NEW RADIOLARIAN SPECIES *PSEUDODICTYOMITRA CORONATA* SP. NOV. FROM THE CONIACIAN-SANTONIAN DEPOSITS OF PERAPEDHI FORMATION, CYPRUS

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Received July 01, 2024

Revised July 18, 2024

Accepted July 18, 2024

Abstract. Numerous representatives of the Pseudodictyomitra Pessagno, 1977 were studied from the Upper Cretaceous deposits of Cyprus. Description of P. pseudomacrocephala (Squinabol, 1903), emend. Nov. is emended. New species P. coronate sp. Nov. is described. Stratigraphic ranges and phylogenetic relationships in the family Pseudodictyomitridae are detalized.

Keywords: *Radiolaria, Pseudodictyomitridae, new species, стратиграфия, Upper Cretaceous, Cyprus*
DOI: 10.31857/S0031031X250102e6

INTRODUCTION

As a result of investigating radiolarian assemblages from several sections of the Perapedhi Formation (Cyprus), numerous representatives of the genus Pseudodictyomitra Pessagno, 1977 were identified (Fig. 1; Table II, fig. 1, 4-19). Analysis of available literature data allowed refining the diagnosis of the genus Pseudodictyomitra (Bragina, 2024). Some species of this genus are very important for Upper Cretaceous stratigraphy. For example, P. crassa Bragina, 2013 (stratigraphic range: lowermost Coniacian - middle Santonian) has been chosen as one of the characteristic species of the Alievium praegallowayi Zone (Lower Coniacian; Bragina, 2016a). The species P.

pseudomacrocephala (Squinabol, 1903) also has important stratigraphic significance, as it terminates near the Turonian-Coniacian boundary (Bragina et al., 2014; Bragina, Bragin, 2015; Kopaevich et al., 2015). Photographic images of P. pseudomacrocephala appear in numerous publications, but this species is not always correctly diagnosed. The study of morphological features of P. pseudomacrocephala from the Turonian deposits of Cyprus (present article), as well as analysis of literature data, allowed refining the description of this species important for Upper Cretaceous stratigraphy (Marcucci et al., 1991; O'Dogherty, 1994; Gorka, 1996; Erbacher, Thurow, 1998; Babazadeh, De Wever, 2004; Bragina, 2004, 2012; Bragina, Bragin, 2006; Musavu-Moussavou et al., 2007; Moix, Gorican, 2013; Shridashtzadeh et al., 2015, etc.).

A previously unknown taxon belonging to the genus Pseudodictyomitra (P. coronata sp. nov.; pl. II, fig. 6–13, 15–19) is consistently found in the Upper Cretaceous deposits of Cyprus, and its description is provided in this publication. Thus, this work continues a series of articles devoted to the description of new radiolarian species from the Upper Cretaceous of Cyprus (Bragina, Bragin, 1995, 1996; Bragina, Vishnevskaya, 2007; Bragina, 2008, 2010, 2013, 2014, 2023; Bragina, Bragin, 2016, 2018; Bragina, 2024). The study established that transitional forms of the phylogenetic lineage P. pseudomacrocephala – P. coronata sp. nov. are distributed in the Crimean sections from the Upper Turonian (Bragina et al., 2014), in Cyprus sections up to the Lower Coniacian (pl. II, fig. 4), and P. coronata sp. nov. is present in Cyprus sections from the Coniacian (pl. II, fig. 6, 8–11, 15–19) to the Lower Santonian inclusive (Bragina, 2012, pl. II, fig. 1; here: pl. II, fig. 7, 12, 13).

Only one species of the genus Pseudodictyomitra was known within the Coniacian and Santonian until the beginning of the 21st century: P. nakasekoi Taketani, 1982. Over the past two decades, the genus Pseudodictyomitra has been expanded with four new species: P. quasilodogaensis Bragina, 2004, P. crassa Bragina, 2013, P. venusta Bragina, 2024, and P. coronata sp. nov. (Bragina, 2004, 2024; Bragina, 2013; present publication). Currently, four species belonging to the genus Pseudodictyomitra (P. crassa, P. nakasekoi, P. venusta, and P. coronata sp. nov.) are known within the

