

**RECORD OF A NEW SPECIES OF EUMEGACETIDE TRAVASSOS, 1923 (DIGENEA, EUMEGACETIDAE) FROM FALCO BIARMICUS IN GIZA PROVINCE, EGYPT.**

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**SUMMARY**

Record of a new species of the genus *Eumegacetes* Looss (1900) is described from *Falco biarmicus* in Giza Province, Egypt. The new species is differentiated from the previously known species of the same genus in the shape, the position of the testes, ovary, uterine loops and the distribution of the vitelline follicles.

Full morphological Camera lucida drawings as well as microphotos are made from mounted specimens. The new species is recorded as a new host record among Egyptian falcon. The taxonomic name *Eumegacetes (Eumegacetes) falco* is suggested for the present species.

**INTRODUCTION**

Wild birds are very important group of birds in Egypt . Studies on helminths infesting birds of Nile Valley had been reported by Gohar (1934), who listed the trematodes of Nile Valley and reported *Eumegacetes emendatus* Brawn, 1901 from the cloaca of *Melillophagus pusillus ocularis*, *Passer domesticus* and from intestine of *Merops apiaster* and *Glarealaa partincala*.

El-Naffar and Khalifa (1980) have recorded two new species of *Eumegacete* *travassos* (1923) from Egyptian hoopae, *E. upupae* from (*Upupa epops major* and *Eumegacetes orientalis*) from the little green Egyptian bee-eater (*Merops orientalis cleopatra*) for the first time in Egypt. Fahmy et al. (1981) described *Eumegacetes (Eumegacetes) spinosus* n. sp from the rectum of the previous bird. Also, Ramadan et al. (1989) briefly recorded *E. (anterovitellim)* sp. from *Passer domesticus niloticus*, while Ashmawy and El-Sokkary (1991) recorded *Eumegacetes* spp. from Egyptian cuculus *Centropus senegalensis aegypticus* and Ashour et al. (1994) recorded two new species of *Eumegacetes (Anterovitellum) pycnonotus* sp. nov. from *Pycnonotus barbatus* and *Eumegacetes (Posthovitellum) hirundus* n. sp. from the bran swallow *Hirundo rustica saviginii*. During a survey of the trmatode fauna of Egyptian birds, a species of genus *Eumegacetes* was found to infest *Falco biarmicus* appeared to be different from the previously recorded species. Hence it was found necessary to describe it and compare it with the previous species.

**MATERIAL AND METHODS**

Five adult trematodes were collected from the

intestine of one bird out of 10 examined birds (*Falco biarmicus*). The worms were prepared for microscopic examination. They were washed in physiological saline solution then gently pressed between two slides, and fixed in 10% formalin, stained with Schneiders aceto-carmin, dehydrated in ascending grades of alcohol and cleared by clove oil followed by xylol before mounting on Canada balsam according to Pritchard and Kruse (1982) and Schmidt (1992). Full morphological descriptions of the specimens were given and drawings were made with the aid of a microscopical tube, Nikon, Japan. Identification of specimens were done according to Yamaguti (1959) and Mc-Donald (1981).

## RESULTS

*Eumegacetes (Eumegacetes) falco* (n.sp.)  
travasses, 1923 Fig. (1 and 2).

Family: Eumegacetidae.

Host: Falco-biarmicus.

Site: Small intestine.

No. of collected worms: five worms.

The parasite is elliptical in shape, both ends are curved with spineless body. The total length measures 3.12-4.45 mm (mean 3.90 mm). maximum breadth 2-3 mm. Oral sucker is broader than long 0.78 -0.4 X 0.44-0.88 mm (mean 0.67 X 0.72 mm). Ventral sucker is slightly smaller than the oral one. It measures 0.41 - 0.70 X 0.39 - 0.80mm (mean 0.64 X 0.66 mm). Pharynx surrounds the oesophagus and measures 0.12 -0.23 X 0.1 -0.22 mm (mean 0.19 X 0.18 mm). The testes lie just anterior to the acetabulum in the

second third of body. They are rounded or ovoid in shape. The right testis measures 0.2 -0.4 X 0.2 -0.39 mm (mean 0.33 X 0.31 mm) and the left testis measures 0.2 -0.43 X 0.2 - 0.43 mm (mean 0.8 X 0.34 mm). Ovary is median in position. It lies just posterior to the acetabulum at the end of the second third of body just anterior to ootype. It is round in shape 0.24- 0.43 mm (mean 0.37 X 0.37 mm). Vitellaria lie on both sides of the body beyond the oral sucker. Vitellaria are scattered in two groups, the anterior group is in front of the level of the anterior margin of acetabulum. The second group is posterior to the acetabulum in the posterior half of body. Vitellaria are found as compact mass. The uterus occupies the whole body and is full of eggs each of which measures 0.03 - 0.05 X 0.02 -0.03 mm (mean 0.03 X 0.04 mm). The eggs are thick shelled and yellowish in colour (Table 1).

