

**ON THE IDENTITY OF CERTAIN SPECIMENS OF *PONTELLOPSIS*  
BRADY (COPEPODA : CALANOIDA) OF THE 'WILSON COLLECTION'  
DEPOSITED IN THE U. S. NATIONAL MUSEUM**

P. PARAMESWARAN PILLAI

*Central Marine Fisheries Research Institute, Cochin 682 018, India*

ABSTRACT

The paper embodies the results of the re-examination and taxonomic studies carried out on certain specimens of *Pontellopsis* (Copepoda : Calanoidea) of the 'Wilson Collection' deposited in the U. S. National Museum. The erratic determination of the identity of certain species viz., *Pontellopsis brevis* (Giesbrecht), *P. laminata* Wilson, *P. lubbocki* (Giesbrecht), *P. perspicax* (Dana), *P. sinuata* Wilson, and *P. strema* (Dana) have been noted and discussed. The male of *P. laminata* Wilson, hitherto undescribed has been reported. It is apparent that the discrepancies noted were largely due to the confusion in cataloguing the material.

INTRODUCTION

CERTAIN identifications made by late Dr. C. B. Wilson in his two papers on copepods (1942 : Copepods of the "Carnegie" Expedition of 1929; 1950: Copepods collected by R/V "Albatross") attracted the attention of scientists recently, since they contained several erratic determinations. Some of the later publications stressed the necessity of a critical re-examination of the material worked on by Dr. Wilson in order to correct the mistaken identity of the copepod species described in his reports (Vervoort, 1950; Fleminger and Bowman, 1956; Fleminger, 1957; Grice and Jones, 1960; Fleminger, 1965). Fleminger (1965) re-examined certain species of *Labidocera* and *Stephos* of Wilson Collection which proved discrepancies of identity, locality or both in Wilson's report (1950) and according to him "the inescapable impression arising from these experiences is that the 1950 "Albatross" Report is unreliable and that the record it contains must be used with much care and restraint". While referring to the species of *Pontellopsis* from the world oceans, obvious errors in the identity of certain species of *Pontellopsis* determined by Wilson and presented in the "Albatross" Report (1950) were met with by the author. This prompted a re-examination of the *Pontellopsis* material from Wilson Collection ("Albatross" and "Carnegie" cruises), presently deposited in the United States National Museum, which was made available by Dr. Thomas E. Bowman, Curator, Smithsonian Institution, USNM, U.S.A. During the course of the study, significant differences were found between the identity of some or all the specimens present in the containers and those specified on the respective labels. The following report embodies the results of the taxonomic studies carried out on these specimens and discussions on the identity of different species of *Pontellopsis* reported by Wilson.

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## MATERIAL

Institution, USNM, U.S.A. for kindly sending him the material and allotting enough time to complete this study.

316 specimens in 14 lots were received for re-examination from the Smithsonian Institution, Washington and indicated in the labels as follows:

	Cat. No.	Station No.	Species as on label	No. of specimens in the vial
"Albatross" Collections	74138	5382	<i>P. armata</i>	2
	74090	16, 2937, 3822, 3878, 4010, 4190, 5186, 5228, 5234, 5340, 5382	<i>P. armata</i>	26
	74091	5348	<i>P. brevis</i>	2
	74092	5319	<i>P. laminata</i>	35
	74093	31	<i>P. lubbocki</i>	2
	74143	2937	<i>P. sinuata</i>	14
	70552	4619	<i>P. strenua</i>	1
	70553	4695	<i>P. strenua</i>	1
	74096	4037, 5134, 5340	<i>P. strenua</i>	200
	74102	3932, 4952, 5228	<i>P. strenua</i>	4
	"Carnegie" Collections	80381	98	<i>P. armata</i>
80382		40	<i>P. lubbocki</i>	16
80383		16, 23, 25, 27, 28, 30, 31	<i>P. perspicax</i>	9
80386		149	<i>P. villosa</i>	3

## ABBREVIATIONS USED IN MORPHOLOGICAL TERMINOLOGY

F	: Adult female	CR	: Caudal rami
M	: Adult male	A-1	: Antennules (First antenna)
CIV, CV	: Copepodid stages 4 and 5	P5	: Fifth pair of legs
T-I to T-V	: Thoracic segments 1 to 5	Re	: Lateral exopod
U-I to U-V	: Urosome segments 1 to 5	Ri	: Medial endopod

## NOTES ON SPECIES

***Pontellopsis armata* (Giesbrecht) 1889**

*Pontellopsis armata* (Giesbrecht): Wilson, 1950, pp. 304, 305, pl. 30, figs. 450-452.

