

sondern erstmals auch Funde aus Privatsammlungen, die unter anderem im Höbarth-Museum in Horn aufbewahrt werden. Weiters wurde Zahn- wie auch Knochenmaterial aus der Irpfelhöhle, Aufhausener Höhle, Villa Seckendorff, Oberrhein/Ketsch aus dem Löwentor Museum in Stuttgart sowie die fossilen Reste aus der Slouper Höhle ebenfalls aus dem Naturhistorischen Museum in Wien und das Material aus der Certova pec Cave in Slowenien vermessen. Zum Vergleich dient das Material der rezenten Tüpfelhyäne aus dem Naturhistorischen Museum in Wien. Mittels PCA (Principal component analysis), NPMANOVA (Non-Parametric Multivariate Analysis Of Variance) und Diskriminierungsanalyse wurden die Ergebnisse statistisch ausgewertet.

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Morphometric Analysis of Intraspecific Variations in Jurassic Echinoids

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The main focus of this study deals with the construction of a basic dataset concerning the variation spectra of various Jurassic echinoids using three dimensional morphometric analyses. Most previous studies on morphometric variations among sea urchins have examined Recent irregular echinoids using two dimensional photometrical analyses. Two dimensional morphological examination is only possible using flattened irregular echinoids. To capture the complex morphological features of the rounded regular sea urchins, a three dimensional representation is essential. The basis of the present analyses are well preserved Jurassic echinoids originating from the paleontological collections in the Institute of Geoscience, Tübingen and the State Museum of Natural History in Stuttgart. The focus of this investigation is on the common regular echinoids of the genera *Plegiocidaris* POMMEL which are present in large numbers and can be very well preserved. Further investigations are being made on the cidaroid genera *Rhabdocidaris* LAMMERT and the irregular echinoids *Nucleolites* LAMARCK and *Galerites* LAMARCK.

The individual echinoids are scanned three dimensionally by μ CT and laser scanners and morphologically interpreted, using landmark analyses. Expected results of this morphometrical studies include information on:

- 1) variations within populations including the analysis of phenotypic variations between adult individuals of a species as possible reactions to environmental parameters,
- 2) variations within the ontogenetic trajectories by compar-

ing of juveniles and adults, as well as variations possible indicating sexual dimorphism; and

- 2) morphological variations through time slices which allow conclusions to be drawn with respect to the direction and rate of evolutionary change through time.

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Changing paleo-environments of the Lutetian to Priabonian beds of Adelholzen (Helvetic Unit, Bavaria, Germany)

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The Adelholzen Section is located southwest of Siegsdorf in southern Bavaria, Germany. The section covers almost the entire Lutetian and ranges into the Priabonian. It is part of the Helvetic (tectonic) Unit and represents the sedimentary processes that took place on the southern shelf to upper bathyal of the European platform at that time. Six lithologic units occur in the Adelholzen-Section: 1) marly, glauconitic sands with predominantly *Assilina*, 2) marly bioclastic sands with predominantly *Nummulites*, 3) glauconitic sands, 4) marls with *Discocyclusina*, 5) marly brown sand. These units were combined as „Adelholzener Schichten“ and can be allocated to the Kressenberg Formation. For the sixth unit, Stockletten, no formal name has been established. The total thickness of all units exposed is about 18 m.

The Adelholzen-Section is rich in planktic and benthic foraminifera. Planktic foraminifera form up to 80% of the total foraminiferal assemblages in the Stockletten, but also the basal nummulitic marls contain about 20% of planktic species. The ratio of planktic to benthic foraminifera is considered to be a good estimator also for paleo-water depth estimations at least during the Cenozoic. The percentage of planktic foraminifera in the assemblages points to depth ranges from 50 m (inner shelf) at the base of the section to a maximum of c. 600 m (upper bathyal) in the Stockletten. Nummulitids and macrofossil assemblages (oysters, spondylids, sea urchins, serpulids, crabs, bryozoans, shark teeth) however point