

**POLYCHAETES OF THAILAND. NEREIDIDAE (PART 3):
SOLOMONONEREIS PHUKETENSIS N. SP.
FROM EUHALINE ENVIRONMENTS IN THE ANDAMAN SEA.**

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ABSTRACT

The monotypic species *Solomononereis marauensis* Gibbs, 1971 has been reported from polyhaline environments in Solomon Islands, South Pacific and in the northern Australia. Samples from fully marine sea beds on the west coast of Phuket Island, Andaman Sea, have revealed one more species, described as *Solomononereis phuketensis*. It differs from *S. marauensis* in having notosetal falcigers present in most anterior setigers. Dorsal ligules are digitiform and greatly reduced already in the anterior part of the body. Paragnaths are slender conical against rod-shaped (pegs) in *S. marauensis*. Conspicuous glands at the base of the dorsal cirri are characteristic of both species of the genus and may constitute a unique character of the genus. The two species of *Solomononereis* share a number of characters with *Ceratonereis japonica* Imajima, 1972. A comparison of these three closely related species is given.

INTRODUCTION

Nereidid polychaetes have previously been described from Thailand in two papers by Hylleberg, *et al.*, 1986 and Hylleberg and Nateewathana, 1988. This is the third paper in the series where a new species of *Solomononereis* is described from Thai waters. The genus *Solomononereis* Gibbs, 1971 was erected to accommodate a monotypic nereidid with small rod-like paragnaths in eight groups on the maxillary ring of the eversible pharynx. *S. marauensis* has been reported from Solomon Islands (Gibbs, 1971) and from northern Australia (Hutchings and Reid, 1991). *S. phuketensis* n. sp. is the second species referred to this genus.

MATERIALS AND METHODS

The specimens were obtained from a survey programme on the west coast of Phuket Island (Hylleberg, *et al.*, 1985). The specimens were fixed in 10% formalin and later transferred to 70% alcohol. Terminology for describing the species is according to Hylleberg, *et al.* (1986). Holotype and paratype are deposited in the Reference Collection of Phuket Marine Biological Center (PMBC), Phuket 83000, Thailand.

RESULTS

TAXONOMIC ACCOUNT

Solomononereis Gibbs emend

TYPE SPECIES: *Solomononereis marauensis* Gibbs, 1971, p.152-153

DIAGNOSIS: Prostomium with two antennae, two biarticulate palps and two pairs of eyes. Peristomium with four pairs of tentacular cirri, dorsal pairs long, ventral pairs much shorter. Proboscis with small, slender conical or rod-like chitinous paragnaths arranged in eight discrete groups on the maxillary ring; oral ring without paragnaths. Parapodia biramous with spinigerous setae in both rami throughout the body; falcigerous setae in both rami from setiger 3 and posteriorly.

Solomononereis phuketensis n.sp.

Figs. 1-3

HOLOTYPE: PMBC 8743. A complete specimen in two fragments, 71 setigers, 17.3 mm long, 1.9 mm wide including setae, Kamala Bay, Phuket Island, 10 m depth, Smith McIntyre grab, 27 February 1982.

PARATYPE: PMBC 8744. An incomplete specimen, 32 setigers, 7.7 mm long, 2 mm wide including setae, Patong Bay, Phuket Island, 20 m depth, Smith McIntyre grab, 26 April 1982.

MATERIAL EXAMINED: PMBC 8745. A total of 70 specimens were collected from the west coast of Phuket Island, at depths of 10-30 m, during 1980-1982.

DESCRIPTION: Small species. Most of the material has 19-53 setigers for 4.0-11.0 mm length and 1.7-2.8 mm width including setae. Body slender, widest anteriorly and tapering slightly posteriorly. Ventral medial groove throughout the body. Preserved specimens pale yellow in colour, white along the ventral medial groove, glands at base of dorsal cirri visible as prominent greyish dots at all setigers.

Prostomium rectangular, width about equal to length, deep cleft present anteriorly between the slender antennae (when pharynx is not protruded). The two antennae arise from extreme corners of distal margin, they are slightly longer than the palps. Palps robust with bi-articulated palpophores and small conical palpostyles. Two pairs of small, dark eyes in trapezoidal position. Four pairs of tentacular cirri, the first ventral pair reaching setigers 3-4; the longest dorsal pair extending to about setiger 20.

