Riverine effects on mitochondrial structure of Bornean orang-utans (Pongo pygmaeus) at two spatial scales

Abstract

We examined mitochondrial DNA control region sequences of 73 Kinabatangan orang-utans to test the hypothesis that the phylogeographical structure of the Bornean orang-utan is influenced by riverine barriers. The Lower Kinabatangan Wildlife Sanctuary contains one of the most northern populations of orang-utans (Pongo pygmaeus) on Borneo and is bisected by the Kinabatangan River, the longest river in Sabah. Orang-utan samples on either side of the river were strongly differentiated with a high ΦST value of 0.404 ($P < 0.001$). Results also suggest an east-west gradient of genetic diversity and evidence for population expansion along the river, possibly reflecting a postglacial colonization of the Kinabatangan floodplain. We compared our data with previously published sequences of Bornean orang-utans in the context of river catchment structure on the island and evaluated the general relevance of rivers as barriers to gene flow in this long-lived, solitary arboreal ape.