

TWO-WINGED FLIES OF THE GENERA DOLICHOPUS
AND HYDROPHORUS COLLECTED IN ALASKA IN 1921,
WITH NEW SPECIES OF DOLICHOPUS FROM NORTH
AMERICA AND HAWAII.

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The present paper is a report on the material in the genera *Dolichopus* and *Hydrophorus*, of the Dipterous family Dolichopodidae, collected by the writer in Alaska during June and July, 1921; it also contains additional new species of *Dolichopus* from Labrador, the United States, and Hawaii.

Among the localities cited are Camps 327 and 334; these are temporary names for points on the Government railroad in Alaska, the numbers indicating the miles from Seward at the south end; they are both in the south edge of the Yukon Basin, on the Nenana River, in a canyon between mountains. Healy is 358 miles from Seward.

Camp 334 has lately been given the permanent name of Carlo, and Camp 327 that of Windy, as sidings on the railroad.

Genus DOLICHOPUS Latreille.

Dolichopus LATREILLE, Précis des Caractères Généraux des Insectes, Paris, 1796, p. 159.—LOEW, Smiths, Misc. Colls., No. 171, pp. 18, 323, 1864.—FREY, Acta Societatis pro Fauna et Flora Fennica, vol. 40, No. 5, pp. 1-27, 1915.—BECKER, Nova Acta, vol. 102, part 2, pp. 126-180, 1921.—VAN DUZEE, COLE, and ALDRICH, Bulletin 116, U. S. Nat. Mus., 1921, 304 pp., 16 plates.

In spite of the fact that 218 species of this remarkable genus are described for North America in Bulletin 116 just cited, my work in Alaska yielded 5 new species and 2 European not previously known from North America; while 15 previously described North American species were also collected, of which 8 had never been reported from Alaska.

DOLICHOPUS MANICULA Van Duzee, Cole, and Aldrich.

Dolichopus manicula VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 56.

Fourteen specimens, Skagway, Alaska. Originally described from high altitudes in Colorado, New Mexico, and Wyoming.

DOLICHOPUS ANNULIPES Zetterstedt.

Dolichopus annulipes ZETTERSTEDT, Insecta Lapponica, 1838, p. 710.

Dolichopus stenhammari ZETTERSTEDT, Diptera Scandinaviae, vol. 2, p. 521, 1843.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 59, 1921.

Two specimens, Healy and Nenana, Alaska. Described from Lapland and common in northern Europe; has been reported several times from Alaska and Labrador, and one specimen is known from New Hampshire (White Mountains). According to Frey, it occurs all over Finland, and is especially characteristic of Lapland. I here follow Becker's monograph in accepting *annulipes* as not preoccupied by *Porphyrops annulipes* of Meigen.

DOLICHOPUS XANTHOCNEMUS Loew.

Dolichopus xanthocnemus LOEW, Smiths. Misc. Colls., No. 171, p. 31, 1864.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 84, 1921.

Nineteen specimens, from Seward, Anchorage, Camp 327, and Fairbanks, Alaska. Originally described from Sitka, and since recorded several times from Alaska.

DOLICHOPUS GROENLANDICUS Zetterstedt.

Dolichopus groenlandicus ZETTERSTEDT, Diptera Scandinaviae, vol. 2, p. 528, 1843.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 94, 1921.

Ninety-four specimens, from Seward, Anchorage, Camps 327 and 344, Healy, and Fairbanks, Alaska, June and July. Originally described from Greenland and later reported from northern Europe. Bulletin 116 records it from Labrador and a specimen from Colorado. While that paper was in preparation I collected a series at Tennessee Pass, Colorado, altitude a little over 10,000 feet (3.05 kilometers).

DOLICHOPUS SOLIDUS Van Duzee, Cole, and Aldrich.

Dolichopus solidus VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 104, 1921.

Thirteen specimens, both sexes, Anchorage, Camp 327, and Healy, Alaska, June 15 and July 7. Described from a single male taken on the Alaska-Yukon boundary near the Arctic Ocean. The front tarsi were missing in the type. I find that they are of peculiar and distinguishing structure, being flattened horizontally (depressed). The second and third joints are very thin as viewed from above, and the fourth and fifth are widened (depressed) and fringed laterally. Second and third of equal length, together equaling the first. I obtained a male and two females of this species at Tennessee Pass, Colorado, July 9 and 10, 1919.

DOLICHOPUS RUPESTRIS Haliday.

Dolichopus rupestris HALIDAY, Entomologists' Magazine, vol. 1, 1833, p. 164.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 112. 1921.

Dolichopus festinans ZETTERSTEDT, Insecta Lapponica, 1838, p. 708.

Fourteen specimens, from Healy and Camps 327 and 334, Alaska, June 26 to July 13. Described from Great Britain and well known from northern Europe. Frey says it is very rare in Southern Finland, but one of the commoner species of the genus in Lapland and on the Kola Peninsula.

DOLICHOPUS BREVIPENNIS Meigen.

Dolichopus brevipennis MEIGEN, Syst. Besch., vol. 4, p. 89, 1824.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, p. 130, 1921.

