

15. Rostrum with 1 or 2 teeth on ventral margin . . . . . 16  
 Rostrum with 3-9 teeth on ventral margin . . . . . 17
16. Telson with anterior pair of dorsolateral spines arising anterior to midlength; 2nd pereopod with carpus longer than palm, about 9 times as long as distal width . . . . . 120. *P. digitalis*  
 Telson with anterior pair of dorsolateral spines arising slightly posterior to midlength; 2nd pereopod with carpus  $\frac{1}{2}$  as long as palm,  $1\frac{1}{2}$  times as long as distal width . . . . . 141. *P. lutescens*
17. Dorsal rostral series consisting of 9-12 teeth; 2nd pereopod with carpus armed distally with 1 obscure tooth. . . . . \*155. *P. tenuipes*  
 Dorsal rostral series consisting of 6-8 teeth; 2nd pereopod with carpus armed distally with 2 teeth . . . . . 18
18. Antennal scale with distolateral tooth not overreaching blade . 137. *P. kororensis*  
 Antennal scale with distolateral tooth reaching distinctly beyond truncate distal margin of blade . . . . . 147. *P. platycheles*
19. Third pereopod with dactyl biunguiculate (abnormally so in *P. albatrossae*) . . . . . 20  
 Third pereopod with dactyl simple, not biunguiculate . . . . . 27
20. Telson with more than 2 pairs of dorsolateral spines anterior to posterior margin . . . . . 21  
 Telson with 2 pairs of dorsolateral spines anterior to posterior margin . . . . . 22
21. Rostrum overreaching antennal scale; telson with 7 pairs of dorsolateral spines anterior to posterior margin; 3rd pereopod with dactyl truncate subdistally, propodus without spinules on flexor margin . . . \*104. *P. albatrossae*, new species  
 Rostrum not overreaching antennal scale; telson with 3-5 pairs of dorsolateral spines anterior to posterior margin; 3rd pereopod with dactyl not truncate subdistally, propodus with few spinules on flexor margin . . . . 105. *P. alcocki*
22. Posteriormost tooth of dorsal rostral series not distinctly isolated from rest of series; orbital angle not ovate . . . . . 23  
 Posteriormost tooth of dorsal rostral series more widely separated from next anterior tooth than any other pairs of adjacent teeth of series; orbital angle subovate, with or without acute tip . . . . . 24
23. Rostrum not slender or rod-like; carapace with hepatic spine located posteroventral to antennal spine; 3rd pereopod with accessory tooth on dactyl stouter than distal tooth . . . . . \*131. *P. incertus*  
 Rostrum slender, rod-like; carapace with hepatic spine located directly posterior to antennal spine; 3rd pereopod with accessory tooth on dactyl weaker than distal tooth . . . . . 139. *P. latipollex*
24. Abdomen without compressed prominence on 3rd somite; antennal scale more than 3 times as long as wide . . . . . 25  
 Abdomen with low, compressed median prominence on 3rd somite; antennal scale less than 3 times as long as wide . . . . . 26
25. Second pereopod with carpus nearly or quite twice as long as palm . . . . . 132. *P. indicus*  
 Second pereopod with carpus less than  $\frac{1}{2}$  as long as palm . . . . . \*157. *P. toloensis*
26. Hepatic spine larger than antennal spine; antennal scale with lateral margin convex . . . . . 142. *P. magnificus*  
 Hepatic spine no larger than antennal spine; antennal scale with lateral margin straight . . . . . 159. *P. venustus*
27. Rostrum directed anteroventrad; carapace with hepatic spine larger than antennal spine; 3rd pereopod with flexor margin of dactyl sinuous . . . . . 124. *P. foresti*

- Rostrum directed anteriorly or anterodorsad; carapace with hepatic spine not noticeably larger than antennal spine; 3rd pereopod with flexor margin of dactyl regularly concave . . . . . 28
28. Rostrum of typical palaemonid form, ventral margin armed with 3–5 (very rarely 2) teeth . . . . . 29
- Rostrum slender, ventral margin armed with 0–2 teeth . . . . . 30
29. Only 1 tooth of dorsal rostral series situated on carapace posterior to orbital margin; eyestalk without dorsal tubercle; 1st pereopod overreaching antennal scale . . . . . 134. *P. johnsoni*
- Two teeth of dorsal rostral series situated on carapace posterior to orbital margin; eyestalk with distinct dorsal tubercle; 1st pereopod not overreaching antennal scale . . . . . 150. *P. seychellensis*
30. Rostrum overreaching antennal scale, ventral margin unarmed; carapace with hepatic spine located almost directly posterior to antennal spine; 6th abdominal somite about twice as long as 5th; antennal scale moderately wide with straight lateral margin, distolateral tooth not nearly reaching level of distal margin of blade; 2nd pereopod with carpus unarmed distally, nearly 3 times as long as palm . . . . . \*148. *P. psamathe*
- Rostrum not overreaching antennal scale, ventral margin bearing 2 teeth; carapace with hepatic spine located posteroventral to antennal spine; 6th abdominal somite only slightly longer than 5th; antennal scale very narrow with lateral margin strongly concave, distolateral tooth distinctly overreaching blade; 2nd pereopod with carpus armed with 3 distal spines, less than 1/2 as long as palm . . . . . 151. *P. sibogae*
31. Second pereopod with acute distal tooth on flexor margin of merus . . . . . 32
- Second pereopod without acute distal tooth on flexor margin merus . . . . . 35
32. Third pereopod with dactyl simple, not biunguiculate . . . . . 33
- Third pereopod with dactyl biunguiculate . . . . . 34
33. Posteriormost tooth of dorsal rostral series arising from carapace posterior to orbital margin, 1 or 2 teeth on ventral margin of rostrum; carapace with hepatic spine located posteroventral to antennal spine; antennal scale with distolateral tooth distinctly overreaching distal margin of blade; 3rd pereopod without spinules on flexor margin of propodus . . . . . 116. *P. consobrinus*
- All dorsal rostral teeth arising from rostrum, proper, anterior to level of posterior orbital margin, 4 or 5 teeth on ventral margin of rostrum; carapace with hepatic spine located directly posterior or even posterodorsal to antennal spine; antennal scale with distolateral tooth reaching about as far as level of distal margin of blade; 3rd pereopod with spinules on flexor margin of propodus . . . . . 149. *P. rectirostris*
34. Rostrum horizontal, rostral formula: 0 + 5–6/1; antennal scale with distolateral tooth not nearly reaching level of distal margin of blade; 2nd pereopod with carpus armed with 2 distal spines . . . . . 127. *P. gracilis*
- Rostrum directed anteroventrad, rostral formula: 0 + 7–10/0–1; antennal scale with distolateral tooth reaching nearly or quite to level of distal margin of blade; 2nd pereopod with carpus unarmed distally . . . . . \*138. *P. lanipes*
35. Epigastric tooth on carapace widely separated from dorsal rostral series . . . . . 36
- Posteriormost tooth of dorsal rostral series not widely separated from rest of series . . . . . 37
36. Rostrum with ventral margin nearly straight, unarmed; carapace with hepatic spine located directly posterior or posterodorsal to antennal spine; 1st pereopod not reaching level of distal end of antennal scale . . . . . 126. *P. galene*
- Rostrum with ventral margin concave, bearing 2 small subapical spines; carapace with hepatic spine located posteroventral to antennal spine; 1st pereopod overreaching antennal scale by length of fingers . . . . . 158. *P. tosaensis*

37. Hepatic spine extending beyond anterior margin of carapace; 3rd pereopod with denticulate lobe on flexor margin of dactyl. . . . . 38  
 Hepatic spine not extending beyond anterior margin of carapace; 3rd pereopod without denticulate lobe on flexor margin of dactyl. . . . . 40
38. Antennal scale with distolateral tooth overreaching distal margin of blade little if at all; uropods distinctly overreaching telson . . . . . 129. *P. hertwigi*  
 Antennal scale with distolateral tooth distinctly overreaching distal margin of blade; uropods overreaching telson little if at all . . . . . 39
39. Rostrum not reaching level of distal end of antennal scale, armed ventrally with 1 tooth; telson with both pairs of lateral spines arising in posterior  $\frac{1}{2}$  of length . . . . . \*113. *P. calcaratus*, new species  
 Rostrum overreaching antennal scale, armed ventrally with 3 teeth; telson with anterior pair of lateral spines arising in anterior  $\frac{1}{2}$  of length . . . . . \*119. *P. dentidactylus*
40. Third pereopod with dactyl biunguiculate, accessory tooth sometimes minute (*P. attenuatus*, *P. soror*) . . . . . 41  
 Third pereopod with dactyl simple, not biunguiculate . . . . . 49
41. Basal antennular segment armed with 2 or 3 distolateral teeth . . . . . 42  
 Basal antennular segment armed with 1 distolateral tooth . . . . . 44
42. Rostrum palaemonoid, with 1 or 2 ventral teeth . . . . . 146. *P. pilipes*  
 Rostrum not typically palaemonoid, without ventral teeth . . . . . 43
43. Rostrum spike-like, armed dorsally with 3 widely spaced teeth, ventral margin straight, without keel; 6th abdominal somite more than twice as long as 5th; antennal scale about 4 times as long as wide, lateral margin sinuous, distolateral tooth nearly reaching level of distal margin of blade; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins . . . . . 109. *P. attenuatus*  
 Rostrum compressed, armed dorsally with 10–13 anteriorly crowded teeth, ventrally with convex keel; 6th abdominal somite less than twice as long as 5th; antennal scale about  $2\frac{1}{3}$  times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade, fingers pectinate on opposable margins . . . . . 153. *P. soror*
44. Rostrum nearly horizontal, directed antieriad rather than anteroventrad; 2nd pereopod with fingers nearly or quite as long as palm . . . . . 45  
 Rostrum directed somewhat anteroventrad; 2nd pereopod with fingers no more than  $\frac{2}{3}$  as long as palm . . . . . 47
45. Rostrum with ventral margin concave in anterior  $\frac{1}{2}$ ; hepatic spine larger than antennal spine; abdomen with compressed dorsal prominence on 3rd somite . . . . . \*130. *P. holthuisi*  
 Rostrum with ventral margin convex in anterior  $\frac{1}{2}$ ; hepatic spine no larger than antennal spine; abdomen without compressed dorsal prominence on 3rd somite . . . . . 46
46. Rostrum armed with 6 dorsal teeth, all situated on rostrum, proper, anterior to posterior orbital margin; 2nd pereopod with 1 distal spine on carpus . . . . . 110. *P. batei*  
 Rostrum armed with 9 or 10 dorsal teeth, posteriormost situated on carapace posterior to orbital margin; 2nd pereopod without distal spine on carpus . . . . . \*152. *P. sinensis*
47. Integument pitted on lateral areas of carapace and abdomen; rostrum with 3–6 ventral teeth; hepatic spine larger than antennal spine; extended 2nd pereopod with carpus less than twice as long as distal width . . . . . 125. *P. foveolatus*  
 Integument not pitted; rostrum with 1 or 2 ventral teeth; hepatic spine not noticeably larger than antennal spine; extended 2nd pereopod with carpus more than twice as long as distal width . . . . . 48

48. Antennal scale with lateral margin slightly convex; 1st pereopod with fingers not pectinate on opposable margins; 3rd pereopod with dactyl nearly straight on flexor margin proximal to accessory tooth . . . . . 117. *P. coriolis*  
Antennal scale with lateral margin slightly concave; 1st pereopod with fingers pectinate on opposable margins; 3rd pereopod with dactyl sinuous on flexor margin proximal to accessory tooth . . . . . 145. *P. pectiniferus*
49. Rostrum without ventral keel below midrib; 2nd pereopod with fingers 3 times as long as palm . . . . . 156. *P. tenuis*  
Rostrum with ventral keel; 2nd pereopod with fingers less than twice as long as palm, usually shorter than palm . . . . . 50
50. Rostrum with midrib nearly horizontal, directed more anterior than anteroventrad . . . . . 51  
Rostrum with midrib directed somewhat anteroventrad . . . . . 54
51. Rostrum with dorsal margin faintly convex, nearly straight . . . . . 52  
Rostrum with dorsal margin distinctly convex . . . . . 53
52. Rostrum with ventral margin nearly straight, subparallel with dorsal margin; antennal scale 3 times as long as wide; 4th thoracic sternite without notch in anterior margin; 2nd pereopods unequal . . . . . \*103. *P. affinis*  
Rostrum with ventral margin distinctly convex; antennal scale 2½ times as long as wide; 4th thoracic sternite with median notch in anterior margin; 2nd pereopods subequal . . . . . 144. *P. ornatus*
53. First pereopod with fingers pectinate on opposable margins; 2nd pereopod with fingers nearly as long as palm, carpus 1½ times as long as distal width . . . . . 111. *P. brevicarpalis*  
First pereopod with fingers not pectinate on opposable margins; 2nd pereopod with fingers ½ as long as palm, carpus 3 times as long as distal width . . . . . 136. *P. kempii*
54. Rostrum overreaching antennal scale; 3rd pereopod with blunt subdistal projection on flexor margin of dactyl . . . . . 112. *P. brockii*  
Rostrum not overreaching antennal scale; 3rd pereopod without subdistal projection on flexor margin of dactyl . . . . . 55
55. Dorsal margin of rostrum distinctly convex; hepatic spine arising directly posterior to antennal spine . . . . . 121. *P. diversipes*  
Dorsal margin of rostrum faintly convex; hepatic spine arising posteroventral to antennal spine . . . . . 56
56. All dorsal rostral teeth confined to rostrum, proper, anterior to orbital margin; hepatic spine arising only slightly below level of antennal spine; 6th abdominal somite 1½ times as long as 5th; 1st pereopod with fingers pectinate on opposable margins; 2nd pereopod with carpus little longer than distal width . . . . . 133. *P. inornatus*  
Posteriormost tooth of dorsal rostral series arising from carapace posterior to orbital margin; hepatic spine arising distinctly below level of antennal spine; 6th abdominal somite about twice as long as 5th; 1st pereopod with fingers pectinate on opposable margins; 2nd pereopod with carpus more than 3 times as long as distal width . . . . . 135. *P. jugalis*

**\*103. *Periclimenes affinis* (Zehntner, 1894)**

*Palaemonella affinis* Zehntner, 1894:208 [type locality: Ambon, Indonesia].

*Periclimenes (Harpilius) affinis*.—Holthuis, 1958:6, fig. 2.

*Periclimenes affinis*.—Bruce, 1980a:2, figs. 1–3.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal

scale, nearly horizontal, rostral formula 0–1 + 6–7/1–2, posteriormost tooth not isolated from remainder of dorsal rostral series, situated in line with or anterior to level of hepatic spine; carapace without supraorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle ovate; abdomen without compressed dorsal



prominence on 3rd somite, 6th somite  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 or 2 distolateral spines on basal segment; antennal scale 3 times as long as wide, lateral margin nearly straight, distolateral tooth not reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopods unequal, fingers  $\frac{1}{2}$  as long as palm, carpus less than  $\frac{1}{2}$  as long as palm, about  $1\frac{3}{4}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin somewhat sinuous, propodus with few indistinct spinules on flexor margin, not segmented; 5th pereopod reaching nearly to distal end of antennal scale; uropod barely overreaching extended telson; maximum postorbital carapace length about 4 mm.

**MATERIAL.**—PHILIPPINES. Near Siasi, Sulu Archipelago; sta 5147;  $5^{\circ}41'40''N$ ,  $120^{\circ}47'10''E$ ; coral sand, shells; 16 Feb 1908 (1127–1147); 12' Agassiz beam trawl, mud bag; 3 ovig females [2.0–3.3].

**RANGE.**—Northern South China Sea; Sulu Archipelago, Philippines; Ambon, Indonesia; Great Barrier Reef, Australia; and New Caledonia; associated with comatulid crinoids.

#### \*104. *Periclimenes albatrossae*, new species

FIGURE 20

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum (Figure 20a) overreaching antennal scale, somewhat palaemonoid, directed slightly anterodorsad anteriorly, rostral formula  $1 + 2 + 7/4-5$ , posteriormost tooth isolated from remainder of dorsal rostral series, situated far posterior to hepatic spine; carapace without supraorbital spine, hepatic spine much larger than antennal spine, arising only slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle ovate; abdomen (Figure 20c) without compressed dorsal prominence on 3rd somite, 6th somite more than  $1\frac{1}{2}$  times as long as 5th; telson (Figure 20d) with 7 pairs of small lateral spines; eye with cornea hemispherical, not produced distally, no wider than eyestalk, and lightly pigmented, antennular peduncle (Figure 20g) with 1 distolateral spine on basal segment; antennal scale (Figure 20i) about  $2\frac{1}{3}$  times as long as wide, lateral margin convex proximally, distolateral tooth not reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod (Figure 20p,q) overreaching antennal scale by about length of chela, fingers not pectinate on opposable margins; 2nd pereopods (Figure

20r,s) subequal (left slightly longer than right because of proportionately longer carpus), overreaching antennal scale by length of chela, fingers  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about  $1\frac{4}{5}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod (Figure 20t,u) with dactyl subdistally truncate, without denticulate lobe on flexor margin, obscurely biunguiculate, flexor margin straight, convex distally, propodus without spinules on flexor margin, not segmented; uropod (Figure 20d) reaching little, if at all, beyond extended telson; postorbital carapace length 10.9 mm.

**MATERIAL.**—PHILIPPINES. South China Sea off western Luzon; sta 5440;  $16^{\circ}33'52''N$ ,  $119^{\circ}52'54''E$ ; 315 m; fine gray sand, globigerina;  $11.8^{\circ}C$ ; 10 May 1909 (1401–1421); 12' Agassiz beam trawl, mud bag; 1 ovig female holotype [10.9], USNM 252658.

**TYPE LOCALITY.**—Same as above.

**RANGE.**—Known only from the unique ovigerous female holotype from off western Luzon, Philippines; 315 meters.

**REMARKS.**—There is strong superficial similarity between *P. albatrossae* and *P. alcocki*. These two species are distinguished from all other members of the Pontoninae by having four or more pairs of dorsolateral spines on the telson. *Periclimenes albatrossae* apparently differs in the slightly longer and more nearly horizontal rostrum; more prominent and subspatulate ventral orbital angle; seven rather than four or five pairs of dorsolateral spines and subcordiform intermediate posterior spines on the telson; three rather than four teeth on the incisor process of the mandible; the second pereopods neither tuberculate nor setose and the movable finger not markedly spatulate; and, especially, in the apparently unique form of the dactyls of the posterior pereopods, which superficially resemble those of *P. hertwigi* more closely than those of *P. alcocki*, as illustrated by Kubo (1940b, fig. 2n), and in the absence of spinules on the flexor margin of the propodus of those pereopods.

There is a temptation to assign more than specific importance to the two species of *Periclimenes* (*P. albatrossae* and *P. alcocki*) that have more than the usual pontonine complement of two pairs of dorsolateral spines on the telson. That single character may be no more important, however, than the striking difference in the form of the dactyl of the posterior pereopods of those two species.

**ETYMOLOGY.**—*Periclimenes albatrossae* is named for the U.S. Fisheries Steamer *Albatross* to honor the men who served on that vessel from 1882 to 1920. We like to believe that the diligence and expertise still reflected in the specimens gathered in remote areas by those professional collectors are widely recognized for the major contribution that they represent to our knowledge of what Howard Evans so appropriately referred to as "Life on a Little-known Planet."

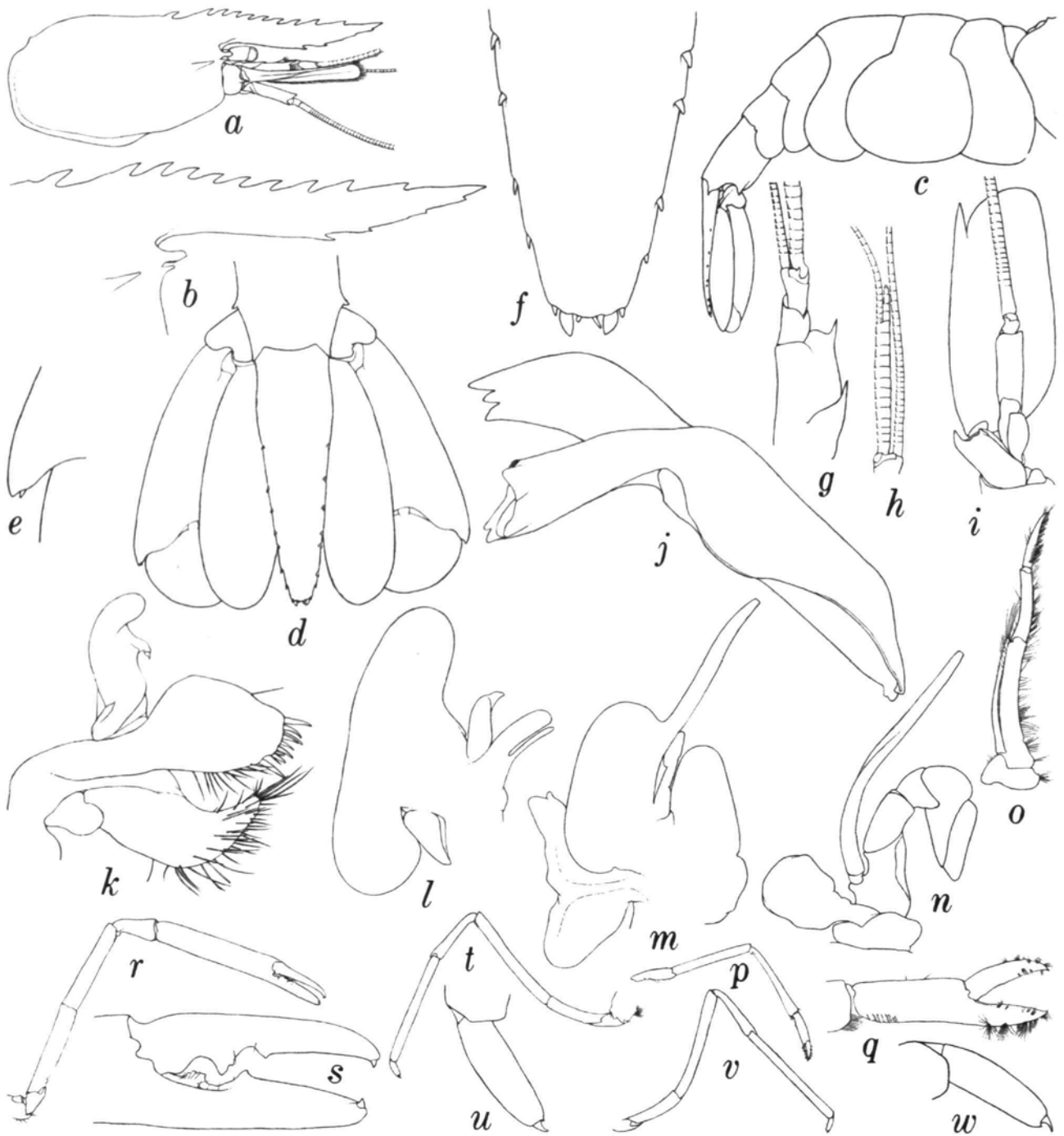


FIGURE 20.—*Periclimenes albatrossae*, new species, ovigerous female holotype from *Albatross* sta 5440 (South China Sea off western Luzon), carapace length 10.9 mm: *a*, carapace and anterior appendages, lateral aspect; *b*, rostrum, lateral aspect; *c*, abdomen, lateral aspect; *d*, tail fan; *e*, distolateral angle of lateral branch of uropod; *f*, posterior end of telson; *g*, right antennule, dorsal aspect; *h*, left antennule, flagella; *i*, right antenna, ventral aspect; *j*, right mandible; *k*, right 1st maxilla; *l*, right 2nd maxilla; *m*, right 1st maxilliped; *n*, right 2nd maxilliped; *o*, right 3rd maxilliped; *p*, right 1st pereopod; *q*, same, chela; *r*, right 2nd pereopod; *s*, same, fingers; *t*, left 3rd pereopod; *u*, same, dactyl; *v*, right 4th pereopod; *w*, same, dactyl.

**105. *Periclimenes alcocki* Kemp, 1922**

*Periclimenes (Periclimenes) alcocki* Kemp, 1922:154, figs. 21–24 [type locality: Laccadive Sea, 9°34'57"N, 75°36'30"E; 743 m].—Kubo, 1940b:33, figs. 1, 2.

*Periclimenes alcocki*.—Bruce, 1981c:190, figs. 1, 2; 1985b:231, fig. 1.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, directed slightly anteroventrad except near tip, rostral formula 2 + 6–8/2–4, posteriormost tooth somewhat isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or post-orbital spine, hepatic spine larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace; orbital angle ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about 1½ times as long as 5th; telson with 3–5 pairs of lateral spines; eye with cornea small, hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale little more than twice as long as wide, lateral margin convex, distolateral tooth not reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopods unequal, with fingers ½ as long as palm, carpus ¼ as long as palm, barely longer than distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin slightly concave, propodus with very few spinules at distal end of flexor margin, not segmented; 5th pereopod not overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about 12 mm.

**RANGE.**—Madagascar, Laccadive Sea, Japan, Philippines, and Australia; 190–743 meters.

**106. *Periclimenes amboinensis* (De Man, 1888)**

*Anchistia amboinensis* De Man, 1888b:546, pl. 22a: fig. 2 [type locality: Ambon, Indonesia].

*Periclimenes amboinensis*.—Bruce, 1983c:874, 898, 899, figs. 1–3, 7E.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, directed somewhat anteroventrad, rostral formula 0 + 6/1, posteriormost tooth not isolated from remainder of dorsal rostral series, situated distinctly anterior to posterior orbital margin, lateral carina expanded posteriorly into supraorbital cave and spine; carapace with supraorbital tooth, hepatic spine not much larger than antennal spine, arising slightly posteroventral to latter, extending nearly to anterior margin of carapace, orbital angle acute, not ovate; telson without dorsolateral spines anterior to posterior margin; eye with cornea angularly produced distally, not hemispherical; antennular peduncle with 1 distolateral spine on basal segment; antennal scale with lateral margin faintly convex, distolateral

tooth not reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by about length of chela; 2nd pereopods unequal, fingers about ⅔ as long as palm, carpus much less than ½ as long as palm, little longer than distal width, without distal spines, merus with stout tooth directed distally from flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, obscurely biunguiculate, flexor margin sinuous, propodus with indistinct spinules near distal end of flexor margin, not segmented; uropod barely overreaching extended telson; maximum carapace length about 4 mm.

**RANGE.**—Indonesia and Great Barrier Reef of Australia; associated with comatulid crinoids. Devaney and Bruce (1987: 222, 230) tentatively recorded the species from Enewetak Atoll, Marshall Islands.

**REMARKS.**—See "Remarks" under *P. ceratophthalmus*.

**\*107. *Periclimenes amymone* De Man, 1902**

*Periclimenes amymone* De Man, 1902:829, pl. 25: fig. 53 [type locality: Ternate, Indonesia].—Bruce, 1981f:262, fig. 1E–I 1983c:875, fig. 7C.

*Periclimenes (Harpilius) amymone*.—Holthuis, 1952c:82, fig. 32.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale or not, palaemonoid, directed anterodorsal in anterior ½, rostral formula 1 + 5–7/2–4, posteriormost tooth isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace with supraorbital spine, hepatic spine not noticeably larger than antennal spine, arising slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle rounded, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite 1⅔ times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale nearly 4 times as long as wide, lateral margin concave, distolateral tooth far overreaching distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod slightly overreaching antennal scale, 2nd pereopod with fingers fully ½ as long as palm, carpus fully ⅓ as long as palm, nearly 2½ times as long as distal width, with 3 distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin sinuous, propodus with single spinule at distal end of flexor margin, not segmented; 5th pereopod not overreaching antennal scale; uropod reaching about to posterior margin of extended telson; maximum postorbital carapace length about 3½ mm.

**MATERIAL.**—PHILIPPINES. Marungas Island (south side), Sulu Archipelago; [6°06'N, 120°58'E]; 1¼–2½ m; scattered coral and sand; 10 Feb 1908 (1330–1500); diving, coral heads

taken ashore: 1 male [3.0] 1 ovig female [3.5].

RANGE.—Nicobar Islands, Philippines, Singapore, Indonesia, Australia, New Caledonia, Solomon and Samoa; usually associated with scleractinian corals.

