

A CONTRIBUTION TO *CUCULICOLA* (INSECTA: PHTHIRAPTERA: ISCHNOCERA)^{1,2}

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Abstract: Specimens of *Cuculicola* collected in Bulolo, New Guinea, from *Centropus phasianinus* are described as a new species, *C. vagata*; those collected in the same zoogeographical region from *Centropus bernsteinii*, *Ce. menbeki* and *Ce. violaceus* are also referred to the new species. Collections of *Cuculicola* from *Phaenicophaeus pyrrocephalus* and *P. curvirostris* are included in *C. hardayali*. A key is presented to species of the *C. vagata* species-group.

This is the 4th paper based on chewing lice received from Dr K. C. Emerson of the U. S. National Museum. It contains the description of 1 new species of the genus *Cuculicola* Clay & Meinertzhagen, 1939 from *Centropus phasianinus* (Cuculiformes, Cuculidae). *Cuculicola* off the type-host from other than the type-locality of *C. vagata*, n. sp., from 3 other species of *Centropus* occurring in the same zoogeographical region, and from 2 species of *Phaenicophaeus*, were studied and identified.

Statements made in the 2nd paragraph, 1st page, of Somadder & Tandan 1970a apply here. The following abbreviations have been used to designate the depositories of the material studied: BISHOP, Bishop Museum; BMNH, British Museum (Natural History); EC, Dr K. C. Emerson collection; USNM, National Museum of Natural History, Washington, D. C.

***Cuculicola vagata* Somadder & Tandan, new species** FIG. 1-5

Type-host: *Centropus phasianinus* (Latham).

DIAGNOSIS. This new species is most closely related to 2 other species of *Cuculicola*, *C. philippensis* (known from the male only) and *C. sinensis*, both described by Somadder & Tandan (1970a) from *Centropus*. It is distinguished from both these forms by the described details of the chaetotaxy, the fewer metasternal setae constituting a good singular distinguishing character; males may be distinguished by the details of the components of the mesosomal complex.

Superficially, the new species also resembles *C. hardayali* Somadder & Tandan, described from *Phaenicophaeus tristis*, the type-host being *P. t. longicaudatus*. The position of the thoracic spiniform seta relative to the thoracic trichobothrium (compare present FIG. 1 with

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FIG. 1 in Somadder & Tandan 1970b), together with the characters given above, distinguish *C. vagata* adequately from *C. hardayali*.

KEY TO CUCULICOLA OF VAGATA SPECIES GROUP

♂♂

1. Sterna II-VI with 38-48, \bar{x} 43.8 setae; mesosome as in FIG. 9 in Somadder & Tandan (1970a) **sinensis**
Sterna II-VI with 37 or less setae (\bar{x} below 30); mesosome not as above 2
- 2(1). 2-5 metasternal setae, \bar{x} less than 3; mesosome as in FIG. 5 **vagata**, n. sp.
4-9 metasternal setae, \bar{x} more than 4; mesosome not as above 3
- 3(2). 9 terminal setae; mesosome as in FIG. 12 in Somadder & Tandan (1970a) **philippensis**
10-17 terminal setae; mesosome as in FIG. 10 in Somadder & Tandan (1970b) **hardayali**

♀♀

1. Terga III-VIII with 14-25 setae, \bar{x} below 24; 14-23 spiniform setae in genital region (FIG. 2)
. **vagata**, n. sp.
Terga III-VIII with more than 27 setae, \bar{x} above 30; less than 10 short setae in genital region [FIG. 2 in
Somadder & Tandan (1970b)] 2
- 2(1). Sterna II-VI with 39-51 setae; seta b present on tergum IX-XI, in a lateral notch of the tergite [FIG. 4
in Somadder & Tandan (1970a)] **sinensis**
Sterna II-VI with 24-29 setae; seta b present on tergite IX-XI [FIG. 1 in Somadder & Tandan (1970b)]
. **hardayali**

