

NOTES ON THE MENOPONIDAE OF NORTH AMERICA. I.

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This is the first of a series of papers dealing with the Menoponidae of North America, in which it is hoped that each genus can be discussed and illustrated. The author wishes to acknowledge the kindness of Dr. G. F. Ferris in lending the Stanford Collection, containing V. L. Kellogg's type material, which is being used in these studies; and of Dr. C. F. W. Musebeck, for the loan of material from the United States National Museum.

Genus **EIDMANNIELLA** Keler, 1938

Eidmanniella Keler, Annales Musei Zoologica Polonici, XIII, p. 81-85 (1938)

Head about twice as broad as long; the lateral margin of the forehead with a slit. Mandibles situated a short distance behind the anterior margin. Oesophageal sclerite either well developed or rudimentary. Antennae four-jointed. Thorax normal; mesonotum short, separated from the metanotum. Legs normal; hind femora each with a patch of setae on the venter. Abdomen elongately oval with tergal, sternal, and paratergal plates; sternites IV-VI with small patches of setae on their lateral margins. Male genitalia with the basal plate short, narrow anteriorly, and gradually broadened toward the apex where it is strongly expanded; parameres present.

Occurring on Sulidae, Phalacrocoracidae, Fregatidae, and Phaetontidae.

Genotype: *Monopon pellucida* (Rudow).

EIDMANNIELLA PELLUCIDA (Rudow, 1869)

Figs. 2, 10, and 13

Menopon pellucidum Rudow, Zeit. f. ges. Naturw., XXXIV, p. 400, (1869)

Menopon brevipalpe Piaget, Les Pediculines, p. 498, pl. 40, f. 5, (1880)

Menopon brevipalpe Piaget; Waterston, Annales S. Afr. Mus., X, p. 314 (1914)

Menopon brevipalpe Piaget; Harrison, Parasitology, IX, p. 34 (1916)

Menopon pellucidum Rudow; Harrison, *ibid*, p. 42

Menopon brevipalpe Piaget; Bedford, 18th Rept. Dir. Vet. Serv. and Anim. Ind. S. Africa, p. 372 (1932)

Menopon pellucidum Rudow; Bedford, *ibid*, p. 375

Eidmanniella brevipalpe (Piaget); Keler, Annales Musei Zoologica Polonici, XIII, p. 81-85 (1938)

Eidmanniella pellucidum (Rudow); Keler, *ibid* p. 81-85

Eidmanniella brevipalpe (Piaget); Clay and Rothschild, Novitates Zoologicae, XLI, p. 306 (1939)

Eidmanniella pellucida (Rudow); Bedford, Ondestepoort Journ. Vet. Sci. and Anim. Indust., XII, p. 125-126 (1939)

Eidmanniella brevipalpe (Piaget); Thompson, Ann. and Mag. Nat. Hist., ser. 11, V, p. 53 (1940)

Menopon pellucida Rudow; Thompson, *ibid*, p. 53

Type Host: *E. pellucida* was described from specimens from *Phalacrocorax capensis* (Sparrman) and *E. brevipalpe* from specimens from *Phalacrocorax carbo carbo* Linn. Specimens from *Phalacrocorax carbo carbo* Linn. were examined (no locality data) and are included in this study because this species is the type of the genus and the host is found on the northeastern coast of North America.

EIDMANNIELLA SINGULARIS (Kellogg and Kuwana, 1902)

(Figs. 4, 5, 6, 7, 12, and 16)

Menopon singularis Kellogg and Kuwana, Proc. Wash. Acad. Sci., IV, p. 485, pl. 31, f. 1 (1902); Kellogg, Trans. Amer. Ent. Soc. XXXII, p. 321 (1906); Kellogg and Mann, Ent. News., XXIII, p. 65 (1912); Harrison, Parasitology, IX, p. 44 (1916); Ferris, Bernice P. Bishop Mus. Bull. 92, p. 59, t.f. 11 a-g (1932)

Eidmanniella singularis (Kellogg and Kuwana); Keler, Annales Musei Zoologica Polonici, XII, p. 81 (1938); Bedford, Ondestepoort Journ. Vet. Sci. and Anim. Indust., XII, p. 126 (1939); Guimaraes, Arz. do. Mus. Para., IV, p. 182, t.f. 2-2 (1945)

Kellogg and Kuwana described this species from specimens taken off *Anous stolidus stolidus* (Linn.) — the Galapagos Islands. Kellogg recorded it

from *Phaethon aethereus* ssp., *Sula variegata* (Tschudi), *Sula nebulosa* Milne-Edwards, and *Phoebe palpebrata palpebrata* (Forster)—the Galapagos Islands. Kellogg and Mann listed it from *Phaethon aethereus* ssp.—Baja California. Ferris collected it from *Fregata minor* ssp.—Marquesas Islands; and Guimaraes from *Fregata manicensis rothschildi* Mathews from Paraná, Brazil.

