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CANADIAN ATLANTIC FAUNA

10. ARTHROPODA

10n. PANTOPODA

BY

ALFREDA BERKELEY NEEDLER

(Based on an unpublished paper by the late Dr. Louis Giltay
of Brussels)

WITH FIGURES

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PANTOPODA (PYCNOGONIDA)

The peculiar class of Arthropods, Pantopoda (or Pycnogonida) are commonly called "sea spiders" although they are not now considered to be Arachnids. They are usually found crawling over hydroids, sponges or seaweeds on which they feed or are definitely parasitic. The body bears four pairs of walking legs, a short abdomen, a suctorial proboscis and, typically, a pair of palps and a pair of cheliferi, though either or both of these last may be absent. The body also bears dorsally a tubercle with eye spots. The males always carry the eggs and have a special pair of legs (ovigers) for this purpose. In some species the females also have ovigers but they are not used. The slender body has lateral processes at the bases of the legs into which the internal organs extend and which increase the appearance of being "all legs."

SELECTED LITERATURE

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- (9) WILSON, E. B. *Trans. Conn. Acad. Arts and Sci.*, Vol. V, pp. 1-24, 1882.

The numbers placed after the specific names refer to the numbered articles in the list of literature.

KEY TO FAMILIES

1. (8) Chelifori absent or rudimentary.
2. (5) Chelifori absent except in larvae.
3. (4) Palps present. COLOSSENDEIDAE (p. 4)
4. (3) Palps absent. PYCNOGONIDAE (p. 5)
5. (2) Chelifori present in larvae and young stages but rudimentary in fully developed specimens.
6. (7) Body fully segmented. Legs without auxiliary claws. EURYCYDIDAE (p. 15)
7. (6) Body imperfectly segmented. Legs with auxiliary claws. AMMOTHEIDAE (p. 15)
8. (1) Chelifori well developed.
9. (12) Proboscis directed forwards. Ovigera present in both sexes.
10. (11) Palps present. NYMPHONIDAE (p. 6)
11. (10) Palps rudimentary or absent. PALLENIDAE (p. 12)
12. (9) Proboscis directed obliquely downwards. Ovigera in males only. Palps absent. PHOXICHILIDIIDAE (p. 13)

COLOSSENDEIDAE

Chelifori absent, palps present, ovigera present in both sexes, body unsegmented, proboscis large.

Genus **COLOSSENDEIS** Jarzynsky.

Abdomen very narrow, sharply defined. Ocular tubercle pointed, eyes indistinct. Palpi slender without distinct setae, ten joints. Ovigera greatly elongated, ten joints, the fourth and sixth joints longest, the four last armed with several series of crowded spines, terminal claw distinct. Legs very long.

C. colossea Wilson 8 (*C. titan*, Filhol.) (Fig. 1).

Body relatively short, lateral processes separated by small intervals. Proboscis $1\frac{1}{2}$ times as long as the body; at $\frac{1}{3}$ of its length it expands suddenly and then gradually tapers towards the tip. Ocular tubercle short, anteriorly nearly triangular, wider than long, two small ocelli without pigment widely separated. Eighth joint of palp elongated, as long as tenth, ninth a little shorter. Fourth and sixth joints of ovigera about equal in length. Legs very long and slender, $5\frac{1}{2}$ times as long as the body (including proboscis and abdomen); claw less than $\frac{1}{2}$ the propodus. Length of body (including proboscis) 50 mm.

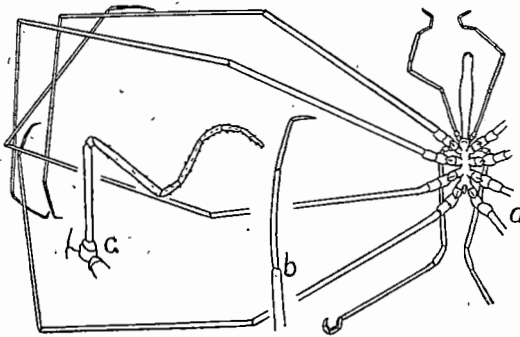


Fig. 1. *C. colossea*, Wilson. (after Wilson). *a*, dorsal view; *b*, end of leg; *c*, palp.

Some authors consider this species identical with *C. gigas* Hoek, but Giltay believes it is a distinct species.

Relatively common in deep water (to 800 fathoms) off Atlantic coasts of Europe and the United States; expected in Canadian waters.

C. angusta Sars 3, 4 (Fig. 2).

Body relatively short and slender, lateral processes widely separated. Proboscis somewhat longer than the body, narrow, cylindrical, slightly swollen at the middle. Ocular tubercle acute, bent slightly forward, with no trace of pigment or visual elements. Eighth joint of palp very short, obliquely truncated at the extremity, the two outer joints about equal in length. Fourth and sixth joint of ovigers about equal in length. Legs slender, about 3 times as long as the body; claw slender, longer than the propodus. Length of body 17-19 mm.

