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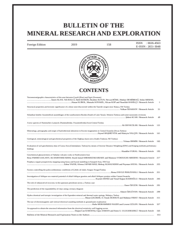

Selandian benthic foraminiferal assemblages of the Southwestern Burdur (South of Lake Yarışlı, Western Turkey) and some taxonomic revisions

Şükrü ACAR[a*]

[a]*General Directorate of Mineral Research and Exploration, Department of Geology, 06800, Ankara, Turkey. orcid.org/0000-0003-0204-152X*

Research Article

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ABSTRACT

In this study, new genera and species are described. These three new genera are *Neosistanites* (type species S*istanites iranica*), *Parahaymanella* (type species *Parahaymanella hakyemezae*) and *Pseudohottingerina* (type species *Pseudohottingerina burdurensis*). *Neosistanites* new species and new genus (*N. sozerii, N. okuyucui, N. guvenci, N. dageri, N. catali, N. armagani, N. inali*) and *Neosistanites iranicus* are defined. *Parahaymanella* is the new genus and its new species *(P. hakyemezae, P. bozkurti* and *P. alanae*). New species of new genus *Pseudohottingerina* (*Ps. burdurensis* and *Ps. yarisliensis*). *Laffitteina anatoliensis, Laffitteina thraciaensis, Sirtina paleocenica, Ankaraella minima* new species and *Laffitteina erki, Laffitteina mengaudi, Ankaraella trochoidea* species are defined and illustrated. Known *Akbarina primitiva, Bolkarina aksarayi***,** *Biloculinites* cf. *paleocenica, Miscellanea? globularis, Globoflarina? sphaeroidea* species and *Heterillina* sp., *Keramosphaera* sp., *Textularia* sp., *Chrysalidina?* sp., *Kolchidina?* sp., *Lockhartia?* sp., *Popovia?* sp. and *Thalmannita?* sp., genera, illustrated only. Only photographs of undescribed benthic foraminifera genera (miliolid, miscellanid, planulinid, rotaliid, mississippinid, aglutine) are given. The definition of a new family (Neosistanitidae), the classification of the *Neosistanites,* the type species and species transfers between the genera, the emendation of the *Ankaraella* genus and the corrections of the *Ankaraella trochoidea* were made. Photographs of some fossil algae are given in plates. All material (SBZ 2) belongs to the Selandian.

1. Introduction

The type localitiy of *Laffitteina erki* (Sirel, 1969) is in the Pontide belt (Gölköy-Mesudiye-Ordu). This species, in later studies (İnan, 1995, 1996; İnan and İnan, 1987, 2008; İnan et al., 1992, 2005; Özgen, 1997; Öztürk et al., 1984; Sirel 1994, 1996, 1998, 2004, 2009, 2015; Şengün et al., 1988), was reported also in various localities in the Pontide and the Anatolide belts. As a result of the MTA (General Directorate of Mineral Research and Exploration) survey conducted within the scope of the Yeşilova project, the presence of this foraminiferal species in the Mediterranean (Tauride) belt, has been determined (Bilgin et al., 1990). Therefore, locality of the sample bearing *L.* erki (just South of the Lake Yarışlı, SW Burdur) was visited in 1990 by the author of this study in order to contribute to knowledge of Paleocene paleogeography of Turkey and to examine benthic foraminiferal assemblage accompanied by *L. erki*, and five systematic limestone samples were taken from a very small outcrop of 3-5m thickness (Text Figure 1). Most of these benthic foraminifera are characterised by their porcelaneous tests and are organisms occuring in the shallow marine, back reef and restricted shelf environments.

The study area (just South of the Lake Yarışlı) is located in a place (West of Isparta Angle, Taurides) that tectonic is significantly active (Poisson, 1984; Price and Scott, 1994; Flecker et al., 2005) (Figure 1). Mamatlar formation, which is the subject of this study, outcrops in a small area and is rich in benthic foraminifera and algae especially in lower levels

* *Corresponding author: Şükrü ACAR, dr.sukru.acar@gmail.com*
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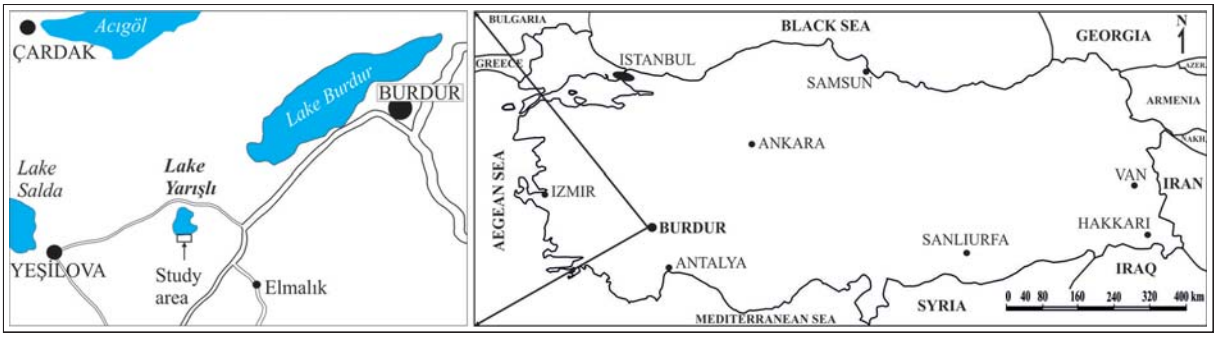

Figure 1- Location maps of the study area.

(Poisson, 1977) (Table 1). A limited number of studies were conducted in the region (Bilgin et al., 1990). Bilgin et al. (1990) prepared geological maps at 1: 25.000 scale in the area and used the name Mamatlar Formation, which had been defined by Poisson (1977), for this middle to late Paleocene ("Montian" – Thanetian) unit (Figure 2).

Sirel (1996, p.79) reported for the first time that the presence of the genus *Sistanites* Rahaghi (1983) in Turkey from "Yarışlı Village, West of Burdur" and determined the following benthic foraminifera: *Sistanites iranica* Rahaghi, 1983, *Bolkarina aksarayi* Sirel, 1981, *Miscellanea globularis* Rahaghi, 1983, *Miscellanea primitiva* Rahaghi, 1983, *Idalina sinjarica* Grimsdale, 1952, *Laffitteina mengaudi* (Astre, 1923), *Laffitteina erki* (Sirel, 1969), *Globoflarina sphaeroidea* (Fleury, 1982) and Miliolidae. Sirel (1998, p.29), referring to the Burdur region, stated that *L. erki, B. aksarayensis, M.? primitiva, M.? globularis, I. sinjarica, G. sphaeroidea* and *L.mengaudi* were determined from "Thanetian aged possibly exotic blocks in Yarışlı". Sirel (2004, p. 20, p. 57) indicated that, in Yarışlı region, Selandian limestones contain an assemblage with *B. aksarayensis*, *M.*? globularis, *M.*? *primitiva, S.iranica, G. sphaeroidea*, *Hottingerina anatolica* Sirel, 1999, *I. sinjarica,* keramospherid type, Miliolidae and algae.

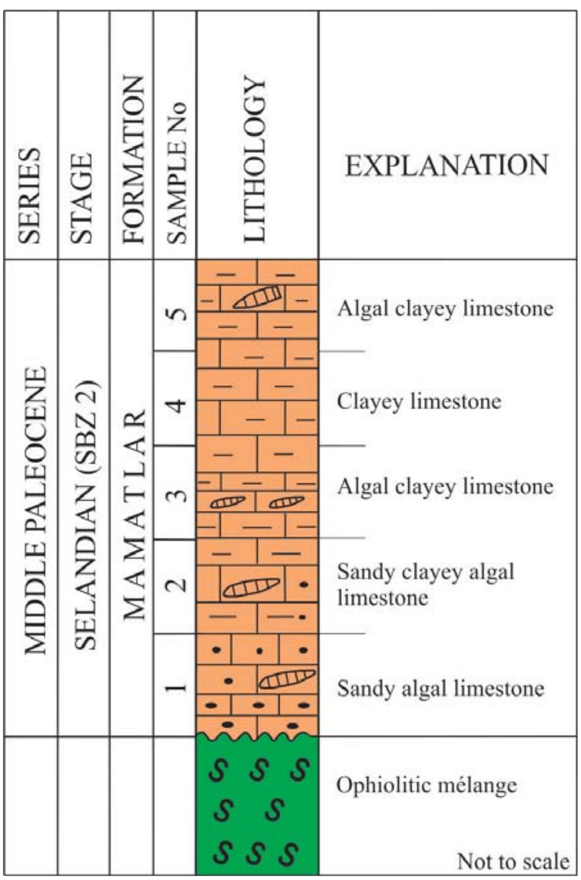

Figure 2- Stratigraphic section of the studied area.

2. Materials and Methods

In 1990, just south of Yarışlı Lake; five systematic limestone samples were taken from a very small outcrop of 3-5m thickness (Figure 1). These samples have been used in this current study. At first, two random thin section from each hard limestone samples were prepared. After a preliminary examin, several oriented thin sections (OTS) were obtained. To obtain OTS, each sample was divided into two pieces. The first one was divided into plates (ca. 4 mm thick) parallel to the bedding. The second one was divided into plates (ca. 4 mm thick) perpendicular to the bedding. Both sides of each plate were polished by grinding disc and examined under binocular microscope. During the examination, the specimens that would be prepared for OTS, were circled with a permanent marker. Plates of individuals (whose borders are drawn) are cut into small pieces. Each miniplate was re-examined under binocular microscope. Based on the examination

Table 1- Fossil assemblage of the South of Lake Yarışlı (SBZ 2).

PALEOCENE					SERIES	AGE
SELANDIAN					STAGE	
SBZ 2					SHALLOW BENTHIC ZONES (Serra-Kiel et al., 1998)	
ŞAY-1	ŞAY-2	ŞAY-3	ŞAY-4	ŞAY-5	SAMPLE NO	
●	●		●	●	*Akbarina primitiva*	FORAMINIFERA
●		●			*Ankaraella minima* n.sp.	FORAMINIFERA
●		●			*Ankaraella trochoidea*	FORAMINIFERA
●					*Biloculinites* cf. *paleocenica*	FORAMINIFERA
●				●	*Bolkarina aksarayi*	FORAMINIFERA
●					*Chrysalidina*? sp.	FORAMINIFERA
●	●	●		●	*Globoflarina*? *sphaeroidea*	FORAMINIFERA
●	●				*Heterillina* sp.	FORAMINIFERA
	●				*Keramosphaera* sp.	FORAMINIFERA
●					*Kolchidina*? sp.	FORAMINIFERA
				●	*Laffitteina anatoliensis* n.sp.	FORAMINIFERA
				●	*Laffitteina erki*	FORAMINIFERA
●				●	*Laffitteina mengaudi*	FORAMINIFERA
				●	*Laffitteina thraciaensis* n.sp.	FORAMINIFERA
●					*Lockhartia*? sp.	FORAMINIFERA
●	●	●			*Miscellanea*? *globularis*	FORAMINIFERA
				●	*Neosistanites armagani* n.gen. n.sp.	FORAMINIFERA
			●	●	*Neosistanites catali* n.gen. n.sp.	FORAMINIFERA
●	●	●		●	*Neosistanites dageri* n.gen. n.sp.	FORAMINIFERA
●	●	●			*Neosistanites guvenci* n.gen. n.sp.	FORAMINIFERA
	●		●	●	*Neosistanites inali* n.gen. n.sp.	FORAMINIFERA
●	●	●			*Neosistanites iranicus*	FORAMINIFERA
●					*Neosistanites okuyucui* n.gen. n.sp.	FORAMINIFERA
●	●	●			*Neosistanites sozeri* n.gen. n.sp.	FORAMINIFERA
●	●	●			*Parahaymanella alanae* n.gen. n.sp.	FORAMINIFERA
	●		●		*Parahaymanella bozkurti* n.gen. n.sp.	FORAMINIFERA
●	●	●	●		*Parahaymanella hakyemezae* n.gen. n.sp.	FORAMINIFERA
			●		*Popovia*? sp.	FORAMINIFERA
●	●	●			*Pseudohottingerina burdurensis* n.gen. n.sp.	FORAMINIFERA
●	●	●			*Pseudohottingerina yarisliensis* n.gen. n.sp.	FORAMINIFERA
●	●			●	*Sirtina paleocenica* n.sp.	FORAMINIFERA
				●	Agglutinated gen.1 indet.	FORAMINIFERA
	●				Agglutinated gen.2 indet.	FORAMINIFERA
●		●			Miliolid gen.1 indet.	FORAMINIFERA
		●			Miliolid gen.2 indet.	FORAMINIFERA
	●				Miliolid gen.3 indet.	FORAMINIFERA
●		●			Miliolid gen.4 indet. sp.1	FORAMINIFERA
●					Miliolid gen.4 indet. sp.2	FORAMINIFERA
		●			Miliolid gen.4 indet. sp.3	FORAMINIFERA
●	●	●			Miliolid gen.5 indet.	FORAMINIFERA
●	●			●	Miliolid gen.6 indet.	FORAMINIFERA
			●	●	Miliolid gen.7 indet.	FORAMINIFERA
●				●	Miliolid gen.8 indet.	FORAMINIFERA
				●	Miliolid gen.9 indet.	FORAMINIFERA
●			●		Miscellanid gen.1 indet.	FORAMINIFERA
	●	●			Mississippinid gen.1 indet.	FORAMINIFERA
	●		●		Planulinid gen.1 indet.	FORAMINIFERA
●	●				Rotaliid gen.1 indet.	FORAMINIFERA
	●				Rotaliid gen.2 indet.	FORAMINIFERA
●				●	Rotaliid gen.3 indet.	FORAMINIFERA
●	●	●			Rotaliid gen.4 indet.	FORAMINIFERA
		●			*Textularia* sp.	FORAMINIFERA
●	●				*Thalmannita* sp.	FORAMINIFERA
●		●			Algae gen.1 indet.	ALGAE
	●				Algae gen.2 indet.	ALGAE
●	●			●	Algae gen.3 indet.	ALGAE

result, each miniplate was orient during grinding according to which section (vertical, horizontal, axial, equatorial etc.) of the specimens had to be obtained. Thus, each specimen became ready for preferred OTS. However, only one plane had to be obtained on the surface. To obtain good OTS. Then the miniplates were left a bit thicker and controlled for thickness under a biological microscope. Some sections were prepared with different thickness according to the different foraminiferal walls. For instance, in order to take good photographs, thin sections of benthic foraminifera with hyaline calcareous test should be normal or a bit more in thickness, yet thin sections of the benthics with porcelaneous test should be thinner than normal. In this study, 219 OTSs were prepared. The benthic foraminifera and algae of the assemblage were determined and photographed by using 213 of these OTSs (Table 1). Oriented thin section used in this study, are deposited in the collection of Paleontology Division, Department of Geology, Mineral Research and Exploration (MTA).

3. Findings

3.1. Systematic Paleontology

In systematic paleontology, Loeblich and Tappan, 1964 and Acar, 1995 are followed.

Phylum: Protozoa GOLDFUSS, 1817,

Subphylum: Sarcodina SCHAMARDA, 1871,

Class: Rhizopoda von SIEBOLD, 1845,

Order: Foraminiferida EICHWALD, 1830,

Suborder: Rotaliina DELAGE AND HÉROUARD, 1896,

Superfamily: Rotaliacea EHRENBERG, 1839,

Family: Neosistanitidae ACAR, New family,

Genus: *Neosistanites* ACAR, n. gen.,

Type Species: *Sistanites iranica* RAHAGHI, 1983.

3.2. New Family *Neosistanitidae* ACAR, n. fam.

Type Genus: *Neosistanites* ACAR, n. gen. [Type Species: *Sistanites iranica* RAHAGHI, 1983].

Description: Test free, tochospirally-rotaliid type coiled and with two layers. Outer layer: thread-like hyaline calcareous; inner layer: dark and blackish coloured, microgranular or very fine granied (Rahaghi, 1983, p.54). Sieved vertical plates (vpl), sieved horizontal plates (hpl), sieved compound plates (cpl), dorsal pillars (dp) and ventral pillars (vnp) with two different shell structure are present but intraseptal canals are absent. First ventral pillars (vnp1) (in the umbilical cavity) are present in rotaliid stage and are hyaline calcareous. Second ventral pillars (vnp2) are also in umbilical cavity yet they are microgranular not hyaline. Besides, funnels (f) between dorsal pillars, umbilical flaps (uf) and umbilical holes (uh) are present. Aperture (a) is single as a basal slit. However, aperture is also present at the base of penultimate septa and of previous septum as an intercameral foramen.

Comparison and Remarks: Features of this new family (Neosistanitidae ACAR, n.fam.) is different from the ones of the family Rotaliidae Ehrenberg, 1839 and of all its subfamilies. In this new family, differently from Rotaliidae; in addition to its two layered (hyaline calcareous, blackish coloured, microgranular or very fine grained) wall structure, the presence of sieved vertical plates (vpl), sieved horizontal plates (hpl), sieved compound plates (cpl), two different type of ventral pillars (vnp1,vnp2), umbilical holes (uh). Due to these differences, the new family Neosistanitidae is introduced.

3.3. Explanation About the Classification of New Genus *Neosistanites*

Genus *Sistanites* Rahaghi (1983) and its type species “*Sistanites iranica* Rahaghi, 1983” were first described and figured by Rahaghi (1983, p.54) from the Thanetian of Iran. Sirel (1996, p.79), later on, described *S. iranica* from Turkey for the first time and Sirel (1998, p.79) again emended this genus. New genus *Neosistanites* is needed to be described in this study, due to inadequate description of the structural elements of *Sistanites* in the studies of Sirel and Rahaghi and due to large number of structural elements specified in this study. *Neosistanites* n. gen. has dorsal pillars (dp) and funnels (f), sieved vertical plates (vpl), sieved horizontal plates (hpl), sieved compound plates (cpl), imperforated umbilical flaps (uf), two different type of ventral pillars (vnpl1, vnpl2), umbilical holes (uh), and a row of apertures (a) or an intercameral foramen (if).

3.4. Species and Type Species Transferring Between Genera

Numerous examples of transferring a new species or a type species into a known species or a new genus are existed in the literature. New descriptions about this issue (specimens described in this study) are presented below:

A- *Sistanites iranica* Rahaghi, 1983, type species of *Sistanites* Rahaghi (1983), is transferred to the new genus *Neosistanites* as its type species (Rahaghi, 1983, p.54, Pl.34, fig.4).

B- *Orduina erki* Sirel, 1969, type species of *Orduina* Sirel (1969), was transferred to some different genera; at the present time, it is accepted and used as *Laffitteina erki* (Sirel, 1969). In this study, *L. erki* is described and figured as well.

C- *Miscellanea primitiva* Rahaghi, 1983 which had been described and figured by Rahaghi (1983), was assigned to different genera as the type species by two different authors (Hottinger, 2009; Sirel, 2009). In this study, it is figured as *Akbarina primitive* Sirel, 2009.

Order: Foraminiferida EICHWALD, 1830,

Suborder: Rotaliina DELAGE AND HÉROUARD, 1896,

Superfamily: Rotaliacea EHRENBERG, 1839,

Family: Neosistanitidae ACAR, New Family,

Type genus: *Neosistanites* ACAR, n. gen. [Type Species: *Sistanites iranica* RAHAGHI, 1983].

New Genus: *Neosistanites* Acar, n.gen.

Derivation of name: The name of "Neosistanites" is derived by the combination of prefix "neo" meaning "new", and the name of former genus.

Type species: Subhorizontal section (Rahaghi, 1983, Pl. 34, fig. 4).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test of this benthic foraminifera is small with two layers, free, and coiled in trochospiral-rotaliid manner. Septa, especially in early rotaliid whorl, are two-layered (Pl. 1, Figs. 1, 4-6). Trochospirally coiled septa in the last whorl are single layered. Outer layer is characterized with thread-like hyaline calcareous and inner layer with dark or blackish coloured, microgranular or very fine grained wall structure (Rahaghi, 1983, p.54). Two-layered wall structure of the genus can especially be better observed in vertical sections. Test of the new genus is small in size. However, species of the new genus can be differentiated into four groups as large, medium, small, and very small based on their size. The new genus could be spherical, subspherical, lobulated, asymmetrical inflated lenticular, lenticular, and asymmetrical flattened lenticular in shape (Pl.1, figs. 1, 4-6; Pl.2, figs. 1-3; Pl.3, figs. 3, 4, 7; Pl.4, figs. 2-4, 7-10; Pl.5, figs. 1, 2, 4-6, 8-11, Pl.6, figs. 1, 3-5, 8, 9). Horizontal diameter and height of the genus varies between 0.758 mm – 1.983 mm and 0.467 mm – 1.371 mm respectively.

In megalospheric generations (fA): protoconch (pr) is spherical in shape and deuteroconch (dt) has a unique shape (similar to a human ear) (Pl.1, fig.6; Pl.2, fig.1; Pl.3, fig.7; Pl.4, fig.4; Pl.5, fig.3; Pl.6., fig.6) (Text figures 3B, C). However, in some specimens, tritoconch (tr) is also present; such is called "triple embryonic structure" (Pl.2, fig.4; Pl.3, fig.7; Pl.4, fig.5) (Text figure 3C). Protoconch diameters of the megalospheric specimens varies between 0.047 mm – 0.262 mm (Pl.1, figs. 5, 6; Pl.2, figs. 1, 2, 4; Pl.3, figs. 3, 4, 6, 7; Pl.4. figs. 1, 4-8; Pl.5, figs. 1-3, 7-11; Pl.6, figs. 3-6) (Text figures 3B, C).

Protoconch (pr) diameters of microspheric generations (fB) varies between 0.009 mm – 0.023 mm (Pl.1, fig.1; Pl.2, fig.5; Pl.4, fig.3) (Text figure 3A). Test is two-layered, outer layer is thread-like hyaline calcareous and inner layer is dark, microgranular or very fine grained, and imperforate (Pl.1, figs. 1, 2, 4-6; Pl.2, figs. 1-6; Pl.3, figs. 2-7; Pl.4, figs. 1-8; Pl.5, figs. 1-12, Pl.6, figs. 1-9) (Text figures 3A-C) (Rahaghi, 1983, p.54). Index of elongation (i.e) which is calculated by "horizontal diameter / height" formula, varies depending on species. Intraseptal canals are absent. Large chamber lumen is subdivided into two parts by one or two plates (vertical plate and/ or compound plate) (Pl.1, figs. 1, 4-6; Pl.2, figs. 1-3; Pl.3, figs. 4, 7; Pl.4, figs. 2-4, 7-10; Pl.5, figs. 1, 2, 4-6, 10) (Text figures 3A, B). Chambers are evolute in dorsal side. Quite narrow surfical openings called as sutural opening (so) (Pl.1, figs, 2, 7; Pl.2, figs. 4, 6) (Text figures 3C), dorsal pillars (dp), funnels (f) and central pillars (cp) are present in dorsal side (Pl.1, figs. 1, 4-6; Pl.2, figs. 1-3; Pl.3, figs. 4, 5, 7; Pl.4, figs. 1-4, 7-9; Pl.5, figs. 1-4, 5-11; Pl.6, figs. 1-5, 8, 9) (Text figures 3A, B).

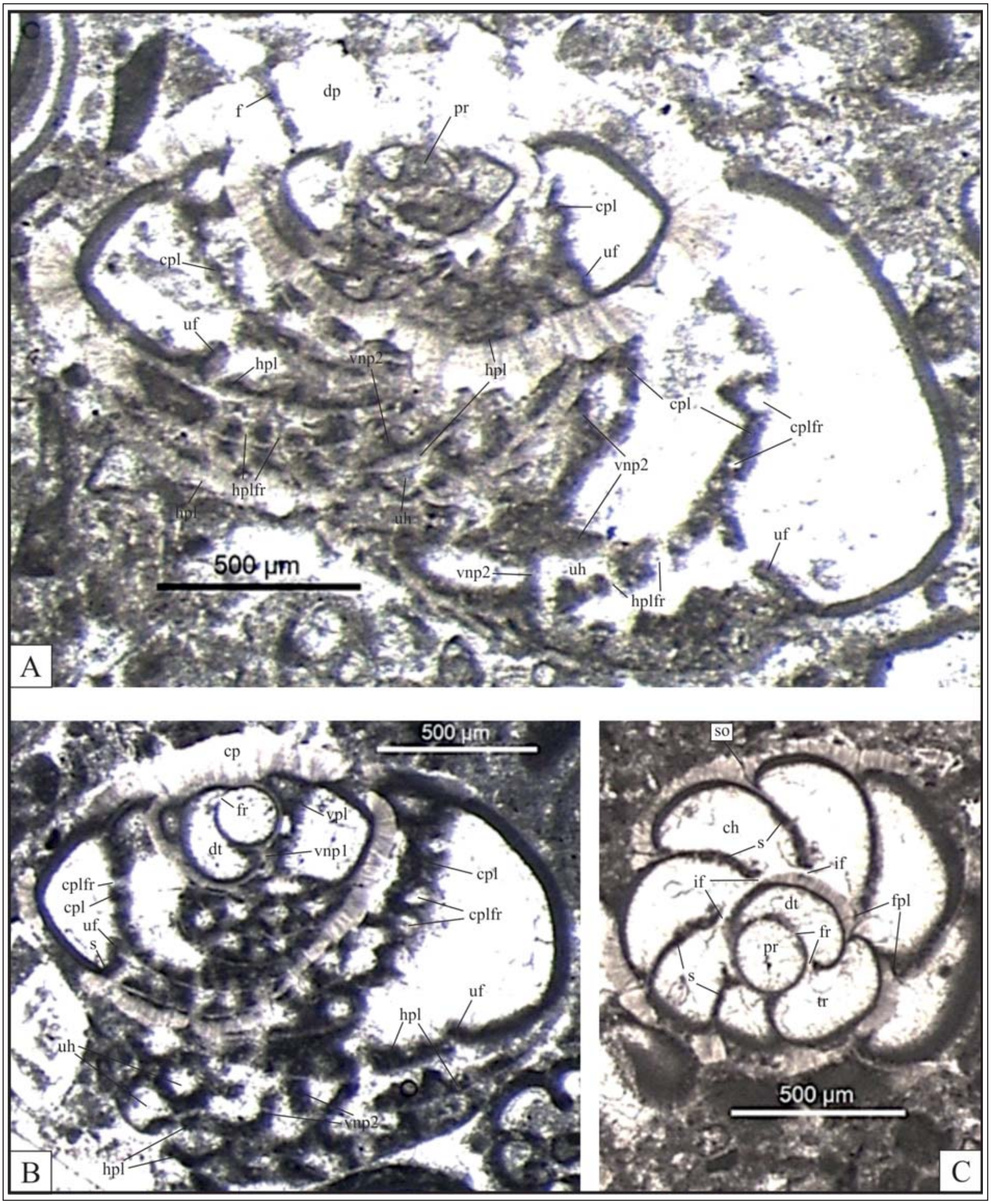

Figure 3- Some structural elements of *Neosistanites* ACAR n. gen. A: Vertical section; (fB) minute spherical protoconch (pr), dorsal pillars (dp), funnels (f), two-layered septum, compound plates (cpl), compound plate foramina (cplfr), umbilical flaps (uf), sieved horizontal plates (hpl), horizontal plates foramine (hplfr), second ventral pillars (vnp2), umbilical holes (uh). B: Vertical section; (fA), central pillar (cp), spherical protoconch (pr) and typical deuteroconch (dt), foramen (fr) between protoconch and deuteroconch, first ventral pillar (vnp1), vertical plate (vpl) (located to the immediate right side of the spherical protoconch), sieved (vertical) compound plate (cpl) (at the left) and compound plate foramina (cplfr), (inclined) compound plate (cpl) (at the right) and the compound plate foramina (at the right) (cplfr), umbilical flaps (uf),sieved horizontal plates (hpl), second ventral pillars (vnp2), umbilical holes (uh). C: Horizontal section; (fA), triple embrionic stage, [large spherical protoconch (pr), larger deuteroconch (dt), largest tritoconch (tr), and foramina (fr) between them], sutural / surfical opening (on the spire) (so), septa (s), chamber (ch), intercameral foramina (if), and foraminal plates (fpl).

Pseudospine-like (psp) structural elements are rarely observed (Pl.1, fig.2). Foraminal plates (fpl) located at the base of the intercameral foramina (if) or on the outer side of the underlying spire of the intercameral foramina (if), are present (Pl.1, figs. 2, 7; Pl.2, figs. 4, 6; Pl.3, fig. 5; Pl.5, figs. 7, 12; Pl.6, fig. 7) (Text figure 3C). Either sieved vertical plates (vpl) or sieved compound plates (cpl) divides chambers lumens into two parts. Horizontal plates (hpl), septa (s), umbilical flaps (uf) and second ventral pillars (vnpl2) are blackish, dark coloured, and microgranular or very fine grained in conformance with internal structure of the wall. All these structural elements fill up the umbilical cavity (Text figure 3A, B, C). Vertical plates (vpl) arise from the dorsal side of the test (from spire), and they divide the chamber lumen into two part as a very thick sieve plate in accordance with the anatomic structure (Pl.1, fig. 3), and then merge with the umbilical flap (uf) (Pl.1, figs.1, 4-6; Pl.2, figs. 1-3; Pl.3, figs. 2-4, 7; Pl.4, figs.2, 3, 7; Pl.4, figs. 2, 3, 7-10; Pl.5, figs. 1, 2, 4-6, 8-11; Pl.6. figs. 1, 3-5, 8, 9) (Text figures 3A, B). In other words, a very thick sieved vertical plate (vpl) contains a very short stage of microgranular and imperforate in the beginning, later on it becomes a sieve plate and finally merges with an umbilical flap (uf). Another vertical plate (vpl) gently curves down (towards the protoconch), and then merges with the umbilical flap (uf). These thick, gently curved concave vertical plates can be observed in some thin sections depending on the direction of the thin section. If the plane of the thin section do not cut this concave vertical plate; in other word, if the plane of the thin section passes through the space between a septum and a vertical plate, vertical plates can not be observed on the thin sections. Umbilical cavity is filled with sieved horizontal plates (hpl) and ventral pillars (vnp) that are located between those plates (hpl). These horizontal plates (hpl) are microgranular and sieved. Horizontal plates (hpl) are present on the ventral side (Pl.1, figs.1, 4-6; Pl.2, figs. 3-11; Pl.3, figs. 2-5, 7; Pl.4, figs. 1-4, 7-10; Pl.5, figs. 1-6, 8-11; Pl. 6, figs. 1-5, 8, 9) (Text figures 3A, B). Horizontal plates (hpl) also fill the umbilical cavity (uc), and one end of it conjoints with an umbilical flap (uf) and the other does with the preceding horizontal plate (hpl). Sometimes, two ends of a horizontal plate conjoint with the preceding horizontal plate (hpl). A large number of short, microgranular second ventral pillars (vnp2) are located between these thick, sieved horizontal plates (Pl.1, figs. 1, 4-6; Pl.2, figs. 1-3; Pl.3, figs. 3, 4, 7; Pl.4, figs. 2-4; Pl.5, figs. 1, 2, 4-6, 8-11; Pl.6, figs. 1, 3-5, 8, 9) (Text figures 3A, B). Compound plates (cpl) are sieved, microgranular and thick. These compound plates (cpl) are formed by merging of a sieve vertical plate (vpl) with a sieve horizontal plate (hpl) on an umbilical flap (uf). Besides, a compound plate (cpl) could be developed by a vertical plate evolving into a horizontal plate after it was attached to an umbilical flap (uf) (Pl.1, figs. 1, 4-6; Pl.2, figs. 1, 2; Pl.3, figs. 4, 7; Pl.4, figs. 2-4, 7-10; Pl.5, figs. 1, 2, 4-6, 10, 11; Pl.6, figs. 3, 5) (Text figures 3A, B). A compound plate (cpl) is located in the middle of a chamber lumen. It divides the chamber lumen into two part, and fills the ventral cavity. Sieve structure of thick vertical plates (vpl) and of thick compound plates (cpl) are clearly observed in oblique sections (Pl.1, figs. 3, 5; Pl.2, figs. 1-3; Pl.3, figs. 1-3; Pl.4, figs. 2, 7, 8) (Text figure 3B: at the right side and left side). In some cases, tissular thickness between foramina could be observed as pillars (p) in vertical parts of the tangential sections of thick compound plates (cpl). However, these are not pillars, only tissue/wall thickness between foramina (Pl.1, figs.1, 5; Pl.2, fig.1) (Text figure 3B: at the right side). Umbilical flap (uf) is a dark, blackish coloured, microgranular or very fine grained, imperforate plate (Pl.1, figs.1, 4-6; Pl.2, figs.1-3; Pl.3, figs.1-4, 7; Pl.4, figs.2-4, 7-10; Pl.5, figs.1-6, 8-11; Pl.6, figs.1-5, 8- 9) (Text figures 3A, B). Umbilical flap is either attached to or located at the end of a septum, and covers umbilical side (Hottinger, 1980, p.12, text figure 5). It especially is observed in the vertical sections of trochospirally / rotaliid coiled benthic foraminifera as an imperforate, small, gently curved plate (uf) at the end of a septum. New genus *Neosistanites* has also ventral and dorsal pillars. As is known, presence of the pillars in a benthic foraminifera is a very important criterion. Each anatomic structure determined above, leads to a specimen being described as different genus. Ventral pillars have two different structural types in its own (Figs. 3A, B). First ventral pillars (vnp1) are located in the umbilical cavity (uc) in first few whorls of the rotaliid stage (close to protoconch) of the test.