Description: ♂ and ♀. Pigmentation pattern of specimens faint due to overtreatment with alkali, but they are probably normally moderately to well sclerotized. No overlap in the range of length of the 2 sexes; mean length of ♀ considerably (about 0.35 mm) more than mean length of ♂. General characters, morphology and chaetotaxy as shown in FIG. 1, 2; body measurements as in TABLE 1, 2. Anterior margin of head normally rounded. Extent of emargination produced in the marginal carina by the dorsal preantennal suture not determinable (but in the conspecific form from *Centropus menbeki* the emargination is as in *C. sinensis*). Terminal bulge of last abdominal segment in ♂ wide, with a prominent tergal thickening. In ♀, posterior margin of tergum IX-XI slightly and broadly emarginate. Tergite IX-XI faint, its lateral margins not delineable accurately; in most specimens margins are uninterrupted but in some lateral margins of 1 side or both sides appear to be interrupted as in *C. sinensis*. In the ♂ external genitalia (FIG. 4, 5), the basal apodeme is of almost uniform width but may also be slightly narrowed at about its middle. Paramere of uniform thickness almost up to its tip. Dorsal endomere narrow at about its middle, its 2 arms directed anteriorly. Ventral endomere somewhat U-shaped, diagnostic (FIG. 5); penis and penial arms as in FIG. 5. Head setae shorter than those in *C. sinensis* and *C. philippensis*. Head setae deserving mention: anterior seta 3 well on dorsal surface; ocular seta on cornea, short to long; marginal temporal seta 2 long, 4 very long. The spiniform marginal temporal seta 3, normally present at about the middle of marginal temporal setae 2 and 4, shows an anterior shift in about 20% of specimens. (In *C. philippensis* the anterior shift is slightly greater and occurs in about 30% of specimens. In *C. hardayali* this seta occurs in its normal position in only about 30% of specimens and its anterior shift in the remaining 70% or so is greater than in *C. philippensis*, with the seta frequently becoming even anterior to marginal temporal seta 2, but the alveoli of the 2 setae always remain contiguous.) Thoracic spiniform seta outside of and usually very slightly anterior to the thoracic trichobothrium (FIG. 1); the same condition occurs in *C. sinensis* and *C. philippensis*.

Chaetotaxy. Marginal pteronotal setae: ♂ (10), 4 + 4 (as arranged in FIG. 1) (7), 3 + 4 (2), 5 + 4 (1); ♀ (10), 4 + 4 (9), 3 + 4 (1). Mesosternal setae: ♂ and ♀ 2 (19), 3 (1). Metasternal setae: 2-4, \bar{x} 2.85 (20) in both sexes, the number being considerably smaller than in *C. philippensis* [♂ 6 (2), ♀ unknown], *C. sinensis* [6-10, ♂ \bar{x} 7.9 (10), ♀ \bar{x} 8.4

