CONTRIBUTIONS TO THE KNOWLEDGE OF THE ALPHEID SHRIMP
OF THE PACIFIC OCEAN

XV. The relationship of *Synalpheus neptunus* (Dana, 1852) to *Synalpheus theano* De Man, 1911, and the establishment of a neotype for *Synalpheus neptunus* (Decapoda, Alpheidae) 1)

BY

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INTRODUCTION

Considerable confusion has occurred in the literature because of the incomplete descriptions of *Synalpheus neptunus* (Dana, 1852) and *S. theano* De Man, 1911 which did not allow for their normally occurring variation. The type specimen of *S. neptunus* has been lost. In our present collection we have 243 specimens from the southernmost Philippines, including the Sulu ("Sooloo") Sea, from where *S. neptunus* was described, and 68 specimens from various parts of Australia. We have also reexamined De Man’s type specimen of *S. theano* which came from “between Misool and New Guinea”. We have decided to use this collection and the reexamination of De Man’s type to establish the identity of the two species, to record their normal variation on points previously considered of systematic importance, and to establish the true identity of *S. neptunus* by the description of a neotype from Dana’s type location.

In 1852 Dana described as *Alpheus neptunus* a specimen of “8-9 lines” (19 mm) from the Sulu Sea. In 1909 Coutière redescribed and figured what he called “typical male examples from the Sulu Sea” as *S. neptunus*. His specimens have also been lost, but they were considerably smaller than that of Dana, for they had a carapace length of 3 mm giving a probable total body length of 8 mm.

In 1911 De Man described what he termed a closely related species under the name of *S. theano*. De Man had one specimen, 10.5 mm long. He did not state the sex, but he noted it was without eggs. As differentiating characters he used the lateral spine of the basicerite in relation to the antennular article, the longer fingers of the small chela, and the shorter terminal spine of the scaphocerite, stating further that they could be separated “no doubt, also by other differences” (De Man, 1911: 294). We have compared the two species on these three characteristics as well as other characteristics which are often used for taxonomic separations; we have found none of them reliable for their differentiation. However,

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we have discovered that in one characteristic the two species can be easily separated. In *S. neptunus*, as redescribed from the neotype below, the apex of the distal article of the endopod of the third maxilliped bears a circlet of heavy spinules. The corresponding article of *S. theano* bears a "brush" consisting of many fine setae. This character was not described by De Man, but was ascertained upon the re-examination of the type. The contrast in the condition is best understood by comparing figures 3E and 3F.

Dana did state "The outer maxilliped has the last joint short pubescent with short hairs at apex." This description, unsupported by figures, can be variously interpreted, but it seems that he is differentiating between the setae on the inner face and some heavier "hairs" at the tip. As all of our 243 specimens from the Sulu Sea and adjacent waters had the spinules we describe, not setae, we believe Dana was describing the condition we found.

We have carefully examined all the specimens in the collection and selected 29 specimens of *S. neptunus* from the Philippines, 32 of *S. neptunus* from Australia and 15 specimens of *S. theano*, also from Australia, for detailed measurement and analysis of the supposed points of difference. Our largest measured specimen of *S. neptunus* from Australia was 26 mm long; the largest measured specimen of *S. theano* (also from Australia) was 16 mm long. In the following comparisons, we have taken the proportions from text or figures from the original descriptions of the three authors and compared them with our range of variation.

1. Length of lateral spine of scaphocerite in relation to antennular articles. — Dana figures the lateral spine as reaching slightly past the end of the antennular peduncle. Coutière states the lateral spine "does not reach the middle of the third antennular article". De Man states that in *S. theano* the lateral spine "reaches to the distal third of the third antennular article." In our specimens of *S. neptunus* the lateral spine varies from reaching the end of the second antennular article to three-fourths the length of the third article. In *S. theano* it varies from one-half the third antennular article to the end of the third article. We have not seen a specimen with the lateral spine of the scaphocerite as long as that shown by Dana.

2. Squamous portion of the scaphocerite in relation to antennular peduncle. — Dana shows that in his specimens the squame reaches to the middle of the third antennular article. In Coutière's specimens the squame does not reach the middle of the second antennular article (judging from the plate). In De Man's species the squame "reaches to the fourth distal part of the median antennular article." In our specimens of *S. neptunus* the squame was most variable. In a collection of 20 specimens from one locality near Thursday Island in the Torres Straits we found specimens in which the squamous portion of the scaphocerite varies from vestigial to reaching the end of the second antennular article. A few specimens from both Australia and the Philippines have the squame entirely lacking. In *S. theano* the squame reaches from three-fourths the length to the end of the second antennular article.