First ventral pillars (vnp1) are hyaline calcareous, plug-looking, monolithic, massive, short ventral pillars (Pl.1, fig.6; Pl.2, fig.1; Pl.3, fig.7; Pl.4, figs.8, 9; Pl.5, figs.2, 3, 5, 6, 10, 11, 12; Pl.6, figs.3, 5) (Text figure 3B). Second ventral pillars (vnp2) are also located in the ventral side. They are short, microgranular and located between the plates in accordance with the inner layer of the test wall (Pl.1, figs.4-6; Pl.2, figs.1-3; Pl.3, figs.3, 4, 7; Pl.4, figs.2-4, 7-9; Pl.5, figs.1, 2, 4-6, 8-10; Pl.6, figs.1, 3-5, 8, 9) (Text figures 3A, B). Dorsal pillars (dp) are located in the dorsal side, and they, in compatible with the outer structure of the test wall, are radial and hyaline calcareous (Pl.1, figs.1, 4-6; Pl.2, figs.1-3; Pl.3, figs.3, 4; Pl.4, figs. 1-4, 7-10; Pl.5, figs. 1-6, 8-11; Pl.6, figs.1-5, 7-9). Funnels (f) are present between dorsal pillars. Umbilical holes (uh) or umbilical cavity (uc) are located between horizontal plates (hpl) and second ventral pillars (vnp2) in the ventral area (Pl.1, figs. 1, 4-6; Pl.2, figs. 1-3; Pl.3, figs.3, 4, 7; Pl.4, figs.2-4, 7-10; Pl.5, figs. 1, 2, 4-6, 8-10; Pl.6, figs. 1, 3-5, 8) (Text figures 3A, B, C). Intercameral foramina (if) are present at the base of setpa and can be observed in horizontal or subhorizontal sections (Pl.1, fig.7; Pl.2, figs.4-6; Pl.3, figs.2, 5, 6; Pl.5, figs. 7, 12; Pl.6, figs.6, 7) (Text figure 3C). Intercameral foramina (if) could be accepted as former apertures. Thus, we can describe apertures by examining intercameral foramina. Depending on this, we could say *Neosistanites* has one aperture which is located at the base of septum as a basal slit. Foraminal plate (fpl), observed in the horizontal or subhorizontal sections, is a dark coloured minute plate. It is present at the base of intercameral foramina, and located on the outer part of the preceding whorl (Pl.1, figs.2, 7; Pl.2, figs.4, 6; Pl.3, fig.5; Pl.4, figs.5, 6; Pl.5, figs.7, 12; Pl.6, fig.7). Fortyfive OTS and sixtythree specimen have been used in order to describe new genus *Neosistanites*. Dimorphism is present. Middle Paleocene, Selandian (SBZ 2) (Serra-Kiel et al., 1998).

Fossil Assemblage: It is associated with *Neosistanites iranicus* (Rahaghi, 1983), *Neosistanites sozerii* Acar, n.gen.,n.sp., *Neosistanites okuyucui* Acar, n.gen.,n.sp., *Neosistanites guvenci* Acar, n.gen.,n.sp., *Neosistanites dageri* Acar, n.gen.,n.sp., *Neosistanites catali* Acar, n.gen.,n.sp., *Neosistanites armagani* Acar, n.gen.,n.sp., *Neosistanites inali* Acar, n.gen.,n.sp., *Parahaymanella hahyemezae* Acar, n.gen., n.sp., *Parahaymanella bozkurti* Acar, n.gen., n.sp., *Parahaymanella alanae* Acar, n.gen., n.sp., *Pseudohottingerina burdurensis* Acar, n.gen.,n.sp., *Pseudohottingerina yarisliensis* Acar, n.gen.,n.sp., *Ankaraella minima* Acar, n.sp., *Laffitteina anatoliensis* Acar, n.sp., *Laffitteina thraciaensis* Acar, n.sp., *Sirtina paleocenica* Acar, n.sp., *Akbarina primitiva* (Rahaghi, 1983), *Ankaraella trochoidea* Sirel, 1998, *Bolkarina aksarayi* Sirel, 1981, *Laffitteina erki* (Sirel, 1969), *Laffitteina mengaudi* (Astre, 1923), *Biloculinites* cf. *paleocenica* Rahaghi, 1983, *Miscellanea*? *globularis* Rahaghi, 1978, *Globoflarina*? *sphaeroidea* (Fleury, 1982), *Heterillina* sp., *Keramosphaera* sp., *Textularia* sp., *Chrysalidina*? sp., *Kolchidina*? sp., *Lockhartia*? sp., *Popovia*? sp., *Thalmannita*? sp., *Periloculina* sp., undeterminated miliolid genera (Miliolid gen.1 indet, Miliolid gen.2 indet, Miliolid gen.3 indet; Miliolid gen.4 indet n.sp.1; Miliolid gen.4 indet n.sp.2; Miliolid gen.4 indet n.sp3; Miliolid gen.5 indet; Miliolid gen.6 indet; Miliolid gen.7 indet; Miliolid gen.8 indet or Idalinid gen.8 indet; Miliolid gen.9 indet), Aglutine gen. (1 and 2) indet., Miscellanid gen. indet., Planulinid gen.1 indet, Rotaliid gen.1 indet. (*Redmondoides?*), Rotaliid gen.2 indet., Rotaliid gen.3 indet., Rotaliid gen.4 indet. (with two layered test), Mississippinid gen. indet., algae gen.1 indet., algae gen.2 indet., algae gen.3 indet. Distrubition of the assemblage has been given in Table 1. Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Comparison with other genera: New genus *Neosistanites* has a two-layered test, and is trochospirally-rotaliid coiled. Evolute in dorsal side, intraseptal canals are absent (Pl.1, figs.1, 2, 4-6; Pl.2, figs.1-6; Pl.3, figs.2-7; Pl.4, figs.1-8; Pl.5, figs.1-12; Pl.6, figs.1-9) (Text figures 3A-C). Outer layer of the test is thread-like hyaline, and inner layer is dark, blackish coloured, microgranular or very fine grained and imperforate (Rahaghi, 1983, p.54). In megalospheric generation, spherical protoconch (pr) and unique shaped (similar to a human ear) deuteroconch (dt) (Pl.1, fig.6; Pl.2, fig.1; Pl.3, fig.7; Pl.4, fig.4; Pl.5, fig.3; Pl.6, fig.6) (Text figures 3B, C) and in some specimens tritoconch (tr) is observed (Pl.2, fig.4, Pl.3, fig.7; Pl.4, fig.5) (Text figure 3C). Protoconch diameters of megalospheric individuals (fA) vary between 0.047 mm – 0.262 mm (Pl.1, figs.5, 6; Pl.2, figs.1, 2, 4; Pl.3, figs.3, 4, 6, 7; Pl.4, figs.1, 4-8; Pl.5, figs. 1-3, 7-11; Pl.6, figs3-6) (Text figure 3B, C). Protoconch diatemeters of microspheric specimens vary between 0.009 mm – 0.023 mm (Pl.1, fig.1; Pl.2, fig.5; Pl.4, fig.3) (Text figure 3A). Large chamber lumina are divided by one or two plates which is a vertical plate (vpl) or a compound plate (cpl) (Pl.1, figs.1, 4-6; Pl.2, figs.1-3; Pl.3, figs.4-7; Pl.4, figs.2-4, 7-10, Pl.5, figs. 1, 2, 4-6, 10) (Text figures 3A, B). Very narrow sutural openings (so) (Pl.1, figs. 2, 7; Pl.2, figs. 4, 6) (Text figure 3C), dorsal pillars (dp) (Pl.1, figs. 1, 4-6; Pl.2, figs, 1-3; Pl.3, 3, 4, 7; Pl.4, 1-4, 7-10; Pl.5, figs. 1-6, 8-11; Pl.6, 1-5, 7-9) and funnels (f) (Pl.1, figs.1,4-6; Pl.2, figs.1-3; Pl.3, 4,5,7; Pl.4. figs.1-4,7,8; Pl.5, 1-4, 10; Pl.6, figs.1, 4, 5) (Text figures 3A, B) are present on the dorsal side. In some individuals, central pillars (cp) (Pl.2, fig.1; Pl.4, fig.9; Pl.5, figs. 5-11; Pl.6, figs.2, 3, 8, 9) (Text figure 3B) and pseudospines (psp) (Pl.1, fig.2) could be observed. A Vertical plate (vpl) arising from the dorsal side (from the spire), divide chamber lumen into two parts, and merges with the umbilical flap (uf) which is attached to the septum (Pl.1, figs.1, 3, 4-6; Pl.2, figs.1-3; Pl.3, 2-4,7; Pl.4, figs. 2,3,7-10; Pl.5, figs. 1,2,4-6,8-11; Pl.6 figs.1,3-5,8,9) (Text figures 3A,B). These gently curved vertical plates (vpl) could only be observed in some sections (depending on the section plane). If the plane of the thin section doesn't cut the vertical plate; in other word, if the plane of the thin section passes through the space between a septum and a vertical plate, vertical plates can not observed on the thin sections. Compound plates (cpl) are microgranular, sieve, and divide the chamber lumine into two. They fill the umbilical cavity. A compound plate (cpl) is formed by merging of a vertical plate (vpl) with a sieved horizontal plate (hpl) on an umbilical flap (uf). Besides, a compound plate (cpl) could be developed by a vertical plate evolving into a horizontal plate after it was attached to an umbilical flap (uf) (Pl.1, figs.1,4-6; Pl.2, figs. 1,2; Pl.3, figs. 4,7; Pl.4, figs.2-4,7-10; Pl.5, figs. 1,2,4-6,10,11; Pl.6, figs. 3,5) (Text figures 3A, B). Especially, sieve structure of vertical and compound plates could be observed in oblique sections (Pl.1, figs.3,5; Pl.2, figs.1-3; Pl.3, figs.1-3; Pl.4, figs.2,7,8) (Text figure 3B). Interforaminal openings observed in the tangential sections of the thick compound plates (cpl), could be observed as if they were pillars (p), yet they are not pillars (Pl.1, figs.1,5; Pl.2, fig.1) (Text figure 3B). Because, interforaminal openings of the parts of thick vertical plates (vpl). Umbilical flaps (uf) are gently curved, minute plates and microgranular texture. They are either attached ot or located on a spetum (s) (Pl.1, figs. 1, 4-6; Pl.2, figs. 1-3; Pl.3, figs. 1-4,7; Pl.4, figs.2-4, 7-10; Pl.5, figs.1-6,8-11; Pl.6, figs.1-5,8,9) (Text figures 3A,B). An umbilical flap (uf) covers the umbilical side (Hottinger, 1980, p.12, text figure 5). Thick, sieved horizontal plates (hpl) and ventral pillars (vnp) are present in the vertical area. Ventral pillars (vnp) have two different structural types in its own (Text figures 3A, B). Horizontal plates are sieve and microgranular in accordance with the inner layer of the test wall. Horizontal plates (hpl) are located in the ventral side (Pl.1, figs. 1,4-6; Pl.2, figs. 11-3; Pl.3, figs. 2-5,7; Pl.4, figs. 1-4,7-10; Pl.5, figs. 1-6,8-11; Pl.6, figs. 1-5,8,9) (Text figures 3A, B). First ventral pillars (vnp1) are located in the umbilical cavity (uc) and in first few whorls of the rotaliid stage of the test (close to protoconch). First ventral pillars (vnp1) are hyaline calcareous, plug-looking, monolithic, massive, short ventral pillars (Pl.1, fig. 6; Pl.2, fig.1; Pl.3, fig. 7; Pl.4, figs. 8,9; Pl.5, figs. 2,3,5,6,10,11; Pl.6, figs. 3,5) (Text figure 3B). Second ventral pillars are microgranular and are located between plates (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, figs. 3, 4, 7; Pl.4, figs. 2-4, 7-10; Pl.5, figs. 1, 2, 4-6,8-11; Pl.6, figs. 1,3-5, 8, 9) (Text figures 3A, B). Umbilical holes (uh) are located between horizontal plates (hpl) and second ventral pillars (vnp2) in the ventral side (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, figs. 3,4,7; Pl.4, figs. 2-4,7-10; Pl.5, figs. 1,2,4-6,8-10; Pl.6, figs. 1,3-5,8) (Text figures 3A, B, C). New genus *Neosistanites* has only one foraminal plate (fpl) (Pl.1, figs. 2,7; Pl.2, figs. 4,6; Pl.3, fig. 5; Pl.5, figs. 7,12; Pl.6, fig. 7) (Text figure 3C) and only one aperture. *Sistanites* Rahaghi (1983) was first described and photographed by Rahaghi (1983, p.54) in Thanetian of Iran. *Sistanites* is differentiated from all other genera of Rotaliidae family by its two layered wall structure which is made of two different materials (Rahaghi, 1983, p.55 remarks). Rahaghi reported that subdivisions of septa were present in the ventral side of the genus *Sistanites*, yet it is not agreed in this study. Because, there is no subdivisions, meaning septula, belonging to septa in the ventral side. Both new genus and its type species have two layered wall structures. Rahaghi (1983, p.55) stated that, "septa are pierced by the intercameral foramen". This is to say, Rahaghi reported that *Sistanites* has one aperture and the author of this study is exactly agreed on. Sirel (1996, p.79) made first determination of *Sistanites iranica* Rahaghi (1983) in Turkey, and described the genus having cribrate aperture, its large umbilical side being filled with thick horizontal and vertical plates, and assigned the genus to Paleocene (Thanetian) age. The author of this study does not agree with the idea of Sirel (1996, p.79) on that the genus having cribrate aperture and being filled with vertical plate in its umbilical side. First of all, that specimen does not have cribrate aperture, but has one (Pl.1, fig. 7; Pl.2, figs. 4-6; Pl.3, figs. 2,5; Pl.4, figs. 5,6; Pl.5, figs. 7,12; Pl.6, figs. 6,7). As is known, position and the number of apertures in a benthic foraminifera is a very important criterion leading a specimen described as different genus. Besides, it was stated that the umbilical side was filled with vertical plates, yet they were not vertical plates, but second ventral pillars (vnp2) located between horizontal plates (hpl) (Pl.1, figs. 4-6; Pl.2, figs. 1-3; Pl.3, figs. 3,4,7; Pl.4, figs. 2-4,7-9; Pl.5, figs. 1,2,4-6,8-10; Pl.6, figs. 1,3-5,8,9) (Text figures 3A, B). The author agrees the statement of Sirel (1996, p.79) that "large umbilical side being filled with horizontal plates", and reports that these horizontal plates are not imperforate, contrarily sieved (Pl.1, figs 1,4-6; Pl.2, figs. 11-3; Pl.3, figs. 2-5,7; Pl.4, figs. 1-4,7-10; Pl.5, figs. 1-6,8-11; Pl.6, figs. 1-5,8,9) (Text figures 3A, B). Deficiencies were eliminated for genus *Sistanites,* and the genus was emended by Sirel (1998, p.81). However, apart from the common generic characteristics of the genus described by Rahaghi (1983) and data reported by previous study of Sirel (Sirel, 1996, p.79), it was reported in that emendation of Sirel (1998, p.81): the genus had numerous vertical plates in the umbilical side and there were lots of holes in its umbilical cavity, and they were not true pillars as in *Locakhartia* Davies (Sirel, 1998: Pl. 39, figs. 1,4,7, 13; Pl. 40, figs. 1,6,12), and the aperture was sieve-plate with short subepidermal partititons (Sirel, 1998: Pl. 39, figs. 3,4,12; Pl. 40, figs. 2,5,8,9). But the author does not agree on the description of Sirel (1998, p.81) about apertures and subepidermal partitions. Because, that specimen has only one aperture (Pl.1, fig. 7; Pl.2, figs. 4-6; Pl.3, figs. 2,5; Pl.4, figs. 5,6; Pl.5, figs. 7,12; Pl.6, figs. 6,7). On the other hand, Sirel (1998, p.81) stated that there were lots of holes in the umbilical side, yet not explained how they were developed! The author accepts that there are lots of holes in the umbilical side, and reports that, these are developed between horizontal plates (hpl) and second ventral pillars (vnp2) (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, figs. 3,4,7; Pl.4, figs. 2-4,7-10; Pl.5, figs. 1,2,4-6,8-10; Pl.6, figs. 1,3-5,8) (Text figures 3A, B, C). The author believes that, pillars could be in different wall structure. As it is known, pillars are hyaline calcareous structured in *Lockhartia, Sakesaria* and rotaliids. However, as is known, interseptal pillars in *Archaias* de Montfort (1808) are in porcelaneous calcareous wall structure. Dorsal pillars (dp) and first ventral pillars (vnp1) of the new genus *Neosistanites* hyaline calcareous structured. However, second ventral pillars (vnp2) located in the umbilical side of the new genus *Neosistanites* are in microgranular wall structure. Consequently, presence or absence of pillars in a foraminiferal genus is highly important. As it is known, this leads individuals being described as different genera. Moreover, Sirel (1998, p.82) reported that protoconch diameters of microspheric generations varying between 0.090 mm – 0.130 mm. The author believes in that these measurements could be incorrect. As is known, protoconch diameter of any benthic foraminifera can not be between 0.090 mm – 0.130 mm. New genus *Neosistanites* has one aperture, central pillars (cp), pseudospines (psp), vertical plates (vpl), umbilical flaps (uf), compound plates (cpl), horizontal plates (hpl), first ventral pillars (vnp1), second ventral pillars (vnp2), umbilical holes (uh), and foraminal plates (fpl).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al, 1998).

Neosistanites iranicus (Rahaghi, 1983)

(Plate 1, Figures 1-7; Plate 2, Figures. 1-6; Plate 3, Figures 1,2) (Text figure 4/1)

1983 *Sistanites iranica* Rahaghi, p. 54, Pl. 34, figs. 1-4, 6-12, 14,15.

1996 *Sistanites iranica* Rahaghi; in Sirel: Drobne et al. (1996), p.79, Pl. 1, figs. 2,3,5,7-9,12-14.

1998 *Sistanites iranica* Rahaghi; Sirel, p.82, Pl. 39, figs. 1, 3, 4, 5, 11-13; Pl. 40, figs. 2, 3, 5, 6, 8-11, 13.

2008 *Sistanites iranica* Rahaghi, Pignatti et al., Pl. 6, figs. 4.

2009 *Sistanites iranica* Rahaghi; Sirel, Pl.5, figs. 6,7.

2015 *Sistanites iranica* Rahaghi; Sirel, Pl. 16, figs. 2,5,6,8-11,13.

Derivation of name: Former name of the species, "*iranica*", is made compatible with the name of the new genus (*Neosistanites*) and is changed "*iranicus*".

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Description: Test is free, small, trochospirally-rotaliid coiled, inflated lenticular (asymmetrical biconvex) or globular in general. Test of "*Neosistanites iranicus*" is larger among the species of the new genus. Chambers are evolute in dorsal side (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3) (Text figure 4/1). Two layered wall structure is best observed in rotaliid stage. Outer layer is radially perforated calcareous in structure, and inner layer is blackish coloured, microgranular or very fine grained (Rahaghi, 1983, p.54). However, wall structure is generally microgranular in the last whorl or in last chambers. Diameter of protoconch in microspheric specimens is 0.009 mm (Pl.1, fig.1; Pl.2, fig. 5). Dorsal pillars (dp) are located on the dorsal side, and interpillar channels or funnels (f) are present as well (Pl.1, figs. 1,4-6; Pl.2, fig. 1-3) (Text figures 3A, B). Septa (s) are imperforate, gently curved, blackish coloured in accordance with structure of the inner layer of the test, microgranular or very fine granied (Pl.1, figs. 2,6,7; Pl.2, figs. 4-6; Pl.3, figs. 1,2)

(Text figure 3C). Intercameral foramina (if) are present at the base of imperforate septa, and the foramen located at the base of the ultimate septum forms the aperture (Pl.1, fig. 7; Pl.2, figs. 4-6) (Text figure 3C). Foraminal plate (fpl) which is present just above the spire located at the base of intercameral foramina, is a dark coloured, thin, minute plate (Pl.1, figs. 2,7; Pl.2, figs. 4,6) (Text figure 3C). Vertical plates (vpl) are found in chamber lumina and divide the chambers into two parts. They are sieved (Pl.1, figs. 3,5-7; Pl.2, figs. 1-3; Pl.3, fig. 1) (Text figure 3B), microgranular structured, and are slightly inclined towards the protoconch, and merges with the umbilical flap. Inner surface of horizontal plates, in ventral side, is slightly concave towards the dorsal side or protoconch, and is microgranular, sieved (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, figs. 1,2) (Rahaghi, 1983, Pl. 34, figs. 6, 8-12) (Sirel, 1996a, Pl. 1, figs. 2, 5, 7, 8; Sirel, 1998; Pl. 39, figs. 1, 3, 4, 7, 11, 12, 13). Horizontal plates (hpl) merges either with the preceding horizontal plate and the umbilical flap (uf) or with horizontal plates of both sides at the bottom. Horizontal plates (hpl) could be seen in vertical, subvertical and oblique sections depending on their geometrical structure and the section plane. A compound plate (cpl) is developed by merging of a sieve vertical plate (vpl) with a sieve horizontal plate (hpl) on an umbilical flap or developed by a sieve vertical plate evolving into a horizontal plate (hpl) after the umbilical flap (uf) (Pl.1, figs. 1, 4-6; Pl.2, figs. 1, 2; Pl.3, fig. 2) (Text figures 3A, B). Umbilical flap (uf), located at the end of septa, is a minute, microgranular, imperforate plate (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, figs. 1,2) (Text figures 3A,B). Ventral pillars (vnp1 and vnp2) are observed in vertical or subvertical sections, and are in two different types. First ventral pillars (vnp1) are hyaline calcareous, short, monolithic, plug-looking pillars. These pillars (vnp1) are located in the ventral side of rotaliid stage following embryonic chambers (Pl.1, figs. 1,4,6; Pl.2, figs. 1-3; Pl.3, figs. 1,2) (Text figures 3A,B). Second ventral pillars are, in accordance with the inner layer of the test wall, microgranular, short and are found between horizontal plates (hpl) (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, fig. 2) (Text figures 3A, B). Umbilical openings (uo) called umbilical hole (uh) or umbilical cavity (uc) are present in the present in the umbilical side, between horizontal plate and second ventral pillars (vnp2) (Pl.1, figs. 1,4-6; Pl.2, figs. 1-3; Pl.3, fig. 2) (Text figures. 3A, B). The new species "*N. iranicus*" is one of larger neosistanitids based on the dimensions (horizontal diameter and height) of its megalospheric individuals. Microspheric generations are some more flattened trochospirally coiled. Megalospheric specimens are more inflated. Dimorphism is present.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 1.015 mm - 1.735 mm, height is 1.050 mm - 1.663 mm, protoconch diameter is 0.105 mm - 0.198 mm, deuteroconch diameter is 0.093 mm - 0.268 mm, and index of elongation 1.417 - 1.487 (Pl.1, figs. 5,6; Pl.2, figs. 1, 2,4,6) (Text figures 3B, C) (Text figure 4/1).

Biometric measurements of the microspheric generation: Horizontal diameter is between 1.867 mm - 2.246 mm, height 1.400 mm - 1.488 mm, protoconch diameter is 0.009 mm, index of elongation is 1.519 (Pl.1, fig. 1; Pl.2, fig. 5) (Text figure 3A)

Differential diagnosis: *N. iranicus* differs from such new species as *N. sozerii*, *N. okuyucui* and *N. catali*, in its convex shape in dorsal side and more convex shape in ventral side or its more inflated lenticular shape or its globular shape. *N. iranicus* is easily distinguished from such new species as *N. armagani, N. guvenci, N. dageri* and *N. inali* by its larger size and globular shape (Text figure 4/1).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites sozerii Acar, n.gen., n.sp.

(Plate 3, Figures 3-5) (Text figure 4/3)

Derivation of name: This species is dedicated to my first master, micropaleontologist Biler Sözeri, MSc. He was known as honest, helpful, hardworking person with his contributions on stratigraphy of Turkey in the years he worked for Directorate of Mineral Research and Exploration (MTA).

Holotype: Almost vertical section, megalospheric section (Pl.3, fig.4).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level**:** Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, free, trochospirally-rotaliid coiled, almost spherical. Dorsal and ventral sides are strongly convex, chambers are evolute in dorsal side (Pl.3, figs.3,4) (Text figure 4/3). Especially rotaliid stage is not as developed as in *N. iranicus* and is not strong (Pl.3, figs.3,4) (Text figure 4/3). Two layered wall structure is clearly observed (Pl.3, figs.3-5) (Text figure 4/3). Inner layer is blackish coloured, calcite, microgranular or very fine grained and imperforate. Outer layer is perforated hyaline calcareous and radially textured (Rahaghi, 1983, p.54). Ultimate whorl or chambers wall of the ultimate whorl is microgranular structured (Pl.3, figs. 3-5) (Text figure 4/3). Dorsal pillars (dp), funnels (f), first ventral pillars (vnp1), vertical plates (vpl) (Pl.3, figs.3-5), horizontal plates (hpl), compound plates (cpl), umbilical flaps (uf), second ventral pillars (vnp2), umbilical holes (uh) (Pl.3, figs. 3,4) (Text figure 4/3) are present. In this new species (*N. sozerii*), tritoconch is also observed. This type of embryon is called triplle embryonic structure (Pl.3, fig.4). Megalospheric individuals of this new species is among large neosistanitids.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 0.91 0mm - 1.692 mm, height is 0.910 mm - 1.575 mm, protoconch diameter is 0.128mm-0.262mm, deuteroconch diameter is 0.117-0.286mm, index of elongation is 1.074-1.205 (Pl.3, figs. 3-5) (Text figure 4/3). Microspheric generation has not been determined yet. However, in the genus *Neosistanites*, advanced dimorphism is existed.

Differential diagnosis: *N. sozerii* is easily distinguished from other newly introduced species of *Neosistanites* by its spherical shape (Text figure 4/3).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites okuyucui Acar, n.gen., n.sp.

(Plate 3, Figures 6,7; Plate 4, Figures 1,2) (Text figure 4/2)

Derivation of name: In honour of Prof. Dr. Cengiz Okuyucu for his studies on Paleozoic benthic foraminifera in both national and international area.

Holotype: Vertical section, megalospheric form (Pl.3, fig.7).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, free, trochospirally-rotaliid coiled, convex in dorsal side with ulttimate chamber hanging down or lobate structured or inflated biconvex or strongly asymmetric neosistanitid form (Text figure 4/2). In horizontal / subhorizontal sections: width and height of chambers are gradually increasing. Especially in vertical sections of adult specimens, hanging ultimate chamber or lobate structure is clearly seen, and margins of the chambers are rounded (Pl.3, figs. 6,7; Pl.4, figs. 1,2) (Text figure 4/2). Chambers are evolute in dorsal side and in especially inflated rotaliid forms, two layered wall structure is well observed (Pl.3, fig. 7; Pl.4, fig. 2). The wall of the inner layer is composed of blackish coloured calcite, microgranular or very fine grained texture, imperforate; though outer layer is perforated calcareous and radially structured (Rahaghi, 1983, p.54). Sieve vertical plates (vpl) (generally observed at the end of the septa in subhorizontal sections) (Pl3, fig.6; Pl.4, figs.1,2), sieve horizontal plates (hpl), sieve compound plates (cpl), umbilical flaps (uf), second ventral pillars (vnp2) (Pl.3, fig. 7; Pl.4, figs. 1,2), funnels (f) (Pl.3, fig. 7; Pl.4, fig. 1,2), thick and advanced first ventral pillars (vnp1) (Pl.3, fig.7), umbilical holes (uh) are present. Megalospheric generation of his new species (*N. okuyucui*) is among larger neosistanitids.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 1.190 mm-1.575 mm, height is 1.225 mm-1.400 mm, protoconch diameter is 0.082 mm-0.175 mm, deuteroconch diameter is 0.076mm - 0.233mm, and index of elongation is 1.104-1.119 (Pl.3, figs. 6,7; Pl.4, figs. 1,2) (Text figure 4/2). Microspheric generaion has not been determined yet. However, in the genus *Neosistanites*, advanced dimorphism is existed.

Differential diagnosis: *N. okuyucui* differs from *N. iranicus, N. sozerii* ve *N. catali* in having larger test, hanging ultimate chamber or lobate structure, most inflated biconvex shape and rounded chamber margins. It is, by its larger size, also easily distinguished from the middle sized species such as *N. armagani, N.guvenci* and small sized *N. dageri* and the smallest sized *N. inali* (Text figure 4/2).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites guvenci Acar, n.gen., n.sp.