(i) *Label on vial*: U. S. N. M. Cat. No. 74138, *P. armata* (Giesbrecht), "Albatross" Station 5382, Ragay Gulf, Luzon, Philippines Is., 13° 15' 20" N, 122° 45' 30" E, bottom tow, March 6, 1909 (1F, 1M).

*Material*: *P. armata* — 1M (2.288 mm); *P. armata* — CV, M (Prosome length 1.520 mm, urosome damaged).

(ii) *Label on vial*: U. S. N. M. Cat No. 74090 *P. armata* (Giesbrecht), from the following 11 "Albatross" Stations collected during 1902-1909 (26 M, 1 F). Sta: 16 (04° 21' S, 81° 59' W; off the coast of Peru, surface); Sta: 2937 (33° 04' 30" N, 117° 45' W; off S. California); Sta: 3822 (south of Molokai

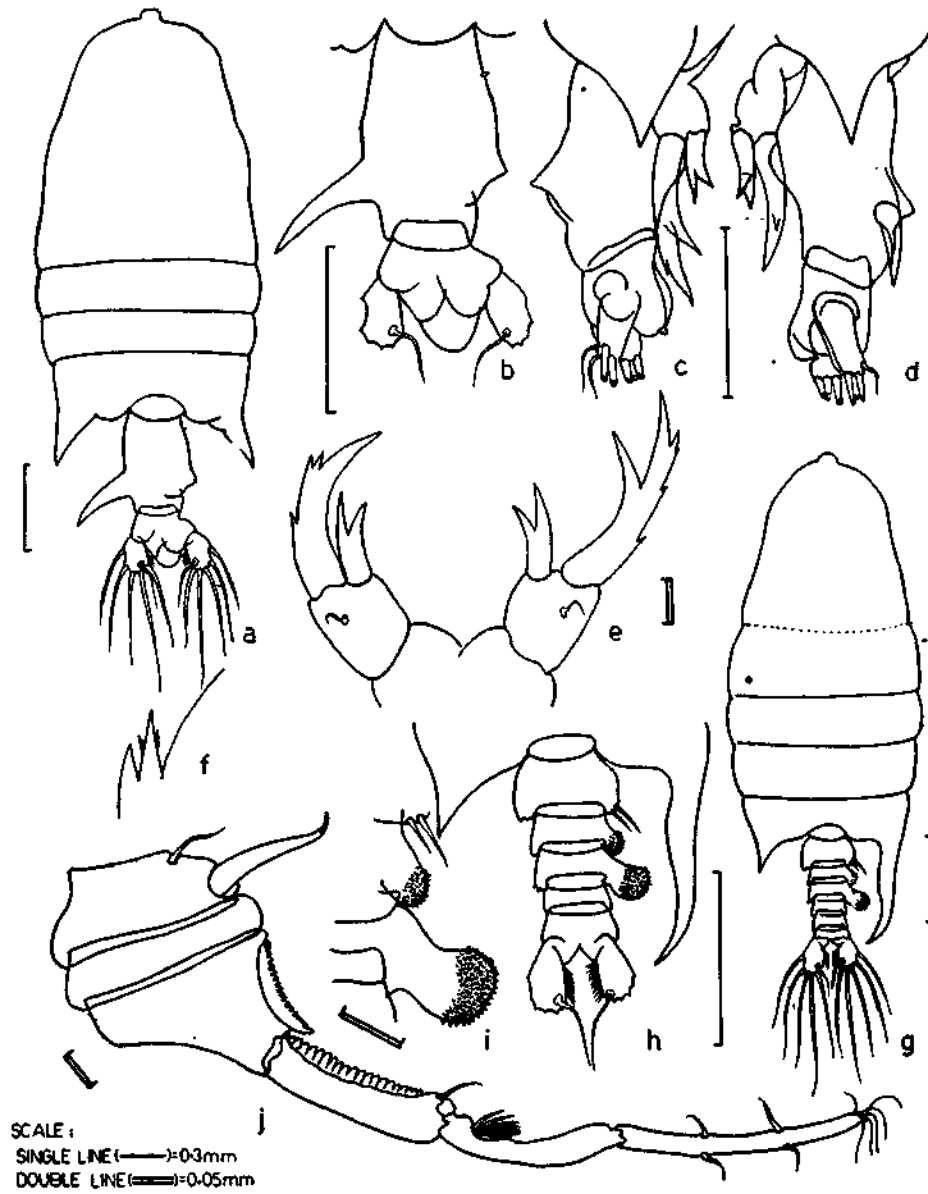


Fig. 1. *Pontellopsis laminata*: a. female - dorsal view; b. female - urosome, dorsal view; c. female - urosome, left lateral view; d. female - urosome, right lateral view; e. female - P5; f. distal outer marginal spine of female P5 enlarged; g. male - dorsal view; h. male - urosome, dorsal view; i. right margin of U-II and U-III of male urosome, enlarged; and j. male, right A - 1.

Is., Hawaii Is., surface); Sta : 3878 (south of Lanai Is., Hawaii Is.); Sta : 4010 (21°35'N, 158°50'W, off Oahu Is., Hawaii Is.); Sta : 4190 (34°39'18"N, 132°04'W; Hawaii Is.); Sta : 5186 (09°53'30"N, 122°15'30"E, between Panai and Negros, Philippines Is.); Sta : 5228 (12°29'30"N, 122°15'45"E, south of Rombow, Philippines Is.); Sta : 5234 (10°00'N, 124°46'06"E, between Bohol and Layte, Philippines Is.); Sta : 5340 (10°55'51"N, 119°14'12"E, Malam-paya Sound, Palawan, Philippines Is.); and Sta : 5382 (13° 15'20" N, 122°45'30"E, Ragay Gulf, Luzon, Philippines Islands).

*Material* : *P. armata* - 17F (Range 2.168–2.600 mm; Mean 2.413 mm); *P. armata* — 4M (Range 1.920–2.586 mm; Mean 2.248 mm);

