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Nezzazata praesimplex sp. nov. and *Nezzazata praegyra* sp. nov. from the Aptian Dariyan Formation of SW Iran and the origin of the Nezzazatidae (Foraminifera)

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ABSTRACT - The new species *Nezzazata praesimplex* and *Nezzazata praegyra* are described from the upper lower-upper Aptian Dariyan Formation of SW Iran. The differences to other, mostly Cenomanian species of *Nezzazata* are discussed in detail. The Aptian species can be considered as small-sized homeomorphs of the Cenomanian taxa *N. simplex* Omara and *N.* gr. *gyra* (Smout). *Nezzazata* specimens reported from the Hauterivian of Iran appear to represent the oldest reliable record of the genus so far.

Keywords: Larger Benthic Foraminifera; new taxa; Lower Cretaceous; Zagros Zone; taxonomy; biostratigraphy.

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1. INTRODUCTION

The Nezzazatidae Hamaoui and Saint-Marc, 1975 represent a group of agglutinated benthic foraminifera typically occurring in inner carbonate platform facies in the Cretaceous and in some cases with biostratigraphic value (e.g., Hamaoui and Saint-Marc, 1975; Schroeder and Neumann, 1985; Simmons et al., in press). The greatest diversity of the Nezzazatidae was achieved during the Cenomanian. especially in platform carbonates developed along the southern margin of Neotethys including the Arabian Plate (Fig. 1). The taxonomic composition of the Cenomanian representatives of the genus *Nezzazata* is reviewed by Simmons et al. (in press) who recognized three species/groups; the type-species *N. simplex* Omara, 1956, *N.* gr. *gyra* (Smout, 1956) and *N. isabellae* Arnaud-Vanneau and Sliter, 1995. In the literature there is consensus that the earliest record of *Nezzazata, Nezzazata simplex germanica* Omara and Strauch, 1965, described using isolated specimens extracted out of Hauterivian shelf marls from NW Germany is doubtful as a member of the genus. Herein, two new species are described as *Nezzazata praesimplex* and *N. praegyra* from the upper lower-upper Aptian Dariyan Formation of SW Iran. This allows us to review the early records of the Nezzazatidae.

2. GEOLOGICAL SETTING

Iran consists of different structural units, including the Alborz and Kopet Dagh in the northern part of the country, the Zagros fold and thrust belt and the Sanandaj-Sirjan Zone in the southern part, separated by Central Iran in the middle part (Fig. 2A). As a part of Alpine-Himalayan system, the Zagros belt developed along the oblique collisional suture zone between the NE Arabian margin and Eurasia. It extends from the NW Iranian border to SW Iran, up to the Strait of Hormoz (Heidari et al., 2003). This fold-thrust belt formed as a result of the Late Cretaceous compressive phases that, in turn, controlled the overall sedimentation on the Arabian Plate (Sherkati and Letouzey, 2004; Agard et al., 2005; Piryaei et al., 2010; Van Buchem et al., 2010a; Navidtalab et al., 2020; Simmons et al., 2024). The Zagros belt can be subdivided into several tectono-stratigraphic units based on their structural style and sedimentary history, including the Fars Province (Interior Fars and Coastal Fars), the Dezful Embayment, the Izeh Zone, the High Zagros, and the Lurestan Province (e.g., Falcon, 1974; Motiei, 1993, Sherkati and Letouzey, 2004; Sherkati et al., 2006; Heydari, 2008; Farzipour-Sain et al., 2009). The investigated area is located in the south of High Zagros Zone, close to the boundaries with Interior Fars

