MITES FROM MEDIEVAL OLDEBOORN
An environmental reconstruction

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Introduction

The exoskeleton of mites (Acari) is composed of chitin. Under favourable (anaerobic) conditions this exoskeleton is preserved so well that a specific identification of the remains of mites is possible. Furthermore, mites occur nearly everywhere in high densities and many species show a distinct habitat preference. I will demonstrate the use of mites in reconstructing the environment by presenting the results of the study of the mite remains from the "terp" (artificially raised dwelling mound) Oldeboorn in the north of the Netherlands. The reliability of mites as ecological indicators is demonstrated by the study of the mite remains of the Lateglacial deposit of UsselO. The results of this study concur with those from the palaeobotanical and palaeoentomological studies (Schelvis & van Geel, 1989).

Methods

The extraction of mite remains from archaeological deposits is done by means of a modified version of the paraffin flotation method (Schelvis, 1987). This technique was applied to a dung sample taken from the "terp" Oldeboorn. This sample, that was dated to the twelfth century (de Langen, 1988), yielded the remains of 702 mites in the first flotation. More than 96% of the Oribatids could be allotted to one of the 20 ecological groups defined by Schelvis (subm.). Each of these groups represents the optimal habitat for a number of recurring species. Since the number of species found in each group is a stronger indication for the presence of a certain habitat than the actual number of mite remains in that group, the number of remains in each group was multiplied by an index, indicating the completeness of that particular ecological group.

Results

The diagram shows the spectrum of the ecological groups found in Oldeboorn, based on the remains of 618 oribatid mites. From the distribution of the ecological groups one can conclude that the environment of the sampled site was a very open one, dominated by grassland with a notable influence of the sea as well as a detectable presence of nearby moorland. Although in itself a useful result the comparison in time and/or space of similar reconstructions will prove to be the most informative. Even though the method is based upon the rather crude assumption that each species has an equal chance of being recovered and that therefore each of the mite remains gives the same contribution to the final spectrum, preliminary results look very promising.
N = 518

XIV 32.8%

XIII 33.7%

rest 23%

II 42%

III 20%

IX 73%

XI 17.8%

- XIII Moist as well as soaking wet, either fresh or salty grassland.
- XIV Salty grassland only.
- XI Constantly soaking wet mosses, especially Sphagnum in moorland.
- IX Soaking wet moorland and grassland as well as swamp woodland.
- I Moss, lichens and litter on dry sandy soil in heath and on moist soil in moorland.
- III Dry and moist, rarely wet, litter as well as moss in woodland.

References: