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FACIES DIVERSITY OF THE BRNO JURASSIC FROM MICROFACIES AND MICROFAUNA POINT OF VIEW

FACIÁLNÍ ROZMANITOST BRNĚNSKÉ JURY Z HLEDISKA MIKROFACIÍ A MIKROFAUNY

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Abstract

Bubík, M., 2022: Facies diversity of the Brno Jurassic from microfacies and microfauna point of view. – Acta Musei Moraviae, Scientiae geologicae, 107, 2, 227–239 (with Czech summary).

Facies diversity of the Brno Jurassic from microfacies and microfauna point of view

Denudation remnants of Upper Jurassic carbonates in Brno area were originally part of vast carbonate platform on the eastern margin of the Bohemian Massif. High facies variability reflects original variable mosaic of shallow marine habitats. The prevailing microfacies type are biopelmicritic spiculites (packstones) with enclaves of biomicrite, intrabiomicrite and pelmicrite (packstones and wackestones). Locally bed of crinoidal biosparitic limestone (encrinite) and oosparitic limestone occurs. Microfaunal associations were studies in acid residues of limestone. Calcareous benthic foraminifera, sponge spicules and echinoderm ossicles prevail over other groups (bryozoans, bivalves, ostracods, brachiopods, stromatoporoids etc.). Comparative analysis of the microfacies from thin sections and quantitative analysis of microfauna from acid residues was applied for identification of original locality of pliosaur tooth from the collections of the Masaryk University, Brno, lacking the original lable. Combined microfacial features and characteristic composition of microfossil assemblage from the limestone enclosing the tooth show that the find very probably came from lower part of Stránská skála section.

Key words: Bohemian Massif, Oxfordian, microfacies, micropalaeontology, Foraminifera.

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1. INTRODUCTION

Carbonate facies of the Jurassic in eastern Brno outskirts were originally part of carbonate platform encompassing south-eastern Moravia up to vicinity of Znojmo, Třebíč and Svitavy in the west, continuing to Vienna area to the south and connected with the Jurassic in Poland and Bavaria (Uhlig 1882, Oppenheimer 1926, Koutek 1927, Eliáš 1981, Adámek 2005). Towards the south and east, the Jurassic carbonates are buried under the sedimentary fill of the Vienna Basin and nappes of Outer Carpathians.

Jurassic limestones in „Latein“ near Brno (todays Brno-Slatina neighbourhoud, where Stránská skála is situated) were mentioned already by Boué (1829). More detailed investigations of the Jurassic at localities Olomučany, Stránská skála, Bílá hora and Švédské šance performed Uhlig (1882). The first note on the Jurassic remnant at Hády Hill was published by Makowsky (1893). Koutek (1926, 1927) provided results of early sedimentary-petrography studies based on thin sections. The microfacies of the Brno Jurassic were characterized first by Eliáš (1981).

A striking feature of the Jurassic carbonate remnants in the Brno area is considerable facies variability, from detrital limestones with bivalve fauna, through crinoidal and coral limestones, to spongy biostromes and spiculite biopelmicritic limestones with abundant cephalopods (ammonites, belemnites). This indicates a considerable variability of depositional topography in the Brno sedimentation area during the Jurassic.

The stratigraphy of the Jurassic limestones is mainly based on the ammonites. Oppenheimer (1932) assigned the nodular cherty limestones of the Hády Hill to the ammonite Transversarium Zone, corresponding to the upper middle Oxfordian. However, a more recent study of the ammonite fauna and nannofossils points to the lower Oxfordian Cordatum Zone (P. Hykš, oral communication). Ammonite *Gregoryceras transversarium* Quenst. reported from Stránská skála by Oppenheimer (1926) and species *Perisphinctes* cf. *kiliani* de Riaz, *Euaspidoceras* cf. *perarmatum* (Sow.), *Epipeltoceras uhligi* (Oppenh.), *Taramelliceras callicerum* Opp. reported from Švédské šance by Oppenheimer (1907) prove the middle Oxfordian Transversarium Zone. Vašíček (1973) reported from the Švédské valy and Stránská skála localities the Bifurcatus and Bimammatum ammonite zones (upper Oxfordian-lower Kimmeridge) based on a revision of ammonites from museum collections. Thus the Stránská skála and Švédské šance sections span from the middle Oxfordian to lower Kimmeridgian (see also Hykš 2020, tab. 12).

Recently, the Jurassic remnants of the Brno area were investigated during the geological survey 1 : 25,000. The Jurassic limestones are exposed on the map sheets 24-324 Brno-North, 24-342 Brno-South, 24-413 Mokrá-Horákov, and 24-431 Šlapanice. During the fieldworks, the sections Hády Hill, Švédské šance, Stránská skála, Bílá hora and Slatina were measured, logged and sampled. Obtained sample set provided representative data on petrography, microfacies and microfauna of the limestones.

These data were applied in special case study – identification of the original locality of pliosaur tooth from the collections of the Geological Institute of Masaryk University in Brno. The limestone enclosing the tooth was analysed and compared with set of samples from the documented sections to find the best fit.

