

Triploporella bacilliformis n. sp. (Dasycladaceae) from the Lower Cretaceous of the Island of Korčula

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A new species of the genus *Triploporella* (Dasycladaceae) is described. It is marked by thin primary branches and a great distance between neighbouring whorls. The new species, *Triploporella bacilliformis* derives from the lowest deposits of the Lower Aptian (Bedulian) of the Island of Korčula.

Opisana je nova vrsta roda *Triploporella* (Dasycladaceae), koja se odlikuje tankim primarnim ograncima i međusobno velikom udaljenošću susjednih pršljena. Nova vrsta *Triploporella bacilliformis* potječe iz najnižih slojeva donjeg apta (bedulian) otoka Korčule.

The new alga was found in the sample of biointramicrite from which the genus *Korkyrella* was described earlier. In an abundance of sections and fragments of various Dasycladaceae, a specimen with marked properties of the genus *Triploporella* stood out by its size and the state of preservation. Remarkably evenly thin branches, situated in relatively quite distant whorls — a picture generally different from the common properties of the known species of this genus — suggested that the specimen should be described as *Triploporella bacilliformis* n. sp.

Family: *Dasycladaceae* Kützing 1843

Tribus: *Triploporelleae* Pia 1920

Genus: *Triploporella* Steinmann 1880

Triploporella bacilliformis n. sp.

Plates I—II

Origin of the name: deriving from the bacilli-like shape of primary branches.

Type locality: about 50 m from the crossroads at Brna, where the road is cut into the rock on the way to Prižba, on the island of Korčula.

Type stratum: well-layered, brown, partly recrystallized biointramicrites of the Lower Aptian.

Holotype: oblique section shown in Plate I, Fig. 4.

Diagnosis: A regular cylindrical skeleton with clearly and sharply delineated outer and inner edges. Primary branches are very thin and of the same thickness along the whole length. Branches lie in regular whorls evenly distributed along the thallus, but very far away from one another. Primary branches carry short secondary branches which are difficult to notice.

Description: The new alga is represented by a great number of variously oriented and well preserved sections clearly showing the simple cylindrical, occasionally slightly bent, thallus. The skeleton of recrystallized calcite has a sharply outlined outer surface, as a rule somewhat abraded, as suggested by the rarely preserved secondary branches. The main stem takes about 30–50% of the total diameter, and has a complete and well delineated edge. In addition to a general *Triploporella* appearance, this species has branches clearly differentiated into primary and secondary ones. As mentioned above, the main feature of the species is its narrow bacilliform primary branches, located in regular whorls, which, however, are rather distant from one another. An analysis of the section illustrated shows that the dominantly represented specimens have narrow primary branches evenly thin along the whole length, which is manifested by the equal size of the pores, regardless of whether they belong to the sections near the proximal or the distal ends (Plate I, Figs. 5–9; Plate II, Figs. 2, 4). Rare exceptions found in the species described are specimens in which the primary branches are slightly wider at the distal ends, but so slightly that the widening is difficult to notice. The branches are perpendicular to the longitudinal axis or slightly pointing upwards. The branches of the same whorl at the distal end are not always at the same level, and sometimes two neighbouring branches show different deflections from the longitudinal axis, resulting in a different position of the pores of the neighbouring branches of the same whorls, as observed on the tangential section of the distal end (Plate I, Fig. 1). Secondary branches, which are supposed to have been very short or protruding most of their length from their carbonaceous sheaths, separate from the distal end of the primary branches. The hardly noticeable secondary branches (Plate I, Figs. 4, 5) are tender in structure and tend to widen slightly towards the outer end. The number of secondary branches has not been clearly established in any of the sections, where they were partly preserved, so it can be assumed that there were three–four in every primary branch. The rarely noticeable spores observed only singly in a very small number of samples do not allow a documented classification of this species under one of the groups as differentiated by Barattolo (1980).