#### 108. *Periclimenes andamanensis* Kemp, 1922

*Periclimenes (Ancylocaris) andamanensis* Kemp, 1922:204, figs. 54–57 [type locality: Ross Channel, Port Blair, Andaman Islands; 7–15 meters].  
*Periclimenes andamanensis*.—Bruce, 1977j:269.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching level of distal end of antennal scale or beyond, slenderly palaemonoid, directed slightly anterodorsad in anterior  $1/2$ , rostral formula  $1 + 6-8/2-4$ , posteriormost tooth somewhat isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace with supraorbital spine, hepatic spine no larger than antennal spine, arising almost directly posterior to latter, not extending beyond anterior margin of carapace, orbital angle rounded, not ovate; abdomen with 6th somite about  $1\frac{3}{4}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale  $5-5\frac{1}{2}$  times as long as wide, lateral margin slightly concave, distolateral tooth far overreaching distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod far overreaching antennal scale; 2nd pereopod with fingers  $1/2-3/4$  as long as palm, carpus  $4/5-1\frac{1}{5}$  times as long as palm,  $6-7\frac{1}{2}$  times as long as distal width, with 1 or 2 distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin regularly concave, propodus with spinules on flexor margin, not segmented; 5th pereopod reaching about to distal end of antennal scale or beyond; maximum postorbital carapace length about 4 mm.

RANGE.—Madagascar, Andaman Islands, Ryukyu Islands, and Queensland, Australia; the only Indonesian record is based on a specimen identified by J. Roux and reported by Dammerman (1929:117 and 1948:511, fig. 43) from a brackish pool on Pulau Sertung in Selat Sunda.

#### 109. *Periclimenes attenuatus* Bruce, 1971

*Periclimenes attenuatus* Bruce, 1971d:533, figs. 1–5 [type locality: Waterhouse Cove, Burukuk, Duke of York Group, St. George's Channel, Bismarck Archipelago;  $4^{\circ}7.3'S$ ,  $152^{\circ}27.3'E$ ; associated with crinoids in 1–2 m]; 1983c:879.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum short, not overreaching anteriorly extended eyes, slender, directed slightly anterovertrud, rostral formula  $0 + 3/0$ , teeth subequally spaced; carapace without supraorbital or postorbital spine, hepatic spine smaller than antennal spine, arising slightly posteroventral to latter, not

extending to anterior margin of carapace, orbital angle subovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite nearly  $2\frac{1}{3}$  times as long as 5th; telson with 2 pairs of dorsolateral spines, anterior pair arising at about mid-length; eye large, cornea hemispherical, not produced distally; antennular peduncle with 1 or 2 distal spines mesial to usual distolateral spine on basal segment; antennal scale 4 times as long as wide, lateral margin sinuous, distolateral tooth not quite reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of fingers, latter not pectinate on opposable margins; 2nd pereopods unequal and dissimilar, major one with fingers  $1/2$  as long as palm, carpus  $1/3$  as long as palm, about  $1\frac{1}{2}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl lacking denticulate lobe on flexor margin, minutely biunguiculate distally, flexor margin nearly straight, propodus without spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length 2 mm.

RANGE.—Seram, Indonesia; Bismarck Archipelago; and Great Barrier Reef, Australia; associated with comatulid crinoids.

#### 110. *Periclimenes batei* (Borradaile, 1917)

*Palaemonella orientalis* Bate, 1888:787, pl. 128: fig. 4 [not *Palaemonella orientalis* Dana, 1852].

*Palaemonella batei* Borradaile, 1917:357, 358 [type locality: off Sibago Island, Sulu Archipelago, Philippines;  $6^{\circ}47'N$ ,  $122^{\circ}28'E$ ].

*Periclimenes (Periclimenes) batei*.—Holthuis, 1959:195, fig. 1.  
*Periclimenes batei*.—Bruce and Svoboda, 1984:98.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, nearly horizontal, rostral formula  $0 + 6/1$ , posteriormost tooth not isolated from remainder of dorsal rostral series; carapace without supraorbital or postorbital spine, hepatic spine no larger than antennal spine, not extending beyond anterior margin of carapace; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about twice as long as 5th; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 3 times as long as wide, lateral margin faintly concave, distolateral tooth not overreaching distal margin of blade; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers about  $4/5$  as long as palm, subequal to carpus in length, latter about  $3\frac{1}{2}$  times as long as distal width, with 1 distal tooth, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, sharply biunguiculate, flexor margin straight proximally, concave distally; uropod probably overreaching extended telson; postorbital carapace length about 1 mm.

RANGE.—Known only from the type locality in the Sulu



Archipelago, Philippines, in 47 m.

REMARKS.—The probability that the unique holotype of *P. batei* is a juvenile suggests that the adult characters of the species and, therefore, its relationship with other members of the genus may remain uncertain for an unpredictable period.

### 111. *Periclimenes brevicarpalis* (Schenkel, 1902)

*Palaemonella amboinensis* Zehntner, 1894:206, pl. 9: fig. 27 [type locality: Ambon, Indonesia; not *Periclimenes amboinensis* De Man, 1888].

*Ancyllocaris brevicarpalis* Schenkel, 1902:563, pl. 13: fig. 21 [type locality: Makasar, Celebes].

*Palaemonella aberrans* Nobili, 1904:233 [type locality: Djibouti].

*Harpilius latirostris* Lenz, 1905:380, pl. 47: fig. 14 [type locality: Mkokotoni and Bawi, Zanzibar].

*Periclimenes potina* Nobili, 1905b:159 [type locality: southeast coast of Arabia].

*Periclimenes hermitensis* Rathbun, 1914:655, pl. 1: figs. 1–3 [type locality: Hermite, Monte Bello Islands, Western Australia].

*Periclimenes (Ancyllocaris) brevicarpalis*.—Kemp, 1922:185, figs. 40–42, pl. 6: fig. 8.

*Periclimenes (Harpilius) brevicarpalis*.—Holthuis, 1952c:69, fig. 27.

*Periclimenes brevicarpalis*.—Bruce, 1983c:879, fig. 7D,E.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, nearly horizontal, rostral formula  $0 + 1 + 4-7/1-2$ , posteriormost tooth not isolated from remainder of dorsal rostral series; carapace without supraorbital or postorbital spine, hepatic spine no larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of inconspicuous dorsolateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale slightly less than  $2\frac{1}{2}$  times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopods similar, subequal, fingers slightly shorter than palm, carpus about  $\frac{1}{2}$  as long as palm, about  $1\frac{1}{2}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, usually simple, rarely biunguiculate, flexor margin slightly sinuous, propodus without spinules or with single distal pair on flexor margin, not segmented; 5th pereopod not reaching distal end of antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about  $8\frac{1}{2}$  mm.

RANGE.—Red Sea, eastern and South Africa, Ryukyu Islands and Honshu, Japan, south to Capricorn Islands, Great Barrier Reef, Australia, and east to Line Islands; associated with sea anemones.

REMARKS.—Bruce (1983c:880) suggested that more than

one species may be represented by the name *P. brevicarpalis* and that one or more of the five names generally synonymized with Schenkel's name may have to be resurrected.

### 112. *Periclimenes brockii* (De Man, 1888)

*Anchistia Brockii* De Man, 1888b:548, pl. 22a: fig. 3 [type locality: Ambon, Indonesia].

*Periclimenes (Harpilius) brockii*.—Holthuis, 1952c:88.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale, modified palaemonoid, directed somewhat anteroventrad, rostral formula  $0 + 9-10/1$ , posteriormost tooth not isolated from remainder of dorsal rostral series; carapace without supraorbital or postorbital spine, hepatic spine no larger than antennal spine, arising short distance posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle subacute, not ovate; telson with 2 pairs of dorsolateral spines anterior to posterior margin; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale with lateral margin nearly straight, distolateral tooth reaching about to level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl obscurely truncate subdistally, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin nearly straight, propodus without spinules on flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length about  $2\frac{1}{2}$  mm.

RANGE.—Known only from the type locality: Ambon, Indonesia. to a depth of 78 m, from which depth in the Maldivian Islands, it was reported by Borradaile (1917:363) to be associated with an echinoid.

### \*113. *Periclimenes calcaratus*, new species

FIGURE 21

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum (Figure 21a) not overreaching antennal scale, slender, directed slightly anteroventrad from horizontal, rostral formula  $0 + 5/1$ , posteriormost tooth not isolated from remainder of dorsal rostral series; carapace without supraorbital or postorbital spine, hepatic spine larger than antennal spine, arising immediately posteroventral to latter, extending beyond anterior margin of carapace, orbital angle slightly subovate; abdomen (Figure 21c) without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{1}{3}$  times as long as 5th; telson (Figure 21d) with 2 pairs of lateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle (Figure 21e) with 1

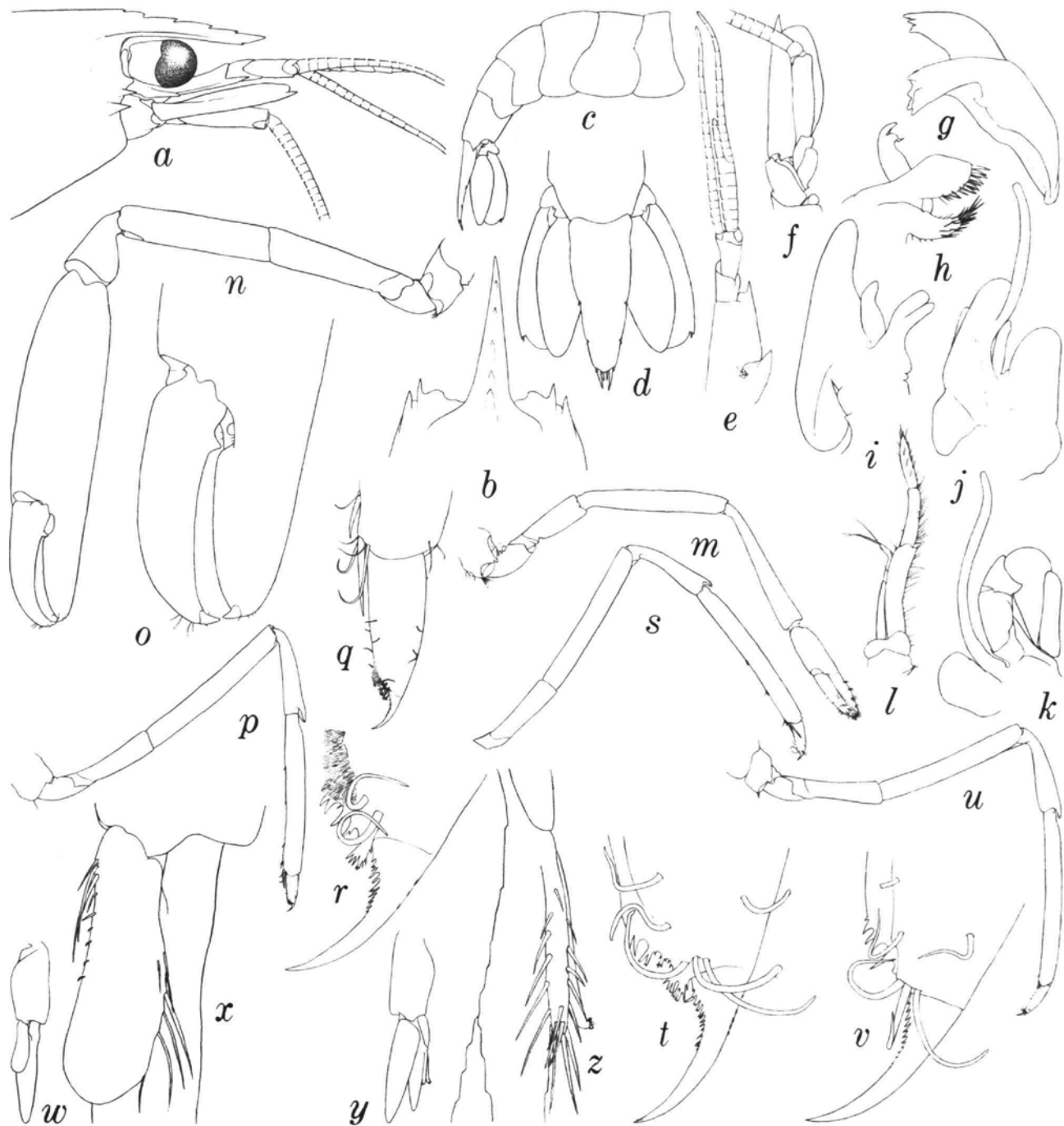


FIGURE 21.—*Periclimenes calcaratus*, new species, male holotype from *Albatross* sta 5453 (Albaya Gulf), carapace length 4.2 mm: *a*, anterior carapace and appendages, lateral aspect; *b*, anterior carapace, dorsal aspect; *c*, abdomen, lateral aspect; *d*, tail fan; *e*, right antennule, dorsal aspect; *f*, right antenna, ventral aspect; *g*, right mandible; *h*, right 1st maxilla; *i*, right 2nd maxilla; *j*, right 1st maxilliped; *k*, right 2nd maxilliped; *l*, right 3rd maxilliped; *m*, right 1st pereopod; *n*, left 2nd pereopod; *o*, same, fingers; *p*, right 3rd pereopod; *q*, same, dactyl; *r*, same, distal portion; *s*, 5th pereopod; *t*, same, distal portion of dactyl; *u*, right 5th pereopod; *v*, same, distal portion of dactyl; *w*, right 1st pleopod; *x*, same, endopod; *y*, right 2nd pleopod; *z*, same, appendix masculina and appendix interna.



distolateral spine on basal segment; antennal scale (Figure 21f) nearly  $2\frac{2}{3}$  times as long as wide. lateral margin nearly straight, distolateral tooth distinctly overreaching distal margin of blade; 1st pereopod (Figure 21m) overreaching antennal scale by length of chela and about  $\frac{1}{3}$  of carpus, fingers not pectinate on opposable margins; 2nd pereopod (Figure 21n) overreaching antennal scale by length of chela and about  $\frac{1}{2}$  of carpus, fingers (Figure 21o) about  $\frac{3}{5}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about  $1\frac{1}{5}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod (Figure 21p) overreaching antennal scale by length of dactyl and about  $\frac{4}{5}$  of propodus, dactyl (Figure 21r) clearly truncate subdistally, with denticulate lobe on flexor margin, not conventionally biunguiculate, flexor margin slightly convex, propodus with few small, indistinct spinules on flexor margin, not segmented; 5th pereopod (Figure 21u) overreaching antennal scale by length of dactyl and about  $\frac{1}{4}$  of propodus; uropod not overreaching extended telson (Figure 21d); postorbital carapace length 4.2 mm.