2. MATERIAL AND METHODS

The thin sections were prepared in the Laboratory of the Czech Geological Survey (CGS), Prague and are curated in collections of CGS in Brno. A Nikon Eclipse ME600 polarizing microscope equipped with a Nikon DS-Fi2 digital camera was used for observation and photodocumentation of the thin sections. The terminology used in the description of microfacies is follows the classifications of Folk (1959) and Dunham (1962) modified by Embry and Klovan (1971).

Free microfossils were extracted from limestones using 80% acetic acid according to the method of Lirer (2000) in the laboratory of the CGS in Brno. This method allows obtaining intact calcareous foraminifera and other microfossils from micritic limestones by selective dissolution of micrite. The resulting acid residue was washed on a 0.063 mm sieve and the microfossils were manually picked under a Zeiss SMXX microscope. Quantitative analysis is based mostly on 300 or more microfossils. Residues, microfossil slides and documentary rock fragments are curated in collections of the CGS in Brno.

The limestone enclosing the pliosaur tooth comes from the collection specimen PAL348 curated in the collections of the Institute of Geological Sciences, Masaryk University, Brno (Madzia *et al.* 2018). The specimen lacks original inventory number and label, so its provenance is uncertain. Besides this specimen, however, the collections contain another pliosaur tooth with the original inventory number and label, according to which the find comes from the collection of A. Stehlík, year 1934, locality Stránská skála (Madzia *et al.*, 2018). During preparation of the tooth, the surrounding rock was partly removed and rock pieces provided for preparation of thin sections and acid residue.

The comparative limestone samples come from the following localities (the numerical code specifies the section number according the documentation database of the CGS and the number of the map sheet 1 : 25,000):

1) **Švédské šance.** Samples came from small artificial cut BU090/24-431 (thickness: 5.6 m; 2 samples evaluated).
2) **Stránská skála.** Samples were taken from 59 m thick composite section comprising two continuing sections in abandoned quarries: lower quarry BU073/24-431 (thickness 46.8m; 8 samples evaluated) and upper quarry BU091/24-431 (thickness 12.4 m; 5 samples evaluated).
3) **Slatina.** Samples are from roadcut BU075/24-413 (thickness approximately 7 m; 5 samples evaluated).
4) **Bílá hora.** Samples were taken from cut along the tramway line BU065/24-413 (thickness approximately 8 m; 3 samples evaluated).
5) **Hády Hill.** Bedding succession in abandoned quarries consists of two distinct members: a) basal conglomerate, breccia and detrital limestone with bivalves (section BU051/24-413; thickness 7 m; 4 samples), b) nodular cherty limestone with ammonites (section BU059/24-413, thickness 5.6 m, 5 samples). Additional samples from sponge limestone that was already quarried out, were taken from loose blocks in lower quarry (BU226/24-413; 2 samples).

For position of localities see fig. 1 and tab. 1, for stratigraphic chart of sections see fig. 2.

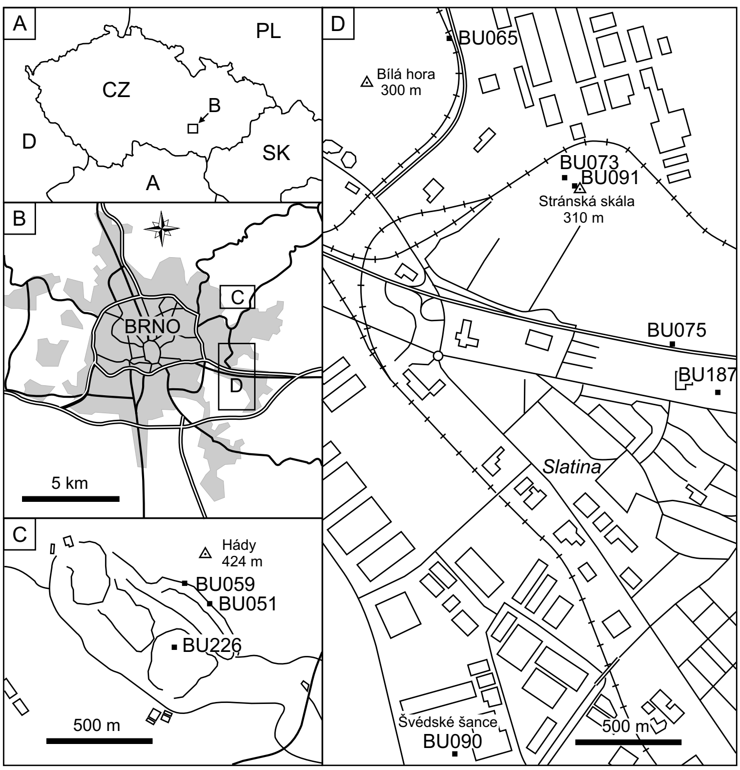

Fig. 1. A, B – specification of study area in Brno outskirts, C – situation of sections at Hády Hill, D – situation of sections at Bílá hora, Stránská skála, Slatina and Švédské šance.

Table 1. GPS coordinates of studied sections. CGS code is locality code in the database of the Czech Geological Survey.

