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Author(s)	UCHIDA, Tohru; UCHIDA, Hiro'omi
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On the Peculiar Actinian, *Synandwakia hozawai* (Uchida)¹⁾

By

Tohru Uchida and Hiro'omi Uchida

Zoological Institute, Hokkaido University
(With 2 Text-figures and 1 Plate)

In 1932 and 1938 T. Uchida described the actinian as a new species under the name of *Andwakia hozawai*. The genus *Andwakia* was an only abasilous representative in having actonia and was at that time represented by the Norwegian species, *A. mirabilis*. In 1947 Carlgren pointed out that the Japanese species does not belong to *Andwakia* and instituted the second genus for the Japanese species and listed the species in his great work (1947, p. 39) as *Synandwakia hozawai* (Uchida) in the same family Andwakiidae. He gave a note that "The place of this genus is somewhat doubtful as the categories of the nematocysts of the acontia are unknown." Therefore, the senior author observed living actinians at the beginning of April, 1959 and then the junior author investigated especially on the acontia and nematocysts in the middle of September, 1968. Thus the present paper took this form.

Synandwakia hozawai (Uchida)

The species is rather common in the vicinity of the Asamushi Marine Biological Station and is found burrowing in fine sand, with the capitulum outside of sand, living together with the apodous holothurian, *Paracaudina chilensis ransonneti* (von Marenzeller). The physa is liable to be attached to substratum. It has not any covering, but is densely permeated with detritus particles, especially in the lower half of body. When transferred to Petri dish the actinian repeats elongation and contraction of the body alternatively, therefore, sand and detritus are gradually cleared up from the body before long.

The body, though variable in form owing to contraction, is elongate, cylindrical and is divisible into capitulum, scapus and physa. When well extended the body exceeds 80 mm long. The whole body is bluish grey with white spots at the base of tentacles and white stripes in the upper part of the scapus. The capitulum is short and liable to be withdrawn into the scapus, which is wider than the former. When slightly contracted, the capitulum is clearly marked off from the scapus by a

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collar-like fosse. The tentacles are 28–80 in number. They are arranged in 5–6 cycles, 6, 6, 12, 24 . . . , the outer tentacles being slightly smaller than the inner ones, moreover, their growth of the same cycle is not always synchronous. These

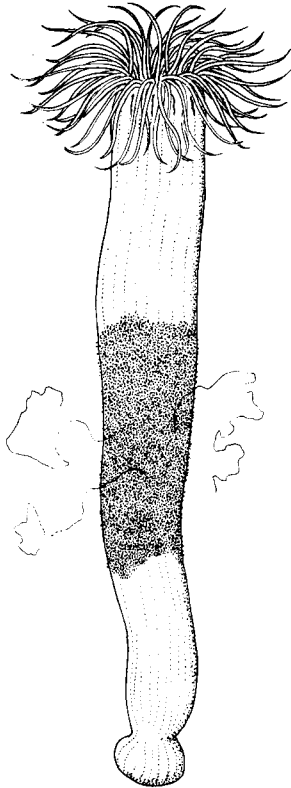


Fig. 1. *Synandwackia hozawai* (Uchida) from living state.

tentacles are perforated at the tip, tapering, filamentous, prehensile and sticky. They have a white spot at their base, which are sometimes faded out in larger specimens. When well-extended, they reach 80 mm in length. The oral disc is rather small with a slit-like mouth in the central portion and several white radial stripes around it. The siphonoglyphes are two in number, and the lips are somewhat elevated, forming 13–15 foldings. The scapus is elongate and cylindrical. The surface wall is hard, finely papillated but devoid of conspicuous papilla-like protuberances. It is thin, hard and leather-like, while the mesogloea is universally thin. The scapus in preserved condition can be divided into two parts; the comparatively narrow proximal part of about 1/3 the length of the scapus and broader distal part. But in living state the scapus is almost universally in the same width. Just proximal to the capitulum one can see in the scapus 12 distinct white marks of insertions of mesenteries and 12 more intermediate narrow white marks of tertiary mesenteries. The insertions of mesenteries in the scapus and the physa obvious from the outside. In the middle part of the scapus is secreted slimy fluid which forms a membrane imbued with fine sand. In this part are distributed cinclids, from which acontia are often emitted. The proximal portion of the