Thirty specimens, from Hurricane, Camp 334, and Healy, Alaska, June 29 to July 3. Originally described from Germany; common in Denmark (Lundbeck); common throughout Finland (Frey). First reported from North America by Osten Sacken, on the identification of Loew; only a female remains of this lot in the Museum of Comparative Zoology, Cambridge, Massachusetts, and the species apparently has not been collected in North America again until now.

DOLICHOPUS RAMIFER Loew.

Dolichopus ramifer LOEW, Neue Beiträge, No. 8, p. 19, 1861; Smiths. Misc. Colls., No. 171, p. 52. 1864.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 147, 1921.

Two specimens, Fairbanks, Alaska, July 1. The species occurs as far south as Indiana and Kansas, and even Los Angeles, California.

DOLICHOPUS OBCORDATUS Aldrich.

Dolichopus obcordatus ALDRICH, Kansas Univ. Quarterly, p. 14, 1893.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 173, 1921.

Four specimens, Fairbanks and Healy, Alaska, June 26 to July 3. A common species in the western mountains of the United States, not hitherto reported farther north than Nelson, British Columbia.

DOLICHOPUS PLUMIPES Scopoli.

Musca plumipes SCOPOLI, Entomologia carnioica, 1763, p. 334.

Dolichopus plumipes VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 183, 1921.

Sixteen specimens, from Seward, Anchorage, Healy, and Fairbanks, Alaska. Described from Carniola, the species extends widely through Europe: Frey lists it as common throughout the whole of Finland. In the United States it extends as far south as South Dakota, Maine, and (in mountains) New Mexico. It has been reported from Alaska several times.

DOLICHOPUS LONGIMANUS Loew.

Dolichopus longimanus LOEW, Neue Beiträge, No. 8. p. 14, 1861; Smiths. Misc. Colls., No. 171, p. 38, 1864.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 195, 1921.

Five specimens, Anchorage and Fairbanks, Alaska, June 12 to July 2. Described from English River, Canada, and reported from Alaska by Coquillett in 1900; it occurs in the Canadian zone of Ontario and the eastern part of the United States, and even south to Virginia, but has not been reported from the western United States.

DOLICHOPUS NUDUS Loew.

Dolichopus nudus LOEW, Smiths. Misc. Colls., No. 171, p. 41, 1864.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 201, 1921.

Nineteen specimens, from Hurricane, Camp 327, and Healy, Alaska, July 7 to 13. Not definitely recognized since its description. The single type male, from "Fort Resolution, Hudson's Bay Territory," has been entirely destroyed but the wings; hence the new material is very important. Loew mentions as one character, "Hind tibiae stout but not exactly thickened, upon the first half of the hind side without hairs." This proves to be a decisive character (in the male), the bare spot being on what I would call the inner side, extending to the middle. Loew's description is ample, and the species is correctly placed in the analytical table of Bulletin 116, page 15.

DOLICHOPUS NIGRICORNIS Meigen.

Dolichopus nigricornis MEIGEN, Syst. Besch., vol. 4, p. 82, 1824.—BECKER, Nova Acta, vol. 102, p. 148, 1920.

Dolichopus discifer STANNIUS, Isis, vol. 1, p. 57, 1831.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 202, 1921.

One male, one female, Anchorage, Alaska, June 16. Described from northern Europe; Frey reports it occurring all through Finland. Reported from Quebec and Ontario, only a few localities south of the Canadian border (Vermont, New York, Wisconsin); has been previously reported from Alaska.

DOLICHOPUS BOREUS Van Duzee, Cole, and Aldrich.

Dolichopus boreus VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 204, 1921.

?*Dolichopus discimanus* WAHLBERG, Kongl. Vet. Akad. Förhandl., vol. 8, p. 301.—ZETTERSTEDT, Dipt. Scand., vol. 12, p. 4626, 1855.

Three males, Anchorage, Alaska, June 13 and July 21. Described from Ungava Bay, Labrador. There is little doubt that *boreus* is a synonym of *discimanus* Wahlberg, but I have not seen European

material, and the latter species is said to have the front coxae dark at base, which might be specific. Frey includes *discimanus* under the strictly arctic species along with *mannerheimi*; I have quoted him under that species.

DOLICHOPUS AMPHERICUS Melander and Brues.

Dolichopus amphericus MELANDER and BRUES, Biological Bulletin, vol. 1, p. 146, 1900.—VAN DUZEE, COLE, and ALDRICH, Bull. 116, U. S. Nat. Mus., p. 217, 1921.

Forty-one specimens, Fairbanks, Alaska, June 30 to July 4. The species has not been identified hitherto except in the type set of two males and three females, collected in Price County, Wisconsin, now in the American Museum of Natural History. My specimens agree with these except in having the hind tibiae somewhat infuscated on the inner side at tip, and the front coxae provided with some black hairs on the front side. I am indebted to Dr. Frank E. Lutz, curator of insects in the American Museum, for the privilege of examining these types. There is one excellent male character, present equally in the types and my specimens, which at once distinguished this species from all the nine related forms mentioned in Bulletin 116 (p. 219): On the sides of the first abdominal segment the pleural fold is rather wide open above, and in the hollow thus formed is a spot of minute grayish tomentum or erect, short fuzzy hairs, filling the hollow and extending a little dorsad of it. I have compared all the other nine species on this point.