Locality	CGS code	GPS position
Švédské šance	BU090	N49°10'01.7" - E16°40'18.4"
Stránská skála	BU073	N49°11'28.4" - E16°40'27.2"
Stránská skála	BU091	N49°11'26.5" - E16°40'32.3"
Slatina	BU075	N49°11'04.9" - E16°40'58.4"
Bílá Hora	BU065	N49°11'45.6" - E16°39'59.6"
Hády Hill	BU051	N49°13'10.5" - E16°40'29.2"
Hády Hill	BU059	N49°13'14.0" - E16°40'21.0"
Hády Hill	BU226	N49°13'04.6" - E16°40'20.3"

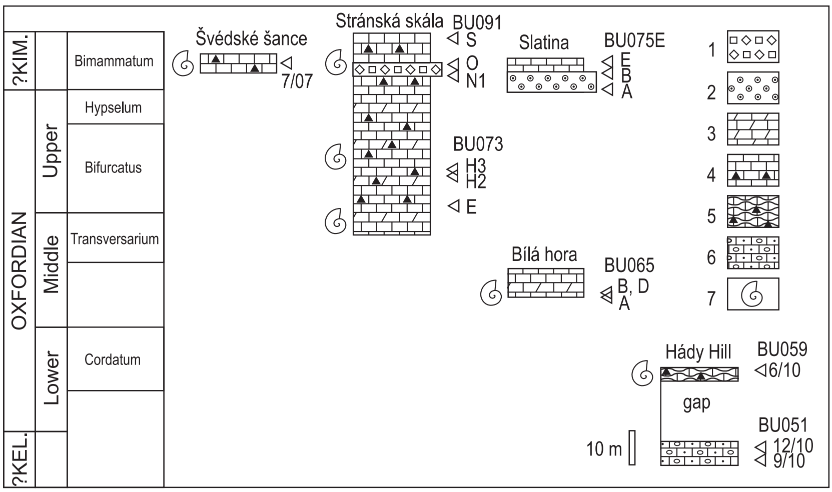

Fig. 2. Stratigraphic chart of studied sections in Brno area with indicated sample position. 1 – encrinite; 2 – oolite; 3 – dolomitic limestone; 4 – cherty limestone; 5 – nodular cherty limestone; 6 – sandy limestone to conglomerate; 7 – ammonite finds.

3. MICROFACIES ANALYSIS

Švédské šance. The rock can be described in thin section as biopelmicrite – packstone (fig. 3A), containing sponge spicules, bryozoans, crinoids and foraminifers (sample BU090-7/07). Intraclasts of pelmicrite (wackestone to packstone) are abundant in places. The micrite matrix is partly sparitized, recrystallization in some places erases the original character of the limestone.

Stránská skála. The limestone in the lower part of the section can be characterized as biopelmicrite, locally intrabiomicrite – packstone (fig. 3B). The micrite ground mass is completely sparitized in places, dolomitization is quite frequent. Beside the spiculites dominated by isolated calcified sponge spicules, packstone with abundant crinoids, bryozoans, and less frequent gastropods, calcareous and agglutinated foraminifera, serpulids and microbial encruster *Crescentiella moronensis* occurs. In the upper part of the sequence there is a distinct 4 m thick bed of crinoid biosparite formed mainly by crinoid cirrals (fig. 3D). This limestone can be classified as a typical "encrinite" (Salomon *et al.* 2021). In the uppermost part, biointramicrite and intrabiomicrite (packstone) predominate (fig. 3E). Its groundmass is often recrystallized. Bioclasts are composed of abundant crinoid ossicles, less frequently calcareous and agglutinated foraminifers, bryozoans, serpulids, and microbial encruster *Crescentiella moronensis*. Spiculite enclaves occur locally within the same thin section (fig. 3F).

Slatina. The lower part of the outcrop consists of biosparite and intrasparite (grainstone) with abundant crinoid cirrals, with intraclasts of pelmicrite (packstone) and bryozoans (sample BU075A1). Above it is a sequence of oosparite limestone about 3 m thick (fig. 4A). The highest exposed part of the section consists of biopelmicrite (packstone) with crinoids, calcified sponge spicules and benthic foraminifers (sample BU075E). The micrite groundmass is partly recrystallized.

Bílá hora. Biopelmicrite and pelbiomicrite spiculite (packstone) prevail over biomicrite (wackestone). The micrite groundmass is recrystallized in places. Dolomitization can bee seen place to place. In addition to the spiculite microfacies, enclaves with crinoids and bryozoans also occur. Benthic foraminifers are represented less often, planktonic are rare. Large plates of sponge skeletons are quite common (fig. 4B). At the scale of the outcrop, clusters of sponge skeletons form a floatstone and rudstone texture and, in some places, perhaps even boundstone (sponge biostrome with sponges in growth position).

Hády Hill. The matrix of calcareous conglomerate and detrital limestone at the base of Jurassic strata on Hády Hill consists of sparite without original sedimentary textures. Recrystallization retreats upward and the highest limestone layers can be characterized as biopelmicrite (packstone to floatstone). Bioclasts comprise abundant bryozoans (fig. 4C). In the coarse fraction remains of echinoids and bivalves are frequent. In the upper member (samples BU059-9/10, -12/10), spiculite biopelmicrite – packstone (fig. 4D) predominates over enclaves of biomicrite – wackestone and mudstone. In addition to the dominant calcified sponge spicules, ossicles of crinoids and echinoids, bivalves, bryozoans, less frequently ostracods, serpulids, benthic and planktonic foraminifers and juvenile ammonites occur.

