Stratigraphical and paleogeographical significance of conodonts from the Muschelkalk of the Holy Cross Mts

ABSTRACT: Fifteen conodont species are noted for the first time from the Muschelkalk of the SW Mesozoic margin of the Holy Cross Mts. An attempt to correlate the Muschelkalk series with those of the Alps and Germany on the basis of these new findings, as well as previous ones, is presented. The heterochronocity of lithostratigraphical units hitherto proposed is demonstrated. Differences in the conodont assemblages point to the fact that three different conodont provinces successively influenced the Muschelkalk basin of the Holy Cross Mts.

INTRODUCTION

The paper is a successive one dealing with the results of the author’s studies on conodonts of the Muschelkalk in the Holy Cross Mts (cf. Trammer 1971).

In searching of conodonts, 51 samples of Middle Triassic limestones were dissolved. Among 11 samples collected from the Lower Muschelkalk section at Pierzchnica (Fig. 1), nine were conodont-bearing. One of these samples yielded an average of 10 conodonts per 300 g of rock. Moreover, the section at Wolica (Trammer 1971) was partially resampled.

The only sample collected from the Middle Muschelkalk section at Pierzchnica appeared to be negative.

All 39 samples collected from the Upper Muschelkalk sections at Pierzchnica, Stare Chećciny and Lesica (Fig. 1) were positive and yielded an average of 50 specimens per 300 g of rock.
Besides those previously recorded (Trammer 1971), 15 other species were found in the investigated area. These species are listed below and their stratigraphical ranges are given in Figs 2 and 3.


*Enantiognathus incurus* Kozur, 1968; 15 specimens — Pierzchnica, Stare Checiny and Lesica (Ceratites Beds) — Pl. 1, Fig. 3.

*Hibbardella bicuspilata* (Kozur, 1968); 8 specimens — Pierzchnica (Ceratites Beds) — Pl. 1, Fig. 1.

*Hindeodella (Metaprioniodus) suevica* (Tatge, 1956); 17 specimens — Pierzchnica, Stare Checiny and Lesica (Ceratites Beds) — Pl. 2, Figs 8 and 10.

*Hindeodella (Metaprioniodus) bicuspilata* Kozur & Mostler, 1970; 18 specimens — Pierzchnica, Stare Checiny and Lesica (Ceratites Beds) — Pl. 2, Fig. 6.

*Hindeodella (Metaprioniodus) sp.;* 1 specimen — Wolica (Łukowa Beds) — Pl. 2, Fig. 5.

*Neohindeodella nevadensis* (Müller, 1956); 14 specimens — Pierzchnica and Wolica (Wollenkalk, Łukowa Beds) — Pl. 2, Fig. 3.

*Neohindeodella riegeli* (Moser, 1968) = *Hindeodella triassica a* in: Hirschmann 1959; 2 specimens — Pierzchnica (Ceratites Beds) — Pl. 2, Fig. 4.

*Neohindeodella sp.;* 1 specimen — Wolica (Łukowa Beds) — Pl. 2, Fig. 1.

*Pollognathus germanicus* (Kozur, 1968); 31 specimens — Pierzchnica, Stare Checiny.
1 — *Hibbardella bicuspidata* (Kozur), Pierzchnica (Ceratites Beds).
2 — *Pollognathus germanicus* (Kozur), Stare Chęciny (Ceratites Beds).
3 — *Enantiognathus incurvus* Kozur, Stare Chęciny (Ceratites Beds).
4 — *Gondolella (Celsigondolella) watznaueri* praececuror Kozur, Pierzchnica (Ceratites Beds).
5 — *Pollognathus sequens* (Kozur), Pierzchnica (Ceratites Beds).
6 — *Cornudina tortilis* Kozur & Mostler, Pierzchnica (Łukowa Beds).
7 — *Cornudina tortilis* Kozur & Mostler, Wolica (Wellenkalk).
8 — *Gondolella haslachensis* Tatge, Stare Chęciny (Ceratites Beds).
9 — *Gondolella haslachensis* Tatge, Lesica (Ceratites Beds).
10 — *Gondolella haslachensis* Tatge, aberrant form, Stare Chęciny (Ceratites Beds).
11 — *Gondolella haslachensis* Tatge, Pierzchnica (Ceratites Beds).
12 — *Gondolella haslachensis* Tatge, a form transitional to G. (Celsigondolella) watznaueri, Stare Chęciny (Ceratites Beds).

