

Mallophaga on the Rock Pigeon (*Columba livia*) in New Zealand, with a Key to their Identification

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Summary

Five species of lice are reported. In the Menoponidae, *Hohorstiella lata* was occasionally found, *Bonomiella columbae* was present in three samples, and *Colpocephalum turbinatum* once only. In the Philopteridae, *Columbicola columbae* was very commonly found, and *Campanulotes bidentatus compar* was the next most frequent and abundant. An earlier report in the literature of the occurrence of *Goniocotes gallinae* on New Zealand rock pigeons is shown to be due to a misdetermination, and the history of the error is documented.

INTRODUCTION AND KEY TO SPECIES

Five species of Mallophaga (chewing lice) have been found on the rock pigeon (= domestic pigeon, *Columba livia* Gmelin, 1789) in New Zealand. All are introduced in the fauna, as is of course the host. Adult and nymphal lice may be separated by the following key (adapted from Emerson, 1957):

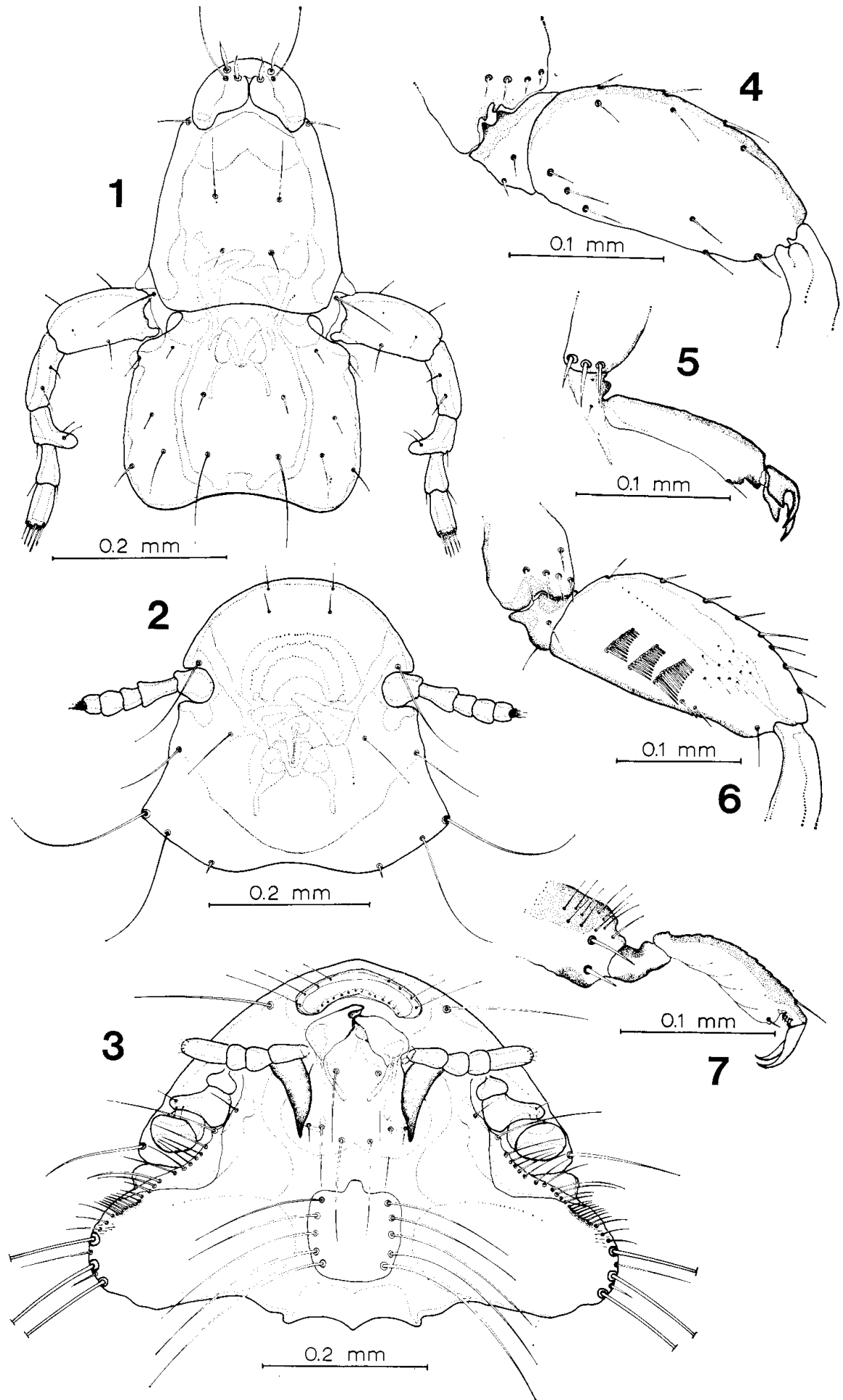
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| 1. Maxillary palps present (Menoponidae) (Fig. 3) | 2 |
| — Maxillary palps absent (Philopteridae) (Figs. 1, 2) | 4 |
| 2. A pair of prominent spine-like processes on the ventral surface of the head (Fig. 3) | <i>Hohorstiella lata</i> |
| — No spine-like processes on the head | 3 |
| 3. Third femur with three combs of fine setae on the ventral surface (Fig. 6); claw as in Fig. 7 | <i>Colpocephalum turbinatum</i> |
| — Third femur without combs of setae (Fig. 4); claw as in Fig. 5 | <i>Bonomiella columbae</i> |
| 4. Very slender form; head longer than wide (Fig. 1) | <i>Columbicola columbae</i> |
| — Stout form; head slightly wider than long (Fig. 2) | <i>Campanulotes bidentatus compar</i> |

