(Crangonyx) from Everett's Spring. The planarians usually attacked these crustaceans with surprising speed and adeptness. Each worm used its anterior end to contact the crustacean, wrapped its body around the prey and commenced to suck the soft parts of its victim with the pharynx. Many planarian species, *e.g.*, *C. foremani* and *P. g. gracilis*, feed readily upon liver and other vertebrate organs which they apparently sense with chemoreceptors of the auricular sense organs (Hyman 1951). My specimens of *Procotyla fluviatilis* were insensitive to the usual fare, although they were starved previously. They apparently have a poor chemical sense for diffusing food juices but require a mechanical vibratory stimulus such as that produced by a swimming amphipod. Dr. Roman Kenk of the Smithsonian Institution once demonstrated to me the quickness with which a specimen of *Procotyla fluviatilis* seizes a dissecting needle that is being tapped rapidly on its point in proximity to a worm.

Acknowledgments

Mr. Stanley Stuart of Bethel College prepared the whole mount from which Fig. 1 was drawn, and Mr. R. H. Boyd of Preiser Scientific Company photographed the sagittal section from which Fig. 2 was printed.

Literature Cited

Bolen, H. R. 1938. Planarians of the Reelfoot Lake region in Tennessee. J. Tenn. Acad. Sci. 13: 164-165.

Horne, M. K. and J. T. Darlington. 1967. Uptake and intracellular digestion of ferritin in the planarian *Phagocata gracilis gracilis* (Haldeman). Trans. Amer. Micros. Soc. 86: 268-273.

Hyman, L. H. 1928. Studies on the morphology, taxonomy, and distribution of North American triclad Turbellaria. I. *Procotyla fluviatilis*, commonly but erroneously known as *Dendrocoelum lacteum*. Trans. Amer. Micros. Soc. 47: 222-255.

———. 1951. *The Invertebrates: Platyhelminthes and Rhynchocoela*. Vol. II. New York: McGraw-Hill. 550 p.

———. 1959. Tricladida. Chapt. 13, 326-334 *in* "Fresh-Water Biology," W. T. Edmondson (ed.), Second Edition. New York: Wiley.

Kenk, Roman. 1944. The fresh-water triclads of Michigan. Misc. Publ. Mus. Zool. Univ. Michigan No. 60: 44 p.

Journal of the Tennessee Academy of Science

Volume 43, Number 4, October, 1968

A REDESCRIPTION OF SPHAERIROSTRIS TERES (WESTRUMB, 1821) (ACANTHOCEPHALA) FROM CROWS OF EGYPT[1, 2]

Lorna M. Cordonnier and Helen L. Ward

Department of Zoology and Entomology
The University of Tennessee, Knoxville 37916

Acanthocephala were collected from crows, *Corvus corax* and *Corvus corone*, in Egypt by parasitologists of the United States Naval Medical Research Unit No. 3 under the direction of Dr. Robert E. Kuntz. They have been identified as *Sphaerirostris teres* (Westrumb 1821). Golvan (1956) redescribed this species and listed the following species as synonyms: *Echinorhynchus picae* Rudolphi, 1819; *E. teres* Westrumb, 1821; *E. hepaticus* Molin, 1858 and 1861; *E. lobianchii* Monticelli, 1887; and *Sphaerirostris picae* Dollfus, 1953. The present study, which is based on measurements of approximately 160 specimens, extends the range of measurements and contributes additional morphological details to previous descriptions of this species. The following description of specimens from Egypt is based on stained whole mounts; all measurements are given in millimeters, except when stated otherwise.

Sphaerirostris teres (Westrumb, 1821)

Male (Fig. 1): body length 12.9 (5-18); maximum body width 1.8 (1.0-3.2). Proboscis length 0.63 (0.52-0.81); maximum width 0.38 (0.31-0.47). Proboscis hooks (Fig. 2) in 32 (26-36) longitudinal rows; number of hooks per row 12 (11-15). The anterior 5 hooks have posteriorly directed roots; the 6th hook has both a posterior root and a small anteriorly directed manubrium; the next 3 to 6 hooks have anteriorly directed manubria; the last 2 to 4 spines have no roots or manubria. Length of longest hook 34μ (28-44μ). Proboscis sheath length 1.12 (0.78-2.06); width 0.32 (0.26-0.48). Lemnisci length 2.38 (1.15-3.64); width 0.18 (0.09-0.39). Testes located anteriorly in tandem; anterior testis length 1.47 (0.63-2.08); width 0.69 (0.39-0.99); posterior testis length 1.43 (0.61-2.21); width 0.72 (0.42-0.99). Four elongate cement glands; length 4.4 (2.0-7.0); width 0.12 (0.09-0.39).

