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FOUR NEW PHILIPPINE SPECIES OF FRESH-WATER  
SHRIMPS OF THE GENUS CARIDINA

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THREE PLATES

The description of these apparently new species of shrimps is based upon material collected from Laoag River, Laoag, Ilocos Norte Province, December 31, 1938, by Mr. Eulogio J. Martinez, and from a mountain stream, Helosig, Leyte, 1,500 feet above sea level, May 23, 1937, by Messrs. Dioscoro S. Rabor and M. Celestino, both of the Division of Fisheries, Bureau of Science.

Genus CARIDINA Milne-Edwards

*Caridina* MILNE-EDWARDS, Histoire Naturelle des Crustaces 2 (1837).

**CARIDINA VILLADOLIDI** sp. nov. Plate 1, figs. 1 to 9.

Rostrum straight, saberlike, nearly reaching level of antennal scale; upper edge without teeth; lower edge with 6 teeth on distal half of its total length; a pair of setæ posterior of rostrum (Plate 1, fig. 1). Antennal spine sharp; anteroinferior angle of carapace sharp-pointed. Eyes normal. Antennular peduncle reaching beyond tip of spine of antennular peduncle scale; basal segment not reaching beyond half of length of rostrum; second segment long, twice its width. Antennal scale slender, three times as long as broad. Mandible with three spines of incisor process and setæ (Plate 1, fig. 2). Terminal joint of third maxilliped (Plate 1, fig. 3) with eight spines and numerous setæ. Carpus of first peræopod (Plate 1, fig. 4) twice as long as distal breadth, excavation at distal end slightly crescent-shaped. Hairs of mobile and immobile fingers of chela not very long. Palm of chela of second peræopod not similar to that of first; distal end of carpus not excavated (Plate 1, fig. 5). Dactylus of third pair (Plate 1, fig. 6) with seven spines; that of fifth pair (Plate 1, fig. 7) with 44 spinules. Body robust, dorsally rounded, depth of second abdominal somite twice in body. Pleopods short and foliaceous. Apex of telson (Plate 1,

fig. 8) triangular, with a sharp midpoint, two curved-in extero-lateral spines, and seven internolateral unequal spines with setæ. Uropodial spinules 17 in each.

Eggs 0.50 mm long, 0.36 wide.

*Type locality*.—Laoag River, Laoag, Ilocos Norte Province, Luzon.

Live specimens grayish with small specks. Preserved specimens yellowish. One type specimen, Cat. No. 40, 26 mm from tip of rostrum to tip of telson.

I take pleasure in naming this species after Dr. Deogracias V. Villadolid, zoölogist of the Division of Fisheries, Department of Agriculture and Commerce.

*Caridina villadolidi* is closely related to *C. angulata* Bouvier with respect to the number of spines of the dactylus of the third and fifth pair of peræopods and diameter of eggs. It differs, however, from the latter by having 17 uropodial spinules, instead of 19 or 20, as in *C. angulata*. The apex of the telson and the basal angle of the uropodial spines of this new species also differ greatly from those of *C. angulata*.

**CARIDINA LAOAGENSIS** sp. nov. Plate 2, figs. 1 to 8.

Rostrum short, slightly curved downwards, not reaching third segment of antennule; upper border with 12 to 18 teeth; lower border with 4 or 5 teeth (Plate 2, fig. 1). Antennal spines below eye orbit sharp-pointed; anteroinferior angle of carapace not rounded. Eyes normal, two times as long as broad, ocellus distinct (Plate 2, fig. 2). Antennular peduncle not reaching beyond tip of spine of antennal scale; basal segment reaching beyond first posterior tooth of lower border of rostrum. Antennal scale three times as long as broad. Terminal joints of third maxilliped not reaching beyond antennular peduncle. Mandible (Plate 2, fig. 3) with five spines of incisor process and setæ. Carpus of first pair of peræopods as long as distal breadth; excavation at distal end crescent-shaped. Mobile and immobile fingers of chela with short hairs (Plate 2, fig. 4). Carpus of second pair of peræopods 4.75 times as long as broad (Plate 2, fig. 5). Dactylus of third pair with seven spines and setæ (Plate 2, fig. 6). Body robust, depth of second abdominal somite twice in length of body. Pleopods short, foliaceous. Telson 1.33 times as long as sixth somite, with three pairs of dorsal spines; apex of telson with two pairs of setæ, with two small extero-lateral spines, two pairs of similar spines, and in between two pairs

of unequal long setæ. Uropodial spinules 20 in each outer uropod.