Limestone enclosing pliosaur tooth. The rock can be characterized as spiculite intrapelbiomicrite (packstone to floatstone) with partially recrystallized groundmass (microsparite) – fig. 4E. Pelmicrite, pelbiomicrite and biomicrite enclaves (packstone) can be found in the same thin-section. In addition to the highly dominant sponge spicules, also large fragments of skeletons with attached epifaunal serpulids (fig. 4F), echinoid and crinoid ossicles, bivalves, benthic and rarely planktonic foraminifers (Globuligerina sp.), brachiopods, bryozoans, stromatoporoids and ostracods are present. Sponge spicules are often coated with a micrite envelope. Limestone with pieces of sponge skeletons in prevailing groundmass can be classified as floatstone. Locally, bindstone consolidated by encrusting bryozoans was observed.

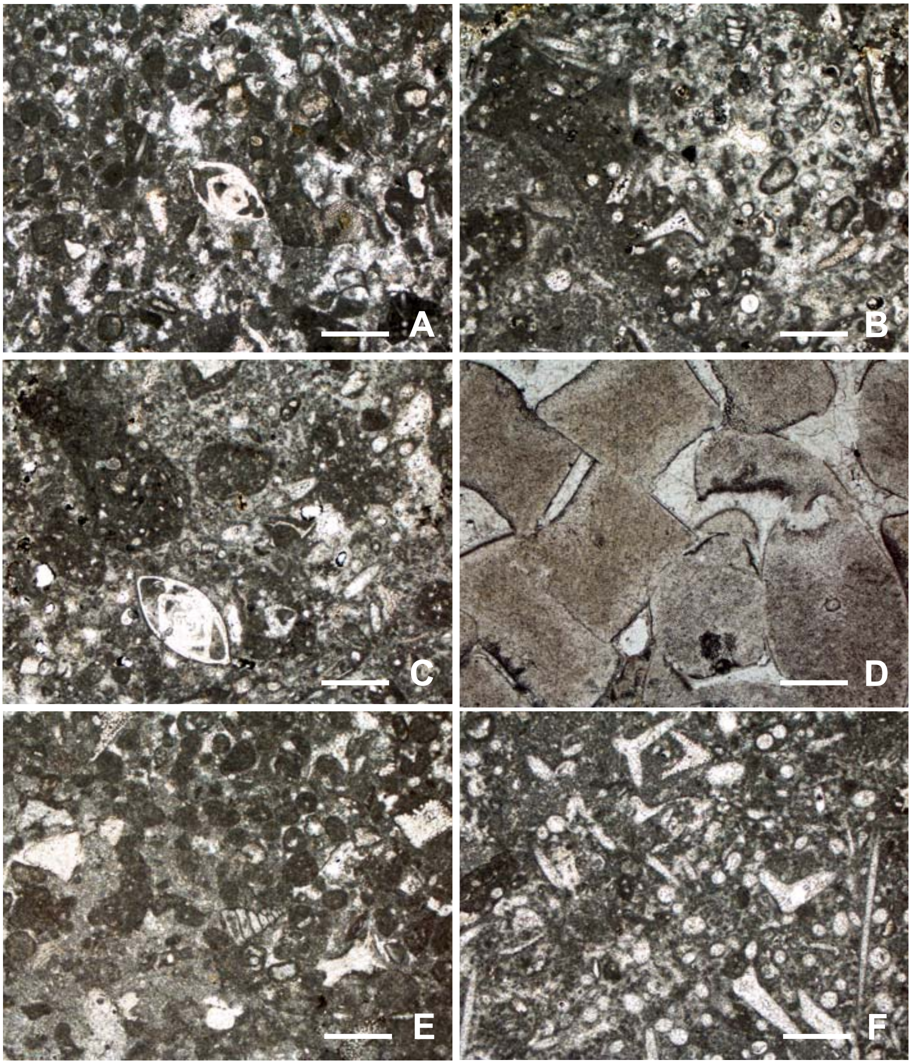

Fig. 3. A – biopelmicrite with *Lenticulina* sp., Švédské šance, BU090-7/07; B – partly recrystallized pelbiomicrite – spiculite, Stránská skála, BU073E; C – intrabiomicrite with *Lenticulina* sp., Stránská skála, BU073H2; D – biosparite (encrinite), Stránská skála, BU091S; E – biointramicrite with crinoids and *Protomarssonella* sp., Stránská skála, BU091O; F – pelbiomicrite (spiculite), Stránská skála, BU091S. Scale bar = 0.5 mm.