DOLICHOPUS MANNERHEIMI Zetterstedt.

Dolichopus mannerheimi ZETTERSTEDT, Insecta Lapponica, 1838, p. 707; Diptera Scandinaviae, 1843, vol. 2, p. 500.—BECKER, Nova Acta, vol. 102, p. 163, 1920.—FREY, Acta Societatis pro Fauna et Flora Fennica, vol. 40, sep., pp. 4, 27, 1915.

Twelve specimens, both sexes, collected at Camps 327 and 334 and at Healy, Alaska, June 26 to July 13.

Not heretofore reported from North America. Originally described from Lapland. Frey includes it among a list of 20 species of Dolichopodidae of which he says (p. 4): "The oldest postglacial Dolichopodid species are those * * * which now occur only in Lapland and the Kola Peninsula, and here principally within the purely arctic field and tundra regions. The limit of forest is not decisive for them, as they may occur in the northern coniferous zone. * * * Their southern limit is approximately the Arctic Circle." (Translation.)

No European specimens have been compared, but the characters are striking, and Zetterstedt's elegant description seems unmistakable. The species is here redescribed for the benefit of American workers. In Bulletin 116 it runs to *laticornis* in Group A on page 9, from which

it is separable by many characters, among them the infuscation in the wing tip.

Male.—Front green. Face pale yellow, rather narrow. Palpi black. Antennae entirely black, rather short. Orbital cilia entirely black.

Mesonotum and scutellum rather obscure green, with coppery reflections and rather distinct changeable stripes. Pleurae blackish green, but little shining. Cilia of calypters white. Halteres yellow. Abdomen rather long, dark green. Hypopygium large, the lamellae white, rather square across the apical end where they are broadly bordered with black, deeply notched and provided with the usual curved bristles; the upper border is fringed with erect hairs which become larger toward the base.

Coxae black, the front ones somewhat silvery on the anterior side, with small dark hairs. Femora black except the extreme knees; front tibiae yellow, the middle tibiae yellow but on the outer side distinctly white and without the usual small black hairs. The tip of the middle tibia distinctly infuscated, hind tibia yellow, slightly darkened at base, with the apical fifth black. Front tarsi plain, the first joint yellow except at extreme tip, the remainder black; middle tarsus with the first joint brown, its apical fourth white, on the outer side snow-white and bare, the extreme tip and all the following joints deep black; hind tarsi deep black, the first joint as long as all the following and bearing about 14 bristles in several erect rows, one of which is on the under side; the middle femora have a row of short white cilia beginning about the middle, the hind femora with a row of long white cilia from the middle.

Wings elongate, rather narrow, with a uniform gray tinge and a distinct apical dark spot, which begins at about the tip of the second vein and extends almost to the hind margin, filling out the apex except a narrow border beginning behind the tip of the fourth vein; hind cross vein bearing a slight cloud; anal angle small, costa with a distinct thickening at the end of the first vein.

Female.—Face a little wider than the male; front coxae with many more black hairs. Cilia of calypters yellow, middle tibiae not quite so wide as in the male, the middle basitarsus brown, its extreme tip black. Wing broader than in the male, the apical spot present, but less distinctly defined; hind cross vein very distinctly infuscated.

Length of male 6.2 mm.; of female 5.8 mm.

The only species known in North America which is at all similar to this one is *annulipes* Zetterstedt (*stenhammari* of authors), which also has black legs with the middle tibiae and tarsi ornamented with white. It, however, has a different color pattern and is easily separable by having black cilia on the calypters.

DOLICHOPUS LONGICORNIS Stannius.

Dolichopus longicornis STANNIUS, Isis, vol. 1, p. 53, 1831 (published 1838).—
BECKER, Nova Acta, vol. 102, p. 170, 1921.

Not previously reported from North America.

Thirty-five specimens of both sexes, taken at Fairbanks, Alaska, from June 29 to July 3; compared with European specimens in my collection, determined by Doctor Kertész. Originally described from northern Europe: Frey mentions it as widespread but not abundant in Finland. Redescribed for the convenience of American students. In the analytical tables of Bulletin 116, the male runs to couplet 2 of Group F, on page 14, where it forms a third alternative "Antennae black above, yellow below including a large part of the elongate third joint."

Male.—Front green. Face shining yellow, changing to paler below. Palpi yellow. Antennae very much elongated, the first joint slender, the third very long with a slender point, the arista attached about at the middle. Antennae black, broadly yellow below including the third joint almost to its middle; the arista slightly thickened beyond the middle but slender at apex. Orbital cilia white except a few above.