(Plate 4, Figures 3-8; Plate 5, Figures 1-4) (Text Figure 4/6)

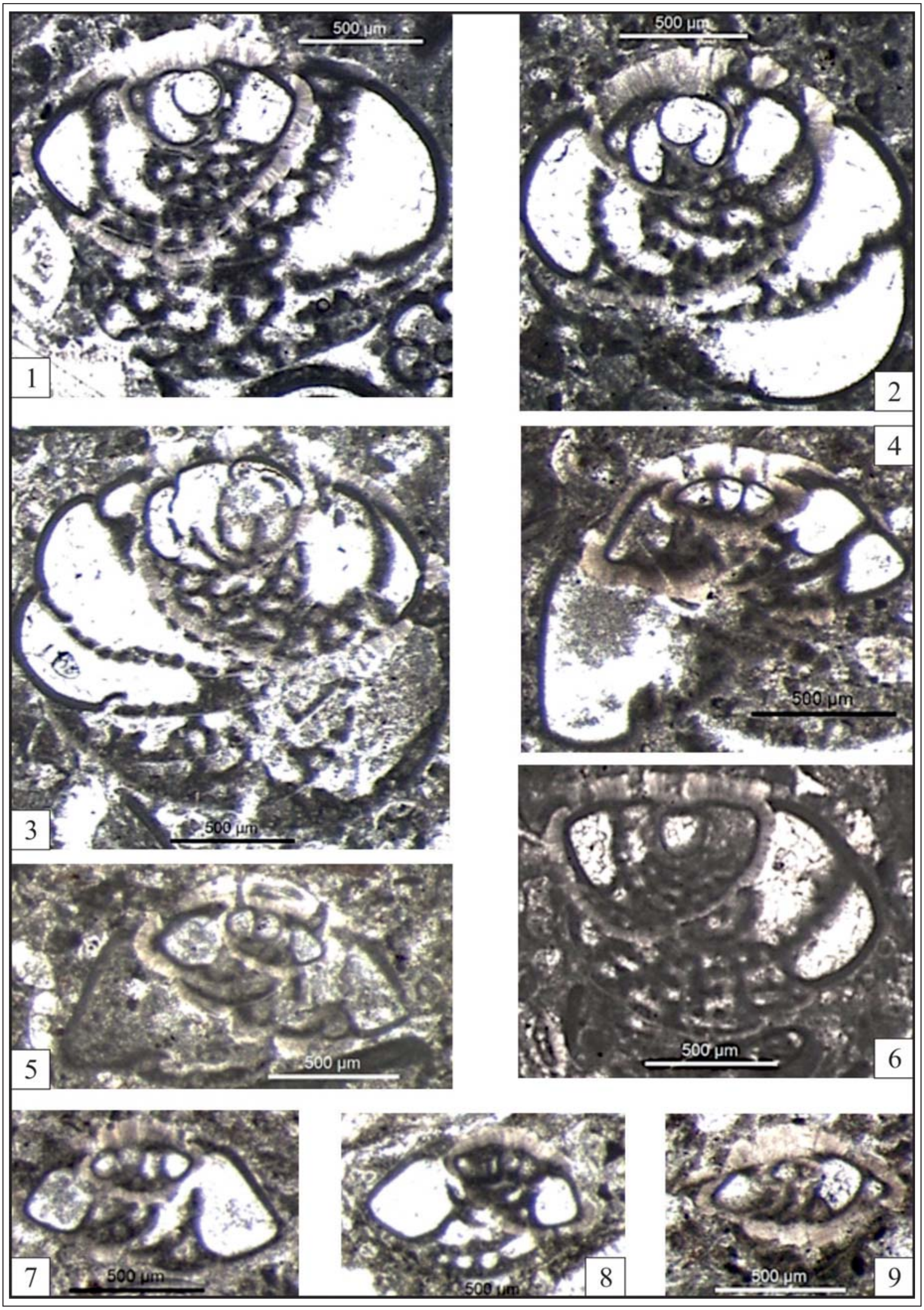

Figure 4- Species of the new genus *Neosistanites*: 1- *Neosistanites iranicus*. 2- *Neosistanites okuyucui* n.sp. 3- *Neosistanites sozerii* n.sp. 4- *Neosistanites catali* n.sp. 5- *Neosistanites armagani* n.sp. 6- *Neosistanites guvenci* n.sp. 7, 8- *Neosistanites dageri* n.sp. 9- *Neosistanites inali* n.sp.

1983 *Sistanites iranica* Rahaghi, p. 54, Pl. 34, figs. 5,13.

1996 *Sistanites iranica* Rahaghi; in Sirel, Drobne et al. (1996), p. 79, Pl. 1, figs. 1, 11.

1998 *Sistanites iranica* Rahaghi; Sirel, p. 82, Pl. 39, fig. 8; Pl. 40, figs. 7, 12.

2015 *Sistanites iranica* Rahaghi; Sirel, Pl. 16, figs. 7,12.

Derivation of name: This species is dedicated to Prof. Dr. Tuncer Güvenç who had undertaken studies on Paleozoic algae and continental shelf.

Holotype: Vertical section, microspheric form (Pl.4, Fig. 3).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, free, asymmetric trochospirally-rotaliid coiled. Dorsal side is generally flattened or flattened convex, and chabers are evolute in dorsal side (Pl.4, figs. 3,4,7,8; Pl.5, figs. 1,2,4) (Text figure 4/6). Two layered wall structure is well seen in rotaliid stage (Pl.4,figs. 3,4,7,8; Pl.5, figs. 1-4). Even though inner layer of the wall is blackish coloured calcite, microgranular or very fine grained, imperforate, outer layer is perforated calcareous and microgranular textured (Rahaghi, 1983, p.54). Mıcrogranular structure is observed in the last whorl or in structure of wall or septum of the last whorl (Pl.4, figs. 3,5,6; Pl.5, figs. 2,3). Curved vertical plates (vpl) are seen by having small perforations in vertical sections. However, they are seen as pierced in slightly oblique sections (Pl.4, figs. 5,6). Horizontal plates (hpl), compound plates (cpl), umbilical flap (uf), second ventral pillars (vnp2) are in microgranular structure (Pl.4, figs. 3,4,7,8). Dorsal pillars (dp) and short first ventral pillars (vnp2) are hyaline calcareous, and funnels (f) are present (Pl.4, figs. 3,4,7,8; Pl.5, fig. 14). This new species has also tritoconch (tr) (Pl.4, fig.5). Umbilical holes (uh), horizontal plates (hpl), short second ventral pillars (vnp2) are present (Pl.4, figs. 3,4,7,8; Pl.5, figs. 1,2,4). The new species *N. guvenci* could be counted in middle sized neosistanitids. Dimorphism in this new species is existed.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 0.688 mm-1.283 mm, height is 0.595 mm-1.003 mm, protoconch diameter is 0.070 mm-0.215 mm, deuteroconch diameter is 0.082mm -0.222 mm, tritoconch diameter is 0.093 mm-0.198 mm and index of elongation is 1.156-1.589 (Pl.4, figs. 4-8; Pl.5, figs. 1-4) (Text figure 4/6)

Biometric measurements of the microspheric generation: Horizontal diameter is 2.100 mm, height is 1.167 mm, protoconch diameter is 0.025 mm, and index of elongation is 1.799 (Pl.4, fig.3).

Differential diagnosis: *N. güvenci* is easily distinguished from all other species of *Neosistanites* by being flattened in dorsal side, and convex in ventral side (Text figure 4/6).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites dageri Acar, n.gen., n.sp.

(Plate 4, Figures 9,10; Plate 5, Figures 5-12) (Text figure 4/7, 8)

1996 *Sistanites iranica* Rahaghi; in Sirel, Drobne et al. (1996), p. 79, Pl.1, figs. 4, 10.

1998 *Sistanites iranica* Rahaghi; Sirel, p. 82, Pl. 39, figs. 2,6,7, 9, 10, 14, Pl. 40, fig. 4.

2015 *Sistanites iranica* Rahaghi; Sirel, Pl. 16, figs. 3,4.

Derivation of name: This species is dedicated to micropaleontologist Dr. Zeki Dağer since his contributions on the geology and micropaleontology of Turkey with his studies on Mesozoic benthic foraminifera and for his sincere personality.

Holotype: Almost vertical section, microspheric form (Pl.5, fig. 5).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Differential diagnosis: Test is small, free, almost lenticular (Pl.4, figs. 9,10; Pl.5, figs. 5,6,8-10), trochospirally-rotaliid coiled. Chambers are evolute in dorsal side. Two layered wall structure is well observed especially in rotaliid stage (Pl.4, figs. 9,10; Pl.5, figs. 5-12) (Text figures 4/7,8). Inner layer of the wall is blackish calcite, micrgranular or very fine grained and imperforate. Outer layer is radial hyaline calcareous in structure (Rahaghi, 1983, p.54). Last wohorl or the septa and their wall structure in the last whorl are microgranular (Pl.5, figs. 6,7,9,10,12). Vertical plates (vpl) (Pl.4, fig.9), horizontal plates (hpl), compound plates (cpl), umbilical flap (uf) and short second ventral pillars (vnp2) are identical to inner layer of the test wall (Pl.4, figs. 9,10; Pl.5, figs. 5,6,8-11). Dorsal pillars (dp), funnels (f) (Pl.4, fig. 10; Pl.5, figs. 10,11) and central pillars (Pl.4, fig. 9; Pl.5, figs. 5,6,8,9) are present. First ventral pillars (vnp1) are hyaline calcareous structured (Pl.4, fig. 9; Pl.5, figs. 5,6,10,11). Umbilical holes (uh) are located between sieve horizontal plates (hpl) and ventral pillars (Pl.4, figs. 9,10; Pl.5, figs. 5,6,8-11). Septa, intercameral foramina (if) and foraminal plate (fpl) are observed in oblique subhorizontal sections (Pl.5, figs. 7,12). The new species *N. dageri* could be accepted as small sized neosistanitids depending on its dimensions (Text figures 4/7, 8). Dimorphism is distinct.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 0.758mm-1.143mm, height is 0.513mm-0.630mm, protoconch diameter is 0.047mm-0.089mm, and index of elongation is 1.530mm-1.850mm (Pl.4, fig. 10; Pl.5, figs. 7-11).

Biometric measurements of the microspheric generation: Horizontal diameter is between 0.933mm-1.202mm, height is 0.490mm-0.618mm, protoconch diameter is 0.014mm-0.023mm, and index of elongation is 1.904mm-1.945mm (Pl.4, fig. 9; Pl.5, figs. 5,6,12).

Differential diagnosis: *N. dageri* is distinguished from all other species of *Neosistanites*, especially from the smallest one *N. inali*, by its small size and almost symmetrical lenticular shape (Text figures 4/7,8).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites catali Acar, n.gen., n.sp.

(Plate 6, Figures 1-3) (Text figure 4/4)

1996 *Sistanites iranica* Rahaghi; in Sirel, Drobne et al. (1996), p.79, Pl. 1, fig. 6.

1998 *Sistanites iranica* Rahaghi; Sirel, p.82, Pl. 40, fig. 1.

2015 *Sistanites iranica* Rahaghi; Sirel, Pl. 16, fig.1.

Derivation of name: This species is dedicated to Erol Çatal, MSc, for his contribution to geology of Turkey with his studies on Paleozoic benthic foraminifera.

Holotype: Almost vertical section, megalospheric form (Pl.6, fig. 1).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, free, asymmetric trochospirally-rotaliid coiled, convex. Ultimate chambers of adult specimens are very large (height and width of the chambers are quite large in size). Especially margins of the hanging final chambers are truncate (Pl.6, fig. 1,2) (Text figure 4/4). Chambers are evolute in rotaliid stage and two layered wall structure is apparent (Pl.6, figs. 1-3). Last whorl or wall and septal structure of the last whorl is microgranular (Pl.6, figs.1,2). Inner wall of the test is blackish coloured calcite, microgranular or very fine grained, and imperforate. Outer wall is perforated radial hyaline calcareous (Rahaghi, 1983, p.54). Curved vertical plates (vpl) are observed in vertical plates (Pl.6, fig.3) and umbilical flaps (uf) are observed as being attached to septa (Pl.6, figs.1-3). Horizontal plates (hpl) (Pl.6, figs.1-3), compound plates (cpl) and second ventral pillars (vnp2) are in same structure with the inner layer of the wall (Pl.6, figs.1,3). Central (cp) (Pl.6, figs.2,3) and dorsal pillars (dp) belonging to the outer wall of the test are in hyaline calcareous structure, and funnels (f) are also present (Pl.6, fig.1). These larger dorsal pillars can be observed on well preserved and well cleaned free specimens like a central granule (Pl.6, figs. 2,3). Umbilical holes (uh), are found between sieve horizontal plates and second ventral pillars in the ventral area (Pl.6, figs.1,3).). The new species *N. catali* could be incorporated into larger neosistanitids depending on its size (Text figure 4/4).

Biometric measurements of the megalospheric generation: Horizontal diameter is between 1.138mm-1.517mm, height is 0.846mm-0.933mm, protoconch diameter is 0.117mm, and index of elongation is 1.793-1.862 (Pl.6, fig.3). Microspheric generaion has not been determined yet.

Differential diagnosis: Chambers in the final whorl of *N. catali* are very larger and the last chamber is lobate or hanging-down. Its chambers are truncate

(Pl.6, figs.1,2) (Text figure 4/4). This species is distinguished from all other species of the genus especially from *N. okuyucui* by its shape and larger test.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites armagani Acar, n.gen., n.sp.

(Plate 6, Figures 4-6) (Text figure 4/5)

Derivation of name: This species is dedicated to Fahrettin Armağan, MSc, who has contributed to geology of Turkey with his studies on Mesozoic benthic foraminifera.

Holotype: Vertical section, megalospheric form (Pl.6, fig. 4).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, free, asymmetric trochospirally-rotaliid coiled, convex in dorsal side, inflated and asymmetrical lenticular, but ventral side is almost flattened, and especially last whorls are sharp-edged. Two layered test wall is well observed in rotaliid stage (Pl.4, figs.4,5) (Text figure 4/5). Last whorl, or septa or wall structure of the last whorl is microgranular (Pl.6, figs.4-6). While inner layer of the test is blackish calcite, microgranular or very fine graied and imperforate; outer layer of the test is hyaline calcareous and radial structured (Rahaghi, 1983, p.54). Spherical shaped protoconch (p) and deuteroconch (dt) are present (Pl.6, fig.5). Vertical plates (vpl) (Pl.6, fig.5), horizontal plates (hpl), umbilical flap (uf), and second ventral pillars (vnp2) are identical structure to inner structure of the test (Pl.6, figs.4,5). First ventral pillars (vnp1) (Pl.6, fig.5), dorsal pillars (dp) and funnels (f), septa (s), intercameral foramina (if) (Pl.6, fig.6) are also present (Pl.6, figs.4,5). Umbilical holes (uh) and short second ventral pillars (vnp2) are located in the ventral side (Pl.6, figs.4,5). This new species could be counted in middle sized neosistanitids.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 0.793mm-1.370mm, height is 0.642mm-0.735mm, protoconch diameter is 0.089mm-0.107mm, and index of elongation is 0.642mm-0.735mm (Pl.6, figs.4-6). Microspheric generaion has not been determined yet.

Differential diagnosis: *N. armagani* is distinguished from *N. iranicus*, *N. catali, N. okuyucui* by its inflated, middle sized, asymmetric lenticular test, regular coiling, and being almost flattened in ventral side. Being middle sized differs this species from smaller ones (*N. dageri* ve *N. inali*).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Neosistanites inali Acar, n.gen., n.sp.

(Plate 6, Figures 7-9) (Text figure 4/9)

Derivation of name: This species is dedicated to Erdoğan İnal, MSc. who has contributed to geology of Turkey with his studies on Tertiary benthic foraminifera.

Holotype: Vertical section, microspheric form (Pl.6, fig. 8).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is free, small, trochospirally-rotaliid coiled, flattened lenticular (Pl.6, figs.8,9) (Text figure 4/9). Chambers are evolute in dorsal side. Two layered wall structure is well observed in especially rotaliid stage (Pl.6, figs.7-9). This new species is the smallest one (Pl.6, figs.7-9) (Text figure 4/9). While, inner layer of the test is blackish calcite, microgranular or very fine grained, imperforate; outer layer is perforated calcareous and radial structured (Rahaghi, 1983, p.54). Horizontal plates (hpl), umbilical flaps (uf) and second ventral pillars (vnp2) are in same structure with inner layer of the test (Pl.6, figs.8,9). Central pillars (cp) (Pl.6, figs.8,9) and dorsal pillars (dp) are hyaline calcareous. Funnels (f) are present (Pl.6, figs. 7-9). Umbilical holes (uh) and short second ventral pillars (vnp2) are observed in vertical (Pl.6, figs. 8,9); septa and intercameral foramina (if) are observed in oblique subhorizontal sections (Pl.6, fig. 7). This new species could be included in smallest sized neosistanitids (Text figure 4/9). Dimorphism is evident.

Biometric measurements of a broken megalospheric individual: Horizontal diameter is between 0.852mm, height is 0.583mm, index of elongation is 1.411, and protoconch diameter is 0.070mm (Pl.6, fig.9).

Biometric measurements of the microspheric generation: Horizontal diameter is between 0.758mm-

0.968mm, height is 0.583mm, protoconch diameter is between 0.014mm-0.023mm, and index of elongation is 1.660 (Pl.6, figs.7,8).

Differential diagnosis: *N. inali* is the smallest species of *Neosistanites* (Text figure 4/9). It is easily distinguished by its small and flattened lenticular shape from all other species of *Neosistanites*, especially from *N. dageri*.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Order: Foraminiferida EICHWALD, 1830,

Superfamily: Miliolacea EHRENBERG, 1839,

Family: Soritidae EHRENBERG, 1839,

Subfamily: Soritinae EHRENBERG, 1839;

Genus: *Parahaymanella* ACAR, n.gen.,

Type species: *Parahaymanella hakyemezae* ACAR, n.gen., n.sp.

New genus *Parahaymanella* Acar, n.gen.,

Derivation of name: Name of the genus is derived from the combination of prefix "para" meaning "almost" or "approximate" and the name of genus "*Haymanella*" which the new genus resembles to.

Type species: Longitudinal horizontal section, megalospheric form (Pl.7, fig. 1).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, elongated, asymmetric and free. Shape of the new genus *Parahaymanella* (*Prh.*) is like a golf club as in *Haymanella* (Pl.7, figs. 1-12), (Sirel, 1998, p.36; Sirel, 1999, p.122; Sirel, 2004, p.65; Sirel, 2015, Pl.4, fig. 10). Elongated test is composed of two parts and its length reaches to 0.478-1.313mm. First or spirally coiled part is composed of regular, spiral coiling undivided chambers following triloculine chambers after spherical protoconch. Diameter of this spirally coiled part varies between 0.327 mm-0.595mm (Pl.7, figs. 1,3-5, 8-10). Two types of uniserial chambers are present.

A- Chambers of uniserial stage of *Parahaymanella hakyemezae* n.gen., n.sp. or *Parahaymanella bozkurti* n.gen., n.sp. are composed of irregularly aligned chambers (different height and length) (Pl.7, figs. 1,2,6-8).

B- Chambers of uniserial stage of *Parahaymanella alanae* n.gen., n.sp. are regularly aligned chambers (almost same height and length) (Pl.7, figs. 9-12). Besides, the new genus *Parahaymanella* has imperforate porcelaneous calcareous test with one aperture. Intercameral foramina (if) are located at the base of spirally aligned chambers and in the middle of uniserial chambers (Pl.7, figs. 1-3,6,7,11,12). Dimorphism is faint.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Comparison with other genera: Only similarity between the new genus *Parahaymanella* (*Prh.*) and *Haymanella* Sirel (1999) is the shape of uniserial part of their tests (like an elongated golf club). Irregular milioline arrangement following protoconch is present in megalospheric (fA) and microspheric (fB) generations of *Haymanella* Sirel (Sirel, 1999, Pl. 4, figs. 1,11,13,16; Pl. 5, figs. 5,9,11; Sirel, 2015, Pl. 4, figs. 7,8,13,14). Width of uniserial chambers of *Haymanella* Sirel is regular, gradually increasing and these chambers are triangular (Sirel, 1999, Pl. 4, figs. 1-4,8-10,12,14-16; Pl. 5, figs. 1,3,4,8-10; Sirel, 2015, Pl. 4, fig. 10). Test wall of the genus *Haymanella* Sirel is vacuolar and coarsely agglutinated (Sirel, 1999, Pl. 4, figs. 2-6, 8-10,12-18; Pl. 5, figs. 1-5,9-11,13; Sirel, 2015, Pl. 4, figs. 7,8,10-12,14,17,18). Aperture is terminal, and ribs extending from the apertural periphery towards the center, are present (Sirel, 1999, Pl. 4, figs. 1-5,7, 10,12,14,15,17,18; Pl. 5, figs. 1-4,6-10,12,13; Sirel, 2015, Pl. 4, figs. 9,15,16,18). The genus *Haymanella* with these features is far different from the new genus *Parahaymanella*. Because, in both generations (fA, fB), the new genus *Parahaymanella* has single aperture, imperforate porcelaneous calcareous wall structure, regular spirally aligned undivided chambers after milioline arranged chambers following protoconch. Besides, new genus *Parahaymanella* differs from all other foraminifera with agglutinated wall such as *Acruliammina* Loeblich and Tappan (1964), *Haplophragmium* Reuss (1860) and *Cribratina* Sample (1932), by its imperforated porcelaneous calcareous wall structure. On the other hand, alignment, coiling, and porcelaneous calcareous wall structure of spiral and uniserial stages of the new genus *Parahaymanella* is in common with *Kayseriella*

Sirel (1999, p.126). However, apertural structure is different in each. *Parahaymanella* has single, simple aperture; but *Kayseriella* has toothed (t) aperture with ribs (r). The new genus *Parahaymanella* and *Kolchidina* Morozova (1976) are in common with their planispirally coiled first stage chambers. However, the latter differs from the new genus by its agglutinated wall structure and cribrate aperture.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Parahaymanella hakyemezae Acar, n.gen., n.sp.

(Plate 7, Figs. 1-5)

Derivation of name: This species is dedicated to (micropaleontologist) Dr. Aynur Hakyemez who has contributed to many geological projects with her studies on planctonic foraminifera.

Holotype: Oblique equatorial section, megalospheric form (Pl.7, fig. 1).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, elongated, asymmetric and free. This new species (holotype) is the largest one among the species of the new genus *Parahaymanella* (*Prh.*).It resembles a golf club (Pl.7, figs. 1,2) (Sirel, 1998, p.36; Sirel, 1999, p.122; Sirel, 2004, p.65; Sirel, 2015, Pl. 4, fig. 10). Elongated test of the genus is consisting of two parts. First part is consist of regular spirally coiled chambers following triloculine stage after protoconch and the diameter of these chambers reach to 0.408-0.455 mm (Pl.7, figs.3-5). Length of the second part which is uniserial (handle of the golf club), reaches to 1.050-1.313 mm (Pl.7, figs.1,2). Height and width of triangular chambers of this uniserial stage are different, and these are lined up in an irregular pattern. Chamber width and chamber height of the chamber which is both the largest and the highest chamber of the uniserial stage, are 0. 222 mm and 0.257 mm respectively (Pl.7, fig.1). *Prh. hakyemezae* has imperforate porcelaneous calcareous test and single central aperture. Intercameral foramina or these “former apertures” are located at the base of spirally coiled undivided chambers (Pl.7, figs.3-5) in the first part; and are located in the middle of chambers (Pl.7, figs.1,2) in the second (uniserial) part. A slight flattening is observed in one side of the spirally coiled stage following protoconch (Pl.7, figs.2-4). Dimorphism is faint. Age: Middle Paleocene-Selandian; SBZ2 (Serra-Kiel et al., 1998).

Biometric measurements of the megalospheric generation: In the first part (fA), spherical and large protoconch (0.089-0.175mm) is followed by triloculine chambers which are followed by undivided spirally / planispirally enrolled chambers and intercameral foramina or “former apertures” (Pl.7, figs.3,4). Chambers of the second (uniserial) part are observed in longitudinal or oblique longitudinal sections cutting through the tubular, undivided, irregularly aligned chambers (Pl.7, figs.1,2). Height and length of chambers of this uniserial part are not isometric, or they are irregular (Pl.7, figs.1,2).

Biometric measurements of the microspheric generation: It has been observed in a broken specimen: in the first part, protoconch (0.022mm) is followed by at first cryptoquinqueloculine, then triloculine chambers which are finally followed by undivided spirally/planispirally enrolled chambers with intercameral foramina (Pl.7, fig.5). Second part is absent in this broken specimen.

Differential diagnosis: *Haymanella paleocenica* Sirel, 1999 has irregularly coiled chambers following protoconch (Sirel, 1999, Pl. 4, figs. 11, 16; Pl. 5, figs. 5, 11; Sirel, 2015, Pl. 4, figs. 7,8,13,14) and regularly arranged isometric chambers with gradually increasing height and width in second or uniserial stage (Sirel, 1999, Pl.4, figs.1-4,9,10,12,14-16, Pl.5, figs. 1,3,4,8-10; Sirel, 2015, Pl. 4, figs. 10,12). Besides, *H. Paleocenica* has agglutinated wall structure and extensions in its aperture or ribs (Sirel, 2015, Pl. 4, figs. 9,15,16). *H. Paleocenica* is easily distinguised from *Prh. hakyemezae* by these structural elements. Moreover *Prh. hakyemezae* Acar, n.gen., n.sp. is easily distinguished by its long and irregularly arranged chambers (triangular chambers of uniserial stage) from the smallest species of the genus, *Parahaymanella bozkurti* Acar, n.gen., n.sp., , and from the middle sized *Prh.. alanae* Acar, n.gen., n.sp. having regularly arranged chambers (uniserial).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Parahaymanella bozkurti Acar, n.gen., n.sp.

(Plate 7, Figures 6-8)

Derivation of name: This species is dedicated to young micropaleontologist candidate Alper Bozkurt, MSc., who is a successful field geologist, for his contributions to many geological projects.

Holotype: Oblique equatorial section, megalospheric (Pl.7, fig. 8).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is free, minute, elongated, asymmetrical. This new species is the smallest species of *Parahaymanella* (*Prh.*). It resembles a golf club (Sirel, 1998, p.36; Sirel, 1999, p.122; Sirel, 2004, p.65). Test of the species is consisting of two parts. First part is consist of triloculine chambers following protoconch and of regular, spirally coiled undivided chambers (Pl.7, fig.8). Diameter of this (first part) regular, spirally coiled chambers vary between 0.327-0.408mm. Length of uniserial part of *Prh. bozkurti* varies between 0. 478-0.618mm and this part is quite short (Pl.7, figs.6-8). Height and width of (triangular) chambers of the uniserial stage are different, and these chambers are arranged in an irregular manner. Chamber width and chamber height of the chamber which is both the largest and the highest chamber of the uniserial stage, are 0. 175mm and 0.187mm respectively (Pl.7, fig.7). The species has imperforate porcelaneous calcareous test and single aperture. Intercameral foramina or these “former apertures” are located at the base of spirally coiled undivided chambers (Pl.7, fig.8) in the first part; and are located in the middle of chambers (Pl.7, figs.6,7) in the second (uniserial) part. A slight flattening is observed in one side of the spirally coiled stage following protoconch (Pl.7, figs.2-4). Dimorphism is faint. Age: Middle Paleocene- Selandian; SBZ2 (Serra-Kiel et al., 1998).

Biometric measurements of the megalospheric generation: First part is comprised of spherical protoconch of 0.107mm, following triloculine chambers and regular spirally coiled undivided chambers (Pl.7, fig.8). Chamber diameter of this first part (regular, spirally enrolled part) is 0.408mm. Microspheric generation has not been determined yet.

Differential diagnosis: This new species is easily distinguished from *H. paleocenica, Prh. hakyemezae* and *Prh. alanae* by smallest (spirally coiled) first stage and uniserial second stage with the smallest handle part.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Parahaymanella alanae Acar, n.gen., n.sp.

(Plate 7, Figures 9-12)

Derivation of name: This species is dedicated to Dr. Birkan Alan, who has contributed to many geological projects with her studies on benthic foraminifera.

Holotype: Longitudinal equatorial section, megalospheric form (Pl.7, fig.10).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, free, elongated, asymmetric. This new species is a middle sized species of *Parahaymanella* (*Prh*). It resembles stalk of a golf club (Sirel, 1998, p.36; 1999, p.122; 2004, p.65). The elongated test is consisting of two parts. First part is consisting of triloculine chambers following protoconch and of regular, spirally coiled undivided chambers. Diameter of this spirally coiled part reaches to 0.373-0.572mm (Pl.7, figs.9,10). Length of uniserial part of *Prh. alanae* is 0.700-1.050 mm (Pl.7, figs.9-11). However, length of uniserial part is longer than in *Prh. bozkurti* and shorter than in *Prh. hakyemezae*. Besides, roof of the chambers of *Prh. alanae* are dome-shaped and its chambers are isometric. They are regular in arrangement. Its wall structure is imperforate porcelaneous calcareous and the species has single aperture. Former apertures or intercameral foramina (if) are located in the center or in the middle of the chambers of second (uniserial) part (Pl.7, figs.9,11,12). A slight flattening is observed in both sides of the spirally coiled stage in longitudinal sections (Pl.7, fig.10). Dimorphism is faint. Age: Middle Paleocene- Selandian; SBZ2 (Serra-Kiel et al., 1998).

Biometric measurements of the megalospheric generation: Diameter of the spherical protoconch in first part varies between 0. 047-0.163mm. Diameters of undivided triloculine chambers following protoconch and regular spirally coiled chambers vary between 0. 373-0. 572mm (Pl.7, figs.9,10). Microspheric generation has not been determined yet.

Differential diagnosis: Height, width and arrangement of dome-shaped chambers of uniserial part of *Prh. alanae* is regular (Pl.7, figs.9-11). The species, with these features, differs from *Prh. hakyemezae* and *Prh. bozkurti*. However, length of the uniserial part of *Prh. alanae* is shorter than in *Prh. hakyemezae* and longer than in *Prh. bozkurti*. *H. Paleocenica* is similar to *Prh. alanae* in terms of having regular and gradually increasing chambers in uniserial adult stage, but differs by apertural openings, ribs, and triangular chambers of uniserial stage (Sirel, 1999, Pl. 4, figs. 1-4,8-10,12,14-16, Pl. 5, figs. 1, 3,4,8-10).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Order: Foraminiferida EICHWALD, 1830,

Suborder: Miliolina DELAGE VE HEROUARD, 1896,

Superfamily: Miliolacea EHRENBERG, 1839,

Family: Miliolidae EHRENBERG, 1839,

New genus: *Pseudohottingerina* ACAR, n.gen.,

Type species: *Pseudohottingerina burdurensis* ACAR, n.gen. n.sp.

New genus: *Pseudohottingerina* Acar, n.gen.

Derivation of name: This genus is dedicated to honest, helpful, respectable scientist and grand master, paleontologist Prof. Dr. Lukas Hottinger (passed away in 4th Sept. 2011) who the author refers as his only master. The name of this new genus is derived by combination of the prefix “Pseudo” (meaning false or fake in Latin) and the name of the genus *Hottingerina* Drobne (1975) in order to make Prof. Hottinger’s name eternal one more time.

Type species: Oblique equatorial section, megalospheric form (Pl.8, fig. 1).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, subcylindirical or inflated discoidal shape, slightly depressed in the middle, rounded in the poles, and has radial septal filaments (just as in *Nummulites*) (Pl.7, figs.14-19). Biometric measurements of megalospheric generations (fA) as follows: protoconch diameter is between 0.083-0.115 mm; equatorial diameter is 0.520-1.771 mm; and axial diameter varies between 0.563 - 0.962 mm (Pl.8, figs.1,5). Subepidermal plates are absent between septal filaments (sfl) (Pl.7, figs.14,15,19) of *Pseudohottingerina* (*Psh)*. Subepidermal plate is one of the structural elements in foraminifera. Hence, absence or presence of this element leads the individuals being defined as different genera. In megalospheric generation (fA), spherical protoconch is followed by triloculine chambers (Pl.8, figs. 1-3,6-9), planispirally coiled undivided chambers, thick and curved septa (s) (Pl.8, fig. 1), counters septum (cs) (Pl.8, figs. 1-4,9), advanced lips (lp) (Pl.8., figs.1-3), large intercameral foramina (if) (Pl.8, fig. 18; Pl.8, figs. 1,2,4) respectively. Flaring chambers (fch) of the flaring whorls (fw) of some specimens are very large, high and undivided. These individuals might be passing to a uniserial stage (Pl.8, fig.3). The ultimate chamber of only one specimen appears like being divided into chamberlets (cht) (Pl.8, fig.3). However, this structure has not been observed in any other specimens yet. Chambers of the ultimate whorl of this new genus are evolute in subaxial sections (Pl.7, figs.14-16). Both sides of the test are observed as slightly depressed in subaxial sections (Pl.7, figs.14-16). This depression is caused by being more inflated of biserial evolute last chambers of ultimate whorl. Spherical protoconch, triloculine chambers, undivided planispiral chambers, thick and curved septa (s), counters septa (cs), intercameral foramina (if), lips (lp), penultimate flaring chambers (fch), and flaring whorls (fw) are present in a oblique equatorial section of the holotype (Pl.8, fig.1). Test wall, basal layer, whorls, septa (s) are in imperforate porcelaneous calcareous structure (Pl.7, figs. 14-19; Pl.8, figs. 1-9). Single and large aperture is located close to the middle of a septum, not at the base (Pl.7, fig.18). Periphery of this large aperture is bordered by a thick lip (lp) (Pl.8, figs.1-3). Occurrence of this aperture almost in the middle of a septum provides the formation of this structural element described as counter septum (cs) by Hottinger (2006: p.70, figs. 33, A-G) (Pl.7, fig. 18; Pl.8, figs. 1-4,9). If the aperture were at the base of the septum, counter septum would not be developed. There must be an interval or a bulge between the underlying whorl/spire and the aperture for the occurrence of counter septum. Therefore, aperture of the new genus is located almost in the middle of the septum (Pl.7, fig.18). The counter septum (cs) is observed, in equatorial sections of *Pseudohottingerina*, beneath the aperture or above the spire. Since the microspheric individuals of *Pseudohottingerina* has not been determined yet, dimorphism is absent in *Pseudohottingerina*. Age:

Middle Paleocene, Selandian, SBZ2 (Serra-Kiel, et al., 1998).

