

A Systematic Study on the Korean Anthozoa 15. *Dichopsammia granulosa* new genus and new species (Dendrophyllidae, Scleractinia, Zoantharia)

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A species of Dendrophyllidae collected by fishing nets from Mip'o (129°11' E, 35°09' N) in Korea Strait, turned out to be a new species in a new genus, *Dichopsammia*, is described. The new genus is closely related to the confamilial genus, *Duncanopsammia* in sharing the same corallum shape and the same septal arrangement, but differing in the mode of branching, the corallite formations, the mode of budding and the feature of costae.

KEY WORDS: a new genus and species, systematics, Scleractinia, Anthozoa, Korea.

In Korean waters, scleractinians were known by 17 species including 5 species of the family Dendrophyllidae (Song, 1982). Thereafter, the author described the cnidae (Song, 1988) and reported the geographical distribution of Korean scleractinians (Song, 1991). In total, the Korean scleractinians are numbered by 24 known species, of which 9 species in the family Dendrophyllidae being consisted of 6 species in the genus *Dendrophyllia*, 2 species in the genus *Tubastraea* and 1 species in the genus *Rhizopsammia*.

During the examination of Korean scleractinians, a species of Dendrophyllidae collected by fishing nets from Mip'o (129°11' E, 35°09' N) in Korea Strait was found to be very different from any other known scleractinians, with some similarity with an western Australian species, *Duncanopsammia axifuga* (Milne Edwards & Haimes, 1848), a hermatypic coral.

The sclero-septa was observed under the

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stereomicroscope after resolving the polyps in clorax. The close observation of the corallite was made by using scanning electron microscope, Model JSM 35CF, at 25 kilovolts accelerating voltage. A ion sputter, Model JFC-1000, was used for gold coating. Holotype and most of paratypes are deposited in the Department of Biology, College of Natural Sciences, Ewha Womans University, and the remaining paratypes are deposited in the Natural History Museum, Ewha Womans University.

Systematic Account

Order Scleractinia Bourne, 1900 돌산호 목
Suborder Dendrophyllina Vaughan & Wells, 1943 나무돌산호 아목
Family Dendrophylliidae Gray, 1847 나무돌산호 과

***Dichopsammia*, n. gen.** 이분지돌산호 속(신칭)

Diagnosis: Broad, pedunculate, subdendroid, hermatypic colonies, formed by distomodaeal

intratentacular budding, permanent condition being monocentric. Wall formed by trabecular outer ends of septa. Costae covered with spines or granulations, no striation or vermiculation.

Remarks: Among the 29 genera of Dendrophylliidae, 15 genera can be characterized as having normal septa in ephelic stage, and 14 genera as having septa according to Poutalés plan in ephelic stage (Vaughan & Wells, 1943). Of these 14 genera, 4 genera, *Dendrophyllia*, *Lobopsammia*, *Duncanopsammia* and *Dichopsammia*, form dendroid coralla (see Key). *Dendrophyllia* and *Lobopsammia* are distinguished from *Duncanopsammia* and *Dichopsammia* by the shape of costae. *Dichopsammia*, n. gen. is most closely related to *Duncanopsammia* in having the hermatypic colony, the corallum shape and the septal arrangement. However, there are significant differences between the two: *Dichopsammia* is formed by distomodaeal intratentacular budding in the corallite formation, whereas *Duncanopsammia* is formed by the extratentacular budding from edge zone peripherally on lower margins of corallites (Quelch, 1886; Horst, 1922; Vaughan & Wells, 1943; Wells, 1956). Another important difference is the feature of costae: *Dichopsammia* has bluntly rounded or acute granulations on the wall, but *Duncanopsammia*

has rows of crispate granulations (Wells, 1956; Veron, 1986).

Etymology: *Dichopsammia* [Gr. *dicha*, in two; *psammos*, sand; *-ia*, ending of Gr.] named for having the mode of dichotomous branching.

Type species: *Dichopsammia granulosa* n. sp.

Key to the genera closely related to *Dichopsammia*, n. gen. in Dendrophyllidae

A. Solitary

B. Colonial

1. Reptoid*Rhizopsammia* Verrill, 1869

2. Dendroid

a. Costae distinct

aa. Extratentacular budding.....
.....*Dendrophyllia* de Blainville, 1830

bb. Intratentacular budding.....
.....*Lobopsammia* M. Edw. & H., 1848

b. Costae replaced by spines or granulations

aa. Extratentacular budding.....
.....*Duncanopsammia* Wells, 1936

bb. Intratentacular budding.....
.....*Dichopsammia*, n. gen.

***Dichopsammia granulosa*, n. sp.** 미립이분
지돌산호(신칭) (Pls. 1-5; Tables 1, 2)

Material examined-Holotype: 1 colony, Mip'o (Korea Strait), May 15, 1980 (S.J. Yoon), 20-30 m deep by fishing nets, Ant.800515; - Paratype:

Table 1. Comparison of holotype and paratypes.

Characters	Holotype (mm)	Paratypes (mm)	
	Ant.800515	Ant.740713	Ant.831127
Height of colony	52		
Width of colony	80×53		
Total length of branch	35×58	22~40	28~52
Length of 1st branch	10~18	8~15	8~15
Length of 2nd branch	15~20	7~10	15~20
Length of 3rd & 4th branches	0~7	0~5	0~8
Diameter of 1st branch	6×7~8×8	6×7~7×8	6×7~8×8
Diameter of 2nd branch	6×7~7×9	6×7~7×8	6×7~7×8
Diameter of 3rd & 4th branches	7×8~7×9	6×8~7×9	5×5~7×9
Length of coenosarc	5~8	5~8	4~8
Diameter of corallite	4×6~7×9	4×4~6×7	5×5~6×8
Depth of fossa	5~8	2.5~5	3~6
Width of columella	1×1.5~2×1.5	1×1.5~2×1.5	1×1.5~2×1.5
Interval of corallite	0~8	0~8	0~10