NOTES ON THE FOREGOING GENERA AND SPECIES

Hohorstiella lata (Piaget, 1880) — type host: *Columba livia domestica*. I have taken this species on a few occasions in New Zealand, from rock pigeons only. It appears to occur on this host throughout the country, but not in large numbers. Nelson and Murray (1971) reported this louse in Australia on the same host, particularly on the head where the eggs are laid predominantly. *Hohorstiella* is a small genus confined to Columbiformes.

Colpocephalum turbinatum Denny, 1842 — type host: *Columba livia domestica*. I have found only one specimen (a female) among numerous collections from the rock pigeon in New Zealand, but the species is very common on the Australasian Harrier, *Circus approximans gouldi*, which appears to be its chief, and only other, host in this country. The louse is widely distributed elsewhere and is “. . . found on a number of Falconiformes and possibly sporadically within the Ciconiiformes and Gruiformes” (Price, 1967). Nelson and Murray reported

Fig. 1. *Columbicola columbae*, ♂. Head, dorsal view. Fig. 2. *Campanulotes bidentatus compar*, ♂. Head, dorsal view. Fig. 3. *Hohorstiella lata*, ♀. Head, ventral view. Fig. 4. *Bonomiella columbae*. Left third femur, ventral view. Fig. 5. *Bonomiella columbae*. Left tarsus and claw. Fig. 6. *Colpocephalum turbinatum*. Left third femur, ventral view. Fig. 7. *Colpocephalum turbinatum*. Left tarsus and claw.



it as common on the domestic pigeon in Australia, particularly on the body, wings, and tail feathers. *Colpocephalum* is a very large genus with approximately a hundred species found on a number of orders of birds: Strigiformes, Cuculiformes, Falconiformes, Pelecaniformes, Ciconiiformes, Galliformes, Columbiformes, Piciformes, Gruiformes, Passeriformes (Corvidae) and Psittaciformes. A few specimens have been taken from a skin of the Adelie Penguin, *Pygoscelis adeliae* (Sphenisciformes), but the record requires confirmation (Clay, 1946).

Bonomiella columbae Emerson, 1957 — type host: "domestic pigeon". I have found this species in small numbers (females only) on three occasions in New Zealand. (Additional specimens, especially of males, would be welcomed by the writer.) Identification was kindly verified by Professor K. C. Emerson, to whom specimens were sent. The species has not been taken very often; it occurs in New Zealand and in North America (where it was first found), and has been reported from Europe (Zlotorzyska and Lucinska, 1967; Ribbeck, 1972) and in Egypt (Selim, El-Kazaby and El-Refaii, 1968), always on pigeons. *Bonomiella* is a very small genus confined to Columbidae.