*P. lubbockii*—1M (2.800 mm); *Pontellopsis* sp. (Copepodite, damaged); *Pontella* sp. (Copepodits, partly damaged); *Labidocera* sp. — CV, F; and *Candacia* sp. — CV, 1M.

(iii) *Label on vial* : U. S. N. M. Cat. No. 80381, *P. armata* (Giesbrecht), "Carnegie" Station 98, April 30, 1929, 0-100 m (1 specimen).

*Material* : *P. armata* — 1F (2.576 mm).

*Remarks* : It was stated in the "Carnegie" Report that 2 females of *P. armata* were collected at Sta. 98 from surface waters. Hence the depth of collection as indicated in the label is of doubtful validity.

#### ***Pontellopsis brevis* (Giesbrecht) 1889**

*Pontellopsis brevis* (Giesbrecht): Wilson, 1950, p. 306, pl. 30, fig. 458.

(i) *Label on vial* : U. S. N. M. Cat. No. 74091, *P. brevis* (Giesbrecht), "Albatross" Station 5348, Palawan Passage, Philippines 10° 57'45"N, 118° 38'15"E, bottom tow, Dec. 27, 1908 (2F).

*Material* : *Pontellopsis* sp. — CV, F (1.640 mm); *Pontellopsis* sp. — CV, F (1.704 mm).

*Remarks* : Wilson's records of this species are all from the Pacific ("Albatross" Stations 3980 (Hawaii Is.), 5223 and 5348 (Philippines Is.) and according to him the "Albatross" specimens are the first of its kind from this area. The figure of female P5 (Fig. 458) shows resemblance to that given by Giesbrecht (1892). The description of the genital segment of *P. brevis* by Wilson is in agreement with that presented by Giesbrecht (1892). However, the vial examined (U. S. N. M. Cat. No. 74091) did not contain any specimen of *P. brevis*.

#### ***Pontellopsis laminata* Wilson, 1950 (Fig. 1 a-j; 2 a,b)**

*Pontellopsis laminata* Wilson, 1950, pp. 308-310, pl. 31, figs. 470-475.

(i) *Label on vial* : U. S. N. M. Cat. No. 74092, *P. laminata* Wilson, "Albatross" Station 5319, 21°31'N, 117°53'E, China Sea near Hongkong, 20 fathoms, Nov. 5, 1908 (35 F, M).