PLATE 1

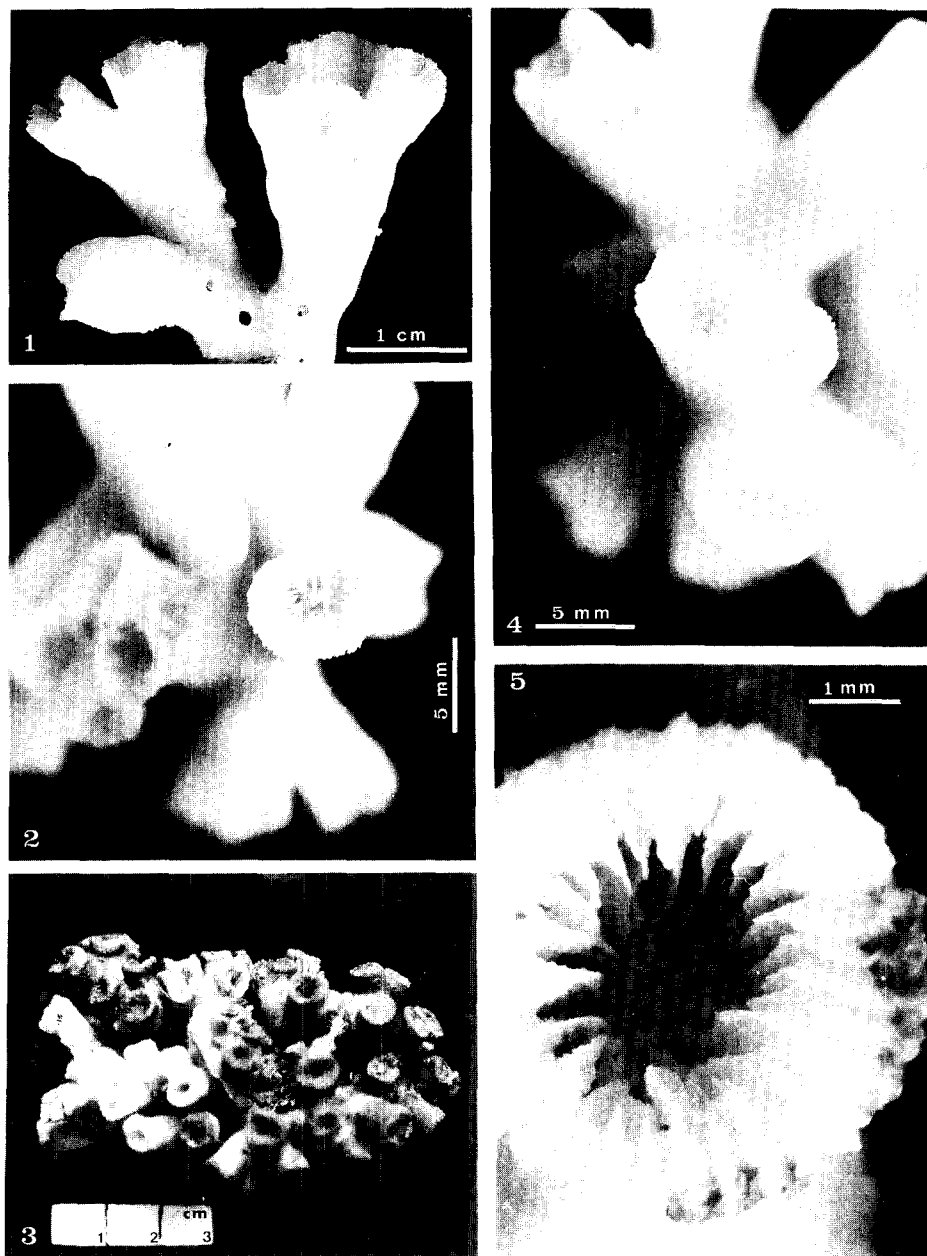


Plate 1

