

Abstract

This paper presents a multilevel analysis of palaeoecological aspects of the process of the *Rhynchostreon* genera evolution. According to the latest results of research, the process of genus appears to be more dynamic than previously assumed. The processes of internal dynamics of the environment in conjuncture with other studied aspects of the late cretaceous environment (e.g. paleotemperature, salinity, etc.) were a significant factor that initiated the activity of selective pressure and represents an important factor in group evolution. In this work we provide the overall hypothesis about co-evolution of two intrageneric (sisters) lineages in *Rhynchostreon* genera. The definition of evolutionary trends of intrageneric lineages within the presented hypothesis (including a new description of oyster species) is supported by various analytical methods, which anchors them in the current zoological nomenclature system. An electron microscopy, isotopes and biometrical analysis of a shell in cooperation with some of the sedimentologic methods suggest a relation of lithology (as a result of environmental aspect) and evolution process. The transregional concept of proposed ecological-evolutionary models, based on materials studies from various paleogeographic regions of cretaceous world, increases the applicability in *Rhynchostreon* genera. We consider this absolutely necessary for any future steps in order to resolve similar huge taxonomic problems.