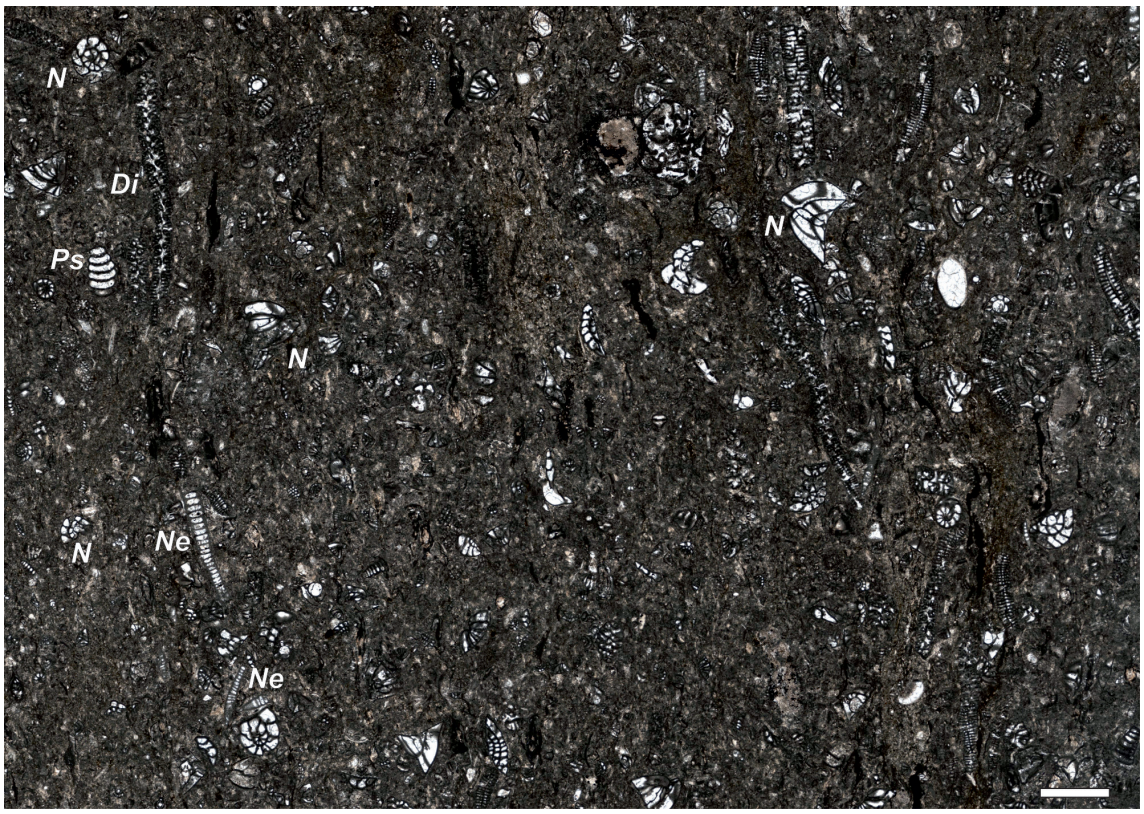

Fig. 1 - Foraminiferan wackestone, middle-upper Cenomanian Sarvak Formation of the Khormuj section (see Vincent et al., 2015; Xu et al., 2023) of SW Iran dominated by *Nezzazata* spp. (*N*), *Dicyclina* sp. (*Di*), *Neodubrovnikella turonica* (Said & Kenawy) (*Ne*), *Pseudolituonella reicheli* Marie and others. Scale bar 1.0 mm.

and Izeh Zone (Fig. 2 B,C). These tectono-sedimentary units as parts of the Zagros folded belt and the Arabian Plate are characterized by extensive shallow-water carbonate deposits during Early-mid-Cretaceous time (e.g., Murris, 1980; Vincent et al., 2015). Well-known shallow marine formations of the broadly Aptian interval include the Dariyan Formation in the Iranian Zagros, the Shuaiba Formation in Oman, Saudi Arabia, and the Gulf region, and the Qishn Formation in Yemen (e.g., Alsharhan and Narin,1997; Sharland et al., 2001; van Buchem et al., 2010b). In the High Zagros, Fars, Dezful Embayment, and the Persian Gulf, the Dariyan Formation consists mostly of shallow marine limestones containing orbitolinids, and other benthonic foraminifera as well as calcareous algae, *Lithocodium/ Bacinella,* and rudist bivalves. The material containing the new *Nezzazata* species comes from one section of the Dariyan Formation in the Zagros belt, the Kuh-e Morvarid section (Fig. 2B).

This section is located in the High Zagros Zone, close to the High Zagros Fault, southeast of the Semirom town, and approximately 30 km to the NE of Qale Mokhtarkhan village. The coordinates of the section base are 31°15′42.20″ N, 51°55′43.47″ E. The 163-m-thick Dariyan Formation unconformably underlies thin-bedded argillaceous limestones of the Kazhdumi Formation whereas its lower contact with the Gadvan Formation is not exposed. The lower 88 m of the formation consists of medium to thick-bedded shallow-marine bioclastic limestones containing benthic foraminifera and calcareous green algae. It is followed by a 12-m-thick interval composed of thin to medium-bedded limestones containing both benthic foraminifera and planktonic foraminifera. The upper part of the Dariyan Formation is mainly composed of thick-bedded bioclastic limestones containing orbitolinids. Close to the top of the formation, medium- to thin-bedded limestones with both benthic and planktonic foraminifera occur (Fig. 3).

The biostratigraphy and chronostratigraphic calibration of the section can be deduced using orbitolinid foraminifera (see Schroeder et al., 2010). These document the Aptian age of the section. The lower-upper Aptian boundary has been placed between the last occurrence of *Palorbitolina lenticularis* (Blumenbach) in the section and the first observed specimen of *Mesorbitolina tibetica* (Cotter) (= *M. parva* in Schroeder et al., 2010). With one exception (*Nezzazata praesimplex* sp. nov. in the late early Aptian, sample J3928), the nezzazatids described here are recorded from the late Aptian. Note that the Kuh-e Morvarid section is also the type-locality of the alveolinoid foraminifera *Ovalveolina*? *primigenita* (Hosseinzadeh et al., 2020). This species appears in the early Aptian below the first appearance of the nerzzazatids, namely *Nezzazata praesimplex* sp. nov. overlapping also with the range of *N. praegyra* sp. nov.