All figures × 100; taken by L. Łuszczyńska, M. Sc.
area studied, corresponds to the Lower Anisian (Hydaspian) and Pelsonian of the Alps (Fig. 2). The youngest bed yielding conodonts characteristic of the Lower Anisian is separated from the oldest bed with forms characteristic of the Pelsonian by a part of section, about 10 m long (Fig. 2); hence the Lower Anisian/Pelsonian boundary cannot be precisely delineated, but it may be only inferred to continue somewhere in the middle part of the Łukowa Beds.

The correlation outlined above differs from that hitherto proposed for the Lower Muschelkalk of the Holy Cross area. Previously, Senkowiczowa (1962, Chart 2), included the Wolica Beds and Wellenkalk series in the Lower Anisian, lower part of the Łukowa Beds in the Pelsonian, and upper part of the Łukowa and Lima striata Beds in the Illyrian 1.

Neohindeodella triassica triassica (Müller) is a very common form both in the Lower and Upper Muschelkalk in Germany (Tatge 1956, Kozur 1968b), whereas in Poland it is similarly common in the Lower Muschelkalk, but later disappears and barely a single specimen was hitherto reported from the Upper Muschelkalk at Pierzchnica. On the other hand, other conodonts occurring in large numbers in the Upper Muschelkalk of Germany, e.g. those of the genus Gondolella, are equally common in contemporaneous deposits of the Holy Cross Mts. Therefore

<table>
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<tr>
<th>Lithostratigraphy</th>
<th>Wolica Beds</th>
<th>Wellenkalk</th>
<th>Łukowa Beds</th>
<th>Lima striata Beds</th>
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<td>Alpine substages</td>
<td>LOWER ANISIAN</td>
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<td>Gondolella regale</td>
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<td>Neohindeodella nevadensis</td>
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<td>Neospathodus kockeli</td>
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![Fig. 2]

Stratigraphical ranges of the index conodonts for the Lower Muschelkalk in the Holy Cross Mts (lithostratigraphic schema according to Senkowiczowa, 1957)

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1 It may be assumed that future studies will enable to subdivide the section of the Lower Muschelkalk more accurately and, particularly, to reduce correlation-error interval in the case of Lower Anisian/Pelsonian boundary. Moreover, the finding of a cosmopolitan form, Neospathodus hoberi neupasserensis Mosher, appearing in the upper Lower Anisian and continuing to the end of the Pelsonian (Kozur 1971), seems very probable.
it may be assumed that facial conditions precluding normal development of *N. triassica triassica* and permitting the existence of other species, predominated in the area of the Holy Cross Mts during the Upper Muschelkalk. The exact nature of these conditions is unclear. However, this mass occurrence of *N. triassica triassica* may be applied in local parallelization as an "index" and diagnostic feature of the Lower Muschelkalk in the Holy Cross area.

The lack of *Cornudina minor* Kozur and *Gondolella mombergensis* Tatge in the Lower Muschelkalk of Germany may similarly have resulted from unsuitable facial conditions (cf. also Kozur 1971, Kozur & Mostler 1971). These species were noted there in the Upper Muschelkalk, exclusively, and therefore were accepted as fossils characteristic of that complex (Kozur 1968b). Nevertheless, in the Holy Cross Mts and Lower Silesia these specimens have recently been noted in the Lower Muschelkalk (Zawidzka 1970, Trammer 1971).

**STRATIGRAPHICAL IMPORTANCE OF CONODONTS FROM THE UPPER MUSCHELKALK**

The stratigraphical importance of conodonts significantly increases in the Upper Muschelkalk in comparison with the Lower Muschelkalk. They served as indices for establishing seven conodont zones in Germany (Kozur 1968b).

Previously, only the two lowest conodont zones were distinguished by the present author (Trammer 1971), because the *Ceratites* Beds were not sampled. During the last field season, the whole sequence of the Upper Muschelkalk was studied in the Holy Cross area, but it appears that only the four lowest German zones may be identified here. The three upper zones (Zones nos 5—7) of the German sequence do not occur here (cf. discussion below). The stratigraphical ranges of conodonts characteristic of these 4 zones are tabulated in Fig. 3. Correlation of conodont and *Ceratites* zones was given by Kozur (1968b) and Trammer (1971, Fig. 3).

