# *Calliphora neozealandica* sp. nov., a New Blowfly from New Zealand

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**Summary**

A description is given of a new species of *Calliphora* (*C. neozealandica*), which occurs in the native forests of New Zealand. The differences between this species and the species of the genus *Calliphora*, which have already been recorded from New Zealand, are discussed. A key for the identification of the common species of the genus *Calliphora* occurring in New Zealand is given.

## INTRODUCTION

DURING the year 1950–51, monthly collections of blowflies were made at the Wallaceville Animal Research Station, New Zealand. Traps of the "Western Australian design" were baited with fresh liver and exposed in various situations for a week at a time. On examination of the flies caught, a new species of the genus *Calliphora* was discovered. This fly, which can be readily distinguished from the more common *Calliphora* found in New Zealand, was only caught in small numbers at Wallaceville, but many specimens were caught when traps were taken into the native bush on the Orongaronga ranges near Wellington. Further specimens were caught on a freshly killed deer carcase in similar bush country, near Lake Brunner, on the west coast of the South Island.

The description of this species is based on the examination of a series of about 100 flies.

## **Calliphora neozealandica**, sp. nov. ♂ ♀

### I. ADULT. Figs. 1–6

GENERAL

The fly is robust and about 9 mm. in length. The thorax is a dark bluish grey, the humeral and notopleural areas being lighter in colour. The spiracles and the base of the wings are bright orange and the abdomen is a brilliant blue, which may vary from a dark duck egg to a Prussian or a violet blue.

HEAD. Frontals and parafrontals in dorsal view, projecting dome-like in front of the head. In the female the distance between the eyes is about one-third the width of the head, but in the male the eyes are slightly closer together, which accentuates the dome-like projection of the frontals and parafrontals. All eye facets are the same size in both sexes and are scattered with a few fine microscopic

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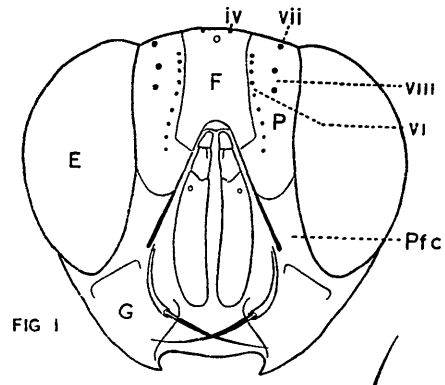


FIG 1

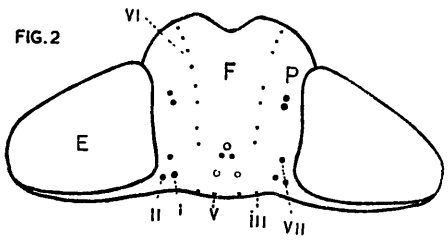


FIG.2

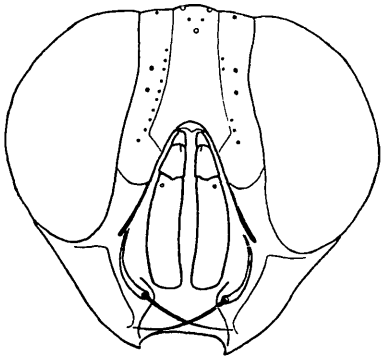

FIG 4

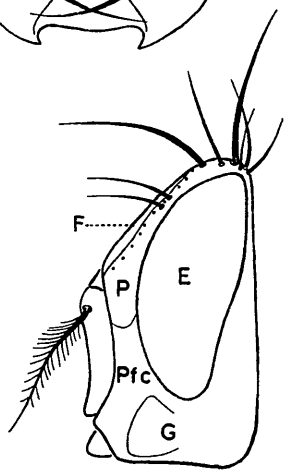


FIG.3

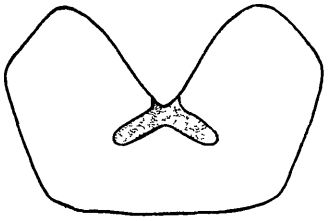

FIG 6

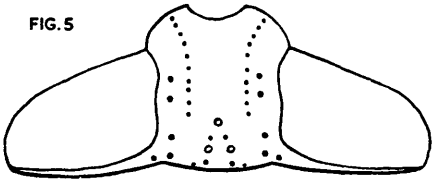

FIG.5

TEXT-FIG. 1.—FIG. 1—Head of Female (anterior view) FIG. 2—Head of Female (dorsal view). FIG. 3—Head of Female (lateral view). FIG. 4—Head of Male (anterior view). FIG. 5—Head of Male (dorsal view). FIG. 6—5th abdominal sternite, male. E, eye; F, frontal; G, cheek; P, parafrontal; Pfc, parafacials. i, inner vertical, ii, outer vertical; iii, post-vertical; iv, ocellar; v, post-ocellar; vi, frontal; vii, upper fronto-orbital; viii, middle fronto-orbital.

hairs The height of the orbit is about seven-tenths that of the head. Ocellar triangle lighter in colour than surrounding frontals and possessing a few long hairs in addition to its specific bristles. Frontals dark blue-grey in colour, reddish near the top of the antennae. They narrow slightly just below the point of the ocellar triangle and, apart from a few hairs dorsally, are naked. Parafrontals, narrower than the frontals, narrowing slightly to the level of the first antennal joint and clothed with a few hairs, especially dorsally; the anterior limit curved and about one-third down the facialia.