scapus is thin-walled and connected with the physa by a slight contracted part. The physa is ampullaceous and thin-walled. It swells out fairly large by time but often reduces to a mere enlargement. It shows slight adhering tendency. Acontia are emitted from the column wall and also from the mouth. They are white in color and reach 30–50 mm long and about 0.1 mm in diameter. They are not emitted by mechanical stimuli in this species but seem to be emitted by sudden change of temperature or salinity. They are sent out slowly, become spiral and make slow movements. Cut peices of them can move for 10–20 minutes.

As to the internal anatomy, Uchida (1938) gave the description in detail. There are 24 paris of mesenteries, of which 6 pairs are perfect and fertile in the

cross section of lower part, but there may be more imperfect pairs in upper part as was pointed out by Carlgren, because the tentacles are arranged in 5-6 cycles.

Nematocysts. The nematocysts were all observed by phase contrast lenses and are systematized after the category of Cutress (1955). Measurements of nematocysts being the ranges and the averaged values of each 20 nematocysts of the same sort. They are summerized in each locality as follows:

Acontia:

Microbasic p-mastigophores	.....	24.0-32.0×4.6-7.0 μ
average		26.4×5.6 μ
Microbasic b-mastigophores	.....	13.0-15.0×2.0-2.8 μ
average		14.1×2.2 μ

Tentacles:

Microbasic p-mastigophores	.....	20.8-25.6×3.8-5.2 μ
average		23.3×4.3 μ
Microbasic b-mastigophores	.....	16.0-21.1×2.0-2.8 μ
average		18.3×2.4 μ
Spirocysts	.....	13.0-22.8×3.0-5.0 μ
average		17.6×4.1 μ
Basitrichs	.....	11.0-18.0×2.3-3.1 μ
average		14.5×2.7 μ
Basitrichs	.....	13.0-23.0×2.1-4.0 μ
average		18.7×3.5 μ

Column:

Microbasic p-mastigophores	.....	9.5-17.0×2.4-4.0 μ
average		13.6×3.4 μ
Microbasic b-mastigophores	.....	8.5-11.9×1.5-2.1 μ
average		10.0×1.9 μ
Microbasic b-mastigophores	.....	14.8-17.2×3.8-4.2 μ
average		15.6×4.0 μ

Filaments:

Microbasic p-mastigophores	.....	17.2-25.5×5.1-7.5 μ
average		21.9×6.3 μ
Microbasic p-mastigophores	.....	8.3-10.9×3.3-4.0 μ
average		9.7×3.8 μ
Microbasic p-mastigophores	.....	21.2-26.0×3.5-4.0 μ
average		23.9×3.8 μ

Actinopharinx:

Microbasic p-mastigophores	.....	11.3-16.6×3.1-4.7 μ
average		14.4×3.7 μ
Microbasic p-mastigophores	.....	22.1-27.3×3.5-4.6 μ
average		24.9×4.0 μ
Microbasic b-mastigophores	.....	19.3-25.7×2.0-2.3 μ
average		22.2×2.1 μ

The species is common at Asadokoro in Asamushi Bay and a few specimens obtained from Muroran, Hokkaido were examined by the senior author.

The diagnosis of the genus *Synandwakia* is as follows:

Genus *Synandwakia* Carlgren 1947

Andwakiidae with the body divisible into capitulum, scapus and physa. Capitulum very short, scapus smooth, without tentaculi but with cinclides, physa