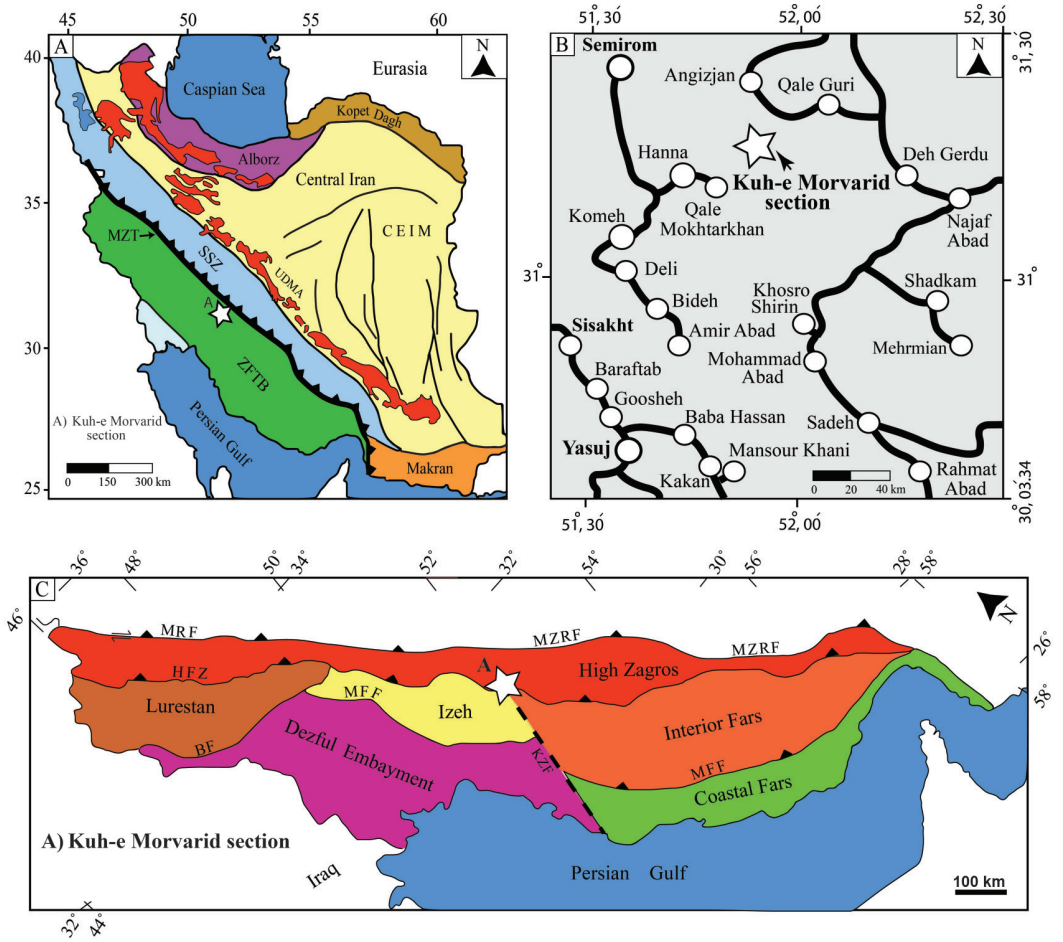

Fig. 2 - A) Simplified geological map of Iran showing the main tectonic subdivisions (after Agard et al., 2011). B) Road map of the study area. C) Tectono-stratigraphic units of the Zagros belt (modified after Farzipour-Sain et al., 2009). The position of the studied section is marked by an asterisk. BF: Balarud Fault, CEIM: Central East Iran Microplate, HZF: High Zagros Fault, KZF: Kazerun Fault, MFF: Mountain Front Fault, MZRF: Main Zagros Revers Fault, MZT: Main Zagros Thrust, SSZ: Sanandaj-Sirjan Zone, UDMA: Uromia Dokhtar Magmatic Arc, ZFTB: Zagros Fold Thrust Belt.

3. MATERIAL AND DEPOSITORY

Nezzazata praesimplex sp. nov. and *Nezzazata praegyra* sp. nov. are described based on 24 thin sections from random cuts made from 7 cemented carbonate rocks. The most prolific thin-section (JR 3945) containing the holotypes of both new species is stored in the paleontological collection of the School of Earth Sciences at Damghan University, Damghan, under the curatorial number DUPC-JR 3945. The rock samples and the other thin sections containing the paratypes are housed in the collection of the National Iranian Oil Company Exploration Directorate (NIOCEXP) under the acronym JR (Kuh-e Morvarid section).

4. SYSTEMATIC DESCRIPTION

The high-level classification (Phylum and Class) of Foraminifera follows Pawlowski et al. (2013). For the low-level classification see Loeblich and Tappan (1987) and Kaminski (2014).

Class Foraminifera d'Orbigny 1826
Subclass Globothalamana Pawlowski, Holzmann and Tyska 2013
Order Lituolida Lankester 1885
Suborder Nezzazatina Kaminski 2004
Superfamily Nezzazatoidea Hamaoui and Saint-Marc 1970
Family Nezzazatidae Hamaoui and Saint Marc 1970
Subfamily Nezzazatinae Hamaoui and Saint-Marc 1970
Genus *Nezzazata* Omara, 1956

Remarks. The allied genus *Nezzazatinella* Darmoian 1976 differs from *Nezzazata* in the following respects; (i) the chambers in the final whorl are narrowly elongated, (ii) the last 3-4 chambers are strongly elongated resulting in a flaring test, (iii) the chambers increase rapidly in size, (iv) ventral sutures are sinuate, (v) the umbilicus (pseudoumbilicus) is open and (vi) the aperture is slit-like rather than more L-shaped with a toothplate (Loeblich and Tappan, 1987; Simmons et al. in press) (Fig. 5H).

Type-species *Nezzazata simplex* Omara, 1965

Nezzazata praesimplex sp. nov.
(Fig. 4)

Etymology. Combined from prae Latin=earlier, before (referring to the age) and the type-species *N. simplex*.

Holotype. Axial section is shown in Fig. 4L, thin-section J3945. It is stored in the paleontological collection of the School of Earth Sciences at Damghan University, Damghan, under the curatorial number DUPC-JR 3945.

Horizon and locality. Late early-early late Aptian Dariyan Formation, Kuh-e Morvarid section, SW Iran (Figs. 2-3).

