

Vorliegende Untersuchungen wurden in Wien, im zoologischen Institute des Herrn Prof. Dr. Hatschek angestellt. Herrn Professor und den beiden Assistenten, Herrn Dr. K. C. Schneider und Herrn Dr. H. Joseph spreche ich für die vielen Auskünfte, wodurch sie mir das schwierige Schneiden und Präparieren dieser Thierchen erleichterten, meinen wärmsten Dank aus.

Wien, 10. Februar 1902.

## 2. The Genus *Carcinonemertes*.

By Wesley R. Coe, New Haven, Connecticut.

(With 2 figs.)

eingeg. 19. Februar 1902.

On the coast of New England, both north and south of Cape Cod, Mass., the lady-crab (*Platyonychus ocellatus*) is commonly infested with a small, parasitic nemertean. Detailed study of both the young and sexually mature worms indicates that the species is identical with the European form, which was described by Koelliker in 1844, under the name of *Nemertes carcinophilus*.

The New England form is described in detail in the American Naturalist for March, 1902 (Vol. XXXVI), and a brief account of its life-history is there given. The anatomical structures are so decidedly different from those of other species of *Eunemertes*, in which this form is placed by Joubin and Bürger, that a new genus to include this and a newly described, and closely related, species from the Pacific Coast has been established.

### *Carcinonemertes*.

Coe, American. Naturalist, Vol. XXXVI, March, 1902.

Parasitic nemerteans living on various species of crustacea. Body small, slender, often filiform, rounded and of about the same diameter throughout; head without distinct lateral grooves, not demarcated from body. Body not usually coiled or much twisted, but often folded sharply so that the anterior portion of body lies parallel and in contact with the posterior portion. Mouth and proboscis open together; oesophagus extremely short, opening broadly into the intestine through a large muscular chamber, or pharynx, situated immediately behind the brain; intestine broad, with short lateral pouches which are but little developed in posterior portion of body.

Proboscis sheath without muscular walls, consisting merely of a thin membrane closely applied to the small proboscis. Proboscis but little developed, very small in size and extremely short, without la-

teral pouches of reserve stylets, but armed with central stylet and basis only (figs. 1, 2). Central stylet minute, usually one-third to one-half as long as basis, which is small and slender. Stylet region of proboscis can be withdrawn but little behind the brain; consequently the anterior chamber is very short, without distinct muscular layers, without distinct nerves, and without a thickened glandular epithelium

such as occurs in almost all other nemerteans. Stylet apparatus imbedded in a strong, muscular enlargement provided with numerous large glands (figs. 1, 2). Chamber immediately behind stylet, or middle chamber, small but muscular, and with a lining of flattened epithelium, while the posterior proboscis cavity is very short, often almost spherical, highly glandular, connected closely with the rudiments of the proboscis sheath, and imbedded in the connective tissue which lies internal to the body musculature (fig. 2).

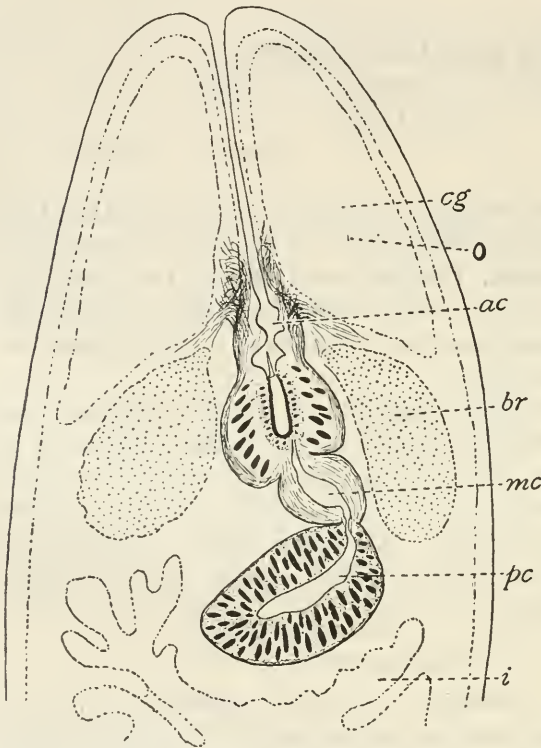


Fig. 1. Optical section of anterior portion of body of *Carcinonemertes epialti*. *cg*, outline of cephalic gland; *o*, ocellus; *ac*, *mc*, *pc*, anterior, middle and posterior chambers of proboscis respectively; *br*, brain; *i*, intestine.

Cerebral sense organs probably wanting. Ocelli 2 (occasionally fragmented into 4).

Cephalic glands massively developed; likewise a remarkable development of sub-muscular glands extends throughout the whole length of the body, usually forming a distinct layer internal to the muscular walls of the body, and thicker than all the other layers of the body wall combined.

Body musculature consists of a thin oblique or circular muscular layer, and a somewhat thicker, but yet weak, longitudinal layer internal to the former.