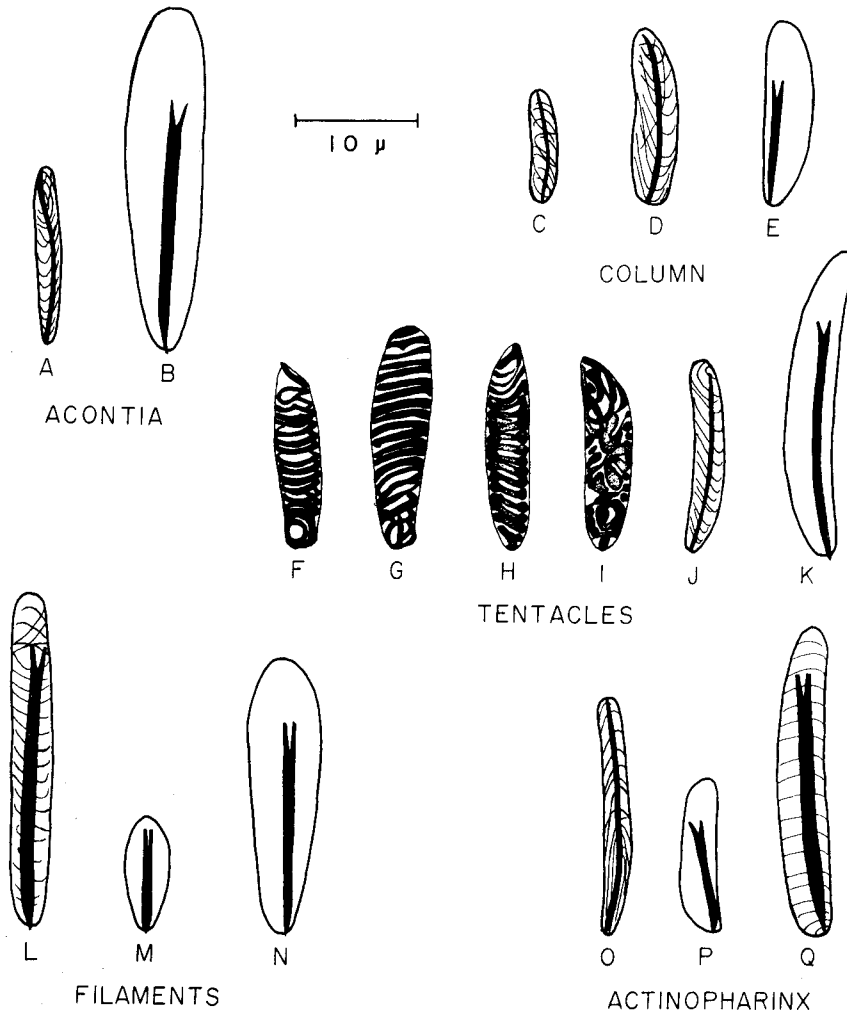
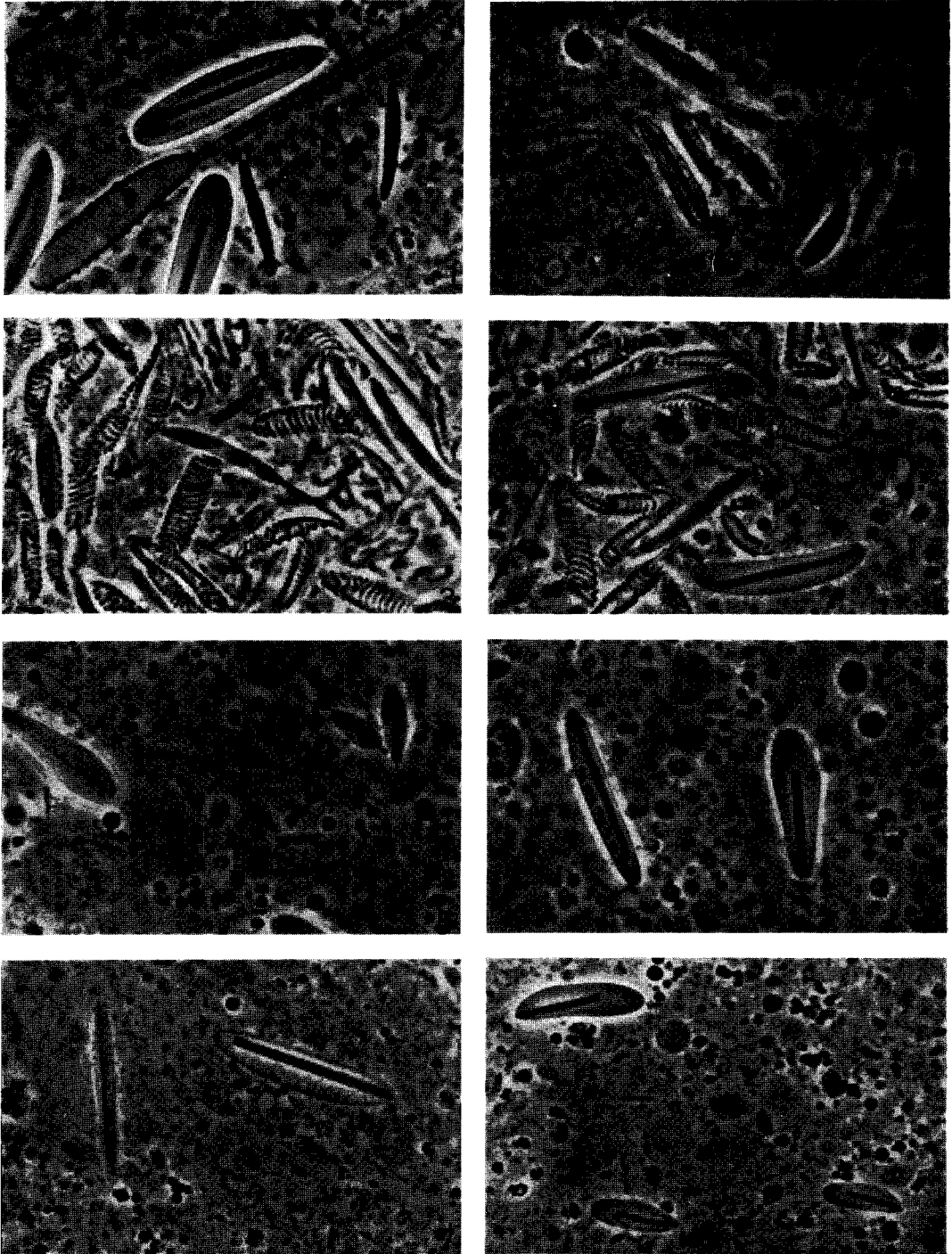


