

PIGEON LICE DOWN UNDER: TAXONOMY OF AUSTRALIAN CAMPANULOTES (PHTHIRAPTERA: PHILOPTERIDAE), WITH A DESCRIPTION OF *C. DURDENI* N. SP.

Roger D. Price*, Dale H. Clayton†‡, and Richard J. Adams†

Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, Oklahoma 74078-0464

ABSTRACT: *Campanulotes flavus* (Rudow, 1869) from *Phaps chalcoptera* is redescribed and illustrated. *C. defectus* Tendeiro, 1969, erroneously recorded from the extinct passenger pigeon *Ectopistes migratorius*, is shown to be a junior synonym of *C. flavus*, thus removing it from the list of lice thought to have gone extinct with the passenger pigeon. *C. flavus elegans* (Tendeiro, 1978) from *P. elegans* is elevated to specific rank and redescribed. Finally, *C. durdeni* n. sp. is described from its type host *Ocyphaps lophotes*.

Campanulotes Keler, 1939, is a genus of chewing lice known only from pigeons and doves (Aves: Columbiformes). With the exception of *Campanulotes compar* (Burmeister, 1838) of the introduced feral pigeon *Columba livia*, the only species of *Campanulotes* known from a North American columbiform is *C. defectus* Tendeiro, 1969, described from the extinct passenger pigeon *Ectopistes migratorius*. During a taxonomic survey of the chewing lice of North American Columbiformes (Clayton and Price, 1999; Price et al., 1999), we became suspicious of the *C. defectus*-passenger pigeon association. To resolve the matter, we compared the morphology of *C. defectus* to that of its closest relative *C. flavus* (Rudow, 1869), a parasite of the common bronzewing *Phaps chalcoptera*.

MATERIALS AND METHODS

Slide-mounted specimens of lice were borrowed from The Natural History Museum, London, U.K., and the K. C. Emerson Museum, Oklahoma State University, Stillwater, Oklahoma. They were examined under a Nikon phase-contrast microscope, with appropriate data recorded and illustrations prepared. In the following descriptions, all measurements are in millimeters. Means are given in parentheses following each range of values. Host classification follows Howard and Moore (1991).

DESCRIPTION

Campanulotes flavus (Rudow) (Figs. 1-3)

Goniodes flavus Rudow, 1869.

Type host: *Phaps chalcoptera* (Latham).

Campanulotes defectus Tendeiro, 1969.

Type host: *Ectopistes migratorius* (Linnaeus)—error. New synonymy.

Male: As in Figure 1. Head wider than long; very long ocular seta and angulate temples; 2 very long setae on each temple side. Pronotum with single medium corner seta; metanotum with 2 long to very long setae on each corner, posterior margin mediad of these with pair of close-set medium setae and median short fine seta 0.010-0.020 (0.013) long; very short seta 0.005-0.020 (0.009) long anterior to these (Fig. 1; arrow), this seta not extending to margin of metanotum. Abdomen with widely separated tergites on III-VIII and well-developed pleural thickenings; without evident ventral sclerotization; tergite II with narrow median fusion to metanotum; tergites II-VII with long to very long postspiracular seta and short seta near median end of sclerite; terminalia

as shown. Genitalia (Fig. 2) simple, 0.34-0.39 (0.357) long, slender, lacking defined mesosomal structures. Dimensions: temple width, 0.38-0.42 (0.400); head length, 0.29-0.32 (0.307); prothorax width, 0.19-0.21 (0.202); metathorax width, 0.27-0.31 (0.294); abdomen width at V, 0.50-0.52 (0.512); total length, 0.94-1.03 (0.994).

Female: As in Figure 3. Similar to male except as follows. Head with short ocular seta. Posterior margin of metanotum with closely associated very long and medium setae and median very long seta; minute submarginal seta anterior to these. Abdominal tergites IV-VII with very long postspiracular seta; tergites II-VIII with short seta near median end of sclerite; terminalia as shown; subgenital plate with 3-5 (4.6) prominent setae on each lateroposterior lobe, minute setae between these lobes. Dimensions: temple width, 0.43-0.49 (0.461); head length, 0.35-0.38 (0.365); prothorax width, 0.20-0.25 (0.225); metathorax width, 0.31-0.36 (0.328); abdomen width at V, 0.52-0.60 (0.564); total length, 1.22-1.33 (1.278).

