

MALLOPHAGA FROM ALASKAN BIRDS.

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The Mallophaga described and identified in the following notes were collected by Mr. E. A. McIlhenny from birds shot by him at Point Barrow, Alaska. The determinations of the birds were made by Mr. McIlhenny.

The two references given for each identified species are, first, to the original description, and, second, to a complete list of the Mallophaga from North American birds recorded up to the time of the publication of this paper. In this list can be found for each species all of the references to the occurrence of the parasite on North American hosts, and also a complete list of all the hosts, North American and foreign, from which the parasite is recorded.

Docophorus lari Denny, Monograph Anoplur. Brit., 1842, p. 89, pl. V, fig. 9. Kellogg A List of the Biting Lice (Mallophaga) taken from Birds and Mammals of North America, 1899, Proc. U. S. Nat. Mus., vol. XXII, p. 44.

From *Larus* sp. Previously recorded by Kellogg from a dozen or more species of *Larus* from Kansas, California and Alaska.

Docophorus alaskensis n. sp. (Pl. VII, fig. 1).

A single male taken from a Ross's Gull, *Rhodostethia rosea* (Point Barrow, Alaska). This species closely resembles *montereyi*, but differs in having the abdomen but little wider than head, while in *montereyi* the abdomen is one-fourth wider than head. It also differs markedly in shape of signature and somewhat in shape of clypeus, and the lateral abdominal bands present noticeable differences.

Description of male: Body, length 1.6 mm., width .6 mm.; head large, dark brown; thorax, with dark lateral borders; abdomen, a little wider than head, dark brown, with black lateral border.

Head, length .55 mm., width .5 mm.; uncolored front of clypeus very slightly expanded, flatly rounded with three short marginal hairs on each side in front of the suture; trabeculae large, reaching almost to the distal end of the second antennal segment, yellowish brown; antennae with segment 2 longest, segments 3 and 4 shortest, segment 5 a little shorter than segments 3 and 4 to-

gether, dark brown with distal end of each segment paler; eye flat, with a long hair and a short prickle; temporal margins with two long hairs and a fine prickle; occipital margin nearly straight or slightly concave; signature shield shaped with produced acuminate posterior angle reaching the mandibles, anterior margin very slightly concave; antennal bands blackish brown, distinct, posterior ends turning diagonally inward, anterior ends, where interrupted by the suture, turning in toward the base of the point of the suture; occipital bands blackish brown, narrow, uniform, diverging, and separated from the antennal bands by a pale diagonal space; region contiguous to the eye dark.

Prothorax short, broad, with slightly diverging sides and rounded posterior angles with one hair; lateral marginal bands blackish brown, bending inwards along posterior margin. Metathorax broadly pentagonal, with a series of seven pustulated hairs on each latero-posterior margin beginning at lateral angles; a dark lateral blotch in each lateral angle extending inward along latero-anterior sides. Legs concolorous with body, with darker markings.

Abdomen, elongate, ovate; segments 2 to 8 with one or two hairs in posterior angles; segments 2-8 with broad black lateral bands, which are narrower on the posterior segments; segments with long, transverse, dark-brown blotches barely separated medially by a paler line, widest on segments 3 and 4, and narrowing on each successive segment; transverse blotches confluent medially on segment 1, with a small, medial, angulated, uncolored emargination on anterior margin; transverse blotches confluent medially on segment 8; a narrow dark-brown transversal line behind the series of hairs in each segment; segments 2-5 with three to four pustulated hairs along the posterior margin, on each side of the middle, segments 1, 7 and 8 with one pustulated hair; segment 9 paler, posterior margin with slight emargination and a few short hairs.

Docophorus melanocephalus Burmeister; Handb. d. Ent., 1839, II, p. 426; Kellogg, List, 1899, p. 44.

From *Stercorarius parasiticus* and (straggler?) *Oidemia* sp. (Point Barrow, Alaska). Previously recorded by Kellogg from *Sterna maxima* (Bay of Monterey, Cal.) by Kellogg and Chapman from *Stercorarius pomarinus* (same locality). Recorded by European authors from three species of *Sterna* and two of *Larus*.