Pharynx with a pair of transparent, brownish jaws with about 9-13 moderately sharp teeth (Fig. 1 D). Paragnaths variable, but mostly slender cones (Fig. 1 B, C), arranged in 8 discrete groups on maxillary ring (Fig. 2 A, B). Area I: bundle of 3-8 cones; II: bundle of 3-8 cones; III: 5-10 cones in each of the 3 discrete groups; IV: bundle of 2-9 cones.

Parapodia uniramous on the first two setigers and biramous on the following setigers. First setiger (Fig. 2 C) and second setiger with cylindrical dorsal cirri, slightly shorter than dorsal ligule. Dorsal cirri gradually enlarged in succeeding setigers. Notopodia with the slender dorsal cirri almost the same length as the dorsal ligule on setiger 3, slightly longer on setiger 5 (Fig. 2 E), about double length of other ligules on setiger 10 (Fig. 3 B, C, D), and 2-3 times

longer than other ligules on posterior setigers (Fig. 2 F, G, H). Notopodial dorsal ligules well developed on anterior setigers, gradually reduced in size from setiger 10-15 and absent from setiger 20; median ligules are long and slender from setiger 3 (Fig. 2 D, E), gradually enlarged and conical on setiger 10 (Fig. 3 C), then reduced on the posterior setigers (Fig. 2 G, H); notacicular papillae present as small conical lobes on the upper middorsal part of the median ligule from setiger 3 and posteriorly. Dorsal, median and ventral ligules with rough surfaces (irregular buds) at high magnification (Fig. 3 E).

Oval, yellowish and conspicuous glands occur at the base of the dorsal cirri. Each gland contains fascicles of spindle shaped bodies, and appears to open to the exterior at a pore situated just above the base of the dorsal cirrus (Fig. 3 A, B).

Neuropodia with long, slender inferior lobes and ventral ligule, almost the same size as the dorsal cirrus on setiger 1-2 (Fig. 2 C); the size somewhat smaller than the median dorsal ligule from setiger 3 and posteriorly; the ventral ligule decreases in size from setiger 17, reduced to be a small knob on setiger 25 and absent on the posterior setigers (Fig. 2 G, H); neuracacula terminate on the middorsal part of inferior lobes in the anterior setigers; neuracacula terminate at the distal end from setiger 25. The inferior lobe reduced and absent on posterior setigers (Fig. 2 G, H); broadly rounded postsetal lobes, gradually enlarged from setiger 3 until having almost the same length as the inferior lobe on setiger 25.

Setae of 4 kinds: sesquigomph spinigers, homogomph/sesquigomph falcigers, heterogomph falcigers and heterogomph spinigers. Sesquigomph spinigers (Fig. 1 E) and homogomph/sesquigomph falcigers (Fig. 1 F) present in notopodia throughout the body. About 8-15 sesquigomph spinigers in anterior setigers, reduced to 6 in the middle and 0-3 in the posterior setigers. Homogomph/sesquigomph falcigers present in a low numbers: 0-1 from setiger 3, 0-2 after setiger 25, and reduced to 1 in the most posterior setigers. Rostrum is only slightly projecting in notopodial setae (Fig. 1 G, H). Sesquigomph spinigers also present in supra-acicular fascicle of neuropodia throughout the body, num-