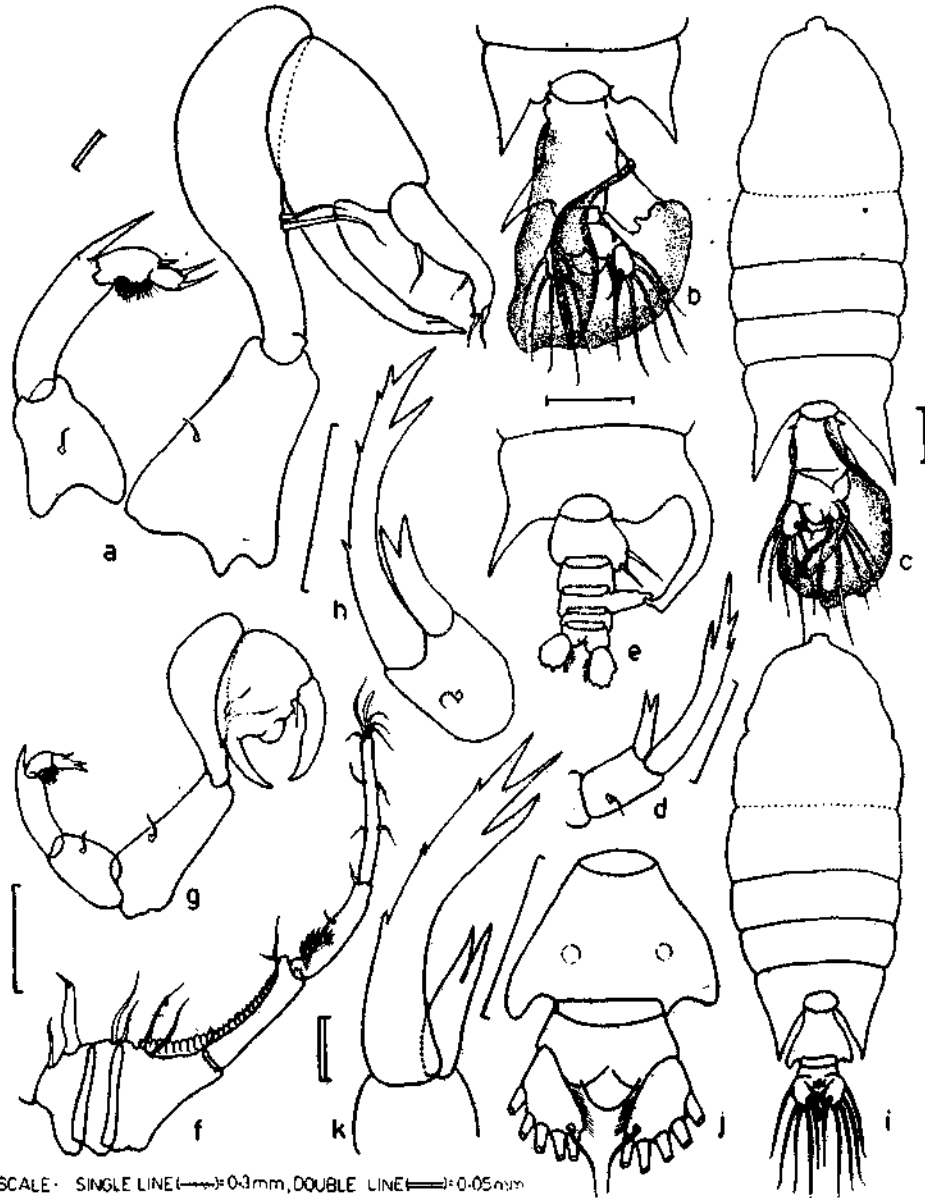


Fig. 2. *Pontellopsis laminata*: a. female urosome with spermatophore sac and coupler sheath; b. male P5. *Pontellopsis lubbocki*: c. female - dorsal view; d. female P5; e. male - urosome, dorsal view; f. male, right A-1; g. male P5. *Pontellopsis perspicax*: h. female P5. *Pontellopsis strenua*: i. female - dorsal view; j. female urosome, dorsal view; and k. Female P5.

*Material*: *P. laminata* — 32 F (Range 1.912 - 2.320 mm; Mean 2.047 mm); *Labidocera* sp. — CV; *Labidocera* sp. — CIV.

*Remarks*: Wilson described this species based on female specimens from Malampaya Sound, Palawan, Philippine Is. ("Albatross" Station: 5340). In the label on vial (U. S. N. M. Cat. No. 74092) it is indicated that the specimens were collected from "Albatross" Station 5319, but in the list of species from the same station (Wilson, 1950) this species is not included. It is probable that the contents of the vial bearing U.S.N.M. Cat. No. 74092 are collected from "Albatross" Station 5340.