Mesonotum and scutellum rather bright green. Pleurae green, overlaid with some gray dust. Calypters with white cilia. Halteres yellow. Abdomen subshining, green. Hypopygium black, green at base, the lamellae white, oval, with a sharply defined black border above, becoming wider apically, the hairs along the upper border longer and more erect than usual; the apex has the usual incisions and crooked bristles.

Front coxae yellow with pale hairs on the anterior side; middle coxae black except at tip, hind coxae yellow with a black spot on the outer side, extending down to the bristle. Femora and tibiae yellow, the hind tibiae infuscated at the tip where they are slightly swollen and have on the hind side, just before the apex, a very distinct rounded depression; the color of the front and middle tibiae is more white than usual; femora not ciliated. The middle tarsi plain, brown from the tip of the first joint; hind tarsi entirely black with only about three bristles.

Wings with a grayish tinge, rather broad, with the anal angle little developed; a very pronounced thickening of the costa at the tip of the first vein.

Female.—Face broader and grayish yellow. Antennae shorter than in the male, still noticeably elongated, with a very sharp point; the yellow color on the under side reaches almost to the tip and is very distinct on the third joint. The cilia of the calypters may be in part black. Hind tibiae scarcely at all infuscated, especially on the outer side.

Length of male 3.1 mm.; of female 3.8 mm.

DOLICHOPUS FORTIS, new species.

Male.—Front bronze green. Face brownish yellow, glistening. Palpi black. Antennae entirely black, of ordinary size. Orbital cilia entirely black.

Mesonotum and scutellum dark bronze green, a little dusted, coppery along the suture. Pleurae blackish-green, moderately dusted. Cilia of the calypters black. Halteres yellow. Abdomen rather elongated, blackish-green with bronze reflections. Hypopygium black, of moderate size, the lamellae whitish, oval, with a broad black margin apically and below, the usual incisions and crooked bristles at the apex.

Legs black, the knees very narrowly yellow; all the tarsi plain, the front ones about one-fourth longer than their tibiae; hind femora with long cilia below, most of which appear pale in favorable lights.

Wings decidedly infuscated throughout, the hind cross-vein and the curvature of the fourth vein slightly more so; costa with a short enlargement at the tip of the first vein; outline of the wing of the ordinary form.

Length 5.4 mm.

Described from one male taken by the writer at Healy, Alaska, June 23, 1921.

Type.—Male, Cat. No. 25188, U.S.N.M.

Runs to *paluster* on page 10 in the analytical table of Bulletin 116; but is a more elongated species, much less green in color, with long instead of rounded wings.

DOLICHOPUS PENSUS, new species.

Male.—Front green, not very shining. Face silvery, of moderate width and rather long. Palpi yellow. Antennae black; very much elongated, especially the third joint, which has a long slender point extending much beyond the insertion of the arista; the first joint is distinctly yellow below at the apex. Orbital cilia white except the upper ones. The head is not so wide in proportion to its height as in most species.

Mesonotum and scutellum green, not very bright. Pleurae dull green. Calypters with white cilia. Halteres yellow. Abdomen rather bright green with the usual thin pruinosity on the sides. Hypopygium rather large, the lamellae white with the usual black border and with the apex notched and bristly.

Front coxae yellow; middle and hind coxae black except tips. Front femora yellow with rather distinct but poorly defined dark shading along the middle; middle femora yellow still with faint indications of infuscation; the hind femora yellow on the basal half,

gradually becoming black at the apex; the extreme tip, however, is yellow. Front and middle tibiae pale yellow; the hind tibiae black with a brown streak on the posterior except near tip; they are considerably longer than their femora and their tarsi are strikingly elongated and enlarged, and deep black in color; the second joint of the hind tarsus seems especially enlarged and noticeably flattened; the following joints of similar appearance but decreasing in size; front and middle tarsi plain, infuscated from the tip of the first joint.

Wings hyaline with a perceptible brown tinge on the anterior half except at base; costa not thickened; anal angle very much reduced.

Female.—Face a little wider than in the male, rather gray in color. Antennae longer than usual in the female, the third joint with an uncommonly sharp tip but very much shorter than in the male. Cilia of the calypters sometimes in part black. Femora colored as in the male; the hind tibiae, however, yellow except on the apical fourth; they are longer than the femora as in the male and the hind tarsi are considerably elongated and entirely black but the joints are not enlarged or flattened. The wing has a distinct brownish tinge which is not confined to the anterior half.

Length 3.1 mm.

Described from 12 males and 13 females collected at Fairbanks, Alaska, on June 30, 1921, by the writer.

Type.—Male, Cat. No. 25189, U.S.N.M.

The striking enlargement and black coloration of the hind legs suggested the name, the idea being that these characters are probably displayed while hovering in the air, the legs hanging down.

In the tables of Bulletin 116 I would put this in Group F, in spite of some infuscation of the front femora; it would then run to *acutus*, page 15, but the latter has no infuscation of any of the femora, etc.

DOLICHOPUS SIMPLICIPES, new species.

Male.—Front rather dull green. Face narrow, silvery, with a slight yellowish tinge. Palpi yellow. Antennae black, the first joint faintly yellowish below on the inner side, the third joint rather broad, but not elongated. Orbital cilia white except a few above.