Deep water off the east coast of the United States, Greenland, northern Europe and Siberia; expected in Canadian waters.

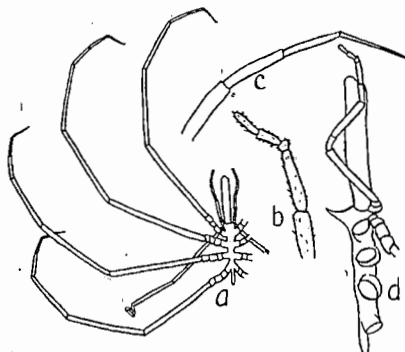


Fig. 2. *C. angusta*, Sars. (after Sars). *a*, dorsal view; *b*, palp; *c*, end of leg; *d*, side view of body.

PYCNOGONIDAE

Chelifori and palpi wanting in adults of both sexes. Ovigiers present only in the male. Body distinctly segmented.

Genus **PYCNOGONUM** Brünnich.

Body very thickset with hard, rough integument and very few hairs or spines. Proboscis extending straight forwards. Oculiferous tubercle obtuse. Ovigiers very small, nine jointed, terminating in a powerful claw. Legs short and robust, tarsus very short, strong terminal claw, usually no auxiliary claws. Egg-mass simple, cake-shaped.

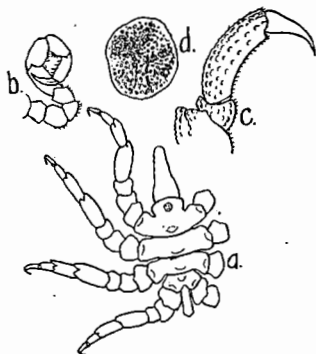
P. littorale (Ström) 3,9 (*Phalangium littorale* Ström, *Pycnogonum balaenarum*, Linne, *P. pelagium* Stimpson.) (Fig. 3).

Fig. 3. *P. littorale*, (Ström). ♀ (after Sars). *a*, dorsal view; *b*, oviger; *c*, end of leg; *d*, egg mass from belly of male.

Body broad and heavy; lateral processes barely separated. Proboscis conical, the outer part slender, cylindrical. A conical tubercle on the middle line of each segment and one or two tubercles on each lateral process. Caudal segment clavate, truncated at the extremity. Legs short, very powerful, claw nearly half as long as propodus. No auxiliary-claws. Length of body: 14-18 mm.

Arctic ocean and Atlantic coasts of Europe and North America, (0-1000 m.). Common under stones at low water.

NYMPHONIDAE

Chelifori present, well developed. Proboscis directed forwards, always shorter than the body. Palps present, 5 jointed. Ovigiers of 10 joints, the 4 outer ones supplied with special spines and a terminal claw. Tarsi of legs longer than broad, sometimes as long or longer than the propodi; propodi straight or very slightly curved.

Genus **NYMPHON** Fabricius.

Body and legs smooth, sometimes a few setae. Cephalic segment rather large, neck well marked, front somewhat expanded. Chelifori not very hairy, well developed; hand comparatively narrow, not much broader distally. Palps of 5 joints. Legs generally slender and long. Fifth joint of ovigers of male gradually widening distally.

N. brevitarse Kröyer 3 (*N. hirsutum* Kröyer) (Fig. 4).

Body relatively short with lateral processes separated. Neck of cephalon short and thick. Ocular tubercle very low and rounded at the extremity.

Proboscis nearly as long as the cephalic segment. Hand of chelifori as long as scape; fingers much shorter than palm. Palps longer than proboscis, third joint somewhat shorter than second, second joint twice as long as fourth and last joint more slender and a trifle longer than the fourth. Tarsus of legs shorter than propodus which has 6 strong spines on the inner edge, claw more than half as long as propodus, auxiliary claws well developed. Length of body is 3 mm., extent 20 mm.

Strait of Belle isle, (120 m.) Greenland, Matotschkin strait, Franz Joseph Land, Spitzbergen.

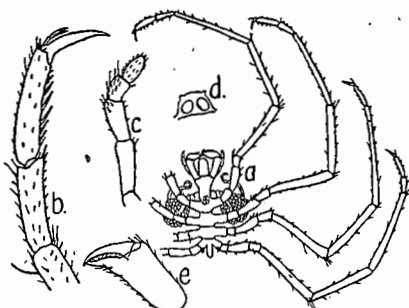


Fig. 4. *N. brevitarse*, Kröyer. ♂ (after Sars). a, dorsal view; b, end of leg; c, palp; d, ocular tubercle, anterior aspect; e, left chela.