Female: Body length 14.6 (7-20); maximum body width 2.3 (1.0-3.0). Proboscis length 0.69 (0.42-0.98); maximum width 0.41 (0.21-0.51). Proboscis hooks in 32 (24-36) longitudinal rows; number of hooks per row 12 (11-16). Arrangement of hooks with roots and manubria same as for male. Length of longest hook 37μ (28-47μ). Proboscis sheath length 1.18 (0.96-1.40); width 0.36 (0.15-0.52). Lemnisci length 2.93 (2.50-3.90); width 0.21 (0.10-0.49). Eggs (Fig. 2d) elliptical and enclosed in 2 membrances, length 50μ (32-63μ); width 22μ (18-26μ).

Hosts: *Corvus corax* (raven) and *Corvus corone* (hooded crow)

1. From a thesis submitted to the Graduate Council of the University of Tennessee in partial fulfillment of the requirements for the degree of Master of Science.

2. Supported in part with aid provided by Contract ONR (NR 165-690/N0014-66-C0094) between the Office of Naval Research and the Southwest Foundation for Research and Education.

Locality: near Cairo, Egypt

Holotype specimens in Parasitology Collection, Department of Zoology and Entomology, University of Tennessee, and U. S. National Helminthological Collection, Beltsville, Md.

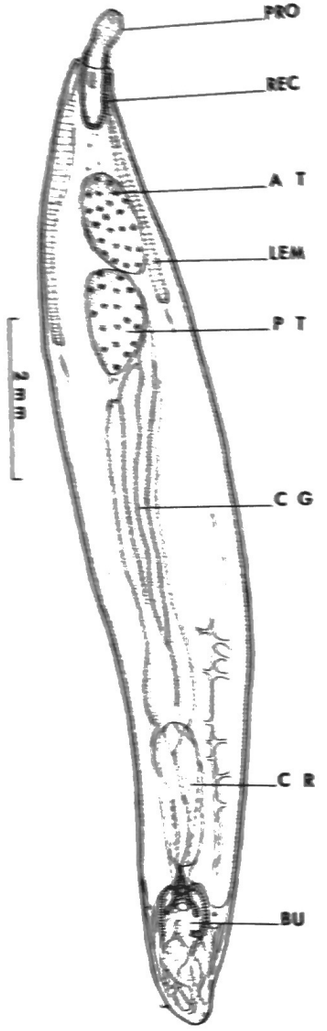

Fig. 1. *Sphaerirostris teres* (whole mount of male)

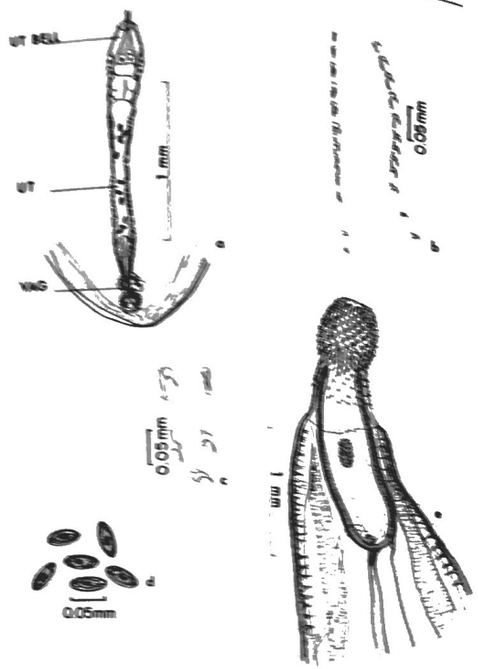

Fig. 2. *Sphaerirostris teres* (detail). a. Posterior end of female; b. Two rows of hooks; c. Hooks and spine; d. Eggs; e. Anterior end.

Abbreviations: PRO, proboscis; REC, proboscis sheath; LEM, lemniscus; AT, anterior testis; PT, posterior testis; CG, cement gland; CR, cement receptacle; BU, bursa; UT, uterus; VAG, vagina.

Discussion

The maximum length of male specimens in Golvan's (1956) description is 16 while that of our specimens is 18. The female body length is essentially the same in both groups. The proboscis in Golvan's description measures 0.60 by 0.35, while that of our specimens varies from 0.42 to 0.98 by 0.21 to 0.51. The number of longitudinal rows of proboscis hooks in Golvan's specimens is 22 to 32, while the number varier from 24 to 36 in the Egyptian collection. The number of hooks per row is 10 to 14 in Golvan's specimens and varies from 11 to 16 in our specimens. The number of cement glands reported by Golvan is 3 while there are 4 in our specimens. Although a greater range of measurements occurs in our specimens, they are essentially similar to *Sphaerirostris teres* as described by Golvan (1956).