Mesonotum and scutellum bronze-green, not very shining. Pleurae greenish-black, with a rather thick gray dust. Calypters with black cilia. Halteres yellow. Abdomen shining green, not very bright, a thin whitish pruinosity along the sides. Hypopygium black, of moderate size, the lamellae oval, white, with a narrow margin above and a broader one at apex, where there are the usual notches and curved bristles.

Front coxae yellow, with a small indistinct dark spot at base on the outer side; the front side with pale hairs; middle and hind coxae black except at tip. Femora yellow; the hind ones slightly infus-

cated at tip, not ciliated, but with unusually long black hairs on outer lower part beyond middle, with a single long preapical bristle. Front and middle tibiae yellow, the hind ones infuscated on about the apical fourth but not much enlarged; front tibia at apex below with a long slender bristle two-thirds as long as the basitarsus. All the tarsi plain, the front and middle ones infuscated from the tip of the first joint; hind ones entirely black.

Wings hyaline, rather narrow, the angle much reduced; the fourth vein with only a slight bend, ending much before the apex of the wing. Costa with a large and long thickening at the junction of the first vein.

Female.—Face considerably wider than in the male, almost white. Front coxae with black hairs on the anterior surface. Hind femora with faint infuscation covering about the apical fourth.

Length 3.2 mm.

Described from 3 males and 2 females. All collected by the writer at Camp 327, Alaska, July 12, 1921.

Type.—Male, Cat. No. 25190, U.S.N.M.

Simplicipes runs in the tables of Bulletin 116 to couplet 10, page 17. It differs from *discolor* in having the costa thickened, and from *genualis* in not having the lamella produced in a sharp point at apex.

DOLICHOPUS CRASSICORNIS, new species.

Male.—Front bright green. Face light golden yellow, rather narrow below. Palpi yellow. Antennae wholly black, quite large, the third joint considerably elongated, about twice as long as wide; the arista inserted near the tip. Orbital cilia pale yellow except a few above.

Mesonotum bright green with a brown mark each side. Scutellum green. Pleurae green, subshining. Cilia of the calypters black. Halteres yellow. Abdomen bright green, at incisures narrowly blackish. Hypopygium black. Lamellae white, oval or somewhat rectangular, with a black border above which is wider apically, where there are the usual incisions and curved bristles.

Coxae black, the front ones slightly yellow toward the apex, especially on the front side. Femora yellow, front ones faintly tinged with brown below, the hind ones without cilia, and with a slight but distinct infuscation at the tip above. Tibiae yellow, the hind ones deep black on the apical third or more, slightly enlarged apically and bearing on the hind side just before the apex a very striking, rounded depression; the flexor side of the hind tibiae closely beset with small black suberect hairs. Hind tarsi entirely black; front and middle tarsi plain, black from tip of the first joint. The front tibia has at apex a fine curved hair-like bristle which is quite short, less than half the length of the basitarsus.

Wings hyaline, of ordinary shape; the anal angle not very prominent. The costa with a long tapering enlargement from the junction of the first vein.

Female.—Face yellow, twice as wide as the male, dull white in color. Third antennal joint of ordinary form. The front femora with quite distinct traces of brown above and below; the middle femora with faint brown tinge below; hind femora with the tip deeply infuscated. Costa not enlarged. Otherwise as in male.

Length 3 mm.

Described from 6 males and 1 female, all from Healy, Alaska, except 2 males which are from Camp 327, Alaska. Collected by the writer.

Type.—Male, Cat. No. 25191, U.S.N.M., from Healy, Alaska.

Runs to *sincerus* in the table of Bulletin 116, page 17, but has much longer antennae and a strong thickening of the costa.

DOLICHOPUS INFLATUS, new species.

Male.—Front green. Face light golden yellow. Palpi yellow. Antennae of ordinary size, the first joint wholly yellow, the others black. Orbital cilia white except a few above.

Mesonotum and scutellum bluish green, moderately bright with a coppery stripe at the suture. Pleurae green, moderately dusted with gray. Cilia of the calypters black, rather abundant. Halteres yellow. Abdomen bright green, rather coppery on the posterior part of each segment, almost wholly shining. Hypopygium rather small, black, the lamellae oval, white, with a narrow black margin, the tip incised and furnished with the usual long bristles.

Wings slightly brownish, more so toward the costa, rather narrow in shape, the hind border distinctly emarginate between the fifth and sixth vein; anal angle prominent: costa with an elongated swelling at the junction of the first vein.

Legs yellow, the middle and hind coxae black except at tip; hind femora not ciliated; all the tarsi plain, pale at base; the middle tibiae with a smooth, white inflated portion on the outer side of the apical fourth. The front coxae have rather conspicuous black hairs on the anterior side.

Length 4.8 mm.

Described from one male taken at Anchorage, Alaska, July 20, 1921, by the writer.

Type.—Male, Cat. No. 25192, U.S.N.M.