Docophorus ceblebrachys Nitsch ; (ed. Giebel) Zeitsch. f. ges. Naturwiss., 1861, vol. XVII, p. 528 ; Kellogg, List, 1899, p. 48.

From *Nyctea nyctea* (Pt. Barrow, Alaska). Previously recorded by American and European authors from same host (various localities in North America and Europe).

Docophorus cursor Nitzsch ; Burmeister, Handb. d. Ent., 1839, II, p. 426 ; Kellogg, List, 1899, p. 48.

From *Asio accipitrinus* (Pt. Barrow, Alaska). Previously recorded by Osborn from *Asio wilsonianus* (Ames, Ia., and Lincoln, Neb.), by Kellogg from *Bubo virginianus* (Lawrence, Kans.), and by Kellogg and Chapman from *Asio wilsonianus* (Ontario, Cal.). Recorded by European authors from *Strix bubo*, *S. otus* and *S. brachyotus*.

Nirmus triangulatus Nitzsch ; (ed. Giebel) Zeitsch. f. ges. Naturwiss., 1866, vol. XXVIII, p. 378 ; Kellogg, List, 1899, p. 53.

From *Stercorarius parasiticus* (Pt. Barrow, Alaska). Previously recorded by Kellogg and Chapman from *Stercorarius pomarinus* (Bay of Monterey, Cal.). Recorded by European authors from *Lestris*, *Stercorarius* and *Larus*.

Nirmus infectus n. sp. (Pl. VII, fig. 2).

A single female taken from a Red Phalarope, *Crymophilus fulicarius* (Pt. Barrow, Alaska).

Description of female: Body, length 1.55 mm., width .42 mm.; pale yellowish white, dark-brown head border, blackish lateral abdominal bands; slight indications of the abdominal blotches, segments 2-6 with small dark-brown median markings.

Head, length .37 mm., width .26 mm.; elongate conical, with narrow parabolic front; four short weak hairs along margins of forehead, a short hair in front of the trabeculæ; antennæ short, segments 4 and 5 most colored, segment 4 longest, segment 5 longer than segment 4, with a few short hairs on the segments; trabeculæ short but distinct; eye flat, with a long hair and prickle; clypeus transparent; temporal margins with two long hairs and a fine prickle between the long hairs; occipital margin nearly straight, with a few fine prickles; signature distinctly colored, nearly pentagonal, slightly convex in front, posterior margin weakly rounding, a dark-brown cross band in anterior middle of the signature; antennal bands distinct, rather broad, bending inward at the suture; temporal

margin for a little distance behind eye with dark-brown border which narrows posteriorly; temporal bands indistinct.

Prothorax short, rectangular, with a single hair in posterior angles; blackish brown lateral borders which extend inward along anterior margin. Metathorax almost as wide as head, with flatly rounding posterior margin, with one long hair in angle and two groups of two each on each lateral half; blackish brown, lateral borders. Legs concolorous with the body, tibiae darker than femora.

Abdomen elongated elliptical; each segment of 1-7 with distinct narrow lateral blackish bands, slightly expanding at front of segment and projecting across the sutures; abdominal blotches very slight; segments 2-6 with small dark-brown ventral median markings; two or three hairs in the posterior angles and a series of four longish hairs on the posterior margin of each of segment 2-6 and 8, segment 1 without hair, segment 7 with two hairs, segment 9 short and with slight angular posterior emarginations, two hairs on the posterior margin.

Nirmus complexivus Kellogg and Chapman; Mallophaga from Birds of California, in New Mallophaga, III, 1899, p. 78, pl. VI, fig. 4; Kellogg, List, 1899, p. 54.

From *Tringa canuta* (Pt. Barrow, Alaska). Previously recorded by Kellogg and Chapman from *Tringa minutilla*, and *Calidris arenaria* (Pacific Grove, Cal.).

