A biogeographic study based on presence/absence data of Gerromorpha was conducted using cluster analysis, two-way indicator species analysis (TWINSPAN), and Detrended Correspondence Analysis (DECORANA) to assess the compositional similarity of the Gerromorpha of highland and lowland communities among four mountain ranges north (Thanon Thong Chai & Tennaserim) and south (Phuket & Nakhon Si Thammarat) of the northern limit of the Isthmus of Kra and among eight mountain ranges in northern, central, eastern, northeastern, and southern Thailand. The results of these analyses indicate that the species compositions of southern mountain ranges were distinctly similar to each other and substantially different from those of the mountain ranges north of the northern limit of the Isthmus of Kra. In contrast, the analyses revealed no biogeographic patterns of the Gerromorpha community of lowland ponds that corresponded with their geographic location. In analyses based on species compositions of eight mountain ranges, three distinct mountain range groups were recognized, which corresponded with geographic regions: northern and central (Thanon Thong Chai, Tennaserim, & Phetchabun), southern (Phuket & Nakhon Si Thammarat), and eastern (Sankambeng, Phanom Darak, & Phu Pan) mountain ranges.

A phylogeographic study was conducted based on a ca. 750 bp fragment of the mitochondrial gene cytochrome oxidase c subunit 1 (COI) to determine if the genetic structure among populations of Ptilomera tigrina and Onychotrechus esakii distributed along the western mountain range in Thailand is related to natural history differences. Genetic differences among populations of each species were determined by standard genetic parameters, pairwise genetic distance (Fst), Analysis of Molecular Variance (AMOVA), haplotype networks, and phylogenetic analysis. For P. tigrina, the results indicated that the populations north of and in the Isthmus of Kra differed from each other genetically, but populations within each side are similar to one to another. For O. esakii, the results revealed that several possible cryptic species exist in southern Thailand.