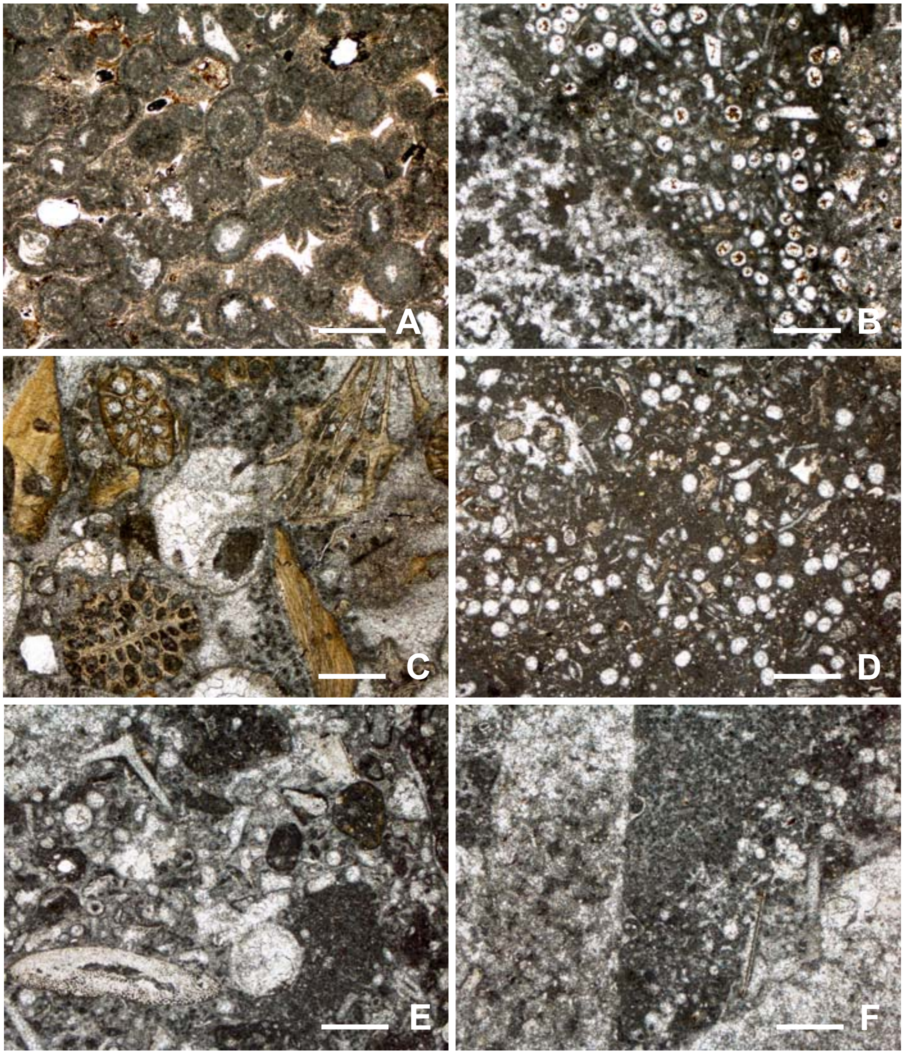

Fig. 4. A – oosparite, Slatina, BU075B1; B – biomicrite (spiculite) with sponge skeleton on the left, Bílá hora, BU065D; C – recrystallized biopelmicrite with bryozoans, Hády Hill, BU051-7/10; D – biomicrite (spiculite) with ostracods, Hády Hill, BU059-12/10; E – intrapelbiomicrite (spiculite), limestone with pliosaur; F – recrystallized pelbiomicrite, sponge skeleton with epifaunal serpulids on the left, limestone with pliosaur. Scale bar = 0.5 mm.

4. MICROFAUNAL ASSOCIATIONS OF ACID RESIDUES

Švédské šance. A relatively diversified microfauna consisting of benthic foraminifera (45%), remains of echinoderms (32%) and sponges (21%) was obtained from acid residue of the sample BU090-7/07 (fig. 5). Foraminifers are represented by *Spirillina* spp. (64% of the foraminiferal assemblage), *Paalzowella*, *Trocholina*, and less frequently by nodosariids, miliolids and agglutinated taxa. The planktonic foraminifers *Globuligerina* sp., fragments of bryozoans and brachiopods are rare.

Stránská skála. Calcareous benthic foraminifers make 54% of microfossils in the acid residue from the lower part of the section (sample BU073E). *Spirillina* spp. dominates the foraminifer assemblage by 80%. *Trocholina* and *Paalzowella* are abundant, nodosariids are rare. Abundant echinoderm ossicles (25%) belong to crinoids, echinoids and, rarely to ophiuroids and holothurians. Sponge spicules make up 13% of the association (mostly sterrasters). Gastropods, bivalves and ostracods are rare (fig. 6). In the sample BU073H3 higher in the section, benthic foraminifer highly predominate (94%) over echinoderm remains (4%). Sponge spicules, bivalves and ostracods are represented as accessories. *Spirillina* spp. makes 83% of the foraminifer assemblage, *Paalzowella* is abundant (13%), *Trocholina*, nodosariids and agglutinated species are rare. Acid residue of the pelbiomicrite packstone from the highest part of the section (sample BU091S) is characterized by the predominance of benthic foraminifera (69%) over the remains of echinoderms (21%) and sponge spicules (sterrasters – 5%). Foraminifers are relatively diversified. The assemblage is dominated by *Spirillina* (67%), followed by *Trocholina* (13%), nodosariids, miliolids and agglutinated species.

