

EOCENE DINOFLAGELLATES FROM H20 DABULENI DRILLING, MOESIAN PLATFORM (ROMANIA)

14

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Abstract: The palynological research of the deposits ranging within the interval 163m-350m in Dabuleni drilling (geographically lying to SE of Craiova and geologically in the Moesian Platform) enabled to distinguish a palynologic assemblage rich in cysts of dinoflagellates and poor in spores and pollen. The generic and particular variety of dinoflagellates identified in these deposits has led to separation of microphytoplanktonic assemblages characteristic to the Lower and Upper Eocene, and for the Middle Eocene to distinction of *Wilsonidium echinosuturatum* dinoflagellate zone (Wilson, 1988).

The dinoflagellates assemblage and zone provided by these deposits may be correlated with the planktonic foraminifera identified (Popescu Gh., Enciu P., 1995) in the samples investigated by us.

The main species of dinoflagellates having stratigraphic significance will be shown in plates.

Keywords: Dinoflagellates, Paleogene, Correlation.

This paper deals with the assemblages of dinoflagellates cysts among to geochronologically date the Eocene deposits and correlate them with the data resulted from the study of other fossil groups. They are very important factors for enhancing the accuracy of geochronologically dating for the above mentioned interval and knowledge of the biostratigraphy of the respective area as well as improvement of dinoflagellates of taxonomic diagnosis.

1. The geographic position of the study area and fossil material source.

Dăbuleni drilling is located in the Moesian Platform in the southern part of Oltenia, to south east of Craiova, in between Jiu and Olt Rivers, at 12km north of the Danube. The palynologic analyses have been performed on mechanical cores taken out from 163m-360m interval, Fig.1.

2. Previous study

The deposits resulted from the above-mentioned interval were also studied microfaunistically (Gh. Popescu, P. Enciu, 1996). Nannoplankton studies on the cores from the wells also drilled in the above-mentioned area were carried out for the Paleocene-Eocene deposits (M. Leu, St. Gartner, I. Costea, 1983).

3. Palynological results

Three types of microphytoplanktonic assemblages characteristic to Eocene (Priabonian, Lutetian?-Bartonian, Ypresian) were identified.

a). The Upper Eocene assemblage (Priabonian) (163m-202m interval) is characterised by: *Impletosphaeridium insolitum*, *Systematophora placacantha*, *Cordosphaeridium gracilis*, *Lingulosphaeridium*

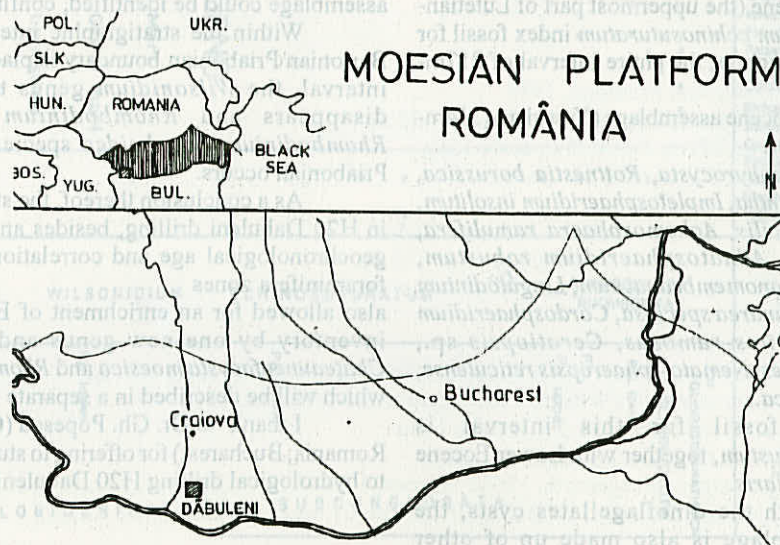


Fig.1 - Lay-out of study area (drilling)

machaerophorum, *Cordosphaeridium funiculatum*, *Spiniferites ramosus*, *Deflandrea phosphoritica*, *Impagidinium maculatum*, *Impagidinium* sp., *Areosphaeridium multicornutum*, *Batiacasphaera* sp., *Batiacasphaera compta*, *Cribooperidinium giuseppeii*, *Wetzeliella* sp., *Thalassiphora pelagica*, *Hystrichokolpoma eisenacki*, *H. cinctum*, *Samlandia clamydophora*, *Nannoceratopsis gracilis*, *Rhombodinium* sp., *Rhombodinium antonescui*, *Rhombodinium rhomboidea*, *Chateauneufacysta moesica*, *Pterodinium cingulatum*, *Palaeocystodinium golzowense*, *Areosphaeridium diktyopokus*, *Deflandrea* sp., *Phthanoperidinium comatum*.