Parafacials naked, with an area of silvery pubescence tinted with gold at the junction with the parafrontals. This extends as a thin line round the orbit to its lower limit. Cheeks bluish grey and longer than high; in size about one-fifth the height of the head. The upper limit is level with the tip of the antennae and covered with fairly long black hairs. Ptilinal suture divergent, ending just above the lower limit of the orbit. Facial plate pear shaped, bare and silvery grey in colour. It is reddish along the margin next to the facial bristles and vibrissae. The lunule has a reddish brown tinge and the carina is pronounced dorsally, terminating midway down the facial plate. The first segment of each antenna a greyish-brown, the second a dark-blue grey with grey margins. The third antennal segment bluish-grey with a brown tint, about four times the length of the other two segments and terminating at about the vibrissal angle; arista brown, stout and plumose, about one and a-quarter times the length of the third antennal segment. The distance between the vibrissal angles is approximately three-quarters the length of the third antennal segment. Palps orange and covered with black bristles. The back of the head is clothed with fine hairs which are golden ventrally.

THORAX. Dark blue-grey but the humeral and notopleural regions are lighter in colour; spiracles and the bases of the wings orange. Anterior surfaces of the wings slightly smoky, and at rest the wings are held over the thorax and abdomen. Dorsal squamae, fringed with black hairs, but naked except for the inner posterior corner of the dorsal surface. Ventral squamae fringed with white hairs and clothed with black hairs

Halteres fawn; legs dark-blue grey with black bristles.

ABDOMEN. Robust in character; varies in colour from a dark duck-egg-blue to a Prussian blue or a violet-blue; well clothed with black hairs.

GENITALIA. *Male*

(i) *The phallosome* (Fig. 7). Apodeme about three-quarters the length of the whole structure; strut strongly sclerotised and curved to form a distinct hook at its extremity. The membranous portion of the strut possesses distinct teeth but is not strongly sclerotised. The terminal process with distinct sclerotised tip. Four strong bristles and 1 weak bristle on posterior margin of the anterior paramere.

(ii) *The Terminal and Sub-terminal Claspers* (Figs. 8 and 9). These structures are normally held close to the abdomen. The terminal claspers are slightly longer than the sub-terminal, which are curved and obtuse.

CHAETOTAXY

(i) *Cephalic.* Inner vertical, 1, strong; outer vertical, 1, weak; posterior vertical, 1, weak; ocellar, 1, strong, and 2 or 3 weak pairs; posterior ocellar, 1; frontals, 8–10 well developed; upper fronto-orbital, 1; middle fronto-orbital, 2; facials, short but increasing in length towards vibrissae; vibrissae, strong; peristomals, longer than facials.

(ii) *Thoracic.* Preacrostichal, 2; post-acrostichal, 3, the anterior being the weakest; predorso-central, 3; post-dorso-central, 3; posterior humeral, 3, the anterior being the weakest; presutural, 2; humerals, 4, the anterior and interior bristles being weakest; notopleurals, 2; supra-alar, 5, 2nd and 5th weak and sometimes absent; intra-alar, 1; post-alar, 3, posterior and interior bristles weak

