*), the water level dropped deeper in the three *bofedales* from the intervened watershed than in the three *bofedales* from the not-intervened (control) watershed, reaching maximum values of about 90 cm below soil surface. It is hypothesized that there might be a time lag in the intervened watershed till improvements in the water level in the three studied *bofedales* will be visible. In the presentation, these preliminary results will be put in relation and analyzed with the local run-off and precipitation measurements.

Keywords: *bofedales*, eco-hydrological monitoring system, Iniciativa Regional de Monitoreo Hidrológico de Ecosistemas Andinos (iMHEA), Mecanismo de Retribución por Servicios Ecosistémicos (MRESE), Rontoccocha-Abancay