Columbicola columbae (Linnaeus, 1758) — type host: *Columba livia domestica*. This species is widespread and abundant on captive and feral rock pigeons in New Zealand. It appears to be common wherever the host occurs, and it is abundant in Australia (Nelson and Murray), being found especially on the body and wing feathers. *Columbicola* contains over 30 species, restricted to Columbiformes. Tendeiro (1967) recognised three subspecies of *C. columbae*, of which only *C. columbae columbae* (L., 1758) is reported from *Columba livia*; the New Zealand specimens agree with his descriptions and illustrations of this subspecies.

Campanulotes bidentatus compar (Burmeister, 1838) — type host: *Columba livia*. This louse is widespread in New Zealand on captive and feral rock pigeons only, though it occurs in much smaller numbers than does *Columbicola columbae*. Nelson and Murray also found it to be less common in Australia. *Campanulotes* is a small genus restricted to Columbiformes.

Many records of pigeon lice elsewhere refer to *Campanulotes bidentatus bidentatus* (Scopoli, 1763); — type host: *Columba palumbus*, which is distinguished from *compar* by its greater size (Clay and Hopkins, 1951). Specimens from New Zealand *Columba livia* fall within the range of measurements given by Kéler (1939, p. 161) and Tendeiro (1969) for *compar*. Specimens collected from rock pigeons in Christchurch were sent to Professor Tendeiro, who kindly verified the identification as *C. b. compar*.

In a report (Heath, Millthorpe and Eves, 1971) on some ectoparasitic arthropods of (rock) pigeons in Christchurch, a passing reference was made to the presence of two species of lice. These were stated to be *Columbicola columbae* and *Goniocotes gallinae*. Whereas *C. columbae* is abundant on the introduced rock pigeons in this country, *G. gallinae* is normally a parasite of gallinaceous birds. In an attempt to verify the record, specimens from the same collection of Heath *et al.* were obtained and slide preparations made of the adult lice. *Columbicola columbae*, both males and females, was present, but not *Goniocotes gallinae*. Instead, there were specimens of both sexes of *Campanulotes bidentatus compar* which had evidently been misidentified as *G. gallinae*. The overall appearance of *G. gallinae* is, indeed, similar to that of *C. bidentatus compar*, and *Goniocotes* and *Campanulotes* are clearly very closely related.

To a large degree, the misdetermination of *C. bidentatus compar* as *G. gallinae* by Heath *et al.* is due to Lapage (1956) to whom the authors turned for identification (Heath, pers. comm.). Lapage (pp. 558-9, Figs. 311-2) referred to *Goniocotes gallinae* (de Geer, 1778) (= *Goniocotes hologaster* Nitzsch, and *Goniodes hologaster* Nitzsch) acknowledging Kéler (1939) for the illustrations, and stating "This species . . . is often called the fluff-louse of the fowl, pheasant and pigeon." It appears that Lapage followed Kéler in regard to

host records also, for Kéler (p. 136) mentioned numerous occurrences of *G. hologaster* on *Phasianus colchicus*, *Gallus gallus*, *Anas tadorna* and other species. Kéler also repeated earlier records from the domestic hen, and included a report of one female specimen from a "Haustaube" (= *Columba livia domestica*). The latter record was, in turn, derived from Zunker. It is clear, however, from Zunker's account (1930, p. 352) that he was simply reporting the existence, in the collections of the Zoologischen Museum in Berlin, of a female specimen of *Goniodes hologaster* which had been taken from *Columba livia* var. *cucullata* in the Berlin zoological gardens. Zunker stated that this specimen should be regarded as a straggler [Irrläufer], and reported a comparable instance of another typical Galliformes louse, the fowl shaft louse, *Menopon gallinae* L., 1758, on a pigeon. These must be regarded as examples of the dangers of establishing host-parasite records from a few parasites obtained from museum specimens or caged hosts. In the case in question, the "record" given by Zunker, and adopted by Kéler and Lapage, has led to much confusion and is partly responsible for misleading Heath *et al.*; it should be disregarded as a normal louse occurrence.

Further collections

Columba livia has been recorded elsewhere as bearing further species of lice; e.g. Emerson (1972) reported, for this host in North America, *Coloceras damicornis fahrenheitii* Eichler, 1950 (type host: *Columba livia domestica*) and *Physconelloides zenaidurae* (McGregor, 1917) (type host: *Zenaidura macroura*, Mourning Dove). It would perhaps not be surprising if the first of these species were to be found in this country. The majority of the writer's records are derived from hosts collected in and near Christchurch, and the possibility of other populations of pigeons elsewhere in the country bearing such further species of lice should be explored. The writer will be glad to receive additional Mallophaga from this and other hosts for identification.