Eggs 0.43 mm long and 0.29 wide.

Live specimens blackish with a yellow narrow band on dorsal side of body. Preserved specimens dark orange.

Type, Cat. No. 41, and several cotypes, 20 to 25 mm long from tip of rostrum to tip of telson.

*Caridina laoagensis* is allied to *C. annandalei* Kemp and *C. lævis* Heller with respect to the rostrum which does not reach the end of the antennular peduncle or beyond the antennal scale. It resembles *C. lævis* with respect to the excavation at the distal end of the carpus of the first pair of peræopods, but differs from *C. annandalei* by having no excavation on the distal end of the carpus. *C. laoagensis* is very distinct, because it has a greater number of spinules on its outer uropods, and the apex of its telson is not similar to that in other species of the genus. The eggs are smaller than those of *C. annandalei*.

**CARIDINA LEYTENSIS** sp. nov. Plate 3, figs. 1 to 7.

Rostrum straight, short, not reaching beyond end of second segment of antennular peduncle. Upper border with eight to ten teeth; lower border with one or no teeth. Antennal spine sharp-pointed; anteroinferior angle of carapace not rounded (Plate 3, fig. 1). Breadth of cornea 1.75 dorsal length of eye; ocellus distinct. Antennular peduncle not reaching beyond tip of spine of antennal scale. End of basal segment of antennular peduncle reaching beyond last posterior of the upper edge of rostrum. Second segment of antennular peduncle 2.33 times as long as broad. Terminal joint of third maxilliped (Plate 3, fig. 2) with four spines and setæ. Carpus of first peræopod (Plate 3, fig. 3) twice as long as distal breadth; no excavation on distal end. Hairs of mobile and immobile fingers short. Carpus of second peræopod (Plate 3, fig. 4) about five times as long as wide; distal end of carpus not excavated. Dactylus of third with four spines and setæ (Plate 3, fig. 5). Body slightly compressed, sixth somite twice as long as wide. Pleopods long, foliaceous. Apex of telson triangular, with two small external spines and four pairs of internolateral spines, six of which are equal in length, the two extremes longer than the inner four. Uropodial spinules 14.

*Type locality*.—Helosig, Leyte.

Type, Cat. No. 42, and cotype, both 7 mm long from tip of rostrum to tip of telson.

*Caridina leytensis* is closely related to *C. kilimæ* Hilgendorf in the shape of the rostrum, but differs by having a greater number of spinules of the outer uropods, and in the shape of the apex of its telson.

CARIDINA CELESTINOI sp. nov. Plate 3, figs. 8 to 10.

Rostrum short, not reaching beyond end of basal segment of antennular peduncle; upper edge with one tooth; lower edge without teeth but with a pair of setæ. Antennal spine acutely pointed, anteroinferior angle also acutely pointed. Eyes 1.75 times as long as broad, ocellus well-marked. Antennular peduncle (Plate 3, fig. 8), reaching tip of lamella of antennal scale. Dorsal and ventral ends of basal segment and second segment with spinules and setæ. Second segment of antennular peduncle 1.75 times as long as wide dorsally. Terminal joint of third maxillipeds reaching beyond tips of antennal scale and antennular peduncle. Carpus of first peræopod (Plate 3, fig. 9) 2.75 times as long as distal breadth; no excavation of distal end. Telson with two pairs of dorsal spines as long as sixth somite dorsally. Mountain stream, Helosig, Leyte.

Preserved specimen dark yellowish.

Type, Cat. No. 43, 4 mm long.

*Caridina celestinoi* is very distinct from other known species in the character of its rostrum, which has one tooth at the middle of the upper edge and a pair of long setæ on the lower edge.

I take pleasure in naming this dwarf shrimp after Mr. Manuel Celestino, one of the collectors of the specimens.

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## ILLUSTRATIONS

[All drawings were made by Guillermo J. Blanco, with the aid of a camera lucida.]

### PLATE 1. CARIDINA VILLADOLIDI SP. NOV.

FIG. 1. Lateral view of rostrum,  $\times 30$ ; 2, mandible,  $\times 50$ ; 3, terminal segment of third maxilliped,  $\times 30$ ; 4, chela and carpus of first peræopod,  $\times 30$ ; 5, chela and portion of carpus of second peræopod; 6, dactylus of third pair,  $\times 50$ ; 7, dactylus of fifth pair,  $\times 30$ ; 8, portion of telson,  $\times 50$ ; 9, uropodial spinules,  $\times 50$ .

