

## **Cephalopod associations and palaeoecology of the Cretaceous in the Alpstein, Switzerland**

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In the Alpstein mountain chains around Säntis in northeastern Switzerland, Cretaceous strata are well exposed and highly fossiliferous. Over the last decades, geologists and paleontologists studied its stratigraphy and sedimentology. Although rich and quite highly diverse cephalopod fossils have been sporadically reported and collected, no comprehensive overview of the Cretaceous successions and their cephalopods was available so far. The examined units include the Tierwis Formation consisting of Altmann Member and Drusberg Member (latest Hauterivian–late Barremian), the Schrattenkalk Formation (late Barremian–Aptian), the Garschella Formation including the Kamm Bed (Aptian–earliest Cenomanian) and the Seewen Formation (Cenomanian). For palaeoecological analyses, we sampled several distinct fossiliferous layers. Wherever possible, we tried to find up to 100 identifiable specimens to obtain statistically representative results. In order to quantitatively analyze the palaeoecological changes through geologic time, we employed the method to compare ecospace utilization introduced by Bush et al. (2007). All the fossils were classified based on the ecological parameters (tiering, motility, and feeding mechanism) and were plotted into the three-dimensional ecospace. We documented 80 species (42 genera) of ammonites, 6 species (3 genera) of nautilids and other invertebrates. The results of these paleoecological analyses reflect dynamic changes through time. The Barremian faunule was dominated by nektonic animals, followed by the Aptian faunule lacking nektonic animals. In the Late Albian, the proportion of nektonic animals surged again, resulting in a nektonic dominance during the early Cenomanian. Comparison of the results of our palaeoecological analysis and previously studied regional sea level fluctuations suggests that the dynamic palaeoecological shifts through time were affected by the regional sea level fluctuations.