Material examined: Ex *Phaps chalcoptera*: 1 male, paratype of *C. flavus*, det. T. Clay, "Alte Sammlung S. A. Poppe determ. 1880-82"; 1 male, "col. R. I. Sc. Nat. Belg., ref. I. G. 16601", died in captivity, 24 Dec. 1949 [only specimen seen by Tendeiro (1969)]; 3 males, 3 females, Port Lincoln, S. Australia, 27 Oct. 1977, R. H. Stranger; 2 males, 2 females, Binu, W. Australia, 10 Jul. 1975, R. Stranger. Ex *Ectopistes migratorius*—error: 3 males, 7 females (including female allotype, 2 male, 1 female paratypes of *C. defectus*, 1880-39, G. R. Waterhouse; 1 male, 1 female, no data ["det. by Tend." as *C. defectus*]).

Remarks

Tendeiro (1969) distinguished his *C. defectus* from *C. flavus* solely on the basis of some nebulous differences in head and antennal shape and chaetotaxy of the female subgenital plate. He had only a single male and no female of *C. flavus* for a comparative study and relied heavily on the illustrations provided by Keler (1939). Our examination of excellent series of both sexes for these supposed different species has convinced us that there are no means of separating them and *C. defectus* must be considered a junior synonym of *C. flavus*.

We find it highly suspicious that *C. defectus* is known only from a single series of specimens. In contrast, *Columbicola extinctus* (Malcomson, 1937), another louse described from the passenger pigeon, is known from several series (Clayton and Price, 1999). D. H. Clayton has collected dried specimens of *C. extinctus* from passenger pigeon skins in several museums; however, he has yet to encounter specimens of *Campanulotes* on this host.

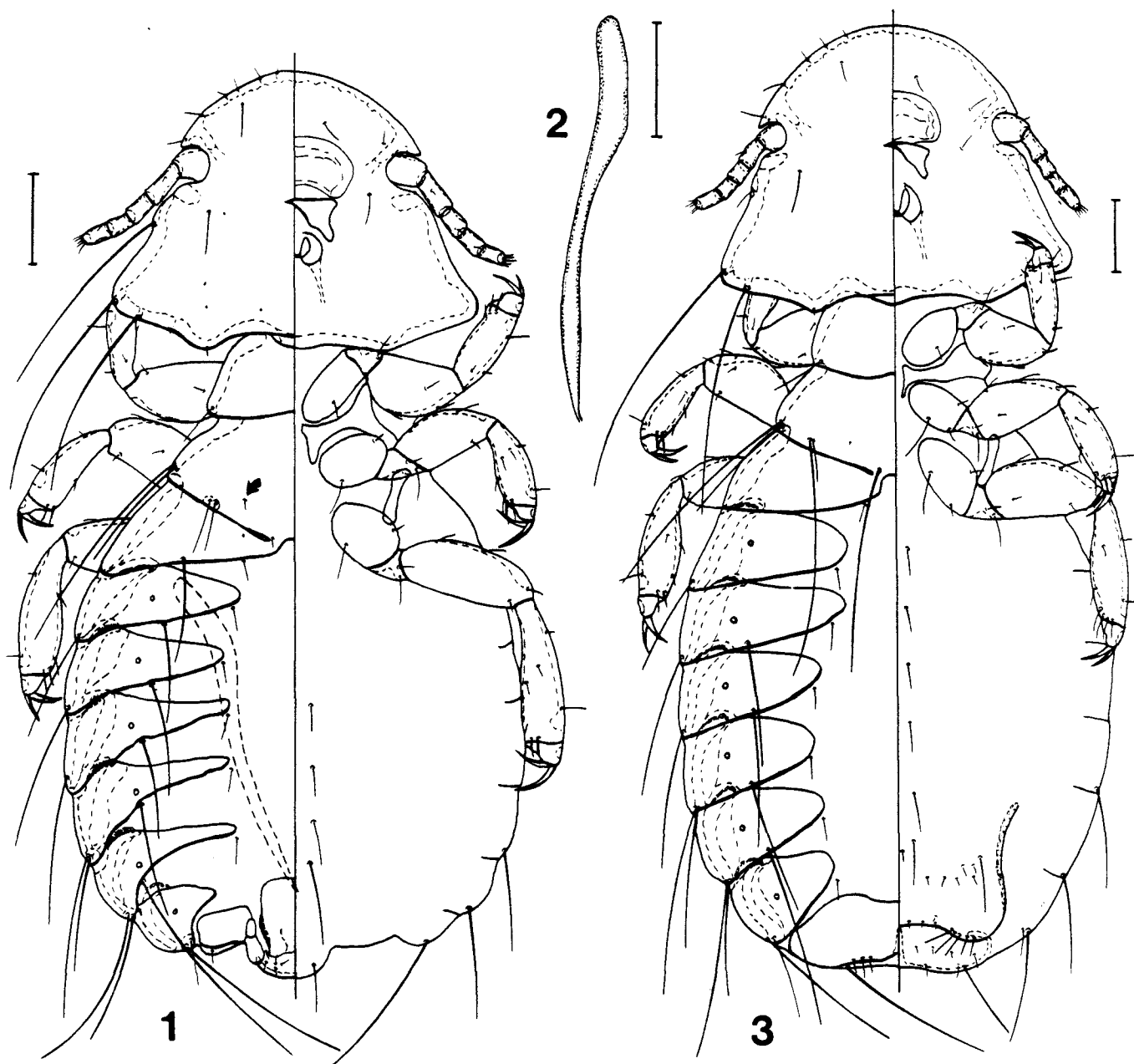
It is difficult to explain how the single series of lice upon which Tendeiro (1969) based his description of *C. defectus* came to be associated with the extinct passenger pigeon, which was restricted to North America. *C. flavus* is restricted to a host found only in Australia. Clayton and Hopkins (1955) discuss in detail the problems associated with specimens in the Rudow Collection at Hamburg. The very low standard of Rudow's work and the ensuing added confusion due to Poppe's replacement of Rudow labels with his own have caused serious problems in determining the identity of louse taxa involved. This matter was further exacerbated by the destruction of much of the Hamburg slide collection in the Allied bombing of 1943. The supporting data for the *C. flavus* type series of "1880-82" and for the *C. defectus* type series of "1880-39" suggest the possibility that these lice may all have been in the Rudow collection. Although we are unable to shed further light on this