The *Rhombodinium rhomboidea* species typical of the Upper Eocene (Priabonian) represents the index fossil of this assemblage and it was recorded with a high frequency.

b). Middle Eocene assemblage (Lutetian?-Bartonian) (202m-305m interval) consist of:

Areoligera+*Glaphyrocysta*, *Rottnestia borussica*, *Impletosphaeridium insolitum*, *Cordosphaeridium gracilis*, *Achomosphaera ramulifera*, *Adnatosphaeridium robustum*, *Lingulodinium machaerophorum*, *Cordosphaeridium funiculatum*, *Spiniferites ramosus*, *Cordosphaeridium inodes*, *Deflandrea phosphoritica*, *Impagidinium maculatum*, *Wilsonidium echinosuturatum*, *Wilsonidium* sp., *Impagidinium* sp., *Areosphaeridium multicornutum*, *Batiacasphaera* sp., *Batiacasphaera compta*, *Cribooperidinium giuseppeii*, *Wetzeliella* sp., *Thalassiphora pelagica*, *Charlesdowniea coleothrypta*, *Phthanoperidinium* sp., *Wetzeliella meckelfeldensis*, *Lejeunecysta hyalina*, *Hystrichokolpoma eisenacki*, *H. cinctum*, *Charlesdowniea fasciata*, *Cordosphaeridium latispinosum*, *Samlandia clamydophora*, *Wilsonidium compactum*, *Selenopemphyx nefroides*, *Deflandrea leptodermata*, *Nannoceratopsis gracilis*, *Oligosphaeridium complex*, *Wetzeliella articulata*, *Wetzeliella aff. articulata*.

The Middle Eocene is well defined biostratigraphically based on *Wilsonidium* genus whose range was identified along 202m-305m interval. In this instance, the whole sequence, amounting to 103m thickness, may be assigned to Middle Eocene (the uppermost part of Lutetian-Bartonian) as *Wilsonidium echinosuturatum* index fossil for this interval occurs throughout the entire interval of 217m-305m, Fig.2.

c). The Lower Eocene assemblage (Ypresian) (314m-360m interval) consist of:

Areoligera+*Glaphyrocysta*, *Rottnestia borussica*, *Systematophora placacantha*, *Impletosphaeridium insolitum*, *Cordosphaeridium gracilis*, *Achomosphaera ramulifera*, *Fibrocysta bipolaris*, *Adnatosphaeridium robustum*, *Spiniferites ramosus granomembranaceum*, *Lingulodinium machaerophorum*, *Deflandrea speciosa*, *Cordosphaeridium funiculatum*, *Spiniferites ramosus*, *Ceratiopsis* sp., *Cordosphaeridium inodes*, *Nemato-sphaeropsis reticulense*, *Deflandrea phosphoritica*.

The index fossil for this interval is *Adnatosphaeridium robustum*, together with Lower Eocene species *Fibrocysta bipolaris*.

Alongside with the dinoflagellates cysts, the palynological assemblage is also made up of other phytoplanktonic species represented by algae: *Cymatiosphaera*, *Pediastrum*, *Tythyodiscus*,

Microtythyodiscus, *Pterospermella*.

The continental palynomorphs were seldom encountered or lacked at certain levels. Other elements such as: microforaminifera, scolecodonts, vegetal tissue, as well as reworked elements of the Paleocene (*Ceratiopsis*) and Jurassic (*Bajocian-Nannoceratopsis gracilis*) deposits were also identified.

4. Correlation of dinoflagellate palynozones with planktonic foraminifera zones in a stratigraphic succession were identified the following biozones:

a). Palynozone with *Adnatosphaeridium robustum* separated within 314m-360m interval can be very well correlated to the area of planktonic foraminifera P9 with *Acarinina pentacamerata* found at the drilling bottom within the interval ranging between 312m-356m.