**MATERIAL.**—PHILIPPINES. Albay Gulf, east of southern Luzon: sta 5453;  $13^{\circ}12'N$ ,  $123^{\circ}49'18"E$ ; [267 m]; 7 Jun 1909 (0944–1004); 12' Agassiz beam trawl: 1 male holotype [4.2], USNM 252659.

**TYPE LOCALITY.**—Same as above.

**RANGE.**—Known only from the unique male holotype from Albay Gulf, Philippines, [267 meters].

**REMARKS.**—The specimen on which this species is based was originally identified as *P. hertwigi*. It may still prove to fall within the range of variation of that species, but it fails to agree exactly with the descriptions of Balss (1914b:49, figs. 28–30) and Holthuis (1952c:43, figs. 11, 12) and the description of *P. gracilirostris* by Kubo (1940b:41, figs. 8–10). The rostrum bears only five dorsal and one ventral teeth, and none of the dorsal teeth is situated on the carapace posterior to the orbital margin; to be sure, this dentition agrees with Balss's description, but his illustrations show six dorsal and two ventral teeth, as in the females described by Kubo and Holthuis. (Is it possible that this is a sexual character and that Balss described the condition in the only male of the five specimens of *P. hertwigi* recorded thus far?) The sixth abdominal somite is considerably less than one and one-half times as long as the fifth, whereas it is described by Holthuis as "slightly less than twice as long as the fifth" and illustrated by Kubo as about twice as long. The distal margin of the distolateral lobe mesial to the distolateral spine of the basal antennular segment is transverse, rather than sloping posteromesially (see illustrations of Balss and Kubo). The antennal scale has the distolateral spine reaching far beyond the distal margin of the blade, rather than reaching "to or slightly beyond the lamella," as described by Holthuis and figured by Balss. The second pereopod has a socket surrounding a peg-like tooth at the base of the fixed finger, rather than two teeth in this position as described by both Holthuis and Kubo. The dentition near the distal end of the flexor margin of the dactyl of the three posterior pairs of

pereopods seems to be more complex than the "shallow lobes" mentioned and illustrated by Holthuis, but the exact form of this margin is difficult to determine, even at high magnification, as noted by Holthuis. Perhaps of major significance is the fact that the uropods fall distinctly short of the posterior end of the telson, whereas they are described as overreaching the telson in all three of the descriptions of *P. hertwigi*. Unfortunately, the sternum of the unique specimen of this species was destroyed by dissection, thereby denying determination of the armature of the fourth sternite.

A male specimen reported from New Caledonia (Bruce, 1990a:151, fig. 2b) has a rostral dentition of 4/1 and closely resembles the present specimen of *P. calcaratus*, but the associated female has a dentition of 5/1, with minute subterminal denticles both dorsally and ventrally. Details of the ambulatory dactyls were not noted. It is possible that these specimens may also belong to *P. calcaratus*.

**ETYMOLOGY.**—The name is from the Latin *calcar* (spur) and was suggested by the peculiar dentition on the dactyls of the third and fourth pereopods.

#### 114. *Periclimenes ceratophthalmus* Borradaile, 1915

*Periclimenes* (*Corniger*) *ceratophthalmus* Borradaile, 1915:211 [type locality: Hulule, Malé Atoll, Maldives Islands; on crinoid]; 1917:324, 365, pl. 54: fig. 9.

*Periclimenes* (*Periclimenes*) *ceratophthalmus*.—Holthuis, 1952c:56, fig. 20.

*Periclimenes ceratophthalmus*.—Bruce, 1983c:880, figs. 4A–D, 5, 6A–C, 7F.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, horizontal, rostral formula  $0 + 4/0$ , posteriormost tooth not isolated from remainder of rostral series, situated slightly posterior to mid-length of rostrum, proper, lateral carina expanded posteriorly into dentate supraorbital eave; carapace with supraorbital tooth, hepatic spine not much larger than antennal spine, arising almost directly posterior to latter, orbital angle convex, not ovate; eye with cornea distinctly ogival, antennular peduncle with 1 distolateral spine on basal segment; antennal scale with distolateral tooth not reaching level of distal margin of blade (overreaching blade in Borradaile's illustration); 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of fingers; 2nd pereopod with fingers about  $\frac{2}{3}$  length of palm, carpus and merus unarmed; uropod considerably overreaching extended telson; carapace length little more than 3 mm.

**RANGE.**—See "Remarks."

**REMARKS.**—As noted by Bruce (1983c:880), material that has been assigned to this species displays unusual variation in the form of the rostrum, the distolateral spines on the telson, the presence or absence of epistomal "horns," the degree of corneal extension of the eyes, the form of the incisor process of the mandible, and the range in form of the dactyl of the posterior pereopods from simple to strongly biunguiculate. It is very possible that *P. ceratophthalmus* consists of at least two species, possibly associated with different crinoid host genera.

However, the recent revision of crinoid host generic and specific names has complicated the problem. Borradaile's inadequate description and crude illustrations of the shrimp have not been helpful, nor has the examination of his type material.

RANGE.—Kenya, Zanzibar, Seychelle and Maldive islands, Indonesia, Great Barrier Reef of Australia, and Solomon and Caroline islands.

#### 115. *Periclimenes commensalis* Borradaile, 1915

*Periclimenes* (*Cristiger*) *commensalis* Borradaile, 1915:211 [type locality: Murray Island, Torres Strait; on comatulid crinoids].

*Periclimenes* (*Periclimenes*) *commensalis*.—Holthuis, 1952c:53, figs. 18, 19.

*Periclimenes commensalis* Bruce, 1983c:883, fig. 4E.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, directed slightly anteroventrad, rostral formula  $0 + 5-7/1-2$ , posteriormost tooth not isolated from remainder of dorsal rostral series; carapace with supraorbital spine, usually arising from supraorbital eave, hepatic spine slightly larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle subovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite nearly  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of minute dorsolateral spines, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 2 distolateral spines on basal segment; antennal scale fully 3 times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by about length of fingers, latter not pectinate on opposable margins; 2nd pereopod with fingers about as long as palm, finely serrate on distal parts of opposable margins, carpus fully  $\frac{1}{3}$  as long as palm, about as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin somewhat sinuous, propodus with few spines on flexor margin, not segmented; 5th pereopod not overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about 4 mm.

RANGE.—Western Indian Ocean to Ryukyu Islands, Hong Kong, Indonesia, Australia, New Caledonia, and Caroline, Marshall, Solomon, and Fiji islands; associated with comatulid crinoids.

#### 116. *Periclimenes consobrinus* (De Man, 1902)

*Harpilius consobrinus* De Man, 1902:836, pl. 26: fig. 54 [type locality: Ternate, Indonesia].

*Periclimenes consobrinus*.—Bruce, 1972f:411, fig. 1B [left drawing]; 1975f:27, fig. 16 [color].—Holthuis, 1981:796, fig. 3i-1.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas

of carapace and abdomen; rostrum barely overreaching antennal scale, palaemonoid, nearly horizontal, slightly sinuous, rostral formula  $1 + 6-7/1-2$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated in line with or anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle bluntly acute, not ovate; abdomen without compressed dorsal prominence on 3rd somite; telson with 2 pairs of distolateral spines anterior to posterior margin, anterior pair arising at or slightly posterior to mid-length, eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about  $3\frac{1}{3}$  times as long as wide, lateral margin somewhat sinuous, distolateral tooth distinctly overreaching distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod overreaching antennal scale by nearly length of chela, fingers not pectinate on opposable margins; 2nd pereopod with fingers fully  $\frac{2}{3}$  as long as palm, carpus less than  $\frac{1}{2}$  as long as palm, about  $1\frac{1}{3}$  times as long as distal width, without distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin sinuous, deeply concave in distal  $\frac{3}{4}$ , propodus without spinules on flexor margin, not segmented; maximum postorbital carapace length 4.6 mm.

RANGE.—Western Indian Ocean, Thailand, Indonesia, and Great Barrier Reef of Australia; associated with scleractinian corals of genus *Pocillopora*.

REMARKS.—The most reliable means of distinguishing *P. consobrinus* from the much more common *P. lutescens* relates to the form of the second maxilliped illustrated by Bruce (1972f, fig. 1). Of similar importance is the presence of a postorbital ridge in *P. consobrinus* and its absence in *P. lutescens*. Whether or not the relative positions of the posteriormost tooth of the dorsal rostral series and the hepatic spine, used in the key offered above, are equally reliable remains to be determined.

#### 117. *Periclimenes coriolis* Bruce, 1985

*Periclimenes coriolis* Bruce, 1985b:234, figs. 4-7 [type locality: southwest of Manila Bay, Luzon, Philippines;  $11^{\circ}01.0'N$ ,  $120^{\circ}17.1'E$  to  $13^{\circ}59.9'N$ ,  $120^{\circ}17.5'E$ ; 186-184 m].

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, rather slender, directed slightly anteroventrad, rostral formula  $1 + 7/2$ , posteriormost tooth not isolated from remainder of rostral series, situated slightly anterior to level of hepatic spine; carapace without supraorbital spine, hepatic spine not noticeably larger than antennal spine, arising slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle produced but not ovate; abdomen

without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{2}{5}$  times as long as 5th; telson with 2 dorsolateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about  $2\frac{1}{2}$  times as long as wide, lateral margin slightly convex, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite unarmed; 1st pereopod overreaching antennal scale by length of chela and part of carpus, fingers not pectinate on opposable margins; 2nd pereopod with fingers fully  $\frac{2}{3}$  as long as palm, carpus about  $\frac{1}{2}$  as long as palm, about  $2\frac{1}{2}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not exactly subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin sinuous, propodus with few spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropods slightly overreaching extended telson; postorbital carapace length 5.2 mm.

RANGE.—Known only from the unique female holotype found in 185 meters southwest of Manila Bay, Philippines.

#### 118. *Periclimenes cristimanus* Bruce, 1965

*Periclimenes cristimanus* Bruce, 1965:487, figs. 1, 2 [type locality: Pulau Sudong, near Pulau Salu, Singapore;  $1^{\circ}12.7'N$ ,  $103^{\circ}43.65'E$ ; associated with echinoid]; 1982e:243, fig. 6.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, lanceolate, horizontal, rostral formula  $0 + 4-5/0$ , posteriormost tooth not isolated from remainder of rostral series, situated considerably anterior to level of posterior orbital margin, lateral carina expanded posteriorly into supraorbital cave and spine; carapace with supraorbital tooth, hepatic spine stronger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle not produced; telson with 2 pairs of dorsolateral spines, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not ogival; antennular peduncle with 2 or 3 distolateral spines on basal segment; antennal scale about 3 times as long as wide, lateral margin straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod with fingers not pectinate on opposable margins, strongly carinate on extensor margins; 2nd pereopod with fingers  $\frac{2}{5}$  as long as palm, carpus about  $\frac{2}{5}$  as long as palm, about as wide as long, without distal spines, merus with lobe but no distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin obscurely sinuous, propodus with spinules on flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length 3 mm.

RANGE.—Singapore, Malaysia, Hong Kong, Great Barrier Reef of Australia, and Marshall Islands; associated with echinoids.

#### \*119. *Periclimenes dentidactylus* Bruce, 1984

FIGURE 22

*Periclimenes dentidactylus* Bruce, 1984a:7, figs. 1-6 [type locality: Makassar Strait southwest of Tanjung Mangkalihat, Borneo;  $0^{\circ}31.4'N$ ,  $117^{\circ}50.1'E$ ; 592-595 meters].

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale, slenderly palaemonoid, nearly horizontal, dorsally slightly concave, rostral formula  $1 + 6/3$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated in line with or anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine larger than antennal spine, arising posteroventral to latter, extending distinctly beyond anterior margin of carapace, orbital angle subacutely produced, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{3}{5}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising in anterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 strong distolateral spine on basal segment; antennal scale about 3 times as long as wide, lateral margin straight, distolateral tooth overreaching blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of chela, fingers not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{1}{2}-\frac{3}{4}$  as long as palm, carpus  $\frac{1}{3}-\frac{2}{5}$  as long as palm, about  $1\frac{1}{3}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl subdistally truncate, with denticulate lobe on flexor margin, complexly biunguiculate, flexor margin nearly straight, propodus with few small spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod reaching to about level of end of extended telson; maximum postorbital carapace length 8 mm.

MATERIAL.—PHILIPPINES. Iligan Bay, northern Mindanao: sta 5515;  $8^{\circ}34'48"N$ ,  $124^{\circ}01'24"E$ ; about 1280 m (no sounding); 8 Aug 1909 (1042-1110); 12' Tanner beam trawl: 1 ovig female [8.1].

RANGE.—Philippines and Indonesia; 592 to about 1280 m.

REMARKS.—The *Albatross* specimen of *P. dentidactylus* belonged to an undescribed species when it was first examined. The illustrations prepared at that time are reproduced here, not so much to show differences between this ovigerous female and the male holotype as to emphasize the similarities between the type specimen and one of the opposite sex taken at possibly more than twice the depth and more than 1000 km to the north.

#### 120. *Periclimenes digitalis* Kemp, 1922

*Periclimenes (Ancylocaris) digitalis* Kemp, 1922:224, fig. 65, pl. 8: fig. 12 [type locality: off "Viper Island," Port Blair, Andaman Islands;  $5\frac{1}{2}-9$  meters].