While examining the contents of the vial bearing label "U. S. N. M. Cat. No. 74096, *Pontellopsis strenus* (Dana), 'Albatross' Stations 4037, 5134, 5340, Philippine Is., depth 25 f, 1909, 200 M, F" three females of *P. laminata* were observed along with 16 hitherto undescribed male specimens. Since the male of *P. laminata* has not been reported so far the male specimens which are probably from Station 5340 are described here as the male of this species. Some discrepancies noted in the original description are also briefly discussed.

		No.	Range (mm)	Mean (mm)	P : UR ratio
Female	USNM 74092	32*	1.912—2.320	2.047	2.3 : 1
	USNM 74096	3			
Male	USNM 74096	16	1.864—2.016	1.925	2.8 : 1

\* 17 specimens with spermatophore and coupler sheath

*Female*: Wilson's description of the specimens are morphologically identical with *P. laminata* but with the following differences: (i) urosome is distinctly 2-segmented and not 3-segmented as shown by Wilson in Figs. 470 and 471; (ii) right protuberance on the lateral margin of the genital segment is relatively short whereas Wilson's Figs. 470 and 471 show it as distinctly projecting laterad at right angles to the urosome axis, and (iii) distinct differences are noted between the P5 figured by Wilson (Pl. 31, Fig. 475) and the features of the P5 of the material examined. Wilson (1950) described the female P5, adding "the exopod ends in a long, stout spine, with another stout spine at about the centre of the inner margin and three minute spines on the outer margin. Ri is half as long as the Re and its distal half is bifurcate, the branches blunt". In the present material, the exopods are asymmetrical, right Re carrying a stout spine at about the distal half of the inner margin; outer margin with three spines placed equidistant; left Re shorter than right, terminating in a stout spine curved inwards; outer margin with three small spines of which distal two are placed close together; terminal one of the outer marginal spines with two small spinules at its base; Ri bluntly bifid at tip.

*Male*: Cephalon separated from T - I; T - V acuminate posteriorly with the tip extending to the mid-outer margin of CR and curved inwards; U - I with two subequal setae on its right distal margin; U - II with a small rounded lobe at its right margin, covered with spinules; U - III with a prominent round lobe at its right margin, covered with spinules and beset with small denticles; CR slightly asymmetrical, right one broader than long; A - 1: geniculate; segment I4 with a moderately long spine; segment

17 with a dorsal plate carrying serrated teeth; segment 18 with dorsal denticles, which are square-shaped and densely packed; segment 19 of fusion segment 19-21 with 7 flagellum-like setae, arranged radially; P5: Right leg chelate; thumb and finger of chela of the same length; finger broad at base and tapers distally; it is recurved at its tip with two inner marginal and two distal setae; left leg with the terminal segment carrying two subequal spines distally and with one outer marginal spine; subterminal segments with a disto-lateral spine.

***Pontellopsis lubbocki* (Giesbrecht) 1889 (Fig. 2 c - g)**

*Pontellopsis lubbocki* (Giesbrecht) : Wilson, 1950, p. 310, pl. 30, figs. 459-461.

(i) *Label on vial* : U. S. N. M. Cat. No. 74093, *P. lubbocki* (Giesbrecht), "Albatross" Station 31, 0°08'N, 9006' W, off Hood Island, Galapagos Group, surface tow, April 15, 1888 (2F).

*Material* : *Pontellopsis krameri* (Giesbrecht) - 2F (2.096 and 2.112 mm).

(ii) *Label on vial* : U. S. N. M. Cat. No. 80382, *P. lubbocki* (Giesbrecht), "Carnegie" Station 40, 01°32'S, 82°16'W, South-Pacific, depth 0-100 m, November 8, 1928 (16 specimens).

*Material* : *P. lubbocki* — 1F (3.144 mm; with coupler sheath); *P. lubbocki* — 2M (2.840mm, 2.840 mm); *Pontella* sp. — CIV, CV (11 Nos); *Labidocera acuta* — CV (1) and *Labidocera* sp. — CV (1).