Bílá hora. The sample BU065A2 from the base of the section, is characterized by abundant echinoderm ossicles (51% – crinoids, echinoids, starfish), benthic foraminifera (40%), and sponge spicules (8%). Juvenile bivalves and prisms of the belemnite rostra were found as accessories. The foraminifer community is highly dominated by *Spirillina* (90%), followed by representatives of the *Paalzowella* and *Trocholina*. The sample BU065B from a thin lense of nodular limestone, taken just approximately 1 m higher, shows a different quantitative composition: calcareous foraminifera (72%), echinoderms (12%), bryozoans (11%), sponge spicules (6%). The community of benthic foraminifera is highly dominated by Spirillina (96%), accompanied by representatives of *Paalzowella* and rare *Lenticulina*. Scarce planktonic foraminifers are worth of note.

Hády Hill. The acid residue of detritic limestone (sample BU051-6/10, fig. 5) is characterized by predominance of echinoderm ossicles (65%) over benthic foraminifera (15%), bivalve prisms (14%) and sponge spicules (6%). Foraminifer community comprises *Spirillina* (67%), *Paalzowella* (13%) and agglutinated taxa (20%). The sample BU059-9/10 from the lower part of the upper limestone member contains benthic foraminifers (calcareous 35%, agglutinated 23%), echinoderms (26%), sponge spicules (14%), and rarely other groups (brachiopods, vertebrates, planktonic foraminifers). Relatively diversified agglutinated foraminifers are represented by *Tolypammina* sp. (dominant), *"Textularia" jurassica* Gümb., *Bicazammina jurassica* (Häus.), and representatives of genera *Recurvoides*, *Haplophragmoides*, *Thurammina* and *Glomospira*. The calcareous benthos is highly dominated by *Spirillina*. The sample BU059-12/10 from the highest part of the section has a different composition: sponge spicules dominate (75%), followed by benthic foraminifera (calcareous 35% – agglutinated 23%), echinoderm ossicles (7%), and rare gastropods and planktonic foraminifers *Globuligerina* sp. Planktonic foraminifers make nearly 8% of the foraminiferal taphocoenosis. Sponge micritic limestone of the floatstone/rudstone type from the lower quarry at Hády Hill (sample BU226A) is characterized by a high proportion of sterrasters (59%), calcareous benthic foraminifera (37%), echinoderms (2%), agglutinated foraminifera (0.5%) and ostracods. Planktonic foraminifers are missing. Pink limestone with belemnites and ammonites (sample BU226B) contains benthic foraminifera (calcareous 35% – agglutinated 6%), sponge spicules (27%), echinoderms (26%) and rarely fragments of gastropods, bivalves, belemnites and vertebrates.