Comparison with other genera:

1- It has been reported that radial septal filaments and the septula between these filaments are present in *Hottingerin*a Drobne (1975, p.250) (Drobne, 1975: Pl.1, fig. 1, Pl. 2, figs. 1,2; Pl. 4, figs. 1-4,6,8,9; Pl. 5, figs. 1-4; Pl. 6, figs. 1-5). However, these are not septula, and beacuse of this reason, these can not form chamberslets (as in Alveolinids). Abovementioned elements actually are subepidermal plates. These subepidermal plates are identical to the one in *Malatyna* and in this genus, they are well developed (Sirel and Acar, 1993: Pl. 1, figs. 1-3,5-7,10,13,15; Pl.2, figs. 1-5,8-10). These subepidermal plates are the short, triangular shape, planar plates hanging down from the ceiling of the chambers but generally not reaching to the base of the chambers (Sirel and Acar, 1993: Pl.1, figs. 1-3,5-7,10,13,15; Pl.2, figs. 1-5,8-10). It has been reported that the aperture of *Hottingerina* is single, simple and is located at the base of septum in planispiral stage (Drobne, 1975: Pl. 3, fig. 1; Pl. 4, figs. 5,7,8; Pl. 6, figs. 1,3,4), yet is cribrate in uniserial stage (Drobne, 1975: pl.6, fig.4; Pl.9, fig.1 top-right). Uniserial stage of the new genus *Pseudohottingerina* has not been clearly observed thus far. Counter septum (cs) described by Hottinger (2006, p.70,fig.33, A-G), is well developed in the new genus *Pseudohottingerina* (Pl.8, figs. 1-9) and the presence of this structural element in *Hottingerina* is agreed as well (Drobne,1975: p.250, Pl.3, fig.1; Pl.4, figs.5,7,8; Pl.5, fig.2; Pl.6, figs.1,3-5). Counter septum (cs) is well developed in *Pseudohottingerina burdurensis* n.sp. (Pl.8, figs.1-4). Subepidermal plates are absent in the new genus *Pseudohottingerina* (Pl.7, figs. 14-19; Pl.8, figs. 1-9). However, counter septum (cs) (Pl.8, figs.1-4), lips (lp); and in megalospheric generations, triloculine chambers following protoconch, and succeeding planispiral chambers are present (Pl.8, figs.1-3,6-9). Briefly, except the common features (apertures, coiling, etc.) of *Pseudohottingerina* and *Hottingerina*; key difference between these genera is the presence or absence of subepidermal plates.

2- Hottinger (2006, p.70, figs. 33, A-G) made the description of counter septum (cs) by examining equatorial sections of the species *Amphistegina tuberculata* (Cushman, 1919) of the hyaline calcareous walled genus *Amphistegina* d'Orbigny (1826). Although the new genus and *Amphistegina* differ in wall structure (porcelaneous calcareous vs. hyaline calcareous), they are in common with the presence of counter septum.

3- *Kayseriella* Sirel (1998, 1999, 2004) differs from the new genus by its toothed (t) and ribbed (r) aperture. Septal filaments (sfl) (Pl.7, figs.14-19), counter septum (cs) (Pl.8, figs.1-4) and lips (lp) are present in the new genus, and the new genus has single aperture. Triloculine chambers following the spherical protoconch, and succeeding planispirally coiled undivided chambers (ch), thick septa (s), thick whorls/spire are existed in both megalospheric generations of *Kayseriella* Sirel (1999) and of the new genus (*Pseudohottingerina*). Both genera have porcelaneous calcareous wall structure. These genera are similar, with those common features (Pl.8, figs. 1-3,6-9), (Sirel, 2004: Pl. 55, figs. 2,5-7; Pl. 56, figs. 9-11).

4- *Nurdanella* Özgen (2000) differs from the new genus by the presence of cribrate aperture and by the absence of counter septum. However, the new genus differs from *Nurdanella*, by having septal filaments (sfl) on its test (Pl.7,figs. 14-19), counter septum (cs) (Pl.8, figs. 1-4), lips (lp) and single aperture. Both genera are in common with the absence of subepidermal plates; and by the presence of triloculine chambers following protoconch, succeeding planispiral chambers, imperforate porcelaneous calcareous test structure (Özgen, 2000).

5- *Raoia* Matsumaru and Sarma (2010, p.560) has sieve or cribrate aperture. Peripheral zones of its chambers are divided by main radial septula. *Raoia* has septal filaments on its test, but no subepidermal plates. *Raoia* is similar to the new genus *Pseudohottingerina*, by these features (Pl.7, figs. 14-19) (Matsumaru and Sarma, 2010: p.560, Pl. 2, figs. 9,10). However, these features of *Raoia* was not reported by the authors of the genus (Matsumaru and Sarma, 2010, Pl. 2, figs. 10). Subepidermal plates are absent (Pl.7, figs.14-19); but counter septum (cs) (Pl.8, figs. 1-4), lip structure and single aperture are present in *Pseudohottingerina*. Peripheral zones of the chambers of *Pseudohottingerina* are not divided by main radial septula. Besides, each genera has different apertural openings. *Pseudohottingerina* and *Raoia* are in common with the features of having septal filaments (sfl) on their tests, having imperforate porcelaneous calcareous tests, having chambers arranged in some planes (milioline?), and having planispirally coiled, undivided, involute chambers.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Pseudohottingerina burdurensis Acar, n.gen., n.sp.

(Plate 7, Figures 14-19; Plate 8, Figures 1-4)

Derivation of name: Burdur is city in the SW Turkey.

Holotype: Oblique equatorial section, megalospheric form (Pl.8, fig. 1).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel, et al., 1998).

Diagnosis: Test is small, subcylindrical or inflated discoidal shape, slightly depressed in the middle, rounded in poles. The test has radial septal filaments (as in *Nummulites*), has no subepidermal partitions (Pl.7, figs.14-19). Biometric measurements are as follows: protoconch diameter is between 0.083-0.115mm; equatorial chamber is 1.124 - 1.771 mm; and axial diameter varies between 0.563 - 0.962 mm. Holotype is an oblique equatorial section. 37 chambers could be counted in 3.5 whorls (except the large and single aperture of penultimate whorl), and the diameter is measured as 1.574 mm (Pl.8, fig.1). Septa (s) and spire are very thick, loosely coiled beginning from the protoconch; whorls are higher, so are the chambers (Pl.7, figs.14-19; Pl.8, figs. 1-4). Counter septum (cs) of *Psh. burdurensis* is very thick (Pl.8, figs. 1-4). Especially the septum between the ultimate chamber and the penultimate chamber of holotype, is the thickest one (Pl.8, fig. 1). Single and large aperture of the species is not at the base of the septum; but located close to the middle of the septum; and the aperture is bordered by a thick lip (lp) around the aperture (Pl.7, fig. 18; Pl.8, figs. 1-4). Wall is imperforate, porcelaneous calcareous. Age: Middle Paleocene, Selandian, SBZ2 (Serra-Kiel, et al., 1998).

Differential diagnosis:

1- *Hottingerina lukasi* Drobne (1975) and the new species *Pseudohottingerina burdurensis* both are in common with having single aperture and counter septum (Pl.8,figs. 1-4) (Drobne,1975: Pl. 3, fig. 1; Pl. 4, figs. 5,7,8; Pl. 5, fig. 2; Pl. 6, figs. 1,3-5).

2- Aperture of *Hottingerina anatolica* Sirel, (1999) was reported by Sirel (1998, 1999) as a basal slit. Sirel (2004, p.57) again, reported the same element as single opening at the base of the septum (Sirel, 1998: Pl. 24, figs. 1-7; Pl. 25, figs. 5,8; Sirel, 1999: Pl. 8, figs. 1,7; Pl. 9, figs. 5,8; Sirel, 2004: Pl. 53, figs. 5,8). Counter septum (cs) can not be present or developed between the aperture and the preceding whorl or spire, in the aperture type named as basal slit or opening. Because, the aperture of *H. anatolica* is not basal slit type, but in the middle of the septum. Therefore, *H. anatolica* has counter septum (cs) (Sirel, 1998: Pl. 24, figs. 1,5,7; Pl. 25, figs. 1,2,4,5,8,9; Sirel, 1999: Pl. 8, figs. 1,2,4,5,7; Pl. 9, figs. 1,2,4,5,8,9; Sirel, 2004: Pl. 52, figs. 1,2,4,5,7; Pl. 53, figs. 1,2,4,5,8, 9; Sirel, 2015: Pl. 26, figs. 1-5,8,9). However, this structural element (cs) was not described by Sirel (Sirel, 1999, p.134: Pl.8, figs. 1,4,7; Pl. 9, figs. 2,5,8,9; Sirel, 2015: Pl. 26, figs. 1-5,8,9). Besides, in the equatorial section of this specimen figured as *Peneroplis* sp. by Sirel (2004), planispiral chambers following the protoconch (pr) and counter septum (cs) are clearly observed since subepidermal partitions can not be observed. Because of this reason, this individual may be *Hottingerina anatolica*, *Hottingerina* sp./(n.sp)?, or a new species of *Pseudohottingerina* Acar, n.gen. (Sirel, 2004: Pl. 40, fig. 6). Natural size of *Psh. burdurensis* is larger, its whorls are looser, its apertures are larger, and it has an advanced lip (lp) structure (Pl.7, fig. 18; Pl.8, figs. 1-9). Moreover, whorl, septum and counter septum thickness in *Psh. burdurensis* are thicker than in *Psh. yarisliensis*. While six chambers are counted in a *Psh. burdurensis* specimen of 0.438 mm diameter (Pl.8, fig.1), 16 chambers are counted in the *Psh. yarisliensis* of the same diameter (Pl.8, fig.5).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Pseudohottingerina yarisliensis Acar, n.gen., n.sp.

(Plate VIII, Figures 5-9)

Derivation of name: Yarışlı is a village in SW Burdur, SW Turkey.

Holotype: Equatorial section, megalospheric form (Pl.8, fig. 8).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel, et al., 1998).

Diagnosis: Test is small. Biometric measurements of equatorial and subequatorial sections: protoconch diameter varies between 0.041-0.104 mm, and equatorial diameter varies between 0.510-0.916 mm. 16 chambers are present in a *Pseudohottingerina yarisliensis* specimen of 0.438 mm diameter (Pl.8, fig.5). Holotype: low sparitised, slightly oblique equatorial section. 27 chambers have been counted in an specimen of 0.755 mm equatorial diameter (Pl.8, fig.8). Smallest protoconch diameter of *Psh. yarisliensis* is 0.041 mm. Cryptotriloculine chambers, undivided spirally coiled chambers and oblique septa, counter septa and intercameral foramina are present (Pl.8, fig.8).

Differential diagnosis: Test of this small species is smaller and spire of the species is shorter than in *Psh. burdurensis*. Its counter septum and intercameral foramina are narrower or limited; septum and spire/ whorls are thinner than in *Psh. burdurensis*.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Superfamily: Rotaliacea EHRENBERG, 1839,

Family: Rotaliidae EHRENBERG, 1839,

Subfamily: Laffitteininae HOTTINGER, 2014

Genus: *Laffitteina* MARIE, 1946,

Type species: *Nummulites mengaudi* ASTRE, 1923.

Laffitteina anatoliensis Acar, n.sp.

(Plate 8, Figure 15; Plate 9, Figures 1-4) (Text figure 5/2)

Derivation of name: Lands of the Turkish Republic founded by Atatürk in 1923, take place on the Asian and European continents. The name of the big peninsula located on Asian continent, is known as “Anadolu” in republic. Anadolu is derived from “Anatolia” in Latin. Anadolu is also referred as “Asia minör” in French. The name of this new species is derived from “Anatolia” in Latin.

Holotype: Slightly oblique vertical section, megalospheric form (Pl.8, Fig. 15).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small. However, this species has a very large horizontal diameter among the species of *Laffitteina* Marie (1946). Test is hyaline calcareous, low trochospirally coiled, convex in dorsal side, flattened in ventral side, and asymmetrical inflated lenticular (Pl.8, fig.15; Pl.9, figs. 1-3) (Text figure 5/2). Chambers of the new species (*L. anatoliensis*) are truncate in vertical sections (Pl.8, fig.15; Pl.9, figs. 1-3). Dorsal pillars (dp) are weak, ventral pillars (vnp) are stronger and longer, funnels (f) are larger in the *L. anatoliensis* (Pl.8, fig. 15; Pl.9, figs. 1-3). Short pustules (ps) are also present (Pl.9, fig.3). Embryonic apparatus of this species (in axial sections) is located on the dorsal side of the test or a place close to dorsal part (Pl.8, fig. 15; Pl.9, figs. 1-3).Biometric measurements are as follows: horizontal diameter is between 1.744 –2.952 mm, height is 0.884 - 1.279 mm, index of elongation is 1.973 – 2.630, protoconch diameter is 0.070 - 0.117 mm (Pl.8, fig. 15; Pl.9, figs. 1,2). Horizontal diameter or equatorial diameter of a juvenile specimen (in equatorial section) is measured as 1.286mm, and three whorls were counted. Number of the chambers in these three whorls are 10, 19, and 29 respectively (Pl.9, fig.4). Diameter of flattened protoconch (pr) is 0.119-0.155mm, diameter of deuteroconch (dt) is 0.071-0.095mm (Pl.9, fig.4). Intraseptal canal (isc), rectangular chambers formed by septa, spiral canal (spc) and umbilical flap (uf) are present in vertical sections (Pl.9, fig.4). Ventral pillars are present in the ventral area, and the pillars fill the umbilical cavity. Width of the area formed by the ventral pillars, is significant for the description of species. This width has been named as width of ventral pillars (wvp). Width of ventral pillars (wvp) in this new species varies between 1.605-1.714mm (Pl.8, fig. 15; levha IX, şekil 1-3). Width of ventral pillars (wvp) commences from the point that ultimate chamber and penultimate chamber merges at (after pustules if present); and this interval is measured from the base of the test. Ventral pillars can be observed in vertical sections, tangential sections through the base, and bottom view of free specimens. Width and shape of ventral pillars area (vnpa) is important. When looking to the ventral side of the species of *Laffitteina* Marie (1946) (in vertical sections or bottom view of free specimens), it can be observed that the ventral pillars area (vnpa) is flattened, strongly convex or dome-like (Pl.8, fig. 15; Pl.9, figs. 1-3; Pl.10, figs. 1-5; Pl.11, figs. 1-4) (Text figure 5). Key differences between the species of this genus are as follows: shape of dorsal side (flattened or convex), shape of ventral pillars area (flattened, convex, dome-like), position of the embryonic apparatus (distant from dorsal side / close to dorsal side), horizontal diameters, height, index of elongation.

Differential diagnosis: The new species *Laffitteina anatoliensis* differs from the new species *Laffitteina thraciaensis* by widely conical/low trochospiral or asymmetrical inflated lenticular shape. Besides, the former is flattened in dorsal side and its chambers are sharper in periphery (Pl.8, fig. 15; Pl.9, figs. 1-3) (Text figure 5/2). The new species *L. anatoliensis* and *L. erki* (Sirel, 1969) arein common with their natural sizes and convex shape in dorsal side. However, *L. anatoliensis* is both flattened in ventral side and the bottom. The bottom, ventral side and ventral pillars area of *L. erki* is strongly concave. For today, the latter is the most concave species (in ventral side) among the species of *Laffitteina* Marie (1946) (Pl.10, figs. 5,6; Pl.11, fig. 1) (Loeblich and Tappan, 1987: Pl. 760, figs. 6,7; Sirel, 1969: Pl.2, 1 (Holotype), 2; Sirel, 1994: Pl.1, figs. 4,6, Pl.2, figs. 1-7,11; Sirel, 1998: Pl. 51, figs. 4,5,7; Sirel, 2004: Pl. 22, figs. 4,5,7; Sirel, 2015: Pl. 9, figs. 3-5). Horizontal diameters of *L. anatoliensis* and *L. erki* are approximate. However, *L. erki* has the largest horizontal diameter (with a horizontal diameter of 3.743 mm) among species of its own genus (Sirel, 2004: Pl. 22, fig. 4; Sirel, 2015: Pl..9, fig.5). The bottom or ventral pillars area (vnpa) of *Laffitteina mengaudi* Astre, 1923 is also flattened (Pl.11, figs.2-4) (Text figure 5/1).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Laffitteina thraciaensis Acar, n.sp.

(Plate 9, Figure 11; Plate 10, Figures 1-3) (Text figure 5/4)

1994, *Laffitteina erki* (Sirel), Sirel, p.47, Pl.1, figs. 1-3,5,9,10.

1998 *Laffitteina* cf. *erki* (Sirel), Sirel, Pl.22, fig.1.

1999 *Laffitteina* sp., Sirel, Pl.3, fig.1.

Derivation of Name: "Thrac" is the name of a community in Greek. The name of the land where Thracian People lived, was "Thracia". Today, the part of the land of Turkish Republic in European Continent, is called in Turkish as "Trakya". The name of this species is derived from "Thracia".

Holotype: Slightly oblique vertical section, megalospheric form (Pl.9, fig.11).

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, hyaline calcareous; whorls are involute in both dorsal and ventral sides. Dorsal side is strongly convex; ventral side is flattened (Pl.9, fig. 11) (Text figure 5/4), very slightly convex (Pl.10, figs.1,2) or very slightly concave (Pl.10, figs.1,2), strongly asymmetrical, strongly inflated lenticular or high conical or triangular shape, and its chambers are slightly rounded. Embryonic apparatus of this species (in axial section) is found at the dorsal side or very close to the dorsal side of the test (Pl.9, fig. 11; Pl.10, figs. 1-3) (Text figure 5/4). While dorsal pillars (dp) are weak and short; funnels (f) are narrow in the new species *L. thraciaensis*; ventral pillars (vnp) are very strong, very long, and funnels (f) are large (Pl.9, fig. 11; Pl.10, figs. 1-3). This new species is the highest conical species among the Paleocene species of *Laffitteina* Marie (1946) (Pl.9, fig. 11; Pl.10, figs. 1-3) (Text figure 5/4). Index of elongation (horizontal diameter/height) of the new species is 2.019, which means its horizontal diameter is almost double of its height.

Biometric measurements of the megalospheric generation: Horizontal diameter is between 1.767-2.349mm, height is 1.023-1.233mm, protoconch diameter is 0.093- 0.116mm. Witdth of ventral pillars (wvp) or ventral pillars area (vnpa) varies between 1.047-1.302 mm.

Differential diagnosis: *Laffitteina thraciaensis*; is a very high conical, strongly asymmetric and strongly inflated lenticular species. Its chambers are rounded, and its ventral side is mainly flattened (Pl.9, fig. 11; Pl.10, figs. 1-3) (Text figure 5/4). On the other hand, the new species *Laffitteina anatoliensis* is (in vertical sections), depressed trochospiral, asymmetrical lenticular shape, and its chambers are truncate (Pl.8, fig. 15; Pl.9, figs. 1-3) (Text figure 5/2). Ventral side of *Laffitteina erki* (Sirel, 1969) is strongly concave (Text figure 5/3). The height of *L. thraciaensis*; is much more than the heights of *L. erki*, *L. thraciaensis*; and *L. mengaudi*, and the former is strongly inflated or much more asymmetrical lenticular in shape.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Laffitteina erki (Sirel, 1969)

(Plate 10, Figures 4,5; Plate 11, Figure 1) (Text figure 5/3)

1969 *Orduina erki* n.gen., n.sp., Sirel, p.160, Pl.2, figs. 1,2.

1969 *Orduina erki* var. *conica* n. var., Sirel, p.160, Pl.3, figs. 1,2,4.

1986 *Laffitteina mengaudi* (Astre), Sirel, Pl.3, fig. (La_2).

1987 *Kathina erki* (Sirel), Loeblich and Tappan, p.661, Pl. 760, figs. 6,7.

1994 *Laffitteina erki* (Sirel), Sirel, p.47, Pl.1, figs. 4,6-8; Pl.2, figs. 1-11.

non *Laffitteina erki* (Sirel), Sirel, 1994, p.47, Pl.1, figs. 1-3,5,9,10.

1996 *Laffitteina erki* (Sirel), Sirel, p.22, Pl.2, figs. 12,20; Pl.8, figs. 1,4,5,7.

non *Laffitteina erki* (Sirel), Sirel, 1996, p.22, Pl.8, figs. 2,6,8.

1996 *Laffitteina erki* (Sirel), İnan, 1996, Pl.4, figs. 1,2.

non *Laffitteina erki* (Sirel), İnan, 1996, Pl.4, figs. 3-10.

1998 *Laffitteina erki* (Sirel), Sirel, p.91, Pl. 51, figs. 1,4,5,7.

non *Laffitteina* cf. *erki* (Sirel), Sirel, 1998, Pl. 22, figs. 1;

non *Laffitteina erki* (Sirel), Sirel, 1998, Pl. 51, figs. 2,6,8.

2004 *Laffitteina erki* (Sirel), Sirel, p.18, Pl. 22, figs. 1,4,5,7.

non *Laffitteina erki* (Sirel), Sirel, 2004, p.18, Pl. 22, figs. 2,6,8.

2009 *Laffitteina erki* (Sirel), Sirel, Pl.5, fig. 8.

non *Laffitteina erki* (Sirel), Sirel, 2009, Pl.5, fig. 9.

2015 *Laffitteina erki* (Sirel), Sirel, Pl. 9, figs. 1,3-5.

non *Laffitteina erki* (Sirel), Sirel, 2015, Pl.9, figs. 2,6.

Diagnosis: Test is small, hyaline calcareous, low trochospiral, convex in dorsal side, ventral side is concave and asymmetrical lenticular shaped. Its chamber margins are slightly rounded (Pl.10, figs. 4,5; Pl.11, fig. 1) (Text figure 5/3). Its identical to Sirel's low conical individuals (Sirel, 1969: Pl.2, fig. 1 (Holotype), 2; Sirel, 1994: Pl.1, figs. 4,6, Pl.2, figs. 1-7,11; Sirel, 1998: Pl. 51, figs. 4,5,7; Sirel, 2004: Pl. 22, figs. 4,5,7; Sirel, 2015: Pl. 9, figs. 3-5; Loeblich and Tappan, 1987: Pl. 760, figs. 6,7). Embryonic apparatus of this species (in vertical sections) is located on the dorsal side or very close to the dorsal side (Pl.10, figs. 4,5; Pl.11, fig. 1). Dorsal pillars (dp) of this species are weak and short, and its funnels (f) are narrow. However, its ventral pillars (vnp) are strong, long and its funnels are large (Pl.10, figs. 4,5; Pl.11, fig. 1). Pustules (ps) and tubercules (tb) are observed between ventral pillars and test channel in the ventral side of some individuals (Pl.10, fig. 4: at the left). It was reported (Sirel, 2004, p.20) that *Laffitteina erki* is the species with the largest horizontal diameter among the species of Laffitteina Marie (1946). However, any of the specimens' horizontal diameter, in the measurements which was taken and accepted in the synonym list by the Sirel (2004), is not 5.4 mm (Sirel, 1969: Pl.2, fig. 1 (Holotype)). For example, the largest horizontal diameter in Sirel (2004: Pl. 22, fig. 4 or 2015: Pl. 9, fig. 5) is 3.714 mm. Biometric measurements are as follows: horizontal diameter is between 2.558-2.628mm, height is 0.791-0.884mm, index of elongation is 2.973-3.234, protoconch diameter is 0.070 -0.081mm (Pl.10, figs. 4,5; Pl.11, fig. 1). Width of ventral pillars varies between 1.000-1.813mm (Pl.10, figs. 4,5; Pl.11, fig. 1).

Differential diagnosis: *Laffitteina erki* is a species with the largest horizontal diameter (3.714mm) among the species of *Laffitteina* Marie (1946) (Sirel, 2004: Pl. 22, figs. 4; Sirel, 2015: Pl. 9, fig. 5) (Text figure 5/3). This species also has, among the species of *Laffitteina*, the most concave ventral side (Pl.10, figs. 4,5; Pl.11, fig. 1) (Loeblich andTappan, 1987: Pl. 760, figs. 6,7; Sirel, 1969: Pl.2, figs. 1,2; Sirel, 1994: Pl.1, figs. 4,6, Pl.2, figs. 1-7,11; Sirel, 1998: Pl. 51, figs. 4,5,7; Sirel, 2004: Pl. 22, figs. 4,5,7; Sirel, 2015: Pl. 9, figs. 3-5) (Text figure 5/3). *L. erki* and *L. anatoliensis* are similar to each other by their natural sizes and convex dorsal sides. While the ventral side of *L. anatoliensis* is flattened, the ventral side of *L. erki* is strongly concave (Text figure 5/3). *L. erki* is easily distinguished from the new species *L. thraciaensis* and the other species of *Laffitteina* by its size and shape.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Laffitteina mengaudi (Astre, 1923)

(Plate 11, Figures 2-4) (Text figure 5/1)

1923 *Nummulites mengaudi* n.sp., Astre, p. 360-368, Pl. 12, figs. 1-23.

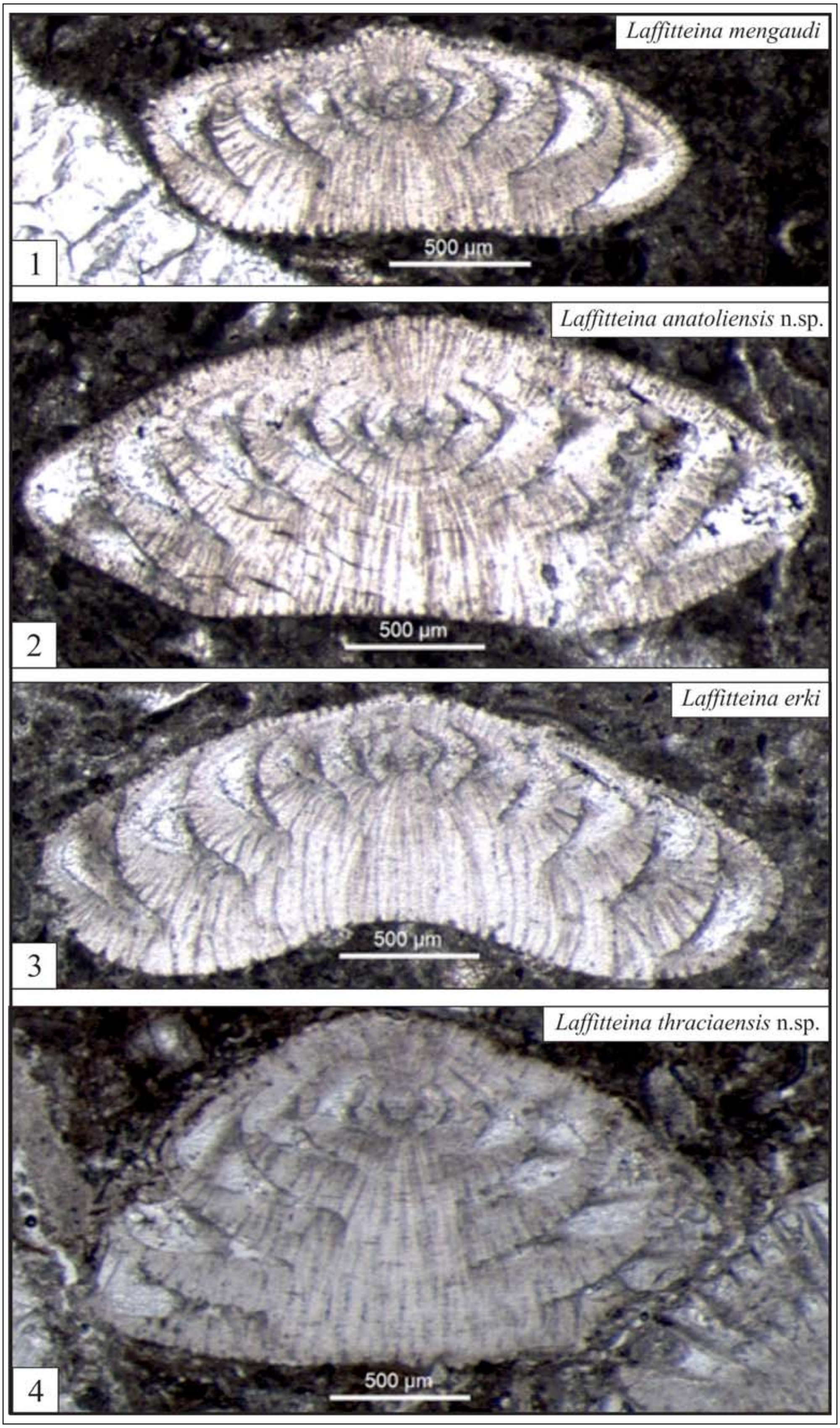

Figure 5- New and some known species of the genus *Laffitteina*. 1- *Laffitteina mengaudi.* 2- *Laffitteina* a*natoliensis* n.sp. 3- *Laffitteina erki* (Sirel, 1969). 4- *Laffitteina thraciaensis* n.sp.

non *Laffitteina mengaudi* (Astre); Sirel, 1986, Pl. 3 (La_2).

1996 *Laffitteina mengaudi* (Astre); Sirel, p. 12, Pl.1, figs. 6,10-13,17,18; Pl.2, figs. 1-4,6-8,10,11,14,15,17,19,21; Pl.3, figs. 1-6,9,10; Pl.4, fig. 19.

non *Laffitteina mengaudi* (Astre); Sirel, 1996, Pl.2, figs. 12,20; Pl.3, fig. 8.

1996 *Laffitteina bibensis* Marie; İnan, Pl.3, figs. 4,5.

1996 *Laffitteina erki* (Sirel); İnan, Pl.4, figs. 4-8.

1987 *Laffitteina mengaudi* (Astre); Loeblich and Tappan, p. 661, Pl. 759, fig.4.

1998 *Laffitteina mengaudi* (Astre); Sirel, Pl. 46, figs. 6-8,10,12,13; Pl. 47, figs. 2-4,6-8,10,11, 14,17,18,19,21.

non *Laffitteina mengaudi* (Astre); Sirel, 1998, Pl. 46, figs. 9,11,14-23; Pl. 47, figs. 1, 5, 12, 13,15,20; Pl. 48, fig.1.

2009 *Laffitteina erki* (Sirel), Sirel, Pl.5, fig. 10.