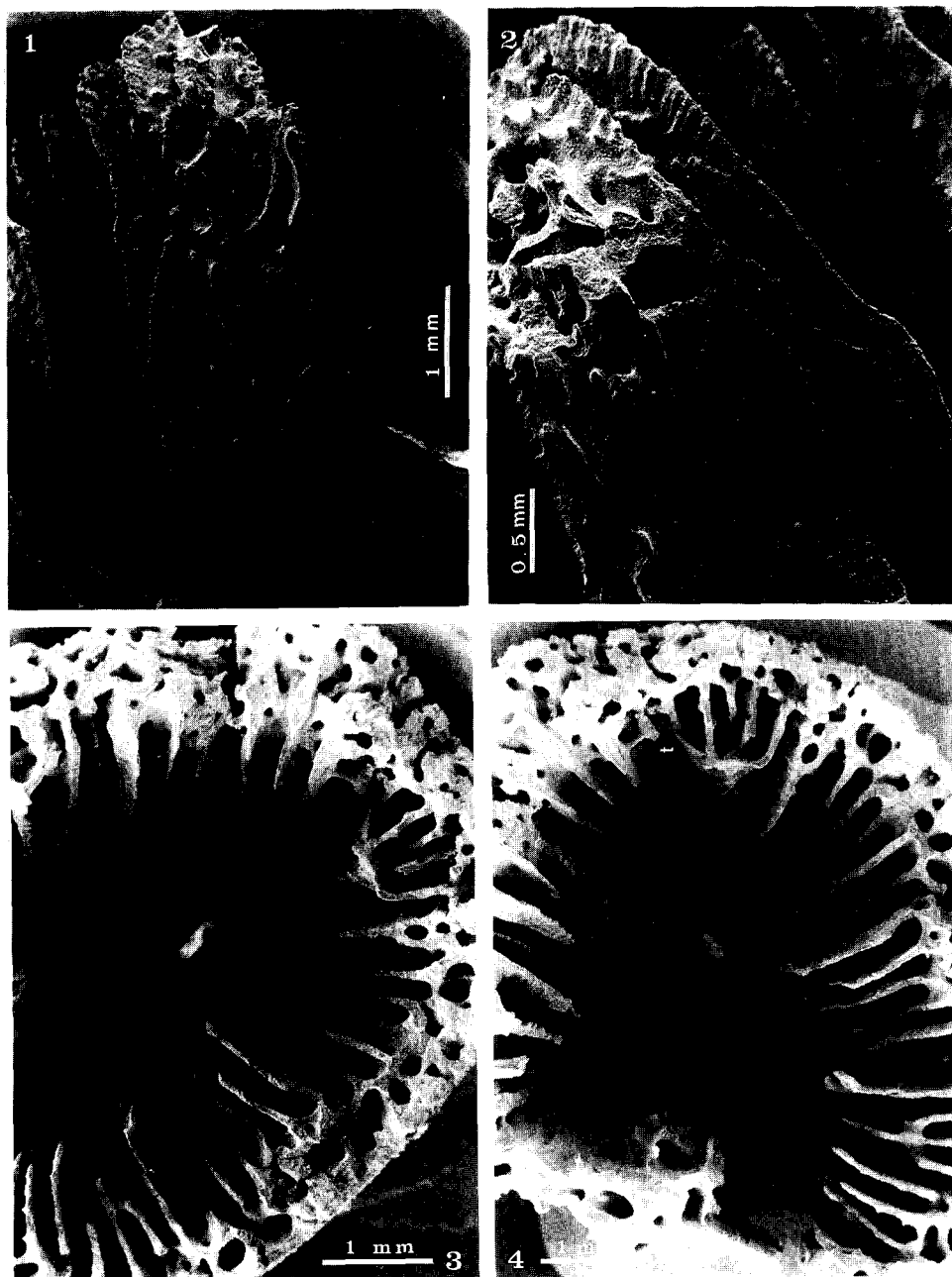
Figs. 1-2, 4. Paratype (Ant.740713).