*Periclimenes digitalis*.—Bruce, 1982e:240, figs. 4, 5.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum typically slightly overreach-



FIGURE 22.—*Periclimenes dentidactylus*, ovigerous female from Albatross sta 5515 (Iligan Bay), carapace length 8.1 mm: a, entire shrimp in lateral view; b, anterior carapace, lateral aspect; c, same, dorsal aspect; d, sternum and bases of pereopods; e, tail fan; f, right antennule, dorsal aspect; g, right antenna, ventral aspect; h, right mandible; i, right 1st maxilla; j, right 2nd maxilla; k, right 1st maxilliped; l, right 2nd maxilliped; m, right 3rd maxilliped; n, right 1st pereopod; o, same, chela; p, right 2nd pereopod; q, same, fingers; r, right 3rd pereopod; s, same, dactyl; t, same, distal portion; u, right 4th pereopod; v, same, dactyl; w, same, distal portion; x, left 5th pereopod; y, same, dactyl, z, same, distal portion.†



ing antennal scale, sometimes shorter, palaemonoid, dorsally horizontal, rostral formula  $2 + 6-9/1-2$ , posteriormost tooth slightly isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace with or without tubercular vestige of supraorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising in anterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not ogival; antennular peduncle with 1 distolateral spine on basal segment; antennal scale fully 3 times as long as wide, lateral margin straight or faintly concave, distolateral tooth overreaching distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of chela and fully  $\frac{1}{2}$  of carpus, fingers not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{2}{3}-\frac{3}{4}$  as long as palm, carpus slightly longer than palm, nearly 9 times as long as distal width, without distal spines, merus with small, acute distal tooth on flexor margin; 3rd pereopod with dactyl long and slender, not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin regularly concave, propodus without spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale by length of dactyl and more than  $\frac{1}{2}$  of propodus; maximum postorbital carapace length fully 4 mm.

RANGE.—Zanzibar? (Bruce, 1982e:243); Andaman Islands, Hong Kong?, and Flores Sea, Indonesia.

REMARKS.—The systematic status of this apparently uncommon species is uncertain because of the presence of a two-segmented mandibular palp in the specimens recorded by Bruce (1982e:243) from Zanzibar and Hong Kong.

### 121. *Periclimenes diversipes* Kemp, 1922

*Periclimenes (Ancyllocaris) diversipes* Kemp, 1922:179, figs. 36–39 [part: type locality: Kilakarai, Gulf of Mannar, southern India; low tide, among corals of genus *Montipora*].

*Periclimenes diversipes*.—Bruce, 1979f:221.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not reaching level of distal end of antennal scale, palaemonoid, directed slightly anteroventrad, except more anterior apically, rostral formula  $1 + 4-6/0-2$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated slightly anterior to level of hepatic spine; carapace without supraorbital spine, hepatic spine no larger than antennal spine, arising directly posterior to latter, not extending beyond anterior margin of carapace, orbital angle bluntly triangular, not ovate; abdomen with 6th somite about  $1\frac{3}{4}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising slightly posterior to mid-length; eye with cornea hemispherical, not

produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale  $2\frac{1}{2}-2\frac{3}{4}$  times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod reaching about to level of distal end of antennal scale, fingers minutely pectinate, visible only under high magnification; 2nd pereopods markedly unequal, dissimilar, fingers varying from  $\frac{1}{2}$  to more than twice as long as palm, major chela with fixed finger distally bidentate, carpus from less than  $\frac{1}{4}$  as long to longer than palm, from little longer than wide to more than  $2\frac{1}{2}$  times as long, unarmed, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus without distinct spines on flexor margin, not segmented; maximum postorbital carapace length less than  $2\frac{1}{2}$  mm.

RANGE.—Red Sea and Madagascar to Singapore and Gulf of Thailand, to Great Barrier Reef of Australia and Coral Sea; associated with scleractinian corals.

### \*122. *Periclimenes elegans* (Paulson, 1875)

*Anch[istia] elegans* Paulson, 1875:113, pl. 17: fig. 1 [type locality: Red Sea].

*Periclimenes (Falciger) dubius* Borradaile, 1915:211 [type locality: Minicoy, Laccadive Islands].

*Periclimenes (Ancyllocaris) elegans*.—Kemp, 1922:215, figs. 60–62.

*Periclimenes (Harpilius) elegans*.—Holthuis, 1952c:81, fig. 31.

*Periclimenes elegans*.—Bruce, 1983c:884.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching to or beyond level of distal end of antennal scale, palaemonoid, directed slightly anterodorsal anteriorly, rostral formula  $1-2 + 5-6/3-6$ , posteriormost tooth somewhat isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace with supraorbital spine, hepatic spine not noticeably larger than antennal spine, arising slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle convex, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising on anterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale  $4\frac{1}{2}-5\frac{1}{2}$  times as long as wide, lateral margin concave, distolateral tooth distinctly overreaching distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod overreaching antennal scale by about  $\frac{1}{2}$  length of chela, fingers not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{2}{5}-\frac{1}{2}$  as long as palm, carpus subequal to palm in length,  $4-4\frac{1}{2}$  times as long as distal width, with 2 distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin slightly concave, propodus with spinules on flexor

margin, not segmented; 5th pereopod not nearly reaching distal end of antennal scale; uropod not reaching level of distal end of extended telson; maximum postorbital carapace length more than 4 mm.

**MATERIAL.**—PHILIPPINES. Off Jolo Island, Sulu Archipelago: sta 5141; 6°09'N, 120°58'E; 53 m; coral sand; 15 Feb 1908 (0847-0905); 12' Agassiz beam trawl, mud bag; 3 males [2.8-4.1] 9 females [2.7-4.0].—Near Siasi, Sulu Archipelago: sta 5147; 5°41'40"N, 120°47'10"E; 38 m; coral sand, shells; 16 Feb 1908 (1127-1147); 12' Agassiz beam trawl, mud bag; 3 ovig females [2.0-3.3].

**RANGE.**—Red Sea and western Indian Ocean to Hong Kong, Philippines, Great Barrier Reef of Australia, and Marshall Islands.

**REMARKS.**—Until the limits of variation of *P. ensifrons* are better known, the possibility that *P. elegans* is a junior synonym of that species, perhaps with regenerated second pereopods, must be considered (See Bruce, 1971:6 and 1984b:145).

### 123. *Periclimenes ensifrons* (Dana, 1852)

*Anchistia ensifrons* Dana, 1852a:25 [type locality: Balabac Strait, North Borneo]; 1855, pl. 38: fig. 1a-g.  
*Periclimenes ensifrons*.—Bruce, 1971f:5; 1984b:145.—Devaney and Bruce, 1987:230.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching about to level of distal end of antennal scale, palaemonoid, curving anterodorsad, rostral formula 1-2 + 5-6/2-3, posteriormost tooth not much isolated from remainder of dorsal rostral series, situated about in line with hepatic spine; carapace with supraorbital spine, hepatic smaller than antennal spine, arising almost directly posterior to latter, not extending beyond anterior margin of carapace, orbital angle not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite not much longer than 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, posterior pair arising only slightly posterior to midlength; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale fully 5<sup>1</sup>/<sub>2</sub> times as long as wide, lateral margin concave, distolateral tooth extending far beyond distal margin of blade; 4th thoracic sternite probably with slender median process; 1st pereopod overreaching antennal scale; 2nd pereopod with fingers about 3/4 as long as palm, carpus nearly as long as palm, nearly 5 times as long as distal width, without distal spines, merus with small distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin regularly concave, propodus with spinules on flexor margin, not segmented; 5th pereopod reaching about to distal end of antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about 3 mm.

**RANGE.**—Red Sea, Comoro Islands and Aldabra, western Indian Ocean; off northern Burma; Marshall Islands; possibly Tuamotu Archipelago.

**REMARKS.**—The limits of variability and, therefore, the synonymy of *P. ensifrons* may require the study of more extensive collections.

### 124. *Periclimenes foresti* Bruce, 1981

*Periclimenes foresti* Bruce, 1981c:201, figs. 10, 11, 17c [type locality: southwest of Manila Bay, Luzon, Philippines; 14°00.0'N, 120°18.0'E—14°01.7'N, 120°20.2'E; 189-209 meters]; 1985b:232, figs. 2, 3.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum rather slender, directed anteroventrad, rostral formula 1-2 + 6-8/1-2, posteriormost tooth distinctly isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine larger than antennal spine, arising nearly in horizontal line with latter, not extending beyond anterior margin of carapace, orbital angle triangularly produced but not ovate; eye with cornea small, hemispherical, not produced distally, antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 2<sup>1</sup>/<sub>2</sub> times as long as wide, lateral margin convex at least proximally, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of chela; fingers not pectinate on opposable margins; 2nd pereopods distinctly unequal, fingers nearly 2/3 as long as palm, carpus about 1/4 as long as palm, little longer than distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl rather abruptly constricted but not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin slightly sinuous, propodus with few indistinct spinules on flexor margin, not segmented; maximum postorbital carapace length 12 mm.

**RANGE.**—Both recorded specimens of *P. foresti* were collected from the same general area southwest of Manila Bay, Philippines, in 136-209 m.

### 125. *Periclimenes foveolatus* Bruce, 1981

*Periclimenes foveolatus* Bruce, 1981c:196, figs. 6-9, 17a,b, 18b,e [type locality: southwest of Manila Bay, Philippines; 14°01.0'N, 120°15.8'E—13°59.2'N, 120°18.8'E; 191-188 meters].

**DIAGNOSIS.**—Integument pitted on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, slenderly palaemonoid, directed anteroventrad to variable degree, rostral formula 0-1 + 7-9/3-6, posteriormost tooth not isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine larger than antennal spine, arising somewhat posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle ovate in



male; abdomen without compressed dorsal prominence on 3rd somite, 6th somite  $1\frac{2}{3}$  times as long as 5th; telson with 2 pairs of small dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment, antennal scale about  $2\frac{2}{3}$  times as long as wide, lateral margin convex, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by at least length of chela, fingers not pectinate on opposable margins; 2nd pereopods slightly unequal, similar, fingers more or less than  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about  $1\frac{2}{3}$  as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl devoid of denticulate lobe on flexor margin, but biunguiculate with minute accessory tooth on faintly sinuous flexor margin, propodus with few small spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length  $9\frac{1}{2}$  mm.

RANGE.—Known only from the type series from southwest of Manila Bay, Philippines; 187–195 m.

#### 126. *Periclimenes galene* Holthuis, 1952

*Periclimenes (Harpilius) galene* Holthuis, 1952c:11, 62, fig. 24 [type locality: Ambon and "islet near Menado," Indonesia].

*Periclimenes galene*.—Bruce, 1976d:12, figs. 3, 4; 1983d:207.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, tapering to slender apex, horizontal, rostral formula 0–1 + 4–7/0, epigastric tooth, if present, movable, isolated from remainder of rostral series, situated in vertical line with hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine fully as large as antennal spine, arising directly posterior or slightly posterodorsad to latter, not extending beyond anterior margin of carapace, orbital angle bluntly lobate, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite fully twice as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising slightly anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about  $3\frac{3}{4}$  times as long as wide, lateral margin faintly concave, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod not reaching distal end of antennal scale, fingers distally expanded, not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{1}{2}$  as long as palm, carpus  $1\frac{3}{4}$  times as long as palm,  $6\frac{1}{4}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod prehensile, dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin regularly concave, propodus expanded subdis-

tally, with strong spines on distal flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length fully 3 mm.

RANGE.—Eastern Africa, Indonesia, and Great Barrier Reef of Australia; associated with hydroids.

#### 127. *Periclimenes gracilis* (Dana, 1852)?

*Anchistia gracilis* Dana, 1952a:25; [type locality: Sulu Sea]; 1952b:578; 1955, pl. 37: fig. 5.—Bruce and Svoboda, 1984:97.—Bruce, 1989b:180, fig. 4B.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, horizontal, rostral formula 0 + 5–6/1, posteriormost tooth not isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine arising posteroventral to antennal spine, not extending beyond anterior margin of carapace; abdomen without compressed dorsal prominence on 3rd somite; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale with distolateral tooth not nearly reaching level of distal margin of blade; 1st pereopod overreaching antennal scale; 2nd pereopod with fingers about  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about  $1\frac{1}{5}$  times as long as distal width, with 2 distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate (?), flexor margin somewhat sinuous, propodus with spinules on flexor margin, not segmented; postorbital carapace length about  $3\frac{1}{2}$  mm.

RANGE.—Known with certainty only from the type locality in the Sulu Sea.

REMARKS.—This species has not been satisfactorily identified with any current pontonine concept. It is very possible, as suggested by Bruce and Svoboda (1984:97) and by Bruce (1989b:180), that *Anchistia gracilis* Dana, 1852 (= *Periclimenes gracilis*), is a senior synonym of *Harpilius depressus* Stimpson, 1860 (= *Harpiliopsis depressa*). As illustrated by Dana, the former species differs from the latter in having only one tooth, rather than two or three, on the unusual contour of the ventral margin of the rostrum, and apparently in having the dactyl of the third pereopod biunguiculate, rather than simple with double, stout, subdistal setae. In support of that conclusion is the not unusual dentition of the incisor process of the mandible described and illustrated by Dana (1852b:578 and 1855, pl. 37: fig. 5d) (see illustration of mandible of *H. depressa* in Holthuis, 1952c, fig. 90a).

#### 128. *Periclimenes grandis* (Stimpson, 1860)

*Anchistia grandis* Stimpson, 1860:39 [type locality: Amami O Shima, Ryukyu Islands].

*Periclimenes vitiensis* Borradaile, 1898:383 [type locality: Viti Levu, Fiji Islands].—Bruce, 1978f:266, fig. 9.

*Periclimenes (Ancylocaris) grandis*.—Kemp, 1922:210, figs. 58, 59, pl. 7: fig.

10.

*Periclimenes grandis*.—Bruce, 1975f:23, fig. 1 [color]; 1976d:6, fig. 2; 1978a:217.—Devaney and Bruce, 1987:230.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching to slightly beyond level of distal end of antennal scale, palaemonoid, curving slightly anterodorsad, rostral formula 1-2 + 6-8/2-5, posteriormost tooth not widely separated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace with supraorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about 1½ times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising in anterior ½ of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 4 times as long as wide, lateral margin concave, distolateral tooth distinctly overreaching distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod overreaching antennal scale by length of fingers, latter not pectinate on opposable margins; 2nd pereopod with fingers ½ to ⅔ as long as palm, carpus ⅓-⅔ as long as palm, 4 to more than 5 times as long as distal width, with 1 distal spine, merus with distinct distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with few spinules on flexor margin, not segmented; 5th pereopod not overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length nearly 4½ mm.

**RANGE.**—Red Sea to Mozambique, eastward to Ryukyu Islands, Kyushu, Indonesia, Great Barrier Reef of Australia, Marshall Islands, and Tuvalu.