As to the boundaries between particular zones proposed by Kozur (op. cit.), some following remarks should be taken into account. The boundary between Zones nos 1 and 2 is often very difficult to trace, because conodonts characteristic of Zone no. 1 (cf. Fig. 3) are rare in the Upper Muschelkalk in the Holy Cross area. Moreover, the base of Zone no. 2 (as defined by Kozur 1968b) is delineated by extinction of a few conodont species, without appearance of any new one, and thus an additional difficulty arises. It is often uncertain whether the lack of conodonts characteristic of Zone no. 1 is because they became extinct or simply because they were not found in the section.
The boundary between Zones nos 2 and 3 is also difficult to define, as statistical evaluations are necessary for its identification, because ranges of *Gondolella mombergensis mombergensis*, characteristic of Zone

![Stratigraphical ranges of the index conodonts for the Upper Muschelkalk in the Holy Cross Mts (lithostratigraphic schema according to Senkowiczowa, 1957)](image)

no. 2 and *G. mombergensis media*, characteristic of Zone no. 3, partly overlap (cf. Fig. 3). The same overlap is observed in Germany, hence Kozur (1968b) who proposed the conodont zonation of the German Muschelkalk, has taken the base of Zone no. 3 at the base of a bed where contribution of *G. mombergensis media* exceeds 50 per cent of gondolellids. This does not seem convenient and therefore the present author lowers the base of this zone to the place where *G. mombergensis media* first appears (cf. Fig. 3). Zone no. 3, so defined, will extend from the middle Compressus/Evolutus to the middle Spinosus Zone inclusively,
and will include total stratigraphical range of its characteristic species (cf. Kozur 1968a, b). The boundary between Zones nos 3 and 4 is distinctly marked by evolution of G. mombergensis media into G. haslachensis.

BOUNDARIES OF LITHOSTRATIGRAPHICAL MEMBERS

The boundary between conodont Zones nos 2 and 3 continues within the Ceratites Beds at Pierzchnica and Stare Chęciny; these beds are defined as dark-grey, somewhat crumpled limestones yielding various Ceratites species. The course of this boundary is based on field data from Pierzchnica and Stare Chęciny (cf. Fig. 3).

In section at Lesica this boundary was traced in the Pecten discites Beds (light-coloured lumachelle with numerous scallop shells). It follows that the lithostratigraphical boundary between the Pecten discites and Ceratites Beds is heterochronous and a facial change has taken place between Pierzchnica — Stare Chęciny and Lesica areas. Where, on the former, the deposition of dark-grey, somewhat crumpled limestones begins, in the latter, deposition of scallop lumachelle continues.

Further studies on sections located close to one another will presumably make possible a more precise evaluation of these facial changes.

MUSCHELKALK/KEUPER BOUNDARY

The conodont Zone no. 4 is the uppermost stated in the Holy Cross area. In Germany, this zone correlates with upper Spinosus and Enodis/Laevigatus Zones of the ceratid zonation (Kozur 1968b). Deposits assigned to Zone no. 4 are overlayed by the Keuper in the Holy Cross area, hence Zone nos 5—7 of Germany are missing. Incompleteness of the Muschelkalk in the Holy Cross area was noted by Senkowski (1957, 1961), but it was assumed that carbonate sedimentation ceased in the Spinosus Zone (Senkowski 1957, 1961; followed by Trammer 1971). However, conodonts recently found in the uppermost Muschelkalk indicate the occurrence of at least a part of the next ceratid zone, viz. the Enodis/Laevigatus Zone. This is evidenced by the occurrence of Gondoella haslachensis transient to G. (Celsigondoella) watznaueri and single specimen of G. (C.) watznaueri praecursor. These forms are known from the uppermost part of Zone no. 4, i.e. the part corresponding to the Enodis/Laevigatus Zone, and are absent in the lower part of Zone no. 4, corresponding to the Spinosus Zone.

Conodont Zones nos 5—7, which are missing in the Holy Cross Mts, correspond to ceratid Nodosus and Discoceratiten Zones of Germany (Kozur 1968b). The above facts point to heterochronity of the Muschelkalk/Keuper boundary within the German Basin. During the deposition
of the uppermost *Ceratites* Beds in Germany, the Keuper facies already dominated in the Holy Cross area.

