

*Nouv. Rev. Ent.*, XIII, 3, 1983, p. 337-343.

**A NEW SPECIES OF MENACANTHUS NEUMANN, 1912  
(MALLOPHAGA : MENOPONIDAE) FROM THE PARTRIDGE**

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ANALYSE

L'espèce nouvelle *Menacanthus lyali* est décrit d'après les exemplaires recueillis sur *Alectoris rufa* (L.). Nous avons aussi donnés les caractéristiques qui permettent de la distinguer des autres espèces voisines.

*Menacanthus lyali* sp. nov., is described and illustrated from specimens collected of *Alectoris rufa* (L.). Characters which distinguish it from related taxa are given.



INTRODUCTION

Continuing the study of the genus *Menacanthus* NEUMANN 1912 (JIMENEZ-GONZALEZ & RODRIGUEZ-CAABEIRO, in press) we have made a revision upon the know species of this genus from the Galliformes, based mainly on material obtained on loan from the British Museum. The study reveals that the species parasitizing *A. rufa* and *A. barbara* differs strikingly from the other species.

Names given to head setae are according to the terminology proposed by CLAY (1969). Measurements have been corrected to two decimal plates.

MATERIALS AND METHODS

The preparation and mouting of lice was according to the method of JIMENEZ-GONZALEZ, RODRIGUEZ-CAABEIRO & MARTIN-MATEO (1980).

RESULTS DESCRIPTION

***Menacanthus lyali*, sp. nov.**

Type host : *Alectoris rufa* (L.).

Male. — Head with preocular slit. Occipital setae 21 and 22 long, extending across prothorax, seta 23 shorter, with alveoli of all 3 essentially in straight line each side. Seta 24 long and seta 25 very short and fine. Marginal temple seta 26, although as fine as 25, is approximately twice as long, alveoli of marginal temple setae 26 and 27 closely associated. Seta 27 very long and large. Seta 28 similar

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and seta 29 to 27. Seta 30 medium. Preocular setae 10 and 11 medium. Sensillum «c» present and associated with seta 15 long and large. Dorsal seta shorter. Seta 14 and 15 with alveoli very close. Dorsal head seta 16 anterior setae 14 and 15, no evidence of sensillum «d». Middorsal setae 17 and 18 late, 18 being half the length of 17. Ocular setae 19 and 20 longer. Sensilla «a» and «b» present, associated seta 9. No evidence of sensillum «e». 1 subocular seta and 2 anterior subocular setae, followed by the subocular comb row. Postmental setae. Gular plate slightly sclerotized with 4 + 4 setae long. Palpal process short and sharp-pointed, not extending into gular area. Antenna scape short and slightly expanded pedicel with 4 fine setae, the first segment of the flagellum is pedunculate and the second segment is globose with setae which arise from a slight indentation. The two sensilla are close together and not associated with the 3 setae of the indentation. The maxillary palp 4-segmented. Hypopharynx as in Fig. 2-C. The transverse carina of the pronotum is apparent with 2 + 2 setae, outer central pronotal seta 1 stronger longer than inner seta 2. Pronotal margin with 12 long and 4 short setae. Mesonotum is a well pigmented oblong sclerite. Prosternal plate moderately developed. 1 + 1 small central prosternal setae and 1 + 1 very fine lateral prosternal setae. Mesothorax with a definite mesonotal plate, 2 + 2 anterior mesonotal setae. Mesosternal plate with 4 central setae and 8 marginal longer setae. Metanotum with a well defined lateral suture on each side, with 2 spine-like marginal setae and 1 + 1 central setae. Posterior margin of metanotum with 5 setae and 1 spine-like seta on each side. Metapleurites with 1 long and 1 short setae each outside angle. Mesosternal plate hexagonal and little sclerotized with 8 setae. Coxa I having an anterior prolongation, femur III with sparse brush of setae, tibia II and III with spine-like setae near the tarsal junction. Tarsus I oval. There are six spiracle-bearing segments (III-VIII). Abdominal segments approximately of equal lengths, undivided, with very long postspiracular setae and without anterior setae. Tergal setae: I 16 (15-16), II 16 (16-17), III 13 (13-15), IV 13 (13-15), V 14 (13-18), VI 14 (13-15), VII 14 (12-15), VIII 11 (10-11). Pleurites without prolonged ventroposterior corners or internal thickenings with a row of generally short heavy marginal setae and occasional short anterior setae. Tergal setae: I 3 (2-3), II 5 (4-6), III 6-7 (6-8), IV 6-7 (6-8), V 6 (3-7), VI 3-4 (3-6), VII 2 (2-3), VIII 3 (2-3). Sternites II-IX with centralsternal setae in 2 rows and sternite VIII and IX fused. Sternal setae: I 2 (2-3), II 20 (14-23), III 27 (20-31), IV 27 (28-37), V 33 (27-35), VI 23 (22-28), VII 17 (15-20). Male terminalia as in Fig. 2-A. Genitalia (Fig. 2-B) with parameres (0,19 × 0,02 mm.) narrow and distally flexed outwards, fine endomeres (0,08 mm.), long and well sclerotized, genital sclerite «V» shaped.