Brain and lateral nerves as in other metanemerteans.

Usually oviparous, although fertilization often takes place internally, and sometimes a portion of the ova of an individual may be re-

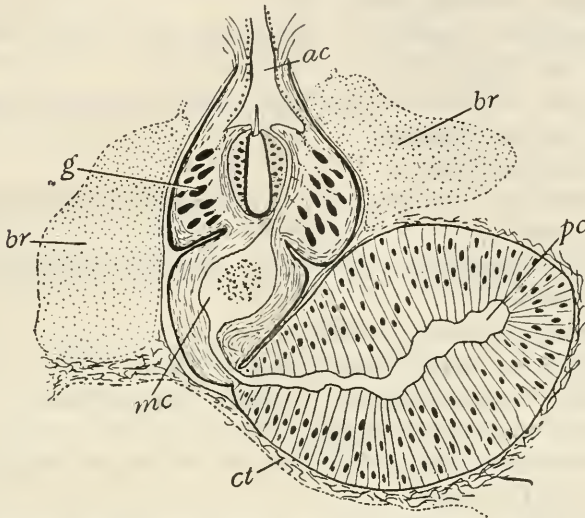


Fig. 2. Horizontal section of proboscis of *Carcinonemertes epialti*; slightly diagrammatic; *g*, gland cells surrounding basis of stylet; *ct*, connective tissue in which rudimentary proboscis sheath is imbedded. Other reference letters as in Fig. 1.

tained until the development of free-swimming embryos. Development without complicated metamorphosis, although the layer of ciliated cells originally covering the embryo is shed as development proceeds.

The principal synonymy of the type species is as follows:

*Carcinonemertes carcinophila* (Koelliker) Coe.

American Naturalist, Vol. XXXVI, 1902.

Host: *Platyonychus ocellatus*; on the gills when young; migrating to the egg-masses when sexually mature; coast of New England.

*Nemertes carcinophilos* Koelliker.

Verh. schweiz. Nat. Ges. Chur, p. 89—93. 1845.

Host: »Small crab«; Messina.

*Polia involuta* van Beneden.

Mém. Acad. Roy. de Belgique, Tome XXXII, p. 18—23, Pl. III figs. 1—30. 1861.

Host: Egg masses of *Carcinus maenas*;  
Coast of Belgium.

*Nemertes carcinophila* Mc Intosh.

British Annelids: Part I. Nemertean, Ray Society, London, 1873.

Host: *Carcinus maenas*, egg-masses; St. Andrews, Scotland.

? *Cephalothrix galathea* Dieck.

Jenaische Zeitschr. f. Naturwiss. Bd. VIII. p. 500—520; Taf. XX, XXI. 1874.

Host: *Galathea strigosa*; gills when young, egg-masses when mature; Messina.

? *Polia xanthophila* Giard.

Bull. Sc. de la France et de la Belgique, Tome XX. p. 496, 1888.

Host: Egg-masses of *Xantho floridus*, Northern coast of France.

*Eunemertes carcinophila* Joubin.

Les Némertiens, Faune Française, Paris, 1893.

Host: *Carcinus maenas*, Northern coast of France.

*Eunemertes carcinophila* Bürger.

Nemertinen, Fauna und Flora des Golfes von Neapel, Monogr. XXII. 1895.

Body slender, commonly 6—15 mm long when found on gills, 20—70 mm long when sexually mature; color yellowish, orange, pale reddish, rose-pink (McIntosh), or bright brick-red; posterior proboscis chamber very small, rounded; in ordinary states of contraction central stylet lies immediately behind the brain. Basis of central stylet slender, about 0,25—0,3 mm in length by 0,06—0,08 mm in average diameter. Central stylet about 0,08—0,12 mm long, or between one-third and one-half as basis.

Parasitic on the gills of various species of crabs when young, migrating to the egg-masses of the crab when sexually mature.

As was pointed out in the American Naturalist for March, 1902, Dieck's species agrees perfectly with Koelliker's *N. carcinophilos* in such a large number of details that there is strong evidence that the two forms are specifically identical, or at any rate very closely related — that they can belong to different orders seems incredible.

The only differences which are mentioned for Giard's *Polia xanthophila* is its smaller size and different host.

Many observations indicate that the worms spend their whole existence on the crab, for they have been found under no other conditions, and those found on the crab are met with in all stages of development. On the New England coast their life-history is briefly as follows: Eggs laid in mucous tubes among the egg-masses of the crab in

June and July; cleavage regular and nearly equal, with the formation of free-swimming, ciliated blastulae which develop into ciliated embryos provided with ventrally-placed mouth, a pair of ocelli, and an anterior and a posterior flagellum, or tuft of much longer, consolidated cilia. The embryos leave the egg-membrane in this condition, and usually remain in the mucous tube or among the egg-masses of the host, but may swim freely in the water. The larval integument, with its cilia and flagella, is apparently shed, as described by van Beneden and Dieck (loc. cit.). At this time the embryos assume the form of the adult, and crawl about instead of swimming. The integument of the young worms now becomes covered with cilia as in the adult. After remaining for a time among the egg-masses of the host, or perhaps until the eggs have hatched, they wander about on her body, eventually reaching the gills. They are found in this position in July or August and later, and here they probably remain until the crab produces another batch of eggs the following season. At this time they migrate again to the egg-masses where they become sexually mature. Those embryos which swim away and which do not chance to find another suitable crab probably perish. The observations of the European observers mentioned are mainly in accord with the account as here given. As observed both by McIntosh and Dieck (loc. cit.), fertilization and early cleavage sometimes takes place within the body of the parent.

