Reconstructing paleoenvironmental conditions and community assembly leveraging freshwater mollusks of the Shungura Formation (Omo-Turkana Basin, Ethiopia)

Bert Van Bocxlaer*[1], Corentin Gibert[1], Alexis Nutz[2], Mathieu Schuster[3], and Jean-Renaud Boisserie[4]

[1]UMR 8198 Evo-Eco-Paleo – Centre national de la recherche scientifique - CNRS (France), Université de Lille - Sciences et Technologies – France

[2]Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement (CEREGE) – Institut de Recherche pour le Développement, Aix Marseille Université, Collège de France, Centre National de la Recherche Scientifique, Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement – France

[3]UMR 7063 Institut Terre et Environnement Strasbourg – université de Strasbourg, Centre National de la Recherche Scientifique – France

[4]UMR 7262 PalEvoPrim - Laboratoire de paléontologie, évolution, paléoécosystèmes, paléoprimatologie – Université de Poitiers = University of Poitiers, Centre National de la Recherche Scientifique – France

Résumé

The great lakes of the East African Rift System constitute a unique natural laboratory, where diversification has occurred in various clades of the Tree of Life, including in freshwater mollusks. In the Turkana Basin various mollusk assemblages have succeeded one another throughout the Plio-Pleistocene and jointly these mollusks were previously considered to provide key evidence for the model of punctuated equilibrium evolution. The observed changes in fossil mollusk communities are now more prosaically explained by iterative cycles of extinction and re-colonization of the basin rather than by ancestor-descendant evolution. The mechanisms causing these faunal turnovers are hitherto poorly understood, but paleoenvironmental changes are expected to have been an important contributing factor. Here we present faunistic studies on the freshwater mollusks of the Shungura Formation (3.75-1.00 Ma) to demonstrate their potential in reconstructing paleoenvironmental conditions and how they have changed through time. We also decipher which assembly processes underly the observed changes in freshwater mollusk communities.

Mots-Clés: Freshwater mollusks, bivalves, gastropods, Omo, Turkana Basin, Ethiopia, Shungura Formation

*Intervenant