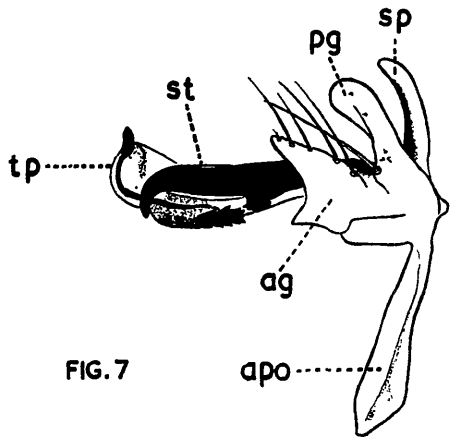


FIG. 7

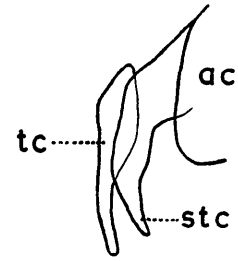


FIG. 8

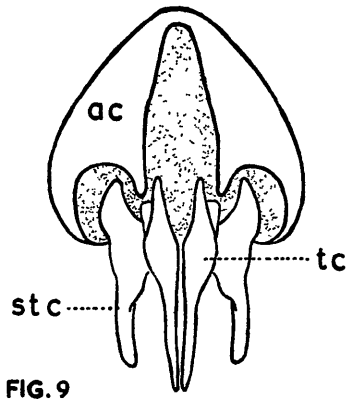


FIG. 9

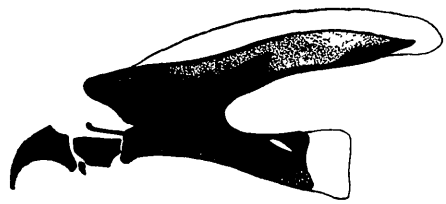

FIG. 10

FIG. 11

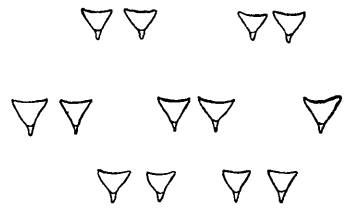

FIG. 12

TEXT-FIG. 2.—FIG. 7—Phallosome. ag, anterior paramere; apo, apodeme; pg, posterior paramere; sp, spine; st, strut; tp, terminal process. FIG. 8—Terminal claspers, male (lateral view). FIG. 9—Terminal claspers, male (anal view). ac, anal capsule; stc, sub-terminal clasper; tc, terminal clasper. FIG. 10—Bucco-pharyngeal skeleton of larva. FIG 11—Posterior spiracle of larva. FIG. 12—Spinules of intersegmental band of larva.

and sometimes absent; apical scutellar, 1 pair; preapical scutellar, 1 pair, weak and sometimes absent; discal scutellar, 1 pair; marginal scutellar, 4, 1st and 3rd weak and sometimes absent; propleurals, usually 3 strong but varies from 2 to 5; mesopleurals, well developed and numerous; sternopleurals, 1: 1; hypopleurals, well developed but weaker than others.

HOLOTYPE.

New Zealand: Orongaronga, November, 1950, J. Rudge, ♂. (Collection of the Division of Entomology, C S I R O . Canberra, Australia )

ALLOTYPE.

New Zealand: Orongaronga, November, 1950, J. Rudge, ♀. (Collection of the Division of Entomology, C.S.I.R.O., Canberra, Australia.)

PARATYPE.

New Zealand: Orongaronga, November, 1950, J. Rudge, 1 ♂, 10 ♀. (Collection of the Division of Entomology, C.S.I.R O., Canberra, Australia; Australian Museum, Sydney, New South Wales, Australia; Cawthron Institute, Nelson, New Zealand; Division of Plant Diseases, D.S.I.R , Auckland, New Zealand; British Museum, London, England.)

New Zealand: Wallaceville, October, 1950, M. D. Murray, 1 ♂, 5 ♀. (Collection of the Division of Entomology, C.S.I.R.O., Canberra, Australia; Australian Museum, Sydney, New South Wales, Australia; Cawthron Institute, Nelson, New Zealand.)

New Zealand· Lake Brunner, September, 1951, M. D. Murray, 1 ♂, 1 ♀. (Collection of the Division of Entomology, C.S.I.R.O., Canberra, Australia.)

## II. LARVA

It has only been possible to examine a few larvae and these specimens have been deposited in the collection of the Division of Entomology, C.S I.R.O., Canberra, Australia.

The fully grown larva is medium sized (half inch) and has inconspicuous intersegmental spines, of triangular shape, which tend to occur in pairs (Fig. 12). The oral hooks of the bucco-pharyngeal skeleton are strongly curved (Fig 10). The spiracular plate is as broad as it is high and the peritreme, which is strongly chitinised, is incomplete round the button (Fig. 11). The anterior spiracles possess 10 to 11 papillae.

## DISCUSSION

The main feature in the chaetotaxy of this fly is the presence of only one intra-alar bristle. This alone distinguishes it from the more common *Calliphora* found in New Zealand. In this respect, however, it resembles *C. viridiventris*, *C. antipodea* and *C. neohortona*. These flies have been described from single specimens, the only ones known, which renders it impossible to determine the variation which may be met within these species. No specimen of the series of *C. neozealandica* was found to agree entirely with the holotype specimens of these species which were examined and in Table I may be seen the main features which differentiate these four species of *Calliphora*.

TABLE I.