Female. — General characters of head and thorax as in male (Fig. 1). Abdomen bearing as follows: Tergites each with two transverse rows of setae. Tergal setae: I 17 (17-19), II 22 (22-26), III 30 (30-31), IV 32 (32-33), V 26 (26-28), VI 26 (23-27), VII 27 (26-27). Pleurites with row of setae as long as the tergal setae. Pleurites each with 1 row of medium sized marginal setae and spine-like anterior setae sparse in the middle region. Pleural setae: I 4-6 (4-6), II 11-12 (11-12), III 13-14 (13-14), IV 12 (12-14), V 10 (10-13), VI 9-10 (9-10), VII 5 (5-9), VIII 4 (4-6). Sternal setae: I 2 (2-4), II 26 (23-28), III 52 (45-57), IV 64 (52-70), V 70 (70), VI 50 (46-55), VII 42 (37-48), VIII 21 (20-21). Subgenital plate separate on sternite VII, with total of 21 (15-21) setae. Ventral pre-anal sclerites as in Fig. 1. Anus essentially oval.

Body measurements of holotype and allotype given in Table I.

TABLE I. — Measurements in mm. of *Menacanthus lyali* sp. nov.

	Holotype	Allotype
head length	0,37	0,41
preocular width	0,50	0,57
temple width	0,60	0,73
prothorax width	0,44	0,58
metathorax width	0,52	0,72
abdomen length	1,15	1,61
abdomen width	0,78	1,21
total length	1,96	2,58
cefalic index	1,62	1,77
corporal index	0,40	0,47

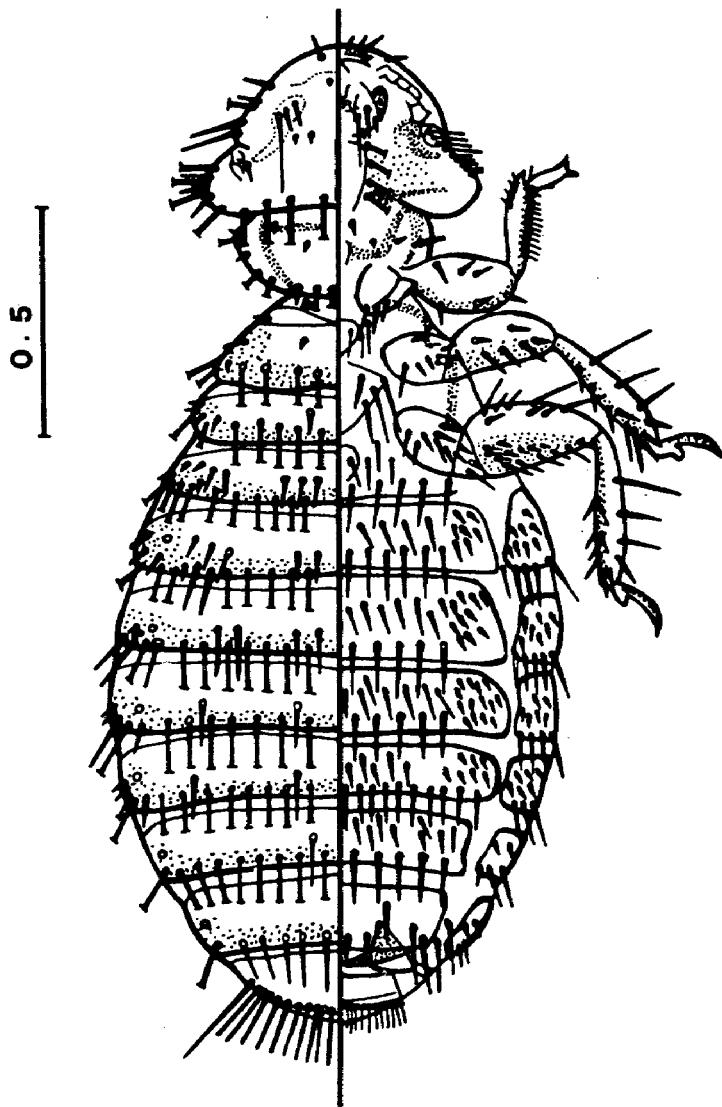


FIG. 1. — *M. lyali*, female.

