

Abstract

Terrestrial plants and insects account for the majority of the Earth's biodiversity today, and almost half of all insect species are herbivores. Thus, insects and plants share ancient associations date back for more than 400 million years. However, investigation of their interactions stands largely at the beginning in Western Europe. Nearly 4300 plant remains showing various kinds of feeding damages are available for the present study. These trace fossils are classified as so-called functional feeding-groups supply an outstanding example of the complexity, the structure and the changes of terrestrial ecosystems, are not well known during this interval. In Europe, the Neogene is characterized by palaeogeographic re-organization due to the collision of the African with the Eurasian plates. The Neogene plant record in Europe is rich and diverse offering a profound large-scale understanding of the floristic and vegetational development. A database of fossil traces from the Most Basin was compiled and analyzed by various statistical methods in terms of the diversity and intensity of palaeo-herbivory. The primary objective is to present results on the development of insect herbivory through the section of the Bilina Mine in North Bohemia, with the aim of understanding principal factors that caused the observed phenomena.

The thesis is focused on the two of three horizons, namely Delta Sandy Horizon (DSH) and Lake Clayey Horizon (LCH), both sufficiently represented to compare their palaeoecological signals on the basis of the presence of damages caused by insects and other herbivore arthropods. Total sample of 60 different damage types attributed into the eight main functional feeding groups was examined. Results from analyses of the frequency and diversity of the selected categories of plant arthropod associations within both examined horizons significantly support different environmental conditions. The LCH seems to be affected by the relatively colder and arid climatic conditions as indicated by relatively four times more frequent leaves with galls and lower taxonomic diversity and species equability, whereas DSH indicates warmer and more humid conditions reflecting the higher diversity of the plant species and damage types.