*Remarks* : In the female, the coupler sheath is present as a wing-like flap partly covering U-I dorsally and extending posteriorly towards the tip of caudal seta. The two lateral flanges unite along the median line ventrally in the form of a projected process. Wilson (1950) has not shown the small toothed plate on the enlarged (distal) segment of the geniculate antenna of the male. Also, the figure of the male P5 lacks the distinct rounded projection on the inner margin of the hand of the chela.

*P. lubbocki* is endemic to eastern tropical Pacific where as *P. krameri* is essentially Indo-Pacific. In the list of species of the "Carnegie Report" this species has been indicated as occurred only in the surface tows from Station 40 (U. S. N. M. 80382). Hence the depth of collection as given in the label is erroneous.

***Pontellopsis perspicax* (Dana) 1849 (Fig. 2 h)**

*Pontellopsis perspicax* Wilson 1950, p. 310.

(i) *Label on vial* : U. S. N. M. Cat. No. 80383, *Pontellopsis perspicax* (Dana), from 7 "Carnegie" Stations collected during 1828-1829, North-Atlantic (9 specimens) : Station 16 (36°47'N, 46°31'W, surface) ; Station 23 (10°50'N, 37°06'W, surface); Station 25 (11°02'N, 37°06'W, surface); Station 27 (11°20'N, 44°12'W, surface) ; Station 28 (12°54'N, 56°15'W, surface) ; Station 30 (12°54'N, 56°15'W, surface); and Station 31 (14° 46'N, 63°26'W, surface).

*Material* : *P. perspicax* - 3M (2.432, 2.512 and 2.600 mm) ; *Labidocera aestiva* — 1M; *Metridia* sp. — 1M; *Pontellopsis* sp. — CV (1); *Pontellopsis* sp. CIV (1F, 1M); and *Labidocera* sp. CIV (1M).

*Remarks* : In the "Carnegie Report" Wilson recorded this species from the North Atlantic and in the "Albatross Report" this species had been reported from Stations 4706 (14°19'S - 98°46'W, Easter to Galpagos Is.); 4765 (53°12'N, 171°37'W, off Atka Is.), and 5340 (10°55'51"N, 119°14'12"E, Philippines) in the West Pacific.

***Pontellopsis sinuata* Wilson, 1950**

*Pontellopsis sinuata* Wilson, 1950, pp. 311 - 312, pl. 33, fig. 497 - 502.

(i) *Label on vial* : U.S.N.M. Cat. No. 74143, *P. sinuata* Wilson, "Albatross" Station 2937, 33°04'30"N, 117°42'W, depth 464 f. Feb. 4, 1889 (10F, 4 immature M).

*Material* : *P. sinuata* — 9F (Range 3.920 - 4.376 mm; Mean 4.186 mm); *P. sinuata*—1M (3.680 mm); and *P. armata* — 4F (Range 2.424 - 2.698 mm; Mean 2.608 mm).

*Remarks* : In the male specimen, the fifth leg was found to be removed. However, the morphological features of these specimens agree with those presented in the original description of this species.

***Pontellopsis strenua* (Dana) 1849 (Fig. 2 i - k)**

*Pontellopsis strenua* (Dana) : Wilson, 1950, pp. 312 — 314, pl. 31, figs. 468—470.

(i) *Label on vial* : U. S. N. M. Cat. No. 70552, *P. strenua* (Dana), "Albatross" Station 4619, 07°17'N, 82°11'W, surface tow, west coast of Costa Rica, Oct. 20, 1904 (1F).

*Material* : *P. perspicax* — 1F (3,480 mm).

(ii) *Label on vial* : U. S. N. M. Cat. No. 70553, *P. strenua* (Dana) "Albatross" Station 4695, 25°22'S, 107°45'W, Easter to Galpagos Is. depth of tow 300-0 m, Dec. 23, 1904 (1F).

*Material* : *P. strenua* (1F : 2.744 mm).

(iii) *Label on vial* : U. S. N. M. Cat. No. 74096, *P. strenua* (Dana), "Albatross" Stations : 4037 (off Hawaii Is., Hawaii); 5134 (6°44'12"N, 121°46'55"E, Sulu Archipelago); and 5340 (10°55'51"N, 119° 14'12"E, Palawan, Philippines) depth 25 f, 1909 (200 M, F)