Coniacian and Santonian. This indicates the continued speciation of this genus in the specified interval. The species Dictyomitra sagitafera Aliev, 1965 is included in the genus Pseudodictyomitra Pessagno, 1977 (Bragina, Bragin, 2015). New data allow us to clarify the phylogenetic relationships and stratigraphic distribution of Late Cretaceous species of the genus Pseudodictyomitra, which were previously analyzed by L. O'Dogherty (O'Dogherty, 1994) and the author (Bragina, 2016b). Based on new data, the author of the article proposes (Fig. 2):

1) a new phylogenetic lineage in which the species P. venusta and P. crassa descended from P. recta Vishnevskaya, 1991;

2) the phylogenetic lineage whose ancestor is considered to be the species P. pentacolaensis Pessagno, 1977 has been clarified and supplemented.

MATERIAL AND RESEARCH METHODS

The new study of radiolarians included the examination of 49 specimens of representatives of the genus Pseudodictyomitra from the following sections: Akamas, Mangaleni-8, and the composite Mangaleni section (deposits of middle-upper Turonian and Coniacian, Cyprus), and analysis of the author's collection material obtained from numerous sections of Crimea and the Greater Caucasus.

Radiolarian photography was performed using a TESCAN 2300 scanning electron microscope at the Geological Institute of the Russian Academy of Sciences (GIN RAS).

Paleontological description was carried out using generally accepted terms. The classification of O'Dogherty et al. (2009) with some modifications was used in the work. The zonal scheme proposed for the Tethyan regions of Eurasia (Bragina, 2016a) is applied in the work.

Collections of Cretaceous radiolarians from Cyprus (No. 4878) and Crimea (No. 4870) are stored in GIN RAS.

DESCRIPTION OF TAXA

① PHYLUM SARCODINA

① CLASS RADIOLARIA

① ORDER SPUMELLARIA

③ FAMILY PSEUDODICTYOMITRIDAE PESSAGNO, 1977

④ Genus Pseudodictyomitra Pessagno, 1977, emend. Bragina, 2024

⑤ Pseudodictyomitra pseudomacrocephala (Squinabol, 1903), emend. Bragina nov.

⑥ Plate II, fig. 1, 2

Dictyomitra pseudomacrocephala: Squinabol, 1903, p. 139, plate 10, fig. 2.

Pseudodictyomitra pseudomacrocephala: Pessagno, 1976, pl. 3, fig. 2, 3; 1977, p. 51, pl. 8, fig. 10, 11; Okamura, 1980, pl. 21, fig. 6; De Wever, Thiebaut, 1981, p. 592, pl. 1, fig. 5; Nakaseko, Nishimura, 1981, p. 159, pl. 9, fig. l, pl. 9, fig. 2, 3; Schaaf, 1981, pl. 24, fig. 1a, 1b; Taketani, 1982, p. 61, pl. 12, fig. 7, 8; Schaaf, 1984, p. 130–131, fig. H (=holotype refigured), 1, 6a–c; Thurow, Kuhnt, 1986, fig. 9.11; Thurow, 1988, p. 405, pl. 1, fig. 13, pl. 3, fig. 16; Kato, Iwata, 1989, pl. 8, fig. 6; O'Dogherty, 1994, p. 108, pl. 8, fig. 6, 8; Gorka, 1996, pl. 3, fig. 1–10; Erbacher, Thurow, 1998, fig. 6.10; Salvini, Marcucci Passerini, 1998, fig. 8.h; Vishnevskaya, 2001, p. 183–184, pl. 129, fig. 5, 9, 10); Bragina, 2004, p. 367, pl. 7, fig. 4, pl. 32, fig. 9, 14–16; Vishnevskaya et al., 2006, pl. IV, fig. 11; Musavu-Moussavou et al., 2007, pl. 2, fig. 9, 10; Bak, 2011, fig. 50.I; Smreckova, 2011, pl. I, fig. 19; Danelian et al., 2014, fig. 8.2; Bragina et al., 2014, fig. 4.5; Bragina, Bragin, 2015, pl. II, fig. 1, pl. III, fig. 14; Shridashtzadeh et al., 2015, fig. 3.10; Kopaevich et al., 2015, pl. V, fig. 1, 2, 20; Bragina, Bragin, 2016, pl. 5, fig. 5, pl. 6, fig. 8, 9, pl. 7, fig. 2, 3.

?Pseudodictyomitra pseudomacrocephala: O'Dogherty, 1994, p. 108, pl. 8, fig. 5; Moix, Goričan, 2013, pl. 1, fig. p.