N. grossipes (Fabricius) 3, 4 (*Pycnogonum grossipes* Fabricius) (Fig. 5).

Body rather slender with lateral processes well separated. Neck of cephalon slender, moderate length. Ocular tubercle high, conically acuminate. Proboscis nearly as long as the cephalic segment. Hand of chelifori as long as scape; fingers curved at the tips, much shorter than palm. Palps longer than proboscis; second joint

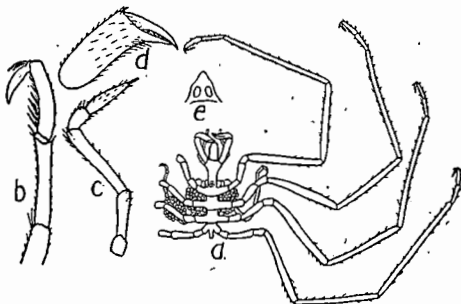


Fig. 5. *N. grossipes* (Fabricius) ♂ (after Sars). a, dorsal view; b, end of leg; c, palp; d, left chela; e, ocular tubercle, anterior aspect.

very short, nearly half as long as the third; last joint twice as long as the fourth, tapering towards the extremity. Tarsus of legs varying in size but usually rather longer than the propodus; propodus somewhat curved, armed with about 6 spines; principal claw rather more than half the length of propodus, auxiliary claws almost half length of principal claw. Length of body about 6 mm.

N. grossipes is a very variable species but Giltay considers it quite distinct from *N. mixtum* and *N. glaciale* since the shape of the palp is characteristic. The second joint of the palp varies a little but is always much shorter than the third.

Circumpolar, arctic and boreo-arctic, strait of Belle isle and gulf of St. Lawrence south to cape Cod and Long Island sound (40-65 m.).

N. mixtum Kröyer 1, 3, 4 (*N. grossipes* var. *mixtum* Schimkewitsh, *N. grossipes mixtum* Giltay) (Fig. 6).

Body slenderer than in *N. grossipes*, lateral processes much more separated. Neck of cephalon very slender, rather elongate. Ocular tubercle very sharply acuminated. Proboscis somewhat shorter than the cephalic segment. Hand of chelifori hardly as long as scape but fingers longer than in *N. grossipes*, a little longer or as long as palm and curved at the tips. Second and third joint of palps about the same length; last joint nearly as long as the fourth, more or less expanded towards the extremity. Tarsus of legs usually twice as long as propodus; propodus with 7-8 strong spines; claw powerful, not half as long as propodus, auxiliary claws two-thirds length of claw. Length of body 9.5 mm.

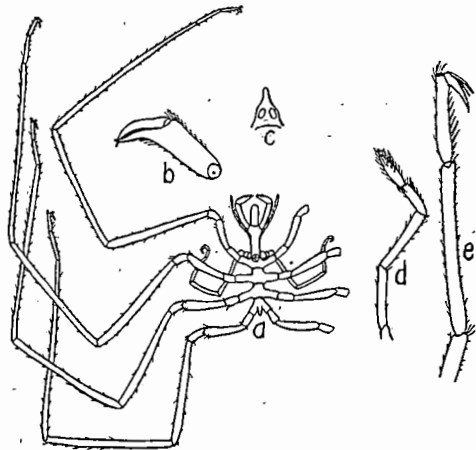


Fig. 6. *N. mixtum*, Kröyer. ♀ (after Sars). a, dorsal view; b, left chela; c, ocular tubercle, anterior aspect; d, palp; e, end of leg.

Strait of Belle isle south to cape Cod and Long Island sound, also circumpolar, arctic and boreo-arctic.

N. glaciale Lilljeborg 3, 4 (*N. grossipes* var. *glaciale* Schimkewitsch) (Fig. 7).

Body less slender than in *N. grossipes* or *N. mixtum*, lateral processes less separated. Neck of cephalon of moderate length. Ocular tubercle low, obtusely pointed. Proboscis shorter than cephalic segment. Hand of chelifori a little shorter than scape, fingers as long as palm. Second and third joint of palps equal in length, fourth joint shorter than fifth. Tarsus of legs a little longer than propodus; propodus with about 9 strong spines; claw more than half as long as propodus, auxiliary claws half as long as principal claw. Length of body 4.5 mm.

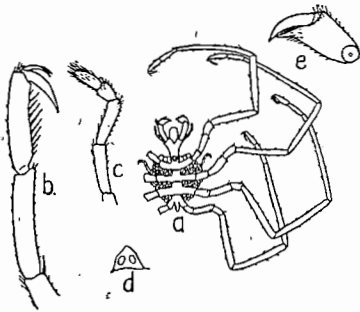


Fig. 7. *N. glaciale* Lilljeborg. ♂ (after Sars). a, dorsal view; b, end of leg; c, palp; d, ocular tubercle, anterior aspect; e, left chela.

Gulf of St. Lawrence north to Greenland, sea of Ochotsk, Bering sea, sea of Karsk, White sea, coast of Murmansk, coast of Norway, Spitzbergen and Franz Joseph Land.

N. sluiteri Hoek 3, 4, 5 (Fig. 8).

Body slender, lateral processes well separated. Neck of cephalon slender, of moderate length. Ocular tubercle acuminate. Proboscis as long as cephalic segment. Hand of chelifori nearly as long as scape, fingers curved and as long as palm. Second joint of palps much shorter than third; fourth joint nearly half as long as fifth; fifth joint tapering towards the extremity. Tarsus of legs longer than propodus, propodus furnished on inner edge with delicate setiform spines; claw very long, almost as long as propodus, auxiliary claws very short. Length of body 7 mm.

