

# A Contribution to the Nannoflora of Nagoryan̄ (Ukrainian SSR; Upper Cretaceous)

Beitrag zur Nannoflora von Nagoriani (Ukrainische SSR; Ober-Kreide)

by

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## Zusammenfassung

Aus vier ausgewerteten Proben von Nagoriani (Ukrainische SSR) ergibt sich eine Einstufung in den oberen Teil der Nannozone CC23b (*Tranolithus phacelosus* Zone) nach SISSINGH (1977) und PERCH-NIELSEN (1985). Dies ist die unterste Nannozone des Maastricht (PERCH-NIELSEN, 1985), wobei angemerkt wird, daß bislang keine Korrelation mit Makrofossil-Zonierungen möglich ist.

Four samples from macrofossil-specimens from Nagoryan̄ (Ukrainian SSR) were collected and investigated under a light microscope. One sample (NHMW 1862.V/32, *Acanthoscaphites tridens*) contained only poorly preserved *Watznaueria* sp. The samples NHMW 1848.II/26 (*Acanthoscaphites tridens*), NHMW 1862.V/50 (*Baculites knorrianus*) and NHMW 1862.V/22 (*Hauericeras sulcatum*) yielded a moderately preserved nannoflora of 33 taxa. From sample 1862.V/50 400 specimens were counted to get an overview over the quantitative composition of the Nagoryany-nannoflora in comparison with published floras of the Campanian-Maastrichtian (e.g. THIERSTEIN, 1981; DOEVEN, 1983). The qualitative and quantitative data are given in table I.

Stratigraphically important species include *Arkhangelskiella cymbiformis* (long diameter 8–12 µm), *Quadrum gothicum*, *Tranolithus phacelosus*, *Reinhardtites levis* and *Prediscosphaera* cf. *stoveri*. Both *Eiffellithus eximius* (STOVER, 1966) and *Reinhardtites anthophorus* (DEFLANDRE, 1959) are absent. Only one broken specimen of *Broinsonia parca constricta* HATTNER et al. 1980, could be found which is considered to be reworked.

In the zonal schemes of SISSINGH (1977) and PERCH-NIELSEN (1985) the Nagoryan̄ samples can be assigned to the upper part of their *Tranolithus phacelosus*-Zone (CC23b — defined by the presence of *T. phacelosus* and the absence of *Broinsonia parca constricta*). This zone is considered to be the first nannofossil zone of the Lower Maastrichtian (PERCH-NIELSEN, 1985) with the Campanian–Maastrichtian boundary marked by the extinction of *B. parca constricta* (PERCH-NIELSEN, 1985) or by the extinction of *R. anthophorus* and *E. eximius* (VERBEEK, 1977; DOEVEN, 1983). However, no exact correlation of nannoplankton and macrofossil zonations at the Campanian–Maastrichtian boundary for low and high latitudes exists (e.g. ROBASYNSKI, et al., 1985). Therefore the age indication for lower Lower Maastricht-

ian in the sense of nannofossil zonations cannot be compared with macrofossil zonations of the Maastrichtian.

The absence of the marker species *Quadrum trifidum* (STRADNER, 1961) is explained by the boreal character of the nannoflora. This species is considered to be a low latitude nannofloral-element (THIERSTEIN, 1976, 1981).

In terms of the nannoplankton zonation of high northern latitudes the sample can be assigned to the *Prediscosphaera stoveri*-Zone sensu LAMBERT (1980), although only two questionable specimens of the index species could be found. This zone is ascribed to the Upper Campanian to lowermost Maastrichtian below the first occurrence of *Lithraphidites praequadratus* ROTH, 1978 (LAMBERT, 1980; CRUX, 1982; ROBASYNSKI et al., 1985).