Non Pseudodictyomitra pseudomacrocephala: O'Dogherty, 1994, p. 108, pl. 8, fig. 7; Babazadeh, De Wever, 2004, fig. 7D.

Holotype – Northern Italy, southern part of the Venetian Alps; uppermost Lower Cretaceous–lowermost Upper Cretaceous, Upper Albian–Lower Turonian, Scaglia Bianca Formation, Teolo Series (Squinabol, 1903, pl. 10, fig. 2).

Description. The shell has an elongated shape with a bulb-like proximal part and a highly conical dorsal part. The shell consists of 12-16 chambers. The cephalis is smoothed and usually lacks an apical horn. The cephalis, thorax, abdomen, first and (often) second post-abdominal chambers are combined into a bulb-like form, within which there are no external inter-chamber constrictions. The proximal (bulb-like) part of the shell has a thickened wall, externally smoothed, sometimes with weakly developed ribs in the lower part. The base of the bulb-like part of the shell usually has a single row of main pores. A double row of rounded main pores is developed at the inter-chamber junctions beyond the bulb-like part of the shell. The ribs (usually seven to nine) are elongated and massive, visible in lateral view on each post-abdominal chamber developed beyond the bulb-like part of the shell. A single relict pore is developed between adjacent ribs. The width and height of the post-abdominal chambers slightly increase toward the aperture. The final post-abdominal chamber has a wide septum with a narrow aperture.

Dimensions in μm:

Specimen	H	Hcl	Wcl	W	d
No. 4878/130	376	75	80	262	6-12
No. 4870/404	300	85	82	150	6-14

Designations: H - shell height, Hcl - height of the bulb-like part of the shell, Wcl - width of the bulb-like part of the shell, W - maximum shell width, d - pore diameter

Comparison. P. pseudomacrocephala (Squinabol, 1903) differs from all species of the genus Pseudodictyormitra by the presence of a bulb-like formation encompassing the cephalis, thorax, abdomen, and first post-abdominal chambers. It differs from P. paronai (Aliev, 1965) by the development of a single relict pore between two adjacent ribs. It differs from the species P. crassa

Bragina, 2013, P. lilyae (Tan, 1927), P. nodocostata Dumitrica, 1997, P. suyarii Dumitrica, 1997, and P. thurowi Dumitrica, 1997 by the presence of ribs on the last post-abdominal chambers.

Remarks. In the monograph by O'Dogherty (1994), an extensive re-examination of C. Squinabol's collection material was undertaken, including an expanded description of the species P. pseudomacrocephala. Since the new taxon P. coronata sp. nov. is morphologically similar to P. pseudomacrocephala, the description of the latter is clarified in this publication.

The changes are as follows:

1. O'Dogherty's phrase (O'Dogherty, 1994, p. 109): "Shell is elongate conical, cylindrical distally" is changed to: "The shell has an elongated shape with a bulb-shaped proximal part and a highly conical dorsal part."

2. O'Dogherty's phrase (O'Dogherty, 1994, p. 109): "Cephalis smooth with weakly developed apical horn" is changed to: "Cephalis smooth and usually lacking an apical horn." The change emphasizes that most specimens of the species, especially within the Cenomanian and Turonian, lack an apical horn. The most ancient specimens of the species may have a rudimentary apical horn (Thurow, 1988, pl. 3, fig. 16).

3. O'Dogherty's phrase (O'Dogherty, 1994, p. 109): "The first four or five segments are included in a strongly thickened wall, externally masking the joints between them (this feature is visible only in transmitted light); the proximal part resembles an arrow along the main axis of the shell" is changed to: "Cephalis, thorax, abdomen, first and (often) second post-abdominal chambers are combined into a bulb-shaped form, within which there are no external inter-chamber constrictions." O'Dogherty calls the shell shape arrow-like. However, the proximal part of the P. pseudomacrocephala shell has a swollen bulb-like shape.

4. O'Dogherty's phrase (O'Dogherty, 1994, p. 109): "Initial part smooth, but slightly ribbed in the lower part, usually with a double row of main pores" is changed to: "The proximal (bulb-shaped)

part of the shell has a thickened wall, externally smooth, sometimes with weakly developed ribs in the lower part."