Estuary of the St. Lawrence (100-200 m.), arctic Canada, Siberia, Greenland, Spitzbergen and the Faroes:

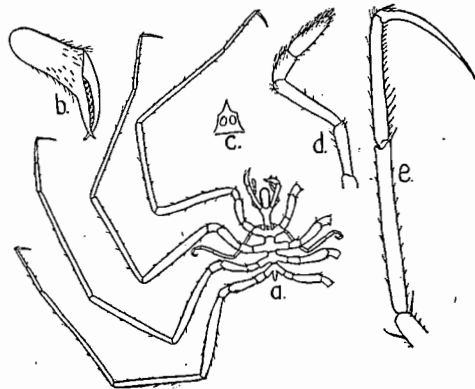


Fig. 8. *N. sluiteri* Hoek. ♀ (after Sars). a, dorsal view; b, left chela; c, ocular tubercle, anterior aspect; d, palp; e, end of leg.

N. longitarse Kröyer 3, 4, 5 (Fig. 9).

Body very slender, lateral processes widely separated. Neck of cephalon long and slender, as long as scape. Ocular tubercle obtusely rounded. Proboscis shorter than cephalic segment. Hand of chelifori shorter than scape, fingers as long as palm, curved at the tips. Second and third joints of palps equal in length; fifth joint somewhat shorter than fourth and both together a little longer than third. Tarsus of legs nearly twice as long as propodus; propodus armed with minute spines; auxiliary claws very small. Length of body 6 mm.

Gulf of St. Lawrence south to cape Hatteras (29-95 m.), a circum-polar, boreo-arctic species.

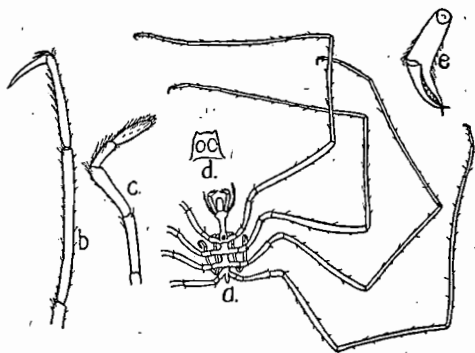


Fig. 9. *N. longitarse*, Kröyer. ♀ (after Sars). *a*, dorsal view; *b*, end of leg; *c*, palp; *d*, ocular tubercle, anterior aspect; *e*, right chela.

N. stroemii Kröyer 3, 4, 5 (Fig. 10).

Body somewhat thick, lateral processes moderately separated. Neck of cephalon shorter than scape. Ocular tubercle low and rounded. Proboscis as long as cephalic segment. Hand of chelifori longer than scape, fingers as long as palm, curved and elongate. Palpi slender, twice as long as proboscis, two outer joints slim and elongated, last joint shortest. Tarsus of legs longer than propodus; propodus with minute setiform spines on the inner edge; claw barely half as long as propodus, auxiliary claws nearly one-third length of principal claw. Length of body 15 mm.

Gulf of St. Lawrence south to Massachusetts (90-325 m.), a circum-polar, boreo-arctic species.

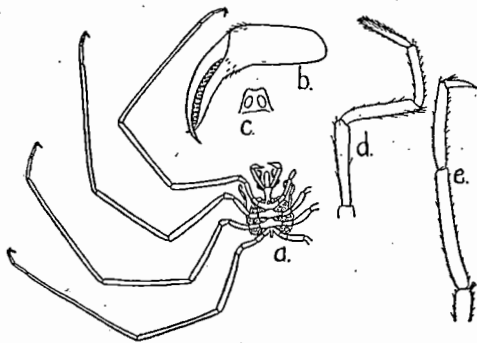


Fig. 10. *N. stroemii*, Kröyer. ♂ (after Sars). *a*, dorsal view; *b*, right chela; *c*, ocular tubercle, anterior aspect; *d*, palp; *e*, end of leg.

N. macrum Wilson 3, 4, 5, 7 (Fig. 11).

Body very slender and lateral processes well separated. Neck narrow but not very long. Ocular tubercle low, truncated at the extremity. Proboscis as long as cephalic segment. Hand of chelifori as long as scape, fingers longer than palm with incurved tips. Second palpal joint nearly twice as long as third; fifth joint shorter and more slender than fourth; fourth and fifth joints together are longer than the third. Tarsus of legs much longer than propodus; propodus beset on inner edge with small setiform spines; claw half as long as propodus; auxiliary claws two-thirds length of principal claw. Length of body 8-9 mm.