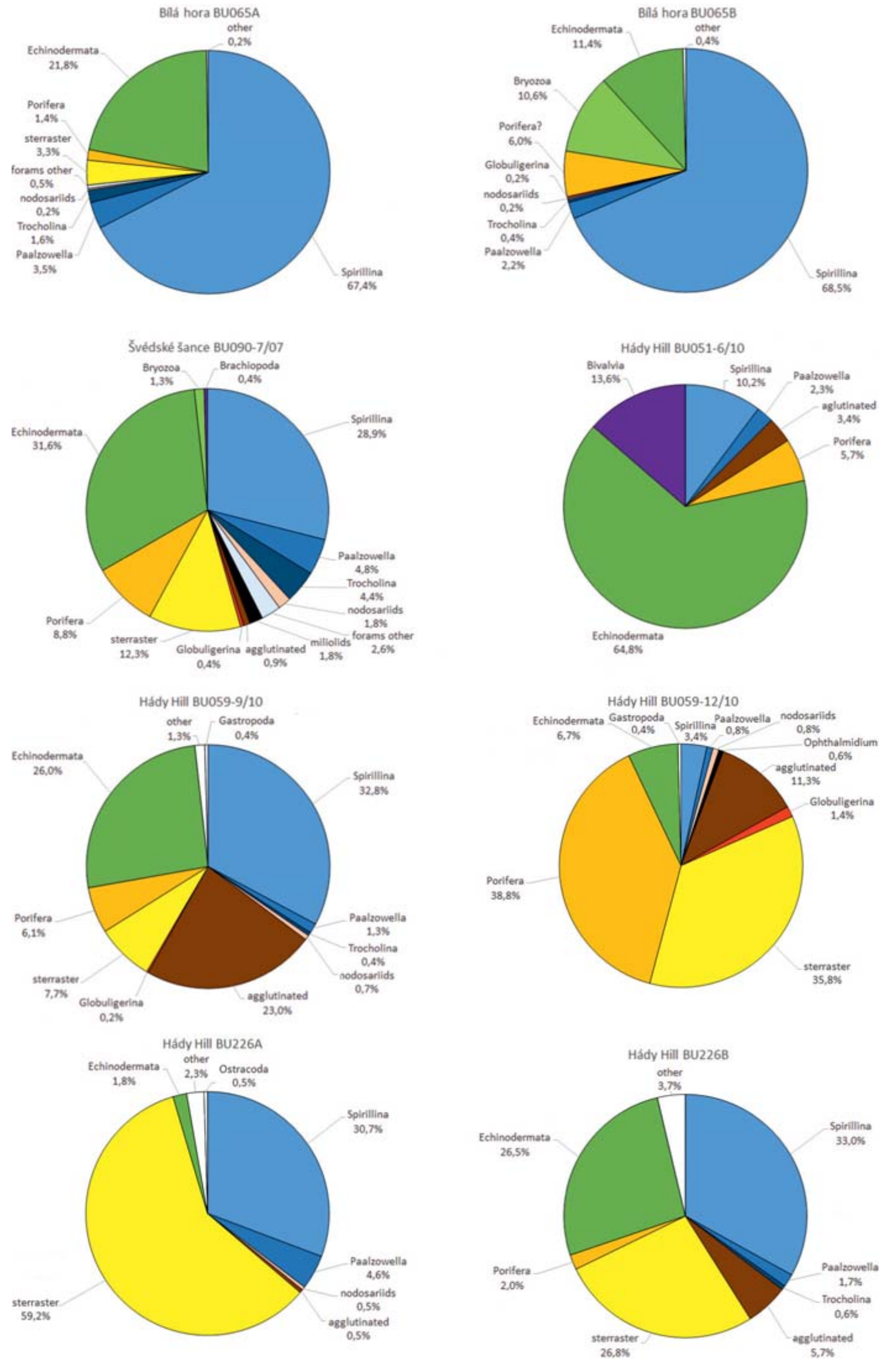

Fig. 5. Quantitative composition of microfossil associations in acid residues of limestones from Bílá hora, Švédské šance and Hády Hill.

Limestone enclosing pliosaur tooth. Benthic foraminifers predominate (56%) over sponge spicules (35%) and echinoderm ossicles (7%). Representatives of the genus *Spirillina* (74%) dominate in the foraminifer assemblage, followed by *Paalzowella* (10%), *Trocholina*, nodosariids and agglutinated species (fig. 6). Echinoderms are represented by the spines of echinoids and occasionally the sclerites of holothurians. A serpulid and a shark tooth were recorded in single specimens.

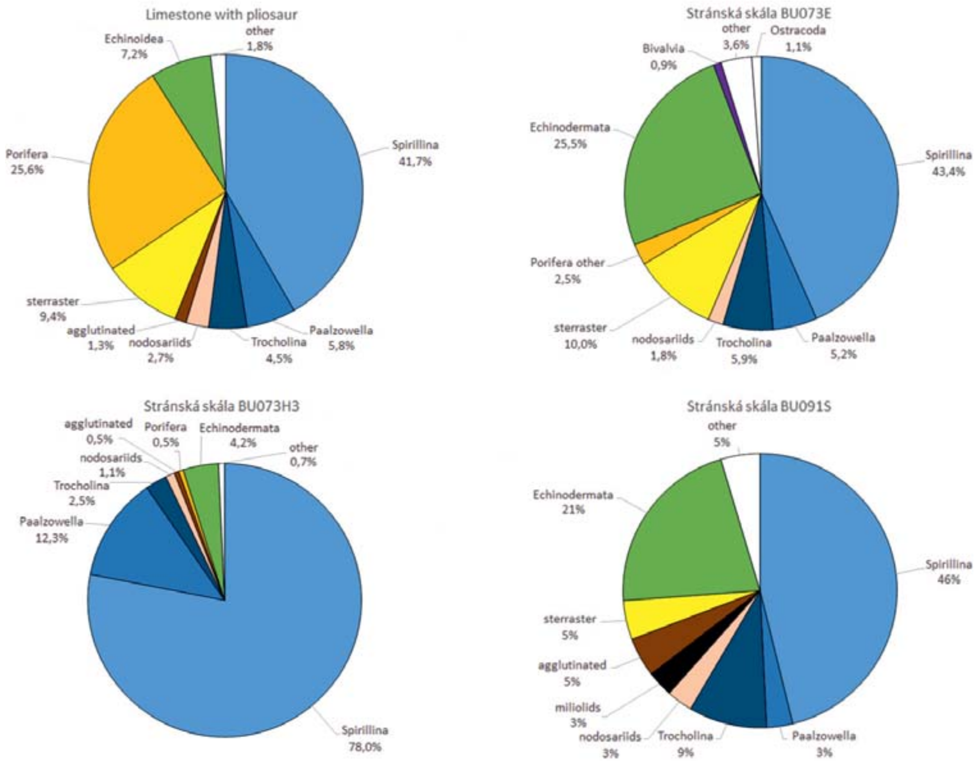

Fig. 6. Quantitative composition of microfossil associations in acid residues of the limestone with pliosaur and limestones from Stránská skála section.

5. DISCUSSION

The comparative analysis of limestones from the Jurassic remnants in the Brno area was carried out using two different approaches: microfacies analysis of thin sections and micropalaeontological analysis of acid residues. Although these methods provide mutually incompatible results, they complement each other appropriately with synergic effect. Acetolysis using the method of Lirer (2000) allows extraction of calcareous microfossils from solid limestones by selective dissolution of micrite. However, there is a loss of foraminifers with certain shell types due to their lower resistance to dissolution. Therefore, miliolids, epistominids and agglutinated foraminifers with calcareous cement are usually absent in the residues. On the contrary, there is an enrichment of foraminifers with a primarily monocrystalline calcite shell (*Spirillina, Trocholina*) and a siliceous agglutinated shell. In thin sections, all microfossils can be observed in true quantitative representation. However, the disadvantage of thin sections is often the small number of microfossils and difficulties with their determination. While few or several tens of foraminifers can rarely be seen in thin section, acid residues usually contain hundreds or thousands of individuals.