2015 *Laffitteina mengaudi* (Astre); Sirel, Pl. 2, figs. 6-11, 16, 23.

Diagnosis: Test is small and hyaline calcareous, asymmetric or slightly asymmetric, lenticular shaped. Dorsal and ventral sides are flattened. Chambers are rounded except in the last whorl (Pl.11, figs. 2-4) (Text figure 5/1). Embryonic apparatus of the species (in axial sections) is located in the middle of or very close the test (Pl.11, figs. 2-4) (Text figure 5/1) (Sirel, 2015: Pl. 2, figs. 6-11,15-17). However, in vertical sections of some trochospiral Paleocene species (*Laffitteina anatoliensis* n.sp., *Laffitteina thraciaensis* n.sp. and *Laffitteina erki*) of the genus *Laffitteina*; embryonic apparatus is observed as located on the dorsal side or close to dorsal side (Pl.8, fig. 15; Pl.9, figs. 1-3,11; Pl.10, figs. 1-5; Pl.11, fig. 1). Dorsal pillars (dp) are weak, short; and funnels (f) are very narrow in this species (Pl.11, fig. 4). However, ventral pillars (vnp) are very strong, very long; and funnels (f) are larger (Pl.11, figs.2-4). Biometric measurements are as follows: horizontal diameter is between 1.348 (broken)-1.907mm, height is 0.721-0.837mm, index of elongation is 1.87-2.278, protoconch diameter is 0.105 -0.140mm. Width of ventral pillars varies between 0.721-0.977mm.

Differential diagnosis: Dorsal and ventral sides are flattened in *Laffitteina mengaudi*. Dorsal side is convex, but ventral side is flattened in the new species *Laffitteina anatoliensis*. Both species (*L. mengaudi* ve *L. anatoliensis*) are identical in their ventral sides (flattened). Diameter and height of *L.mengaudi* are much smaller than in either *L. anatoliensis* or in *L.erki*. The subspecies *Laffitteina mengaudi mengaudi* (Astre) and *Laffitteina mengaudi trochoidea* Sirel, 2015 are very similar to each other. However, the test of the subspecies *L. mengaudi trochoidea* is slightly larger than of *L. mengaudi mengaudi*, and the former has a depressed trochospiral and low conical test (Sirel, 2015: Pl. 2, figs. 19-22,24). Besides, *L. mengaudi trochoidea* is slightly concave in ventral side (Sirel, 2015: Pl. 2, figs. 19,20,21,24). Strongly depressed trochospiral appearance (in vertical sections) of *L.mengaudi trochoidea* is provided by its last chambers in both sides (Sirel, 2015: Pl. 2, figs. 19,20,21,24). The individuals in which those last chambers are not present or not developed (younger specimens), is the juvenile forms of *Laffitteina mengaudi mengaudi* (Astre). Besides, *L. mengaudi* and *Laffitteina bibensis* Marie (1946) are in common with their flattened dorsal and ventral sides. However, *Laffitteina bibensis* is much thinner than *L. mengaudi*.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Super Family: Orbitoidacea SCHWAGER, 1876,

Family: Lepidorbitoididae VAUGHAN, 1933, ̲

Genus: *Sirtina* BRÖNNIMANN AND WIRZ, 1962, ̲

Type Species: *Sirtina orbitoidiformis* BRÖNNIMANN AND WIRZ, 1962,

Sirtina paleocenica Acar, n.sp.

(Plate 8, Figures 10-14; Plate 9, Figures 5-10; Plate 10, Figures 7,8)

Derivation of Name: The name of this species is derived from Serie “Paleocene” of Tertiary time.

Holotype: Almost vertical section, microspheric form (Pl.9, fig.9)

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is minute, trochospirally coiled, slightly convex in dorsal side or rarely flattened. Dorsal pillars (dp) are very short and thin, lateral chambers in dorsal side are very narrow or finely perforated. However, ventral side of the newly introduced Paleocene species of genus *Sirtina* Brönnimann and Wirz (1962) is strongly inflated asymmetrical lenticular (Pl.8, figs. 10-14; Pl.9, figs. 5-10; Pl.10, figs. 7,8). Ventral side of the test is strongly inflated; and its ventral pillars (vnp) are well developed and coarse, funnels (f) are advanced. Whorls are involute in both dorsal and ventral sides (Pl. 10, fig.7). Periphery of the shell is sharp and angular (Pl.8, figs. 11,12,14; Pl.9, figs. 5-8). Although the orbitoidal or orbitoidiform structured-very narrow lateral chambers of *Sirtina paleocenica* are well observed in vertical sections, these lateral chambers are not clearly observed in oblique or slightly oblique sections (Pl.8, figs. 13,14; Pl.9, fig. 10). Biometric measurements are as follows: horizontal diameter is between 0.300-0.860mm, height is 0.240-0.600mm, index of elongation is 1.25-1.433, protoconch diameter (measured in only one specimen) is 0.040mm (Pl.8, fig.12). Measurements of the holotype are as follows: horizontal diameter is 0.780 mm, height is 0.520 mm, index of elongation is 1.433 (Pl.9, fig.9). Dimorphism is present.

Differential diagnosis: *Sirtina orbitoidiformis* Brönnimann and Wirz, 1962 and *Sirtina granulata* Rahaghi, 1976 are lenticular shaped specimens with thick dorsal pillars and well developed-orbitoidal lateral chambers. However, the new species *Sirtina paleocenica* is trochospirally coiled, slightly convex but rarely flattened in dorsal side. Its dorsal pillars are very thin and weak, lateral chambers are very narrow with tiny space, ventral side is strongly inflated or strongly asymmetrical lenticular (Pl.8, figs. 10-14; Pl.9, figs. 5-10; Pl.10, figs. 7,8) (Loeblich and Tappan,1987: Pl. 735, figs. 9,10; Pl. 736, figs. 5,6,10).

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Super Family: Miliolacea EHRENBERG, 1839,

Family: Miliolidae EHRENBERG, 1839,

Subfamily: Miliolininae EHRENBERG, 1839,

Genus: *Ankaraella* SİREL, 1998,

Type species: *Ankaraella trochoidea* SİREL, 1998.

Ankaraella minima Acar, n.sp.

(Plate 11, Figures 5-9)

1998 *Ankaraella trochoidea* Sirel, p.51, Pl. 14, figs. 6,8-10.

2004 *Ankaraella trochoidea* Sirel; Sirel, p.208, Pl. 63, figs. 6,10.

2004 *Ankara**ra**ella* sp. Sirel, p.208, Pl. 63, figs. 5,7-9.

Derivation of Name: The word “minima” is derived from “Minutus” in Latin. This species has been named by “minima” due to its small size.

Holotype: Almost vertical section, microspheric form (Pl.11, fig.5)

Type locality: South of Lake Yarışlı, SW Burdur, W Turkey (Text figure 1).

Type level: Middle Paleocene, Selandian, SBZ 2 (Serra-Kiel et al., 1998).

Diagnosis: Test is small, trochospirally coiled, slightly convex in both dorsal and ventral sides. Septa are thick, chambers are evolute in dorsal/spiral side, but involute in ventral side; umbilical cavity (uc) is narrow (Pl.11, figs.5-7). Short ribs (r) are found in intercameral foramina (if) (Pl.11, figs. 6,8) and in some chambers (Pl.11, figs. 5,6,8). Biometric measurements are as follows: horizontal diameter is between 0.921-1.079mm, height is 0.526-0.658 mm, index of elongation is 1.640-1.751 (Pl.11, figs.5-7), protoconh diameter of megalospheric specimens is 0.066-0.099mm and the protoconch is spherical (Pl.11, figs. 5-7). Protoconch of the microspheric generations could not be measured. In the holotype: dorsal side is convex, chambers are truncate in dorsal side and curved in ventral side. Biometric measurements of the holotype are as follows: horizontal diameter is between 1.053mm, height is 0.448mm, index of elongation is 2.350 (Pl.11, fig. 5). Test wall is porcelaneous calcareous, and dimorphism is present.

Differential diagnosis: *Ankaraella minima* Acar, n.sp. differs from *Ankaraella trochoidea* with smaller natural size.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

Ankaraella trochoidea Sirel, 1998

(Plate 11, Figures 10-12)

1998 *Ankaraella trochoidea* Sirel, p. 51, Pl. 14, figs. 1-4.

2004 *Ankaraella trochoidea* Sirel; Sirel, p.68, Pl. 63, figs. 1-4.

2009 *Ankaraella trochoidea* Sirel; Sirel, Pl.2, figs. 8-10.

2010 *Ankaraella trochoidea* Sirel; Sirel, Pl. 5, figs. 8-10.

2015 *Ankaraella trochoidea* Sirel; Sirel, Pl. 22, figs. 8-10.

Diagnosis: Test is small, trochospirally coiled, flattened or slightly convex in dorsal side, convex in ventral side. Septa are thick, chambers are evolute in dorsal/spiral side, but involute in ventral side (Pl.11, figs. 10-12). Intercameral foramina (if) are present in a broken, almost horizontal section (Pl.11, fig.10). Ribs (r) can be observed depending on the section plane (Pl.11, fig.11). However, presence of these ribs (r) was not reported in the first description of the genus *Ankaraella* (Sirel, 1998: p. 51, Pl. 14, figs. 1-3). Ribs (r) are present in the chambers of *Ankaraella* Sirel (1998) (Pl.11, fig. 11) (Sirel, 1998: Pl. 14, figs. 1-3). Biometric measurements are as follows: horizontal diameter is between 1.25-1.5 mm, height is 0.625-1.125 mm, index of elongation is 1.333-2.000. Protoconch diameter could not be measured.

Fossil assemblage: Table 1; Age: Middle Paleocene, Selandian; SBZ 2 (Serra-Kiel et al., 1998).

4. Discussions

4.1. Some Mistakes and Emendations on *Ankaraella trochoidea* Sirel, 1998

A- Sirel (2004, s.68) erroneously wrote "*Ankaraella trochoidea* Sirel, n.gen.n.sp., 1998" in the text. He should have written "*Ankaraella trochoidea* Sirel, 1998" instead. Because, new genus description of this specimen was made in 1998 (Sirel, 1998).

B- In the same paper, Sirel (2004, s.68) wrote "(Plate 63, figures 1-10)". He should have written "(Plate 63, figures 1-4, 6, 10)" instead. Because, Sirel (2004, s.208) explained only (figures 1-4,6,10) for *Ankaraella trochoidea* in the plate explanations of Plate 63.

C- Again in the same place, "*Ankararaella sp*." was written for "(Plate 63, figures 5,7-9)" and was explained by Sirel (2004, p.208). This implies that the specimens in "(Plate 63, figures 5,7-9)" are not belonging to the species *Ankaraella trochoidea*. Therefore in the text, "(şekil 1-4,6,10)" should have been written instead of "(levha 63, şekil 1-10)". In this current study, figures of "*Ankararaella sp*." have been transferred to the synonym list of *Ankaraella minima* Acar, n.sp. (Sirel, 2004: Pl. 63, figs. 5,7-9).

4.2. Species and Type Species Transferring Between Genera

There must be a type species for an accepted genus or an accepted subgenus, based on the zoological nomenclature. If a genus (or a subgenus) has only its type species, this is called as monotypic. This means, that genus (or subgenus) has no species except its type species. For this reason, if the type species of a monotypic genus (or subgenus) is transferred to another known genus (or subgenus) or a new genus (or subgenus), the genus can not be used anymore. Because, no representatives of this genus (or subgenus), including its type species, is present from then on. In other saying, a genus with no species (even type species) perishes and is invalid. However, type species are never die out, yet they are used in other genera (or subgenera). Many examples could be given about the transferring of a known species or a type species to a new genus (or a subgenus). Regarding this issue, nomenclature and new descriptions made for the specimens in this current study, are presented below:

A- In this current study, "*Sistanites iranica* Rahaghi, 1983" (type species of *Sistanites* Rahaghi (1983)) which was inadequately described by Rahaghi (1983), has been transferred to the new genus *Neosistanites* as type species in this study (Rahaghi, 1983: p.54, Pl. 34, fig. 4). Therefore, monotypic genus *Sistanites* Rahaghi (1983) can not be used anymore since there is no representatives, including the type species.

B- *Laffitteina erki* (Sirel, 1969) which is described and figured in this study, was the type species of *Orduina* Sirel, (1969) (as *Orduina erki* Sirel, 1969). Systematics of this species was changed. *Orduina* Sirel, 1969 was a monotypic genus. At first, the genus *Orduina* Sirel (1969) was transferred to the genus *Kathina* Smout, 1954 by Loeblich and Tappan (1987, s.661) due to its inadequate description, and became *Kathina erki* (Sirel, 1969). Thereafter, the same species (*Orduina erki*) was transferred to *Laffitteina*

Marie, 1946 by Sirel (1994) and the species has being used as *Laffitteina erki* (Sirel, 1969) (Sirel, 1994: p.106). However, *Orduina* Sirel (1969) can not be used anymore by the reason of its type species was transferred to another genus (*Laffitteina* Marie, 1946). Hereafter, there is no representatives (including type species) for the genus *Orduina* just as in *Sistanites* Rahaghi, 1983.

C- Some changes for the systematics of *Miscellanea primitiva* Rahaghi, 1983, which is figured as *Akbarina primitiva* (Rahaghi, 1983) in this study, have been made. *Miscellanea primitiva* Rahaghi, 1983, which was first described by Rahaghi, 1983, was transferred to two different genera by two different authors (Hottinger, 2009; Sirel, 2009) in the later years.

a- Hottinger (2009) transferred *Miscellanea primitiva* Rahaghi, 1983, which had been ineaduqualtely described by Rahaghi, 1983 but having the characteristics of Hottinger's new genus, to his new genus (*Miscellanites* Hottinger, 2009) as the type species; and presented it to the scientific community as *Miscellanites primitivus* (Rahaghi, 1983).

b- Sirel (2009) transferred *Miscellanea primitiva* Rahaghi, 1983 to his new genus as the type species during describing the new genus *Akbarina*; and presented to the scientific community as *Akbarina primitiva* (Rahaghi, 1983). The name *Akbarina primitiva* has been adopted in this study.

5. Conclusions

In this study, some new benthic foraminifera from the SBZ 2 (Selandian) have been described (yet some benthic foraminifera and algae could not be described). Benthic foraminiferal genera and species, which have been determined in this study, are as follows: *Neosistanites iranicus* (Rahaghi, 1983), *Neosistanites sozerii* Acar, n.gen.,n.sp., *Neosistanites okuyucui* Acar, n.gen.,n.sp., *Neosistanites guvenci* Acar, n.gen.,n.sp., *Neosistanites dageri* Acar, n.gen.,n.sp., *Neosistanites catali* Acar, n.gen.,n.sp., *Neosistanites armagani* Acar, n.gen.,n.sp., *Neosistanites inali* Acar, n.gen.,n.sp., *Parahaymanella hahyemezae* Acar, n.gen., n.sp., *Parahaymanella bozkurti* Acar, n.gen., n.sp., *Parahaymanella alanae* Acar, n.gen., n.sp., *Pseudohottingerina burdurensis* Acar, n.gen.,n. sp., *Pseudohottingerina yarisliensis* Acar, n.gen.,n. sp., *Ankaraella minima* Acar, n.sp., *Laffitteina anatoliensis* Acar, n.sp., *Laffitteina thraciaensis* Acar, n.sp., *Sirtina paleocenica* Acar, n.sp. Besides, *Akbarina primitiva* (Rahaghi, 1983), *Ankaraella trochoidea* Sirel, 1998, *Bolkarina aksarayi* Sirel, 1981, *Laffitteina erki* (Sirel, 1969), *Laffitteina mengaudi* (Astre, 1923), *Biloculinites* cf. *paleocenica* Rahaghi, 1983, *Miscellanea*? *globularis* Rahaghi, 1978, *Globoflarina*? *sphaeroidea* (Fleury, 1982), *Heterillina* sp., *Keramosphaera* sp., *Textularia* sp., *Chrysalidina*? sp., *Kolchidina*? sp., *Lockhartia*? sp., *Popovia*? sp., *Thalmannita*? sp. have been described among known benthic foraminiferal genera and species. *Periloculina* sp, has been determined but could not be figured. However, some benthic foraminiferal genera and algae could not be described. Undetermined genera here figured are as follows: undetermined miliolid genera (Miliolid gen.1 indet, Miliolid gen.2 indet, Miliolid gen.3 indet; Miliolid gen.4 indet n.sp.1; Miliolid gen.4 indet n.sp.2; Miliolid gen.4 indet n.sp3; Miliolid gen.5 indet; Miliolid gen.6 indet; Miliolid gen.7 indet; Miliolid gen.8 indet or Idalinid gen.8 indet; Miliolid gen.9 indet), Agglutineted gen. (1 and 2) indet., Miscellanid gen. indet., Planulinid gen.1 indet, Rotaliid gen.1 indet. (*Redmondoides?*), Rotaliid gen.2 indet., Rotaliid gen.3 indet., Rotaliid gen.4 indet. (with two layered test), Mississippinid gen. indet., algae gen.1 indet., algae gen.2 indet., algae gen.3 indet. The presence of fifty seven specimens have been reported in this study. Moreover, introduction of a new family (Neosistanitidae), some explanations on the classification of the new genus *Neosistanites*, transferring of type species or species between genera and emendation (about the presence of ribs) of the genus A*nkaraella* Sirel (1998), and some emendations about *Ankaraella trochoidea* Sirel, 1998 have been made in this study.

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FIGURE AND PLATE EXPLANATIONS

(In alphabetical order)

a: aperture
adch: additional chamber
bl: basal layer
bfs: bifurcating septum
ch: chamber
chl: chamberlet
cp: central pillar
cpl: compound plate
cplfr: compound plate foramen
cs: counter septum
dp: dorsal pillar
dt: deuteroconch/deuteroculus
ems: embryonic stage
f: funnel
fch: flaring chamber
fpl: foraminal plate
fr: foramen
fw: flaring whorls
g: goulot
hp: horizontal plate
hpfr: horizontal plate foramen
if: intercameral foramen
isc: intraseptal canal
kha: keyhole aperture
lp: lip
lch: lateral chamber (in dorsal side)
p: pillar
pr: protoconch/proloculus
prp: preseptal passege
ps: pustules
psp: pseudospine
r: rib
s: septum
sfl: septal filaments/septal traces
sl: septulum
so: sutural opening
spc: spiral canal
t: tooth
tnch: transation chamber
to: test ornamentations
tr: tritoconch/triloculus
trch: truncate chamber
trms: trematophoric structure
uc: umbilical cavity
uf: umbilical flap
uh: umbilical holes
upl: umbilical plate
uplfr: umbilical plate foramen
vnp: ventral pillar
vnp_1: first ventral pillar
vnp_2: second ventral pillar
vpl: vertical plate
vplfr: vertical plate foramen
ws: whorl suture

PLATES

PLATE - I

Neosistanites iranicus (Rahaghi, 1983), n.gen.,

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 5,6; microspheric specimen 1)

Figure 1- Slightly oblique vertical section showing minute protoconch, dorsal pillars, funnels, two layered septum, compound plates (cpl), compound plate foramina (cplfr), umbilical flaps, sieve horizontal plates, horizontal plates foramina, second ventral pillars and umbilical hole or umbilical openings (ŞAY-1/S-1-2).

Figure 2- Oblique section showing very narrow sutural opening (so), pseudospine (psp), imperforate septum (s), foraminal plate (fpl) and umbilical flap (uf) (ŞAY-3/I-31-3).

Figure 3- Tangential section showing sieve vertical plate (vpl) and vertical plates foramina (vplfr) (ŞAY-2/I-8-3).

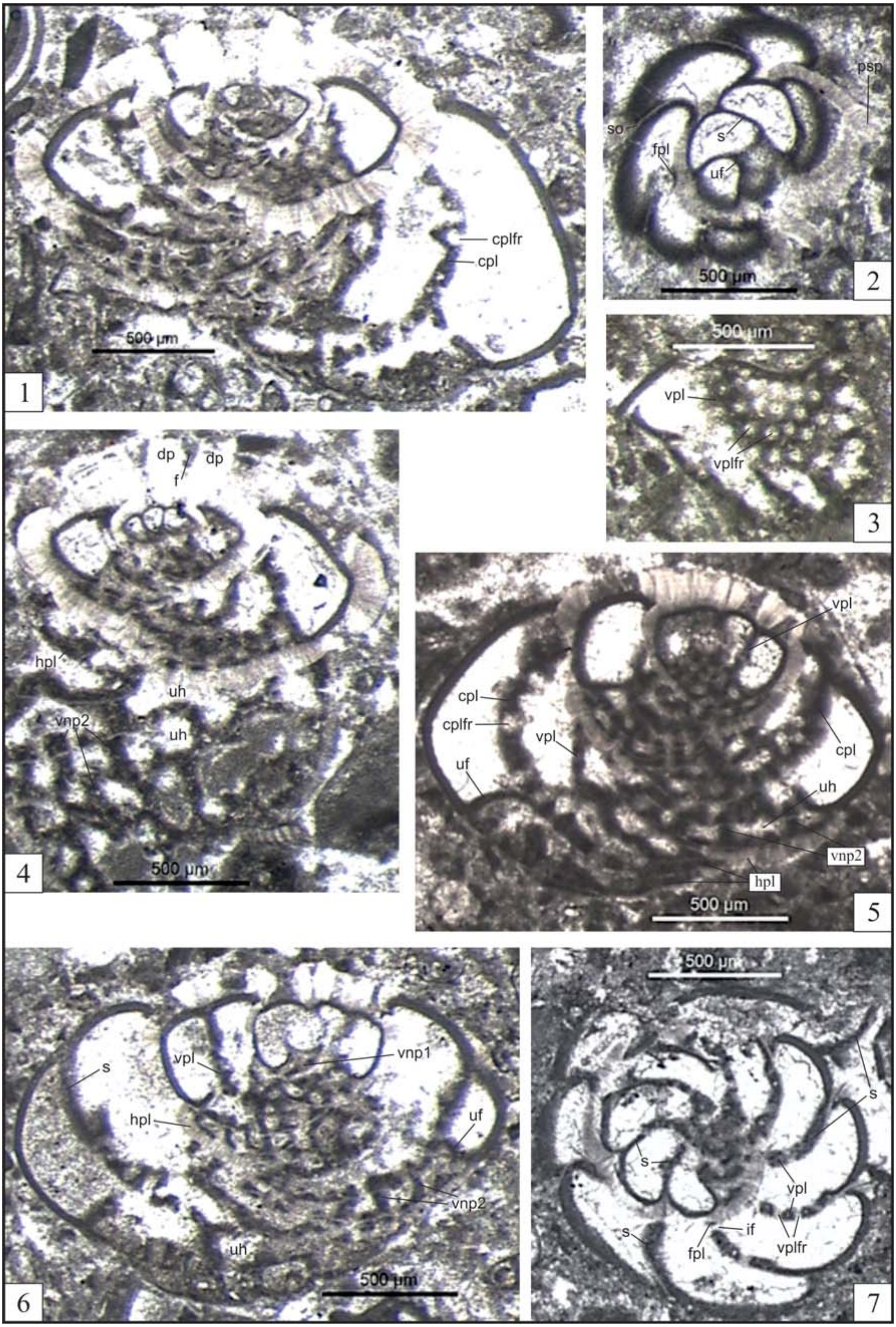
Figure 4- Slightly oblique broken vertical section showing dorsal pillars (dp), large funnels (f), vertical plate, compound plates, umbilical flaps, horizontal plates (hpl), thick second ventral pillars (vnp2) and large umbilical hole (uh) (ŞAY-1/ S-3-1).

Figure 5- Slightly oblique vertical section showing spherical protoconch, dorsal pillars, funnels, septum (two layered), vertical plates (vpl), sieve compound plates (cpl), compound plates foramina (cplfr), umbilical flaps (uf) sieve horizontal plates (hpl), second ventral pillars (vnp2) and umbilical hole (uh) (ŞAY-1/N-8-1S).

Figure 6- Vertical section showing spherical protoconch, typical deuteroconch, dorsal pillars, large funnels, imperforate septa (s), vertical plates (vpl) (at both left and right side of the protoconch), compound plates, umbilical flaps (uf), sieve horizontal plates, second ventral pillars (vnp2) and umbilical hole (uh) (ŞAY-2/S-12-1).

Figure 7- Oblique subhorizontal section showing very narrow sutural opening, single layered septa (microgranular and imperforate) (s), vertical plates (vpl) with narrow perforations at the end of the septa, narrow foramina of vertical plates (vplfr), intercameral foramina (if) and foraminal plate (fpl) (ŞAY-3/I-25-1S).

PLATE - I


cplfr
cpl
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3
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s
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vnp1
hpl
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s
vpl
if
s
fpl
vplfr
7

PLATE - II

Neosistanites iranicus (Rahaghi, 1983), n.gen.,

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1,2,4; microspheric specimen 5)

Figure 1- Broken vertical section (with rotaliid form) showing central pillar (cp), spherical protoconch (pr) and typical deutreoconch (dt), foramen between protoconch and deuteroconch, first ventral pillar (vnp1), septa, vertical plate (vpl) (just right side of protoconch), vertical compound plate (cpl) (at left side) (interforaminal tissue seems as if being thick pillars but not), compound plates foramina (cplfr), imperforate umbilical flaps (uf), horizontal plates (hpl), vertical or inclined second ventral pillars (vnp2) and large umbilical hole (uh) (ŞAY-1/A-2-1S).

Figure 2- Vertical section showing dorsal pillars, narrow funnels, protoconch, vertical plate (microgranular) (vpl), inclined compound plate (sieve, at right side) (cpl), compound plate foramina (cplfr), imperforate umbilical flaps (uf), perforated horizontal plates (hpl), second ventral pillars (vnp2) and large umbilical hole (uh) (ŞAY-3/G-17-4BS).

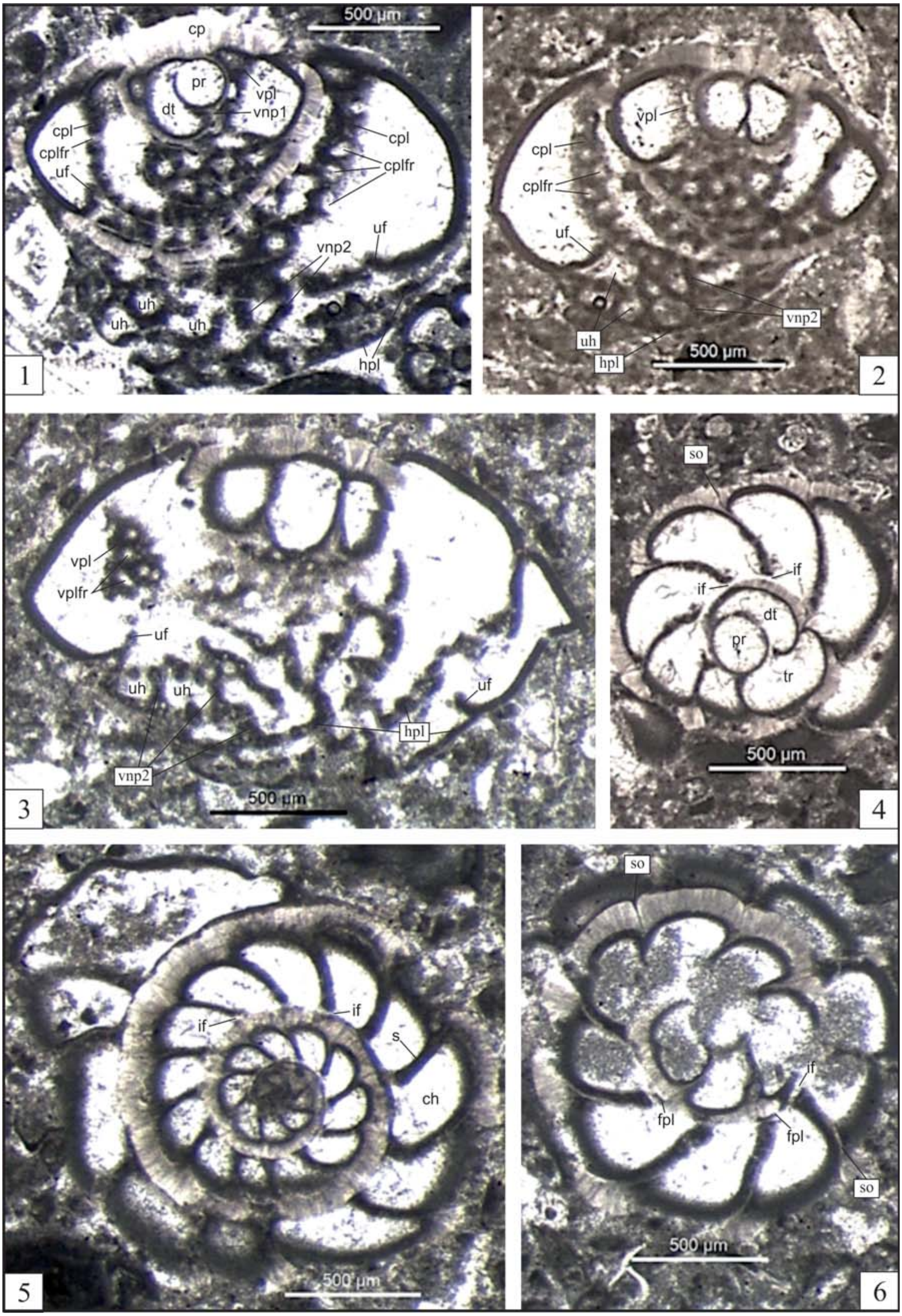
Figure 3- Subvertical section showing dorsal pillars, narrow funnels, septa, tangential section of the sieve vertical plate (at left) (vpl), vertical plate foramina (vplfr), imperforate umbilical flaps (uf), sieve horizontal plates (hpl), thick and well developed second ventral pillars (vnp2) and large umbilical hole (uh) (ŞAY-1/S-8-1).

Figure 4- Horizontal section showing tripple embryonic stage and the foramina, large protoconch (p), large deuteroconch (dt), and the largest tritoconch (tr), sutural opening (on the spire), septa and chambers, intercameral foramina (if), foraminal plate (ŞAY-3/I-20-1S).

Figure 5- Slightly oblique almost horizontal section showing two layered spire, septa (imperforate, microgranular, inclined or gently curved) (s), intercameral foramina (if), irregular chambers of the last whorl (ŞAY-1/S-16-2).

Figure 6- Poorly preserved slightly oblique subhorizontal section showing two layered whorl or spire, surfical or sutural opening (so), septa (inclined, imperforate and microgranular), foraminal plate (fpl), and intercameral foramina (if) (ŞAY-2/S-14-3).

PLATE - II



500 µm
cp
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fpl
6

PLATE - III

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 3-7)

Neosistanites iranicus (Rahaghi, 1983), n.gen.,

Figure 1- Oblique marginal section (towards umbilical area) showing septa (microgranular and imperforate) (s), umbilical flaps (uf), slightly inclined vertical plate (initially imperforate) (vpl) and vertical plate foramina (vplfr) (ŞAY-2/M-5S).

Figure 2- Oblique subhorizontal section (through umbilical area) showing septa (s), intecameral foramen (if), vertical plate (vpl), compound plate, umbilical flaps (uf), horizontal plates (at the center, attached to umbilical flap at the base) (hpl), second ventral pillars (at the center) and umbilical hole (uh) (at the center) (ŞAY-3/I-23-1S).

Neosistanites sozerii Acar, n. gen., n.sp.

Figure 3- Vertical section showing large spherical protoconch, septa (s), vertical plate (tangential section, in the left side of protoconch) (vpl), vertical plate foramina (vplfr), horizontal plates (hpl), horizontal plates foramina (hplfr), umbilical flaps (uf), second ventral pillars (vnp2) and umbilical hole (uh) (ŞAY-3/M-13-3s).