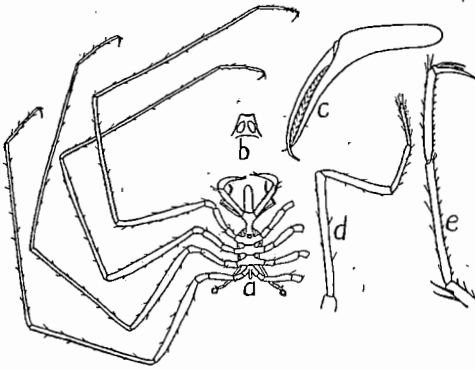


Fig. 11. *N. macrum*, Wilson. ♀ (after Sars).
a, dorsal view; b, ocular tubercle, anterior aspect.
c, right chela; d, palp; e, end of leg.

North Atlantic in deep water.

On American coast, Banquereau, N.S., south to 42° lat. N.

N. serratum Sars 2, 3, 4, 5 (Fig. 12).

Body relatively slender, lateral processes separated, 3 acuminate dorsal projections. Neck moderate. Ocular tubercle conical, truncated at the extremity. Proboscis as long as cephalic segment. Hand of chelifori a little more than half as long as scape; fingers shorter than palm with tips incurved. Second palpal joint longer than third; third joint longer than fourth and fifth together. Tarsus and propodus about the same length; propodus with 6-8 strong spines on the inner edge; claw nearly half as long as propodus; auxiliary claws nearly half length of principal claw. Length of body 12 mm.

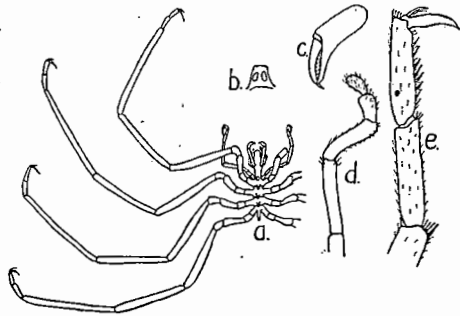


Fig. 12. *N. serratum*, Sars. ♀ (after Sars).
a, dorsal view; b, ocular tubercle, anterior aspect.
c, right chela; d, palp; e, end of leg.

Hudson bay (75 m.), Greenland and Siberia.

N. rubrum Hodge 2, 3 (*N. gracile*, Hoek) (Fig. 13).

Body very slender and elongate, with widely separated; prolonged lateral processes, each bearing 2 stiff bristles. Neck long and slender, very little expanded at the front. Ocular tubercle much elevated, conically acuminate. Proboscis hardly more than half as long as cephalic segment. Hand of chelifori shorter than scape, fingers shorter than palm. Palpi slender, second and third joints about equal in length, fifth joint twice as long as fourth. Legs long and slender, beset with scattered, highly chitinised bristles; relative lengths of joints quite variable, tarsus and propodus usually about same length; propodus armed on inner edge with 4 or 5 strong spines and numerous smaller ones; claw about half as long as propodus; auxiliary claws not quite half length of principal claw. Length of body 4.5 mm.

Minas basin, N.S. (coll. A. H. Leim, identified by L. J. Cole), British Isles, Holland and Norway.

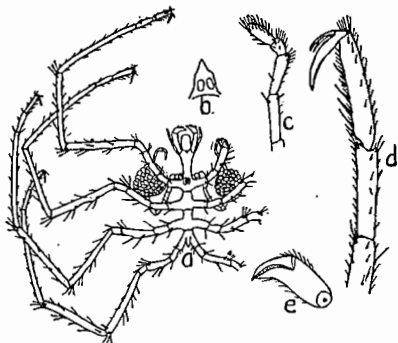


Fig. 13. *N. rubrum*, Hodge. ♂ (after Sars). a, dorsal view; b, ocular tubercle, anterior aspect; c, palp; d, end of leg; e, left chela.

Genus **CHAETONYMPHON** Sars.

Body usually thickset, more or less densely hairy, cephalic segment large, neck rather short, front much expanded. Ocular tubercle more or less elevated with distinct lenses. Chelifori very hairy, hand shorter than scape and broadening distally. Palps of 5 joints. Fifth joint of male oviger much expanded in the outer part and there densely beset with setae. Legs shorter than in *Nymphon*, hairy; femoral joint swollen in female, furnished with blunted nodules in the male.

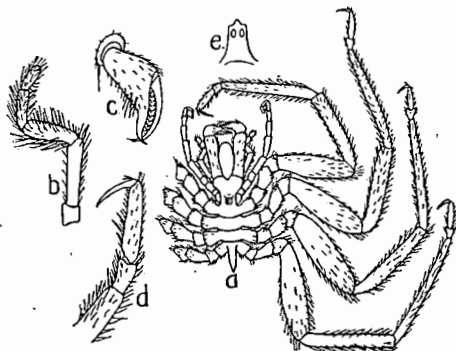
Ch. hirtipes (Bell) 3, 4, 5, 9 (*Nymphon hirtipes* Bell, Wilson, *Ch. spinosum* Schimkewitsch) (Fig. 14).

