

Dee Island in Antarctica: a paradise for microorganisms.

The Antarctic continent is one of the eight largest and most important ecological zones in the world; the continent has impressive natural heritage. The Pedro Vicente Maldonado Ecuadorian research station is in the archipelago of the southern Shetland Islands. Dee Island is near the research station's area of influence. This island, due to summer thawing, forms three bodies of fresh water. Every year, organisms seem to recover their lives. The oomycetes, or aquatic fungi, are very diversified; some can be considered bio-indicators and others optionally parasites. They are known as pests in plants and pathogens in animals for human use; that is, they are important, however, they have been repeatedly undervalued. In ecosystems of interest for conservation, fungi have been detected as the responsible agent for the decline of fish, amphibians, crustaceans, turtles and even moss, both in the Arctic and elsewhere in Antarctica.

Lita: a paradise for birds.

Eliana Benavides, a studious young woman, has spent a year studying the birds in Lita. Birds are part of a biological group that is in contact with humans, inhabit grasslands, forests, seas and cities, and perform important functions in the environment such as: crop pest control, seed dispersion, prevention of the proliferation of diseases, pollination and indicators of environmental quality. In Ecuador, 1,679 species are known to exist, of which 20% are threatened with

extinction; this is due to deforestation, expansion of the agricultural frontier, hunting and trafficking of species. For this reason, this study evaluated the diversity of birds at three altitudinal levels, registering a total of 196 species distributed in 12 orders and 39 families. A worrisome fact is that more species have been added to those in threatened status; between 13% and 18% of the species are in maximum conservation priority. To contribute to the conservation of the birds, conservation strategies were generated, and a bird guide was developed as a management tool.

Italy and Ecuador study: Andean essential oils.

The Technical University of the North in Ibarra has been working since 2017 with the University of Pisa in Italy, to share human resources, carry out joint research projects and support exchanges to reinforce knowledge and contribute to scientific and economic development of the two countries. After 18 months of hard work, it is gratifying to demonstrate various achievements that have allowed the strengthening of Italo-Ecuadorian cooperation, such as: the establishment of a line of research called "Evaluation of the bioactivity of essential oils of Andean plants"; an undergraduate study topic, the academic exchange of a UNIPI professor and two UTN students; and the development of 6 scientific publications. Also, new research topics have been added to this line of investigation and the projected internationalization of the UTN through postgraduate studies of both students and university professors.

Assessment of rural soils in Tulcán

This study consisted of the gathering and analysis of municipal and property owner interview data of rural properties bought in 2017, to establish the value of rural property in the Tulcán district. This study gives the

municipality of Tulcán a technical study to update the value of rural properties with a map of homogeneous zones and affectation factors that are simple to apply.