Dimensions in mm:

| | |
|--|-----------|
| maximal length | 24.0 |
| outer diameter (D) | 2.54–3.20 |
| inner diameter (d) | 0.72–1.60 |
| distance between neighbouring whorls (h) | 0.30–0.52 |
| length of primary branches (l) | 0.70–1.06 |
| length of secondary branches (l') | 0.15–0.20 |

| | |
|--|------------------|
| thickness of primary branches at the proximal end (p) | 0.10—1.15 |
| thickness of primary branches at the distal end (p ₁) | 0.10—0.15 (0.20) |
| number of primary branches in a whorl (w) | 40—50 |
| number of secondary branches on a primary branches | 3—?4 |

Similarities and differences: The species described is classified as *Triploporella* on the basis of the general appearance of the structure, the manner of preservation, type and distribution of the branches and their arrangement, even though there are certain similarities with the genus *Acroporella*. By comparing this species with the species described earlier, namely: *Triploporella fraasi* Steinmann, *T. remesi* (Steinmann), *T. ?karabiensis* Maslov, *T. matesina* Barattolo, *T. decastroi* Barattolo, *T. duplicata* (Sokač and Nikler), it is possible to visually differentiate the species described here from all the species listed above, whose primary branches are more or less, but always clearly club-like; their primary branches tend to widen at the distal end, they have pores of the neighbouring whorls closely packed together and often arranged alternately. The species *T. bacilliformis* n. sp. is differentiated clearly both from *T. issaensis* Sokač and Nikler, and from *T? sarda* Jaffredo et al., in which the primary branches are markedly swollen at the proximal end and very much narrowed at the distal end. The absence of the proximal swollen parts of the branches in the two latter species gives only a seeming impression that the branches are narrow and wide apart; although, in this case, the axial cavity — extremely wide and irregular for the genus — indicates that the inner wall has been destroyed.

The species described differs from *T. ?uragielliformis* Conrad and Peybernes by the shape of its branches, by larger size, and the distance between the neighbouring whorls, the latter being one of the prominent differences between this species and all other species of the genus *Triploporella*. There are some more similarities and perhaps dilemmas in the comparison of this species and *Triploporella marsicana* Praturlon var. *adriatica* Sokač and Nikler. The correspondence in the shape of the neighbouring whorls in *T. marsicana* var. *adriatica* reaches only half the maximal distance of the neighbouring whorls in *T. bacilliformis* n. sp., although other features are of similar values. When examining some of the sections marked *T. marsicana* var. *adriatica*, illustrated by Sokač and Nikler (1975, Plate I, Figs. 3—4, Plate II, Figs. 2—4), one might have to query whether these sections, in view of the width of their axial cavity, should not belong with the species *T. issaensis*. In comparison to the original description of *T. marsicana* there may be a difference in the number of secondary branches, amounting to four in *T. marsicana*, while in *T. bacilliformis* the number assumed as the most probable but not determined with certainty is three; it would be difficult to accept the idea that four secondary branches would grow from so narrow primary branches.

These are basically the reasons for the description of the new species, whose properties would allow further specialization and individualization in relation to *T. marsicana* var. *adriatica* described earlier. A comparison between the species *T. neocomiensis* Radoičić and the species described here does not seem necessary owing to the completely different thallus structure of the former. The resemblance mentioned with the genus *Acroporella*, which after the supplement by Praturlon and Radoičić (1974) remains represented with only the species *A. radoicici* Praturlon, exists in the general shape of the primary branches, as well as their arrangement. The difference is manifested by an alternating arrangement of the primary branches in *A. radoicici*, a feature that has not been noticed in the species described here. Also, the values of practically all features measured are considerably lower for *A. radoicici*, whose number of branches in a whorl is very small in comparison to *T. bacilliformis*.

Stratigraphic position: The species *T. bacilliformis* n. sp. was found in the same sample with *T. marsicana* Praturlon, *T. ? uragielliformis* Conrad and Pybernes, *Salpingoporella* sp., immediately below the first find of *Palorbitolina lenticularis* (Blumenbach), which suggests that the species described in the locality of this find derives from the Lower Aptian. Possible new finds in several distant localities will make it possible to define its stratigraphic distribution more fully and with greater certainty.

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**Triploporella bacilliformis n. sp. (Dasycladaceae)
iz donje krede otoka Korčule**

B. Sokač

Nova alga nađena je u istom uzorku biointramikrita iz kojega je već prethodno opisan rod *Korkyrella*. U obilju presjeka i fragmenata različitih dasikladaceja veličinom i očuvanošću isticala se forma s izrazitim odlikama roda *Triploporella*. Naglašeno jednolično tanki ogranci smješteni u međusobno relativno jako razmaknute pršljene što je generalno različito općim odlikama poznatih vrsta ovoga roda uvetovalo je da se ova forma opiše kao *Triploporella bacilliformis* n. sp.

Familija: Dasycladaceae Kützing 1843

Tribus: Triploporelleae Pia 1920

Rod: Triploporella Steinmann 1880

Triploporella bacilliformis n. sp.