Key to the species of *Menacanthus* from Galliformes :

1. Hypopharynx fully developed.  
Pleurites with internal thickenings well developed. . . . . *M. pallidulus*
- Hypopharynx reduced.  
Pleurites without internal thickenings . . . . . 2
2. Abdominal tergite of male with 1 row of setae.  
Antenna with the second segment globose, the two sensilla are close together and not associated with the 3 setae of the indentation . . . . . 3
- Abdominal tergite of male with more than 1 row of setae.  
Antenna with two sensilla, the proximal is nearby with three setae which arise from a slight indentation . . . . . 4
3. Cephalic index of male more than 1,8 and cephalic index of female more than 1,9.  
Breadth abdomen/length abdomen of male more than 0,79 . . . . .  
. . . . . *M. abdominalis*
- Cephalic index of male less than 1,7 and cephalic index of female less than 1,9.  
Breadth abdomen/length abdomen of male less than 0,73. *M. lyali*
4. Length more than 2,9 mm.  
Parameres shorter than mesosome . . . . . *M. stramineus*
- Length less than 2,1 mm.  
Parameres longer than mesosome . . . . . 5
5. The second segment of flagellum globose.  
Cephalic index of male more than 1,6.  
Postpalpal process as in Fig. 2-D . . . . . *M. numidae*
- The second segment of flagellum elongated.  
Cephalic index of male less than 1,6.  
Postpalpal process as in Fig. 2-E . . . . . *M. cornutus*

Material examined : Holotype male and allotype female from *Alectoris rufa* (L.) from Fuente de Cantos (Badajoz) and Guadalcanal Sevilla) respectively, Spain ; Department of Parasitology, Faculty of Pharmacy, University of Alcalá de Henares collection, slides No. 149-1013 and 168-1236. Paratypes : 18 males and 22 females from the same host Fuente de Cantos (Badajoz), Guadalcanal (Sevilla) and Venta de los Santos (Jaén), Department of Parasitology, Faculty of Pharmacy, University of Alcalá de Henares, collection. 2 males (1 dissected) and 7 females from *Alectoris barbara* (Bonaterre) from Morocco, British Museum (Natural History), collection.

The species is named in honour of Dr. Christopher LYAL, of the Department of Entomology, British Museum.