Diagnosis. Small-sized representatives of the genus exhibiting a test with acute periphery and consisting of up to three low trochospirally arranged whorls. The septa are relatively thick showing a terminal septal plate. The wall is homogeneous finely-agglutinating often with a bright external surficial layer also covering the apertural side of the septa.

Description. The test is typically planoconvex in axial sections (Fig. 4 L-P) and rounded in transverse sections with diameters mostly between 0.25 mm and 0.30 mm (Fig. 4 C,K). The spiral (upper) side is not always flush but slightly convex. Starting with a subspherical proloculus, it consists of up to three low-trochospirally coiled whorls each with eight to ten chambers. In axial section, the chambers are broader than high, rectangular to trapezoidal in shape. The septa are relatively thick (equal or thicker than the external wall thickness) almost straight in the early whorl later slightly bending backwards. They exhibit a septal plate (extension) stretching towards the apertural side and backwards well developed in the final whorl (Fig. 4C). The foramina are rather narrow in axial sections and in an interiomarginal position. Whether they are slit- or pore-like cannot be determined. In oblique sections, the low foramina are not discernible and in these cases the septa stretch continuously between two walls (Fig. 4 J,M). The wall is homogeneous and most likely finely agglutinated. An external thin bright superficial layer ('vitreous' layer of Henson, 1948, p. 82) that covers also the frontal part of the septa (= towards growth direction) is often clearly discernible (Fig. 3 F,J).

Dimensions. See Tab. 1 and differences.

Remarks. Species of *Nezzazata* have often been recorded (with or without illustrations) from the Aptian Dariyan Formation (Dehghani et al., 2014; Mansouri-Daneshvar et al., 2015; Shirzade et al., 2019; Yavari et al., 2017; Navidtalab et al., 2024). They were either reported in open nomenclature or referred to the typically Cenomanian taxa *N. simplex* or *N. gyra-conica*. Small '*Nezzazata*' sp. was also mentioned by Wynd (1965) as one accessorial faunal element of the '*Hensonella-Orbitolina-Choffatella* assemblage zone' of the Dariyan Formation.

Differences. *N. isabellae* Arnaud-Vanneau and Sliter, 1995 from the upper Aptian?-lower Albian of Pacific guyots is also a relatively small species (max. diameter 0.20 mm, max. thickness 0.16 mm). It differs from *N. praesimplex* by a more high-trochospirally coiled biconvex test with rounded periphery, smaller size and a higher number of chambers per whorl (up to 12). Besides *N. isabellae*, Arnaud-Vanneau and Sliter (1995) reported further three different small-sized morphotypes as *Nezzazata* sp. A, sp. B. and *Nezzazata*(?) sp. C from the same locality. Among these forms, *Nezzazata*(?) sp. C (Arnaud-Vanneau and Sliter, 1995, pl. 2, figs. 6-7) with maximum diameter of 0.35 mm and maximum height of 0.20 mm shows affinities to *N. praesimplex* sp. nov. The two illustrated specimens are most likely from the late Aptian (Arnaud-Vanneau and Sliter, 1995, Tab. 1) while the whole range is indicated as late Hauterivian to late Aptian or early Albian. However, the discussion about the stratigraphic significance of the observed assemblages is somewhat misleading with *Nezzazata*(?) sp. C indicated as a typical constituent of an assemblage referred to the Barremian-early Aptian based on *Falsurgonina*(?) sp. (pl. 3, fig. 18: not an uniserial taxon) and *Protopeneroplis* sp. (pl. 5, figs. 8-10: uncertain, possibly epistominids).The Cenomanian homeomorphic species *N. simplex* Omara, 1956, is distinctly larger. Hamaoui (1985, p. 33) indicates a minimum diameter of 0.51 mm and maximum diameter of 0.62 mm. This relatively narrow range however does by no means represent the variability of the species, with measurements of own material obtained from the Cenomanian Sarvak Formation of SW Iran with diameters from 0.45 mm to ~1.0 mm (Fig. 4, left). Even Hamaoui (1985, pl. 11, fig. 1) illustrated a 'large specimen' with a diameter of about 1.10 mm but failed to include this value in the description. Generally, *N. simplex* increases more in width than height during ontogeny leading to adult specimens that are up to three times broader than high. The Cenomanian specimens may also display the superficial bright outer wall layer observed from *N. praesimplex* (Fig. 5 I-J). The Aptian species does not show any indication of a pseudokeriotheca observed in rare Cenomanian specimens (Schlagintweit and Yazdi-Moghadam, 2022). The thin 'vitreous' layer is reported from different groups of agglutinated (e.g., Orbitolinidae, Douglass, 1960) and porcelaneous benthic foraminifera (e.g., Soritoidea, Henson, 1948). It has also been observed in the Cenomanian *N. simplex* (Fig. 5 I-J). It may have led Whittaker et al. (1998) to mistakenly regard *Nezzazata* as a porcellaneous genus. In the Orbitolinidae it refers to a dense concentration of tiny agglutinated material, while in the latter case to '*fine calcite crystals oriented chaotically, suggesting a diagenetic modification of the original wall microstructure*' (Consorti et al., 2015, p. 382). Independently whether *Nezzazata simplex germanica* Omara and Strauch, 1965 belongs to this genus, it is much smaller than *N. praesimplex* with diameters of 0.07 mm