1. One fragment showing branching form; 2. One calice showing intratentacular budding; 4. One calice showing distomodaeal intratentacular budding and two calices divided by budding.

Figs. 3, 5. Holotype (Ant.800515).

3. Whole colony; 5. Calicular view showing septal arrangement.

PLATE 2

**Plate 2**

Figs. 1-2. Septa having granules and coenosteum.

Figs. 3-4. Septal arrangement showing poutalès plan after cutting upper septal margin.

PLATE 3

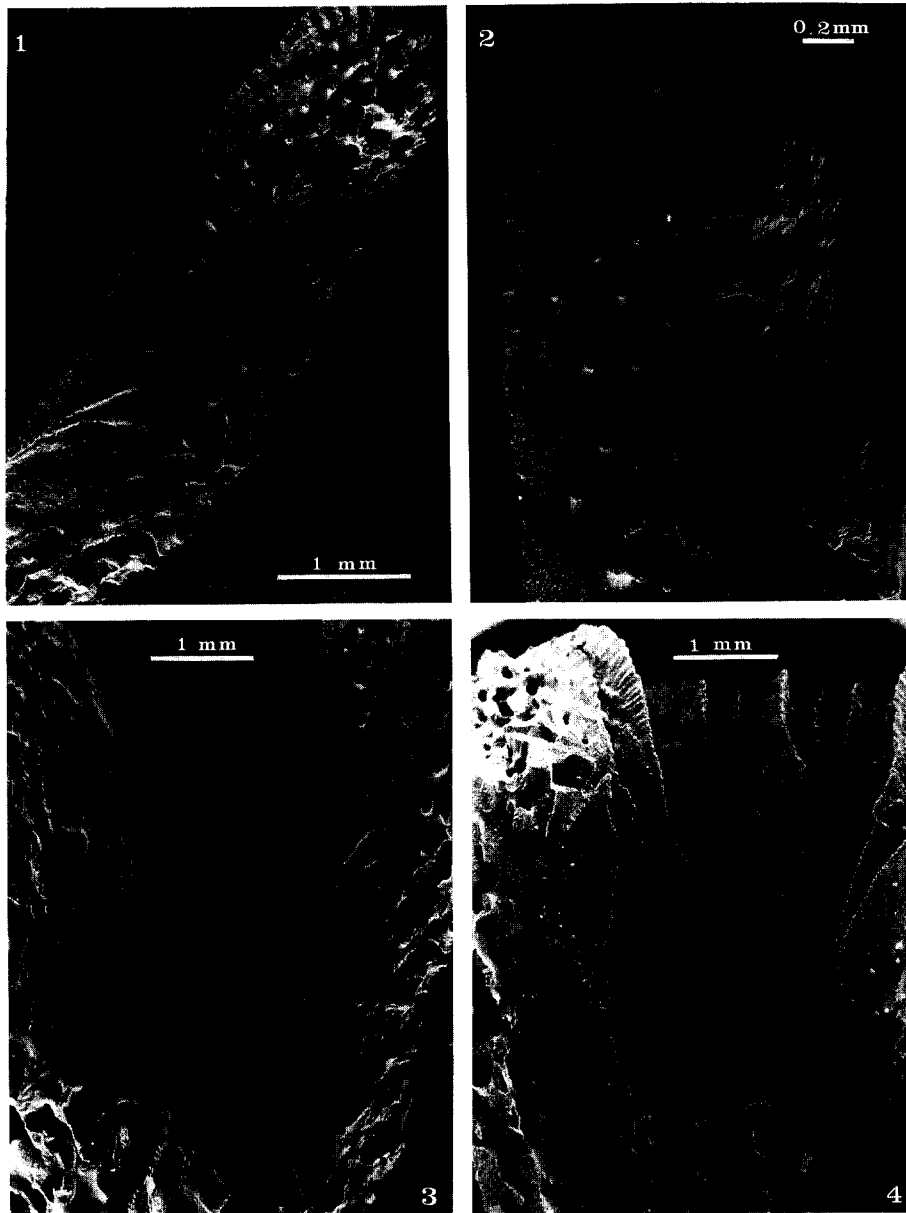


Plate 3

Fig. 1. One septa exposing septocostal face, aligned septal granules.

Fig. 2. Distal part of fig. 1.

Fig. 3. Broken calice exposing septocostal face, fossa and trabecular linkage below columella.

Fig. 4. Broken calice showing septal margin.