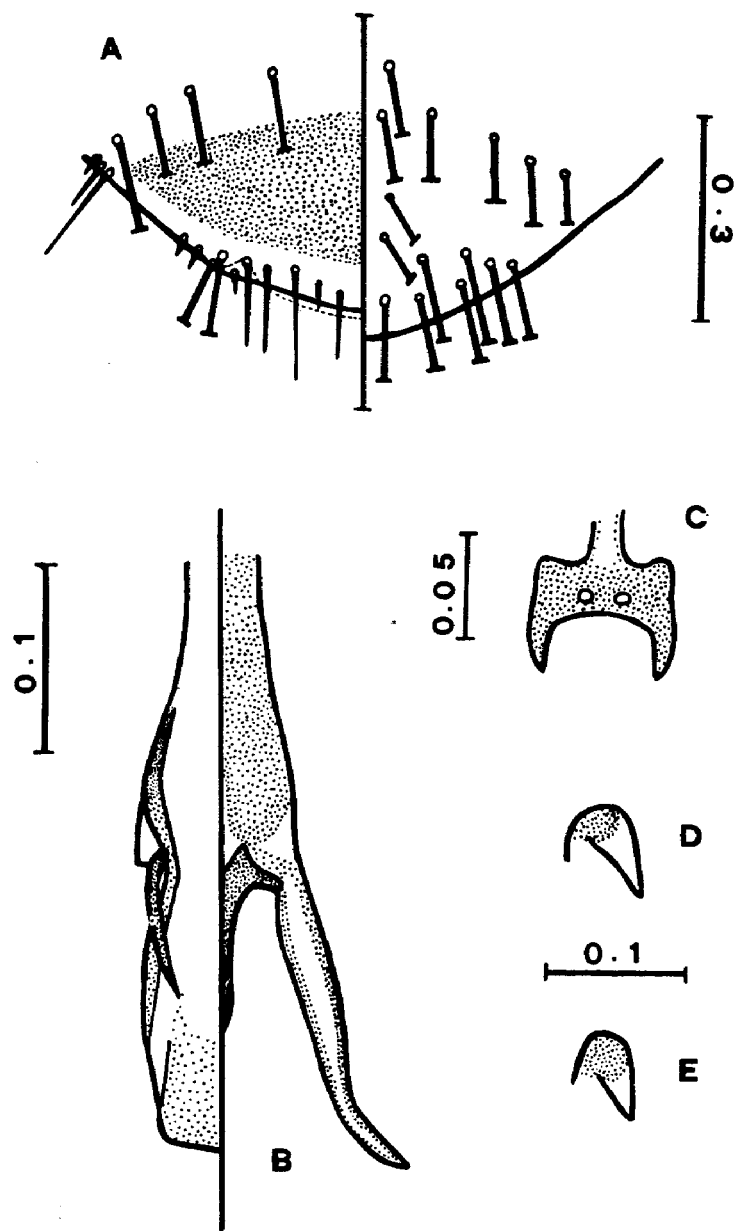


FIG. 2. — A-C. *M. lyali*.

A. Terminal segments, male.  
B. Male, genitalia.  
C. Hypopharynx.

D. *M. numidae*, postpalpal process.  
E. *M. cornutus*, postpalpal process.

## DISCUSSION

CLAY in 1969 suggest that originally the antenna of Menoponidae would be made up of scape, pedicel and a flagellum divided in three segments with one sensillum in each of the two terminal segments. In the species studied in which the terminal segment of the antenna supports both sensilla, we have observed a graduation of the species with respect of the position of these sensilla.

*M. stramineus* parasite of *Meleagris gallopavo* seems to be the most primitive, presenting 1 sensillum associated with 3 setae near the small lateral indentation.

This is very similar to what occurs with *M. numidae* parasite of *Numida meleagridis* and *M. cornutus* parasite of *Gallus domesticus* although in these species the sensilla are situated nearer to one another.

We can consider a second group comprised of *M. lyali* and *M. abdominalis* parasite of *Coturnix c. coturnix*, a species which present the second segment of flagellum globose with a small indentation, near which appear 3 setae, however the two sensilla are together and situated in terminal position.

Finally *M. pallidulus* parasite of *Gallus domesticus* presents the second segment of flagellum elongated and cylindrical without lateral indentation and with the two sensilla and all the setae in terminal position. Contrary to all the other species studied *M. pallidulus* presents a well developed hypopharynx.

Slight differences exist between the specimens of *M. lyali* collected from *Alectoris rufa* and *Alectoris barbara*, which we do not consider sufficiently important to permit the separation in two subspecies. Thus in the males collected in *Alectoris rufa*, only one row of setae tergaes is observed whilst in the examples collected in *Alectoris barbara* we notice some setae anterior to the row of marginal setae in the segments III and IV although neither their number or situation is constant.

TABLE II. — Measurements in mm. of the paratypes of *Menacanthus lyali* sp. nov., from *Alectoris rufa* (L.).

	Male		Female	
	X	S <sub>x</sub>	X	S <sub>x</sub>
head length	0.36	0.13	0.39	0.02
preocular width	0.48	0.02	0.56	0.02
temple width	0.58	0.01	0.72	0.02
prothorax width	0.43	0.01	0.57	0.01
metathorax width	0.51	0.01	0.70	0.03
abdomen length	1.08	0.06	1.51	0.09
abdomen width	0.76	0.02	1.07	0.01
total length	1.85	0.09	2.42	0.09
cefalic index	1.63	0.03	1.84	0.07
corporal index	0.41	0.01	0.44	0.03

TABLE III. — Measurements in mm. of the paratypes of *Menacanthus lyali* sp. nov., from *Alectoris barbara* (BONNATERRE).

	Male		Female	
	X	S <sub>x</sub>	X	S <sub>x</sub>
head length	0.32	0.02	0.37	0.01
preocular width	0.44	0.01	0.50	0.01
temple width	0.54	0.00	0.64	0.02
prothorax width	0.41	0.01	0.49	0.01
metathorax width	0.47	0.00	0.61	0.02
abdomen length	1.05	0.01	1.47	0.07
abdomen width	0.74	0.01	1.03	0.08
total length	1.69	0.01	2.26	0.09
cefalic index	1.70	0.11	1.74	0.04
corporal index	0.43	0.01	0.46	0.02

We also observe some differences between the examples of both hosts in their biometric characteristics as can be seen in the Tables II and III.

*M. lyali* can be readily distinguished from the other species by the shape and proportion of the abdomen and characters of the male external genitalia.

## ACKNOWLEDGEMENTS

We are grateful to Dr. Christopher LYAL, British Museum (Natural History), for the loan of material and for his unceasing interest in our work.

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