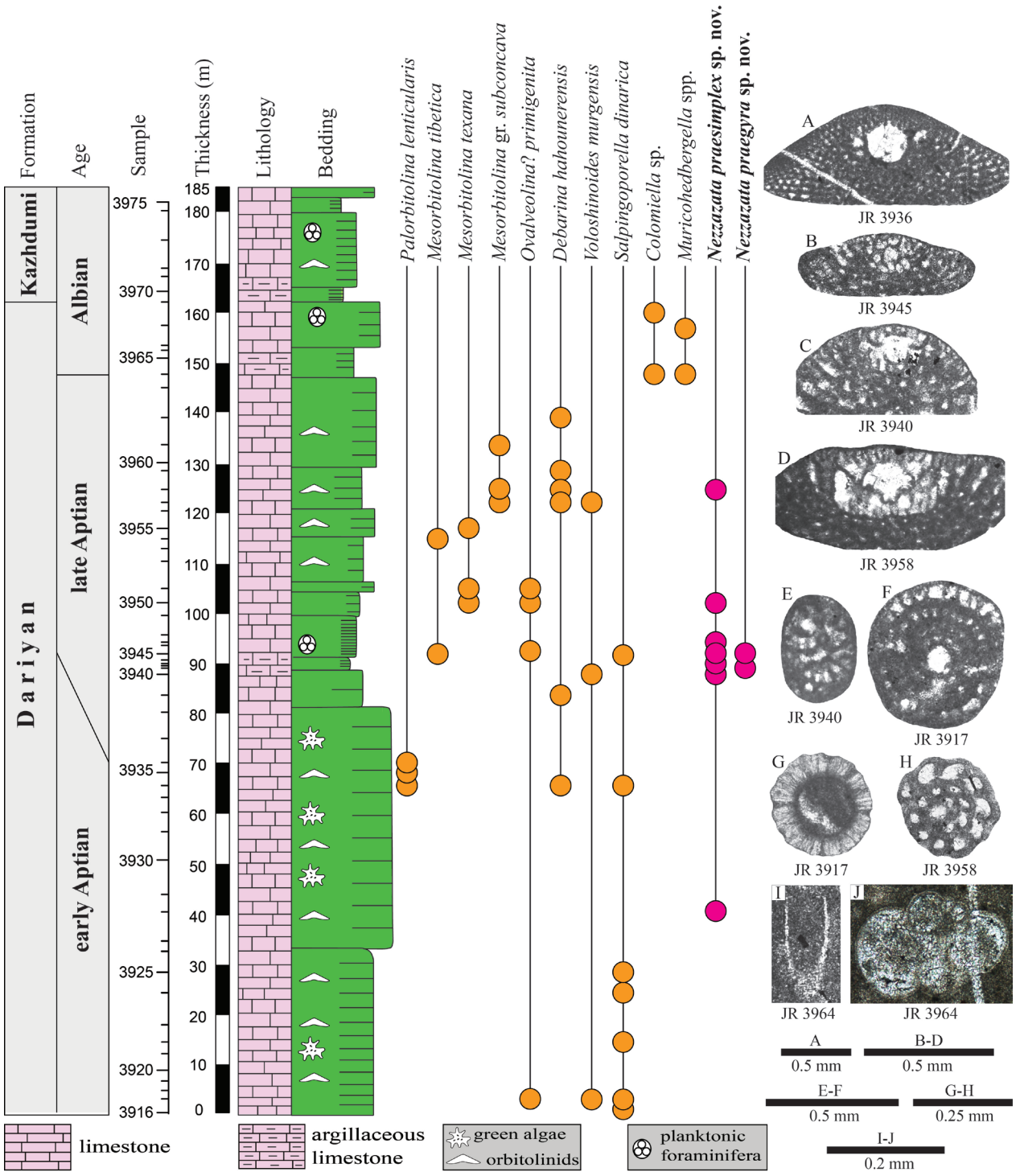

Fig. 3 - Sedimentary log of the Kuh-e Morvarid section showing the distribution of *Nezzazata praesimplex* sp. nov., and *Nezzazata praegyra* sp. nov. together with the distribution of selected larger benthic and planktonic foraminifera in the Dariyan Formation. A) *Palorbitolina lenticularis* (Blumenbach), B) *Mesorbitolina tibetica* (Cotter), C) *Mesorbitolina texana* (Roemer), D) *Mesorbitolina* gr. *subconcava* (Leymerie), E) *Voloshinoides murgensis* Luperto Sinni and Masse, F) *Ovalveolina*? *primigenita* Hosseinzadeh, Consorti and Schlagintweit, G) *Salpingoporella dinarica* Radoičić, H) *Debarina hahounerensis* Fourcade, Raoult and Vila, I) *Colomiella* sp., J) *Muricohedbergella* sp.

to 0.25 mm and test height/thickness of 0.04 mm to 0.15 mm. Omara and Strauch (1965, p. 88) noted that only a few specimens reach a diameter larger than 0.20 mm. *N.* gr. *gyra* (Smout) and *N. praegyra* sp. nov. are clearly differentiated from *N. praesimplex* by its morphology, and the latter also by its distinctly smaller size (Tab. 1).