**REMARKS.**—Like *P. elegans*, this species may eventually prove to be a junior synonym of *P. ensiferus*.

### 129. *Periclimenes hertwigi* Balss, 1913

*Periclimenes hertwigi* Balss, 1913:235 [type locality: Sagami Nada, Japan; 120 meters, on echinoid].—Bruce, 1983d:208; 1990a:151, figs. 1, 2, 39c.

*Periclimenes Hertwigi*.—Balss, 1914b:49, figs. 28-30.

*Periclimenes (Ancylocaris) gracilirostris* Kubo, 1940b:41, figs. 8-10 [type locality: Kumano Nada off Mie Prefecture, Japan; about 310 meters].

*Periclimenes (Periclimenes) hertwigi*.—Holthuis, 1952c:43, figs. 11, 12.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching to or slightly beyond level of distal end of antennal scale, slender, directed very slightly anteroventrad, rostral formula 1 + 5/2, posteriormost tooth not isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine larger than antennal spine, arising just posteroventral to latter, extending beyond anterior margin of carapace, orbital angle

blunt, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite slightly less than twice as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 2⅓ times as long as wide, lateral margin nearly straight, distolateral tooth reaching to or slightly beyond level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by entire lengths of chela and carpus, fingers not pectinate on opposable margins except for minor serrations near tips; 2nd pereopod with fingers about ½ as long as palm, carpus about ⅓ as long as palm, slightly longer than distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl subdistally truncate, with denticulate lobe on flexor margin, not truly biunguiculate, flexor margin moderately convex, propodus with few obscure spinules on flexor margin, not subdivided; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about 7 mm.

**RANGE.**—Japan, East China Sea, Indonesia, Queensland, Australia, and New Caledonia; 120-600 meters, associated with echinoids.

### \*130. *Periclimenes holthuisi* Bruce, 1969

*Urocaris longicaudata*.—Pearson, 1905:78, pl. 1: fig. 5 [not *Urocaris longicaudatus* Stimpson, 1860].

*Periclimenes (Periclimenes) aesopius*.—Holthuis, 1952c:34, figs. 5, 6 [not *Anchistia aesopia* Bate, 1863].

*Periclimenes holthuisi* Bruce, 1969b:258 [type locality: "Lung Ha Wan," N.T., Hong Kong; 22°18.5'N, 114°18.2'E; 4 meters, associated with sea anemones].—Bruce and Svoboda, 1983:10, fig. 3; 1984:94.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, slender, generally horizontal but arched dorsally and anteriorly directed anteroventrad, rostral formula 1-2 + 7-9/1-2, posteriormost tooth not distinctly isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine somewhat stronger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle acutely subovate; abdomen with compressed dorsal prominence on 3rd somite, 6th somite twice as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, both pairs arising in posterior ½ of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 small distolateral spine on basal segment; antennal scale about 2⅔ as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by fully length of fingers, latter not pectinate on opposable margins; 2nd pereopods equal, similar, with fingers

nearly or quite as long as palm, carpus also about as long as palm, about  $3\frac{1}{2}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin variably sinuous, propodus with few spinules on flexor margin, not segmented; 5th pereopod not reaching far beyond end of antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about  $3\frac{1}{4}$  mm.

**MATERIAL.**—PHILIPPINES. Sulu Sea, northeast of Dumarán Island: sta 5423;  $10^{\circ}37'50''N$ ,  $120^{\circ}12'E$ ; 93 m; sand; 8 Apr 1909 (1534–1554); 6' McCormick-Blake beam trawl: 1 ovig female [6.0].

**RANGE.**—Red Sea and eastern Africa to Maldives, Sri Lanka, South China Sea, Hong Kong, Japan (?), Philippines, Indonesia, New Guinea, Australia, Lord Howe Island, New Caledonia, Palau, and Marshall Islands; 34–45 m, associated with sea anemones, corals, and medusae.

### \*131. *Periclimenes incertus* Borradaile, 1915

*Periclimenes (Cristiger) incertus* Borradaile, 1915:210 [type locality: Maldives Islands]; 1917:364, pl. 53: fig. 7.

*Periclimenes (Periclimenes) impar* Kemp, 1922:140,147, figs. 16, 17, pl. 3: fig. 1 [type locality: Port Blair, Andaman Islands; 9 meters, on pinkish sponge].

*Periclimenes (Periclimenes) incertus*.—Holthuis, 1959:193.

*Periclimenes incertus*.—Bruce, 1980a:10, fig. 5.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, nearly horizontal, rostral formula  $1-2 + 7-8/1-2$ , posteriormost tooth usually somewhat isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{2}{3}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about  $3\frac{1}{5}$  times as long as wide, lateral margin slightly concave, distolateral tooth not quite reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod reaching about to distal end of antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers about  $\frac{2}{3}$  as long as palm, carpus about  $\frac{1}{2}$  as long as palm, about  $2\frac{1}{3}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin concave, propodus with spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postor-

bital carapace length about 4 mm.

**MATERIAL.**—PHILIPPINES. Marungas Island (south side), Sulu Archipelago;  $6^{\circ}06'N$ ,  $120^{\circ}58'E$ ;  $1\frac{1}{4}$ – $2\frac{1}{2}$  mm; scattered coral and sand; 10 Feb 1908 (1330–1500); diving, coral heads taken shore: 1 male [2.1].—Off Jolo Island, Sulu Archipelago: sta 5139;  $6^{\circ}06'N$ ,  $121^{\circ}02'30''E$ ; 37 m; coral sand; 14 Feb 1908 (1313–1317); 12' Agassiz beam trawl, mud bag: 1 female [1.7]; sta 5141;  $6^{\circ}09'N$ ,  $120^{\circ}58'E$ ; 53 m; coral sand; 15 Feb 1908 (0847–0905); 12' Agassiz beam trawl, mud bag: 1 male [1.9]; sta 5145;  $6^{\circ}04'30''N$ ,  $120^{\circ}59'30''E$ ; 42 m; coral sand, shells; 15 Feb 1908 (1344–1359); 12' Agassiz beam trawl, mud bag: 1 ovig female [2.0].—Near Siasi, Sulu Archipelago: sta 5147;  $5^{\circ}41'40''N$ ,  $120^{\circ}47'10''E$ ; 38 m; coral sand, shells; 16 Feb 1908 (1127–1147); 12' Agassiz beam trawl, mud bag: 2 males [1.9, 1.9] 1 ovig female [1.9].

**RANGE.**—Aden to Madagascar, east to Philippines, Indonesia, Australia, and New Caledonia; to a depth of 53 m. (apparently a new depth record), associated with sponges.

### 132. *Periclimenes indicus* (Kemp, 1915)

*Urocaris indica* Kemp, 1915:275, fig. 26, pl. 13: fig. 9 [type locality: Chilka Lake, Orissa, India; fresh and brackish water].

*Periclimenes (Periclimenes) indicus*.—Kemp, 1922:144, fig. 13.—Holthuis, 1952c:39, fig. 8.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, crested above orbit, horizontal, rostral formula  $2 + 6-8/1-3$ , posteriormost tooth isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about twice as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale  $3\frac{1}{3}$ – $3\frac{3}{4}$  times as long as wide, lateral margin straight, distolateral tooth not reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod not overreaching antennal scale; 2nd pereopod with fingers fully as long as palm, carpus slightly more or less than twice as long as palm, fully 5 times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin concave, propodus with spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about 3 mm.

**RANGE.**—India, Nicobar Islands, Malaya, Singapore, Indonesia, and Queensland, Australia; to a depth of 55 meters.

### 133. *Periclimenes inornatus* Kemp, 1922

*Periclimenes (Ancylocaris) inornatus* Kemp, 1922:191, figs. 43–46 [type locality: Port Blair, Andaman Islands].

*Periclimenes* aff. *inornatus* Fransen, 1989:136, fig. 2.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum directed anteroventrad not overreaching antennal scale, shallow, ventrally convex, rostral formula 7–8/0–2, posterior tooth not isolated from remainder of dorsal rostral series, situated slightly anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle distinctly produced, subacute, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about 1.5 times length of 5th; telson with 2 pairs of well-developed dorsal spines, anterior pair at about 0.3 of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 small distolateral spine on basal segment; antennal scale about 2.2 times longer than wide, lateral margin feebly convex, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite with transverse ridge with small open median notch; 1st pereopod overreaching antennal scale by fingers of chela, fingers subspatulate, margins pectinate; 2nd pereopod with fingers about  $1/2$  as long as palm, carpus about  $1/4$  of palm length, about  $1^{1/10}$  times as long as distal width, without distal spines, merus without tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, flexor margin sinuously concave, propodus without spines, not segmented; 5th pereopod reaching to about  $2/5$  of scale length; uropod slightly exceeding extended telson; maximum postorbital carapace length more than 4 mm.

RANGE.—Kenya, Zanzibar, Seychelles, Comoro, Maldives and Andaman islands, Ryukyu Islands, Indonesia, South China Sea, Great Barrier Reef, Fiji and Caroline islands.

### 134. *Periclimenes johnsoni* Bruce, 1987

*Periclimenes (Harpilius) calmani*.—Johnson, 1962b:59 [not *P. calmani* Tattersall, 1921].

*Periclimenes johnsoni* Bruce, 1987c:115 [type locality: Pasir Laba, Singapore; 1°21'N, 103°38'E].

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale, palaemonoid, nearly horizontal, rostral formula 1 + 7–9/4–5, posteriormost tooth somewhat isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle convexly triangular, not ovate, abdomen without compressed dorsal prominence on 3rd somite, 6th somite fully  $1^{2/3}$  times as long as 5th; telson with 2

pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 2 distolateral spines on basal segment; antennal scale about  $3^{1/2}$  times as long as wide, lateral margin nearly straight, distolateral tooth reaching nearly to level of distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers subequal to palm in length, carpus  $1^{1/4}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with few spinules on flexor margin, not segmented; 5th pereopod not reaching distal margin of antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about  $2^{1/2}$  mm.

RANGE.—Known only from tidal stream on Singapore.

### 135. *Periclimenes jugalis* Holthuis, 1952

*Periclimenes (Harpilius) jugalis* Holthuis, 1952c:11, 67, fig. 26 [type locality: Djedan, Kepulauan Aru, Indonesia; 13 meters].

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, slender, directed slightly anteroventral, rostral formula 1 + 8/2, posteriormost tooth not isolated from remainder of rostral series, situated in line with or anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle not ovate; abdomen with 6th somite nearly twice as long as 5th; telson with 2 pairs of dorsolateral spines, both pairs arising in posterior  $1/2$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale with lateral margin nearly straight, distolateral tooth not reaching level of distal margin of blade; 1st pereopod overreaching antennal scale by length of fingers, latter not pectinate on opposable margins; 2nd pereopod with fingers about  $2/5$  as long as palm, carpus fully  $2/3$  as long as palm, about  $3^{3/4}$  as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin regularly concave, propodus with spinules on flexor margin, not segmented; uropod overreaching extended telson; postorbital carapace length about 4 mm.

RANGE.—Zanzibar and Indonesia.

### 136. *Periclimenes kemp* Bruce, 1969

*Periclimenes (Ancylocaris) diversipes* Kemp, 1922:179, figs. 36–39 [part].

*Periclimenes kemp* Bruce, 1969b:260 [type locality: Hurghada, Red Sea coast of Egypt; 27°14'N, 38°50'E; 1 meter, associated with alcyonarians]; 1979f:224; 1981g:80, fig. 2.



**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, nearly horizontal, 0+5-8/0-2, posteriormost tooth not isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine little longer than antennal spine, arising posteriad and slightly ventrad to latter, not extending beyond anterior margin of carapace, orbital angle acutely produced, not quite subovate; abdomen without distinct compressed dorsal prominence on 3rd somite; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale with distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of fingers, latter pectinate on opposable margins; 2nd pereopod with fingers about  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about 3 times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin convex at extreme proximal end of flexor margin, concave distally, propodus with 1 distal spinule on flexor margin, not segmented; uropod distinctly overreaching extended telson; maximum postorbital carapace length about  $1\frac{1}{2}$  mm.

**RANGE.**—Red Sea, Zanzibar, Andaman Islands, Singapore, Australia, and Fiji Islands; associated with alcyonarians.

### 137. *Periclimenes kororensis* Bruce, 1977

*Periclimenes kororensis* Bruce, 1977c:33, figs. 1-4 [type locality: Koror, Palau Islands; associated with fungiid coral].—Bruce and Svoboda, 1984:94, figs. 5, 6.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not quite reaching level of end of antennal scale, shallow, directed anterodorsad in anterior  $\frac{1}{2}$ , rostral formula 1-2 + 5-6/3-5, posteriormost tooth not isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine more prominent than antennal spine, arising directly posterior to or somewhat posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle convex, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite  $1\frac{4}{5}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral tooth on basal segment; antennal scale about  $4\frac{3}{5}$  times as long as wide, lateral margin distinctly concave, distolateral tooth not reaching level of distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod overreaching antennal scale by

more than length of chela, fingers not pectinate on opposable margins; 2nd pereopods equal and similar, fingers  $\frac{1}{2}$  as long as palm, carpus about  $\frac{3}{4}$  as long as palm,  $7\frac{1}{2}$  times as long as distal width, with 2 distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate but slightly constricted at base of unguis, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin faintly sinuous, propodus with single distal spinule on flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length about  $4\frac{1}{2}$  mm.

**RANGE.**—Cebu, Philippines; Palau Islands; and Queensland, Australia; associated with fungiid corals.

### \*138. *Periclimenes lanipes* Kemp, 1922

*Periclimenes (Periclimenes) lanipes* Kemp, 1922:156, pl. 4; fig. 4 [type locality: Mergui Archipelago; 12°48'N, 98°16'10"E; 44 meters].  
*Periclimenes lanipes*.—Bruce, 1971g:11, figs. 3, 4, 5c,d; 1978a:228, fig. 11.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale little if at all, rather shallow, directed distinctly anteroventrad, rostral formula 0 + 7-10/0-1, posteriormost tooth not isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posterior or posterodorsal to latter, not extending beyond anterior margin of carapace, orbital angle triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite little if at all longer than 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale only twice as long as wide, lateral margin convex basally, nearly straight distal thereto, distolateral tooth reaching about to level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by more than length of chela, fingers not pectinate on opposable margins of fingers; 2nd pereopod with fingers less than  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{4}$  length of palm, about as long as distal width, without distal spines, merus with strong distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, accessory tooth small, flexor margin straight, becoming concave distally, propodus clothed with long, woolly hairs on flexor margin, not segmented, 5th pereopod not reaching distal end of antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about  $4\frac{1}{2}$  mm.