5. O'Dogherty's phrase (O'Dogherty, 1994, p. 109): "Double row of circular main pores present at postabdominal chamber junctions" is changed to: "Double row of circular main pores developed at interchamber junctions beyond the bulbous part of the shell." This clarification is necessary because pores are absent between the first and second postabdominal chambers. Usually, the bulbous proximal part of the shell combines five chambers (Squinabol, 1903, p. 139; Schaaf, 1984, fig. 5), in some cases only four chambers may be combined: cephalis, thorax, abdomen, and the first postabdominal chamber (Schaaf, 1984, fig. 6).

The presence of a single relict pore between adjacent ribs is a characteristic feature of the species P. pseudomacrocephala (Pessagno, 1977, p. 51; O'Dogherty, 1994, p. 109). From the latter, it follows that morphotypes with a double row of relict pores between adjacent ribs (O'Dogherty, 1994, pl. 8, fig. 7; Babazadeh, De Wever, 2004, fig. 7D) do not belong to the species P. pseudomacrocephala.

Individual specimens of the species in the Cenomanian (Gorka, 1996, pl. 3, fig. 4, 9: Polish Carpathians), in the Turonian (Bragina, 2004, pl. 32, fig. 14: Crimea; Salvini, Marcucci Passerini, 1998, fig. 8.h, Italy) and, especially, in the Late Turonian (Bragina, Bragin, 2015, pl. III, fig. 14; Kopaevich et al., 2015, pl. V, fig. 2: Northeastern Azerbaijan) are characterized by a slightly inflated proximal (bulbous) part of the shell, the length of which is twice its width.

The specimen Pseudodictyomitra sp. A (pl. II, fig. 3) differs from typical P. pseudomacrocephala by the arrow-shaped form of the proximal part of the shell, which is not characteristic for this species.

Distribution. Upper Albian – Upper Turonian, worldwide; Middle Albian – Upper Turonian of Cyprus; Upper Cenomanian – Upper Turonian of the Mountainous Crimea.

Material. 15 specimens from the composite section of Mangaleni (uppermost Middle Turonian and Upper Turonian).

⑤ Pseudodictyomitra coronata Bragina, sp. nov.

⑥ Pl. II, fig. 6–13, 15–19

?Pseudodictyomitra sp.: Okamura, 1980, pl. 22, fig. 1.

Pseudodictyomitra pseudomacrocephala subsp. A (Squinabol, 1903): Nakaseko, Nishimura, 1981, p. 159, pl. 16, fig. 6.

Pseudodictyomitra sp. A: Bragina, Bragin, 2006, pl. II, fig. 9.

Pseudodictyomitra pseudomacrocephala (Squinabol, 1903): Bragina, 2012, table I, fig. 1.

Species name from coronatus *Latin* . – crowned with a crown, coronated.

Holotype – GIN, № 4878/318; Cyprus, Akamas section; Lower Coniacian, Perapedhi Formation, Unit I (upper part), sample 21-16-1, Alievium praegallowayi zone.

Description. Shell has a high conical shape. Cephalis is conical and lacks an apical horn. Cephalis and thorax form a cone, separated from each other by a single row of pores. Abdomen is barrel-shaped. Abdomen width is approximately 1.2–1.3 times greater than that of the thorax. Thorax and abdomen are separated from each other by a single row of pores. The width of the first postabdominal chamber is 0.75–0.8 of the abdomen width, which gives the shell an overall arrow-like shape along its main axis. The second and subsequent postabdominal chambers slightly increase in width and height toward the aperture. Abdomen and subsequent postabdominal chambers have well-formed ribs. The ribs range from thin crescent-shaped to sub-rectangular (plate II, fig. 10, 11, 15). The abdomen has seven to eight ribs (sometimes up to nine) on half of the diameter. The number of ribs may slightly increase toward the final postabdominal chamber. A single relict pore is developed between adjacent ribs. The diameter of the relict pores is greater than or equal to the diameter of the main pores at the intercameral constrictions. The final postabdominal chamber ends with a wide septum with a narrow aperture (plate II, fig. 10).