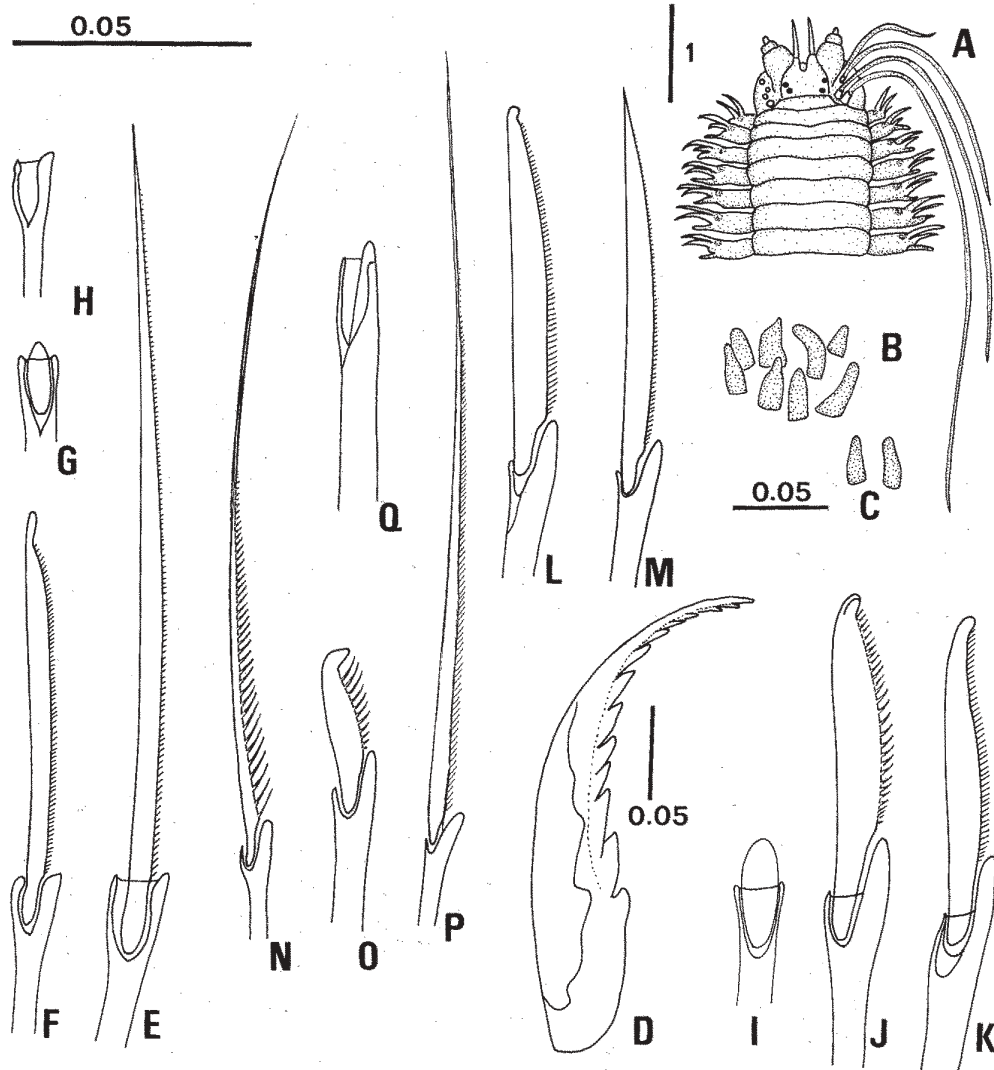


Figure 1. *Solomononereis phuketensis* n.sp. (A) anterior body, dorsal view. (B) paragnaths of area III, and (C) of area II. (A-C =dissected specimen No. I-2 13/2, 7. 4. 81). (D) jaw. (E-H) notosetae from setiger 10. E = sesquigomph spiniger, F = homogomph/sesquigomph falciger, G = terminal part of the shaft of a sesquigomph seta (socket of the blade). the socket is viewed with the boss of the collar in a central position. H = the socket viewed with the boss projecting to the right. (I-J) neurosetae from upper bundle of setiger 10. I = socket of heterogomph falciger with the boss in central position. J & K = heterogomph falcigers. (L-M) neurosetae from lower bundle of setiger 10. L = heterogomph falciger, M = heterogomph spiniger with short, finely serrated blade. (N-Q) setae from setiger 42 (specimen No. II-2 15/3). N = heterogomph, coarsely serrated spiniger, and O = heterogomph falciger, and P = heterogomph spiniger, lower bundle of neuropodia. Q= socket of notoseta with boss projecting at the right hand side. Scales: A = 1 mm; B-D = 0.05 mm; E-Q = 0.05 mm.