In view of the above data, Senkowiczowa's (1970) opinion that the Upper Muschelkalk section is complete in the Holy Cross Mts, seems unsubstantiated.

**CONODONT PROVINCES**

Kozur & Mostler (1971) distinguished a few Triassic provinces on the basis of differences in conodont assemblages.

During the Lower Anisian (Wolica Beds, Wellenkalk, lower part of the Łukowa Beds) the Holy Cross basin was transitional between the Asiatic and German provinces. The Asiatic province is characterized by occurrence of the genus *Gondolella* and multielement *Gladigondolella tethydis*, which are unknown in the German province, according to Kozur & Mostler (1971). In the Lower Anisian of the Holy Cross Mts, *Gondolella* was found (cf. also Trammer 1971), whereas multielement *Gladigondolella tethydis* is missing. In the Lower Anisian of both Austro-Alpine and Western-Mediterranean provinces, no conodonts were noted (Kozur & Mostler 1971).

During the Pelsonian (upper part of the Łukowa Beds, *Lima striata* Beds) the Holy Cross area belonged to the Austro-Alpine province, which is evidenced by the occurrence of the genus *Gondolella* (cf. Trammer 1971). These conodonts are known from the Austro-Alpine province and have not been found in the German province (Kozur & Mostler 1971). Therefore, the earlier hypothesis on closer connections of the Holy Cross basin with Austro-Alpine than German province during the Lower Muschelkalk (cf. Łumiewski 1923; Samsonowicz 1929; Senkowiczowa 1962; Trammer 1971, 1972) is confirmed.

During the Upper Muschelkalk, the Holy Cross basin belonged to the German province. This is evidenced by the occurrence of endemic, German evolutionary series: *Gondolella mombergensis mombergensis* — *G. mombergensis media* — *G. haslachensis* — *G. (Celsigondolella) watznaueri praecursor* (cf. Fig. 4) and a number of other species, known exclusively from Germany.

**CONTRIBUTION TO THE PROBLEM OF EVOLUTION OF TRIASSIC CONODONTS**

The phenomenon of phylogenetic increment in size is known to take place in many faunal groups. This regularity is commonly termed as "Depéret's Law" (cf. Kuźnicki & Urbanek 1970). This phenomenon was also noted in the evolution of Middle Triassic ceratids, being expressed by an increase in size of ceratids from one zone in relation to those from the previous zone (cf. Wenger 1957).
The opposite process may be observed in conodonts of the genus *Gondolella* from the Upper Muschelkalk. These conodonts evolve rapidly, but this is accompanied by the decrement of successively younger forms in size (Fig. 4). Hence this phenomenon may be termed as "phylogenetic decrement in size".

**Fig. 4**

Phylogenetic development of conodonts of the genus *Gondolella* in the Upper Muschelkalk of the Holy Cross Mts; visible is a phenomenon of "phylogenetic decrement in size"

A - *Gondolella mombergensis mombergensis* Tatge
B - *Gondolella mombergensis media* Kozur
C - *Gondolella mombergensis media*, a form transitional to *G. haslachensis* Tatge
D - *Gondolella haslachensis* Tatge
E - *Gondolella haslachensis*, a form transitional to *G. (Celsigondolella) watznaueri praecursor* Kozur
F - *Gondolella (Celsigondolella) watznaueri praecursor* Kozur
PROBLEM OF THE SPECIES GONDOLELLA HASLACHENSIS TATGE, 1956

Tatge (1956) established two new species of the genus Gondolella. Stauffer & Plummer, 1932. The first, G. mombergensis Tatge, was found in the Trochitenkalk and Lower Ceratites Beds; whereas the second one, G. haslachensis Tatge, was found in the middle part of the Upper Muschelkalk. Successive authors have included G. haslachensis into the synonymy of G. mombergensis (cf. Huckriede 1958, Hirschmann 1959, Budurov 1962, Budurov & Stefanov 1965, Mosher & Clark 1965, Clark & Mosher 1966, Bender 1967, Cherchi 1967, Wilczewski 1967, Hayashi 1968, Nogami 1968, Mosher 1968). It was supposed that G. haslachensis represents a dwarfish form ("Kümmernform") of G. mombergensis (cf. Huckriede 1958) or its juvenile form (cf. Hirschmann 1959). On the other hand, Kozur (1968b) used G. haslachensis as an index fossil of Zones nos 4 and 5, outside the range of G. mombergensis, in his conodont zonation of the Upper Muschelkalk of Germany; hence it may be assumed that although Kozur did not discuss the taxonomic position of G. haslachensis he accepted the existence of this species. Later, this species was once more cited as a characteristic fossil by Kozur (1970) and Kozur & Mostler (1971).