Dimensions in μm:

Specimen	H	Hc	Wc	Ht	Wt	Ha	Wa	W1p	W	d
No. 4878/318 (holotype)	297	7	49	25	75	27	105	85	140	2–8
No. 4878/307	288	25	55	25	79	26	99	85	130	2–8
No. 4878/308	275	26	55	25	74	25	91	80	124	3–9
No. 4878/309	320	27	67	27	89	27	103	99	150	3–8
No. 4878/310	300	24	54	25	82	26	106	100	145	3–7
No. 4878/311	277	26	50	24	81	26	106	100	154	2–11
No. 4878/312 (paratype)	250	25	49	24	76	26	99	96	126	2–8
No. 4878/313	285	27	60	26	80	28	103	99	150	2–7
No. 4878/314	298	24	55	24	75	28	102	97	142	2–8
No. 4878/316 (paratype)	292	24	56	25	78	26	103	99	152	2–7

No. 4878/317	305	27	58	23	77	26	106	102	148	2–6
No. 4878/319	307	28	53	25	83	26	105	95	145	2–9
No. 4878/320	318	27	60	25	85	28	105	92	152	2–9

Abbreviations: H – shell height, Hc – cephalis height, Wc – cephalis width, Ht – thorax height, Wt – thorax width, Ha – abdomen height, Wa – abdomen width, W1p – width of the first postabdominal chamber; W – maximum shell width, d – pore diameter

C o m p a r i s o n . The new species differs from P. pseudomacrocephala (Squinabol, 1903) by the presence of distinct rows of pores separating the cephalis from the thorax and the thorax from the abdomen, well-formed ribs of the abdomen, as well as the arrow-shaped form of the proximal part of the shell. It differs from P. nakasekoi Taketani, 1982 by the expanded, arrow-shaped form of the proximal part of the shell.

R e m a r k s . Since the new species was not studied under an optical microscope, it is possible that the ribs on the proximal part of the shell develop not from the abdominal chamber, but from the first postabdominal one. Two relict pores, oriented in a horizontal row, may sometimes be developed between adjacent ribs on individual postabdominal chambers (pl. II, fig. 11, 15, 17). The double row of main pores between the abdomen and the first postabdominal chamber is not always clearly visible, as the row closer to the first postabdominal chamber usually consists of imperforate pores (pl. II, fig. 11).

Specimen Pseudodictyomitra sp. B (pl. I, fig. 4) differs from typical representatives of P. coronata sp. nov. by poorly developed ribs on the inflated proximal part of the shell. Specimens of Pseudodictyomitra sp. C (pl. II, fig. 5, 14) differ from typical representatives of P. coronata sp. nov. by the absence of a row of pores between the cephalis and abdomen. The specimen Pseudodictyomitra

sp. (Okamura, 1980, pl. 22, fig. 1), unfortunately, has mediocre preservation, which does not allow it to be unambiguously attributed to P. coronata sp. nov.

Material. 18 specimens: three specimens from the type locality, 12 specimens from the composite section of Mangaleni (lower Coniacian–lower Santonian), and three specimens from the Mangaleni-8 section (lower Coniacian).

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The author expresses gratitude to M.S. Afanasieva (Borissiak Paleontological Institute of RAS) and V.S. Vishnevskaya (GIN RAS) for critical remarks and advice; N.V. Gorkova (GIN RAS) for assistance with electron microscopic work.

FUNDING

This work was funded by the budget of the Geological Institute of the Russian Academy of Sciences within the framework of the state assignment FMMG-2021-0003. No additional grants for conducting or supervising this particular research were received.

CONFLICT OF INTERESTS

The author of this work declares that she has no conflict of interest.

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Figure captions

Fig. 1. Location of the studied radiolarians in Cyprus: *a* – scheme of sections location; *b* , *c* , *d* – lithological columns: *b* – composite section of Mangaleni, *c* – Akamas section, *d* – Mangaleni-8 section. Legend: 1 – Troodos ophiolite massif, 2 – Arakapas fault, 3 – upper pillow lavas, 4 – umbrites with interlayers of radiolarian cherts and massive abiogenic cherts, 5 – cherts with interlayers of siliceous mudstones, 6 – opal-like, manganiferous cherts, 7 – findings of radiolarians of the genus Pseudodictyomitra.

Fig. 2. Stratigraphic distribution and phylogenetic relationships of the genus Pseudodictyomitra Pessagno, 1977 within the Middle Albian–Campanian (from: Bragina, 2016b, with changes and additions).

