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**CAMBIOS TEMPORALES EN LA DIVERSIDAD FUNCIONAL DE AVES  
EN UN ECOSISTEMA ALTOANDINO DEL SUR DEL ECUADOR**

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MAGISTER EN RECURSOS NATURALES RENOVABLES  
MENCIÓN ECOLOGÍA Y BIODIVERSIDAD**

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## Resumen

Los cambios climáticos y del uso del suelo están transformando profundamente los patrones de biodiversidad a nivel mundial. La diversidad funcional ofrece un marco sólido para comprender cómo las comunidades responden a estas transformaciones ambientales. Utilizando datos de monitoreo a largo plazo obtenidos mediante anillamiento de aves en el Parque Nacional Cajas (Ecuador), evaluamos los cambios temporales en la diversidad funcional  $\beta$  de las aves a través de tres tipos de hábitats: bosque nativo, matorral nativo y bosque introducido. Nuestros análisis revelaron variaciones temporales significativas en la diversidad funcional  $\beta$  dentro del bosque nativo y el matorral. En el bosque nativo, estos cambios estuvieron acompañados por modificaciones marcadas en la estructura de rasgos, evidenciando una disminución en la frecuencia de especies de gran tamaño corporal a lo largo del tiempo. En contraste, el bosque introducido no mostró cambios en la diversidad  $\beta$ , ni en la composición de rasgos, lo que indica una estabilidad funcional a través del tiempo. Estos hallazgos subrayan la importancia de integrar enfoques basados en rasgos funcionales en los programas de monitoreo a largo plazo, para predecir mejor las consecuencias ecológicas del cambio ambiental y orientar las estrategias de conservación y manejo adaptativo en los ecosistemas andinos.

**Palabras clave:** ecosistemas andinos, diversidad funcional  $\beta$ , datos a largo plazo, rasgos de aves, cambios temporales.

**ABSTRACT:**

Climate and land-use changes are profoundly reshaping biodiversity patterns worldwide. Functional diversity offers a powerful framework for understanding how communities respond to these environmental transformations. Using long-term monitoring data of birds in Cajas National Park (Ecuador), we assessed temporal changes in functional  $\beta$ -diversity of birds across three habitat types: native forest, native shrub, and introduced forest. Our analyses revealed significant temporal changes in functional  $\beta$ -diversity within native forest and shrub. In the native forest, these shifts were related to changes in trait structure, with large-bodied species becoming less frequent over time. In contrast, the introduced forest showed no changes in either  $\beta$ -diversity or trait composition, indicating functional stability through time. These findings underscore the importance of integrating trait-based approaches in long-term monitoring programs to better predict the ecological consequences of environmental change and to guide conservation and adaptive management in Andean ecosystems.

**Keywords:** Andean ecosystems, functional  $\beta$ -diversity, long-term data, bird traits, temporal changes.



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