From the lower Aptian, Neagu and Cîrnaru (2004) described a very tiny taxon as *Nezzazata* (?) *perexigua*

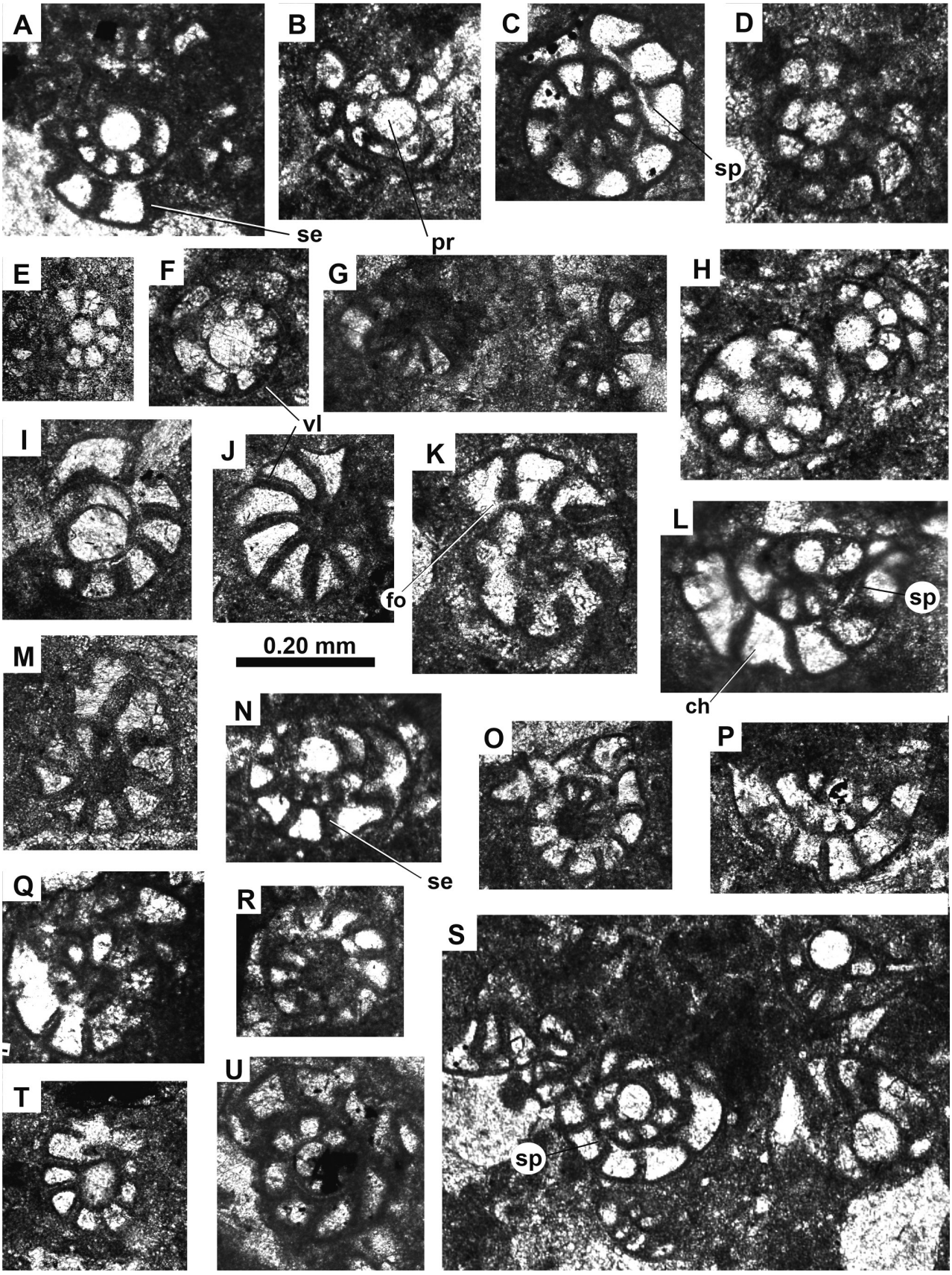

Fig. 4 - *Nezzazata praesimplex* sp. nov. from the Aptian Dariyan Formation of the Kuh-e Morvarid section, SW Iran. A-B, G (left specimen), H (right specimen), N, S) oblique sections. C-D-F, G (right specimen),H (left specimen); note the septal plate in C. I-K, M, O, Q-R, T-U) transverse sections passing either through the first whorls showing the protoconch or subsequent whorls. L, P) axial sections; L) Holotype specimen. Abbreviations: ch = chamber, fo = foramen, pr = protoconch, se = septum, vl = 'vitreous' layer, sp = septal plate. Thin-sections: J3941 (E), J3945 (A-D, F-U).

