The Pliocene-Pleistocene transition had dual effects on North American migratory bird speciation

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Paleo-environmental change is thought to substantially influence biological evolution. In particular, fragmenta- tion of the geographical distributions of vertebrate faunas and subsequent speciation events occurred frequently due to glacial advances after the Pliocene-Pleistocene transition 2.5 million years ago (Ma). However, the effects of glacial advances on speciation between migratory and sedentary birds have not been systematically evaluated. Here, we conducted phylogenetic meta-analysis of 14 closely related pairs of the North American migratory spe- cies and 25 closely related pairs of the North American migratory and neotropical sedentary species and estimat- ed their divergence times using cytochrome b. Whereas divergence events between migratory species were mostly in the Pleistocene (median 1.51 Ma) as previously reported, many divergence events between the migra- tory and sedentary bird species appear to date back to the Pliocene (median 2.77 Ma). These speciation patterns indicate that the Pliocene-Pleistocene transition may have accelerated speciation between migratory bird spe- cies, but did not accelerate that between migratory and sedentary species through counteracting mechanisms.

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