The nannoplankton assemblage of Nagoryan̄ is dominated by the following genera: *Micula* (14%), *Prediscosphaera* (12%), *Eiffellithus* (10%), *Arkhangelskiella* (8%) and *Watznaueria* (6%). Common species like *Reinhardtites levis*, *Arkhangelskiella cymbiformis*, *Kamptnerius magnificus* and *Eiffellithus turriseiffeli* show abundance peaks in high latitudes (THIERSTEIN, 1976, 1981) which confirms the boreal character of the nannoflora. The high ratio of *Micula* to *Watznaueria* also indicates relatively cold water masses (DOEVEN, 1983).

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Table I. Nannoplankton taxa from Nagoryan̄ (Ukrainian SSR)

	%
<i>Ahmuellerella octoradiata</i> (GORKA, 1957) REINHARDT, 1966	2
<i>Arkhangel'skiella cymbiformis</i> VESHINA, 1959	8
<i>Biscutum constans</i> (GORKA, 1957) BLACK, 1959	5
<i>Braarudosphaera bigelowi</i> (GRAN & BRAARUD, 1935) DEFLANDRE, 1947	0,5
<i>Broinsonia</i> sp.	2
<i>Chiastozygus litterarius</i> (GORKA, 1957) MANIVIT, 1971	3
<i>Chiastozygus</i> sp.	0,5
<i>Cretarhabdus crenulatus</i> BRAMLETTE & MARTINI, 1964	2
<i>Cribrosphaerella ehrenbergii</i> (ARKHANGEL'SKY, 1912) DEFLANDRE, 1952	5
<i>Cyclagelosphaera</i> sp.	0,3
<i>Eiffellithus turriseiffelii</i> (DEFLANDRE, 1954) REINHARDT, 1965	10
<i>Gartnerago obliquum</i> (STRADNER, 1963) REINHARDT, 1970	1
<i>Kamptnerius magnificus</i> DEFLANDRE, 1959	4
<i>Lithraphidites carniolensis</i> DEFLANDRE, 1963	1
<i>Lucianorhabdus cayeuxii</i> DEFLANDRE, 1959	3
<i>Manivitella pemmatoidea</i> (DEFLANDRE, 1965) THIERSTEIN, 1971	0,5
<i>Microrhabdulus decoratus</i> DEFLANDRE, 1959	5
<i>Micula concava</i> (STRADNER, 1960) BUKRY, 1969	1
<i>Micula decussata</i> VEKSHINA, 1959	13
<i>Prediscosphaera cretacea</i> (ARKHANGEL'SKY, 1912) GARTNER, 1968	8
<i>Prediscosphaera grandis</i> PERCH-NIELSEN, 1979	0,3
<i>Prediscosphaera spinosa</i> (BRAMLETTE & MARTINI, 1964) GARTNER, 1968	2
<i>Prediscosphaera</i> cf. <i>stoveri</i> (PERCH-NIELSEN, 1968) SHAFIK & STRADNER, 1971	0,5
<i>Quadrum gothicum</i> (DEFLANDRE, 1959) PRINS & PERCH-NIELSEN, 1977	1
<i>Reinhardtites levis</i> PRINS & SISSINGH, 1977	5
<i>Rhagodiscus angustus</i> (STRADNER, 1963) REINHARDT, 1966	0,5
<i>Rhagodiscus reniformis</i> PERCH-NIELSEN, 1973	0,5
<i>Tranolithus minimus</i> (BUKRY, 1969) REINHARDT, 1971	0,5
<i>Tranolithus phacelosus</i> STOVER 1966	1
<i>Vekshinella crux</i> (DEFLANDRE & FERT, 1952) SHAFIK & STRADNER, 1971	2
<i>Watznaueria barnesae</i> (BLACK, 1959) PERCH-NIELSEN, 1968	6
<i>Zygodiscus diplogrammus</i> (DEFLANDRE & FERT, 1954) GARTNER, 1968	2
<i>Zygodiscus spiralis</i> BRAMLETTE & MARTINI, 1964	3

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