PLATE 4

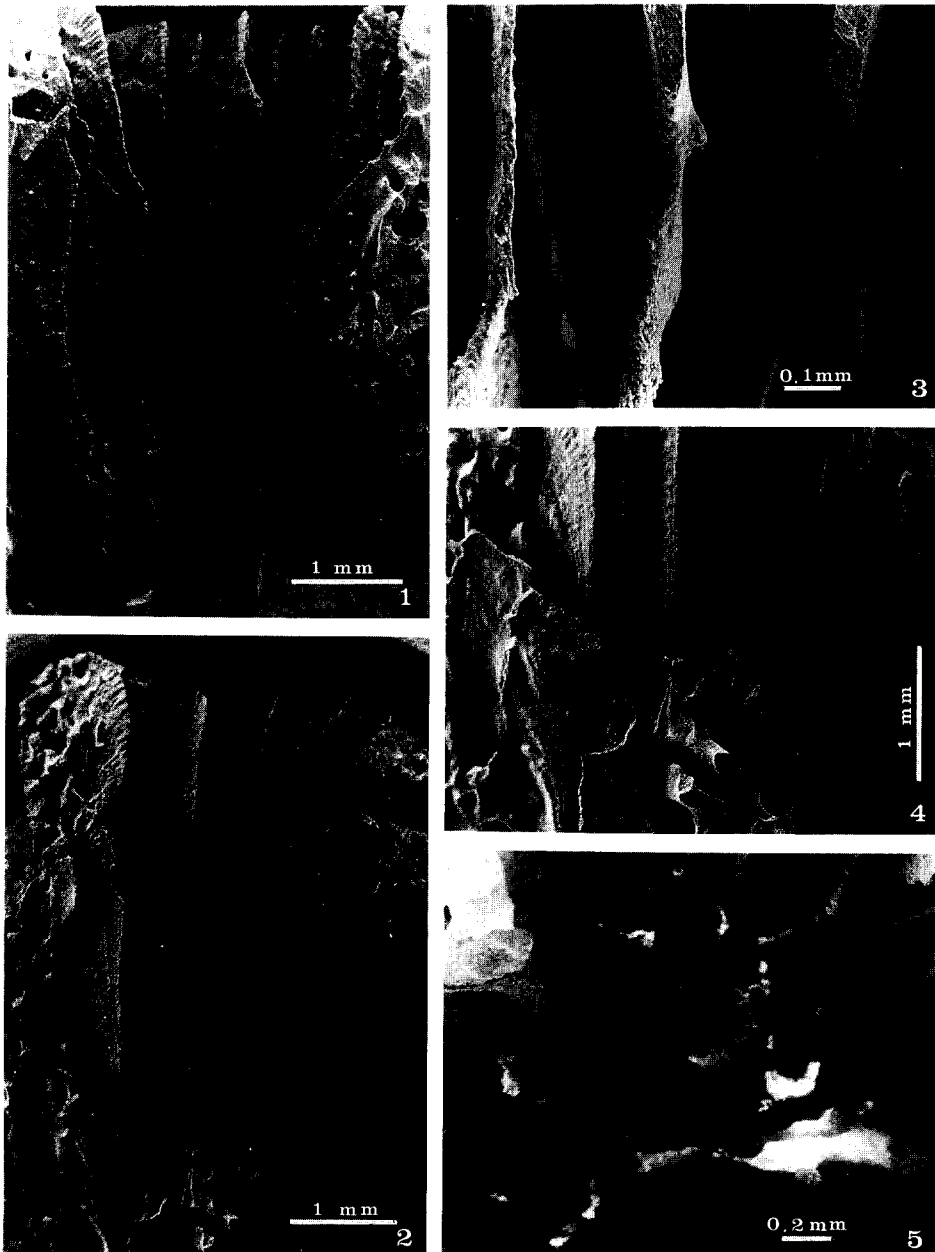
**Plate 4**

Fig. 1. Broken calice showing coenosteam and septal margin at fossa.

Fig. 2. Broken calice exposing fascicular columella.

Fig. 3. Enlargement of septal margin at fossa.

Fig. 4. Lateral view of columella.

Fig. 5. Frontal view of columella.