### PLATE 2. CARIDINA LAOAGENSIS SP. NOV.

FIG. 1. Lateral view of rostrum,  $\times 30$ ; 2, eye,  $\times 30$ ; 3, mandible,  $\times 50$ ; 4, chela, carpus, and propodus of first pair of peræopods,  $\times 30$ ; 5, chela and carpus of second pair of peræopods,  $\times 30$ ; 6, dactylus of third pair of peræopods,  $\times 50$ ; 7, portion of telson; 8, uropodial spinules,  $\times 50$ .

### PLATE 3

FIG. 1. *Caridina leytensis* sp. nov., lateral view, anterior cephalothorax,  $\times 50$ ; 2, *Caridina leytensis* sp. nov., terminal joint of third maxilliped,  $\times 30$ ; 3, *Caridina leytensis* sp. nov., peræopod of first pair,  $\times 60$ ; 4, *Caridina leytensis* sp. nov., peræopod of second pair,  $\times 60$ ; 5, *Caridina leytensis* sp. nov. dactylus of third pair,  $\times 60$ ; 6, *Caridina leytensis* sp. nov., apex of telson, 60; 7, *Caridina leytensis* sp. nov., uropodial spinules,  $\times 60$ ; 8, *Caridina celestinoi* sp. nov., lateral view, anterior cephalothorax,  $\times 50$ ; 9, *Caridina celestinoi* sp. nov., peræopod of first pair,  $\times 50$ ; 10, *Caridina celestinoi* sp. nov., lateral view of telson and uropods,  $\times 50$ .