A combination of both methods was used to identify the original locality of the pliosaur find. The comparison of microfacies is complicated by the high microfacies variability, often within the scale of one thin section. Therefore the importance of details cannot be overestimated. Apparently different biodetrital limestones of the upper member from Hády Hill (BU051-7/10), encrinites from Stránská skála (BU091N1) and Slatina (BU075A1), and oosparite limestone from Slatina (BU075B) can be ruled out with certainty. Predominant types of limestone from the Hády Hill, Bílá hora, Stránská skála, Slatina and Švédské šance are more or less similar to limestone enclosing the pliosaur tooth. If we characterize the predominant microfacies of this limestone as intrapelbiomicritic spiculite with frequent coated sponge spicules (cortoids) and large fragments of sponge skeletons (packstone to floatstone), then the closest affinity can be seen to limestones from Stránská skála and Bílá hora. Limestones with sponge skeletons from Bílá Hora, however, have a larger proportion of micrite and lack coated spicules.

Micropalaeontological quantitative analysis of acid residues shows that the spongolithic nodular limestone of the upper member at Hády Hill differs from the pliosaur limestone by significantly more frequent agglutinated foraminifers. The microfossil association of conglomeratic limestone of the lower member at Hády Hill is dominated by echinoderms and bivalve fragments are abundant. The microfossil associations of sponge limestone from Bílá hora have a low proportion of sponge remains and a lower diversity of benthic foraminifers compared to the pliosaur limestone. The association from the lower part of the Stránská skála section (sample BU073E), on the other hand, is similar in the percentage of foraminifers (over 50% of microfossil association) and in a structure of the foraminiferal assemblage. It differs just in the predominance of echinoderms over the remains of sponges. Associations from the highest part of the Stránská skála section (BU091) and Švédské šance (BU090) have a similar benthic-foraminifer assemblage, but they differ in the higher diversity and presence of miliolids. Here, the sponge remains predominate over echinoderms. Although one might speculate that the ratio of sponges to echinoderms increases with depth, this parameter cannot be overestimated. The proportions of agglutinated forms, miliolids and planktonic forms seem to be more significant indicators. Agglutinated foraminifers in Upper Jurassic carbonate platforms indicate relatively deeper and cooler waters. The planktonic foraminifer *Globuligerina* was probably not true oceanic plankton like modern globigerinids, but it seems to be indicative of more open parts of carbonate platforms. Miliolids represent rather shallow-water and lagoonal microbenthos. From this point of view, the microfauna of the limestone with the pliosaur is most similar to the association from the lower part of the limestones on Stránská skála.

The results of the comparative analysis using both methods show the greatest similarity between the limestone with the pliosaur tooth and the limestones on Stránská skála - more exactly from the lower part of the section. This result meets expectations, because the second pliosaur tooth from the old collection of A. Stehlík was found on Stránská skála according to the original label (Madzia *et al.* 2018).

6. CONCLUSIONS

The study of Jurassic limestones in Brno area confirmed considerable facies variability, often in outcrop scale. Biopelmicrite spiculite (packstone) with enclaves of biomicrite, intrabiomicrite and pelmicrite (packstone and wackestone) is the dominant microfacies

through the studied sections. Locally, layers of crinoidal intrasparite – encrinite (Stránská skála and Slatina) and oosparite (Slatina) occur. Quantitative analysis of limestone acid residues recorded percentage of sponge spicules, echinoderm ossicles, foraminifers and other groups with special attention paid to the structure of foraminifer assemblages. The integration of results from thin sections and acid residues enable to speculate about the original location of the pliosaur tooth. The find comes most likely from the lower part of the Stránská skála section.

SOUHRN

Denudační relikty svrchnojurských vápenců na Brněnsku představují zbytky rozsáhlé karbonátové plošiny na východním okraji Českého masivu. Velká faciální rozmanitost odráží původní proměnlivou mozaiku biotopů mělkého moře. Převládajícím typem mikrofacií jsou biopelmikritové spikulity (packstone) s enklávami biomikritu, intrabiomikritu a pelmikritu (packstone a wackestone). Lokálně se vyskytuje poloha krinoidového biosparitového vápence (enkrinit) a oosparitového vápence. Asociace mikrofauny byly vyhodnoceny na základě mikrofauny získané acetolýzou vápence. Vápnité bentické foraminifery, jehlice hub a osikuly ostnokožců převažovaly nad ostatními skupinami (mechovky, mlži, ostrakodi, ramenonožci, stromatopory aj.). Pomocí srovnávací analýzy mikrofacií v horninových výbrusech a srovnání mikrofauny z acetolýzy byla řešena otázka původní původní lokality vápence uzavírajícího zub pliosaura. Tento vzácný nález ze sbírek Masarykovy univerzity v Brně postrádá originální etiketu, takže lokalita byla neznámá. Mikrofaciální znaky a asociace mikrofosilií z vápence s pliosaurem ukazují, že nález velmi pravděpodobně pochází ze spodní části profilu na Stránské skále.

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