I have examined Kellogg's series of specimens and have found one male with data "S. cyanops, 15°N-130°W." His specimens from *Phaethon aethereus* (no locality) are *Austromenopon sternophilum* (Ferris); and the specimens from the same host with the locality as Pasa Rojas, California, are *Austromenopon becki* (Kellogg). The specimens from *Phoebe palpebrata palpebrata* (Forster) are probably stragglers. The specimen, figured and described by Kellogg and Kuwana in their original description, is a male and not a female as stated by them. The records by Ferris and Guimaraes pertain to *E. singularis* (K. and K.).

EIDMANNIELLA KUWANI (Kellogg and Chapman, 1902)

Figs. 3, 8, and 14)

Menopon kuwani Kellogg and Chapman, Journ. N.Y. Ent. Soc., X, p. 25, pl. III, f. 4, (1902); Harrison, Parasitology, IX, p. 39 (1916); Essig, Insects of Western N. A., p. 128 (1926).

Amrysidea kuwani (Kellogg and Chapman); Peters, Bird-Banding, VII, p. II (1936).

Eidmanniella kuwani (Kellogg and Chapman); Keler, Annales Musei Polonici, XIII, p. 85, (1938); Bedford, Onderstepoort Journ. Vet. Sci. and Anim. Indust., XII, p. 125-126 (1939); Thompson, Ann. and Mag. Nat. Hist., ser. II, V, p. 53 (1940).

Kellogg and Chapman described this species from specimens from *Phalacrocorax penicillatus* (Brandt) from California. Peters recorded the species from *Phalacrocorax auritus auritus* (Lesson) from Georgia and Illinois.

I have examined the type specimens recorded and described by Kellogg and Chapman.

EIDMANNIELLA PUSTULOSA (Nitzsch, 1818)

(Figs. 1, 9, 11, and 15)

Menopon pustulosum Nitzsch, Magaz. f. Ent. von Germar und Zinken III, p. 440 (188); Giebel, Zeit. f. ges. Nat., XXVIII, p. 393 (1866); Giebel, Insect Epizoa, p. 298 (1874); Piaget, Les Pediculines, p. 490, pl. 41, f. 3, (1880); Mjoberg, Arkiv. for Zoologi, VI, p. 34 (1910); Waterston, Annals of the S. Afr. Mus., X, p. 314 (1914); Harrison, Parasitology, IX, p. 44 (1916); Bedford, 18th Rept. Dir. Vet. Serv. and Anim. Indu. Un. S. Afr., p. 375 (1932).

Eidmanniella pustulosum (Nitzsch), Keler, Annales Musei Polonici, XIII, p. 81-85 (1938); Bedford, Onderstepoort Journ. Vet. Sci. and Anim. Indust., XII, p. 125 (1939); Thompson, Annals and Mag. Nat. Hist., ser. II, V, p. 51 (1940).

