

**AVIAN GENE TREES, LANDSCAPE EVOLUTION, AND GEOLOGY:
TOWARDS A MODERN SYNTHESIS OF AMAZONIAN HISTORICAL
BIOGEOGRAPHY ? ¹**

ABSTRACT. As the number of phylogeographic studies on Amazonian birds increases, spatially and temporally different scenarios are gradually replacing previous interpretations of Amazonian historical biogeography. At the same time, recent studies have improved significantly our understanding of Amazonian geological history during the late Tertiary and Quaternary, two periods regarded as critical for the recent diversification of the Amazonian avifauna. The notion that geologically older and more stable areas of Amazonia (such as the Brazilian and Guianan shields) functioned as “species-pumps”, whereas geologically more dynamic areas (such as the western Amazonian lowlands) mostly “captured” part of the diversity generated nearby, was supported by a recent phylogeographic study focusing on a species complex of the genus *Xiphorhynchus* (Dendrocolaptidae). Here, I review 14 recent additional molecular datasets to assess whether this historical scenario can be extended to other lineages of Amazonian birds as well. The reviewed datasets indicated, among other things, a clear dichotomy in the diversification histories of species associated with seasonally flooded versus upland forests, and those with high versus low dispersal capabilities. Many “core” lineages of upland species found nowadays in western Amazonia are clearly associated with more basal lineages from the Brazilian shield, Guianan shield, and the Andes, indicating a more recent history in this geologically dynamic region. On the other hand, lineages associated with seasonally flooded forests seem to have an ancient history in western Amazonia, apparently expanding over the geologically more stable areas only recently. Most sister taxa of the reviewed lineages exhibited levels of pairwise sequence divergence consistent with splitting events dating back to a time frame stretching from the late Miocene to the **early** Pleistocene (**late** Tertiary and **early** Quaternary periods), a period when significant physiographic and landscape changes took place in Amazonia. When interpreted together, all reviewed studies provide evidence that geology and landscape evolution are tightly linked with the timing and mode of differentiation of Amazonian birds.

¹ *Invited first keynote presentation scheduled for the 24th International Ornithological Congress Symposium entitled “Advances in Molecular Systematics and Phylogeography of Neotropical Birds”.*