The structure of the middle tibia is about the same as in *fulvipes*, but the latter has the antennae elongated and almost entirely yellow, with several other differences. The species runs to *fulvipes* in the table in Bulletin 116, page 26.

DOLICHOPUS DELICATUS, new species.

Male.—Front bright green. Face rather wide, grayish yellow. Palpi dark yellow and quite prominent. Antennae slightly elongated, black, the first joint broadly yellow, the third sharply pointed, but not remarkably elongated. Orbital cilia yellowish white except a few above.

Mesonotum and scutellum coppery green in color. Pleurae blackish green, dusted with gray. Calypters with black cilia. Abdomen bright green with coppery reflections. Hypopygium rather small and rounded, black; the lamellae rather deep yellow, small, oval, with brownish border and at the apex some incisions and moderately long bristles.

Legs yellow, the middle and hind coxae black, the front coxae infuscated on the outer side near the base; hind femora not ciliated, hind tibiae slightly infuscated at apex and tarsi wholly black. Front tarsi with the first four joints yellow, the second, third, and fourth of almost equal length, the fifth joint black, very slightly compressed, about three-fourths as long as the fourth joint; middle tarsi infuscated from the tip of the first joint.

Wings rather brownish, of about normal shape, the costa hardly thickened at the junction of the first vein.

Female.—Front still wider than in the male, quite gray, the antennae a little shorter. The anterior tarsi are rather dark yellow to the last joint which is black but not at all compressed. The third and fourth joints are each a little shorter than the fifth.

Length 5 mm.

Described from 4 males and 3 females taken at Ungava Bay and Fort Chino, Labrador, collected by L. M. Turner.

Type.—Male, Cat. No. 25193, U.S.N.M., from Ungava Bay.

Delicatus runs to *boreus*, page 22, in the table of Bulletin 116, and greatly resembles that species; the male fore tarsi are on the same plan yet quite distinct. The fourth joint in *boreus* is very thin and elongated, and the fifth is about one-third as long but very distinctly compressed though small. In *delicatus* the fourth joint is less elongate and thin; the fifth is one-half as long, and so slightly compressed that it might almost be called plain. The lamellae in *delicatus* are smaller and more rounded than in *boreus*, and the costa is not thickened.

DOLICHOPUS ELEGANS, new species.

Male.—Front green. Face pale yellow, rather narrow below. Palpi dark brown. Antennae of the ordinary size, entirely black. Orbital cilia white except a few of the upper ones.

Mesonotum and scutellum rather shining green. Pleurae green with a little gray dust. Cilia of the calypters black. Halteres

yellow. Abdomen green with bronze reflections and slight pruinosity. Hypopygium large, black, the lamellae oval, whitish, with black border which is rather wide above as well as apically, the apex has a few small incisions and longer bristles.

Legs yellow, middle and hind coxae black, front coxae blackish at base for about one-third the length and on the outer side for two-thirds: hind femora not ciliated, decidedly infuscated at tip; hind tibiae black on the apical fifth and their tarsi entirely black; front and middle tarsi infuscated from the tip of the first joint, the front ones about one-third longer than their tibiae, the last two joints distinctly flattened but without lateral fringes of any size; when viewed from above the second and third joints appear very narrow emphasizing the breadth of the last two. They are all of a gradually decreasing length.

Wings slightly infuscated or subhyaline, of ordinary shape; the costa with a rather short enlargement at the tip of the first vein.

Female.—Face dull gray, wider than in the male; front coxae almost entirely black; hind femora rather more broadly infuscated at tip. Wings distinctly wider than in the male.

Length 3.8 mm.

Described from 4 males and 1 female taken by the writer at Tennessee Pass, Colorado, altitude 10,240 feet (3.12 kilometers), July 10, 1919.

Type.—Male. Cat. No. 25194, U.S.N.M.

DOLICHOPUS LONGUS, new species.

Male.—Agrees very closely with *fortis* except in the following characters: Face dull brown instead of shining brownish-yellow; fore and middle femora with long hairs below on lower hind edge, subciliate; cilia of hind femora wholly black; hind tibiae more thickened; lamellae almost wholly blackish, only on the central and basal part a trifle lighter in color. Size and elongate form the same in both, and the elongate brownish wings are the same.

Four males, Tennessee Pass, Colorado, July 10 and 11, 1919, collected by the writer.

Type.—Male, Cat. No. 25195, U.S.N.M.

DOLICHOPUS RECTICOSTA, new species.

Male.—Front deep blue, at the sides very narrowly whitish. The face narrow, silvery white. Palpi black. Antennae short, entirely black. Orbital cilia white except a few of the upper ones.

Mesonotum deep blue with greenish reflections and in some lights a whitish pollinose triangle on each side of the suture. Scutellum deep blue. Pleurae bluish green, very thinly dusted. Cilia of the calypters black. Halteres light yellow. Abdomen greenish blue, the incisures narrowly blackish, at sides of the segments with thin silvery pruinosity. Hypopygium rather small, black; the lamellae

oval, white, with a narrow dark margin apically, almost none elsewhere. At the apex there are five or six long bristles arising from prolongations of the lamellae.