Table I — II

Podrijetlo imena: potječe od štapičastog oblika primarnih ogranaka.

Tipičan lokalitet: zasjek na cesti za Prižbu, oko 50 m udaljen od raskršća u mjestu Brna, otok Korčula.

Tipični slojevi: dobro uslojeni smeđi, djelom rekristalizirani biointramikriti donjeg apta.

Holotip: kosi presjek prikazan na tab. I, sl. 4.

Dijagnoza: pravilan cilindričan skelet s jasno i oštro ocrtanim vanjskim i unutrašnjim rubovima. Primarni ogranci vrlo su tanki i podjednake su debljine na cijeloj dužini. Ogranci su u pravilnim, duž talusa jednoliko raspoređenim, ali međusobno jako udaljenim pršljenima. Primarni ogranci nose kratke, teško uočljive sekundarne ogranke.

Opis: nova alga predstavljena je velikim brojem različito orjentiranih i dobro očuvanih presjeka, koji jasno pokazuju jednostavan cilindričan i kad-kad slabo povijeni talus. Skelet od rekristaliziranog kalcita oštro je ocrtane, ali redovito ponešto abradirane vanjske površine, na što upućuju rijetko očuvani sekundarni ogranci. Matična stanica zaprema približno 30–50% ukupnog dijametra, cjelovitog je i jasno ocrtanog ruba. Uz opći triploporelski izgled i kod ove vrste ogranaci su jasno diferencirani na primarne i sekundarne. Kao što je već spomenuto, osnovna značajka vrste izražena je njezinim uskim štapičastim primarnim ogranacima smještenim u regularne, ali međusobno jako razmaknute pršljene. Analizom ilustriranih presjeka vidljivo je da su dominantno zastupani oblici uskih i duž cijele dužine podjednako tankih primarnih ogranaka što se manifestira podjednakim dimenzijama pora neovisno da li ove odgovaraju presjecima ogranaka bliže proksimalnom ili distalnom kraju (tab. I, sl. 5–9; tab. II, sl. 2, 4). Unutar opisane vrste izuzetno rijetko mogu se naći primjerci, kod kojih se primarni ogranci jedva primjetljivo distalno neznatno proširuju. U odnosu na uzdužnu os biljke ogranci su okomiti do lagano ustrmljeni prema gore. Ogranci istog pršljena prema distalnom kraju nisu uvijek u istoj ravnini već ponekad dva susjedna ogranka u odnosu na uzdužnu os pokazuju različiti otklon što u tangencijalnom presjeku distalnog kraja ima za posljedicu različiti položaj pora susjednih ogranaka istog pršljena (tab. I, sl. 1). Od distalnog kraja primarnih ogranaka odvajaju se sekundarni za koje se pretpostavlja da su bili vrlo kratki ili da su većim dijelom svoje dužine izlazili iz vapnenačkog omotača. Teško uočljivi sekundarni ogranci (tab. I, sl. 4–5) nježne su građe i s tendencijom lagano proširenja prema vanjskom kraju. Broj sekundarnih ogranaka ni u jednom od presjeka, gdje su barem djelomično očuvani nije jasno utvrđen, pa se pretpostavlja da ih je tri–četiri na svakom primarnom ogranku. Rijetko uočljive spore zapažene tek pojedinačno kod vrlo malog broja primjeraka ne omogućuju dokumentirano uvrštavanje ove vrste u jednu od grupa kako ih razlikuje Barattolo (1980).

Dimenzije u engleskom tekstu:

Sličnosti i razlike: opisana vrsta pribrojena je rodu *Triploporella* na osnovi općeg izgleda građe, načina očuvanja, tipa i podjeljenosti ogranaka, njihovog rasporeda i dr., premda stanovite sličnosti možemo naći i s rodom *Acroporella*. Uspoređujući ovu vrstu s prije opisanim vrstama: *Triploporella fraasi* Steinmann, *T. remesi* (Steinmann) *T. ? karabiensis* Maslov, *T. matesina* Barattolo, *T. decastroi* Barattolo, *T. duplicata* (Sokač & Nikler), moguća je generalno vizuelna diferencijacija opisane vrste prema svim prethodno navedenim kod kojih su primarni ogranaci više ili manje, ali vidljivo kijačasti, odnosno kod kojih primarni ogranaci pokazuju jasnu tendenciju distalnog proširivanja, i kod kojih su pore ogranaka susjednih pršljena gusto stisnute i često naizmjeničnog rasporeda. Vrsta *T. bacilliformis* n. sp. jasno se diferencira i od vrsta *T. issaensis* Sokač & Nikler i *T. ? sarda* Jaffrezo at all. kod kojih su primarni ogranaci izrazito napuhnuti u proksimalnom dijelu, a naglašeno suženi distalno. Nedostatak proksimalnog napuhnutog dijela ogranaka kod ove dvije posljednje spomenute vrste daje samo prividni dojam njihovih uskih i razmaknutih primarnih ogranaka, premda u ovom slučaju za rod ekstremno široka i nepravilna aksijalna šupljina ukazuje na razorenost unutrašnje stijenke. Od *T. ? uragielliformis* Conrad & Peybernes opisana se vrsta također razlikuje oblikom ogranaka, većim dimenzijama, pa udaljenošću susjednih pršljena, što je jedna od naglašenih razlika ove prema svim ostalim vrstama roda *Triploporella*. Nešto je više sličnosti pa i dileme u usporedbi ove vrste s *Triploporella marsicana* Praturlon var. *adriatica* Sokač & Nikler. Nesumnjiva je podudarnost oblika njihovih primarnih ogranaka, ali je maksimalna udaljenost susjednih pršljena kod *T. marsicana* var. *adriatica* tek pola vrijednosti maksimalne udaljenosti susjednih pršljena kod *T. bacilliformis* n. sp., premda su drugi elementi sličnih vrijednosti. Promatrajući danas neke presjeke označene kao *T. marsicana* var. *adriatica* ilustrirane od Sokač & Nikler (1975, tab. I, sl. 3—4, tab. II, sl. 2—4) nameće se pitanje da li ovi presjeci s obzirom na širinu aksijalne šupljine možda ipak ne pripadaju vrsti *T. issaensis*. U odnosu na originalni opis *T. marsicana* vjerojatna je razlika i u broju sekundarnih ogranaka kojih kod *T. marsicana* ima četiri, dok se za *T. bacilliformis*, premda nije sa sigurnošću utvrđeno, pretpostavlja kao najvjerojatnije tri, jer je teško prihvatljivo da bi s tako uskih primarnih ogranaka izrastala četiri sekundarna. To bi u osnovi bili razlozi opisa nove vrste koja svojim odlikama pokazuje daljnju tendenciju izrazitije specijalizacije i individualizacije u odnosu na ranije opisanu *T. marsicana* var. *adriatica*. Usporedba s vrstom *T. neocomiensis* Radoičić zbog njezinog potpuno različito građenog talusa ne čini se potrebnom u odnosu na novo opisanu vrstu. Spomenuta sličnost s rodom *Acroporella*, koji je nakon dopune Praturlon & Radoičić (1974) ostao zastupan samo s vrstom *A. radoicici* Praturlon, postoji u generalnom obliku primarnih ogranaka kao i njihovoj podijeljenosti. Razlika je izražena alternirajućim rasporedom primarnih ogranaka kod *A. radoicici*, što kod ovdje opisane vrste nije zapaženo, pa znatno manjim vrijednostima gotovo svih mjenjenih elemenata kod *A. radoicici*, koja u odnosu na *T. bacilliformis* n. sp. ima i vrlo mali broj ogranaka u pršljenu.

Stratigrafska pripadnost: vrsta *T. bacilliformis* n. sp. nađena je u istom uzorku s *T. marsicana* Praturlon, *T. ? uragielliformis* Conrad & Peybernes, *Salpingoporella* sp., a neposredno ispod prvog nalaza *Palorbitolna lenticularis* (Blumenbach) što ukazuje da opisana vrsta na lokalitetu ovog nalaza potječe iz donjeg apta. Tek novi nalazi na većem broju međusobno udaljenih lokaliteta omogućiti će da se s više sigurnosti i potpunije definira njezin stratigrafski raspon.

PLATE — TABLA I

1—9. *Triploporella bacilliformis* n. sp.

1, 7. Oblique-tangential sections (koso-tangencijalni presjeci), x 11

2—4. Oblique sections, fig. 4 Holotype (kosi presjeci, sl. 4 holotip), x 11

5, 6, 8, 9. Cross sections (poprečni presjeci), x 11



PLATE — TABLA II

1—5. *Triploporella bacilliformis* n. sp.

1—3. Longitudinal-tangential sections (uzdužno — tangencijalni presjeci), x 7; 2. x 11

4. Tangential section (tangencijalni presjek), x 11

5. Oblique section (kosi presjek), x 11