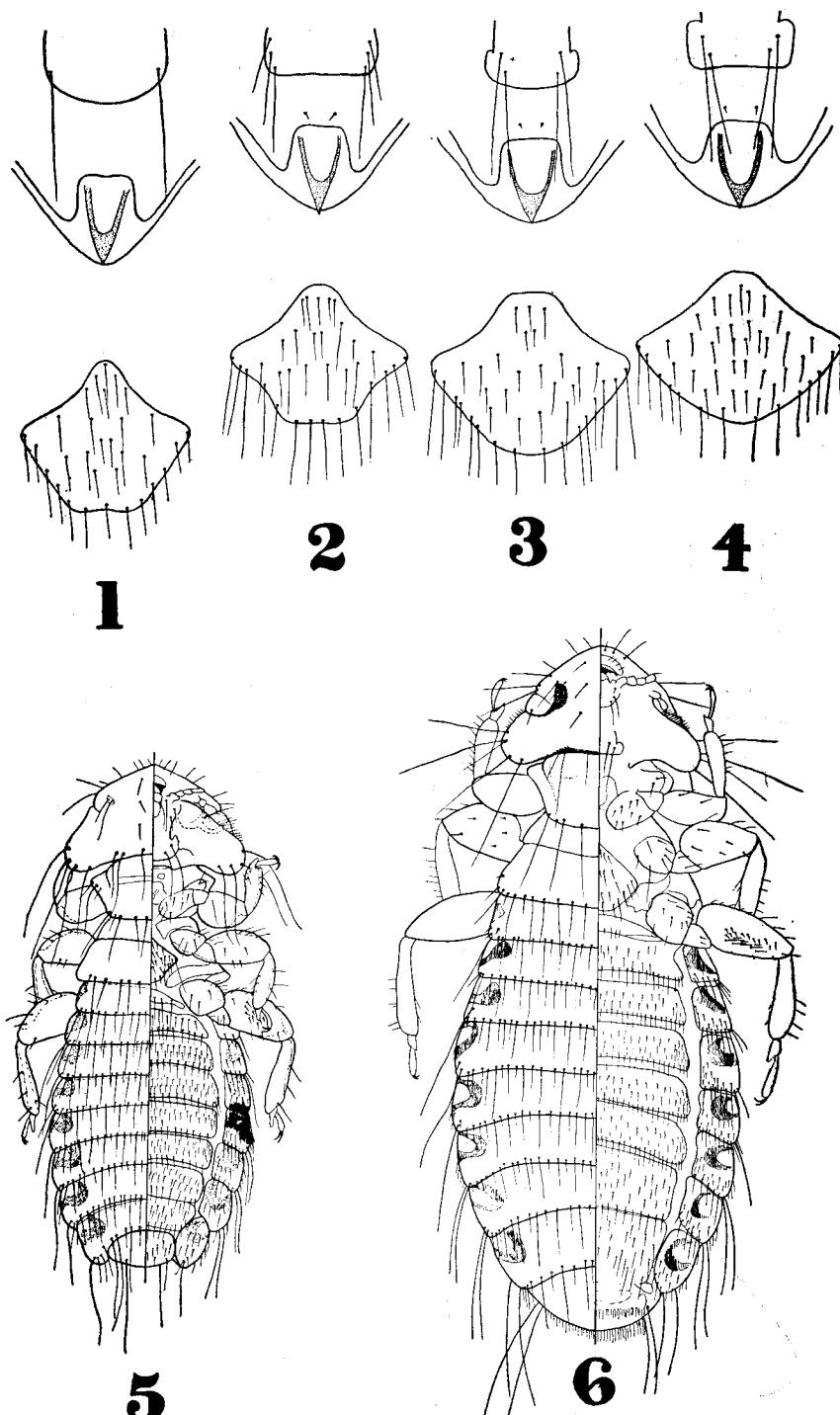
A small series of one male, one female, and an immature form from *Morus bassana* (Linn.), the type host, from the Bonaventure Islands was examined. This is the first record of this species from North America.

DISCUSSION

These four species are very closely related; however, they can be separated by a comparative study of the heads, gular regions, and thoracic sternal plates. In chaetotaxy and form of the female genitalia, the species are very similar. I have seen the males of *E. singularis* (Kellogg and Kuwana) and *E. pustulosum* (Nitzsch), which are figured. The accompanying figures and table of measurements illustrate the slight differences.