Lipeurus ferox Giebel; Zeitsch. f. ges. Naturwiss., 1867, vol. XXIX, p. 195, Kellogg, List, 1899, p. 59.

From *Diomedea nigripes* (Pt. Barrow, Alaska). Recorded by Kellogg from *Diomedea albatrus* (Bay of Monterey, Cal.), by Osborn from *D. brachyura* (locality?), and by European authors from *D. exulans*, *melanophrys* and *brachyura*.

Lipeurus confidens Kellogg, Mallophaga from Birds of Panama, Baja California and Alaska, in New Mallophaga III, 1899, p. 28, pl. III, fig. 2; Kellogg, List, 1899, p. 59.

From *Diomedea nigripes* (Pt. Barrow, Alaska).

Lipeurus densus Kellogg, New Mallophaga I, 1896, p. 114, pl. VII, figs. 1, 2; Kellogg List, 1899, p. 59.

From *Diomedea nigripes* (Pt. Barrow, Alaska). Recorded by Kellogg from *D. albatrus* (Bay of Monterey, Cal.), and from *D. nigripes* (off Kodiak, Alaska).

Lipeurus macilhennyi n. sp. (Pl. VII, fig. 3).

A single female taken from a Black-footed Albatross, *Diomedea nigripes* (Pt. Barrow, Alaska). This *Lipeurus* is a very well-marked species differing strongly in shape of head and body and in markings from the other *Lipeuri* of the Albatrosses.

Description of female: Body, length 3.6 mm., width .83 mm.; whole body chestnut brown with sharply defined, blackish brown marginal marking on abdomen and thorax, and distinct antennal and occipital bands on head; body long, widening posteriorly to fourth and fifth segments; head small and shorter than wide, forehead only one-third of length of entire head; clypeus broadly and flatly rounded; legs unusually large and stout.

Head, length .53 mm., width .55 mm.; decidedly short and broad for *Lipeurus*; clypeal front flatly rounded, with six short marginal hairs on each side of the front, a short hair on the margin in front of the antennæ which are short; trabeculæ small but distinct, uncolored; segment 2 of the antennæ longer than segment 1, segment 5 slightly longer than segment 3 or 4, the anterior end of segment 3 and segments 4 and 5 pale fulvous, a few short hairs on the segments; eyes prominent with a distinct ocular fleck; temples flatly convex, with three short prickles; occipital margin nearly straight without hair or prickle; whole head brown; antennal bands broad and blackish continuing beyond the suture; temples bordered by a very narrow line of blackish brown slightly broader just below the eyes; conspicuous ocular blotch blackish brown; two large blackish triangular blotches on the occipital margin; no uncolored clypeal region, and no signature.

Prothorax, very much wider than long, the angles very weakly rounded; segment chestnut brown with dark-brown lateral border extending inward, but leaving the middle portion of the segment paler, posterior angles slightly projecting; two blackish brown lateral blotches on the suture of pro and metathorax. Metathorax with lateral margin slightly concave before the middle; longer than broad; segment chestnut brown with large, lateral, marginal blackish brown blotch in front of the middle, and margin behind the blotch dark; four hairs in posterior angles, and set closely together in a small uncolored space; posterior margin slightly concave. Legs large, stout, concolorous with thorax, with distinct dark border; front legs short, femora wide with small dark-brown

marginal markings; second and third pair of legs long; coxæ of third pair unusually large and flat, projecting laterally beyond the sides of metathorax; femora long and broad, with dark-brown border, tarsi short and broad at middle, with dark-brown border; claws pale brown; several scattered hairs and spines on the legs.

Abdomen, widening posteriorly to segments 4 and 5 which are widest, segments 6 and 7 a little narrower than segments 4 and 5, and segments 8 and 9 narrowing more rapidly; first four segments with single hair in posterior angles, segments 5 and 6 with two hairs, and long hairs, increasing in length and number on posterior segments, segment 9 short and pale; segments almost wholly covered by large brown lateral blotches which leave a median paler longitudinal space and distinct transverse pale sutural lines; lateral marginal bands with conspicuous round-headed blackish brown processes projecting inward, segment 1 with a single pair, segments 2 to 7 with two pairs, none in segments 8 and 9.