The above-mentioned biozones are characteristic to the Lower Eocene (Ypresian).

b). The *Wilsonidium echinosuturatum* bearing palynozone identified throughout 189m-305m interval is well correlated with the planktonic foraminifera areas as follows: (for 285m-312m interval) with the lower part of P11 zone, for 236m-285m, with the median part of *Globigerinatheka subconglobata* bearing P11 zone.

All palynologic and planktonic foraminifera zones separated with the above-mentioned interval are characteristic to the upper part of Middle Eocene (Lutetian?-Bartonian).

c). *Rhombodinium rhomboidea* bearing palynozone separated within 163m-214m interval is well correlated with the zones of planktonic foraminifera P11 upper part, P12 with the lower part of P13 zone and with P15 *Globigerinatheka seminivoluta* separated within the interval 165m-180m (Popescu, Enciu, 1996); both biozones being characteristic to the Upper Eocene (Priabonian).

Remarks. The lack of some planktonic foraminifera conclusive for P10 zone (Lutetian base) determined the authors (Popescu, Enciu, 1996) to suppose the occurrence of a sedimentary gap. The palynological data on dinoflagellates confirm this gap because no species or palynological assemblage could be identified, confirming the Lutetian.

Within the stratigraphic interval 202m-214m, the Bartonian/Priabonian boundary is placed as throughout this interval, the *Wilsonidium* genus typical of Bartonian disappears and *Rhombodinium* genus which by *Rhombodinium rhomboidea* species is characteristic to Priabonian occurs.

As a conclusion thereof, the study of dinoflagellates in H20 Dabuleni drilling, besides an acknowledgement of geochronological age and correlation with the planktonic foraminifera zones also allowed for an enrichment of Eocene dinoflagellates inventory by one new genus and two new species: *Chateauneufacysta moesica* and *Rhombodinium antonescui*, which will be described in a separate work.

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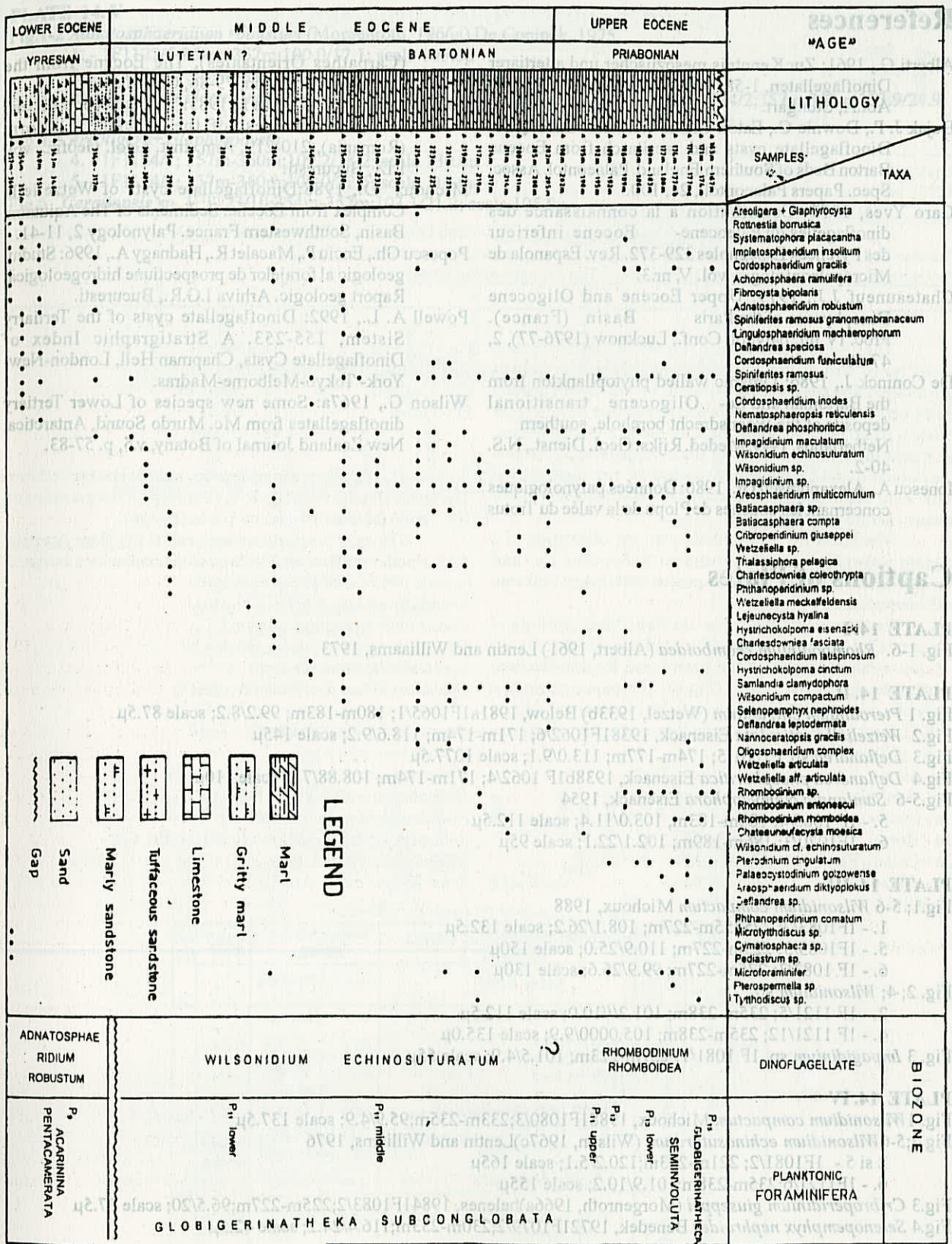