TABLE NO. I

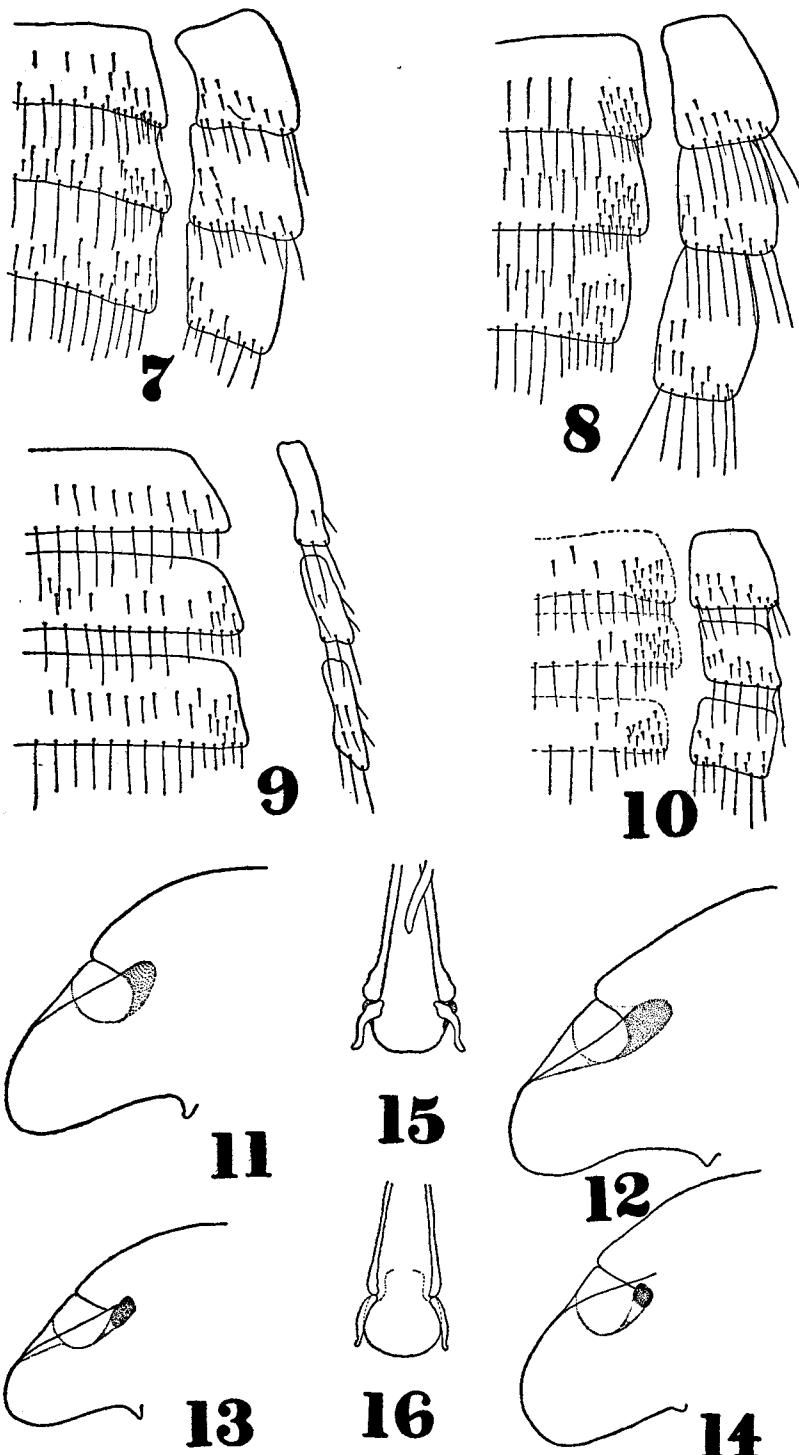
Length	<i>kuwani</i> female	<i>pellucidum</i> female	<i>singularis</i> female	<i>pustulosum</i> female	<i>singularis</i> male	<i>pustulosum</i> male
Head	.240mm	.360mm	.372mm	.360mm	.372mm	.300mm
Prothorax	.300	.300	.276	.300	.228	.240
Meta-Mesothorax	.204	.300	.300	.300	.250	.240
Abdomen	1.632	1.620	1.620	1.740	.960	.960
Total	2.376	2.580	2.568	2.700	1.810	1.740
Width						
Head	.732mm	.720mm	.780mm	.756mm	.696mm	.612mm
Prothorax	.708	.576	.600	.612	.480	.456
Meta-Mesothorax	.720	.792	.780	.780	.600	.552
Abdomen	1.140	1.116	1.080	1.164	.792	.756



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Figs. 1-4 Gular region and thoracic sternal plates of
Eidmanniella spp.: Fig. 1, *E. pustulosa*. Fig. 2, *E. pellucida*. Fig. 3, *E. Kuwani*. Fig. 4, *E. singularis*.

Figs. 5-6. *Eidmanniella singularis* (Kellogg and Kuwana): Fig. 5, Male. Fig. 6, Female
 (redrawn from Ferris, 1932).



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Figs. 7-10, Abdominal segments III-V, ventrolateral aspect: Fig. 7, *E. singularis*. Fig. 8, *E. kuwani*. Fig. 9, *E. pustulosa*. Fig. 10, *E. pellucida*.

Figs. 11-14, Half of head in outline, dorsal view: Fig. 11, *E. pustulosa*. Fig. 12, *E. singularis*. Fig. 13, *E. pellucida*. Fig. 14, *E. kuwani*.

Figs. 15-16, Male genitalia: Fig. 15, *E. pustulosa*. Fig. 16, *E. singularis*.

OTHER SPECIES IN THE GENUS

- Eidmanniella albescens* (Piaget) (Type host: *Moris serrator* (Gray))
Eidmanniella eurum (Piaget) (Type host: *Halictor niger* (Vieillot))
Eidmanniella eurygaster (Nitzsch) (Type Host: *Phalacrocorax olivaceus olivaceus* (Humboldt))
Eidmanniella giganteum (Rudow) (Type host: *Sula leucogaster* (Boddaert))
Eidmanniella sigmoidale (Picaglia) (Type host: *Phalacrocorax carbo lucidus* (Lichtenstein))
Eidmanniella subrotundum (Piaget) (Type host: *Phalacrocorax sulcirostris* (Brandt))

Genus **HELENOMUS** Ferris, 1916

Helenomus Ferris, Canadian Entomologist, XLVIII, p. 305-306 (1916)

Hoazineus Guimaraes, Arz. Zool. São Paulo, I, p. 311-317 (1940)

Head wider than long, front reduced and rounded. Lateral margins slightly swollen above the bases of the antennae. The temporal lobes rounded, reclined with the anterior margins set at a sharp angle to the longitudinal axis of the body. Pharyngeal sclerite and glands present. Antennae longer than normal, last segment conical.