Figure 4- Vertical section showing embryonic chambers (ems), dorsal pillars, funnels, vertical plate (vpl), compound plates (cpl), horizontal plates (hpl), horizontal plates foramina (hplfr), umbilical flaps (uf), second ventral pillars (vnp2) and larger umbilical hole (uh), Holotype, (ŞAY-2/S-9-2).

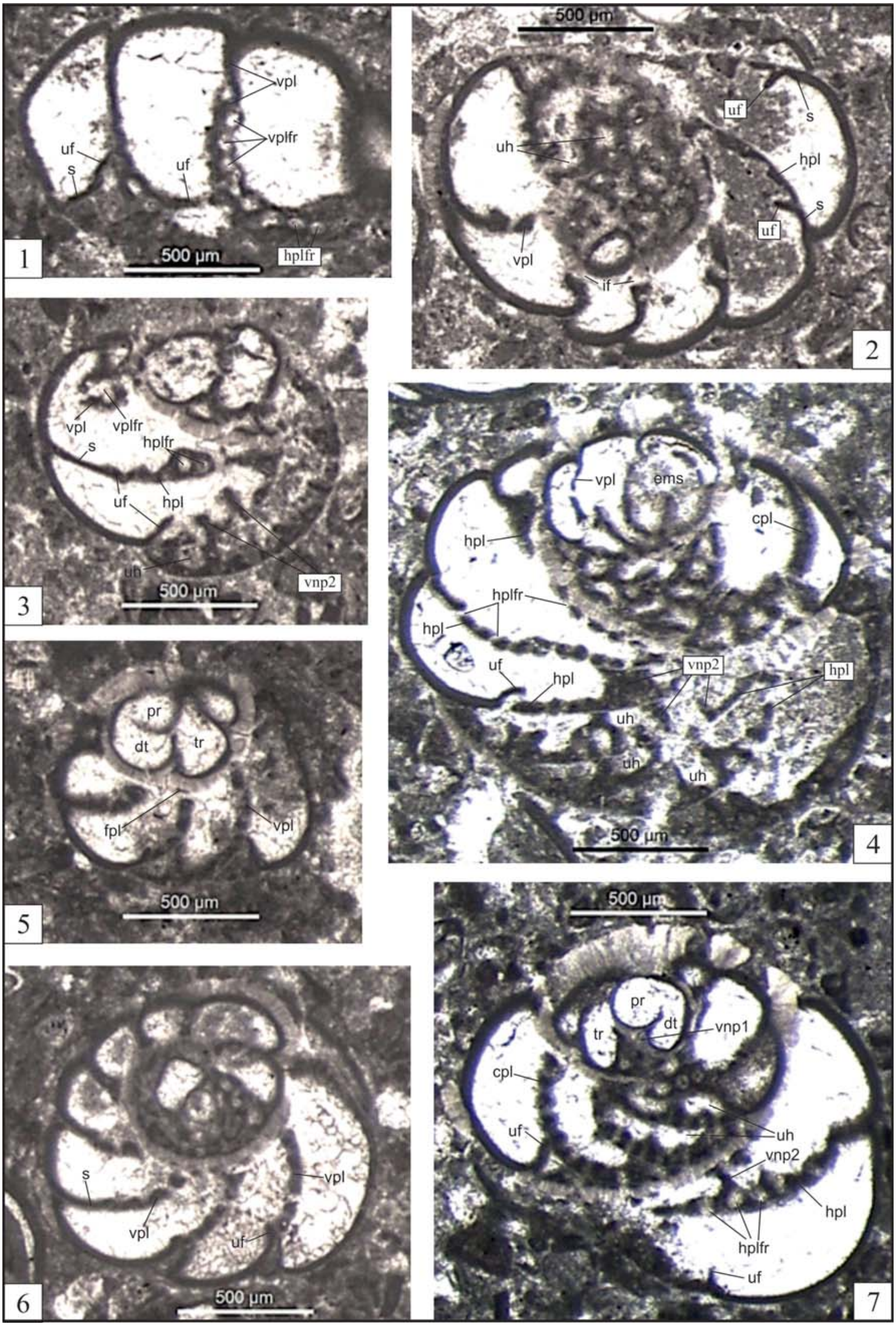
Figure 5- Oblique horizontal section showing embryonic chambers [protoconch (pr), deuteroconch (dt), tritoconch (tr)], septa, umbilical flaps, foraminal plate (fpl), vertical plate (vpl), (ŞAY-1/K-2S).

Neosistanites okuyucui Acar, n.gen., n.sp.

Figure 6- Slightly oblique horizontal section showing spherical protoconch, horizontal plates, second ventral pillars (at the center, around protoconch), septa (s), umbilical flaps (uf), vertical plates (vpl) (ŞAY-1/K-1-1S).

Figure 7- Vertical section showing protoconch (p), typical deuteroconch (dt), tritoconch (tr), large passage between protoconch and deuteroconch, dorsal pillars, funnels, first ventral pillars (vnp1), compound plate (cpl), umbilical flaps (uf), horizontal plates (hpl), horizontal plates foramina (hplfr), second ventral pillars (vnp2), umbilical hole (uh), Holotype, (ŞAY-1/N-8-2).

PLATE - III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500 µm
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PLATE - IV

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1, 4-8; microspheric specimens 3, 9)

Neosistanites okuyucui Acar, n.gen., n.sp.

Figure 1- Vertical section showing spherical protoconch, dorsal pillars, funnels, septa (s), horizontal plates (hpl), horizontal plates foramina (hplfr), umbilical flaps (uf) (ŞAY-1/B-2-4 Ns).

Figure 2- Subvertical section showing dorsal pillars, funnels, vertical plate (at right) (vpl), umbilical flaps (uf), horizontal plates (hpl), second ventral pillars (vnp2) and large umbilical hole (uh) (ŞAY-1/P-2-3S).

Neosistanites guvenci Acar, n.gen., n.sp.

Figure 3- Vertical section showing minute spherical protoconch, dorsal pillars (dp), funnels (f), compound plate, umbilical flap (uf), horizontal plates (hpl), second umbilical pillars and umbilical hole, Holotype, (ŞAY-1/S-2-1a).

Figure 4- Oblique section showing spherical protoconch, deuteroconch (dt), foramen between protoconch and deuteroconch (fr), dorsal pillars, vertical plate (at left of protoconch) (vpl), compound plate, horizontal plates, second ventral pillars (vnp2), umbilical hole (ŞAY-2/G-9-6s).

Figure 5- Slightly oblique horizontal section showing embryonic chambers (pr, dt, tr) foramen between tritoconch and protoconch (fr), first whorl (two layered) and ultimate whorl (single layered, microgranular), septa (s), vertical plates (with narrow foramina) (vpl), vertical plates foramina (vplfr) (ŞAY-2/S-11-2).

Figure 6- Slightly oblique horizontal section showing spherical protoconch, deuteroconch, foramen between protoconch and deuteroconch (fr), vertical plates with narrow foramina, foraminal plate (fpl) (ŞAY-3/S-6-2).

Figure 7- Almost vertical section of a young specimen showing spherical protoconch, dorsal pillars, funnels, horizontal plates (hpl), second ventral pillars (vnp2), umbilical hole (uh) (ŞAY-1/M-18-9s).

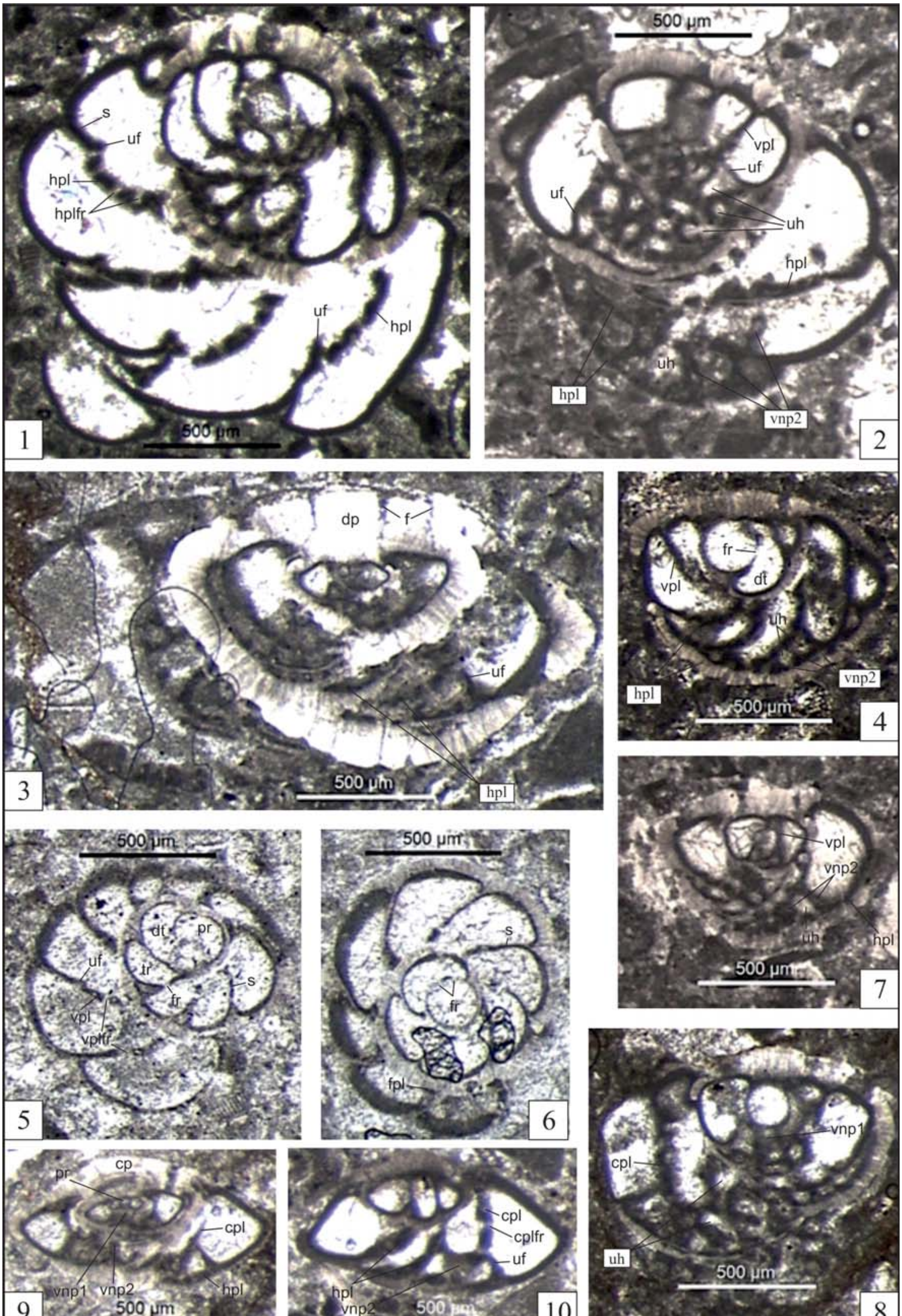
Figure 8- Vertical section showing spherical protoconch, dorsal pillar, funnels, compound plate (cpl), first ventral pillar (vnp1), umbilical flaps, horizontal plates, second ventral pillars and umbilical hole (uh) (ŞAY-3/G-17-1).

Neosistanites dageri Acar, n.gen., n.sp.

Figure 9- Vertical section showing small spherical protoconch (pr), central pillar (cp), funnels, umbilical flaps, vertical plate, compound plate (cpl), horizontal plate (hpl), first ventral pillar (vnp1), second ventral pillar (vnp2) and umbilical hole (ŞAY-1/S-2-1b).

Figure 10- Subvertical section showing central pillar, septum, compound plate (cpl), umbilical flaps (uf), horizontal plates (hpl), second ventral pillars and umbilical hole (ŞAY-5/M-6-1s).

PLATE - IV



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5
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vnp1
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cpl
cplfr
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hpl
vnp2
500 µm

PLATE - V

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1-3,7-11; microspheric specimens 5,6,12)

Neosistanites guvenci Acar, n.gen., n.sp.

Figure 1- Vertical section showing protoconch, dorsal pillars, large funnels, compound plate (cpl), umbilical flaps (uf), horizontal plates, second ventral pillars (vnp2) and umbilical hole (uh) (ŞAY-1/G-7-3s).

Figure 2- Poorly preserved vertical section showing large spherical protoconch, foramen of protoconch (fr), first ventral pillar (vnp1), second ventral pillar (vnp2), compound plate (cpl), horizontal plate (hpl) and umbilical hole (uh) (ŞAY-2/S-3-4).

Figure 3- Oblique section showing spherical protoconch, dorsal pillars, funnels, horizontal plates with small foramina (hpl), umbilical flaps (uf), first ventral pillars (vnp1) and second ventral pillars (short) (ŞAY-1/S-1-2b).

Figure 4- Subvertical section showing dorsal pillars, funnels, compound plate (cpl), umbilical flaps, horizontal plate (hpl), second ventral pillars and umbilical hole (uh) (ŞAY-1/M-18-10s).

Neosistanites dageri Acar, n.gen., n.sp.

Figure 5,6- Vertical and subvertical sections showing protoconch (pr), very thick central pillars (cp), compound plates (cpl), umbilical flaps (uf), horizontal plates, first ventral pillar (vnp1), second ventral pillars (vnp2) and umbilical hole (uh), Holotype, (ŞAY-1/S-2-2) and (ŞAY-1/S-1) respectively.

Figure 7- Oblique horizontal section showing spherical protoconch (pr), deuteroconch (dt), inclined imperforate septa, intercameral foramina (if) and foraminal plate (fpl) (ŞAY-1/S-3-1).

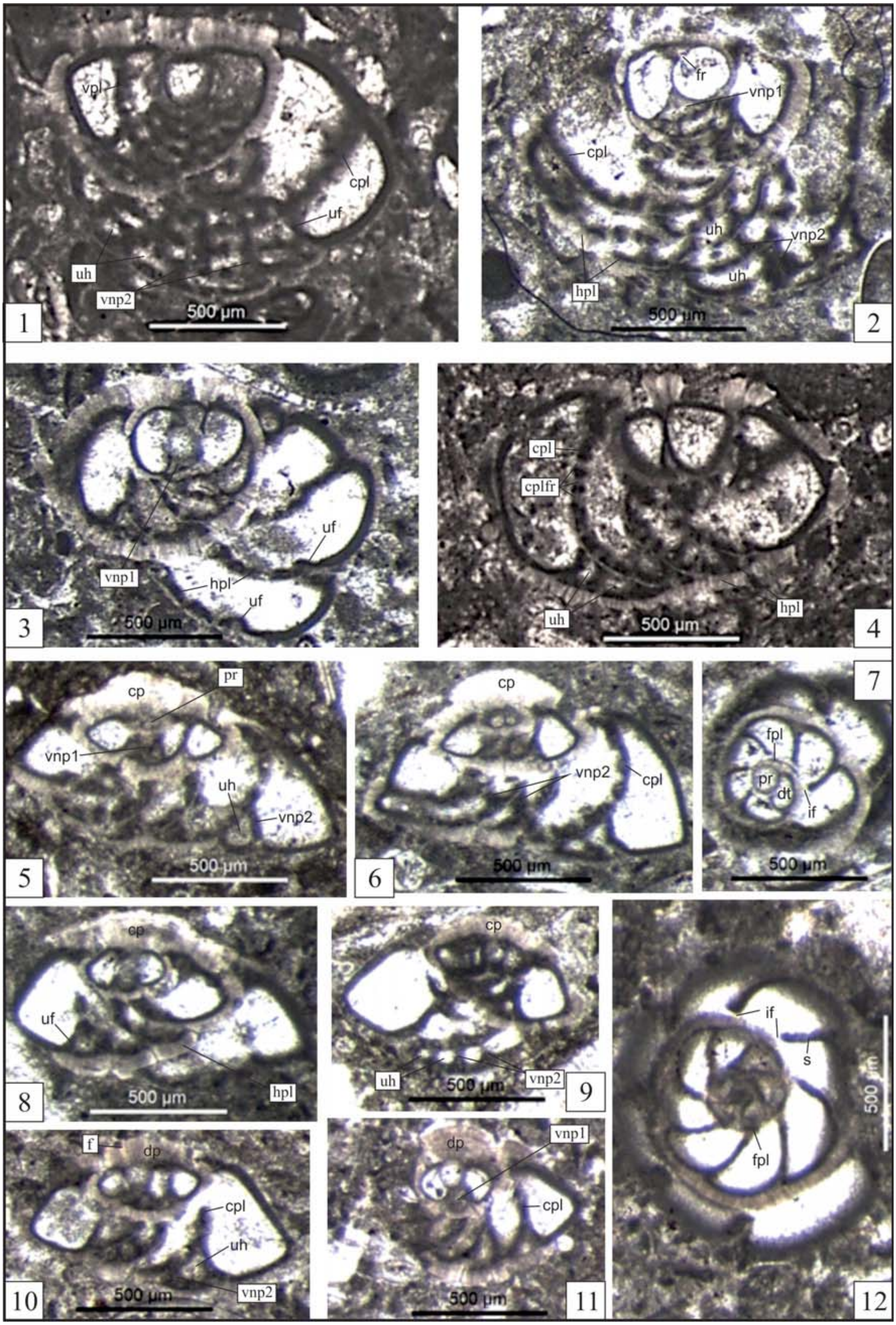
Figure 8- Almost vertical section showing very thick central pillar (cp), narrow funnels, umbilical flaps (uf), horizontal plates (hpl), second ventral pillars and umbilical hole (ŞAY-2/G-11-2s).

Figure 9,10- Vertical sections showing spherical protoconchs, central pillar (cp), dorsal pillars (dp), narrow funnels, sparitised compound plates (cpl), umbilical flaps, horizontal plates, second ventral plates (vnp2), umbilical hole (uh); (ŞAY-1/S-2-3) and (ŞAY-3/G-14-2s) respectively.

Figure 11- Broken vertical section showing spherical protoconch, very thick dorsal pillar (dp), funnel, compound plate (cpl), umbilical flap, horizontal plate and second ventral pillar (vnp2) (ŞAY-5/Ml-10-2s).

Figure 12- Oblique, almost horizontal section showing septa (s), intercameral foramina (if), foraminal plates (ŞAY-1/M-1-2s).

PLATE - V


vpl
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fr
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cp
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vnp2
9
f
dp
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uh
500 µm
vnp2
10
dp
vnp1
cpl
500 µm
11
if
s
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fpl
12

PLATE - V I

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 3-6,9; microspheric specimens 7,8,10; scale bars: 500µm and 2mm)

Neosistanites catali Acar, n.gen., n.sp.

Figure 1- Subvertical section showing dorsal pillars (dp) and funnels (f), compound plate (cpl), umbilical flaps (uf), horizontal plate (hpl), second ventral pillar (vnp2) and umbilical hole (uh), Holotype, (ŞAY-5/L-2-3).

Figure 2- Oblique section showing very large central pillar (cp) and funnel, imperforate septa (s), horizontal plates (hpl), umbilical flaps (uf) and second ventral pillars (at the center) (ŞAY-5/L-5-3).

Figure 3- Vertical section of a broken specimen showing spherical protoconch (pr), large central pillar (cp), first ventral pillar (vnp1), vertical plates (vpl), imperforate compound plate?, umbilical flap (uf), horizontal plates (vnp2), second ventral pillars and large umbilical hole (uh) (ŞAY-4/L-1-1).

Neosistanites armagani Acar, n.gen., n.sp.

Figure 4- Vertical section showing spherical protoconch, large dorsal pillars (dp), large funnels (f), umbilical flaps (uf), horizontal plates (hpl), second ventral pillars (vnp2) and umbilical hole (uh), Holotype, (ŞAY-5/L-17-2A).

Figure 5- Vertical section of a broken specimen showing spherical protoconch (pr), deuteroconch (dt), dorsal pillar, funnels, umbilical flaps (uf), vertical plates (vpl), compound plate, horizontal plates, thick second ventral pillars (vnp2) and large umbilical hole (uh) (ŞAY-5/L-2-4).

Figure 6- Oblique section showing spherical protoconch (pr), deuteroconch (dt), septa (s) and intercameral foramina (if) (ŞAY-5/Rt-2-3).

Neosistanites inali Acar, n.gen., n.sp.

Figure 7- Oblique horizontal section showing spherical protoconch (pr), dorsal pillars (dp), funnel, imperforate septa, intercameral foramina (if) and foraminal plate (fpl) (ŞAY-2/G-11-1S).

Figure 8- Vertical section showing small spherical protoconch (pr), large central pillar (cp), horizontal plates (hpl), umbilical flaps, second ventral pillars (vnp2) and large umbilical hole, Holotype, (ŞAY-5/L-17-4).

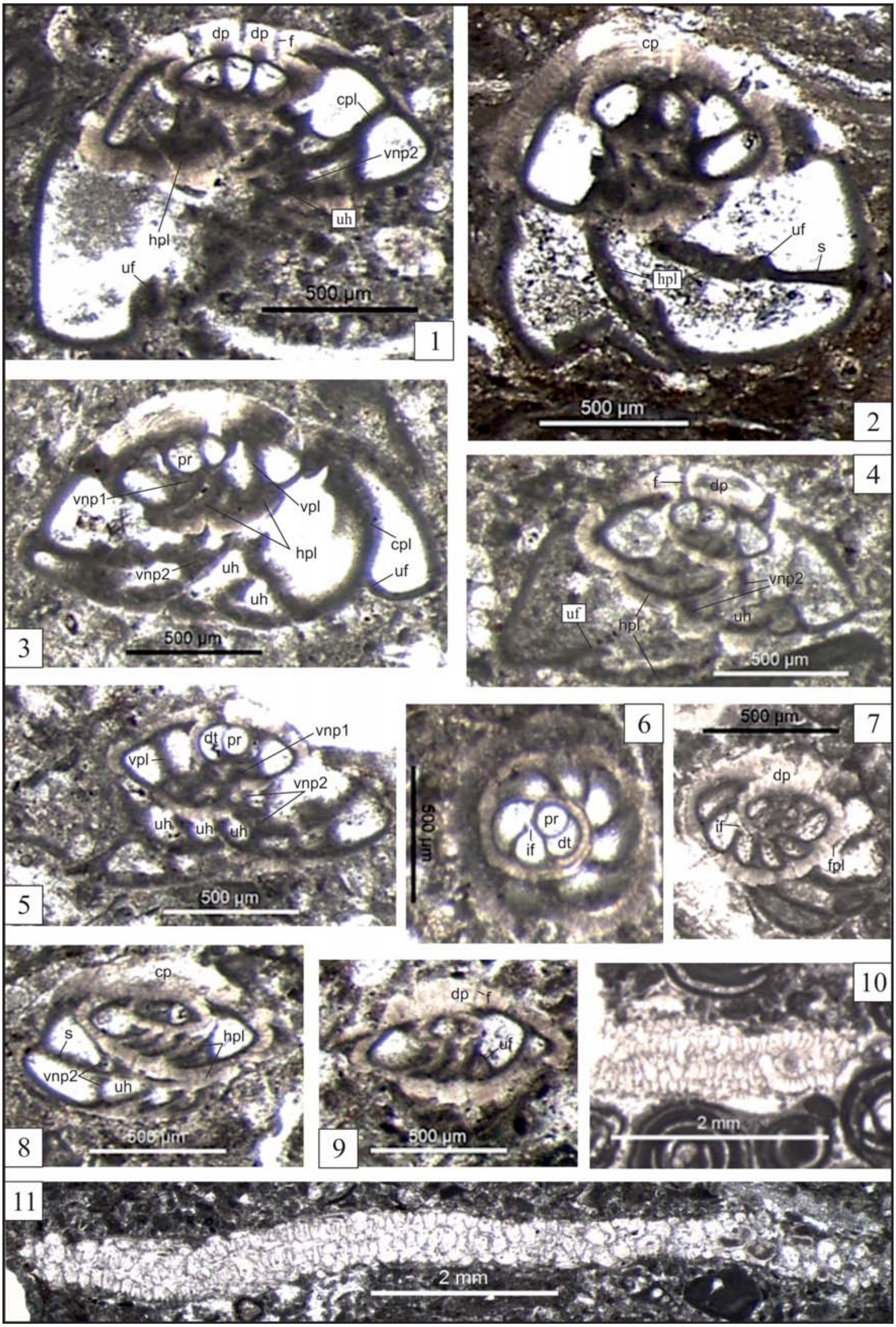
Figure 9- Subertical section of a broken specimen showing spherical protoconch (pr), large dorsal pillar (dp), funnel, umbilical flaps (uf), horizontal plates, second ventral pillars and umbilical hole (ŞAY-4/M-2-1S).

Bolkarina aksarayi Sirel, 1981,

Figure 10- Oblique section of a broken specimen showing spiral-like or rotaliid coiling at the center, bilateral pillars and interpillar passages (ŞAY-1 /B-1-1).

Figure 11- Subaxial section showing bilateral pillars, interpillar passages and irregular equatorial chambers (at right) (ŞAY-1/B-3-1).

PLATE - VI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2 mm
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PLATE - VII

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1,3,4,8-10,12; microspheric specimen 5)

Parahaymanella hakyemezae Acar, n.gen., n.sp.

Figure 1,2- Broken, longitudinally equatorial or subequatorial sections showing spherical protoconch (pr), triloculine chambers, spiral chambers, uniserial irregular chambers, septum (s) and intercameral foramina (if), Holotype; (ŞAY-4/H-1-2) and (ŞAY-1/G-5-1) respectively.

Figure 3,4- Slightly oblique equatorial sections showing milioline and spiral chambers and intercameral foramen (if); (ŞAY-1/G-3-1) and (ŞAY-2/G-11-3) respectively.

Figure 5- Oblique equatorial section showing protoconch, milioline chambers and spiral chambers (ŞAY-2/S-13-6).

Parahaymanella bozkurti Acar, n.gen., n.sp.

Figure 6,7- Longitudinal sections showing chambers of first stage; variable-sized, irregular chambers of second (uniserial) stage, and intercameral foramina (if); (ŞAY-2/N-2-4) and (ŞAY-2/K-7-1) respectively.

Figure 8- Slightly oblique longitudinally equatorial section showing large spherical protoconch (pr), chambers of first stage (triloculine and regular-spiral), variable-sized and irregularly arranged chambers of uniserial (second) stage, intercameral foramina (if), Holotype, (ŞAY-4/M-3-2).

Parahaymanella alanae Acar, n.gen., n.sp.

Figure 9- Longitudinally equatorial sections showing very large spherical protoconch (pr), triloculine and regular-spiral chambers of first stage, and regularly arranged (uniserial) chambers second stage (ŞAY-2/S-9-1).

Figure 10- Longitudinal sections showing spherical protoconch (pr), evolute chambers of first stage; regularly arranged, equally spaced and equidimensional chambers of second (uniserial) stage, Holotype, (ŞAY-1/M-1-2).

Figure 11,12- Longitudinal sections showing regularly arranged chambers of second (uniserial) stage, septum (s) and intercameral foramina (if); (ŞAY-1/K-3-1A) and (ŞAY-3/P-5-2Nh) respectively.

Biloculinites* cf. *paleocenica Rahaghi, 1983

Figure 13- Oblique, almost axial section showing short-vertical particles at the bottom (ŞAY-1/P-9-3).

Pseudohottingerina burdurensis Acar, n.gen., n.sp.

Figure 14-19- Tangential sections showing thick and radial septal filaments on the test (sfl) (without subepidermal partitions), thick septa (s), intercameral foramina (if), counter septum (cs) and single aperture (a), (ŞAY-1/G-6-2); (ŞAY-1/B-3-3), (ŞAY-1/G-5-1), (ŞAY-2/G-12-1), (ŞAY-2/G-9-7) and (ŞAY-2/G-11-1) respectively.

PLATE - VII

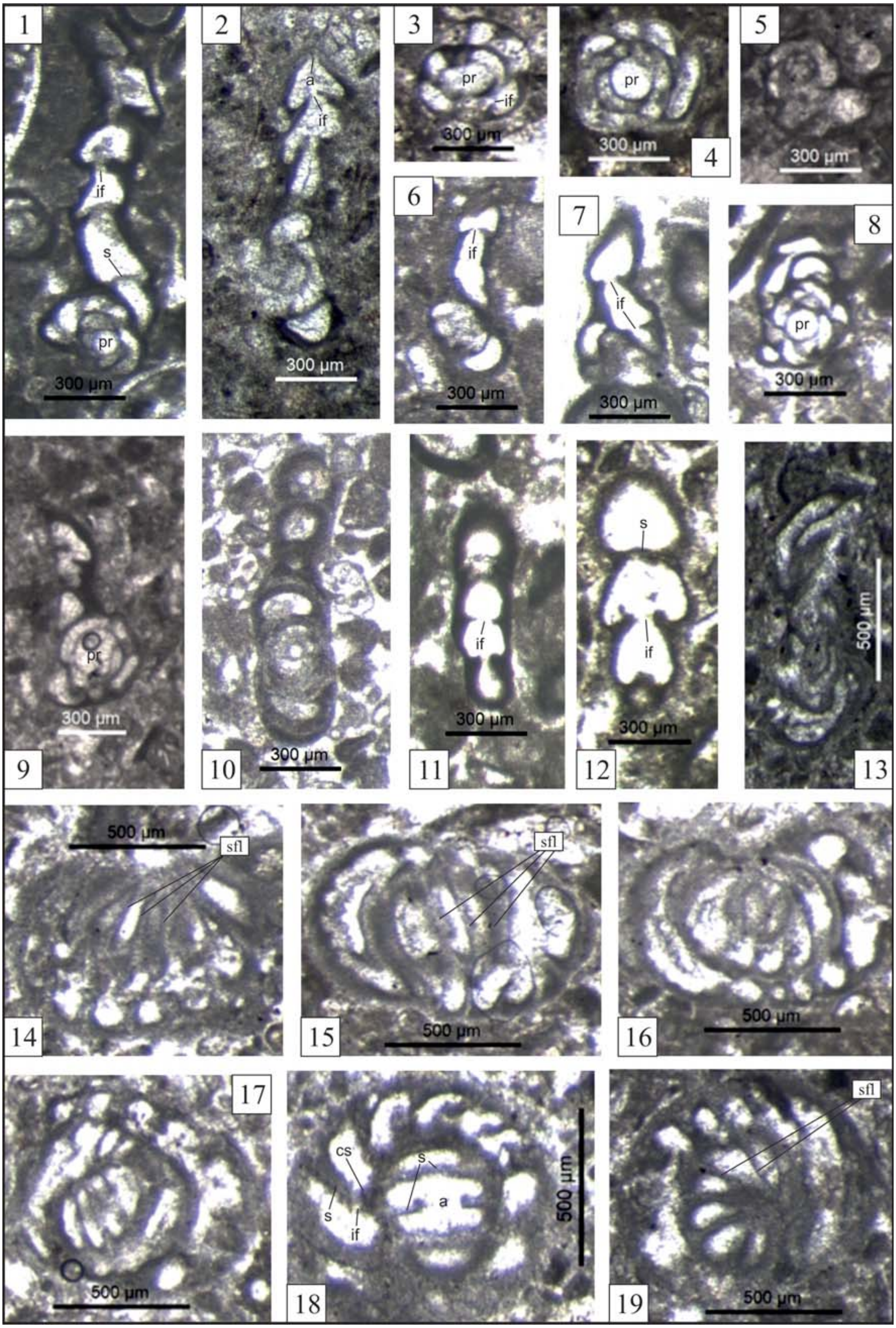
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PLATE - VIII

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1-9,12; microspheric specimens 10,14)

Pseudohottingerina burdurensis Acar, n.gen., n.sp.