On the basis of the conodont succession in the Upper Muschelkalk of Germany (Kozur 1968b) and Holy Cross Mts the following conclusions may be presented. The subspecies Gondolella mombergensis media Kozur had evolved into G. haslachensis Tatge during the middle Spinus Zone and disappeared itself (Figs 3—4). However, within very variable subspecies G. mombergensis mombergensis Tatge, besides typical forms, i.e. closest to the holotype of Tatge (1956), some forms representing intraspecific variability had existed. One of these forms was somewhat similar morphologically to G. haslachensis, which might have caused misinterpretations. Moreover, some misunderstandings might have resulted from insufficient knowledge of conodont faunas from the upper Spinus and Enodis/Laevigatus Zones, yielding G. haslachensis, which existed until the paper by Kozur (1968b) was published. At present we know that in these ceratid zones only G. haslachensis is represented, whereas even a single specimen of G. mombergensis has not been found here. This demonstrates the existence of G. haslachensis as a separate species, which is endemic of the German basin. On the other hand, within the cosmopolitan species G. mombergensis, some variants similar to G. haslachensis were reported from the Triassic of the Tethys. Hence, the inclusion of G. haslachensis into the synonymy of G. mombergensis might have partly resulted from the fact that the majority of the authors studying Triassic conodonts were occupied with Tethyan forms.
G. haslachensis differs from small varieties of G. mombergensis in a strong, long cusp, two or three times larger than the rest of carina teeth. No variety of G. mombergensis with such cusp has been found.

SYSTEMATIC DESCRIPTION OF SOME CONODONTS

Only those forms, the taxonomic position of which is changed in the present paper, are described below. The full paleontological descriptions of all conodonts recorded in the Triassic of the Holy Cross Mts will be presented in a separate paper.

Genus CORNUDINA Hirschmann, 1959
Type species Cornudina breviramulis (Tatge, 1956)
Cornudina minor Kozur, 1968

1959. Cornudina breviramulis a; C. Hirschmann, pp. 46–47, Pl. 4, Fig. 4.
1959. Cornudina breviramulis b; C. Hirschmann, p. 67, Text-fig. 11.
1968b. Parachirognathus breviramulis (Tatge); L. Mosher, pp. 622–623, Pl. 113, Fig. 1a.
1970. Cornudina breviramulis (Tatge); K. Zawidzka, Pl. 2, Fig. 12 (non Fig. 11 = C. breviramulis).
1971. Cornudina breviramulis minor Kozur; J. Trammer, Pl. 1, Fig. 2.

Remarks. — Kozur (1968a), in his description of a new subspecies Cornudina breviramulis minor Kozur, considered it to have evolved from the subspecies C. breviramulis breviramulis Tatge in the lowermost Ceratites Beds, which itself thereafter disappeared. However, it happens that the form minor co-occurs with the latter, breviramulis breviramulis (sensu Kozur 1968b) already in the Lower Muschelkalk (Zawidzka 1970, Trammer 1971). It seems rather improbable that two subspecies of the same species inhabited the same area in a long span of time. Hence, the form minor should be considered a separate species. The probability that "forms" minor and breviramulis breviramulis resulted from intraspecific variability is rather small, since they always differ distinctly.

Occurrence. — According to Kozur (1968a, b), Cornudina minor occurs in Zones nos 2 and 3 of the Upper Muschelkalk in Germany. In the Lower Silesia and the Holy Cross Mts, the form under discussion was found in the Lower Muschelkalk (Zawidzka 1970, Trammer 1971).