## DISCUSSION

The new species of Eumegacetidae in the present study differs from other species which are recorded in Egypt. There are eight species recorded in Egypt. The cuticle of the present material is smooth as *E. upupae* and *E. orientalis* (El-Naffar and Khalifa, 1980). While the cuticle of the other species in Egypt are covered with spines *E. spinocus* (Fahmy et al., 1981). *E. anterovitellum* (Ramadan et al., 1989). *E. species (A)* and species B (Ashmawy and El-Sokkary, 1991) and *E. pycnonotus* and *hirundis* (Ashour et al., 1994) (Tables, 2 and 3). It is also different from the type species described by Diesing (1950) as cited by Yamaguti (1958) (Table 3).

Table (1): The measurements of the different parts of the worm (*Eumegacetes* sp.) isolated from *Falco biarmicus* (measurements in mm).

No. of specimen	1	2	3	4	5	Mean
Aspect						
1- Total length	4.45	4.10	4.10	3.94	3.124	3.90
2- Maximum width	2.81	3.00	2.80	2.6	2.00	2.60
3- Oral sucker	0.74 X 0.78	0.72 X 0.88	0.72 X 0.80	0.78 X 0.70	0.40 X 0.44	0.67 X 0.72
4- Ventral sucker	0.70 X 0.62	0.64 x 0.72	0.68 X 0.80	0.78 X 0.74	0.41 X 0.39	0.64 X 0.66
5- Pharynx	0.22 X 0.23	0.20 X 0.20	0.20 X 0.20	0.20 X 0.20	0.10 X 0.12	0.19 X 0.18
6- Right testis	0.39 X 0.39	0.40 X 0.38	0.36 X 0.35	0.31 X 0.23	0.20 X 0.20	0.33 X 0.31
7- Left testis	0.43 X 0.43	0.38 X 0.35	0.40 X 0.36	0.39 X 0.35	0.20 X 0.20	0.38 X 0.34
8- Ovary	0.43 X 0.43	0.38 X 0.38	0.39 X 0.39	0.39 X 0.39	0.24 X 0.24	0.37 X 0.37
9- Egg	0.03 X 0.05	0.03 X 0.05	0.03 X 0.05	0.02 X 0.04	0.02 X 0.03	0.03 X 0.04

Table (2) Comparison between *Eumegacetes* (E.) pupae and *Eumegacetes* (E.) *orientalis* and the parasite under investigation.

Aspect	<i>Eumegacetes</i> upupae El-Naffer and Khalifa (1980)	<i>Eumegacetes</i> <i>orientalis</i> El-Naffer and Khalifa (1980)	<i>Eumegacetes</i> sp. Under investigation
1- total length	2900 - 2954 $\mu$ m	1200 - 1300 $\mu$ m	3120 - 4446 $\mu$ m
2- M. width	1400 - 1500 $\mu$ m	500 - 600 $\mu$ m	2000 - 3000 $\mu$ m
3- Oral sucker	510-518 X 576-580	350 - 352 X 326.4-330	400 X 780 - 446 X 880 $\mu$ m
4- Ventral sucker	589-570 X 627-640	320 X 326 -315-316	410 - 780 X 390 X 800
5- Pharynx	290-294 X 192-195	168-174 X 130-133	120-230 X 100-200
6- Right testes	396-400 X 339.7 - 341	175-177.6 X 160-164	200-400 X 200-390
7- Left testes	380-384 X 307.2-310	130.8-135 X 192-194	200-429 X 200-429

Cont.

Position of testes	Don't reach to the lateral wall of intestinal caeca.	Extended after the lateral wall of the intestinal caeca.	Just anterior to the acetabulum and don't reach to the lateral wall of the intestinal caeca.
8- Ovary (shape and position)	Oval in shape submedian in posterior fourth of body.	Kidney shape, submedian just posterior to the acetabulum.	Median, rounded in shape just posterior to the acetabulum
9- Uterus	In the form of two lateral loops in the posterior half of body.	In the form of two lateral loops in the posterior half of the body.	It occupies the whole body and full of eggs.
10- Vitellaaria	Coarse follicles in lateral field.	Coarse follicles in lateral field.	In the form of compact mass in both halves of body extracecal.
11- Egg	22.4-24 X 11.2-12.8	17.6-19.2 X 8-9	30 X 50
12- Host	<u>Upupa epops major</u>	<u>Merops orientalis cleopatira</u>	<u>Falco biarmicus</u>
13- Locality	Upper Egypt (Assiut)	Upper Egypt (Assiut)	Giza, Egypt.

