

PROGRAMME & ABSTRACTS

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S6 - MULTI-VIEW STEREO 3D RECONSTRUCTION OF THE LOWER MOLARS OF RECENT AND NORTH-WESTERN EUROPEAN PLEISTOCENE RHINOCEROSES FOR THE PURPOSE OF MESOWEAR ANALYSIS

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Reconstructing palaeodietary regimes provides important information about the habitat conditions of palaeocommunities. Since wear patterns of mammalian teeth are influenced by the diet, the dental material of fossil species has proven to be an advantageous research subject. In 2000 Fortelius and Solounias introduced mesowear analysis, which can be used to reconstruct the diets of different herbivore species. In this work a method derived from mesowear analysis is presented for the analysis of the lower molars of rhinoceroses, to which classical mesowear analysis cannot be applied. The method is based on examining the phase I facets of the buccal enamel band. Multi-view stereo reconstruction was used to generate 3D models of the teeth from ordinary digital photographs. The digitally measured angle between the surface of the phase I facet and the buccal side surface of the teeth is used to score wear patterns. A variation of the method, where the scoring is made visually, is also presented. The palaeodiet reconstruction of North-Western European Pleistocene rhinoceroses was used as a study case. The reconstructed palaeodiets were compared to the dietary regimes of the Recent species of rhinoceroses. The results suggest that the dietary regime of *Stephanorhinus etruscus* and *Stephanorhinus kirchbergensis* fall within the browsing realm, whereas the diet of *Stephanorhinus hemitoechus* was more abrasive, yet not as abrasive as the diet of the Recent mixed feeder *Rhinoceros unicornis*. The dietary regime of *Coelodonta antiquitatis* falls between the dietary regimes of the Recent grazer *Ceratotherium simum* and mixed feeder *Rhinoceros unicornis*.