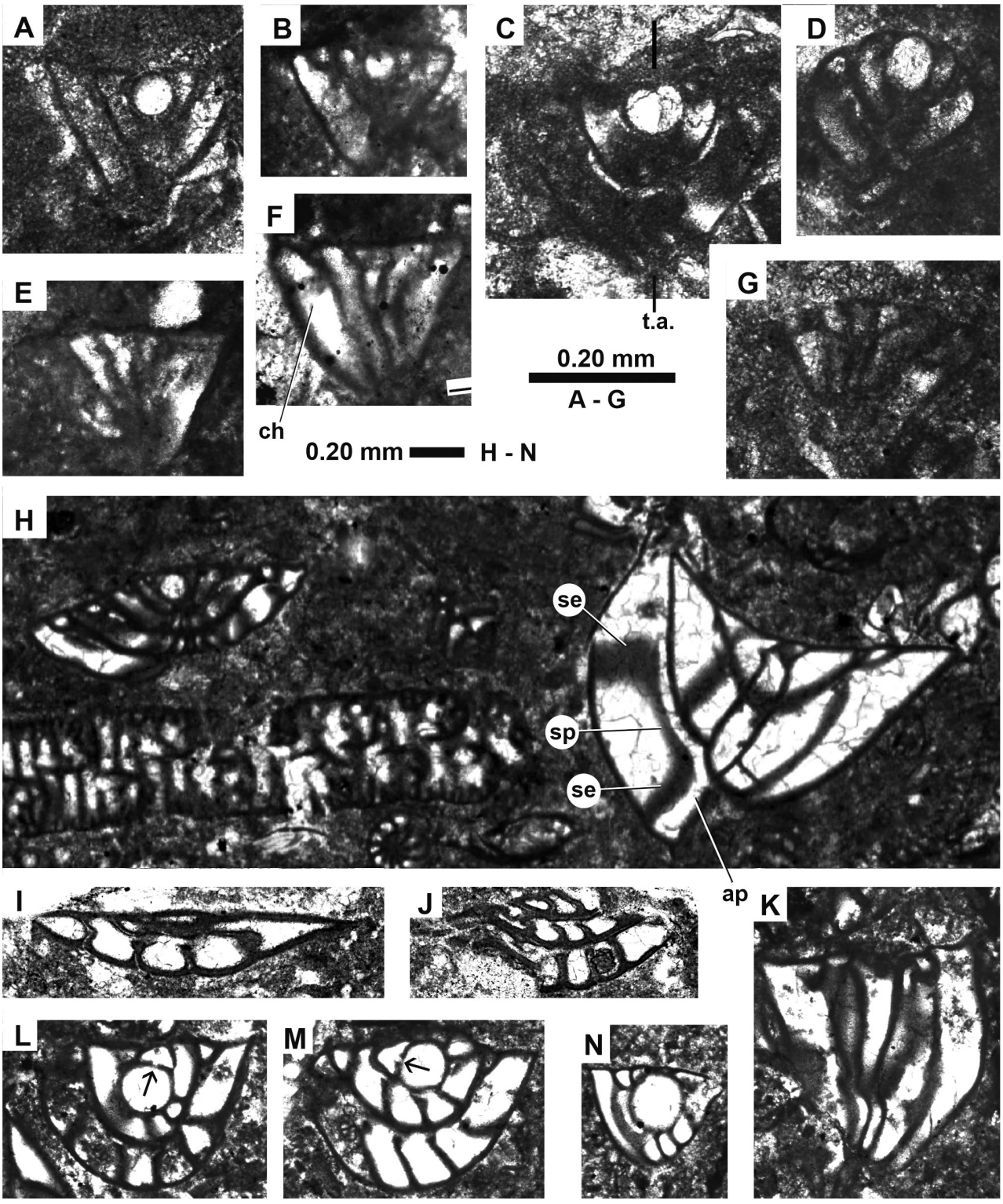

Fig. 5 - *Nezzazata praegyra* sp. nov. from the Aptian Dariyan Formation of the Kuh-e Morvarid section, SW Iran (A-G) compared with *Nezzazata simplex* Omara (H, left side, I-J, L-N) and *N.* gr. *gyra* (Smout) (H right side, K) from the Cenomanian Sarvak Formation of SW Iran (A-B) axial sections. A) holotype specimen. D) oblique axial section. E-G) subaxial sections. H) axial section (left) and oblique section (right) showing the bending of the aperture of the final chamber 'sharply to parallel the peripheral margin' (Loeblich and Tappan 1987, p. 86). I) subaxial section through the final whorl. J) oblique section. K) subaxial section. L-N) slightly oblique axial sections. Abbreviations: ap = aperture, ch = chamber, se = septum, t.a. = test axis. Arrows in L and M = foramen (pore) between proloculus and first neanic chamber. Thin-sections: J3945 (A-G), 19kj 159 (H, K-N; Khormuj section, see Xu et al., 2023), DB 14486 (I-J; Maymand section, see Yazdi-Moghadam and Schlagintweit, 2020).

Tab. 1 - Biometric data. The data for the Cenomanian species *N. simplex* and *N.* gr. *gyra* are from Hamaoui (1985), supplemented by our own measurements (*) from specimens of the Cenomanian Sarvak Formation of SW Iran (Khormuj section; Xu et al., 2023).

species	*N. praesimplex* sp. nov.	*N. simplex* Omara, 1956	*N. praegyra* sp. nov.	*N. gyra* (Smout, 1956)
Diameter	0.16-0.40 mm	0.51-0.62 mm 0.45 to 1.1 mm*	0.23-0.36 mm	0.3-1.2 mm
Thickness/height	0.16-0.21 mm	0.23 mm	0.19-0.27 mm	0.20-0.90 mm
Number of whorls	Up to 3	Up to 3.5	2 (rarely 3)	3
Diameter proloculus	0.04-0.09 mm	0.06-0.07 mm	0.045-0.067 mm	0.04-0.08 mm
Stratigraphy	Aptian	Cenomanian	Aptian	Cenomanian

displaying '*round-lobated periphery*'. The test diameter of the isolated specimens ranges from 0.17 mm to 0.19 mm and a height (thickness) of 0.10 mm to 0.14 mm. Due to the very small size and 'the impossibility to observe the structure of the aperture' Neagu and Cîrnaru (2004, p. 281) considered '*doubtful the generic affiliation*'.

Other Lower Cretaceous (Barremian-Aptian) records in open nomenclature as *Nezzazata* sp. A to E in Altiner and Decrouez (1982) are not further commented in detail here. From the individual images, just *Nezzazata* sp. C should be referable to *N. isabellae* (Altiner and Decrouez 1982, pl. 6, fig. 26).