Fig. 2 - Dinoflagelates distribution

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Captions of Plates

PLATE 14. I

Fig. 1-6. *Rhombodinium rhomboidea* (Albert, 1961) Lentin and Williams, 1973

PLATE 14. II

Fig. 1 *Pterodinium cingulatum* (Wetzel, 1933b) Below, 1981a1F1065/1; 180m-183m; 99.2/8.2; scale 87.5 μ

Fig.2 *Wetzeliella articulata* Eisenack, 19381F1062/6; 171m-174m; 118.6/9.2; scale 145 μ

Fig.3 *Deflandrea* sp. F1061/5; 174m-177m; 113.0/9.1; scale 1077.5 μ

Fig.4 *Deflandrea phosphoritica* Eisenack, 1938b1F 1062/4; 171m-174m; 108.88/7.0; scale 110 μ

Fig.5-6 *Samlandia clamydophora* Eisenack, 1954

5. - 1F 1065/4; 180m-183m, 103.0/11.4; scale 112.5 μ

6. - 1F1070/3; 186m-189m; 102.1/22.1; scale 95 μ

PLATE 14. III

Fig.1; 5-6 *Wilsonidium compactum* Michoux, 1988

1. - 1F1083/2; 225555m-227m; 108.1/26.2; scale 132.5 μ

5. - 1F1083/3; 225m-227m; 110.9/25.0; scale 150 μ

6. - 1F 1083/3; 225m-227m; 99.9/26.6; scale 130 μ

Fig. 2; 4; *Wilsonidium* sp.,

2. - 1F 1121/5; 235m-238m; 101.2///10.0; scale 112.5 μ

4. - 1F 1121/12; 235m-238m; 105.0000/9.9; scale 135.0 μ

Fig. 3 *Impagidinium* sp. 1F 1081/1; 221m-223m; 101.5/4.9; scale 55 μ

PLATE 14. IV

Fig. 1 *Wilsonidium compactum* Michoux, 19881F1080/3; 233m-235m; 95.9/4.9; scale 137.5 μ

Fig.2;5-6 *Wilsonidium echinosuturatum* (Wilson, 1967c) Lentin and Williams, 1976

2 si 5 - 1F1081/2; 221m-223m; 120.2/5.1; scale 165 μ

6. - 1F1121/6; 235m-238m; 101.9/10.2; scale 155 μ

Fig.3 *Cribroperidinium giuseppeii* (Morgenroth, 1966a) helenes, 19841F1083/2; 225m-227m; 96.5/20; scale 67.5 μ

Fig.4 *Selenopemphyx nephroides* Benedek, 19721F1079/2; 230m-233m; 116.4/24.2; scale 42.5 μ