ACKNOWLEDGMENTS

I am indebted to Dr A. C. G. Heath for his willing co-operation in allowing me access to his collection arranged through the courtesy of Mr P. Kettle. I am grateful to Professor K. C. Emerson and to Professor J. Tendeiro for checking the identifications of respectively, *Bonomiella columbae* and *Campanulotes bidentatus compar.* Dr Theresa Clay provided much assistance and advice; most of the identifications herein are primarily based on earlier determinations of New Zealand material made by her. I am happy to acknowledge the assistance of Mr Ricardo L. Palma in executing the illustrations and for fruitful discussion in preparing the paper.

REFERENCES

- CLAY, T., 1946: A preliminary key to the genera of the Menoponidae (Mallophaga). *Proceedings of the Zoological Society, London* 117: 457-77, 40 figs.
- CLAY, T., AND HOPKINS, G. H. E., 1951: The early literature on Mallophaga (Part II). *Bulletin of the British Museum (Natural History) Entomology* 2 (1): 1-37, 45 figs., 3 Pl.
- EMERSON, K. C., 1957: A new species of Mallophaga from the pigeon. *The Florida Entomologist* 40 (2): 63-4, 3 figs.
- 1972: Checklist of the Mallophaga of North America (North of Mexico). Part IV. Bird host list. Desert Test Center, Dugway, Utah, pp. 157-8
- HEATH, A. C. G., MILLTHORPE, A. P., AND EVES, N., 1971: Pigeon mites and human infestation. *N.Z. Entomologist* 5 (1): 90-2.
- KÉLER, S., 1939: Baustoffe zu einer Monographie der Mallophagen. II Teil: Überfamilie der Nirmoidea (1). *Nova Acta Leopoldina N.F.* 8 (51): 1-254, 114 figs., 4 Pl.
- LAPAGE, G., 1956: *Veterinary Parasitology*. Oliver and Boyd, Edinburgh and London. xvi + 964, 434 figs., 34 Pl.
- NELSON, B. C., AND MURRAY, M. D., 1971: The distribution of Mallophaga on the domestic pigeon (*Columba livia*). *International Journal for Parasitology* 1: 21-9, 6 figs.

- PRICE, R. D., 1967: A new species of *Colpocephalum* (Mallophaga: Menoponidae) from the Kea. *Journal of the Kansas Entomological Society* 40 (1): 9-12, 3 figs.
- RIBBECK, R., 1972: DDR-Erstnachweis der Haustaube-Mallophege *Bonomiella columbae*. *Angewandte Parasitologie* 13: 129-33, 5 figs.
- SELIM, M. K., EL-KASABY, A., AND EL-REFAII, A. H., 1968: External parasites of domestic pigeon in United Arab Republic. *Angewandte Parasitologie* 9 (2): 74-83, 7 figs.
- TENDEIRO, J., 1967: Etudes sur les Mallophages. Clés pour le genre *Columbicola* Ewing, 1929. Observations additionnelles, avec description de quatre espèces et une sous-espèces nouvelles. *Revista dos Estudos Gerais Universitários de Moçambique, Série iv* 4: 71-194, 82 figs., 72 photographs.
- 1969: Estudos sobre os Goniódideos (Mallophaga, Ischnocera) dos Columbiformes. IV — Género *Campanulotes* Kéler, 1939. *Revista de Ciências veterinárias Lourenço Marques, Série A* 2: 363-466, 20 figs., 39 photographs.
- ZLOTORZYCKA, J., AND LUCINSKA, A., 1967: Über den Federling *Bonomiella columbae* Emers. (Mallophaga, Somaphantidae) aus Polen. *Polskie Pismo Entomologiczne (= Bulletin entomologique de Pologne)* 37 (2): 341-5, 5 figs.
- ZUNKER, M., 1930: Die Mallophagen der Haustiere. II. Mitteilung: Die Mallophagen der Haustaube (*Columba domestica*). *Archiv für Tierheilkunde* 61: 344-58, 11 figs. [= 1931, *Arbeiten aus den Reichsgesundheitsamt, Berlin* 62: 557-72.]
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