**The predictable sequence of adaptive radiation in subterranean amphipod: glass half empty or half full?**

Špela Borko, Ester Premate, Florian Altermatt, Ole Seehausen, Cene Fišer

Adaptive radiation (AR) is the evolutionary phenomenon whereby an ancestral species colonizes an adaptive zone free of predators and rich in underexploited resources, and proliferates into many ecologically diversified species. Initially high rates of speciation and diversification may slow down as ecological niches fill up. Theoretically, ecological diversification within AR unfolds predictably, with emerging species initially partitioning habitats, while diversification in trophic niches within habitats continues longer. We tested this hypothesis using AR of the subterranean amphipod genus *Niphargus*. The genus radiated in southeastern Europe 20-15 Mya, in a series of regional ARs that assembled into one very large AR. Multiple ARs within a single lineage are an excellent model system to test the hypothesis that habitat utilization diversifies early in AR whereas diversification of trophic niches continues longer. Using functional morphological traits as surrogates for habitat and trophic components of ecological niches, we analysed the sequence of diversification of niche traits through time. We performed analyses on the genus-wide AR, and on four speciose clades representing four regional ARs. Two clades diversified predominantly in karst areas with high habitat diversity and the other two in the interstitial with low habitat diversity. Genus-wide analysis indeed suggested that diversification of traits related to habitat preceded diversification of traits related to trophic niche. However, analyses of regional ARs provided mixed results. Genus-wide pattern of sequential ecological diversification was recovered in both karstic clades, but not in the interstitial ones. We conclude that sequential ecological diversification is predictable but habitat-dependent, and might misleadingly amplify on a higher taxonomic level.