Lipeurus laculatus Kellogg and Chapman, Mallophaga from Birds of California, in New Mallophaga III, 1899, p. 93. pl. VIII, fig. 1; Kellogg, List, 1899, p. 59.

From *Stercorarius* sp. (Pt. Barrow, Alaska). Recorded by Kellogg and Chapman from *S. pomarinus* and *Puffinus creatopus* (Bay of Monterey, Cal.).

Lipeurus protervus Kellogg, Mallophaga from Birds of Panama, Baja California and Alaska, in New Mallophaga III, 1899, p. 31, pl. III, fig. 4; Kellogg, List, 1899, p. 63.

From *Lagopus lagopus* (Pt. Barrow, Alaska). Recorded by Kellogg from same host (Kodiak Island, Alaska).

Although these specimens are from the same host and the host from the same region as in the case of the type specimens, there is a noticeable and constant difference in the shape of the head between the specimens of the two lots. The Point Barrow specimens have the clypeal margin distinctly flatter, and it is in the character of this clypeal margin that specific differences are most readily recognized among the *Lipeuri* of the Grouse. This case simply emphasizes the fact, referred to in the senior author's former papers on the Mallophaga, of the flexible character of specific lines in this group of insects. The peculiar habits of the Mallophaga, producing isolation of all degrees from slight to nearly absolute, renders their systematic study an intricate but interesting matter.

Eurymetopus brevis Dufour, Ann. Soc. Ent. France, 1835, vol. IV, p. 674, pl. xxxi, fig. 3; Kellogg, List, 1899, p. 61.

From *Diomedea nigripes* (Pt. Barrow, Alaska). Recorded by Osborn from *D. exulans* (Albatross expedition), by Kellogg from *D. albatrus* (Bay of Monterey, Cal.) and *D. nigripes* (North Pacific Ocean, off Alaska). Recorded by European authors from *D. exulans*, *nigripes* and *brachyura*.

Colpocephalum pingue Kellogg, New Mallophaga I, 1896, p. 144, pl. XII, fig. 5; Kellogg, List, 1899, p. 72.

From *Diomedea nigripes* (Pt. Barrow, Alaska). Recorded by Kellogg from *D. albatrus* (Bay of Monterey, Cal.).

Colpocephalum paetulum n. sp. (Pl. VII, fig. 4).

A single male from *Arenaria interpres* (Pt. Barrow, Alaska). This small *Colpocephalum* belongs to the group of species including *ochraceum* N. and Piaget's species related to *ochraceum* occurring on shore birds, but differs obviously from all of the hitherto described members of the group. The long hairs arranged in transverse series on the dorsal surface of the abdomen are pustulated, thus differing from *ochraceum* P. and *umbrinum* P.; there are two to three transverse series in each abdominal segment of the male thus differing from *spinulosum* P. with but one such series; there are no pustulated hairs on the head thus differing from *pustulosum* P.

Description of female: Body, length 1.7 mm., width .45 mm.; elongate with comparatively large head and legs; head golden brown with dark-brown ocular blotches; yellowish brown transverse blotches on the abdomen; a distinct pale submarginal longitudinal line parallel with the lateral margin of the abdomen; two or more transverse rows of pustulated hairs on segments 3-8.

Head, length .37 mm., width .45 mm.; front rounded, almost a semicircle, four hairs between the middle of front and the latero-anterior angle of which the last hair is the longest, a very short hair in front of the projecting tip of palpus; five hairs in the lateral angle in front of the ocular emargination of which the first is the longest; ocular emarginations deep, narrow; the eyes undivided but with a distinct medial emargination; the ocular fringes prominent; four long hairs in the temporal margin; occipital margin slightly concave, with four long hairs; color golden

brown, ocular blotch dark brown, and narrow dark-brown border on outer temporal and occipital margin; indistinct narrow brown occipital bands, the dark-brown occipital margin expanded at their bases.