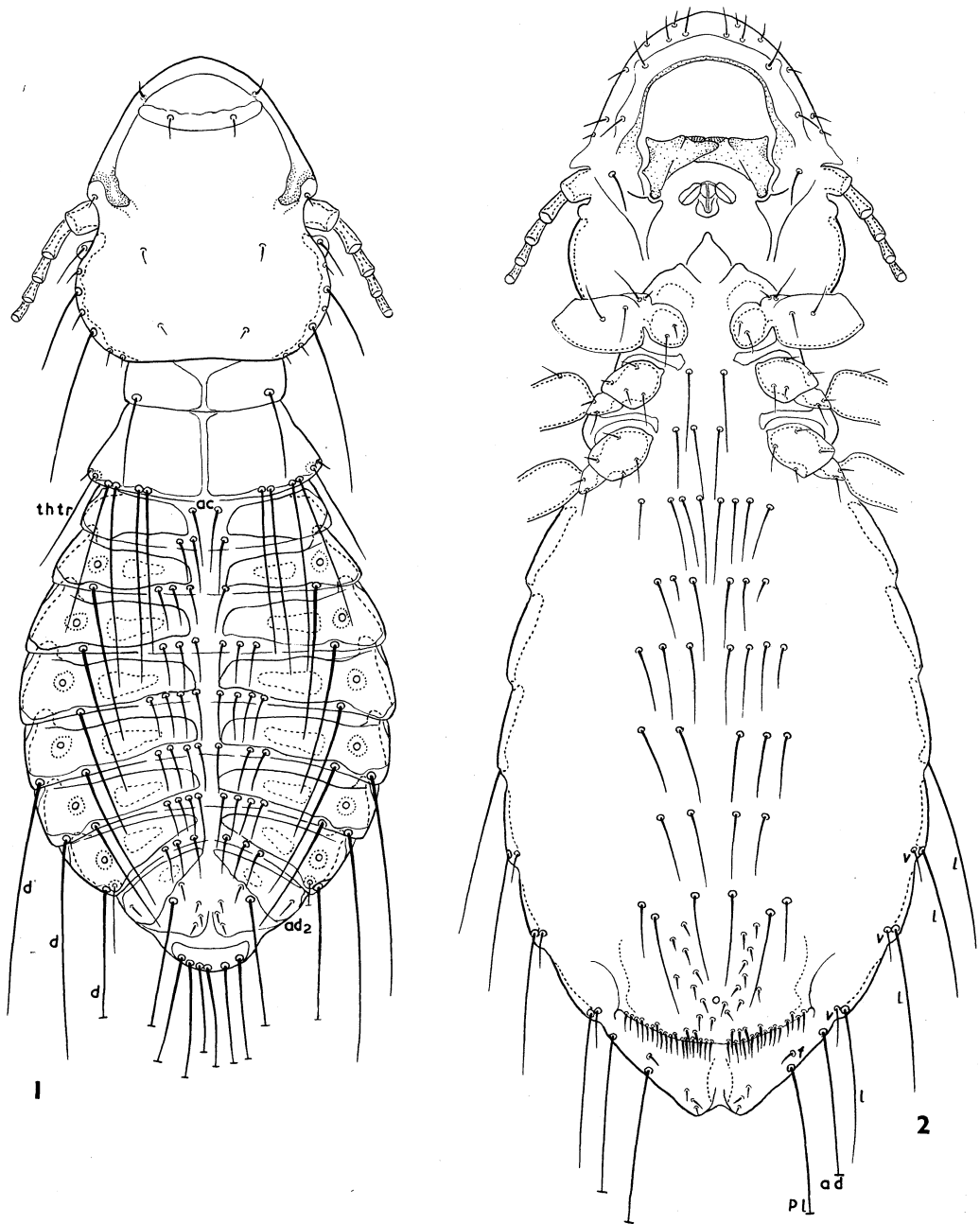


FIG. 1-2. *Cuculicola vagata*, n. sp. from the type-host: 1, ♂, dorsal; 2, ♀, ventral. d, l and v represent dorsal lateral and ventral pleural setae; ac, antero-central setae; th tr, thoracic trichobothrium.

(10)] and *C. hardayali* [♂ 5-9, \bar{x} 6.5 (10), ♀ 6-8, \bar{x} 6.5 (9)]. *Abdominal chaetotaxy*. For convenience certain tergal and sternal setae and all pleural setae have been named (FIG. 1, 2, 3). Tergal setae: ♂ (10); II, 2 anterocentral. Marginal: II, 2-4; III, 4-7; IV, 4-6; V, 5-8; VI, VII, 6-8; VIII, 4-8, \bar{x} 6.2; total of III-VIII, 32-41, \bar{x} 37.3; IX + X, seta a absent; b, 1 + 1; b₁, each side 1-2, \bar{x} 1.05 (20 sides), total 2-3, medium to long; terminal setae 4-9, \bar{x} 6.25 (20), thick, very long, all marginal, none dorsal. ♀ (10); II, 2 anterocentral. Marginal: II, 2; III, 2-4; IV, 3-4; V, VI, 2-4; VII, 2 (20); VIII, 2 (20); total of III-VIII, 14-19, \bar{x} 17; IX-XI, seta a, absent; b, 1 + 1, normally present on tergite, as in *C. hardayali*. Pleural setae: ♂ (10); II, III, absent; IV, 0 (8), 0 + 1 (2) as seta referred to as l present on 1 side; V, 1 + 1 (8) (seta 1), 1 + 2 (1), 2 + 2 (1) as seta referred to as v newly added on 1 or both sides; VI, 3 + 3 (6) (1 + 1 setae 1, 1 + 1 setae v and 1 + 1 setae referred to as d newly added), 2 + 3 (3), 2 + 2 (1); seta v on VI, 0.032-0.070 mm, \bar{x} 0.053 (10 setae) long, its tip either falls short of or reaches to spiracle of VII; VII, 3 + 3 (8), 2 + 3 (2); on VI and VII variation is due to absence of seta v on 1 or both sides; VIII, 3 + 3 (10). Seta ad, 1 + 1 (9), 1 + 0 (1); ad₂, 1 + 1 (6), 1 + 0 (3), 0 (1); pd and pl setae absent (present in ♀ only). ♀ (10); II, III, absent; IV, 0 (9), 1 + 0 (1); V, 1 + 1 (9), 1 + 2 (1); variation on IV and V is due to the same setae as in ♂; VI, 3 + 3 (7), 2 + 2 (2), 3 + 2 (1) due to absence of seta 1 on 1 or both sides; seta v on VI, 0.038-0.070 mm, \bar{x} 0.058 (10 setae) long, its other features as in ♂; VII, VIII, 3 + 3 (10). Seta ad, 1 + 1; ad₂, 1 + 1 (4), 0 + 1 (5), 0 (1); pd, 1 + 1 (9), 1 + 0 (1); pl, 1 + 1 (8), 1 + 0 (2); seta pd dorsal, rather removed from pl seta. Sternal setae: ♂ (10); II, 4-9, \bar{x} 7.2; III, 5-9, \bar{x} 6.6; IV, 4-8, \bar{x} 5.8; V, 4-6, \bar{x} 5.6; VI, 4-6, \bar{x} 4.4; total of II-VI, 25-34, \bar{x} 29.6; VII, 2 central + 1 lateral (4), 2 + 2 (1), 2 + 0 (5); seta e, 1 + 1; e₁ absent. ♀ (10); II, 6-9, \bar{x} 7.7; III, IV, 6-8, \bar{x} 6.8; V, 5-7, \bar{x} 5.8; VI, 4-5, \bar{x} 4.4; total of II-VI, 27-34, \bar{x} 31.6; VII, 4-5, \bar{x} 4.4, of these 2 are central and 2-3 lateral (lateral setae are fewer than in *C. hardayali* and *C. sinensis*); setae in genital region, each side 6-12, \bar{x} 9.55 (20 sides), total 14-23, spiniform; vulval marginal, 26-42, \bar{x} 35.1, spiniform. Occasionally the outer seta on 1 or both sides on sterna II-IV of both sexes is exceptionally shorter.