Table (3) Comparison between Eumegacetes under investigation and previous known species isolated from Egyptian birds, *E. spinosus* (Fahmy et al., 1981), *E. anterovitelum* (Ramdan et al., 1989) *E. species A & B* (Ashmawy and El-Sokary, 1991), *E. pycnonotus* and *E. hirundus* (Ashour et al., 1994) as well as other species from Africa and Europe (Diesing, 1850).

Parasite Aspect	Parasite under investigation	Other species from Egypt	Other species from Africa and Europe (Diesing, 1850)
1- Body shape, cuticle and size	- Elliptical in shape, spinose cuticle and larger than other species.	- Oval or elongated, tongue shaped and spinose cuticle.	- elongate, oval to elliptical.
2- Testes shape	- Rounded or oval	- Oval, egg shape and subglobular.	- Inside caecal arch or overlapping.
3- Ovary shape and position	- Rounded, median just posterior to the acetabulum.	- Cone shaped, oval, subglobular between ventral sucker and posterior end.	- In posterior third of body or at its junction with middle third.
4- Vitellaria	- Compact mass in 2 groups anterior and posterior.	- Fine or coarse follicles in lateral field.	- More or less intruding into fore body.
5- Uterus	- Occupied the whole body.	- Filled the hind body or extend to the level of anterior border of the testes or to the anterior border of ventral sucker.	- Forming lateral loops intruding into fore body.
6- Eggs	- Larger in size than other species	- Smaller size.	- Small or very numerous.
7- Host	- <i>Falco birmicus</i>	- <i>Merops orientalis</i> , <i>Passer domesticus</i> centropus species, <i>Pycnonatus barbatus</i> and <i>Hirundorusic savaini</i> .	<i>Passer domesticus</i> , <i>Glaucala platincole</i> , <i>Merops apiaster</i> , <i>M. viridis</i> , <i>M. aegyptiacus</i> , <i>Copronulcus europaeus</i> and <i>Melittophagus pasillus oclaris</i> .

