

TREE

Toho Rendezvous with Ecology and Evolution Seminar

10月 31日 (水)

15:00-16:00

氷河期サイクルが全北区のミジンコ進化におよぼしてきた影響

The effects of Quaternary glacial cycles on the evolution of Holarctic Daphnia

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<要旨：講演は日本語です>

Quaternary glacial cycles have drastically changed the Holarctic biota. However, the effect of glaciation as a source of biodiversity remains unclear for most of taxonomic groups. Here we assess the effects of glaciation on the evolution of Holarctic Daphnia. First, I addressed the systematic biology of the subgenus Daphnia, and estimated the phylogenetic position of *D. curvirostris* by performing the combination of genetical and morphological analyses. The Japanese 'curvirostris' was found to be a new divergent lineage in the subgenus Daphnia and possess distinctive morphological characteristics from *D. curvirostris* in Europe and North America. Second, I assessed the effects of glaciation on *Daphnia galeata* with apparently marked dispersal capacity and a widespread hybrid lineage in North America. I analyzed the samples of this species from 148 Holarctic lakes using the nuclear and mitochondrial gene sequences, and tested predictions for hypotheses that account for the origin and spread of North American *D. galeata*. The genetic results supported the hypothesis that North American *D. galeata* underwent introgression with the native lineages of *Daphnia rosea* s.l., with dispersal being enhanced by glaciations. Finally, I addressed the history of population differentiation and ongoing gene flow in *Daphnia rosea* s.l., by comparing population and regional divergences in mature unglaciated areas with younger previously glaciated areas. I analyzed the sample of this species complex from 84 Holarctic lakes and ponds using the nuclear and mitochondrial gene sequences, and examined the timing and paths of colonization in previously-glaciated areas to assess the dispersal limitations of *D. rosea* s.l. Mitochondrial phylogeny revealed three geographically restricted and divergent clades: European; Siberian; and Japanese/American. The Japanese/American clade showed marked population genetic structure that was weakly associated with geographical distance. The evidence agrees with negligible gene flow after founding, and the accumulation of genetic divergence with habitat age. My results consistently showed that older unglaciated habitats have preserved ancient lineages, and agreed with the accumulation of genetic divergence with habitat age. Widespread geographical sampling is critical to understand Holarctic diversity. The primacy of local selective regimes has implications for population genetics and conservation biology.

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詳細はTREE seminarウェブサイト <http://d.hatena.ne.jp/castaneacrenata/> をご覧下さい。