The number and proportions of certain setae differ from those in *C. hardayali*, *C. philippensis* (known from ♂ only) and *C. sinensis*. In the ♂, b₁ and terminal setae are fewer in number, as also are those on terga III-VIII in both sexes. [*C. hardayali*: ♂; (i) b₁ each side 1-6, \bar{x} 2.2 (20 sides), total 2-9 (10); (ii) terminal setae 11-17, \bar{x} 13.4 (10); (iii) terga

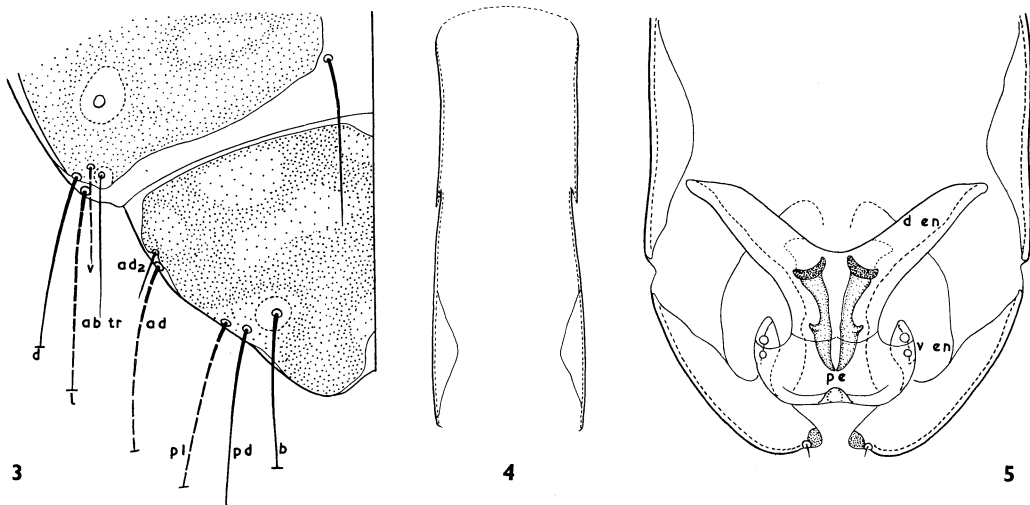


FIG. 3-5. *Cuculicola vagata*, n. sp. from the type-host: 3, ♀ terminalia, dorsal 1/2. 4-5, external ♂ genitalia: (4) basal apodeme; (5) parameres and mesosome. d, l and v represent dorsal, lateral and ventral pleural setae; ab tr, abdominal trichobothrium; d en and v en, dorsal and ventral endomeres; pe, penis.

TABLE 1. Measurements in mm of the ♂♂ of *Cuculicola vagata* taken from different species of *Centropus*.

			HOSTS			
			<i>Centropus phasianinus</i>			<i>Centropus menbeki</i>
			(10) Bulolo	(7) Tegona	(3) Cape Killerton & Jumbora	(12)
Total	Length	Range	1.57-1.69	1.59-1.73	1.65-1.69	1.60-1.78
		Mean	1.61	1.69	1.67	1.66
Head	Index	Range	0.87-0.92	0.86-0.91	0.85-0.92	0.86-0.95
		Mean	0.89	0.89	0.88	0.89
	Length	Range	0.48-0.53	0.55-0.57	0.55-0.56	0.53-0.59
		Mean	0.51	0.56	0.556	0.55
	Breadth*	Range	0.40-0.43	0.44-0.47	0.43-0.46	0.44-0.49
		Mean	0.42	0.46	0.44	0.46
	Breadth**	Range	0.44-0.47	0.48-0.51	0.48-0.51	0.48-0.53
		Mean	0.46	0.50	0.49	0.50
Pro-thorax	Length	Range	0.09-0.12	0.09-0.12	0.10-0.11	0.08-0.12
		Mean	0.10	0.10	0.103	0.10
	Breadth	Range	0.31-0.34	0.32-0.35	0.34	0.33-0.36
		Mean	0.32	0.34	0.34	0.35
Ptero-thorax	Length	Range	0.14-0.16	0.14-0.17	0.14-0.16	0.13-0.18
		Mean	0.15	0.15	0.15	0.16
	Breadth	Range	0.42-0.44	0.44-0.48	0.44-0.46	0.46-0.51
		Mean	0.43	0.46	0.45	0.49
Abdomen	Length	Range	0.83-0.90	0.78-0.91	0.85-0.87	0.81-0.95
		Mean	0.85	0.87	0.86	0.86
	Breadth	Range	0.66-0.69	0.70-0.78	0.72-0.74	0.66-0.75
		Mean	0.67	0.74	0.73	0.70