Fig. 14. *Ch. hirtipes*, (Bell). ♀ (after Sars). a, dorsal view; b, palp; c, left chela; d, end of leg; e, ocular tubercle, anterior aspect.

Body, lateral processes and legs hairy. Body thickset, lateral processes not separated. Neck short and wide. Caudal segment narrow, tapering towards the end. Proboscis as long as cephalic segment. Ocular tubercle higher than broad, directed obliquely backwards. Hand of chelifori a little shorter than scape; fingers as long as palm, curved at the tips. Fourth and fifth joint of palps narrower than the preceding ones and, together, longer than the third and about as long as the second. Legs more

or less thickset; tarsus very short, a little longer than broad; propodus with 4 or 5 slender spines on the inner edge; claw more than half as long as propodus; auxiliary claws very small. Length of body 11.5 mm.

Several authors have confused this species with *Ch. spinosissimum* and *Ch. hirtum*.

North Atlantic. On Canadian coast Hudson bay to Halifax (75-90 m.).

PALLENIDAE

Chelifori well developed. Proboscis directed forwards. Cephalic segment rather large. Palps rudimentary or absent. Tarsi of legs short, not longer than broad, always shorter than propodi; propodi more or less curved. Ovigera present in both sexes.

Genus **PSEUDOPALLENE** Wilson.

Body robust. Proboscis inclined somewhat downwards, mamilliform with the oral orifice surrounded by a dense wreath of delicate bristles. Legs armed with spiny tubercles, no auxiliary claws. Ovigera ten-jointed, terminating with a well-developed claw; fifth joint in male with a short lobe at the extremity.

P. circularis (Goodsir) 3, 4, 5, 9 (*Pallene circularis* Goodsir, *Pallene intermedia* Kröyer, *Pallene hispida* Stimpson, *Pseudopallene hispida* Wilson, *Pseudopallene intermedia* Hansen) (Fig. 15).

Body thickset, lateral processes nearly contiguous, with a longitudinal series of spiniform projections on the back of the two median sections. Neck very short, cephalic segment and short armed with spiniform tubercles at the expanded anterior edge. Proboscis as long as cephalic segment. Ocular tubercle very low, not higher than broad, directed backwards. Scape of chelifori with spiniform tubercles, hand as long as scape, immobile finger with one tubercle on the inner edge, mobile finger smooth. Palps absent. Legs short and robust; furnished, especially on the outer edge, with spiniform tubercles each ciliated on the sides and with a stiff bristle at the point; tarsus very short; propodus curved and armed on

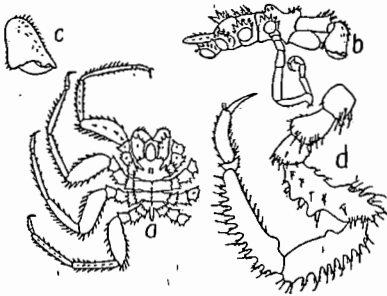


Fig. 15. *P. circularis*, (Goodsir). (after Sars). *a*, adult female, dorsal view; *b*, body (without legs) of adult male, side view; *c*, right chela; *d*, a leg of the male.

the inner edge with 8-10 strong spines; claw strong but shorter than propodus. Length of body 3.5 mm.

North Atlantic. On American coast Grand Manan to cape Cod.

Genus **PALLENOPSIS** Wilson.

Body slender, segmented. Proboscis large. Ocular tubercle with two very unequal pairs of large ocelli. Abdomen slender, simple. Chelifori slender, the scape two-jointed. Palpi rudimentary, composed of a single joint. Ovigera ten-jointed. Legs slender; auxiliary claws present; the fourth joint in the male with a peculiar glandular duct near the middle.

P. longirostris Wilson 8 (Fig. 16).

Body slender, lateral processes separated at the base. Neck short. Proboscis longer than cephalic segment. Ocular tubercle obtusely rounded, the anterior eyes larger than the posterior. Chelifori very slender; the scape two-jointed; fingers long, slender and very curved with finely serrated cutting edges. Ovigera much better developed in males than females. Palps reduced to a pair of simple rounded knobs at the sides of the proboscis. Legs very long and slender with very few hairs; the propodus usually with three large spines followed after a space by three or four shorter ones; claw about half length of propodus; auxiliary claws about one-third length of claw. Length of body 6 mm.

Cabot strait (378 m.), New Jersey (915 m.).

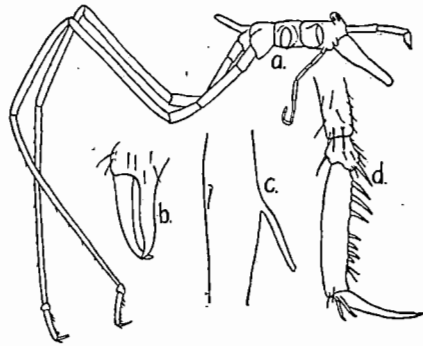


Fig. 16. *P. longirostris*, Wilson. (16a by A. B. Needler; 16b, 16c and 16d after Wilson). *a*, adult female, side view, two legs removed; *b*, chela; *c*, duct on fourth leg of male; *d*, end of leg.