PLATE 5

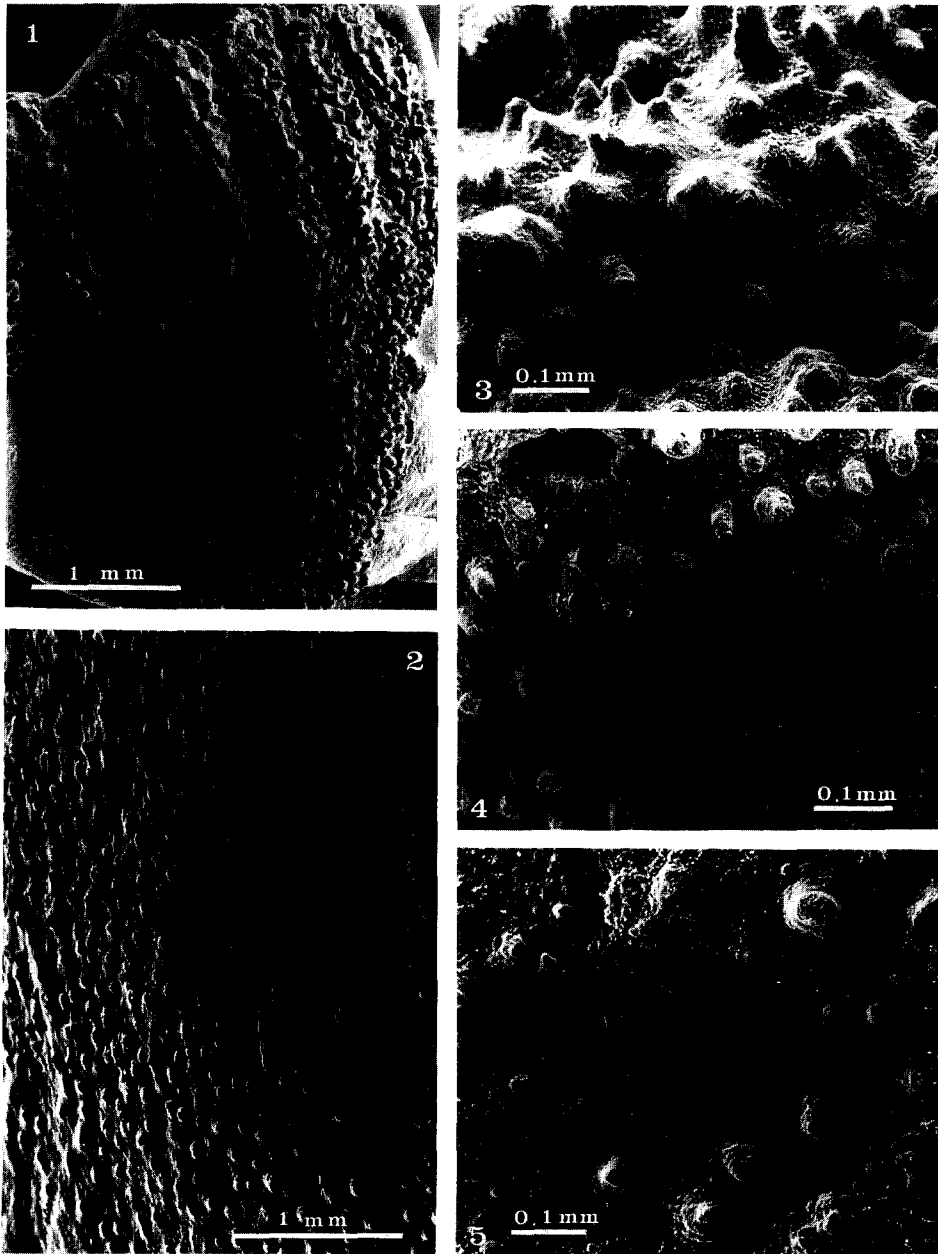


Plate 5

Fig. 1. Granular costae.

Fig. 2. Granular costae and below intercostae perforated.

Fig. 3. Enlargement of granular costae.

Fig. 4. Enlargement of costae and below costae.

Fig. 5. Granules below costae.

Table 2. Comparison of *Duncanopsammia axifuga* and *Dichopsammia granulosa*.

Characters	<i>Duncanopsammia axifuga</i>	<i>Dichopsammia granulosa</i>
Colonial form	dendroid	subdendroid
Corallites	round (10 - 14 mm dia.)	round to elliptical (4 × 4 - 7 × 9 mm dia.)
Septa	Pourtalès plan	Pourtalès plan
Fossa	deep-seated	deep-seated (3 - 5 mm deep)
Columellae	broad, spongy	small, narrow, fascicular
Calicular wall	porous coenosteum	porous coenosteum (6 - 8mm long)
Costae	crispate granulations	rounded or acute granulations
Coenosarc	green or blue-grey	yellowish brown

3 fragments, Mip'ò, July 13, 1974 (B.J. Rho & J. I. Song), Ant.740713; many fragments, Mip'ò, Nov. 27, 1983 (B.J. Rho, J.I. Song & J.H. Park), Ant.831127.

Description: Hermatypic corals forming broad, pedunculate, subdendroid colony by distomodaeal intratentacular budding, permanent condition being monocentric (Pl. 1, Figs. 2, 4). Largest specimen (holotype) 52 mm high, 80 mm wide and 53 mm thick (Pl. 1, Fig. 3). Branching bifurcate, mostly 40°-50°, sometimes up to 60° in 3rd or 4th of same colony. In length of branches, 1st 8 - 15 mm, 2nd 7 - 20 mm, 3rd and 4th 5 - 8 mm (Pl. 1, Fig. 1).