*Breadth at level of preantennal setae.

**Breadth across temples.

III-VIII, 40-50, \bar{x} 42.8 (10); (iv) ♀ terga III-VIII, 28-35, \bar{x} 31.1 (10)] [*C. sinensis*: ♂; (i) b_1 , each side 1-4, \bar{x} 2.45 (20 sides), total 4-6 (10); (ii) terminal setae, 10-23, \bar{x} 14.9 (10); (iii) terga III-VIII, 49-66, \bar{x} 59.4 (10); (iv) ♀ terga III-VIII, 28-43, \bar{x} 37.8 (10)] [*C. philippensis*: ♂; (i) b_1 each side 2-3, \bar{x} 2.5 (4 sides), total 5 (2); (ii) terminal setae 9 (2); (iii) terga III-VIII, 56 (1), 59 (1).] Further, the tergal setae, especially b_1 , are stouter in ♂.

In both sexes of *C. vagata*, pleural seta v on segments VI-VIII and seta ad_2 , being normally spiniform, occasionally of medium length (range spiniform to medium), are considerably shorter than in the other species (FIG. 2). Length in mm of pleural seta v on segment VI: *C. hardayali*: ♂, 0.067-0.256, \bar{x} 0.207 (13 setae); ♀, 0.106-0.250, \bar{x} 0.196 (16 setae); *C. sinensis*: ♂, 0.195-0.259, \bar{x} 0.246 (4 setae); ♀, 0.202-0.269, \bar{x} 0.245 (4 setae); *C. philippensis*: ♂, 0.218, 0.243 (1 seta each).

The total number of setae on sterna II-VI of both sexes is slightly greater than in *C. hardayali* [♂, 23-29, \bar{x} 26.2 (10); ♀, 24-29, \bar{x} 26.3 (10)] and smaller than in *C. sinensis* [♂, 38-48, \bar{x} 43.8 (10); ♀, 39-51, \bar{x} 43.4 (10)]. In the 2 ♂♂ of *C. philippensis* (30, 31) the total number falls within the range of the new species. The setae in the ♀ genital region are stouter and greater in number than in *C. hardayali* [each side 1-4, \bar{x} 2.5 (20 sides), total 3-6

(10)] and *C. sinensis* [each side 1-3, \bar{x} 1.64 (20 sides), total 2-5 (10)]. Vulval marginal setae, especially the central ones, are significantly shorter than in the ♀♀ of both these species, their number also being greater than in *C. hardayali* [25-34, \bar{x} 30 (10)] but about the same as in *C. sinensis* [31-43, \bar{x} 35.3 (10)].

Holotype ♂ (BISHOP 11, 248), from *Centropus phasianinus* (Latham), BBM-NG 56252, PNG: New Guinea (NE): Bulolo, 29.I.1962, J. Sedlacek. Paratypes: 73 ♂♂, 73 ♀♀, all data as given for holotype (BISHOP, BMNH, EC, USNM).

In addition to the series from *Centropus phasianinus* collected in Bulolo, NE New Guinea, on which the description of *C. vagata* is based, additional *Cuculicola* specimens are available from the type-host from Tegona, Cape Killerton and Jumbora (SE New Guinea) and also from 3 other species of *Centropus*: *Ce. menbeki* Lesson & Garnot (from New Guinea, loc. unknown), *Ce. bernsteinii* Schlegel (from Bulolo, NE New Guinea), and *Ce. violaceus* Quoy & Gaimard (from New Ireland and New Britain). A critical comparison has shown these *Cuculicola* specimens to resemble *C. vagata* from the type-host rather closely, but certain differences have also emerged. The resemblances are in the general habitus, shape and chaetotaxy of the head, thorax and abdomen, more especially in the position of the thoracic spiniform seta relative to the thoracic trichobothrium, and in the components of external male genitalia. The magnitude of difference from *C. vagata* exhibited by these *Cuculicola* specimens varies with host species and locality. Since material of *Cuculicola* from *Ce. menbeki* shows the least and that from *Ce. violaceus* shows the greatest difference from *C. vagata*, the former is the first and the latter the last to be considered in the following discussion.