PHOXICHILIDIIDAE

Chelifori well-developed. Cephalic segment generally short. Palps absent. Proboscis issuing from ventral side of cephalic segment directed obliquely downwards. Tarsi usually short, always shorter than propodi. Ovigera present in males only.

Genus **ANOPLODACTYLUS** Wilson.

Cephalic segment anteriorly constricted and projecting beyond base of proboscis. Ocular tubercle at extreme anterior end of cephalic segment. Chelifori comparatively feeble, the chela small and the fingers scarcely forcipate. Ovigera six-jointed, no terminal claw. Auxiliary claws extremely small or absent.

A. lentus Wilson 2, 6, 9 (*Anaphia lenta* Norman, *Phoxichilidium maxillare*, Stimpson) (Fig. 17).

Body slender, lateral processes separated, the whole body scabrous. Cephalic segment broad, nearly as long as wide with the ocular tubercle a little in advance of the base of the proboscis. Ocular tubercle low, terminating in a little point. Proboscis longer than cephalic segment. Caudal segment nearly twice as long as broad, slightly bifid at the extremity. Legs long and slender; propodus curved with a rounded lobe near the base bearing four to six spines followed by a series of much smaller ones; no auxiliary claws; claw stout, nearly two-thirds length of propodus. Length of body 7 mm.

Atlantic coast of North America, common between tide marks.

Genus **PHOXICHILIDIUM** H. Milne-Edwards.

Cephalic segment projecting very little if at all beyond the base of proboscis. Ocular tubercle just in front of middle of cephalic segment. Chelifori comparatively powerful, fingers strongly curved and markedly forcipate. Ovigera of male five-jointed with the last joint comparatively large, compressed and strongly curved, without claw but with unguiform spines at the sides and along the inner margin. Auxiliary claws distinct.

P. femoratum (Rathke) 3, 9 (*Nymphon femoratum* Rathke, *Orithyia coccinea* Johnston, *P. globosum* Goodsir, *P. maxillare* Stimpson, Wilson, *P. minor* Wilson) (Fig. 18).

Body slender, lateral processes well separated. Neck swollen, cephalic segment broad. Ocular tubercle prominent, conical, the anterior eyes larger than the posterior. Proboscis stout, rounded at the end, nearly two-thirds the length of body. Chelifori longer than proboscis. Legs rather robust, beset with extremely small spines; femur of female often swollen with developing eggs; tarsus very small; propodus curved with a rounded lobe near the base bearing two to six strong spines followed by a series of much smaller ones; auxiliary claws one-fifth to one-sixth length of claw. Length of body 3-4 mm.

Common on both sides of north Atlantic, under stones at low tide to 200 m. frequently on Hydrozoa and Bryozoa.

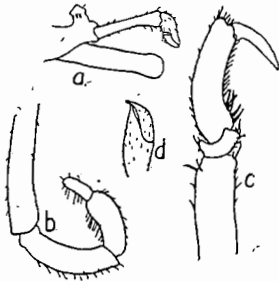


Fig. 17. *A. lentus*, Wilson. (17a, 17b and 17c after Norman; 17d after Wilson). a, cephalic segment; b, oviger; c, end of leg; d, chela of male.

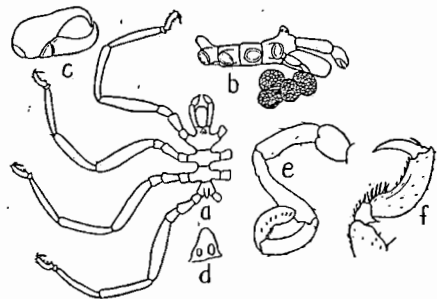


Fig. 18. *P. femoratum* (Rathke). (after Sars). a, adult female, dorsal view; b, body (without legs) of ovigerous male, side view; c, chela; d, ocular tubercle, side view; e, oviger of male; f, end of leg.

EURYCYDIDAE

Body fully segmented, caudal segment distinctly demarcated. Chelifori more or less rudimentary. Palps greatly elongated, ten-jointed, the two first joints very short. Ovigera present in both sexes, ten-jointed, with distinct terminal claw. Legs without auxiliary claws. Proboscis more or less curved in under the body, sometimes articulated to a cylindrical scape.

Genus **ASCORHYNCHUS** Sars.

Body narrow and elongated with sharply defined segments and widely separated lateral processes. Proboscis very large, pyriform, with no distinct scape. Chelifori small, hand in full-grown female individuals rudimentary, triangular in shape; male chelifori sometimes with claws.