Genus NEOHINDEODELLA Kozur, 1968
Type species Neohindeodella triassica (Müller, 1956)
Neohindeodella hirschmanni (Kozur, 1968)

1959. Hindeodella triassica a; C. Hirschmann, p. 59, Text-figs 26–27, Pl. 4, Fig. 14.
1959a. Hindeodella (Neohindeodella) triassica hirschmanni n. subspp; H. Kozur, p. 138, Pl. 1, Fig. 10.
1983a. Hindeodella (Neohindeodella) triassica hirschmanni Kozur; H. Kozur, p. 1078, Pl. 2, Fig. 12.
1970. Hindeodella triassica hirschmanni Kozur; K. Zawidzka, Pl. 2, Fig. 5.
1971. Hindeodella (Neohindeodella) triassica hirschmanni Kozur; J. Trammer, Pl. 1, Fig. 14.
Remarks. — Neohindeodella hirschmanni continues through the whole Muschelkalk, just as N. triassica. As stated above, it seems rather improbable that two subspecies of one species can inhabit the same area at the same longer span of time. Hence, it may be assumed that N. hirschmanni, contrary to the opinion held by Kozur (1968a) and successors (cf. synonymy), is not a subspecies of N. triassica but represents a separate species.

Occurrence. — Neohindeodella hirschmanni is known from the Muschelkalk of Germany (Kozur 1968a) and from the Lower Muschelkalk of the Holy Cross Mts (Trammer 1971).

Genus GONDOLELLA Stauffer & Plummer, 1932
Subgenus GONDOLELLA Stauffer & Plummer, 1932
Type species Gondolella eleganula Stauffer & Plummer, 1932
Gondolella (Gondolella) prava Kozur, 1968

Remarks. — Gondolella (Gondolella) prava occurs from the base of the Upper Muschelkalk till to the Spinus zone, therefore its range overlaps the ranges of G. (G.) mombergensis (from the base of the Upper Muschelkalk up to the Evolutus zone) and G. (G.) mombergensis media (from the Evolutus to Spinus zone). Reasoning as above, G. (G.) prava is considered a separate species and not a subspecies of mombergensis.

Occurrence. — Gondolella (Gondolella) prava is known from the Upper Muschelkalk, up to middle Spinus zone in Germany (Kozur 1968a, b) and the same in the Holy Cross Mts.

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CONODONTS FROM THE MUSCHELKALK


ZNAĆENIE STRATYGRAFICZNE I PALEOGEOGRAFICZNE KONODONTÓW WAPIENIA MUSZLOWEGO Z GÓR ŚWIĘTOKRZYSKICH

J. TRAMMER

(Stwarentc)

W profilach wapienia muszlowego południowo-zachodniego obrzeżenia mezozoicznego Gór Świętokrzyskich (fig. 1), prócz konodontów znanych stąd poprzednio (Trammer 1971), stwierdzono obecność dalszych 15 gatunków (vide lista w tekście angielskim oraz pl. 1–2).

W oparciu o konodonty wykazano, że świętokrzyski dolny wapien muszlowy odpowiada alpejskiemu dolnemu anizykowi (hydaspowi) oraz pelsonowi (fig. 2).

W górnym wapieniu muszlowym stwierdzono istnienie czterech poziomów konodontowych (fig. 3) spośród siedmiu wydzialeyanych w Niemczech (Kozur 1968b). Trzy najwyższe poziomy (nr 5, 6 i 7) z niemieckiego górnego wapienia muszlowego w Górach Świętokrzyskich nie występują, zaś nad osadami należącymi do poziomu 4 leży tu bezpośrednio kajper. Powyższe fakty prowadzą do wniosku, że granica między wapieniem muszłowym a kajperem jest w obrębie zbiornika środkowo-europejskiego (geomorfologicznie) heterochroniczna.

Na obszarze świętokrzyskim heterochroniczna jest także granica między warstwami z Pecten discites i warstwami ceratytowymi.

W wapieniu muszlowym obszar Gór Świętokrzyskich należał kolejno do trzech prowincji konodontowych. W dolnym wapieniu muszłowym był on najpierw przejściowym między prowincją germanijską oraz azjatycką, następnie zaś należał do prowincji austro-alpejskiej. Natomiast w górnym wapieniu muszłowym obszar świętokrzyski należał do prowincji germanijskiej.

Wśród konodontów z rodzaju Gondoletia stwierdzono w górnym wapieniu muszłowym interesujące zjawisko filogenetycznego zmniejszania rozmiarów (fig. 4).

W pracy opisano także trzy formy, których pozycja taksonomiczna określona przez autora różni się od dotąd przyjmowanej.

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