Cuculicola from *Ce. menbeki* shows the following differences from *C. vagata* from the type-host: both sexes are slightly larger in size (TABLE 1, 2). In the ♂, tergal thickening of the bulge of the last abdominal segment is longer, the number of setae on terga III-VIII [29-33, \bar{x} 31.4 (10)] is smaller but that of seta b_1 [each side 1-3, \bar{x} 1.65 (20 sides), total 2-5 (10)], of terminal setae [7-9, \bar{x} 8.1 (10)] and of metasternal setae [2-4, \bar{x} 3.4 (10)] and setae on sterna II-VI [27-35, \bar{x} 30.8 (10)] tends to be or is slightly greater. In the ♀ the number of setae on terga III-VIII [16-21, \bar{x} 18.5 (5)], on the metasternum [4-5, \bar{x} 4.75 (4)], on sterna II-VI [32-36, \bar{x} 33.2 (5)], and on the margin of vulva [33-44, \bar{x} 39 (6)] is slightly greater; the difference in the metasternal chaetotaxy is considerable. Probably the most important difference concerns the pleural chaetotaxy, as a greater percentage of these specimens normally have 1 pleural seta each side on IV and more than 1 on V. ♂: IV, 1 + 1 (4), 1 + 2 (1), 1 + 0 (4), 0 (3); V, 1 + 1 (4), 1 + 2 (6), 2 + 2 (1), 3 + 1 (1). ♀: IV, 1 + 1 (1), 1 + 0 (3), 0 (2); V, 1 + 1 (2), 2 + 2 (2), 1 + 2 (2). It has not been possible to reliably separate these specimens from the type population of *C. vagata* on the basis of these differences.

One *Cuculicola* ♀ from *Ce. bernsteinii* agrees with *C. vagata* from the type-host in its chaetotaxy and measurements, but the abdomen is slightly shorter (0.88 mm) and wider (0.78 mm). The specimen was overtreated with alkali and the sclerites could not be examined satisfactorily. This specimen has been identified as *C. vagata*.

TABLE 2. Measurements in mm of the ♀♀ of *Cuculicola vagata* taken from different species of *Centropus*.

		HOSTS				
		<i>Centropus phasianinus</i>		<i>Centropus menbeki</i>	<i>Centropus violaceus</i>	
		(10) Bulolo	(6) Tegona	(6)	(5)	
Total	Length	Range	1.72-2.07	1.91-2.05	1.86-2.05	1.89-2.24
		Mean	1.94	2.02	1.96	2.08
Head	Index	Range	0.88-0.93	0.89-0.93	0.89-0.95	0.89-0.91
		Mean	0.90	0.91	0.92	0.90
	Length	Range	0.52-0.56	0.59-0.61	0.59-0.61	0.60-0.64
		Mean	0.54	0.60	0.60	0.61
	Breadth*	Range	0.44-0.47	0.48-0.51	0.48-0.51	0.48-0.52
		Mean	0.45	0.49	0.49	0.50
	Breadth**	Range	0.48-0.52	0.52-0.56	0.53-0.57	0.53-0.59
		Mean	0.49	0.54	0.55	0.56
Pro-thorax	Length	Range	0.07-0.10	0.09-0.12	0.10-0.12	0.11-0.13
		Mean	0.09	0.10	0.11	0.12
	Breadth	Range	0.32-0.36	0.36-0.38	0.35-0.39	0.35-0.40
		Mean	0.34	0.37	0.37	0.38
Ptero-thorax	Length	Range	0.14-0.18	0.16-0.17	0.16-0.17	0.13-0.19
		Mean	0.16	0.166	0.166	0.16
	Breadth	Range	0.46-0.51	0.49-0.52	0.51-0.53	0.49-0.55
		Mean	0.47	0.51	0.52	0.53
Abdomen	Length	Range	0.91-1.22	1.07-1.18	0.99-1.17	1.04-1.30
		Mean	1.13	1.16	1.09	1.18
	Breadth	Range	0.70-0.88	0.81-0.88	0.75-0.85	0.72-0.92
		Mean	0.78	0.85	0.80	0.85

*Breadth at level of preantennal setae.