A. armatus (Wilson) 8 (*Scaeorhynchus armatus* Wilson) (Fig. 19).

Body slender, lateral processes well separated, segments constricted in the middle. A prominent conical vertical spine near the outer end of each lateral process and in the median line of each of the three posterior segments of the body. Caudal segment slender and cylindrical. Proboscis large and pyriform. Ocular tubercle conical, acute, and very prominent with rudimentary ocelli. Scape of chelifori two-jointed, chela rudimentary in the female, well developed with long, slender, curved unarmed claws in the male. Palps ten-jointed. Ovigera ten-jointed, larger in male than in female. Legs long and slender; propodus straight and without strong spines; claw short and small, no auxiliary claws. Length of body 22-30.5 mm.

Off Georges bank, 2270 m., expected in Canadian waters.

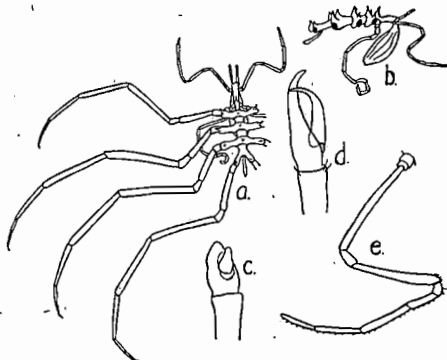


Fig. 19. *A. armatus* (Wilson). (after Wilson).
a, dorsal view; b, lateral view, legs removed;
c, chela of female; d, chela of male; e, palp.

AMMOTHEIDAE

Body compact, more or less imperfectly segmented. Chelifori small and rudimentary. Palpi well-developed, four to nine jointed. Ovigera present in both sexes. Proboscis fusiform, more or less movably connected to cephalic segment. Legs with auxiliary claws.

Genus **AMMOTHEA** Leach.

Body short and stout, lateral processes closely crowded. Caudal segment not separated from last body segment. Ocular tubercle at anterior end of cephalic segment, strongly protruberant with distinct lenses. Proboscis directed obliquely downwards. Chelifori of adult specimens small, two-jointed, last

joint globular. Palps eight to nine jointed. Ovigera without distinct terminal claw. Legs robust, frequently spinous; tarsus very small; auxiliary claws well developed.

A. spinosa (Stimpson) 2, 9 (*Zetes spinosa* Stimpson, *Achelia spinosa* Wilson, *Ammothea acheloides* Wilson) (Fig. 20).

Body nearly orbicular, lateral processes separated by a distinct but very narrow interval. Segments of body not separated. Ocular tubercle large, prominent, acute. Scape of chelifori unjointed with two or three tubercles near the extremity. Palps eight-jointed. Ovigera ten-jointed. "Legs rather long;

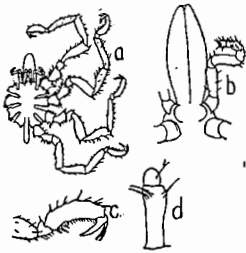


Fig. 20. *A. spinosa* (Stimpson). (after Wilson). *a*, dorsal view; *b*, rostrum, ventral side; *c*, end of leg; *d*, one of the rudimentary chelifori.

the three basal joints are short and stout, the second longest, the three following joints are nearly equal, each about as long as the three basal joints united; tarsus small, about one-fourth the propodus; the latter is strongly curved and armed below with a series of short stout spines; dactylus (claw) about half the propodus, stout and curved; auxiliary claws more than half the dactylus. The entire surface of legs and body is scabrous with numerous pointed hairy tubercles often tipped with spines; the lateral processes of the body have three or four of these tubercles near the exterior margin; the largest are on the basal joints of the legs; on the other joints they are much smaller. The legs are throughout hairy and most of the hairs are borne

on prominent tubercles." (Wilson). Length of body 2.6 mm.

This species is very similar to the European species *A. echinata* (Hodge). Norman believes them to be identical.

Grand Manan to cape Cod, living on hydroids or under stones near low water mark.

A. scabra (Wilson) 7 (*Achelia scabra* Wilson) (Fig. 21)

This species is very similar to *A. spinosa*. The most conspicuous difference is in the auxiliary claws which, in *A. scabra*, are less than one-fifth the length of the claw. The lateral processes are shorter and closer together than in *A. spinosa*; all except the posterior pair have a pair of conical, spinous tubercles on their upper side. There are two similar tubercles on the neck. Ocular tubercle large and obtuse. Chelifori stouter than in *A. spinosa*. Entire surface of body and legs is rough and scabrous but there are very few tubercles or hairs on the three basal leg joints and much fewer altogether than in *A. spinosa*. Length of body 2.3 mm.

Magdalen is. (40-45 m.), cape Ann, St. Georges bank.

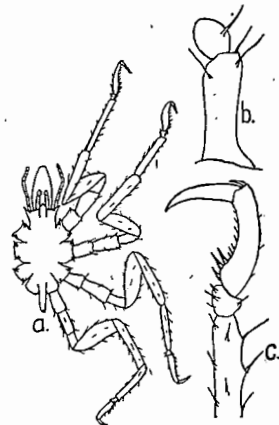


Fig. 21. *A. scabra* (Wilson). (by A. B. Needler). *a*, dorsal view; *b*, one of the rudimentary chelifori; *c*, end of leg.