Prothorax, broad (nearly twice as wide as long), with a spine and two long hairs in produced lateral angles, posterior border rounded with a series of eight hairs; color golden brown with dark-brown lateral border, and a narrow transverse line across the segment in front of the middle. Metathorax showing no marginal constriction at line of union of mesothorax and metathorax; sides bare, posterior angles with a long hair and spine; posterior margin straight, with a row of long hairs; color golden brown with narrow dark lateral border. Legs, large, stout; femora greatly thickened and margined with golden brown; with scattered prominent hairs.

Abdomen elliptical; several short hairs on the lateral margins of the segments, some long hairs in the posterior angles; a row of unpustulated hairs along posterior margin of segments 1-2, two rows of pustulated hairs on segment 3 and three rows of pustulated hairs on segments 4-8, which are not strictly arranged in definite rows except the most posterior ones; color golden brown; lateral marginal blotches dark brown, separated from the median transverse blotches by a pale submarginal band, which is parallel with the lateral margin of the abdomen; median transverse blotches yellowish brown; last segment rounding, with numerous hairs on the posterior margin, two long hairs in each latero-posterior angle and a few scattered hairs, color paler.

Menopon corporosum n. sp. (Pl. VII, fig. 5).

Several specimens from a Red Phalarope, *Crymophilus fulvicarius* (Pt. Barrow, Alaska), and one specimen (straggler?) from a Turnstone, *Arenaria interpres* (same locality). Differing markedly from the few other species of *Menopon* taken from the Grallatores in the very broad abdomen.

Description of female: Body, 1.8 mm., width .8 mm.; small head, with obovate abdomen; color light chestnut brown with dark-brown lateral abdominal borders.

Head, length .29 mm., width .53 mm.; front rounded, with slight indication of median angulation; eight hairs between mid-

dle of front and the ocular region; palpi projecting by the length of their terminal segments, temporal margin with three long hairs, one slightly shorter and five short ones; occipital margin concave, with four hairs on the middle third; color pale brown, dark occipital margin and black ocular blotches.

Prothorax broad, short, with lateral angles much produced and bearing two spines and one long hair; posterior margin flatly convex with ten long hairs; color golden brown. Metathorax as wide as head, narrow anteriorly with rapidly diverging sides; mesothorax distinctly separated by marginal constriction and dark transverse line; posterior angles of mesothorax bare, sides of meso- and metathorax bare; posterior angles of metathorax with four spines; posterior margin weakly convex with a series of hairs; metathorax with broad transverse yellowish brown band like those of abdomen. Legs pale brown with dark margin; femora thick, with rather long hairs.