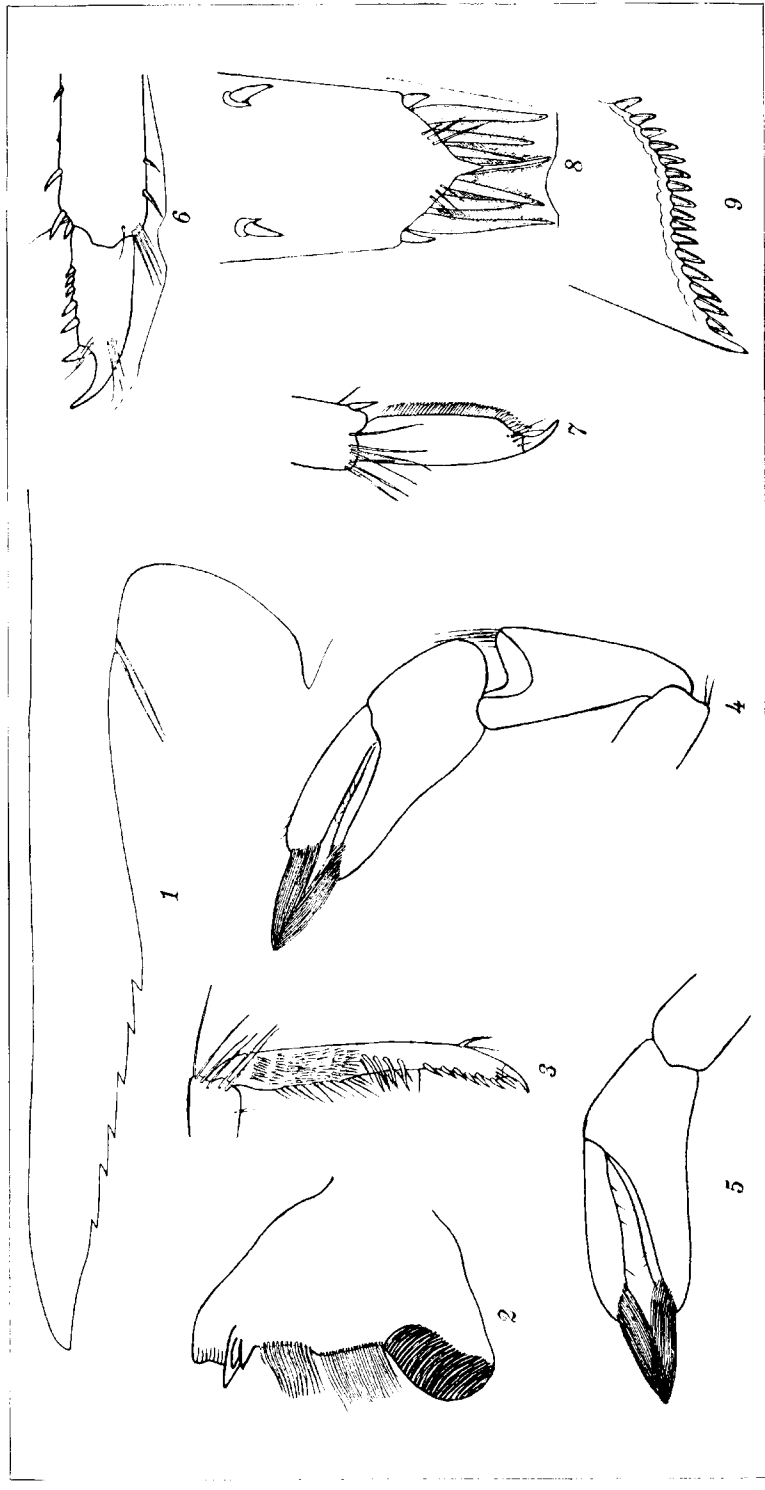


PLATE 1. *CARIDINA VILLADOLIDI* SP. NOV.



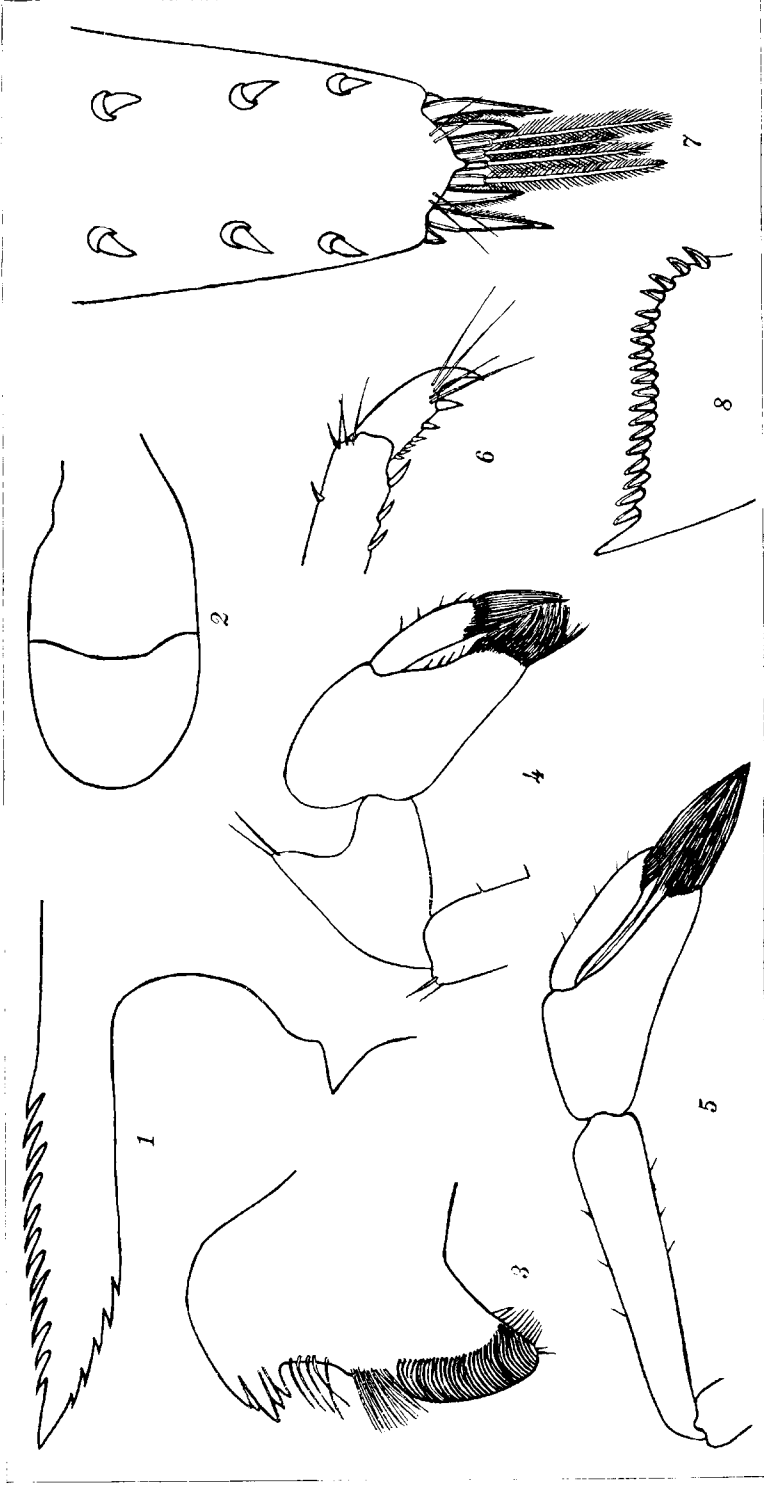


PLATE 2. *CARIDINA LAOAGENSIS* SP. NOV.