Fig. 2. Nematocysts of *Synandwakia hozawai* (all nematocysts drawn to same scale). Microbasic b-mastigophores: A, C, D, J, O. Microbasic p-mastigophores: B, E, K, L, M, N, P, Q. Spirocysts: F, G. Basitrichs: H, I.



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ampulleous. Sphincter mesogloal, small, situated at the margin. Tentacles hexamerous in arrangement, rather numerous. Two siphonoglyphes. Mesenteries distinctly divisible into macro- and microcnemes, 6 pairs perfect and fertile. More mesenteries at the margin than at the physa. Retractors of the macrocnemes strong, somewhat restricted. Parietal muscles rather weak. Acontia few. Cnidom: spirocysts, basitrichs, microbasic p-mastigophores, microbasic b-mastigophores.

S. (Andwakia) Hozawai Uchida 1932, p. 394.

References

- Carlgren, O. 1947. Further contributions to a revision of the Actiniaria and Corallimorpharia. Kungl. Fysis. Sälls. Lund Förh., 17: 2.
- 1949. A survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. Kungl. Svensk Vetensk. Handl. Fjär. Ser. 1: 38-39.
- Cutress, C.E. 1955. An interpretation of the structure and distribution of cnidae in Anthozoa. Syst. Zool. 4: 120-137.
- Uchida, T. 1932. Description of a new actinian, *Andwakia Hozawai* n. sp. Proc. Imp. Acad., 8: 394-396.
- 1938. Report of the Biological Survey of Mutsu Bay. 33. Actiniaria of Mutsu Bay. Sci. Rep. Tohoku Imp. Univ., Ser. 4, Biol., 13: 291-293.

Explanation of Plate I

1. Nematocysts of the acontium.
2. Nematocysts of the column.
- 3-4. Nematocysts of the tentacles.
- 5-6. Nematocysts of the filaments.
- 7-8. Nematocysts of the actinopharinx.

(All photographs are in the same scale: × 1200)