Explanation to Plate II

Fig. 1, 2. Pseudodictyomitra pseudomacrocephala (Squinabol, 1903): 1 – specimen GIN, No. 4878/130 (from: Bragina, Bragin, 2016, Pl. 5, fig. 5), 2 – specimen GIN, No. 4870/404 (from: Bragina et al., 2014, fig. 4.4).

Fig. 3. Pseudodictyomitra sp. A, specimen GIN, No. 4870/405 (from: Bragina et al., 2014, fig. 4.5).

Fig. 4. Pseudodictyomitra sp. B, specimen GIN, No. 4878/265 (from: Bragina et al., 2021, fig. 5J).

Fig. 5, 14. Pseudodictyomitra sp. C: 5 – specimen GIN, No. 4878/306, 14 – specimen GIN, No. 4878/315.

Fig. 6–13, 15–19. Pseudodictyomitra coronata sp. nov.: 6 – specimen GIN, No. 4878/307, 7 – specimen GIN, No. 4878/308, 8 – specimen GIN, No. 4878/309, 9 – specimen GIN, No. 4878/310, 10 – specimen GIN, No. 4878/311, 11 – paratype GIN, No. 4878/312, 12 – specimen GIN, No. 4878/313, 13 – specimen GIN, No. 4878/314, 15 – paratype GIN, No. 4878/316, 16 – specimen GIN, No. 4878/317, 17 – holotype GIN, No. 4878/318, 18 – specimen GIN, No. 4878/319, 19 – specimen GIN, No. 4878/320.

Cyprus: Moni Formation, sample 03-2-4, zone Alievium superbum, Lower Turonian (fig. 1); Perapedhi Formation, Akamas section, Alievium praegallowayi zone, Lower Coniacian, sample 19-18-1 (fig. 4, 6); Mangaleni-8 section, Alievium praegallowayi zone, Lower Coniacian (fig. 5, 9, 14, 18): 5, 18 – sample 21-18-5, 9 – sample 21-18-1, 14 – sample 21-18-2; composite Mangaleni section (fig. 7, 8, 10–13, 15–17, 19): 7, 12, 13 – Theocampe urna zone, Lower Santonian, sample 03-3-3; 8, 10, 11, 16 – Cyprodictyomitra longa zone, Upper Coniacian: 8 – sample 21-14-5, 10, 16 – sample 21-14-1, 11 – sample 21-14-2; 15, 17, 19 – Alievium praegallowayi zone, Lower Coniacian: 15 – sample 21-16-2, 17, 19 – sample 21-16-1.

Crimea, Byuk-Karasu River section, Actinomma (?) belbekense zone, Upper Turonian (fig. 2, 3): 2 – sample 09-13-17, 3 – sample 09-13-29. Scale bar 100 μm