Nezzazata praegyra sp. nov.
(Fig. 5A-G)

2023 *Nezzazata* aff. *N. gyra-conica*-Solak and Taslı (2023), fig. 11S and 11S1 (late early Aptian of Central Taurides, Turkey).

2024 *Nezzazata conica* Smout-Navidtalab et al., fig. 1 (Aptian Dariyan Formation of SW Iran).

Etymology. Combined from prae Latin=earlier, before (referring to the age) and the Cenomanian species *N.* gr. *gyra*.

Holotype. Fig. 5A, thin-section J3945. It is stored in the paleontological collection of the School of Earth Sciences at Damghan University, Damghan, under the curatorial number DUPC-JR 3945.

Horizon and locality. Late Aptian Dariyan Formation, Kuh-e Morvarid section, SW Iran (Figs. 2-3).

Diagnosis. Small-sized representatives of the genus exhibiting a plano-convex (bowl-shaped) test displaying a subacute margin and consisting of up to two rarely three trochospirally coiled whorls.

Differential diagnosis. The test is plano-convex (bowl-shaped) tapering towards the umbilical side. It displays a subacute margin and consists of up to two, rarely three trochospirally coiled whorls of chambers that are distinctly higher than wide. The external wall angle is arranged about 20 degrees in respect to the test axis (Fig. 5C). The proloculus is subspherical and in a median position (Fig. 5B). The wall is homogenous finely agglutinated; a 'vitreous' layer is not discernible.

Dimensions. See table 1 and differences.

Remarks. In the studied material *N. praegyra* is rarer than *N. praesimplex* (see also Fig. 2). Some specific features (number of chambers, foramina type) are not determined awaiting further specimens. This lack of information does not have any influence of the validity of the new species.

Differences. The bowl-shaped tests of the Aptian *N. praegyra* can be morphologically compared with the Cenomanian *N.* gr. *gyra* (Smout, 1956). Note that this taxonomic concept is based on the revision of Hamaoui (1985) uniting Cenomanian planoconvex species of the genus as *N.* gr. *gyra* (see also Simmons et al., in press).

The maximum test diameter observed in *N. praegyra* only slightly exceeds the corresponding minimum value of *N.* gr. *gyra*. The maximum diameter of *N.* gr. *gyra* is more than three times the one measured from *N. praegyra*. As in the case of the morphologically corresponding pair *N. praesimplex-N. simplex*, the diameter of the proloculi are more or less in the same range. Worth emphasising at this point is the occurrence of forms that perfectly match the Iranian finds from the late Aptian of Turkey (Solak and Taslı, 2023).

5. DISCUSSION

In the genus *Nezzazata* Omara, 1956 the oldest supposed record is *Nezzazata simplex germanica* described from isolated forms recovered from Hauterivian shelf facies of NW Germany (Omara and Strauch, 1965). This subspecies is most likely neither referable to *Nezzazata* nor even to the Nezzazatinae (Hamaoui in Schroeder and Neumann, 1985; Arnaud-Vanneau and Sliter, 1995). Therefore, Arnaud-Vanneau and Sliter (1995, p. 552) concluded that '*Nezzazata isabellae* probably represents one of the oldest species belonging to the genus'. Already Omara and Strauch (1965, p. 84) remarked that

Nezzazata might have a possible ancestor within the Aptian ('möglichen Vorläufer vielleicht schon im Apt'). Especially *N. isabellae* has previously been reported from various Aptian localities and regions (Arnaud-Vanneau and Sliter, 1995: Pacific region; Husinec et al., 2009: Croatia; Mancinelli and Chiocchini, 2006 and Chiocchini et al., 2012: Italy; Hfaiedh et al., 2013: Tunisia; Taslı and Solak, 2019: Turkey; Scott et al., 2024: Mexico). Velić (2007) and Saint-Marc (1974, tab. 3) reported *N. simplex* from the late Aptian of Croatia and Lebanon but without any illustration. The specimens illustrated by Saint-Marc (1974, pl. 4, figs. 9-10) are from the Cenomanian. Solak and Taslı (2023, figs. 9 G-I, 11T) figured four specimens of *N. simplex* from the late Aptian of Turkey that in our opinion belong to *N. isabellae*. The assemblage of nezzazatids recovered from the late early Aptian-early late Aptian Dariyan Formation belongs to these earliest records of the genus *Nezzazata*. An even older record refers to the upper Barremian Kharaib Formation of the United Arab Emirates pending sufficient specimens for precise species attribution (*N. isabellae* or *N. praesimplex*) (Alteneiji et al., 2024). The oldest published record of the genus is probably that of Hosseini et al. (2016) from Hauterivian strata in the Iranian Zagros. The two images of Hosseini et al. (2016, fig. 11 d-e) were assigned to *Nezzazata simplex* var. *germanica* Omara. In our opinion, however, they belong to two different taxa, most likely *Nezzazata isabellae* and *Nezzazatinella* sp.

6. CONCLUSIONS

The two species of *Nezzazata* described herein from the uppermost lower to upper Aptian Dariyan Formation are among the earliest records of the genus. However, specifically undetermined forms are already known from the late Barremian Kharaib Formation of the U.A.E (Altneiji et al., 2024). The two new described species *N. praesimplex* and *N. praegyra* represent small sized homeomorphs of the distinctly larger Cenomanian counterparts *N. simplex* and *N.* gr. *gyra.*

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