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‡ To whom correspondence should be addressed.

* Present address: 4202 Stanard Circle, Fort Smith, Arkansas 72903-1906.

† Department of Biology, University of Utah, Salt Lake City, Utah 84112-0840.



FIGURES 1-3. *Campanulotes flavus*. 1. Dorsosventral view of male (arrow: submarginal metanotal seta). 2. Male genitalia. 3. Dorsosventral view of female.

issue, we are confident of the conspecificity of the two species on the basis of our careful comparison of their morphology.

***Campanulotes elegans* (Tendeiro)**

Saussurites flavus elegans Tendeiro, 1978: 119.

Male: Quite similar to *C. flavus*, differing as follows. Metanotum with longer submarginal and median marginal setae, both 0.030–0.035 long, former extending beyond margin of metanotum. Smaller dimensions: temple width, 0.35–0.36; head length, 0.28–0.31; prothorax width, 0.19; metathorax width, 0.24–0.27; abdomen width at V, 0.45–0.51; total length, 0.92.

Female: Also quite similar to *C. flavus*, differing as follows. Larger number of prominent setae on each lateral lobe of subgenital plate, 5–

7 (6.3). Smaller dimensions: temple width, 0.41–0.43 (0.420); head length, 0.33–0.34 (0.338); prothorax width, 0.21–0.22 (0.216); metathorax width, 0.29–0.32 (0.308); abdomen width at V, 0.51–0.54 (0.522); total length, 1.16–1.23 (1.196).

Type host: *Phaps elegans elegans* (Temminck).

Type locality: King Island, Tasmania, Australia.

Specimens deposited: Holotype male, allotype female, and paratypes in The Natural History Museum, London, U.K.

Etymology: This species is named after the specific name of its type host, *P. elegans*.

Material examined: Ex *Phaps elegans*: 3 female paratypes of *C. flavus elegans*, King Island, Tasmania, 20 Feb. 1968, R. Green; 1 male, 1 female, South Australia, 10 Oct. 1977, R. H. Stranger.

Campanulotes durdeni, n. sp.