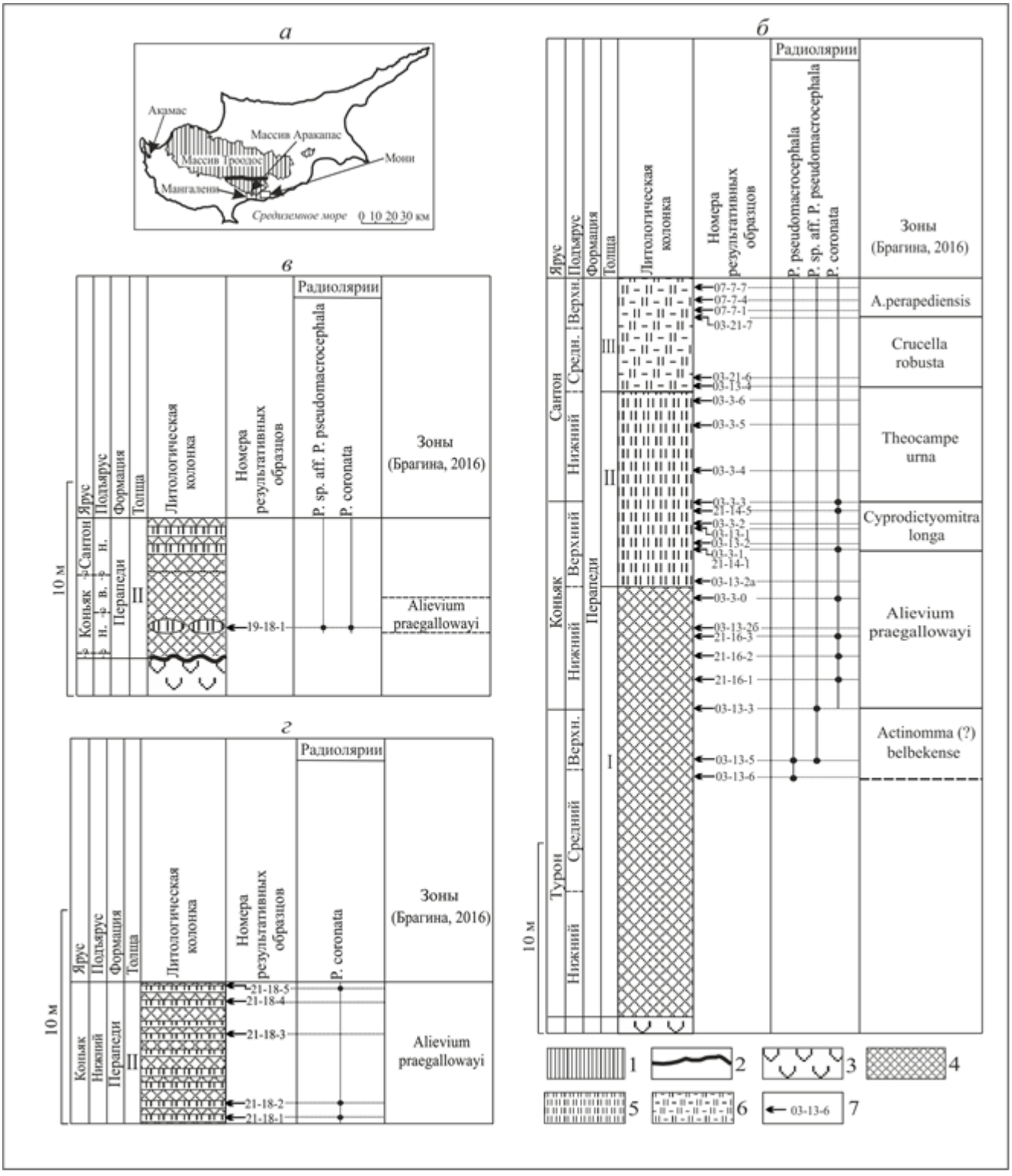
а
Акамас
Массив Аракапас
Массив Троодос
Мони
Мангалени
Средиземное море
0 10 20 30 км
б
Ярус
Подъярус
Формация
Толща
Литологическая колонка
Номера результативных образцов
Радиолярии
P. pseudomacrocephala
P. sp. aff. P. pseudomacrocephala
P. coronata
Зоны (Брагина, 2016)
Сантон
Верхн.
Средн.
Нижний
Коньяк
Верхний
Нижний
Перапеди
Турон
Средний
Верхн.
Нижний
I
II
III
10 м
07-7-7
07-7-4
07-7-1
03-21-7
03-21-6
03-13-4
03-3-6
03-3-5
03-3-4
03-3-3
21-14-5
03-3-2
03-13-1
03-13-2
03-3-1
21-14-1
03-13-2a
03-3-0
03-13-2б
21-16-3
21-16-2
21-16-1
03-13-3
03-13-5
03-13-6
A.perapediensis
Crucella robusta
Theocampe urna
Cyprodictyomitra longa
Alievium praegallowayi
Actinomma (?) belbekense
1
2
3
4
5
6
7
03-13-6
в
Ярус
Подъярус
Формация
Толща
Литологическая колонка
Номера результативных образцов
Радиолярии
P. sp. aff. P. pseudomacrocephala
P. coronata
Зоны (Брагина, 2016)
Сантон
Коньяк
Перапеди
II
10 м
19-18-1
Alievium praegallowayi
г
Ярус
Подъярус
Формация
Толща
Литологическая колонка
Номера результативных образцов
Радиолярии
P. coronata
Зоны (Брагина, 2016)
Коньяк
Нижний
Перапеди
II
10 м
21-18-5
21-18-4
21-18-3
21-18-2
21-18-1
Alievium praegallowayi