Dollfus (1953) described *Sphaerirostris picae* from *Pica pica mauritanica* in Morocco, and Golvan (1956) placed this species in synonymy with *S. teres*. However, *S. picae* differs from *S. teres* in certain essential diagnostic features. The body length of the male of

S. picae is 6 which is considerably smaller than that of *S. teres* (12 to 18). The constriction between the anterior and posterior regions of the proboscis occurs at the ninth or tenth hook in *S. teres*, while in *S. picae* it occurs at the seventh or eighth hook. In *S. teres* the last two or three spines of each longitudinal row do not have roots, but in *S. picae* these spines are provided with anterior roots or manubria. The maximum length of hooks in our specimens is considerably less than that in *S. picae* (37μ and 54μ). Because of these differences we believe that *S. teres* and *S. picae* should be regarded as two distinct species.

Summary

Sphaerirostris teres (Westrumb, 1821) is reported from *Corcus corax* and *C. corone* in Egypt. The range of measurements for this species as given by Golvan (1956) is extended. *Corcus corax* appears to be a new host, and Egypt appears to be a new locality record. Results of this study indicate that *Sphaerirostris picae* Dollfus, 1953, and *S. teres* are not synonyms as was suggested by Golvan (1956).

Literature Cited

Dollfus, R. Ph. 1953. Miscellanea helminthologica Maroccana. XI. Sur cinq espèces d'acantocephales, dont une du hérisson. (*Aethechinus algirus* Duvernoy et Lereboullet 1840). Arch. Inst. Pasteur, Maroc, IV (8), 541-545.

Golvan, Y. J. 1956. Le Genre *Centrorhynchus* Luehe, 1911 (Acanthocephala-Polymorphidae). Revision des espèces européennes et description d'une nouvelle espèce africaine parasite de Rapace diurne. Bull. de l'. F. A. N. t. XVIII, série A, no. 3: 732-785.

Journal of the Tennessee Academy of Science

Volume 43, Number 4, October, 1968

NOTES ON PARASITES OF IMMATURE TABANIDAE (DIPTERA) AND DESCRIPTIONS OF THE LARVA AND PUPARIUM OF *CARINOSILLUS PRAVUS* (DIPTERA: TACHINIDAE)

James T. Goodwin

Biology Department, Memphis State University, Memphis, Tennessee 38111

Abstract

Carinosillus pravus Reinhard (Diptera: Tachinidae) is reported for the first time as a parasite of tabanid larvae. The larva and puparium of this species are described and figured, and comparative notes between it and *C. tabanicorus* (Hall) are offered. Additional records of two previously reported parasites of tabanid larvae or pupae, *Phasiops flavus* Coquillett (Diptera: Tachinidae) and *Trichopria tabanitora* Fouts (Hymenoptera: Diapriidae), are furnished, and the first record of a dipteran parasite of tabanid pupae is noted.

Published reports of dipterous parasites of larvae and pupae of Tabanidae have been rather limited. In fact, no confirmed reports of dipterous parasites of tabanid pupae have been found in the literature. Review of the available literature revealed that six species of parasites have been reported from North American tabanid larvae. Jones and Bradley (1923) reported the rearing of two; they reared *Anthrax lateralis* Say (Bombyliidae) from the larva of *Leucotabanus annulatus* (Say) and *Phasiops flavus* Coquillett (Tachinidae) from the larva of *Tabanus trimaculatus* Palisot. Jones and Anthony (1964) added *T. petiolatus* Hine to the list of hosts for the latter species. These same authors added the larvaevorid fly *Ormia punctata* Rogineau-Desvoidy to the list of tabanid larval parasites on the basis of an adult reared from an unidentified species of *Tabanus*. Tashiro and Schwardt (1953) reported the rearing of *Vibrissotheresia pechumani* Reinhard from the larva of *Tabanus* species. Hall (1937) described *Carinosillus* (as *Myocera*) *tabanicorus* from a single male reared from *T. trimaculatus* by Dr. C. B. Philip (Philip 1931). Greene (1937) described and figured the puparium of the latter parasite; Hays (1958) described the larva and adult female (as *Phorostoma tabanicora*) and furnished notes on the biology of the species. James (1963) reported the rearing of many *Carinosillus* (as *Phorostoma*) *novaengliae* (West) from tabanid larvae.

During the course of a taxonmic and ecological study of tabanid larvae in the springs of 1966 and 1967, several larvae of *Tabanus fairchildi* Stone were taken from a small mountain stream in Monroe Co., Tennessee. These larvae were collected in early May and all were apparently last instar larvae. When collected the larvae exhibited no signs of being parasitized but in the course of rearing them six proved to be hosts for the larvae of *Carinosillus pravus* Reinhard (reared adults of the parasite identified by Dr. C. W. Sabrosky of the Systematic Entomology Laboratory, U. S. Dept. of Agriculture, Washington). Until the first definitive signs of parasitization, these larvae exhibited no noticeable differences from the normal larvae, an observation which agrees with the findings of Hays in his studies of *C. tabanicorus*. The following is a list of other definitive signs which agree with those noted by Hays for *C. tabanicorus* infections 1) the infected larvae became lethargic, 2) they contained excess liquid, 3) they were somewhat discolored and 4) they refused to feed. Within a few days only the larval skin and a small