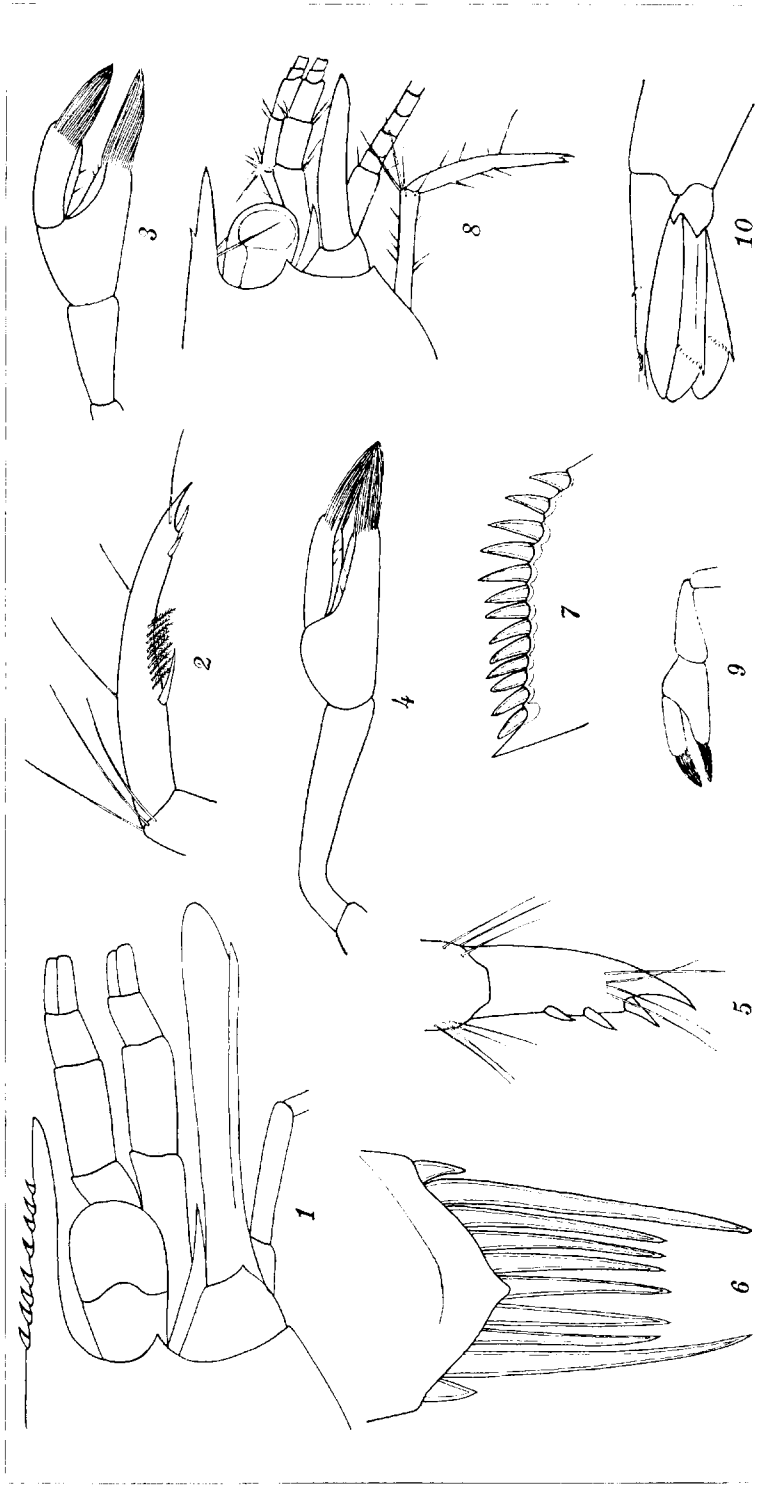


PLATE 3.

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