Coxae and femora black, hind femora not ciliated; the knees and tibiae light yellow; hind tibiae infuscated for about one-third their length. Front and middle tarsi plain, light yellow at base.

Wings hyaline, costa not thickened; shape of the wing is very peculiar, the costal margin being much straighter than usual about to the point where the third longitudinal vein joins it. From this point it curves backward and the posterior margin has a broad uniform curve, the anal angle being very little developed. The fourth vein beyond the cross vein bends strongly forward and continues in that direction to the margin so that its tip is considerably before the apex of the wing. It is however parallel with the third vein.

Length 3.6 mm.

Described from a single male specimen from Florida, labeled "Fla."

Type.—Male, Cat. No. 25196, U.S.N.M.

Runs to couplet 30, page 14, in the table of Bulletin 116, but differs from all three species in having the costa almost straight.

DOLICHOPUS ABRUPTUS, new species.

Male.—Front steel blue; face pale golden yellow, rather narrow below; palpi yellow; antennae wholly black, of moderate length; the arista plain; orbital cilia white except on the upper third. Mesonotum and scutellum dark steel blue; pleurae green with thin gray dust; calypters with black cilia. Abdomen green; the incisures black; Hypopygium black, rather small; the lamellae ending in a very sharp point, the narrow black border entire and not very hairy. Legs yellow; the front coxae considerably infuscated on the basal third; middle and hind coxae black except tips; the hind femora and tibiae infuscated on the apical fourth. Front tarsi one and one-fourth times as long as their tibiae; the basal joint about as long as the four following, yellow; second joint about one-half as long, also yellow; the remaining joints black, the third becoming flattened toward the apex, the fourth and fifth distinctly flattened laterally but not fringed. Middle femora having a very slight tinge of brown at the apex; middle tibiae rather whitish, their tarsi infuscated from the tip of the first joint; hind tarsi entirely black; pulvilli small. Wing subhyaline, rather broad on the apical half; the anal angle however conspicuously narrowed; costa not thickened at tip of first vein.

Length 3.9 mm.

One male, Lake Tear, Essex County, New York. Collector unknown. Received from M. C. Van Duzee.

Type.—Male, Cat. No. 25410, U.S.N.M.

Runs to *virga* on page 17 of the analytical table of Bulletin 116, but differs in the male in having the front steel blue, the anal angle of the wing conspicuously reduced in size and the third and fourth joints of the front tarsi not broadly fringed so as to have the appearance of a tassel.

DOLICHOPUS TOWNSENDI, new species.

Male.—Front green, face pale yellow, quite narrow below; palpi yellow; antennae of moderate size, the first two joints entirely yellow, third entirely black, not at all elongated; orbital cilia pale, about six of the upper ones black; thorax and abdomen bronze green with a considerable whitish dust, which in certain lights partly obscures the ground color. Pleurae of the same color but a little more dusted; calypters with black cilia. Hypopygium long and stout with exceptionally large lamellae, which are widest near the apex, rather truncate, white except a narrow apical and still narrower upper border; the apical margin begins below with long processes bearing cilia, these become gradually shorter at the upper corner and bear a rather uniform row of cilia. Legs yellow; all the tarsi blackened from the tip of the first joint, the second joint, however, more or less pale at base; fore tarsi plain, not much longer than the tibiae; front coxae without dark hairs except near the tip; middle and hind coxae brown as far as the bristle; hind femora without cilia, middle and hind with only one preapical bristle, hind tibiae not at all enlarged, on the hind side free from hairs between the two rows of bristles where they seem to be whiter on account of the absence of hairs. Wings almost hyaline, widest a little beyond the large crossvein, at which point the costa begins to bend backward; fourth vein ending rather far before the apex, almost parallel with the third; a distinct notch in the hind margin at the tip of the fifth vein; anal angle small; costa not thickened at the junction of the first vein.

Length of male, 5.4 mm.

Described from 1 male, on rocks by stream, Rio Ruidoso, White Mountains, New Mexico, about 6,500 feet altitude (1.98 kilometers), July 30, collected by C. H. T. Townsend.

Type.—Male, Cat. No. 25237, U.S.N.M.

Runs to *terminalis* in couplet 58 on page 26, but differs in the very large wide lamellae, in having the front tarsi darkened from the first joint instead of only the last joint, and in some other minor characters.

DOLICHOPUS EXSUL, new species.

Male.—Front green, face silvery white, rather narrow below. Palpi yellow. Orbital cilia white except a few of the upper ones. Antennae short, broadly reddish below including the third joint.

The first joint narrowly blackish on the upper edge, the third mostly brown.

Mesonotum shining green with a coppery stripe on each side along the suture. Scutellum shining green. Pleurae blackish green, covered with a thin gray dust. Cilia of the calypters black. Halteres yellow. Abdomen shining green, but less bright than the thorax. Posteriorly it is compressed. Hypopygium large, blackish green. Lamellae nearly circular, white with a very narrow dark border. The front edge deeply incised from half a dozen long processes with bristles at the tip.