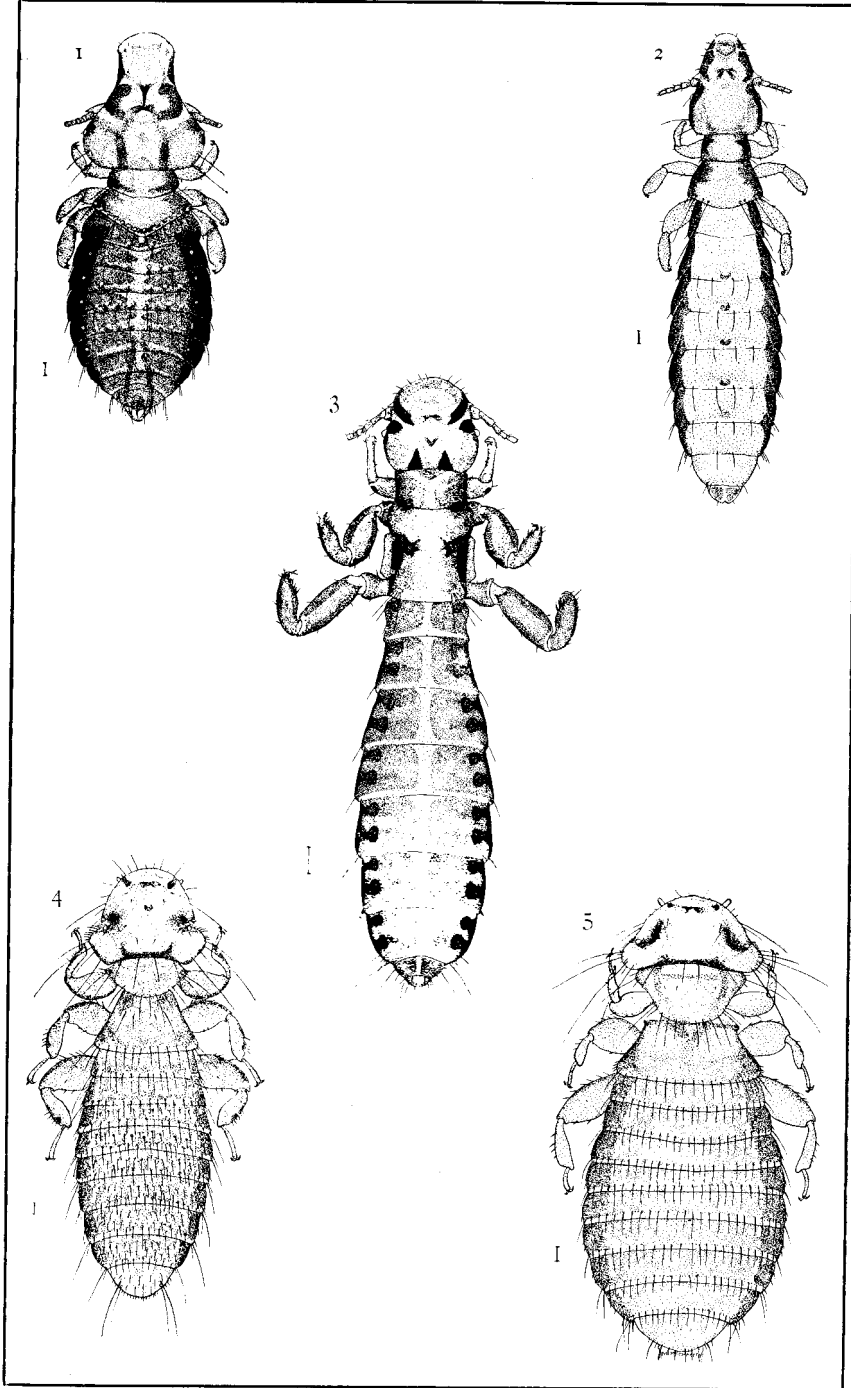
Abdomen obovate, posterior angles of segment with one or two strong hairs and adjacent short ones; a series of hairs along posterior margin of each segment; color pale at sutures, black interrupted lateral bands, and a yellowish brown transverse band on each segment; a distinct pale and submarginal longitudinal line; ninth segment rounded behind with narrow transparent margin thickly set with a fringe of short sharp-pointed transparent hairs.

Menopon infrequens Kellogg, New Mallophaga I, 1896, p. 161. pl. xv, fig. 5; Kellogg, List, 1899, p. 75.

From *Oidemia* sp. probably a straggler from a gull. Recorded by Kellogg from *Larus glaucescens* (Bay of Monterey, Cal.) and by Kellogg and Chapman from *Larus delawarensis* (same locality).

EXPLANATION OF PLATE VII.

- Fig. 1. *Docophorus alaskensis* Kellogg and Kuwana, ♂.
Fig. 2. *Nirmus infectus* Kellogg and Kuwana, ♀.
Fig. 3. *Lipeurus macilhennyi* Kellogg and Kuwana, ♀.
Fig. 4. *Colpocephalum pætulum* Kellogg and Kuwana, ♂.
Fig. 5. *Menopon corporosum* Kellogg and Kuwana, ♀.



KELLOGG AND KUWANA. MALLOPHAGA FROM ALASKAN BIRDS.