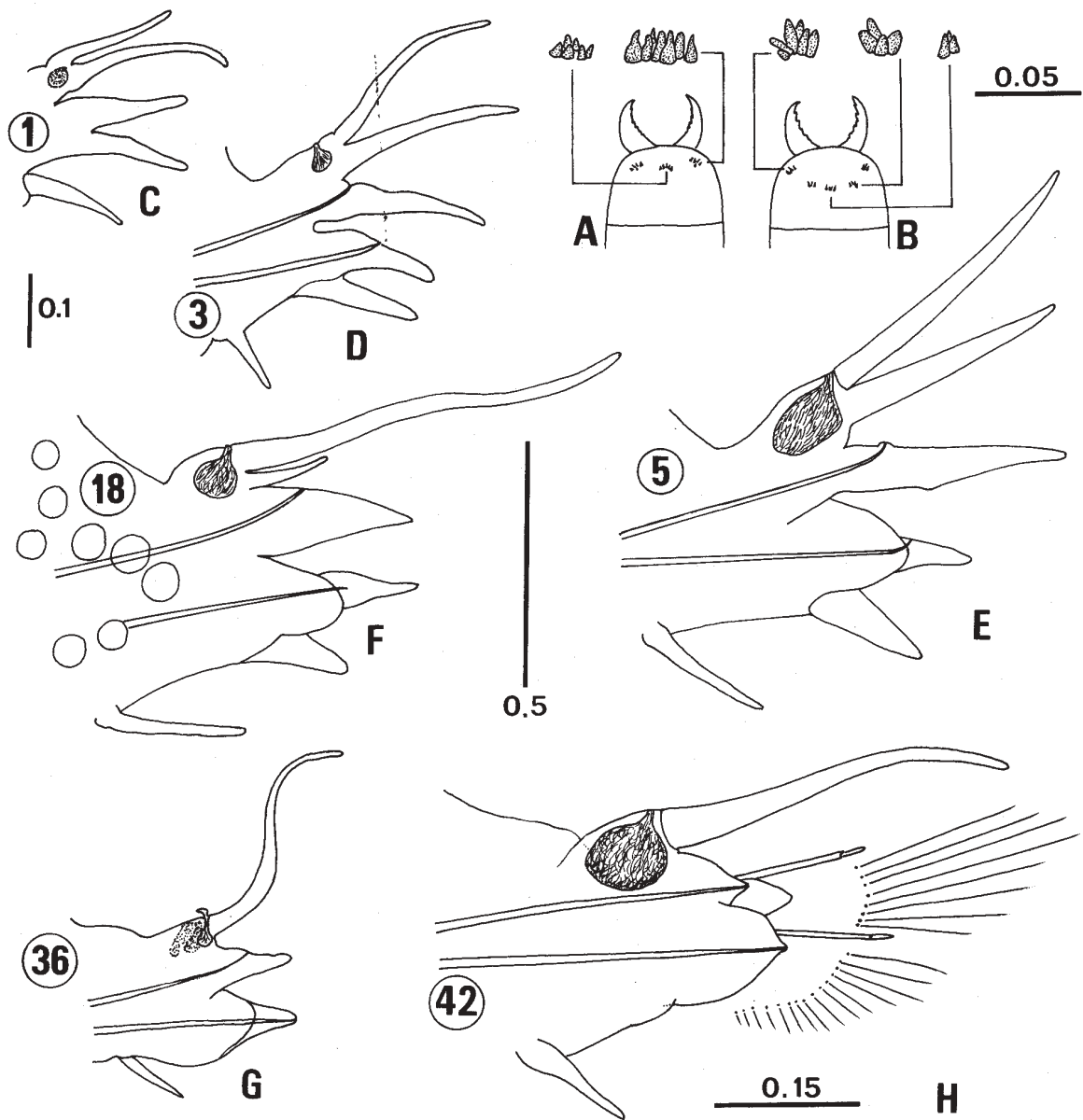


Figure 2. *Solomononeries phuketensis* n.sp. (A-B) pattern of paragnaths: A = dorsal, & B = ventral view. Enlarged paragnaths of area I & II (on top of A), Two groups of area III & the group on area IV (on top of (B)). (C-H) parapodia in anterior view (E = specimen No. I-2 13/2, 7.4.81, H = No. II-2 15/3). Encircled numbers indicate setigers: C = 1, D = 3, E = 5, F = 18, G = 36, H = 42. Scales: A-B = 0.05 mm; C-D = 0.1 mm, E-G = 0.5 mm, H = 0.15 mm.