Fig. 1

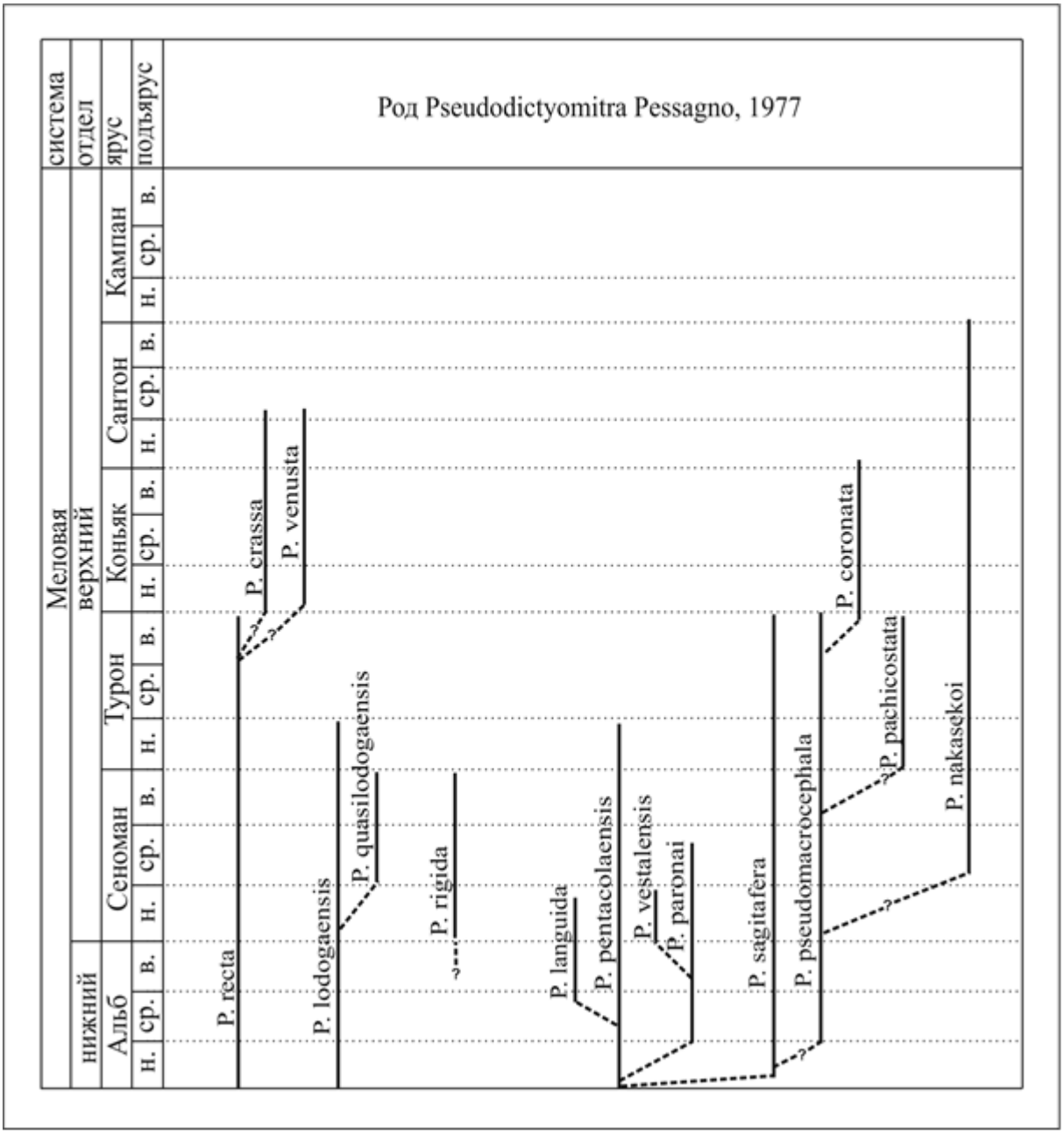
Род Pseudodictyomitra Pessagno, 1977
система
отдел
ярус
подъярус
Меловая
нижний
верхний
Альб
Сеноман
Турон
Коньяк
Сантон
Кампан
н. ср. в. н. ср. в. н. ср. в. н. ср. в. н. ср. в. н. ср. в.
P. recta
P. lodogaensis
P. quasilodogaensis
P. rigida
P. languida
P. pentacolaensis
P. vestalensis
P. paronai
P. sagitafera
P. pseudomacrocephala
P. crassa
P. venusta
P. coronata
P. pachicostata
P. nakasekoi

Fig. 2

Table II