**Breadth across temples.

The *Cuculicola* specimens collected from *Ce. phasianinus* from Tegona show the following differences from the type series of *C. vagata*. In both sexes the body measurements are slightly larger (TABLE 1, 2) and the number of setae on certain parts of the body is somewhat greater. The setae in the ♂ are as follows: b₁, each side 1-3, \bar{x} 2.21 (14 sides), total 2-6 (7) (on 1 side this seta may occasionally occur laterad to seta b also, unlike typical *C. vagata*); terminal setae, 8-10, \bar{x} 9.57 (7); and setae on sternum VII, which are always 2 central + 2 lateral (5). Setae in the ♀: on terga III-VIII, 21-25, \bar{x} 23 (5) and in the genital region, each side 9-15, \bar{x} 11 (12 sides), total 19-28 (6). The difference in the tergal chaetotaxy of the ♀ is due mainly to a greater number of setae on the posterior terga: total number on terga III-V, 12-13, \bar{x} 12.4 (5) [*C. vagata* types 8-12, \bar{x} 10.5 (10)] and on terga VI-VIII, 9-12, \bar{x} 10.6 (5) [*C. vagata* 6-8, \bar{x} 6.8 (10)]; VIII, 2-4, \bar{x} 2.8 (5) [*C. vagata* 2 (20)]. While the ♀ of this form can be separated from the ♀ of typical *C. vagata* by the tergal chaetotaxy, as both the range and average number of setae are greater, a separation of the ♂ from that of *C. vagata* is not possible.

The *Cuculicola* specimens available from *Ce. phasianinus* from Cape Killerton and Jumbora are somewhat intermediate in their measurements (TABLE 1) and characters between typical *C. vagata* from Bulolo and congeneric specimens from Tegona. Setae in-

intermediate in number in the ♂ are seta b_1 [\bar{x} 1.66 (6 sides), total 2-5], terminal setae [6-9, \bar{x} 8 (3)], setae on sternum VII, 0-1 lateral + 2 central. Setae in the ♀ are on terga III-VIII [18-21, \bar{x} 19 (3)].

The ♀♀ from *Ce. violaceus* (♂♂ not available) differ from typical *C. vagata* in being slightly larger in size (TABLE 2) and in having a greater number of setae on the metasternum [4-5, \bar{x} 4.25 (4)], on terga III-VIII [22-25, \bar{x} 22.75 (4), on VIII 2-3, \bar{x} 2.2 (5)], on sternum II-VI [33-41, \bar{x} 38 (4)] and on vulval margin [28-47, \bar{x} 39.8 (5)]. The vulval marginal setae tend to be slightly longer, the central ones even more so. In 1 ♀ the shape of the terminalia is somewhat as in *C. sinensis*, but tergite IX-XI and position of seta b resemble those of *C. vagata*. These ♀♀ are separable from *C. vagata* ♀♀ by the tergal chaetotaxy, as both the range and average number of setae are greater. But neither this nor any other character separated them from the ♀♀ collected from *Ce. phasianinus* in Tegona.

As discussed above, specimens of *Cuculicola* off *Ce. menbeki* ("New Guinea") off *Ce. bernsteinii* (Bulolo), and off *Ce. phasianinus* (Cape Killerton and Jumbora) cannot be reliably separated taxonomically from the type series of *C. vagata*. Specimens off *Ce. phasianinus* from Tegona are distinguishable from the type population only in the female, which nonetheless bears considerable resemblance to the typical female of *C. vagata*. Material off *Ce. violaceus* (New Ireland and New Britain) can be distinguished in the female (males not available) from the typical form, but is identical to the form off *Ce. phasianinus* from Tegona. All of the above material is thus, for the present, referred to *C. vagata*, but is excluded from the type series. Complete collection data for this material follows.

14 ♂♂ (2 dissected), 7 ♀♀ (1 teneral) from a skin of *Centropus menbeki*, NEW GUINEA: (no other data), R. Meinertzhagen, 13386 (BMNH). 1 ♀ from *Centropus bernsteinii*, (Cat. No 43516, Univ. Kansas Mus. Nat. History), PNG: New Guinea (NE): Bulolo, 29.I.1962, J. Sedlacek (BISHOP). From *Centropus phasianinus*: 8 ♂♂, 6 ♀♀, BBM-NG 50489, PNG: New Guinea (SE): Tegona, 5.IV.1964, H. Clissold (EC, BISHOP); 2 ♂♂, 1 ♀, BBM-NG 29239, Cape Killerton, 18.X.1963, H. Clissold (BISHOP); 1 ♂, 2 ♀♀, BBM-NG 28749, 29706, Jumbora, 16,27.IX.1963, H. Clissold (EC, BISHOP). From *Centropus violaceus*: 4 ♀♀, PNG: New Ireland: (no other data), R. Meinertzhagen, 13429 (BMNH); 1 ♀, BBM-NG 20714, PNG: New Britain: Riaet, 2.XI.1962, H. Clissold (BISHOP).

