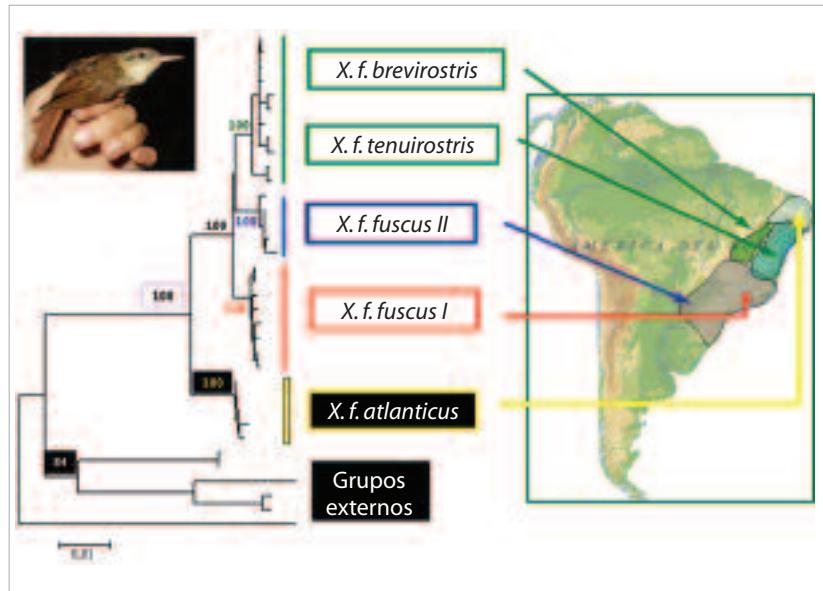


RECONSTRUCTION OF THE EVOLUTIONARY HISTORY AND PHYLOGENETIC STUDIES OF NEOTROPICAL BIRDS BASED ON MOLECULAR MARKERS

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The Neotropics is a mega diverse region. The origin of such richness may be related to the geologic and climatic changes that occurred through time and its conservation depends on combined efforts. Birds comprise one of the most diverse groups of neotropical animals. Their endemism patterns and the association between the systematic and biogeographic relationships are appropriate for historical biogeography studies. Their occurrence in all biomes is also suitable to study the origin of diversity in the Neotropics. In the present research project, molecular techniques have been applied in phylogenetic and phylogeographic studies of birds. We will enhance taxa sampling of three groups which we have been studying (parrots, cracids, and toucans) and will include another one (hawks and eagles). We will also start the study of passerines from the Atlantic Forest to understand the biogeography and phylogeography of such taxa. The dates of divergence between lineages will be estimated, taxonomy uncertainties may be resolved, and the level of isolation between populations will be determined. These data will contribute to a better knowledge of the origin, distribution, and maintenance of the biodiversity of the Neotropics.



Relationships and geographic distributions of generic lineages of Xiphorhynchus fuscus

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

The present project has been gathering data on the historic biogeography of birds and the biomes where they occur based on their phylogenies and population structure studies. The reconstructions of the evolutionary history of birds (including estimates of divergence dates of lineages) are used to infer possible factors that can be related to these divergences. These analyses suggest that past climate and geological changes in South America contributed to speciation events and intra-specific diversification. The results indicate a complex biogeographical history in the Neotropical region in contrast with less complex patterns in the Nearctic and Palearctic regions. Also, our data indicate that taxonomic revisions are needed in some groups. Finally, we found taxa previously undescribed by Science and among them, there are populations that need conservation actions. We have counted on many collaborators to develop these subprojects.

Another main area of action of the present project is to provide genetic data for the management of endangered avian species. Given the complexity of conservation, we have been working with various collaborators. We have been recommending actions for captive programs and for diminishing the illegal traffic of wildlife.

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Molecular phylogeny of the genus *Gypopsitta* and corresponding areas of distribution of its species