**MATERIAL.**—PHILIPPINES. Jolo Island, Sulu Archipelago; [5°58'N, 121°06'E]; shore; 12 Feb 1908: 1 ovig female [3.2].—Near Siasi, Sulu Archipelago: sta 5146; 5°46'40"E, 120°48'50"E; 44 m; coral sand, shells; 16 Feb 1908 (1011-1031); 12' Agassiz beam trawl, mud bag: 1 male [3.0] 6 ovig females [3.0-4.2]; sta 5147; 5°41'40"N, 120°47'10"E; 38 m;

coral sand, shells; 16 Feb 1908 (1127–1147); 12' Agassiz beam trawl, mud bag; 2 ovig female [4.1, 4.3].

RANGE.—Somalia to Madagascar, eastward to South China Sea, Philippines, Singapore, Australia, and New Caledonia; associated with basket stars (Euryalida).

### 139. *Periclimenes latipollex* Kemp, 1922

*Periclimenes* (*Periclimenes*) *latipollex* Kemp, 1922:150, fig. 18, pl. 4: fig. 3 [type locality: Mergui Archipelago; 12°15'20"N, 97°10'10"E; 113 meters].—Holthuis, 1952c:47, figs. 13, 14.

*Periclimenes latipollex*.—Bruce, 1971f:8; 1981c:195, fig. 3.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum typically overreaching antennal scale, shallow, nearly horizontal, rostral formula 2–3 + 5–6/2–3, posteriormost tooth not distinctly isolated from remainder of dorsal rostral series but arising slightly farther from 2nd tooth than latter from 3rd, situated slightly posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine no larger than antennal spine, arising directly posterior to latter, not extending beyond anterior margin of carapace, orbital angle bluntly triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite 1½ times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising slightly anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale typically about 3 times as long as wide, distolateral tooth reaching to about level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of fingers, latter not pectinate on opposable margins; 2nd pereopod with fingers about 1/3 as long as palm, carpus about 1/4 as long as palm, about 1½ times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin straight proximally, concave distally, propodus with spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; maximum postorbital carapace length more than 4 mm.

RANGE.—Eastern Africa to Philippines and Indonesia; 78 to more than 300 meters, possibly associated with gorgonians.

REMARKS.—The records of *P. latipollex* in the literature suggest that it is either an unusually variable species or that the name has been applied to more than one species. The specimens recorded by Holthuis (1952c:47) from Kauluan Kai in 304 meters have the accessory tooth on the dactyl of the third pereopod microscopic, whereas it is small but distinct in the type specimens from the Mergui Archipelago in 113 meters and in the Philippine specimen identified by Bruce (1981c:195). On the other hand, the latter specimen has the rostrum less shallow, curving dorsad, and armed with 10 dorsal teeth, three of which are situated on the carapace posterior to the level of the orbit, and the antennal scale fully 3½ times as long as wide.

### 140. *Periclimenes longirostris* (Borradaile, 1915)

*Palaemonella longirostris* Borradaile, 1915:210 [type locality: Naifaro Island, Fadifollu Atoll, Maldive Islands].

*Pariclimenes* (*Falciger*) *affinis* Borradaile, 1915:211 [type locality: Salomon Island, Chagos Archipelago; not *Palaemonella affinis* Zehntner, 1894].

*Periclimenes* (*Ancylocaris*) *proximus* Kemp, 1922:201, figs. 51–53 [type locality: Port Blair, Andaman Islands; 7–15 meters].

*Periclimenes* (*Harpilius*) *longirostris*.—Holthuis, 1958:3, fig. 1.

*Periclimenes longirostris*.—Bruce, 1981c:195, figs. 4, 18a,d.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching nearly to level of or overreaching antennal scale, shallowly palaemonoid, directed slightly anterodorsad anteriorly, rostral formula 1 + 5–6/2–3, posteriormost tooth not distinctly isolated from remainder of dorsal rostral series but arising slightly farther from 2nd tooth than latter from 3rd, situated posterior to level of hepatic spine; carapace with supraorbital spine, hepatic spine no larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle weakly triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about 1¼ times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale 4½–5¼ times as long as wide, lateral margin distinctly concave, distolateral tooth far overreaching distal margin of narrow blade; 4th thoracic sternite with slender median process; 1st pereopod far overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers slightly more or less than 1/2 as long as palm, carpus longer or shorter than palm, 7–8 times as long as distal width, without distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin distinctly concave, propodus with spinules on flexor margin, not segmented; 5th pereopod reaching about as far as distal end of antennal scale; uropod not overreaching extended telson; maximum postorbital carapace length about 2½ mm.

RANGE.—Northern Red Sea and western Indian Ocean to Philippines, Indonesia, Papua, northeastern Australia, and Marshall Islands; to a depth of at least 17 meters.

### 141. *Periclimenes lutescens* (Dana, 1852)

*Harpilius lutescens* Dana, 1852a:25 [type locality: Tongatapu Island, Tonga Islands]; 1852b:576; 1855:12, pl. 37: fig. 4.—Kemp, 1922:235, figs. 72, 73.

*Periclimenes* (*Ancylocaris*) *amamiensis* Kubo, 1940b:44, figs. 11, 12 [type locality: Amami O Shima, Ryukyu Islands].

*Periclimenes* (*Harpilius*) *lutescens*.—Holthuis, 1952c:88 [part], fig. 35.

*Periclimenes lutescens*.—Bruce, 1972f:411, fig. 1A [right drawing]; 1975f:27, fig. 15 [color]; 1976c:98; 1977h:73 [color figure]; 1977i:3.—Holthuis, 1981:796.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, nearly horizontal, rostral formula 1–2 +



5-7/1-2. posteriormost tooth not isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite; telson with 2 pairs of dorsolateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale with distolateral tooth distinctly overreaching distal margin of blade; 4th thoracic sternite with short, stout median process; 1st pereopod exceeding antennal scale by length of chela, fingers not pectinate on opposable margins; 2nd pereopod with fingers fully  $\frac{2}{3}$  as long as palm, carpus less than  $\frac{1}{2}$  as long as palm, about  $1\frac{1}{2}$  times as long as distal width, without distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin strongly concave, propodus not segmented, non-spinulate; maximum postorbital carapace length about  $7\frac{1}{2}$  mm.

**RANGE.**—Known with assurance from Red Sea and eastern Africa eastward to Japan, Indonesia, and Great Barrier Reef of Australia, at least to Solomon and Samoa islands, and perhaps eastward to limits of range of *Acropora*; associated with branching corals of genera *Acropora* and, less commonly, *Seriatopora*.

**REMARKS.**—See "Remarks" under *P. consobrinus*.

The striped color pattern illustrated by Dana (1855, pl. 37: fig. 4) is so different from the one displayed by the species currently associated with the name *P. lutescens* (Bruce, 1975f, fig. 15, and 1977h:73) that there is a tendency to believe that Dana's name is now misapplied to a different species. The remark by Dana (1852b:577), however, "Colors probably not constant for the species" suggests the possibility that his material included more than one species. The single character illustrated by Dana that seems to relate most exactly to the current conception of the species is the peculiar second maxilliped (pl. 37: fig. 4f). Except for the inadvertently missing flexor margin of the penultimate segment, that illustration is remarkably similar to those offered by Holthuis (1952c, fig. 35e) and Bruce (1972f, fig. 1A). On the basis of that character and the Samoan record cited by Bruce (1977i:3)—which suggests the presence of the species in the Tonga Islands (Dana's type locality)—would it not be desirable in the interest of stability—to assume the identity of the species described by Dana with the one now generally known by the same name?

#### 142. *Periclimenes magnificus* Bruce, 1979

*Periclimenes magnificus* Bruce, 1979d:195, figs. 1-5, pl. 1: figs. A-C [type locality: Wistari Reef, Capricorn Islands, Queensland, Australia; 26-29 meters].—Cases and Storch, 1981:15.—Bruce and Svoboda, 1984:96.—Fransen, 1989:143, figs. 4b,c, 5e-8, 6i-m, 7i-p.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, shallow, slightly arched, rostral formula  $1 + 7-8/1-2$ , posteriormost tooth isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle acutely subovate; abdomen with low, compressed dorsal prominence on 3rd somite, 6th somite about twice as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 dorsolateral spine on basal segment; antennal scale about  $2\frac{3}{5}$  times as long as wide, lateral margin moderately convex to base of distolateral tooth, latter not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of fingers, latter not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{4}{5}$  as long as palm, carpus  $\frac{3}{4}$  as long as palm,  $2\frac{3}{4}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin concave, propodus with few obscure spinules on flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length about  $6\frac{1}{4}$  mm.

**RANGE.**—Southern Japan, Philippines, Indonesia, and Great Barrier Reef of Australia; 3-29 meters, associated with scleractinian corals and sea anemones.

#### 143. *Periclimenes nilandensis* Borradaile, 1915

*Periclimenes (Falciger) nilandensis* Borradaile, 1915:211 [type locality: Nilandu Atoll, Maldives Islands]; 1917:372, pl. 54: fig. 13.  
*Periclimenes (Harpilius) nilandensis*.—Holthuis, 1952c:58, fig. 22.  
*Periclimenes nilandensis*.—Bruce, 1978a:222, figs. 8, 9.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum reaching as far as or overreaching distal end of antennal scale, palaemonoid, nearly horizontal, rostral formula  $2 + 6-8/3-5$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated posterior to level of hepatic spine; carapace with postorbital spine, hepatic spine slightly larger than antennal spine, arising slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle bluntly triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale fully 3 times as long as wide, lateral margin straight or slightly

concave, distolateral tooth reaching to or slightly beyond level of distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod slightly overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{2}{3}$  as long as palm, carpus  $\frac{4}{5}$  as long as palm; about about 3 times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with spinules on flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length about 3 mm.

RANGE.—Eastern Africa to Maldives Islands, South China Sea, Indonesia, and Queensland, Australia; associated with gorgonians and, less commonly, hydroids.

#### 144. *Periclimenes ornatus* Bruce, 1969

*Periclimenes ornatus* Bruce, 1969b:266 [type locality: Lung Ha Wan, Hong Kong]; 1982e:252, figs. 11, 12.—Fransen, 1989:136, fig. 3a-i.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, rather deep, horizontal, rostral formula  $0 + 6-7/0-1$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated slightly posterior to level of orbital margin, anterior to hepatic spine; carapace without supraorbital or postorbital tooth, hepatic spine not noticeably larger than antennal spine, arising posteriorly and slightly ventrally to level of latter, not extending beyond anterior margin of carapace, orbital angle acute, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about  $1\frac{1}{2}$  times as long as 5th, telson with 2 pairs of well-developed dorsal spines anterior to posterior margin, at about 0.3 and 0.6 of length; eye with cornea hemispherical, not ogival; antennular peduncle with 1 distolateral tooth on basal segment; antennal scale about  $2\frac{1}{2}$  times as long as wide, lateral margin straight, distolateral tooth not exceeding distal margin of blade; 4th thoracic sternite with transverse ridge having small closed median notch; 1st pereopod with fingers subspatulate, cutting edges entire; 2nd pereopods similar, subequal, with fingers about  $\frac{1}{2}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about  $1\frac{3}{4}$  times longer than wide, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with small distoventral spine only, not segmented; uropod not overreaching extended telson; maximum postorbital carapace length to about 4.8 mm.

RANGE.—Red Sea, Kenya, Japan, Hong Kong, Indonesia, Great Barrier Reef, Norfolk Island to Marshall Islands.

#### 145. *Periclimenes pectiniferus* Holthuis, 1952

*Periclimenes (Periclimenes) pectiniferus* Holthuis, 1952c:48, figs. 15, 16 [type locality: Pulau Kabaladua, Makassar Strait, Indonesia; 22 m].

*Periclimenes pectiniferus*.—Bruce, 1983d:209.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum somewhat palaemonid, not overreaching antennal scale, directed slightly anteroventrad, rostral formula  $1-2 + 7/1$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated nearly in line with hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at mid-length; eye with cornea hemispherical, not ogival; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 3 times as long as wide, lateral margin slightly concave, distolateral tooth not quite reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by slightly more than length of chela, fingers subspatulate, pectinate on greater part of opposable margins; 2nd pereopods slender, subequal, fingers  $\frac{2}{3}$  as long as palm, carpus  $\frac{3}{5}$  as long as palm, about  $2\frac{1}{2}$  times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin nearly straight, propodus with spinules on flexor margin, not segmented; uropod overreaching extended telson; postorbital carapace length about 3 mm.

RANGE.—Known only from a single specimen from east of Townsville, Queensland, Australia, in 30–35m, in addition to the two syntypes from Makassar Strait.

#### 146. *Periclimenes pilipes* Bruce and Zmarzly, 1983

*Periclimenes pilipes* Bruce and Zmarzly, 1983:644, figs. 1–6 [type locality: southern tip of Medren Islet, Enewetak Atoll, Marshall Islands;  $11^{\circ}24'N, 162^{\circ}22'E$ ; 3 m].—Bruce, 1989b:177, fig. 3a.

DIAGNOSIS.—Integument smooth, not pitted on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, narrowly palaemonid, directed slightly anteroventrad, rostral formula  $0 + 5-7/1-2$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated slightly anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine more robust than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising slightly posterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with at least 2 distolateral spines on basal segment, antennal scale about  $2\frac{3}{4}$  times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st

pereopod slightly overreaching antennal scale, fingers minutely crenulate on opposable margins; 2nd pereopods unequal, similar, fingers about  $\frac{1}{3}$  as long as palm, carpus about  $\frac{1}{3}$  as long as palm, about  $1\frac{1}{3}$  times as long as wide, unarmed, merus with distal angle of flexor margin bluntly produced, not dentate; 3rd pereopod with dactyl very unequally biunguiculate and with 3 long, slender spines in same transverse line arising from distodorsal margin of corpus at base of unguis, flexor margin distinctly sinuous but without denticulate lobe, propodus with few small spines on distal  $\frac{1}{6}$  of flexor margin, not segmented; uropod considerably overreaching extended telson; postorbital carapace length about  $3\frac{1}{2}$  mm.