REMARKS. The new taxon *Cuculicola vagata* and 3 previously known species, *C. sinensis*, *C. philippensis* and *C. hardayali*, with which *C. vagata* has been compared, have several characters in common which distinguish all 4 taxa from *C. latirostris* (Burmeister, 1838) and species related to the latter. These characters are (1) usually well sclerotized species with contours of sclerites, especially tergites, distinct; (2) head width across temples more than 0.40 mm in the ♂, 0.43 mm in the ♀; (3) dorsal cuticle anterior to the preantennal suture feebly sculptured; (4) pro- and pteronotum completely divided and the latter without a postnotum; (5) tergal thickening of abdominal segment VIII in both sexes and of IX + X in the ♂ in the form of lateral tergites (FIG. 1); (6) tergum II usually with 2 anterior central setae

in both sexes and IX + X in the ♂ with 1-6 setae each side (total 2-9), usually inner to seta b (b₁, in FIG. 1); (7) dorsal setae on terminal bulge of the abdomen in the ♂ slightly to moderately shorter and finer than the thick and very long marginal setae; (8) pleural setae: IV absent, as seta l normally absent, V 1 + 1 but the number may be 2 + 1 or 2 + 2 also due to the presence of seta v, VI-VIII 3 + 3 as seta v normally 1 + 1 (FIG. 2); on VIII the position of setae l and v relative to seta d as in FIG. 3; seta d on VI and VII well on dorsal surface; (9) in the ♀ seta pd dorsal or submarginal and pl almost at the same level or slightly anterior relative to it (FIG. 3); (10) no setae present inner to pd and pl setae in both sexes; (11) vulval marginal setae 25-43 in number, short to medium and spiniform, the central being slightly longer than the lateral ones (FIG. 2); seta f in the genital region spiniform and stout, well anterior and lateral relative to seta b; (12) anal setae spiniform, of almost identical proportions; (13) basal apodeme of uniform width or slightly narrower anteriorly. The outer edges of the basal apodeme and paramere have a distinct articulation at about the level of the middle of the mesosome. The endomeral complex is broad posteriorly and considerably covered over by the parameres posterolaterally. On each lateral tip of the ventral endomere, 2-3 sensilla each side (total 4-6) are present. The penial complex is diagnostic and joined with the basal apodeme.

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Since the description of *C. hardayali* from its type host, *Phaenicophaeus tristis longicaudatus* Blyth, *Cuculicola* specimens have been examined from *Phaenicophaeus pyrrocephalus* and *P. curvirostris*. The specimens from *P. pyrrocephalus* resemble *C. hardayali* from the type-host closely, but they show the following differences. In both sexes, the shape of the frons is intermediate between that in typical *C. hardayali* and *Cuculicola* from *P. curvirostris* discussed in the next paragraph. In the single male specimen, the mesosomal complex seems to be slightly smaller, and in the females the posterior margin of the abdomen is slightly but narrowly emarginate. Since these differences are inadequate for separating the specimens from *C. hardayali*, with which their resemblances are overwhelming, *Cuculicola* from this host has been referred to *C. hardayali*.

The specimens from *P. curvirostris* also resemble *C. hardayali* from the type-host closely, while they differ from the latter as follows. In both sexes the shape of the frons has an incipient median point; marginal temporal seta 2 (long to very long) and ventral submarginals (medium) are both slightly shorter, and the number of setae on terga III-VIII [total, ♂ 44-57, \bar{x} 50.33 (3), ♀ 35-40, \bar{x} 37.5 (2)] is slightly greater. In the ♂, the range and average of metasternal setae [4-6, \bar{x} 4.66 (3)] are slightly smaller, and the mesosomal complex seems to be slightly smaller in length. In the ♀, the range and average of vulval marginal setae [33-35, \bar{x} 33.66 (3)] are slightly greater. Since the enumerated differences are small and ranges for the above mentioned setae overlap with those of typical *C. hardayali*, it is not possible to use the differences for separating the specimens off *P. curvirostris* from those off the type host; thus this material is included in the concept of *C. hardayali*.

MATERIAL EXAMINED. 1 ♂, 3 ♀♀, slide no. PJ 9223, from *Phaenicophaeus pyrrhocephalus* (Pennant), BORNEO I: Sabah: Ranau, 16.IX.1960, collector unknown (EC, USNM). 3 ♂♂, 3 ♀♀, BBM-PI 761 & 1030, from *Phaenicophaeus curvirostris* (Shaw), PHILIPPINE IS: Palawan: Brookes Point, 30.III.1962, 2.IV.1962, Max Thompson (BISHOP, EC).

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