Figure 1- Oblique equatorial section showing spherical protoconch, triloculine chambers, undivided spiral chambers; thick, inclined and curved septa (s), counter septa (cs), intercameral foramina (if), curved lip structure (lp), penultimate flaring whorls (fw) and undivided flaring chambers (fch), Holotype, (ŞAY-1/G-8-5).

Figure 2- Almost equatorial section showing triloculine chambers, undivided spiral chambers, thick and curved septa, counter septa (cs), intercameral foramina (if), curved lip structure (lp) (ŞAY-3/G-13-2).

Figure 3- Almost equatorial sparitised section showing undivided spiral chambers, septa, counter septa (cs), intercameral foramina, curved lip structure (lp), undivided flaring chambers (fch), septulum? (sl) and chamberlets? (chl) (ŞAY-1/G-4-1).

Figure 4- Slightly oblique equatorial sparitised section showing spherical protoconch, cryptotriloculine chambers, undivided spiral chambers, septa, counter septa (cs), intercameral foramina (if), curved lip structure (ŞAY-1/G-2-1)

Pseudohottingerina yarisliensis Acar, n.gen., n.sp.,

Figure 5-9- Slightly oblique subequatorial sparitised sections showing spherical protoconch, slightly curved septa, undivided spiral chambers, counter septa (cs), intercameral foramina and curved lip structure; (ŞAY-1/G-4-2), (ŞAY-1/N-5-4), (ŞAY-2/G-10-1) and (8) Holotype (ŞAY-3/G-17-4), (ŞAY-3/I-18-3B) respectively.

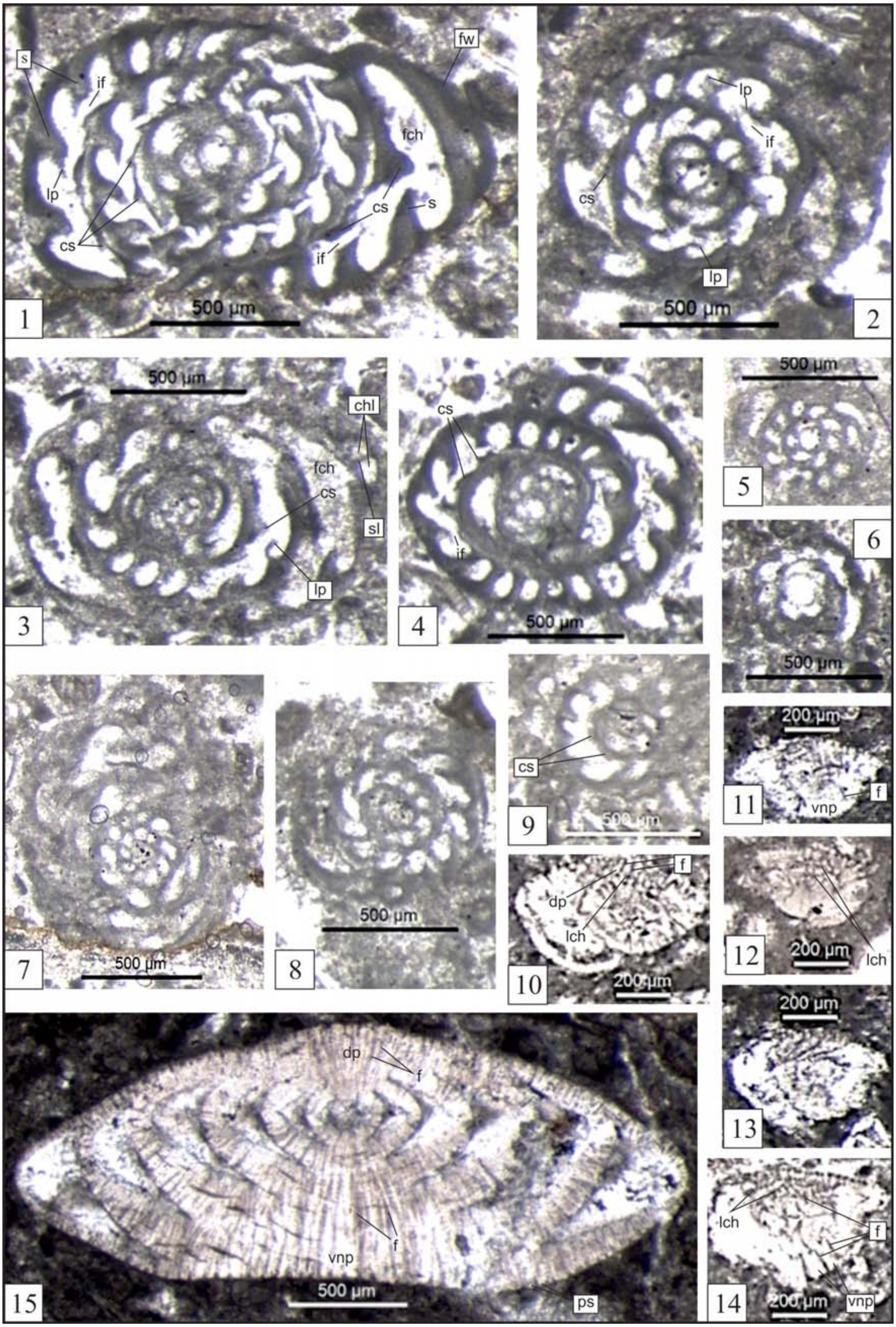
Sirtina paleocenica Acar, n.sp.

Figure 10-14- Vertical or subvertical sections showing thin dorsal pillars (dp), funnels (f), very narow lateral chambers (lch) and large ventral pillars (vnp); (ŞAY-3/I-22-1Sr),(ŞAY-2/Sr-2-4), (ŞAY-2/K-10-1Sr) (ŞAY-3/G-17-6), (ŞAY-3/M-9-1Sr) respectively.

Laffitteina anatoliensis Acar, n.sp.

Figure 15- Vertical section showing spherical protoconch, dorsal pillars (dp), funnels (f) and ventral pillars (vnp), Holotype, (ŞAY-5/L-14-1).

PLATE - VIII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ps
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vnp
200 µm
14

PLATE - IX

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1-7, 11; microspheric specimens 8-10)

Laffitteina anatoliensis Acar, n.sp.

Figure 1-3- Almost vertical sections showing dorsal pillars (dp), narrow funnels (f) and ventral pillars (vnp); (ŞAY-5/L-17-1A), (ŞAY-5/L-16-1), (ŞAY-5/L-17-1B) respectively.

Figure 4- Slightly oblique horizontal section showing embryonic chambers (protoconch and deuteroconch), regular spiral coiling and rectangular chambers, straight or slightly inclined septa, umbilical flaps (uf), intraseptal canal (isc), spiral canal (spc), (ŞAY-5/M-3-1L).

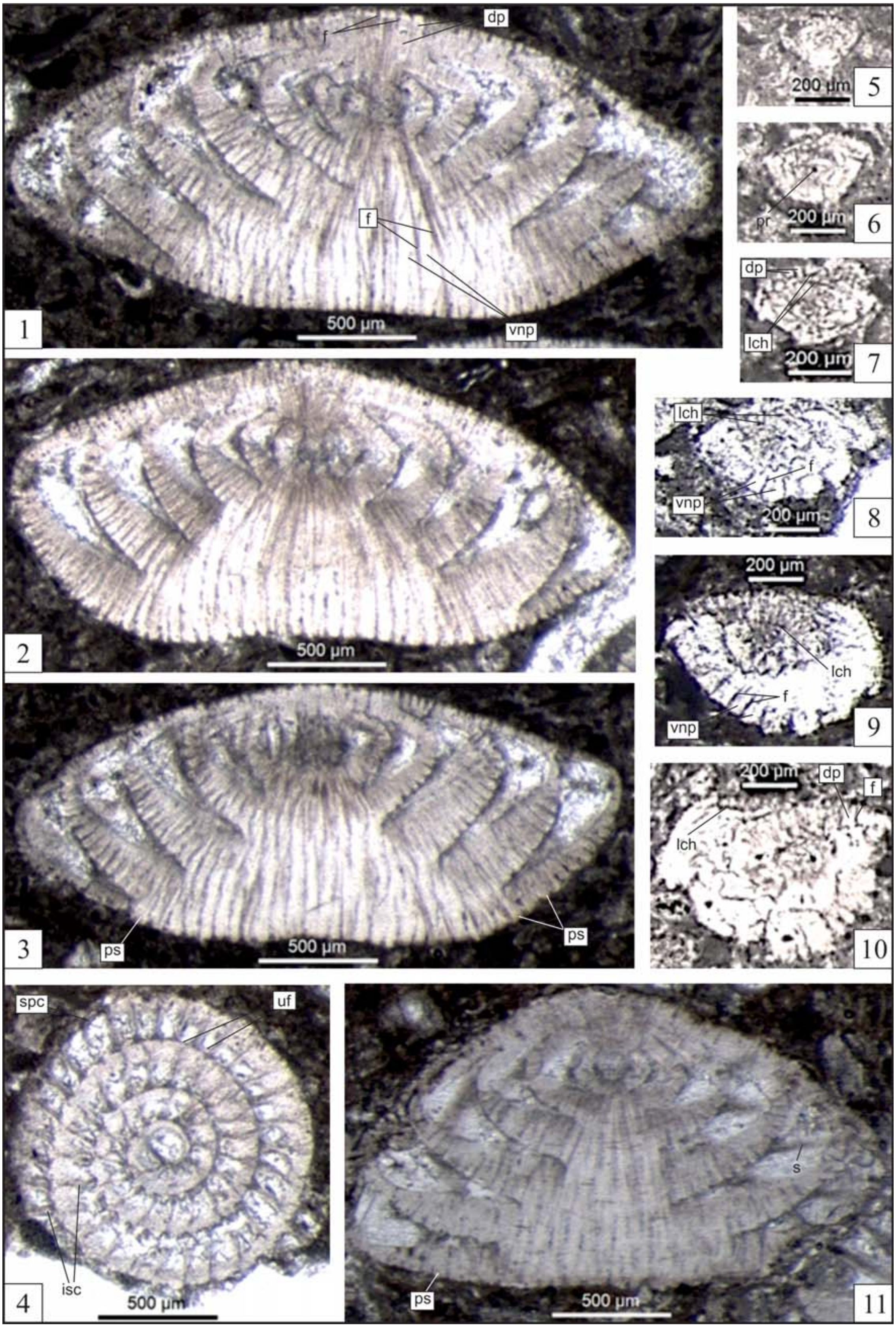
Sirtina paleocenica Acar, n.sp.

Figure 5-10- Vertical or subvertical sections showing protoconch (pr), thin/weak dorsal pillars (dp), narrow funnels (f), lateral dorsal chambers (lch), ventral pillars (vnp) and pustules; (ŞAY-5/K-9-12Sr), (ŞAY-2/S-9-3Sr), (ŞAY- 2/He-2-3Sr), (ŞAY-2/S-4-2Sr); 9 Holotype (ŞAY-2/Sr-2-3A), (ŞAY-1/B-2-Sr) respectively.

Laffitteina thraciaensis Acar, n.sp.

Figure 11- Slightly oblique vertical section showing spherical protoconch, septa (s), dorsal pillars, ventral pillars, funnels and pustules (ps), Holotype (ŞAY-5/L-6-1).

PLATE - IX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11

PLATE - X

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1-4,9,10; microspheric specimens 7,8?)

Laffitteina thraciaensis Acar, n.sp.

Figure 1-3- Vertical, slightly oblique vertical and subvertical sections showing spherical protoconch, septa (s), dorsal pillars, funnels (f), ventral pillars (vnp); (ŞAY-5/G-14-1B), (ŞAY-5/L-15-1L), (ŞAY-5/L-13-1) respectively.

Laffitteina erki (Sirel, 1969)

Figure 4,5- Vertical and slightly oblique subvertical sections showing spherical protoconch, dorsal pillars, funnels, ventral pillars and marginal pustules (slightly curved) (ps); (ŞAY-5/L-13-1), (ŞAY-5 /L-18-1A1) respectively.

Bolkarina aksarayi Sirel, 1981

Figure 6- Oblique subaxial section showing bilateral pillars and interpillar passages (ŞAY-5/B-4-3).

Figure 10- Oblique equatorial section of a broken specimen showing protoconch (pr) and rectangular chambers (ŞAY-5/I-21-1).

Sirtina paleocenica Acar, n.sp.

Figure 7- Oblique section showing small spherical protoconch (pr), thin dorsal pillars, narrow funnels, very narrow lateral chambers, septa, chambers, ventral pillars (vnp) and pustules (ps) (at left) (ŞAY-5/I-16-Sr).

Figure 8- Almost horizontal section showing loosely coiling, inclined septa, rectangular chambers (ŞAY-5/P-8-7Sr).

***Popovia*? sp.**

Figure 9- Centered longitudinal section showing protoconch (pr) and following planispiral chambers, and uniserial chambers (ŞAY-5/S-16-1).

PLATE - X

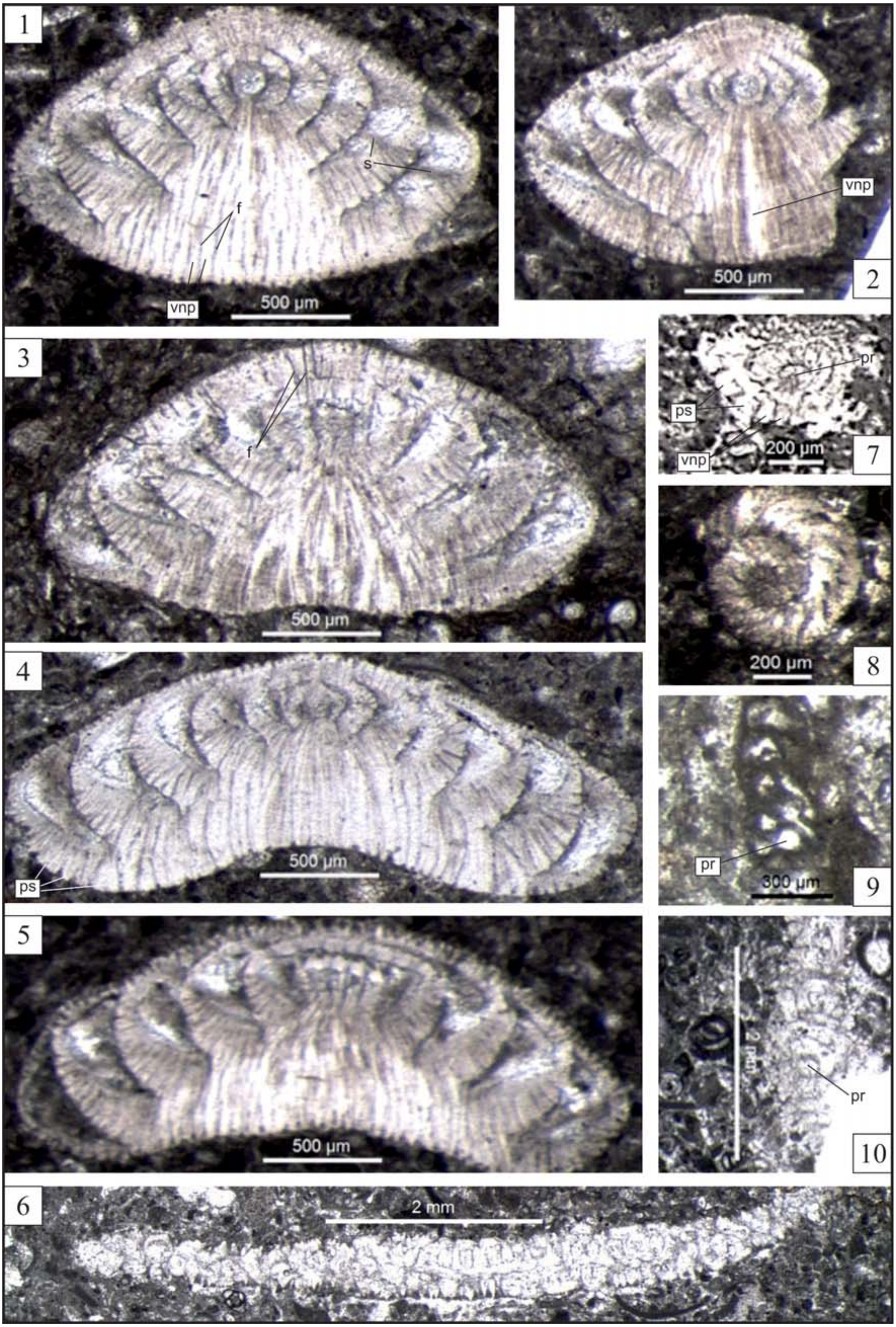
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PLATE - XI

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1-5,7,9; microspheric specimens 8,10)

Laffitteina erki (Sirel, 1969)

Figure 1- Vertical section showing spherical protoconch, weak dorsal pillars (dp), narrow funnels (f) and ventral pillars (vnp) (ŞAY 5/L-1-2).

Laffitteina mengaudi (Astre, 1923)

Figure 2-4- Vertical sections showing spherical protoconch, dorsal pillars, narrow funnels and ventral pillars; (ŞAY 5/S-3-2), (ŞAY-5/L-5-4), (ŞAY-1/G-1-2) respectively.

Ankaraella minima Acar, n.sp.

Figure 5-7- Vertical, subvertical and slightly eroded sections showing depressed spherical protoconch (pr), convex or flattened dorsal side, trochospirally coiled curved chambers, ribs (r), umbilical cavity, (5) Holotype; (ŞAY-1/A-1-2), (ŞAY-1/A-2-3), (ŞAY-3/P-6-2) respectively.

Figure 8,9- Vertical and almost horizontal section showing spherical protoconch (pr), trochospirally coiled milioline chambers at the center (8), intercameral foramina (if), hook-structured and convex ribs (r) and triloculine chambers (9): (ŞAY-1/G-6A), (ŞAY-1/K-4-2) respectively.

Ankaraella trochoidea Sirel, 1998

Figure 10- Almost horizontal section of a broken and eroded specimen showing quinqueloculine (at the center) and triloculine chambers, convex ribs and intercameral foramen (ŞAY-3/P-5-2).

Figure 11- Tangential or subvertical section showing trochospirally arranged chambers which are flattened in dorsal side and concave in ventral side, thick convex ribs (r), umbilical cavity (ŞAY-1/M-1-3).

Figure 12- Subvertical section showing flattened dorsal side and very large umbilical cavity (uc) (ŞAY-3/M-9-2).

PLATE - XI

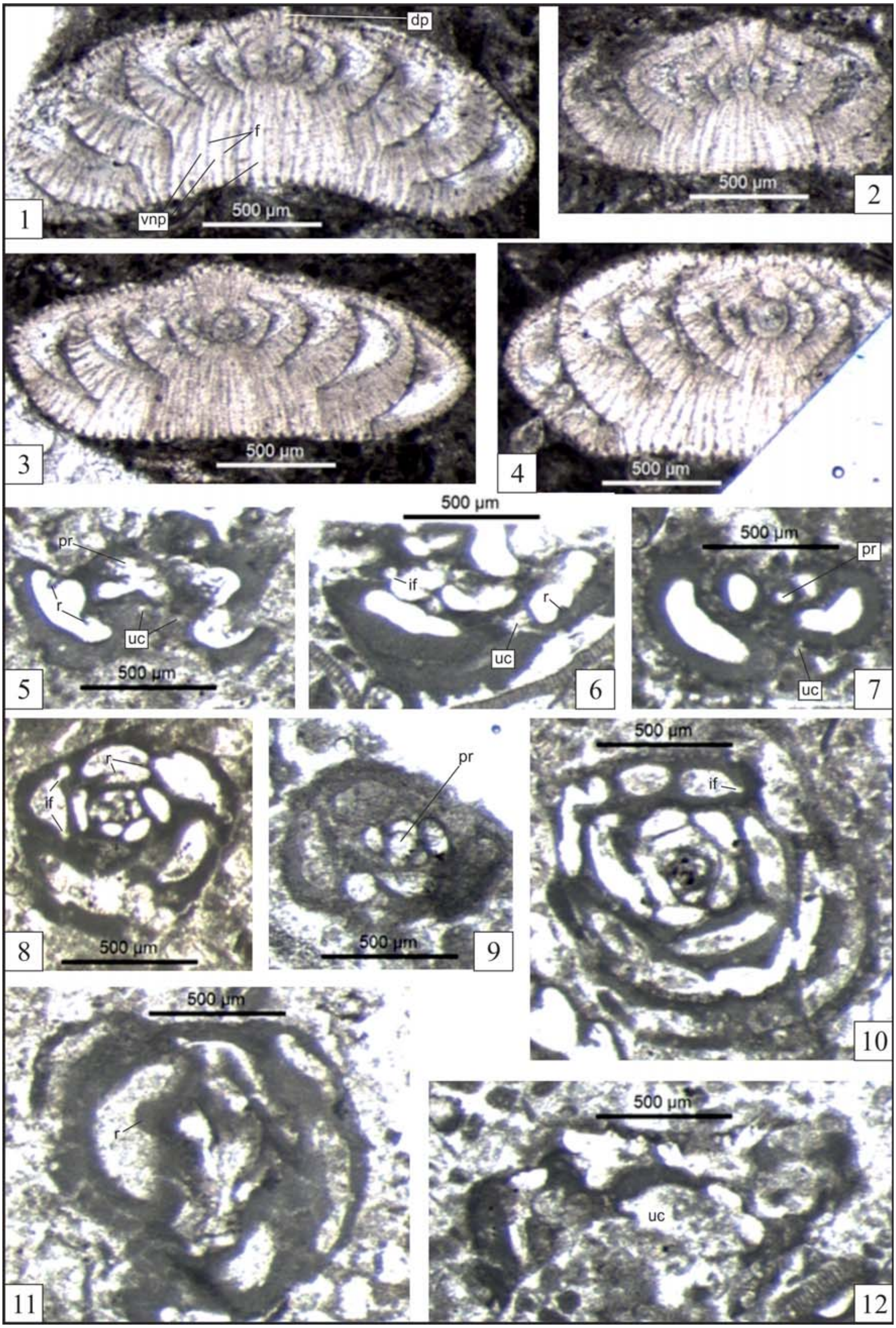
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PLATE - XII

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 3-7; microspheric specimens 1,8,9)

Globoflarina*? *sphaeroidea (Fleury, 1982)

Figure 1- Poorly preserved almost axial section showing septa (s), septulum (sl), chamberlet (chl), axis of coiling and flaring whorls (asymmetrical) (fw) (ŞAY-1/G-5-2A).

Figure 2- Poorly preserved, broken, slightly oblique tangential section showing flaring whorls (fw), septula (sl), chamberlets (chl) and preseptal passage (prp) (ŞAY-1/G-8-1).

Figure 3- Almost equatorial oblique section showing depressed spiral chambers which follow protoconch, and chambers (ŞAY-5/Ml-3-1B).

Figure 4- Slightly oblique equatorial section showing the largest protoconch, foramen between protoconch and goulot (fr), depressed spiral chambers (ch), key hole aperture (kha) or main aperture, secondary or main aperture, and key hole aperture or dome-like alveol opening into secondary aperture (ŞAY-5/G-9-1).

Figure 5- Slightly oblique equatorial section showing large, rectangular protoconch, succeeding depressed spiral chambers intercameral foramen (if) (ŞAY-1/G-6-2).

Figure 6- Equatorial section showing very large protoconch, foramen between protoconch and goulot, goulot (g), depressed spiral chambers (ch) and flaring whorls (fw) (ŞAY-2/G-10-1A).

Figure 7- Equatorial section showing very large protoconch, goulot (g), septa (s)¸depressed spiral chambers (ch) and intercameral foramina (if) (ŞAY-3/G-14-1).

***Keramosphaera* sp.**

Figure 8, 9- Almost centered sections; (ŞAY-2/K-6-3), (ŞAY-2/K-5-1) respectively.

PLATE - XII

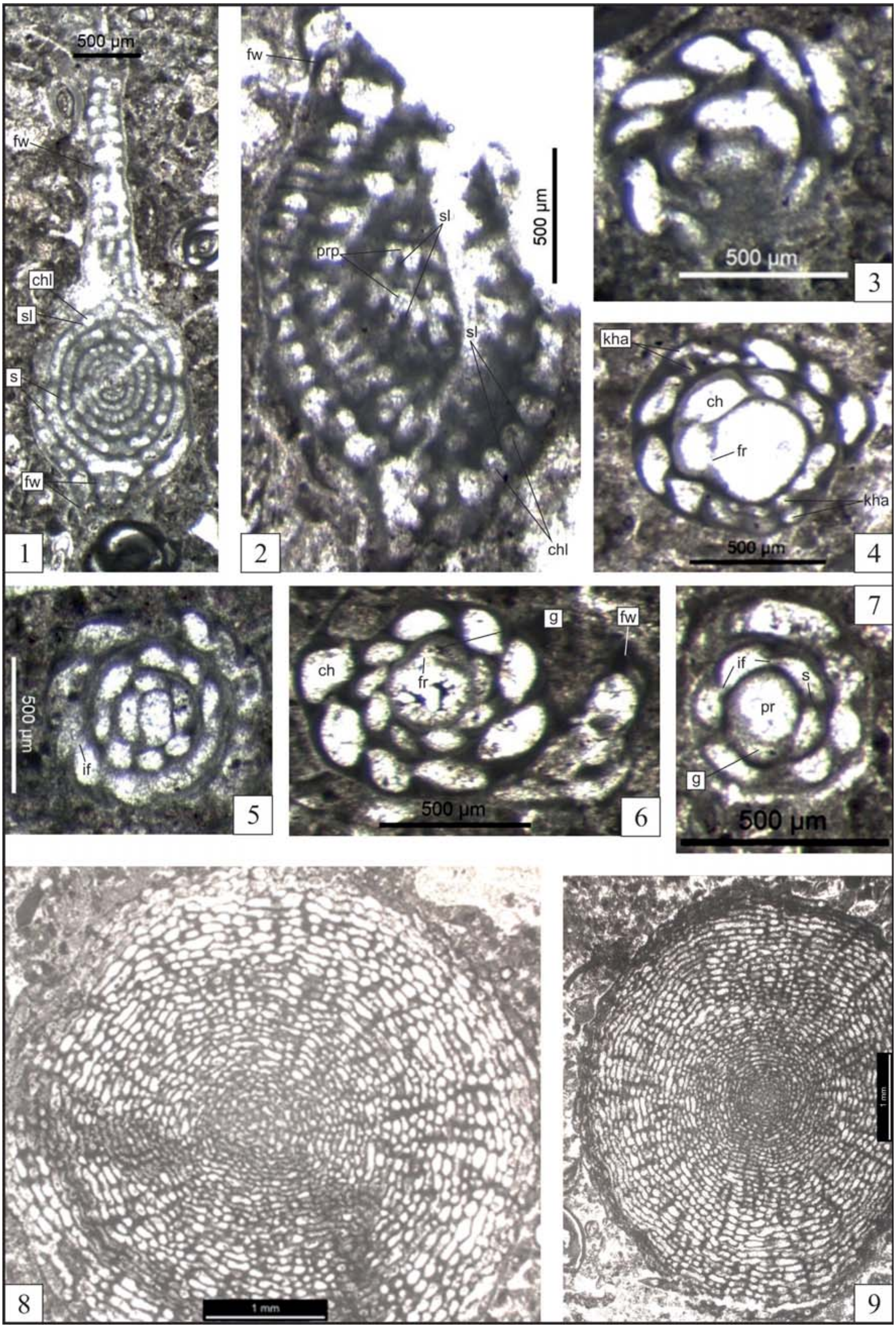
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PLATE - XIII

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 1-8, 10-15, 17?)

Miscellanea*? *globularis Rahaghi, 1978

Figure 1-4- Slightly oblique and centered axial sections showing spherical protoconch, deuteroconch, bilateral pillars (p), funnels (f) and test ornamentations; (ŞAY-1/M-12-1), (ŞAY-2/M-8-1), (ŞAY-2/G-9-5), (ŞAY-2/P-8-4M) respectively.

Figure 5-8- Slightly oblique or equatorial sections showing spherical protoconch (pr), deuteroconch (dt), septa (s), narrow intraseptal canals (isc), weak spiral canals (spc) and test ornamentations (ŞAY-2/He-2-1), (ŞAY-1/M-1-6), (ŞAY-3/M-13-2), (ŞAY-1/M-2-1) respectively.

Figure 9- Tangential section showing septa (s), one row of apertures (a) on septa and vertical sections of test ornamentations (to) (ŞAY-3/I-25-3).

Akbarina primitiva (Rahaghi, 1983)

Figure 10- Equatorial sections showing protoconch and deuteroconch, inclined septa (s), intraseptal canal (isc) and weak spiral canal (spc) (ŞAY-4/M-3-2).

Figure 11-15- Slightly oblique or centered axial sections showing bilateral pillars (p), funnels (f), test ornamentations. 12: young specimen, and 15: slightly oblique subaxial section; (ŞAY-2/M-5-2), (ŞAY-1/M-1B), (ŞAY-5/M-4-3), (ŞAY-5/M-2-1), (ŞAY-5/L-5-4M) respectively.

Figure 16- Oblique equatorial section showing septum, intraseptal canal (isc) and spiral canal (spc) (ŞAY-5/L-17-2M).

***Kolchidina*? sp.**

Figure 17- Almost equatorial oblique section showing microgranular or fine grained agglutinated test, spiral chambers following embryonic stage, and succeeding operculinid chambers (ŞAY-1/B-2-6).

Algae gen.3 indet.

Figure 18-20- Vertical? Sections showing prayer beads-shaped or celled algal chambers (spherical or slightly oblique ovoid). 20: various type of flaring chambers/cells on periphery; (ŞAY-2/G-11-4), (ŞAY-1/G-1-3), (ŞAY-5/Al-1-1), respectively.

PLATE - XIII

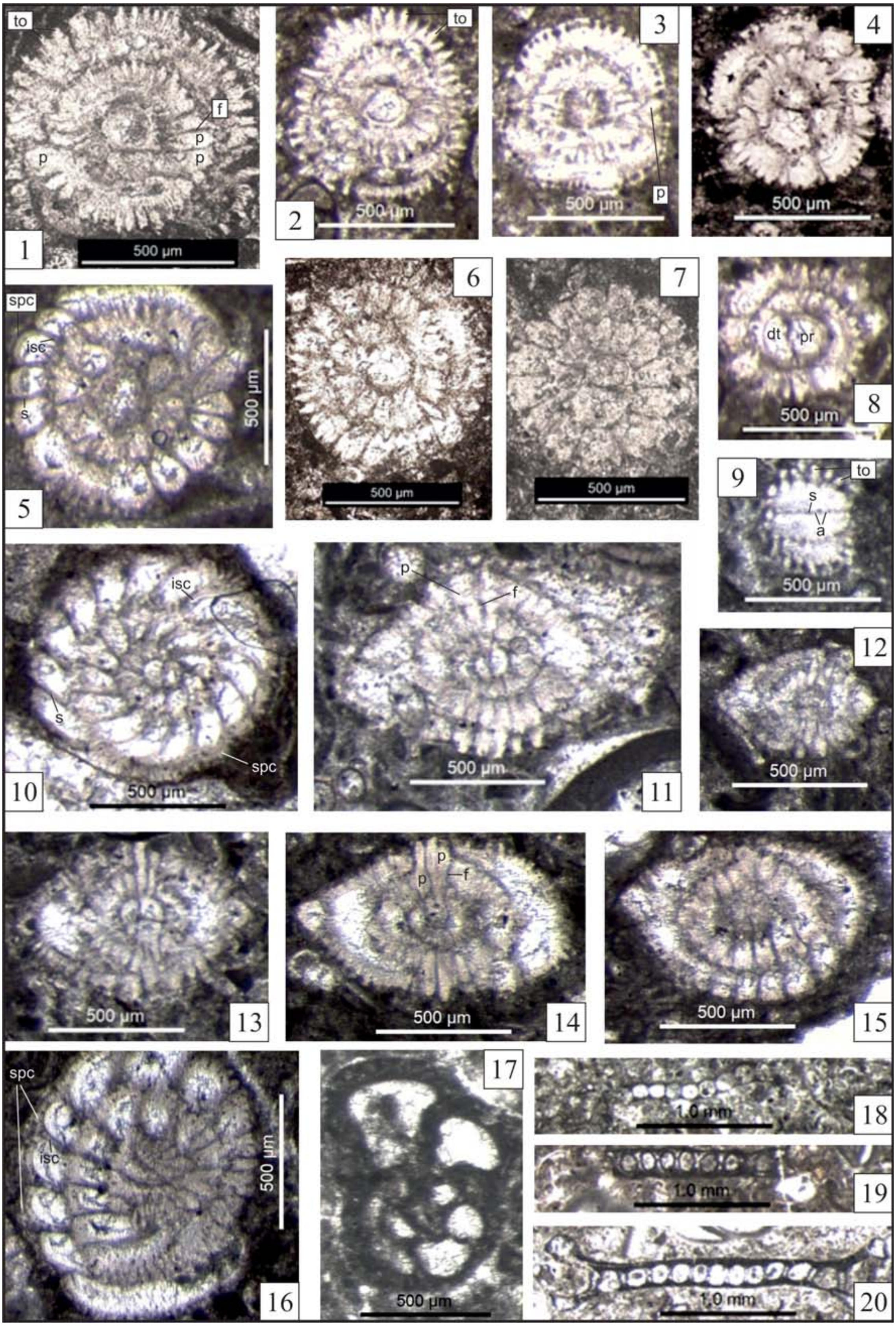
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PLATE - XIV

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 2,3,5; microspheric specimens 1,4,6,7)

Miliolid gen.1 indet.