Thorax with three segments, the mesothorax small, and the metathorax trapezoidal. *Posterior legs* with single delineated patches of setae on the ventral surfaces of the femora. Tibia of every leg with a row of small bristles on the external border of the distal portion.

Abdomen elongate, sternites and tergites each with a row of small setae along the posterior margin, and with numerous short stout hairs. Fifth sternite with a distinct patch of spines on each posterolateral angle.

Male genitalia with an extremely long slender basal plate. Parameres large and stout, with the distal tips bent outward.

Occurring mostly upon Gruiformes.

Genotype: *Colpocephalum truncatum* Piaget.

HELENOMUS ASSIMILE (Piaget, 1880)

(Figs. 17, 18, and 19)

Colpocephalum assimile Piaget, Les Pediculines, p. 544 (1880)

Osborn, Div. of Ent. U.S.D.A. Bull. V, p. 246 (1896);

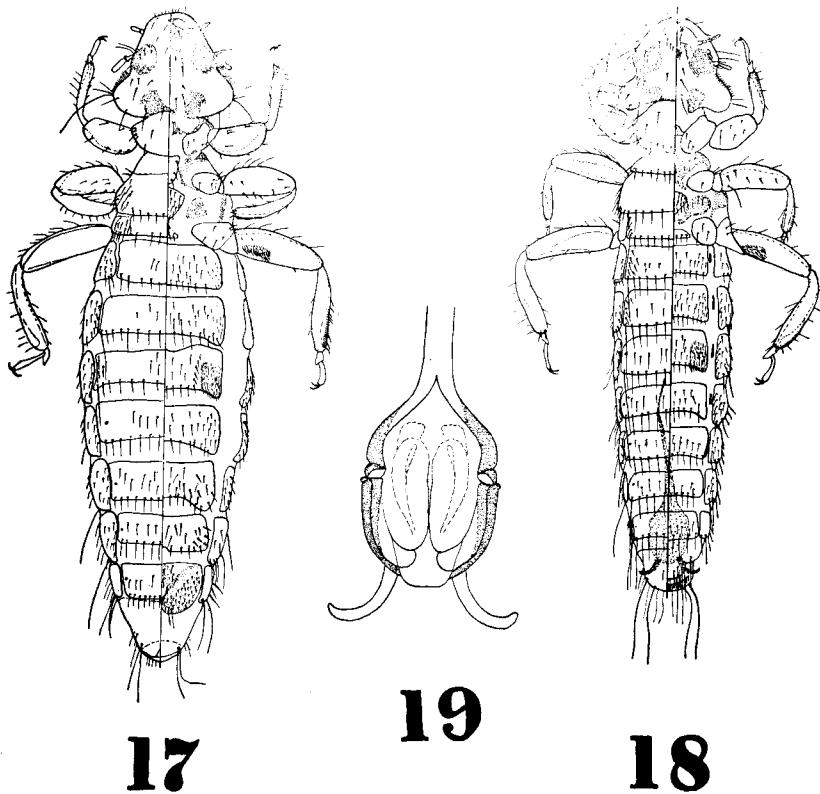
Harrison, Parasitology, IX, p. 47 (1916)

Helenomus assimile (Piaget); Ferris, Canadian Entomologist, XLVIII, p. 305-306 (1916)

Colpocephalum assimile Piaget; Essig, Insects of Western N. A., p. 128 (1926)

Helenomus assimile (Piaget); Carriker, Lloydia, III (4), p. 291-292 (1940)

Osborne collected this species in Iowa and Colorado from the type host, *Grus americana* (Linn.). Essig, recorded it from the same host collected in Colorado. The specimens of latter record are probably part of the series lent to the author by Dr. Ferris. The host is very rare, hence there are few recorded collections. Carriker stated that he had specimens in his collection, but failed to give any other data; however, I believe them to be a part of the University of Nebraska series collected in Lincoln, Nebraska.



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Figs. 17-19, *Helenomus assimile* (Piaget): Fig. 17, Female. Fig. 18, Male. Fig. 19, Male genitalia.