

The Fortuyniidae and Selenoribatidae are thalassobiontic oribatid mite families living exclusively in the rocky intertidal zone of tropic coasts. This habitat is subject to environmental influences posed by both marine and terrestrial climates and therefore represents an extreme environment. Little is known about evolutionary adaptations of these mites and how they have managed to colonize this ecotone. Certain members of the Fortuyniidae and Selenoribatidae were recorded on the Bermuda archipelago whereas one of these species, *Fortuynia atlantica*, represents the first documented occurrence of the Fortuyniidae on Atlantic coasts and two found selenoribatid species are to date undescribed taxa. The occurrence of these taxa on Bermuda represents the unique opportunity to investigate evolutionary mechanisms affecting these intertidal mites. Bermuda is a geologically young landmass and of a size easy to survey. Nevertheless, this archipelago consists of a large number of spatially more or less isolated islands whereas the shorelines are exposed to different ocean currents. These diverse ecological influences and the geographic isolation of various locations on Bermuda offer ideal preconditions for adaptive radiation in littoral oribatid mites. The colonization of Bermuda by the Fortuyniidae and Selenoribatidae must have happened in the last one million years. This period represents from an evolutionary point of a view a short time span and accordingly speciation processes may still be going on. Earlier initial investigations of these mite populations support this assumption and additionally indicate that sympatric speciation may be the case in the selenoribatid taxa. Therefore a comprehensive study on Bermuda is planned in order to get deeper insights into the evolutionary processes occurring in these intertidal oribatid mites. The detailed investigation of morphology, ecology and life history traits as well as of molecular genetic sequences of various populations of the archipelago will provide important information about adaptations to the extreme environment of the intertidal habitat and about the mechanisms of rapid speciation on isolated islands.

Additionally the phylogeographic origin of the littoral mites of Bermuda will be investigated and clarified. The Fortuyniidae have their centre of distribution in the Indo-pacific region and *Fortuynia atlantica* from Bermuda is supposed to originate from this area. Consequently pacific *Fortuynia* populations must have invaded the Caribbean Sea before the Central American Isthmus closed and then they must have reached the coasts of Bermuda drifting along the Gulf Stream. Sampling excursions to two selected Caribbean islands in the target area as well as morphological and molecular genetic analyses of the sampled specimens will be performed to confirm the successful colonization of the Caribbean Sea and to verify the hypothesis of phylogeographic origin.