LA GRANJA: **REVISTA DE** CIENCIAS DE LA VIDA

Editorial



Dear reader,

La Granja journal. This special issue, titled "Connectivity Corridors: A Strategy for Territorial Conservation", highlights the efforts of researchers dedicated to understanding and promoting the importance of ecological connectivity as a key tool for conservation and land management.

Connectivity corridors are special areas for biodiversity conservation, established between the National System of Protected Areas (SNAP), National Forest Heritage, areas of hydrological importance, buffer zones, and other conservation areas recognized by international instruments ratified by Ecuador, such as RAMSAR sites and Key Biodiversity Areas (KBAs). Their objective is to mitigate the effects of landscape fragmentation and the risks associated with the isolation of flora and fauna populations by utilizing remnant habitats that maintain genetic flows and ecological processes. This ensures the connectivity of wild populations, ecosystem resilience, and the continuous provision of environmental services in areas outside protected zones, where varying levels of human pressures occur.

Ecuador has been a pioneer in establishing connectivity corridors as an innovative conservation approach. The country

It is an honor to present Volume 41 of has implemented *Ministerial Agreement* 0019, which facilitates the design, recognition, and management of connectivity corridors. To date, the Ministry of Environment, Water, and Ecological Transition (MAATE) has officially recognized three connectivity corridors.

> This recognition grants them significance in local territorial planning, as current regulations mandate their inclusion in development and land-use plans. Additionally, MAATE is leading a participatory process to define the best management tools for these corridors, acknowledging that planning instruments must be comprehensive, accessible, and easily applicable.

> Their relevance lies in being complementary alternatives to traditional conservation schemes, whose long-term efficiency is often compromised by geographical isolation and human disturbances. Furthermore, the recognition of new protected areas is an increasingly evident technical and political challenge.

> Therefore, the recognition of connectivity corridors, along with the establishment and strengthening of their priority conservation areas, collaboration with local communities and stakeholders in im

plementing sustainable land management practices, and participatory governance, enhances the effective connectivity area and promotes the coordination of local and regional actors.

This special issue includes studies that provide key evidence for understanding and strengthening connectivity corridors in Ecuador.

The first study, "Analysis and Prediction of Land Use and Cover Change in the Llanganates-Sangay Connectivity Corridor by 2030", employs advanced spatial modeling tools, such as MOLUSCE and artificial neural networks, to project future scenarios of land-use transformation in the Llanganates-Sangay Connectivity Corridor (CELS). While the results indicate lower deforestation rates in protected areas within the CELS, threats persist in non-protected zones. The recognition of the CELS presents an opportunity to consolidate conservation strategies in priority areas for connectivity and strengthen zones with official conservation schemes.

The second study, "Multivariate Analysis of Ecuadorian Provinces and Protected Areas Based on the Presence of Poison Dart Frogs (*Dendrobatidae*) and Considerations for Their Conservation", analyzes the distribution of 48 species of poison dart frogs, 32 of which are endemic to Ecuador. These species, considered key bioindicators, reflect the health status of ecosystems. Through classification and ordination analyses, the study identifies priority regions for the conservation of these amphibians and underscores the importance of ecological corridors in facilitating connectivity between fragmented populations.

In the journal's miscellaneous section, aligned with conservation themes, Diego Mina and his research team from the Pontificia Universidad Católica del Ecuador, the International Potato Center of Ecuador, and the Center for Functional and Evolutionary Ecology (UMR CEFE) in Montpellier, France, present a study on pesticide use and its impact on entomofauna in Andean farms in Ecuador. The study highlights the importance of improving agricultural practices and the rational use of pesticides, not only to enhance crop yields but also to preserve pollinator species vital for the agricultural sector's development.

Similarly, Edison Campos Collaguazo and Luis Alberto Jiménez from the National Agrarian University La Molina in Peru conduct a study on "Valuation of Hydrological Ecosystem Services in a Páramo Microbasin in Ecuador", using the contingent valuation method to determine the community's willingness to pay for this ecosystem service, thereby promoting its conservation.

From the earth sciences, Javier Chininín-Cabrera and Rolando Célleri, researchers from the University of Cuenca in Ecuador, conduct a study to determine rainfall characteristics and extreme events in the Tropical Andes using a vertically pointing radar. This region is characterized by its complexity and limited data availability, posing significant challenges for atmospheric models in simulating rainfall. This research contributes to understanding the vertical structure, diurnal cycle, and convective or non-convective origins of precipitation, potentially improving the prediction of extreme rainfall events.

From Pakistan, researchers Mehmood Ali Khan, Mustafa Atif, and Iqbal Aqsa from the University of Engineering and Technology in Karachi present an urban photobioreactor for CO_2 sequestration and microalgal biomass production, which has applications in biofuel production and other value-added products, making it an interesting contribution to climate change mitigation through greenhouse gas sequestration.

In the field of biotechnology, Diana Portela Dussán and her research team from the Universidad Antonio Nariño and the Universidad Colegio Mayor de Cundinamarca in Colombia present their research on the identification of an antimicrobial peptide from Roman chamomile. Using *in silico* and experimental approaches, they found that its apoplastic fluid inhibits the development of *R. solani*, representing a previously uncharacterized activity.

Finally, in agricultural sciences, Fernando Arauco Villar and a broad team of researchers from the National University of Central Peru, the Technological University of Peru, and the Peruvian Union University evaluate the physicochemical, microbial, and hygienic quality of cow's milk in the Peruvian Andes. Additionally, David Catagua, Julio Dustet Mendosa, and Elaine Valiño Cabrera, in a collaborative study between the Escuela Superior Politécnica del Litoral in Ecuador and the Technological University of Havana "José Antonio Echeverría" in Cuba, present their research on improving the nutritional value of chocho foliage flour through solid-state fermentation with lignocellulolytic fungal strains, finding significant improvements in the legume's nutritional value.

We are confident that this volume represents an unprecedented effort in compiling and disseminating scientific results that are relevant to strengthening ecological connectivity and advancing life and environmental sciences. It is clear that science must play a fundamental role in local and regional planning, providing solid foundations for the implementation and monitoring of conservation strategies with the involvement of local stakeholders and civil society. Specifically, this special issue demonstrates the imperative to continue generating research in these areas and to strengthen collaboration among the academic community, conservation institutions, protected area managers, private landowners, and decision-makers at local and national levels to promote informed land management decisions based on technical and scientific evidence.

Sincerely,

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