(Fig. 4)

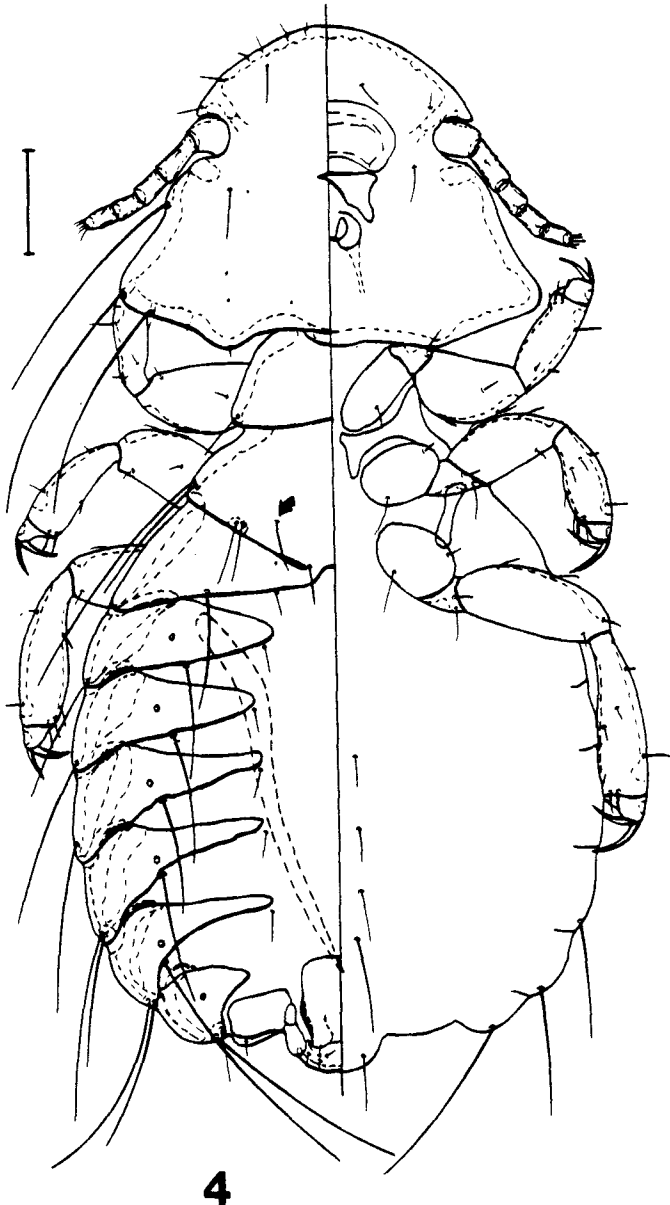


FIGURE 4. *Campanulotes durdeni*. Dorsoventral view of male (arrow: submarginal metanotal seta).

Remarks

Tendeiro (1978) described this as a subspecies on the basis of a series of only a single male and four females. As he had seen no females of the nominate form, his decision must have been based on the single male. The descriptive details Tendeiro (1978) gives for this male are consistent with those of the male we have examined, and dimensions of both are included in the description above. We have studied and compared both sexes of *C. flavus* with those of *C. f. elegans*, although

certainly not in the numbers that we would desire. However, in view of the chaetotaxy and dimensional differences detailed above, we elevate this taxon to specific rank.

Male: Quite similar to *C. flavus*, differing by consistently having much longer submarginal (Fig. 4: arrow) and median marginal metanotal setae, respectively, 0.030–0.055 (0.038) and 0.025–0.040 (0.030) long, with former extending beyond metanotal margin.

Female: Also quite similar to *C. flavus*, inseparable in some cases. Tendency for somewhat larger number of setae on each lateral lobe of subgenital plate, 4–6 (5.4) setae.

Type host: *Ocyphaps lophotes* (Temminck).

Type locality: Adelaide, South Australia.

Specimens deposited: Holotype and 2 paratypes in K. C. Emerson Collection, Oklahoma State University, Stillwater, Oklahoma; remainder of paratypes in The Natural History Museum, London, U.K.

Etymology: This species is named for Lance A. Durden, Georgia Southern University, Statesboro, GA, in recognition of his many contributions to the systematics of lice and other ectoparasites.

Material examined: Ex *Ocyphaps lophotes*: holotype male, Adelaide, South Australia, May 1983, C. Chambers B-37369; 2 female paratypes, same data as holotype; 3 male, 2 female paratypes, S. of Roebourne, N. of W. Australia, 1974, R. H. Stranger, 740809; 1 male, 2 female paratypes, Warrambo, S. Australia, 9 Oct. 1977, R. H. Stranger; 2 female paratypes, Griffith, New South Wales, Australia, 13 Dec. 1964, J. L. McKean; 7 male, 5 female paratypes, Bred in Lilford Aviary, 230.

Remarks

This species is extremely close to both of the foregoing taxa. However, the consistently longer submarginal and median marginal metanotal setae for the male separates it from *C. flavus*, and the larger dimensions for both sexes separate it from *C. elegans*.

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