Legs yellow. The middle and hind coxae blackish except at tip. The hind tibiae blackened from about the middle to end. Tarsi entirely black. Front and middle tarsi gradually infuscated toward the apex. Front coxae with black hairs on the anterior surface.

Wings hyaline, rather narrow in shape, the anal angle not very prominent. The fourth longitudinal vein sharply bent beyond the cross vein with a stump of a vein at one or both of the bends. Costa with an elongated swelling not very large at the junction of the first vein.

Female.—Face about half wider than in the male. Hind tibiae infuscated on the apical fourth, otherwise about as in the male.

Length 4 mm.

Described from 6 males and 5 females collected at Tantalus and Waialua, Oahu, and at Olaa, Hawaii, 2,500 feet (0.76 kilometer), all in the Hawaiian Islands, by W. H. Ashmead.

Type.—Male, Cat. No. 25197, U.S.N.M., from Tantalus.

This is the only true *Dolichopus* known to me to occur in a tropical climate. The species is not known from North America; it would run to *abrasus* on page 20 in the tables of Bulletin 116, but is readily separable by its short, broad lamellae. It may have been introduced from Japan, but the species of that region are too imperfectly known as yet to settle that point.

Genus HYDROPHORUS Fallén.

Hydrophorus FALLÉN, Diptera Sueciae, Dolichopodes, 1823, p. 2.—LOEW, Smiths. Misc. Colls., No. 171, 1864, p. 211.—ALDRICH, Psyche, vol. 18, pp. 45-73, 1 pl., 1911.

Six species of this genus were collected in Alaska in my expedition of June and July, 1921; one was undescribed, none European, and all but two occur in the United States.

HYDROPHORUS ALTIVAGUS Aldrich.

Hydrophorus altivagus ALDRICH, Psyche, vol. 18, p. 67, 1911.

Ten specimens, Anchorage and Fairbanks, Alaska. Described from Colorado, and I afterwards collected it at Moscow, Idaho.

HYDROPHORUS BREVISETA Thomson.

Medeterus breviseta THOMSON, Fregat. Eugenies Resa, 1868, p. 150.

Hydrophorus breviseta ALDRICH, Psyche, vol. 18, p. 58, figs., 1911.

Four specimens, Seward and Skagway, Alaska. Described from California, presumably San Francisco; since reported from the Puget Sound region.

HYDROPHORUS INNOTATUS Loew.

Hydrophorus innotatus LOEW, Smiths. Misc. Colls., No. 171, p. 212, 1864.—

ALDRICH, Psyche, vol. 18, p. 66, 1911.—MALLOCH, Rept. Canad. Arctic Exped., vol. 3, p. 50c, 1920.

Eight specimens, Skagway, Alaska, June 4. and Seward, Alaska, July 24. Originally described from Sitka, and since reported from Arctic Canada, Oregon, and Washington.

HYDROPHORUS GRATIOSUS Aldrich.

Hydrophorus gratiosus ALDRICH, Psyche, vol. 18, p. 49; Entom. News, vol. 24, pp. 215, 217, 219.

Two specimens, Anchorage, Alaska, July 21, and Seward, Alaska, July 24. Described from Idaho, Washington, and California, and since reported from Utah and Nevada.

HYDROPHORUS SIGNIFERUS Coquillett.

Hydrophorus signiferus COQUILLET, Fur Seals and Fur Seal Islands, vol. 4, p. 344, 1899.—MALLOCH, Rept. Canad. Arctic Exped., vol. 3, p. 50c.

One female, Healy, Alaska, June 26. Described from Bering Island, and reported with additional description by Malloch from Teller, Alaska. The National Museum has eight specimens collected by J. M. Jessup in 1912 on the Alaska-Yukon boundary at latitude 69° 20'.

HYDROPHORUS AQUATILIS, new species.

Female.—Front with gray pollen, along the orbits thinner so as to show a little of the green color beneath; face entirely gray pollinose; cheek below the eye rounded and narrow; beard yellowish; antennae black, of ordinary size; occiput with a single pair of bristles. Mesonotum yellowish gray pollinose, with brownish reflections which are brighter above the wings; pleurae of the same color: propleura with yellow hairs and one yellow bristle; calypters with yellowish cilia. Halteres decidedly black, the stem yellow except at base. Abdomen greenish, coppery, with a thin gray pollen. Legs black, the femora with greenish reflections; front coxae covered with yellowish pollen, with rather long yellow hair in front and without any black bristles even at the tip. Front femora moderately thickened at base, with a row of seven or eight spines hardly reaching the middle, and some scattered much shorter spines extending

along the inner side of this row and somewhat beyond. The front tibia almost straight, on the extensor side with a row of short even bristles; on the flexor side a denser row of more erect and shorter little spines, terminating in one which is a little longer; middle and hind femora very slender. Wings long and narrow, uniformly tinged with brown, without any distinct spots.

Length, 3.8 mm.

Two females. Fairbanks and Nenana, Alaska.

Type.—Female, Cat. No. 25409, U.S.N.M., from Fairbanks.