Figure 1- Almost axial section showing ovoid embryonic stage (quinqueloculine? chambers), ribs (r), triloculine and biloculine chambers with very thick basal layer, simple tooth in the last whorl and simple trematophoric structure (trms) with weak pillar (ŞAY-3/I-20-2).

Figure 2,3- Axial section showinglarge spherical protoconch, large and long goulot (g), foramen between protoconch and goulot (fr), triloculine and biloculine chambers, ribs (r), simple tooth (t) and polar enlargement in some chambers; (ŞAY-3/B-6-1M), (ŞAY-1/M-2-4M) respectively.

Miliolid gen.2 indet.

Figure 4- Almost axial oblique section showing fusiform embryonic stage (fusiform shaped, irregular, quinqueloculine? and triloculine chambers) and ovoid biloculine chambers with thick basal layer, short ribs (r) and single teeth (t) (ŞAY-3/I-34-Sg1).

Figure 5- Broken axial? Section showing fusiform shaped protoconch with ragged edge; triloculine chambers with irregular thick basal layer (bl), teeth (t) and ribs (r) (ŞAY-3/I-20-4M).

Miliolid gen.3 indet.

Figure 6- Almost equatorial section showing spherical quinqueloculine chambers of embryonic stage, triloculine chambers, bifurcating biloculine chambers (bfs) and cyclic chambers (ŞAY-2/I-6).

Figure 7- Almost axial slightly oblique section showing spherical quinqueloculine chambers of embryonic stage, triloculine chambers, bifurcating biloculine chambers (bfs) and cyclic chambers (ŞAY-2/I-6).

PLATE - XIV

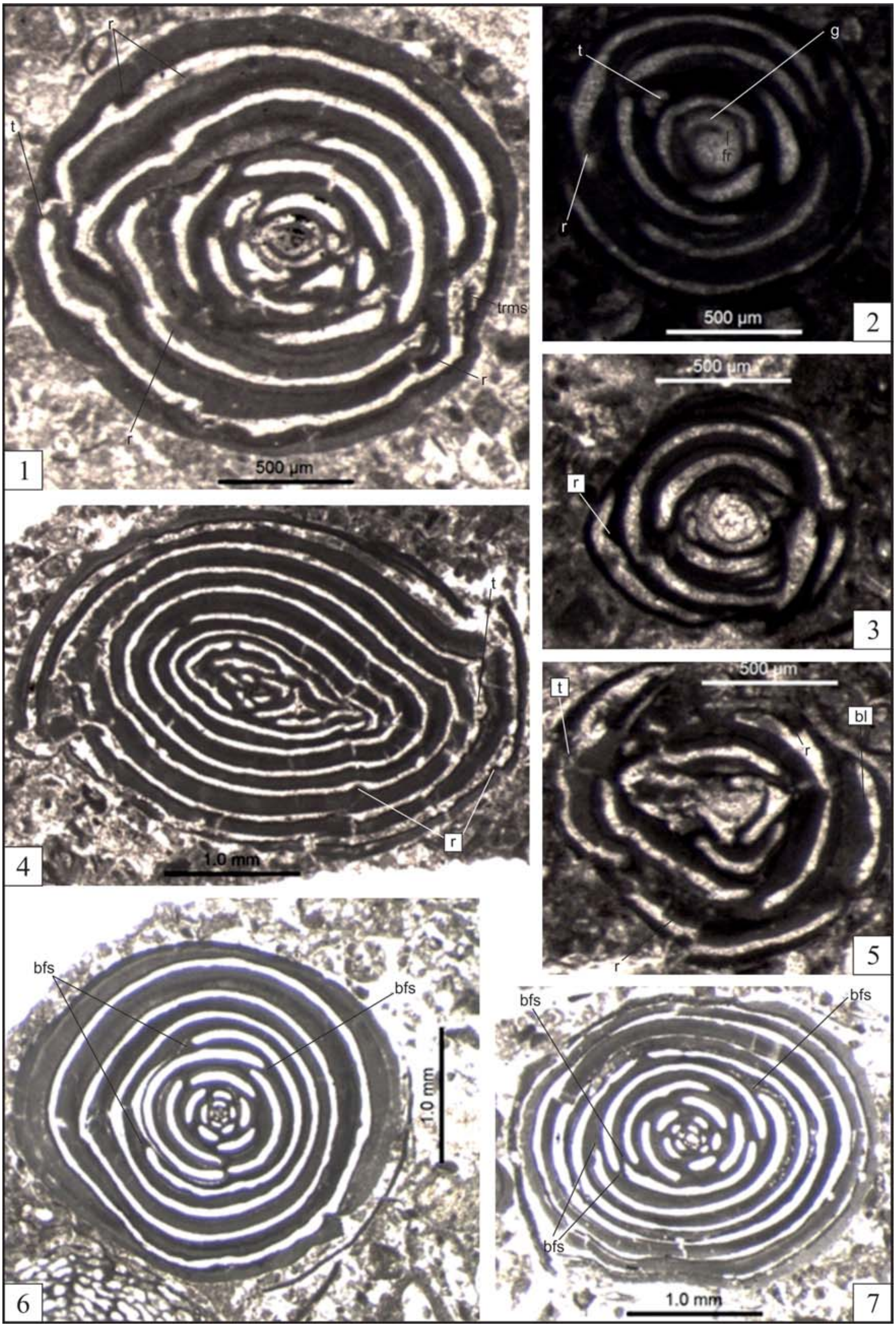
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PLATE - XV

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 3,4,6,9-13, 15; microspheric specimens 1,5?,7, 14?)

Miliolid gen.4 indet. sp.1

Figure 1- Almost axial oblique broken section showing quinqueloculine? chambers, triloculine truncate chambers (tnch), transition chamber (tnch), broken chambers and irregular penultimate chamber (at left) (ŞAY-3 /I-31-4M).

Figure 2- Almost euqatorial oblique section showing truncate chambers (trch) at the center and succeeding whorls, transition chamber (tnch) and simple tooth (t) (ŞAY-1/B-2-2M).

Miliolid gen.4 indet. sp.2

Figure 3- Axial section of a lenticular form (with sharp edge) showing spherical protoconch, triloculine chambers, biloculine truncate chambers (trch) and tooth? (ŞAY-1/Pl-1-3A).

Figure 4- Oblique section showing spherical protoconch, goulot? and transition chamber (tnch) (ŞAY-1/Ms-1-2M).

Miliolid gen.4 indet. sp.3

Figure 5,6- Broken and centered axial sections showing limited chambers of embryonic stage, truncate chambers (trch), transition chamber (tnch) and simple tooth structure; (ŞAY-3/I-35-2Sg), (ŞAY-3/I-25-2Sg) respectively.

Miliolid gen.5 indet.

Figure 7- Equatorial section showing spherical chambers of embryonic stage (minute spherical protoconch, quinqueloculine and triloculine chambers), short and thick septa, spiral chambers of 1.5 cycle, simple tooth (t), intercameral foramina (if) and ultimate chamber with irregular internal structure (ŞAY-3/N-3-1).

Figure 8- Non-centered oblique section showing triloculine? And irregular spiral chambers, short and thick septa, intercameral foramen (if), simple tooth (t), and aperture (a), (ŞAY-2/N-2-3).

Figure 9,10- Axial sections showing spherical protoconch, triloculine and evolute biloculine chambers, simple tooth (t), (ŞAY-2/M-11-1Q), (ŞAY-3/N-7-4A) respectively.

Figure 11- Slightly oblique equatorial section showing spherical protoconch, triloculine chambers, spiral chambers, intercameral foramen (if), simple tooth (t), (ŞAY-1/I-3-2).

***Thalmannita*? sp.**

Figure 12-15- Axial sections; (ŞAY-1/G-8-2T), (ŞAY-2/N-6-1Ra), (ŞAY-1/G-5T), (ŞAY-1/N-8-3T) respectively.

PLATE - XV

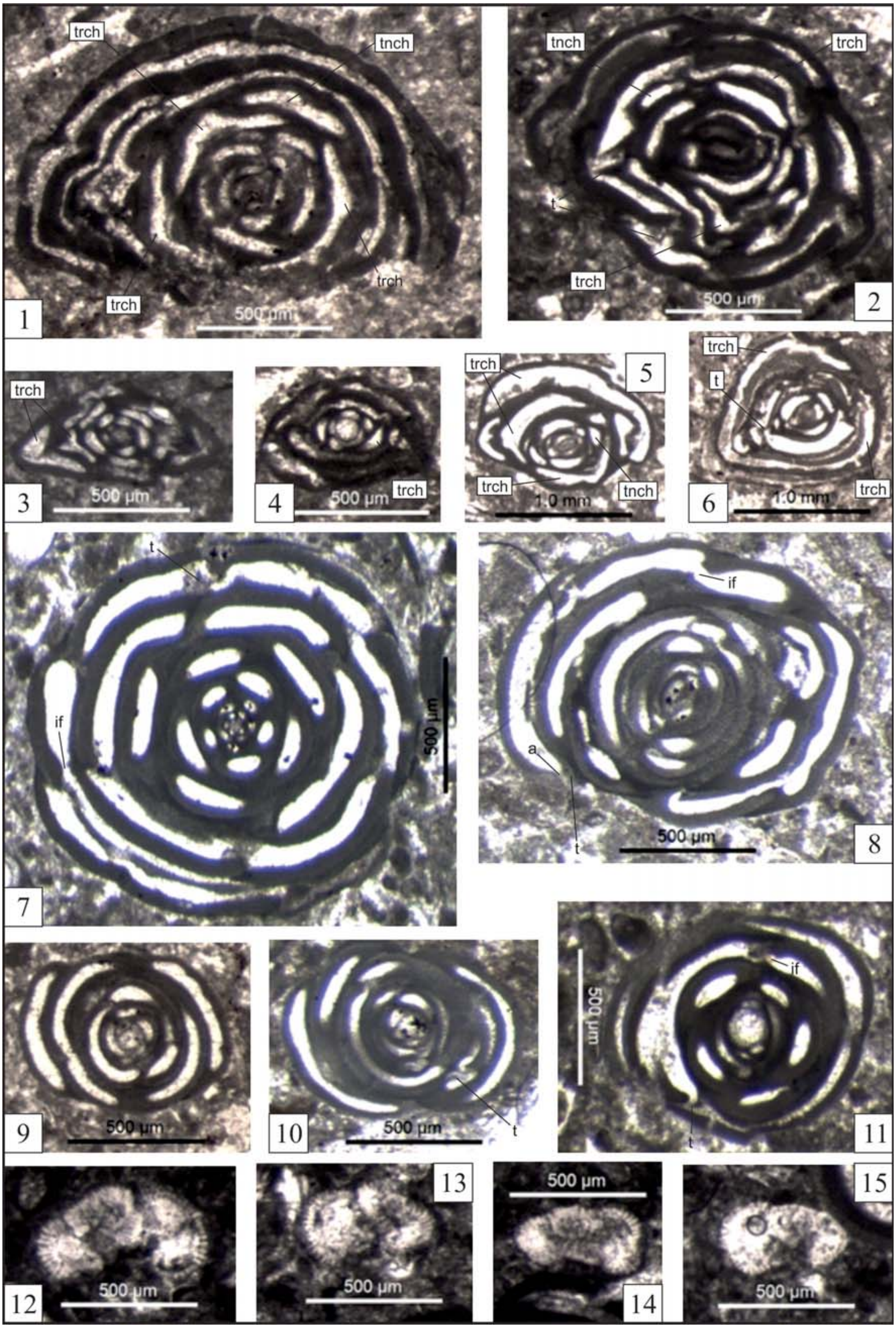
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PLATE - XVI

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 2,3,5,6,8,9; microspheric specimens 1,4,7)

Miliolid gen.6 indet.

Figure 1- Axial sections showing spherical embryonic quinqueloculine (in two planes) and triloculine (in three planes) chambers, ovoid (evolute) biloculine chambers (1.5 whorls), transition chambers (tnch), whorl sutures (ws) and thick basal layer (bl), (ŞAY-2/N-4-1).

Figure 2,3**-** Axial sections showing spherical protoconch, spherical triloculine chambers and irregularly coiled ovoid (evolute) biloculine chambers (1 – 1.5 whorls) and goulot (g), (ŞAY-1/M-2-1Ml) (ŞAY-5/Ml-5-1C) respectively.

Miliolid gen.7 indet.

Figure 4- Axial sections showing ovoid embryonic chambers (minute spherical protoconch and succeeding ovoid biloculine chambers) and succeeding irregular (quinqueloculine? and triloculine) chambers, additional chambers (adch), whorl suture (ws) and interlocular microgranular fillings? (in the bottom, on the penultimate chambers) (ŞAY-5/Ml-1-1B).

Figure 5,6- Axial sections showing spherical protoconch, irregular triloculine chambers and additional chamber (adch), (ŞAY-5/M-4-2) (ŞAY-4/M-3-2A) respectively.

Miliolid gen.7 indet. or Idalinid genus 1

Figure 7- Poorly preserved, almost axial section showing ovoid embryonic chambers (minute spherical protoconch) and following biloculine chambers and a simple tooth (t), (ŞAY-5/Ml-4-2).

Figure 8,9- Oblique axial sections showing spherical protoconch, goulot (g), biloculine chambers and simple tooth? (ŞAY-5/Ml-5-1B) (ŞAY-1/G-4-2) respectively.

PLATE - XVI

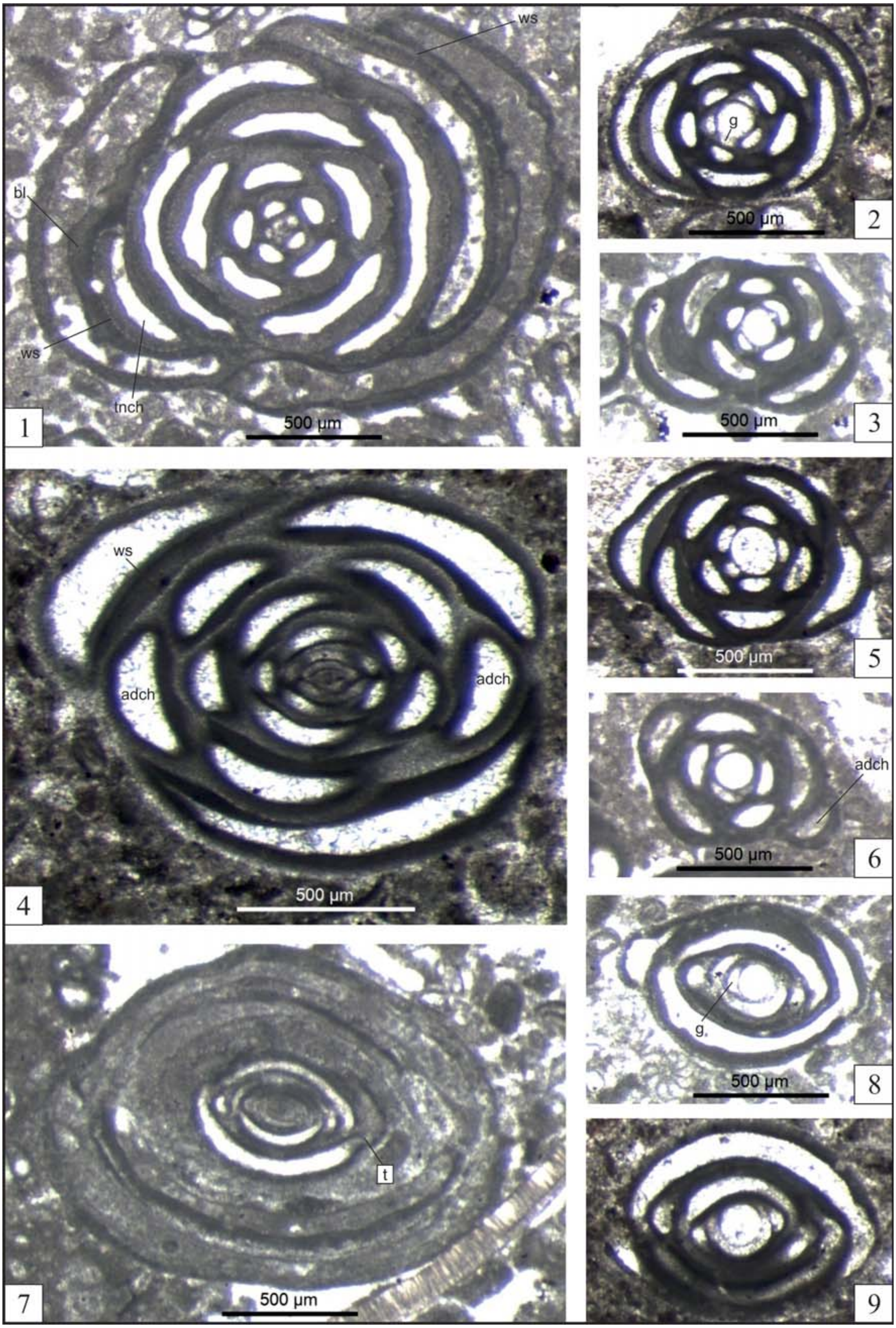
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PLATE - XVII

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 2-5,7,9-14; microspheric specimens 1,6)

Miliolid gen.9 indet.

Figure 1- Almost axial sections showing spherical quinqueloculine chambers and triloculine chambers, thick basal layer (bl), ribs (r), whorl suture (ws), transition chamber (tnch) and irregular biloculine chambers (ŞAY-5/Ml-9-1).

Figure 2- Axial sections showing large spherical protoconch, elongated goulot (g), irregular triloculine chambers and biloculine chambers, thick basal layer (bl), and a very thick rib (r) dividing the ultimate chambers (ŞAY-5/Ml-6-1).

Agglutinated gen. 1 indet.

Figure 3,4,6- Poorly preserved vertical sections showing conical agglutinated shell, inflated triserial chambers, spherical protoconch (pr), septum (s), umbilical flap (uf), umbilical plate (upl), umbilical plate foramina (uplfr) and pillar? (ŞAY-2/I-11-2Tx) (ŞAY-2/P-8-5Tx) (ŞAY-3/I26-2Tx) respectively.

***Textularia* sp.**

Figure 5- Vertical section showing small spherical protoconch and textulariid chambers (ŞAY-3/I-23-2Tx).

Agglutinated gen. 2 indet.

Figure 7,9- Slightly oblique vertical sections showing globular, agglutinated shell, depressed triserial chambers, spherical protoconch (pr), strongly depressed and large chambers, septum (s), umbilical plate (upl), umbilical plate foramina (uplfr) and pillar? (p); (ŞAY-2/G-11-2) (ŞAY-2/Sr-2-6Gf) respectively.

Figure 8- Slightly oblique horizontal sections showing triserial chambers, septum (s), chamber lümen, thick umbilical flaps (uf) and umbilical plate foramina (uplfr) (ŞAY-2/G-9-Gf).

***Heterillina* sp.**

Figure 10,11- Almost axial sections showing triloculine and biloculine chambers, (ŞAY-1/C-1-2) (ŞAY-2/He-2 3).

Miscellanid gen. 1 indet.

Figure 12,13- Axial sections showing spherical protoconch (pr), pillars (p), funnels (f), lenticular chambers preceding the last whorl, and truncate chambers of the last whorl (trch), (ŞAY-2/M-2-2) (ŞAY-1/M-1-1) respectively.

Figure 14- Slightly oblique equatorial sections showing protoconch and deuteroconch (dt), spiral canal (spc), intraseptal canal (isc), irregular planispirally coiled rectangular (with a bigger height) chambers (ŞAY-4/M-3-1).

PLATE - XVII

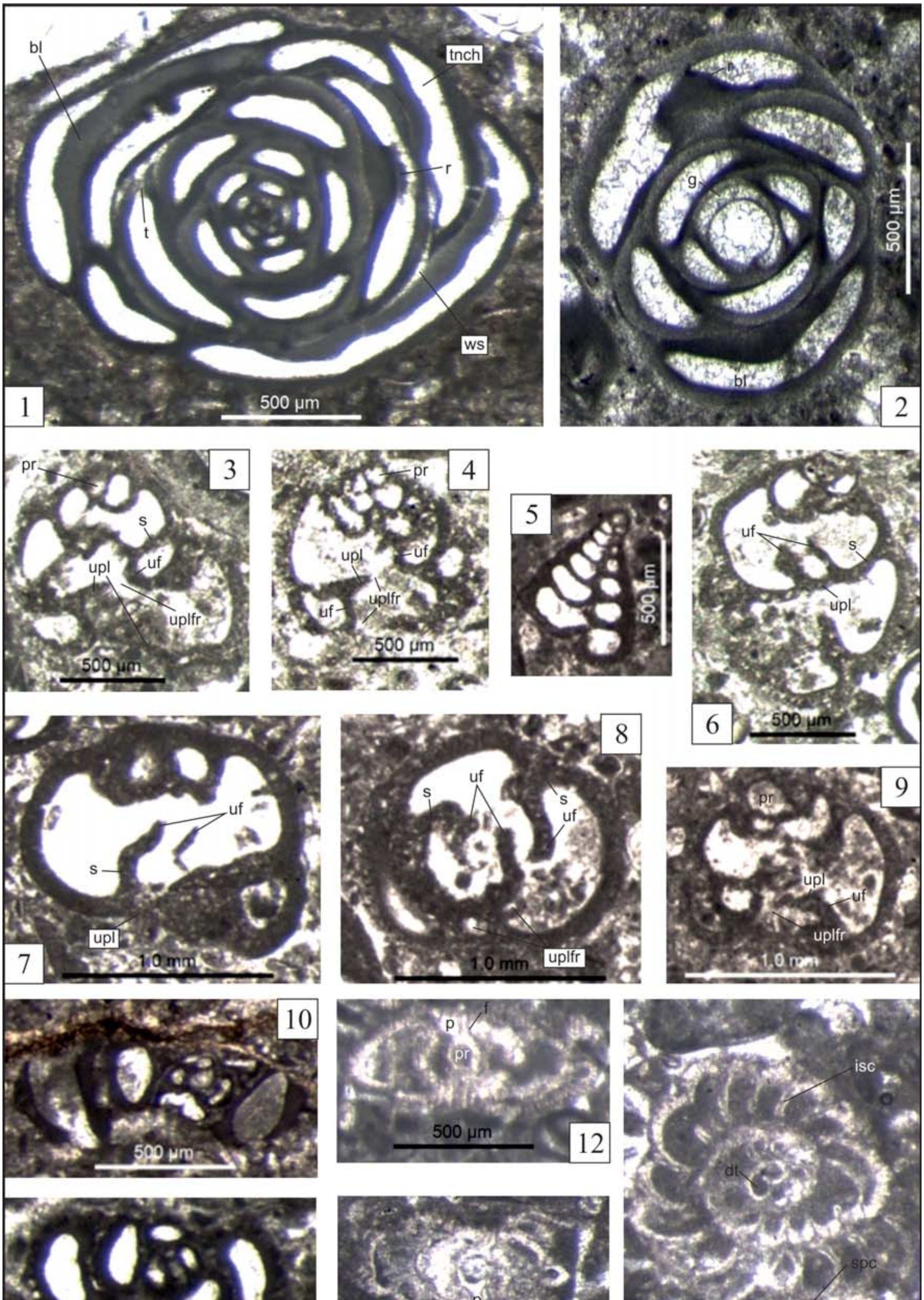
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PLATE - XVIII

(Selandian, SBZ 2, South of Lake Yarışlı, SW Burdur, W Turkey)

(megalospheric specimens 2,4-7,10,14-18,21,22,25-29; microspheric specimens 11,24)

Note that, the scale bar is 500µm for figure 13

Figure 1- ***Chrysalidina?* sp**.; Subvertical section showing a conic form (ŞAY-1/C-1- 13A).

Figure 2-4- Planulinid gen. 1 indet.: 2,3- Vertical and subvertical or axial sections (ŞAY-2/B-4-2Pl)**,** (ŞAY-2/P-8-3Pl) respectively; 4- Slightly oblique or equatorial section (ŞAY-4/M-1-1Pl)

Figure 5,6- ***Lockhartia*? sp.**: Vertical sections, (ŞAY-1/R-1-3L), (ŞAY-1/M-18-2L) respectively.

Figure 7-10, 13,14- Rotaliid gen. 1 indet. ***(Redmondoides?)*:** 7-10,13- Vertical or subvertical sections, (ŞAY-1/M-18-10A), (ŞAY-1/M-18-12R), (ŞAY-1/M-18-8R), (ŞAY- 1/G-7-1R) (ŞAY 2/G-9-3R) respectively; 14- oblique section, (ŞAY-1/I-4-2R)

Figure 11,12- Rotaliid gen. 2 indet.: 11**-** Almost horizontal section, (ŞAY-2/P-8-7R); 12- Vertical section, (ŞAY-2/M-7-1R).

Figure 15-18- Rotaliid gen. 3 indet.; (15-17)- Vertical sections, (ŞAY-5/Ml-10-2Pk) (ŞAY-5/M-6-1APk) (ŞAY-5/L-1-1M) respectively; 18- Horizontal section, (ŞAY-1/G-3-1Pk).

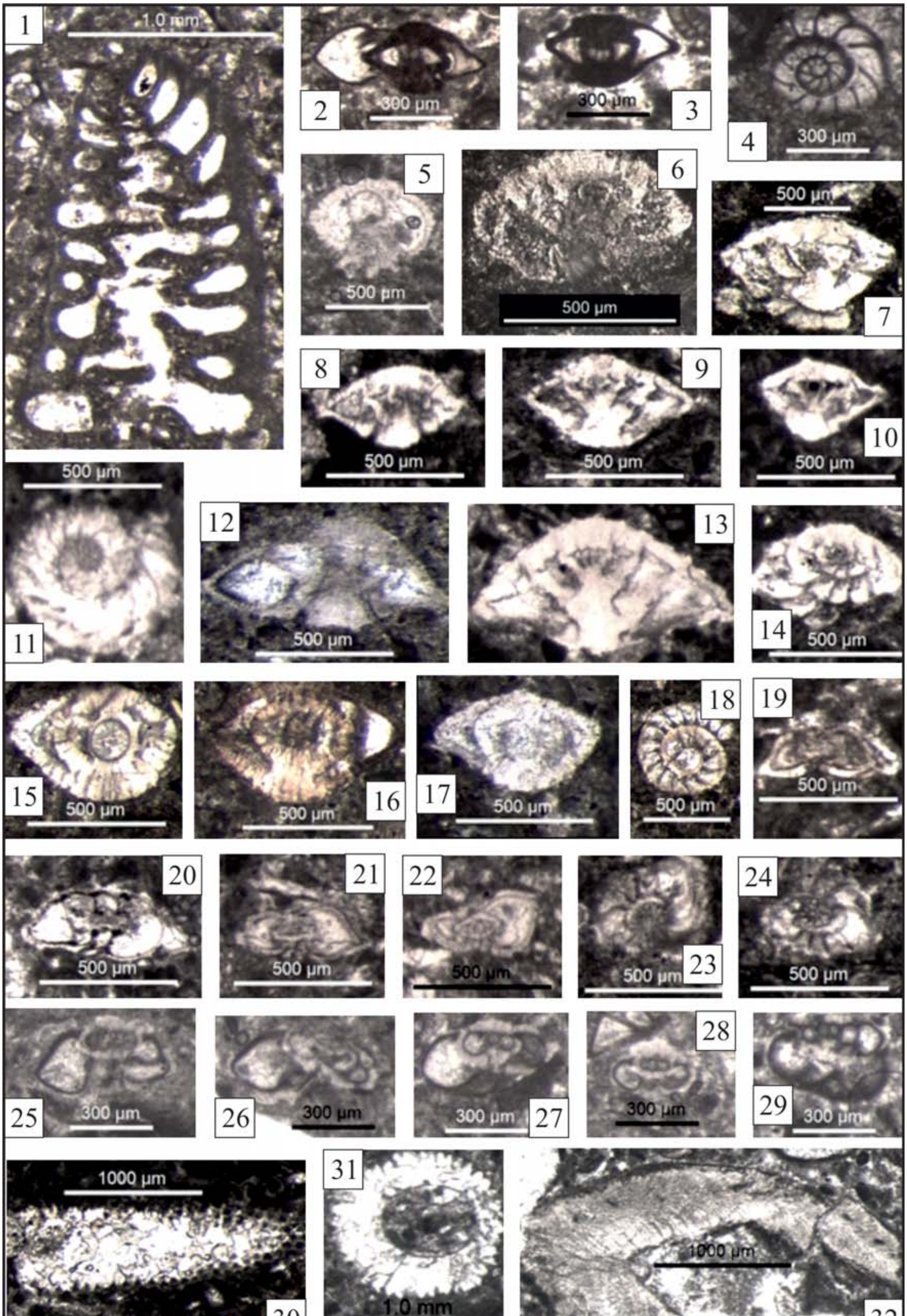
Figure 19-24- Rotaliid gen. 4 indet. (with two layered test): (19-22)- Vertical or subvertical sections, (ŞAY-2/I-8-2Rc) (ŞAY-2/P-8-1Rc) (ŞAY-3/I-17-1Rc) (ŞAY-1/M-12-1Rc) respectively; 23,24- Horizontal or subhorizontal sections, (ŞAY-1/M-18-11Rc2) (ŞAY-1/M-18-7Rc) respectively.

Figure 25-29- Mississippinid gen. 1 indet.: Vertical or subvertical sections, (ŞAY-3/I-23-3), (ŞAY-2/I-39-Ms), (ŞAY-3/I-28-3Ms), (ŞAY-3/I-29-3Ms), (ŞAY-2/I-11-3Ms) respectively.

Figure 30,31- Algae gen. 1 indet.: 30- Oblique vertical section, (ŞAY-3/B-6-1Al); 31- Oblique horizontal section, (ŞAY-1/M-2-2Al).

Figure 32- Algae gen. 2 indet.: Vertical? section (ŞAY-2/G-11-Al).

PLATE - XVIII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