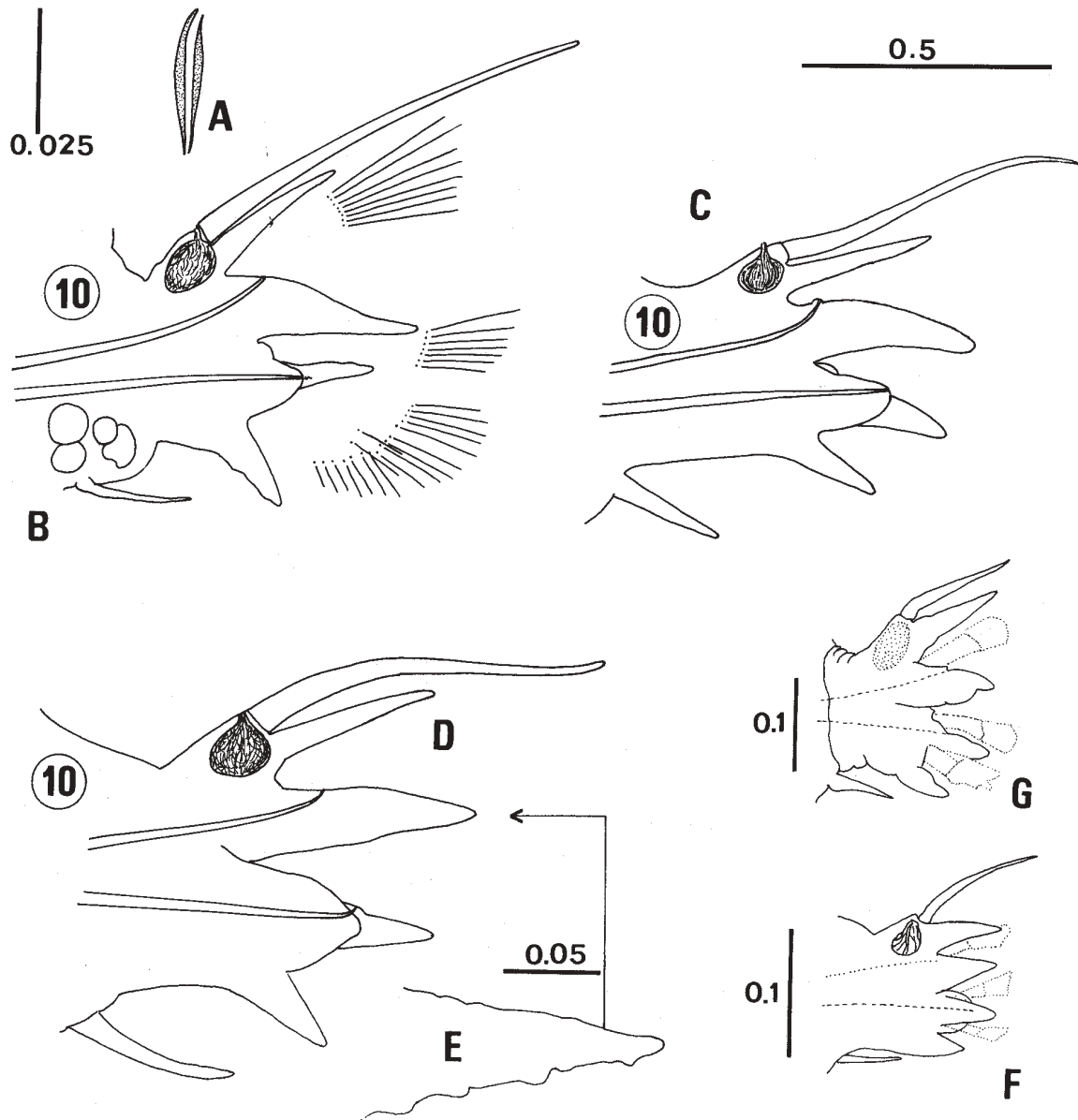


Figure 3. *Solomononereis phuketensis* n. sp. (A) spindle shaped bodies extruded from dorsal glands on parapodia. (B-D) parapodia number 10 from 3 different specimens. (C = female No. V, !3/1, 15.12.80, D = specimen No. I-2 13/2, 7.4.81) (E) enlarged portion of median ligule to show buds on the surface of the ligule. (F) anterior parapodium of *Solomononereis marauensis* redrawn from Gibbs, 1971, p.152. (G) parapodium number 10 of *Ceratonereis japonica* redrawn for Imajima, 1972, p.70. Scales: A = 0.025 mm, B-D = 0.5 mm, E = 0.05 mm, G-F = 0.1 mm.

bering 10-15 in anterior body, and reduced to about 6 posteriorly. Heterogomph falcigers with coarsely serrated blade (Fig. 1 J) and short conical terminal pieces (Fig. 1 J, K) in supra-acicular fascicle of anterior neuropodia. The boss of heterogomph falciger distinctly projecting (Fig. 1 I). Heterogomph falcigers with finely serrated terminal piece (Fig. 1 L) and heterogomph falcigers/spinigers with pointed tip, and finely serrated blade (Fig. 1 M) present in subacicular fascicles of neuropodia. In posterior setigers, neurosetae encompass heterogomph spinigers (Fig. 1 N, P) and heterogomph falcigers (Fig. 1 O). From 10-25 setae in supra-acicular fascicle and 7-28 setae in subacicular fascicle of anterior setigers, 6-23 and 12-25 in the middle, 3-8 and 3-10 in the posterior setigers, respectively. Acicula dark, one aciculum in each noto- and neuropodium.

Pygidium with two anal cirri.