RANGE.—Philippines and Marshall Islands; associated with crinoids.

#### 147. *Periclimenes platycheles* Holthuis, 1952

*Periclimenes (Harpilius) platycheles* Holthuis, 1952c:85, fig. 33 [type locality: the 2 syntypes came from two different Indonesian localities: Pulau Fau west of Pulau Gebe, Halmahera Sea (31 m) and off Atiationim, Western New Guinea (to 57 m)].—Miyake and Fujino, 1968:409, fig. 3c–f.

*Periclimenes platycheles*.—Bruce, 1983d:210.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum slightly overreaching antennal scale, slender, directed anterodorsad in anterior  $\frac{1}{2}$ , rostral formula  $1 + 5-6/5-6$ , posteriormost tooth not isolated from remainder of dorsal rostral series, situated slightly posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle broadly rounded, not spatulate; abdomen with 6th somite  $1\frac{1}{2}$  times as long as fifth; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale  $4\frac{3}{4}$  times as long as wide, lateral margin deeply concave, distolateral spine distinctly overreaching truncate distal margin of blade; 4th thoracic sternite with slender median process; 1st pereopod overreaching antennal scale by length of chela, fingers not pectinate on opposable margins; 2nd pereopod with fingers  $\frac{1}{2}$  as long as palm, carpus more than 7 times as long as distal width, with 2 distal spines, merus with distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length less than 3 mm.

RANGE.—Indonesia; Queensland, Australia; and Palau Islands.

#### \*148. *Periclimenes psamathe* (De Man, 1902)

*Urocaris psamathe* De Man, 1902:816, pl. 25: fig. 51 [type locality: Ternate].  
*Periclimenes (Harpilius) psamathe*.—Holthuis, 1952c:61, fig. 23.—Monod,

1976:14, figs. 1–28.

*Periclimenes psamathe*.—Bruce and Svoboda, 1984:94.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum far overreaching antennal scale, slender, slightly crested above orbit, directed sinuously anteriorad or anterodorsad, rostral formula  $1 + 2 + 2 + 1/0$ , distoventral margins of 3 posterior teeth finely serrate, posteriormost tooth isolated from remainder of dorsal rostral series, situated variably posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posterior or posterodorsal to latter, not extending beyond anterior margin of carapace, orbital angle variably produced anteriorly, sometimes subspatulate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about 3 times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale  $4\frac{2}{3}$  times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by length of chela, fingers pectinate on opposable margins; 2nd pereopods grossly unequal, major chela with fingers about  $\frac{1}{4}$  as long as palm, carpus  $2\frac{4}{5}$  times as long as palm, nearly 25 times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin rather deeply concave distally, propodus with spinules on flexor margin, not segmented; 5th pereopod overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length more than 7 mm.

MATERIAL.—PHILIPPINES. Off Jolo Island, Sulu Archipelago: sta 5141;  $6^{\circ}09'N$ ,  $120^{\circ}58'E$ ; 53 m; coral sand; 15 Feb 1908 (0847–0905); 12' Agassiz beam trawl, mud bag: 1 male [1.9] 2 ovig females [4.2, 4.3]; sta 5145;  $6^{\circ}04'30"N$ ,  $120^{\circ}59'30"E$ ; 42 m; coral sand, shells; 15 Feb 1908 (1344–1359); 12' Agassiz beam trawl, mud bag: 3 females [4.0–5.3], 2 ovig [4.0, 5.3].

RANGE.—Eastern Africa to South China Sea, Japan, Philippines, Great Barrier Reef of Australia, New Caledonia, and Marshall Islands; associated with gorgonians.

#### 149. *Periclimenes rectirostris* Bruce, 1981

*Periclimenes rectirostris* Bruce, 1981c:204, figs. 12–15 [type locality: southwest of Manila Bay, Luzon, Philippines;  $13^{\circ}53.1'N$ ,  $120^{\circ}08.9'E$ — $13^{\circ}53.3'N$ ,  $120^{\circ}10.7'E$ ; 134–129 meters, probably associated with echinoid *Eremopyga*].

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale, shallow, tapering, horizontal, rostral formula  $0 + 11-12/4-5$ , posteriormost tooth not isolated from remainder of dorsal

rostral series, situated far anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine stouter but not noticeably larger than antennal spine, arising slightly posterodorsal to latter, not extending beyond anterior margin of carapace, orbital angle subquadrate, not spatulate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite fully  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, both pairs arising in posterior  $\frac{1}{2}$  of length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 5 times as long as wide, lateral margin nearly straight, distolateral tooth reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by about length of chela, fingers subspatulate, pectinate on opposable margins; 2nd pereopod with fingers nearly as long as palm, carpus about  $\frac{1}{2}$  as long as palm, about  $2\frac{1}{2}$  times as long as distal width, without distal spines, merus with small distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin obscurely sinuously concave, propodus with spinules on flexor margin, not segmented; uropod overreaching extended telson; maximum postorbital carapace length nearly 6 mm.

RANGE.—Known only from the three type specimens from southwest of Manila Bay; 134–129 meters.

#### 150. *Periclimenes seychellensis* Borradaile, 1915

*Periclimenes (Falciger) seychellensis* Borradaile, 1915:212 [type locality: Praslin, Seychelles].

*Periclimenes (Ancylocaris) seychellensis*.—Kemp, 1922:176, figs. 34, 35; pl. 6: fig. 7.

*Periclimenes seychellensis*.—Bruce, 1974d:192.

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum overreaching antennal scale slightly, if at all, palaemonoid, directed slightly anterodorsad, rostral formula  $2 + 5-8/2-5$ , posteriormost tooth somewhat but not widely isolated from remainder of dorsal rostral series, situated distinctly posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle bluntly acute, not spatulate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite  $1\frac{1}{2}$  times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising anterior to midlength; eye with cornea hemispherical, not produced distally, stalk with dorsal tubercle; antennular peduncle with 1 distolateral spine on basal segment; antennal scale 3 or more times as long as wide, lateral margin slightly concave, distolateral tooth reaching nearly or quite to level of distal margin of blade; 4th thoracic sternite with slender median

process; 1st pereopod not overreaching antennal scale, fingers not pectinate on opposable margins; 2nd pereopod with fingers fully as long as palm, carpus subequal to or slightly shorter than palm, nearly 4 times as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with few spinules on flexor margin, not segmented; 5th pereopod not overreaching antennal scale; uropod overreaching extended telson; maximum postorbital carapace length about 4 mm.

RANGE.—Red Sea to Mozambique, eastward to Indonesia, Papua, Australia, New Caledonia, and Marshall Islands; in algal communities.

#### 151. *Periclimenes sibogae* Holthuis, 1952

*Periclimenes (Harpilius) sibogae* Holthuis, 1952c:73, figs. 28, 29 [type locality: anchorage, Kepulauan Banda, Indonesia; 9–36 meters].

DIAGNOSIS.—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, shallow, sinuously horizontal, rostral formula  $1 + 6/2$ , posteriormost tooth isolated from remainder of dorsal rostral series, situated in line with or slightly posterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine smaller than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle shallowly rounded, not spatulate; abdomen with 6th somite only slightly longer than 5th; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale about 6 times as long as wide, lateral margin deeply sulcate, distolateral tooth distinctly overreaching distal margin of blade; 4th thoracic sternite with short, stout median process; 1st pereopod overreaching antennal scale by length of chela and part of carpus, fingers spatulate, pectinate on opposable margins; 2nd pereopod with fingers  $\frac{1}{2}$  as long as palm, carpus less than  $\frac{1}{2}$  as long as palm, more than twice as long as distal width, armed with 3 distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, simple, not biunguiculate, flexor margin concave, propodus with spinules on flexor margin, not segmented; postorbital carapace length about 4 mm.

RANGE.—Known only from the unique holotype from Kepulauan Banda, Indonesia; 9–36 meters. (Dr. Holthuis has informed us that the specimens from the Sudanese Red Sea identified by him as *P. sibogae* and reported by Edwards and Emberton (1980:236) may not belong to this species.)

#### \*152. *Periclimenes sinensis* Bruce, 1969

*Periclimenes sinensis* Bruce, (July)1969b:270 [type locality: Hong Kong; on alcyonarian]; 1982e:255, figs. 13, 14.

*Periclimenes (Periclimenes) setoensis* Fujino and Miyake, (November)



1969a:149, figs. 4, 5 [type locality: Shiso-jima, Tanabe Bay, Wakayama Prefecture, Japan; 5 meters, associated with alcyonarian].

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, palaemonoid, nearly horizontal, rostral formula 1 + 8–9/2, posteriormost tooth not isolated from remainder of dorsal rostral series, situated in line with or anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not noticeably larger than antennal spine, arising posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle bluntly triangular, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite more than 1½ times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, anterior pair arising at about mid-length; eye with cornea hemispherical, not produced distally; antennular peduncle with 1 distolateral spine on basal segment; antennal scale 2¾ times as long as wide, lateral margin nearly straight, distolateral tooth not reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod overreaching antennal scale by about length of fingers, latter not pectinate on opposable margins; 2nd pereopods subequal, similar, fingers about as long as palm, carpus ¾ as long as palm, more than twice as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod with dactyl not subdistally truncate, without denticulate lobe on flexor margin, biunguiculate, flexor margin concave, propodus with spinules on flexor margin, not segmented; 5th pereopod not overreaching antennal scale; uropod slightly overreaching extended telson; maximum postorbital carapace length 2.3 mm.

**MATERIAL.**—PHILIPPINES. Off Jolo Islands, Sulu Archipelago: sta 5141; 6°09'N, 120°58'E; 53 m; coral sand; 15 Feb 1908 (0848–0905); 12' Agassiz beam trawl, mud bag: 1 ovig female [1.3].—Near Siasi, Sulu Archipelago: sta 5147; 5°41'40"N, 120°47'10"E; 38 m; coral sand, shells; 16 Feb 1908 (1127–1147); 12' Agassiz beam trawl, mud bag: 1 ovig female [2.1].—Off Tawitawi, Sulu Archipelago: sta 5151; 5°24'40"N, 120°27'15"E; 44 m; coarse sand, shells; 18 Feb 1908 (1307–1327); 12' Agassiz beam trawl, mud bag: 1 cephalothorax [2.0].

**RANGE.**—Known previously only from Hong Kong and Japan; associated with alcyonarians. The depths at which the species was taken by the *Albatross* (to 53 m) represent a considerable extension of the known bathymetric range.

**REMARKS.**—The posterior four or five teeth of the dorsal rostral series are articulated (not indicated by Fujino and Miyake) and the distolateral spine on the basal segment of the antennular peduncle resembles the illustration in Bruce (1982e, fig. 14B) more closely than the one in Fujino and Miyake (1969a, fig. 5a). On the other hand, the antennal scale and the dactyl of the third pereopod are more like those illustrated by Fujino and Miyake (1969a, fig. 5a,i) than those in Bruce (1982e, fig. 14C, and 131J).

### 153. *Periclimenes soror* Nobili, 1904

?*Periclimenes parasiticus* Borradaile, 1898:384 [type locality: Milne Bay, Papua].—Bruce, 1975d:281, fig. 2.

*Periclimenes soror* Nobili, 1904:232 [type locality: Djibouti].—Gordon, 1939:395, figs. 1–3.—Bruce, 1978e:299, figs. 1–6.—Bruce and Svoboda, 1984:98.

*Periclimenes (Cristiger) frater* Borradaile, 1915:210 [type locality: Seychelles].

*Periclimenes bicolor* Edmondson, 1935:10, fig. 3 [type locality: Kaneohe Bay, Oahu, Hawaii; on asteroid].

*Periclimenes (Periclimenes) soror*.—Holthuis, 1952c:51, fig. 17.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, rather deep, directed anteriorad or very slightly anteroventrally, rostral formula 0 + 10/0, posteriormost tooth not isolated from remainder of dorsal rostral series, situated anterior to level of hepatic spine; carapace without supraorbital or postorbital spine, hepatic spine not much larger than antennal spine, arising slightly posteroventral to latter, not extending beyond anterior margin of carapace, orbital angle rather strongly produced triangularly, not ovate; abdomen without compressed dorsal prominence on 3rd somite, 6th somite about 1⅔ times as long as 5th; telson with 2 pairs of dorsolateral spines anterior to posterior margin, both pairs arising in posterior ½ of length; eye with cornea hemispherical, not ogival; antennular peduncle with 2 or 3 distolateral spines on basal segment; antennal scale about 2⅓ times as long as wide, lateral margin nearly straight, distolateral tooth not nearly reaching level of distal margin of blade; 4th thoracic sternite without slender median process; 1st pereopod not overreaching antennal scale, fingers spatulate, pectinate on opposable margins; 2nd pereopod pectinate on opposable margins; 2nd pereopod with fingers less than ½ as long as palm, carpus also less than ½ as long as palm, nearly twice as long as distal width, without distal spines, merus without distal tooth on flexor margin; 3rd pereopod without denticulate lobe on flexor margin, obscurely biunguiculate, flexor margin sinuous, propodus with spinules on flexor margin, not segmented; uropod slightly overreaching extended telson; maximum postorbital carapace length about 2.7 mm.

**RANGE.**—Red Sea to Japan, Philippines, Indonesia, Australia, and eastward to Hawaii and Society and Tuamotu islands to Golfo de Panama on the American coast; associated with asteroids.

### \*154. *Periclimenes spiniferus* De Man, 1902

*Periclimenes petithoursii* var. *spinifera* De Man, 1902:824 [type locality: Ternate, Pulau Damar-Besar, Teluk Djakarta, and Ambon, in Indonesia, and Tahiti, Society Islands].

*Periclimenes (Falciger) spiniferus*.—Borradaile, 1917:324, 369, pl. 52.

*Periclimenes (Harpilius) spiniferus*.—Holthuis, 1952c:76, fig. 30.

*Periclimenens spiniferus*.—Bruce, 1976c:95, figs. 5, 6.

**DIAGNOSIS.**—Integument smooth, not pitted, on lateral areas of carapace and abdomen; rostrum not overreaching antennal scale, shallowly palaemonoid, directed somewhat anterodorsally in anterior ½, rostral formula 1 + 5–8/2–5, posteriormost