**The Differences Between the Species of the Genus *Calliphora* Occurring in New Zealand which Possess One Intra-alar Bristle.**

| | *C. neozealandica* | *C. neohortona* | *C. viridiventris* | *C. antipodea* |
|---|---|---|---|---|
| Locality of capture | Wallaceville, Orongaronga ranges, Lake Brunner, Westland. | Lake Moana, Westland | Campbell Islands | Antipodes Islands |
| Eyes | Covered with widely separated fine hairs (magnification of 40 required). Separated by $\frac{1}{3}$ head width at vertex. | Covered with widely separated fine hairs (magnification of 40 required). Separated by less than $\frac{1}{3}$ width of head at vertex. | Naked. Separated by little more than $\frac{1}{3}$ head width at vertex. | Naked. Separated by little less than $\frac{1}{2}$ head width at vertex |
| Cheeks | $\frac{1}{5}$ height of head. | Little less than $\frac{1}{3}$. | Little less than $\frac{1}{3}$. | Little less than $\frac{1}{3}$ |
| Ptilinal suture | Terminates above lower limit of orbit. | Terminates just below lower limit of orbit. | Terminates well below lower limit of orbit | Terminates well below lower limit of orbit |
| Palps | Bristles | Bristles. | Bristles | Bare |
| Arista | Black. $1\frac{1}{4}$ length third antennal segment. | Brown, $1\frac{1}{4}$ length third antennal segment. | Reddish. Equal in length third antennal segment | Black, $1\frac{1}{4}$ length third antennal segment |
| Legs | Blue grey. | Tawny to pale orange. | Tibia and tarsi orange | Black grey |
| Chaetotaxy: | | | | |
| Frontals | 8–10 | 7 | 10 | 7 |
| Humerals | 4 | 2 | 4 | 4 |
| Sternopleurals | 1:1 | 1:1 | 1:0 | 1:1 |

In general appearance *C. neozealandica* may resemble the larger dark specimens of *C. icela,* which may be found in the native bush, or small specimens of *C. quadrimaculata.* The silvery pubescence of the parafacials readily distinguishes *C. neozealandica* from *C. icela,* in which the pubescence is golden, while the structure of the eyes distinguishes it from *C. quadrimaculata,* in which the eyes are very hairy.

KEY TO THE SPECIES OF THE GENUS *Calliphora* OCCURRING IN NEW ZEALAND

Note.—The uncommon species have been placed in parentheses.

| | | |
|---|---|---|
| 1 | Flies golden brown in colour . | 2 |
| | Flies with blue abdomen | 3 |
| 2 (1) | Two pairs of presutural acrostichal bristles in both sexes, eyes of male with normal facets, frontals and parafrontals project distinctly in front of curvature of head . . . . . | *rufipes* Macquart |
| | Three pairs of presutural acrostichal bristles in both sexes, eyes of male with lower facets smaller than upper, frontals and parafrontals not projecting distinctly in front of curvature of head | *stygia* Fabricius = *laemica* White (*teste* S J Paramonov) |
| 3 (1) | Abdomen Prussian blue with silvery tessellations, spiracles and wing articulations sombre coloured but not orange . . . . . | *erythrocephala* Meigen |
| | Abdomen blue without silvery tessellations, spiracles and wing articulations orange or yellow | 4 |
| 4 (3) | Eyes distinctly haired . . | 5 |
| | Eyes indistinctly haired or naked . . . | 6 |
| 5 (4) | Large fly (undersized specimens not uncommon), abdomen brilliant Prussian or violet blue, palps orange . . | *quadrimaculata* Swederus |
| | Medium sized fly. abdomen usually greenish blue, frontals and parafrontals project prominently in front of curvature of head, palps black . | *hortona* Walker |
| 6 (4) | Two strong intra-alar bristles | 7 |
| | One strong intra-alar bristle . | 8 |
| 7 (6) | Medium sized fly, eyes bare, golden pubescence on parafacials . . . . . | *icela* Walker |
| | (Robust fly, eyes sparsely haired—magnification of 40 required, thoracic dorsum and abdomen pilose, the latter blue with silvery tessellations . . | *nothocalliphoroides* Miller) |
| 8 (6) | Medium sized fly, eyes covered with a few widely scattered fine hairs—magnification of 40 required, silvery pubescence on parafacials . . . . . | *neozealandica* sp. nov. |

(See Table I—to differentiate from *C. neohortona, C. antipodes* and *C. viridiventris.*)

ACKNOWLEDGMENTS

The interest and advice of Dr. S. J. Paramonov and Dr. D. F. Waterhouse, of the Division of Entomology, C.S.I.R.O., Canberra, in the preparation of this manuscript is gratefully acknowledged. I also wish to thank Mr. J. Rudge, who so willingly took traps into the bush country on the Orongaronga ranges for me. Thanks are also due to Mr. L. K. Whitten, Parasitologist, Wallaceville Animal Research Station, in whose section this work was carried out.

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