*Material* : *P. strenua* — 1F (2.736 mm); *P. strenua* — CV — 1F; *P. krameri* — 75F (Range 2.080 - 2.112 mm; Mean 2.095 mm); *P. macronyx*— 75M (Range 1.736 - 1.782 mm; Mean 1.752 mm); *P. laminata* — 3F (Range 2.034-2.128 mm; Mean 2.101 mm); *P. laminata* — 16M (Range 1.864 - 2.016 mm; Mean 1.925 mm); *P. villosa* — 1M (2.528 mm); *Pontellopsis* Copepodites — F, M, 64 Nos.; *Undinula vulgaris* — 1M; *Centropages furcatus* — 1M; *Candacia bradyi* — 1F; *Labidocera kroyeri* — 2M; *L. minuta* 1F, 1m; *Labidocera* sp. copepodites — 7 Nos.; *Pontella* sp. copepodites — 2 Nos.; *Pontellina plumata* — 2F, 3M, 2 copepodites; and Damaged specimens — 2 Nos.



*Remarks* : Wilson (1950) redescribed *P. strenua* based on specimens collected from Caldera Bay Anchorage, west coast of Mindanao, Philippine Is., and since Dana's original types have long been disappeared, a female and male have been designated to serve as neotypes (U. S. N. M. No. 74144, from Endeavour Strait, north of Queensland, Australia).

Wilson's (1950) description and figures of the female clearly indicates that he was dealing with *P. krameri* instead of *P. strenua*. The characteristic lateral protuberances and the nature of the P5 distinguish *P. strenua* from any other species. He also described the male of this species but without figuring the P5. A brief description of the female is presented, based on the specimen present in the vial labelled U. S. N. M. 70553, "Albatross" Station 4695, Easter to Galpagos Is., 25°22'S, 107°45'W, 300 - 0 f, Dec. 23, 1904.

*Female* : Total length 2.744 mm; Prosome : urosome ratio 4.1:1; Cephalon anteriorly rounded with a knobular rostral base; cephalon and T - I separated; T - V ending in acuminate prongs, the posterior tips of which reach the posterior margin of genital segment; urosome two-segmented; genital segment large, produced on its left side into a distinct spike-like projection; its right margin with a short, conical, stout process; anal lamina well developed; CR symmetrical; A - 1 17-segmented; it reaches to the posterior margin of T-IV; P5 : symmetrical; Re symmetrically bifid at tip; inner margin of Re with a strong spine sub-distally; outer margin of Re with three spines of which the distal one is the longest

The vial bearing the label "U. S. N. M: Cat. No. 70552" contains one female specimen of *P. perspicax*. *P. perspicax* was reported by Dana from the tropical Pacific while the records of *P. strenua* are from the Indian and Pacific Oceans, mainly from the west Pacific.

#### ***Pontellopsis villosa* Brady, 1883**

*Pontellopsis villosa* Brady : Wilson, 1950, p. 314, pl. 30, fig. 462.

(i) *Label on vial* : U. S. N. M. Cat. No. 74102, *P. villosa* Brady: "Albatross" Stations 3932 (25°45'N, 171°32'W, Hawaii Is.); 4952 (31°19'N 132°11'30"E, Bungo Channe, Japan) and 5228 (12°29'30"N, 122°15'45"E, South of Romblon, Philippine Is.) (4F).

*Material* : *P. villosa* — 3 M (Range 2.536 - 2.576 mm; Mean 2.552 mm); *Pontellopsis* sp. — CVF (2.888 mm).

(ii) *Label on vial* : U. S. N. M. Cat. No. 80386, *P. villosa* Brady: "Carnegie" Station No. 149, 21°18'N, 138°36'W, C — 100 m, Oct. 21, 1929 (3 specimens).

*Material* : *P. villosa* — 2F (2.456, 2.620 mm) and *P. villosa* — 1M (2.472 mm).

#### CONCLUSION

In most of the specimens examined and discussed above there are discrepancies on the identity and/or locality. It is apparent that there was

confusion in cataloguing the material and evidently there are misplacement of labels. It appears, therefore, that much reliance cannot be given to Wilson's "Albatross" Report which was published posthumously. It is difficult to ascertain the source of these discrepancies observed during the re-examination of the few samples. Although the present work has re-determined the identity of some species of *Pontellopsis*, there is still ambiguity on the localities from where the samples were collected. In view of this it is not possible to use the present data in discussing the geographical ranges of the different species considered herein. However, in order to erase the confusion regarding the validity of the planktonic copepods described and recorded by Wilson in the "Albatross" Report, a thorough and critical re-examination of the material identified by him and presently deposited in the "Wilson Collection" is urgently needed.

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