Calices circular to elliptical in shape, 4 × 6 - 7 × 9 mm in diameter. Corallites cylindrical, up to 8 mm in depth of fossa, sometimes anastomosing towards upper part of colony. Theca porous, relatively thin, never epithecate, namely synapticulotheca. Corallites forming by distomodaeal intratentacular budding (fission) (Pl. 1, Figs. 2, 4).

Costae protrude slightly only near calicular margin by intercostae perforated 4 - 8 mm long, reduced to granulations downwards calice. Costae equal wide over thin wall, covered with rounded or acute granulations. Also, lower parts of corallites and whole wall of branches uniformly covered with low rounded granules 0.08 - 0.11 mm tall (Pl. 5, Figs. 1-5).

Septa arranged in a distinctive pattern according to Pourtalès plan, scarcely exsert (Pl. 1, Fig. 5; Pl. 2, Figs. 3, 4). First septal margin minute teeth with simple trabeculae (Pl. 2, Figs. 1, 2; Pl. 3, Figs. 1-4). Septa of 1st and 2nd cycles similar, thickened near columella. At edge of

calice, septa very small, becoming gradually broader towards columella, slope with faint bend and then descend perpendicularly downwards. Fourth septal margin dentate towards columella (Pl. 3, Fig. 4; Pl. 4, Figs. 1, 3). Septal faces covered by acute granules about 0.08 mm tall, triangular granules aligned in rows perpendicular to septal edges (Pl. 3, Figs. 1, 2).

Fossa very deep, containing fascicular columella, mostly 3 - 5 mm deep, up to 8 mm deep in largest corallite (7 × 8 mm in diameter) and 2.5 mm deep in smallest corallite (4 × 4 mm in diameter). Columella feeble, narrow, composed of about 10 flabellate lobes, synapticalae, mostly 1 × 1.5 - 2 × 1.5 mm in width (Pl. 4, Figs. 2, 4-5).

In color, upper 4 - 8 mm of corallites covered by yellowish brown (No. 22 in color chart) coenosarc, and lower part of them milky white, uniformly covered with round granules.

Habitat: There are various kinds of benthic animals attached on the corallum of this species, such bryozoans as *Celleporaria* sp., *Smittina* sp. and *Caberea* sp., calcareous tubes of the polychaetes, *Dexiospira foraminosus* and *Spirobranchus tetracerus*, and the barnacle *Boscia oulastreae*.

Etymology: *granulosa* [L. *granulus*, a small grain; -osa, termination denoting "full of"] named for having fine granules on the costae and wall.

Remarks: In general features such as the colonial shape and the septal arrangement according to Pourtalès plan (Horst, 1922; Vaughan & Wells, 1943; Wells, 1958; Veron, 1986), this species is closely related to *Duncanopsammia axifuga*. However, *Dichopsammia granulosa* differs in its smaller diameter of corallite, forming colonies by

distomodaeal intratentacular budding and having narrow fascicular columellar in deep fossa of corallite (Table 2). Furthermore, *Dichopsammia granulosa* have yellowish brown coenosarc on upper thecal margin and fine granulations replaced on costae and wall. Up to date, *Duncanopsammia axifuga* occurs only in deep water (over 20 m) around Australia, especially western Australia including the type locality.

Acknowledgment

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韓國産 珊瑚蟲類의 系統分類學的 研究 15. 돌산호 目에 속하는 一新屬 一新種에 관하여
宋浚任(梨花女子大學校 自然科學大學 生物科學科)

한국산 산호충류의 계통분류학적 연구의 일환으로 1969년부터 1986년까지 우리나라의 삼면 연안과 도서 지방으로 부터 채집된 돌산호류 중 대한해협 의 미포에서 그물에 의해 채집된 나무돌산호 과의 1종이 신속, 신중으로 밝혀져 미립이분지돌산호(*Dichopsammia granulosa*)라고 명명하고 기재한다.

이들의 완모식 표본과 대부분의 부모식 표본들은 이화여자대학교 자연과학대학 생물과학 과에 보관되어 있고, 일부 부모식 표본은 이화여자대학교 자연사박물관에 보관되어 있다.