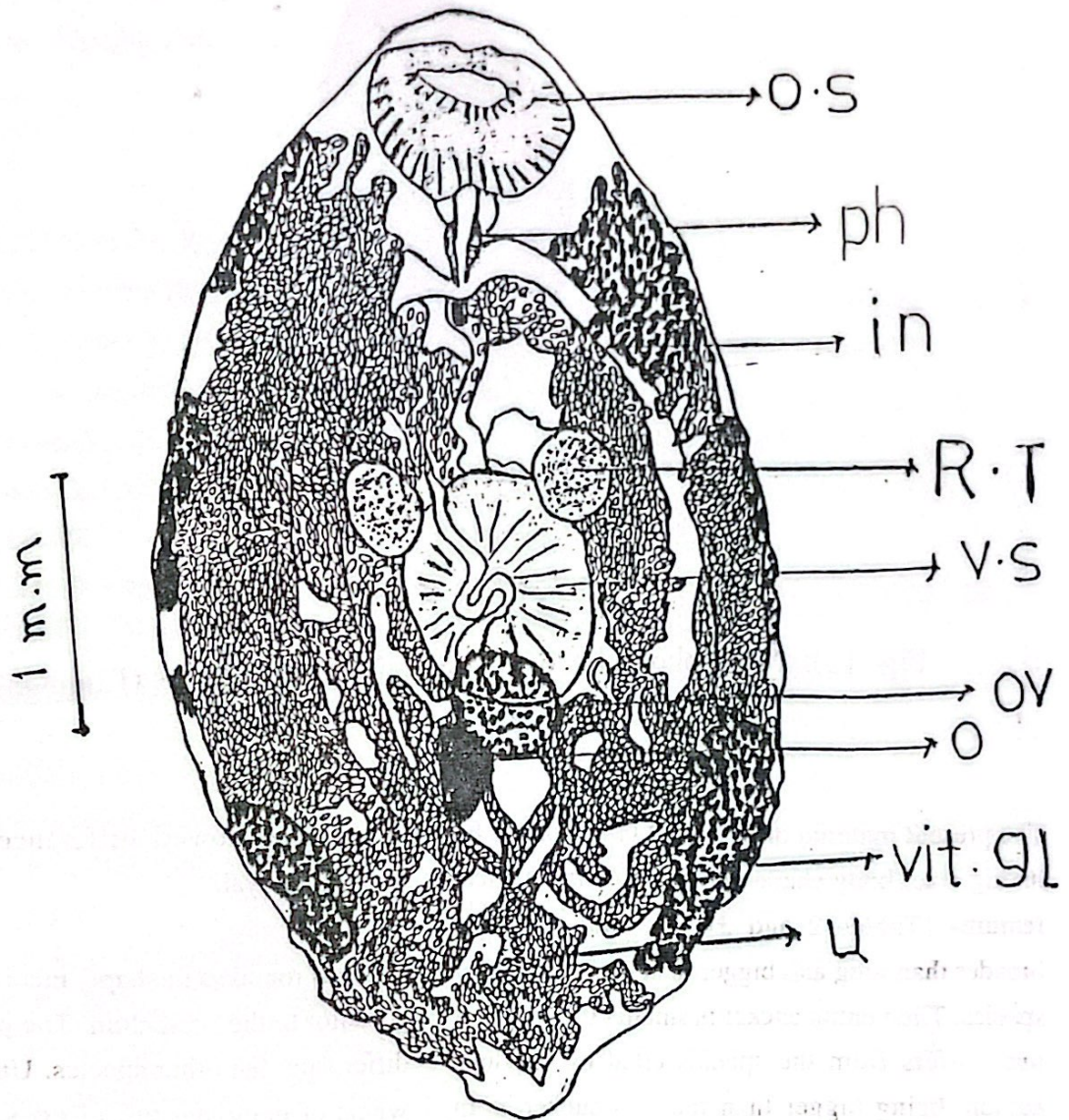


Fig. (1): Eumegacetes (Eumegacetes) falco n.sp. drawing by microscopical tube, Nikon, Japan.

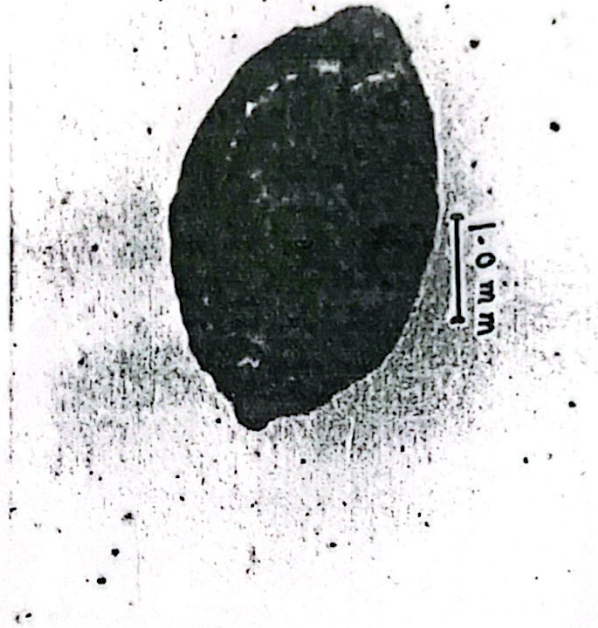


Fig. (2): Microphoto by close-up lens Eumegacetes (Eumegacetes) falco  
n.sp..

The present material differs from other species by its big size, body shape and other morphological features (Tables 2 and 3). The oral sucker is broader than long and bigger than that of the other species. The ventral sucker is smaller than the oral one, differs from the species cited by previous authors being bigger than the oral sucker as in case of *E. upupae* (El-Naffar and Khalifa, 1980), *Eumegacetes* species. (Ashmawy and El-Sokkary, 1991) and *E. pycononatus* (Ashour et al., 1994). The present material differs mainly in the site of genital organs and the shape as well as the relative measurements. The main difference in the position of testes and ovary, two testes lie just anterior to the acetabulum. The testes in present material are bigger than those of other species except in case of *E. hirundus* (Ashour et al., 1994)

which also showed difference in shape being rounded or oval.

Ovary is rounded in shape, median in position just posterior to the acetabulum. The position and shape differ from the other species. Uterus occupies the whole of body and full of eggs. In other species the uterus was filling the hind body in form of lateral loops. In some cases, they do not exceed the anterior border of testes. In the present material it is convoluted and occupies the whole body. Vitellaria are in the form of two main compact masses in two groups, anterior and posterior one. In the other previous species, the vitellaria varied from coarse to fine and small follicles.



Eggs in the present material are larger than those of other species. Also, our material differed from other species in host and locality. The variations were quite enough to create a new species *E. (Eumegacetes) falco* infesting *Falco biarmicus*.

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