ETYMOLOGY: The species is named after Phuket Island, Thailand.

DISTRIBUTION: Only known from the west coast of Phuket Island, the Andaman Sea.

REMARKS: The genus *Solomononereis* Gibbs, 1971 is similar to the genus *Ceratonereis* in having eight discrete groups of paragnaths on the maxillary ring and absence of paragnaths on the oral ring. However, the two genera can be separated on the shape of the paragnaths: slender rods in *Solomononereis* against conical paragnaths in *Ceratonereis*. Other characters of *Solomononereis* include a weakly developed peristomial ring and the arrangement of setae. Spinigers are present in both rami throughout the body and, in addition, a few falcigers appear in both rami of middle and posterior parapodia. Conspicuous glands at the base of the dorsal cirri apparently constitute a unique character. The oval glands consists of fascicles of spindle-shaped bodies. The glands seem to open to the exterior at a pore situated just below the base of the dorsal cirrus. Similar glands have not been described in other nereidid genera.

Solomononereis has been monotypic until the discovery of the present species. *S. phuketensis* is very close to *S. marauensis* Gibbs, 1971. Diagnostic characters encompass presence of conical paragnaths, and up to 8 heterogomph falcigers in upper bundles of anterior neuropodia. Heterogomph falcigers are present in lower bundles of neuropodia along the whole body. Falcigers are absent in lower neuropodial bundles of *S. marauensis* which only carries one heterogomph falciger in the upper bundles of neuropodia in median to posterior setigers.

S. phuketensis is a small species. A complete specimen measured 17 mm for 71 setigers, against 40 mm for 157 segments in the largest paratype of *S. marauensis*. It is suspected that *Ceratonereis japonica* Imajima, 1972 also belongs to the genus *Solomononereis*. It has all characters of *Solomononereis* with the exceptions that Imajima refers to the paragnaths as being conical instead of rod-shaped, and there is no reference to the characteristic oval glands at the base of the dorsal cirri. Hence, a new study of the original material is needed to verify the suggestion that *C. japonica* should be classified differently. Comparison of the characters these three species can be summarized in Table 1.

The type locality of the genus (Solomon Islands, South Pacific) is an area with sticky mud close to freshwater outflows. In northern Australia, *S. marauensis* has been collected from mangrove-lined creeks subjected to wide fluctuations in salinity (Hutchings and Reid, 1991). The present species from the Andaman Sea is the first record of a species of this genus from fully marine sea beds (10-30 m depths).

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Table 1.

	<i>Solomononereis phuketensis</i> n.sp.	<i>Solomononereis marauensis</i>	<i>Ceratonereis japonica</i>
HEAD: prostomium			
Shape of paragnaths	slender cones	rod-shaped(pegs)	cones
No. of paragnaths			
Area I	3-8	10-15	8-12
Area II	3-8	10-15	7-13
Area III(X3)	5-10	10-15	6-10
Area IV	2-9	10-15	11-12
No. of teeth on jaws	9-13	7-8	10
HEAD: peristomium			
Longest tentacular cirrus to setiger No.	20	20	10
Shortest tentacular cirrus to setiger No.	4-7	3	3
BODY			
Maximum length	17 mm	45 mm	81 mm
Maximum width	2.8 mm	3 mm	3.5 mm
Maximum No. of setigers	71	157	83(?)
Pigmentation (anteriorly)	+/-	+	-
PARAPODIA			
Ratio: length of dorsal cirrus relative to length of dorsal ligule on setiger 10	2:1	1:1	1:1
Shape of dorsal ligule	digitiform	conical	conical
Ratio: width of dorsal cirrus to width of dorsal ligule (at base)	1:1	1:2	1:2
Notopodial ligule reduced from setiger No.	10-15	20-30	25
Rudiments of notopodial ligule	absent from 20	absent posteriorly	absent form 28
Neuropodial ligule reduced from setiger No.	18	20-30	25-mid body
Rudiments of neuropodial ligule in posterior setigers	absent	present	absent
Falcigers in anterior set.	present	absent	present
Spinigers in posterior set.	present(+/-)	present	absent
Notopodia: type of setae	sesquigomph	homogomph	homogomph
Notopodia: No. & type of falcigers in posterior set.	1 sesquigomph	2-3 homogomph	2 homogomph
Neuropodia:No. & type of falcigers in upper bundle (posteriorly)	1 heterogomph	1 heterogomph	absent
Neuropodia: coarsely serrated spinigers in lower bundle (posteriorly)	present	present	absent

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