*Carcinonemertes epialti* Coe.

American Naturalist, Vol. XXXVI figs. 1—9, 1902.

A very much smaller and less slender species than *C. carcinophila*, being only 4—6 mm in length, when sexually mature; posterior chamber of proboscis (figs. 1, 2 *pc.*) much more swollen than in Koelliker's species. Stylet a little less than half as long as basis, which is but slightly larger posteriorly than at attachment of stylet. Other anatomical peculiarities are noted in the paper cited. In general appearance, color, arrangement of ocelli, oesophagus, intestine and brain, the two species are very similar.

Upwards of 100 sexually mature individuals, about 4—6 mm in length and less than 0.5 mm in diameter, were collected from the egg-masses of a single crab (*Epialtus productus*) at Monterey, California.

The only other nemertean known to be parasitic on crabs is the form which has been found on *Nautilograpsus minutus* in the region of the Sargasso Sea, and which was referred by Willemoes-Suhm<sup>1</sup> to

<sup>1</sup> Ann. Mag. Nat. Hist. Vol. XIII. p. 411. Pl. XVII fig. 4. 1874.

the genus *Tetrastemma*, but this was too briefly described to establish its systematic position with certainty. The specimens were lost before they had been fully studied, but it appears to be certain that they do not belong to the genus *Carcinonemertes*.

### 3. Weiterer Beitrag zu *Acanthicus hystrix* aus dem unteren Amazonas.

Von Dr. Gottfried Hagmann,  
Assistent der zoologischen Section des »Museum Göldi« in Pará, Brasilien.  
(Mit 2 Figuren.)

eingeg. 20. Februar 1902.

Durch ein zweites Exemplar von *Acanthicus hystrix* Spix, das sich nun in unserer Sammlung vorfindet, sehe ich mich veranlaßt, noch einmal auf meine erste Notiz zurückzukommen (siehe diese Zeitschr. Bd. XXIV. No. 639. 1901, p. 173 seq.).

Inzwischen ist auch, wie ich nach meiner Rückkehr von einem dreimonatlichen Aufenthalt auf der Insel Mexiana ersah, in No. 653 des Zool. Anz. vom 30. Sept. 1901, ein Beitrag zu meiner Notiz in No. 639 aus der Hand von Herrn Prof. Berg in Buenos Ayres erschienen, zu welchem ich bei dieser Gelegenheit noch einige Commentare beigeben möchte<sup>1</sup>.

Ich muß betonen, daß der Hauptzweck meiner Mittheilung nicht der Nachweis von *A. hystrix* aus dem unteren Amazonas war, denn dann hätte ich mich veranlaßt sehen müssen auch mehrere andere Fischarten, die sich in unserer Sammlung befinden und die bis heute niemals aus dem unteren Amazonas nachgewiesen worden sind, in gleicher Weise zu erwähnen. Ich fand es nämlich nicht uninteressant, eines so seltenen Fisches, dessen systematische Stellung früher in Zweifel war, mit wenigen Worten Erwähnung zu thun und zwar vor Allem als Beitrag zur weiteren Kenntnis desselben, wie ich es ja durch Angabe von genauen Maßen und Hervorheben einzelner Eigenthümlichkeiten gethan habe.

Gewiß ist das vorzügliche Werk von C. H. und R. S. Eigenmann auch am Museum in Pará bekannt, wie es übrigens durch Dr. Göldi's Fischcatalog: Primeira contribuição para o conhecimento dos peixes do valle do Amazonas e das Guyanas, Bol. d. Museu Paraense Bd. II. p. 443 seq. deutlich genug bewiesen wird, wo doch Eigenmann's Werk auf jeder Seite mehrere Male citiert worden ist.

<sup>1</sup> Vorliegende Notiz war bereits geschrieben und druckfertig, als durch Telegramm der hiesigen Tagesblätter vom 21. Jan. die Nachricht eintraf, daß Prof. Dr. Berg, Director des Museo Nacional in Buenos Ayres, plötzlich verstorben sei. Trotz dieser Thatsache sehe ich mich nicht veranlaßt, auch nur ein einziges Wort an der ursprünglichen Fassung gegenwärtiger Notiz zu verändern.

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Zeitschrift/Journal: [Zoologischer Anzeiger](#)

Jahr/Year: 1901

Band/Volume: [25](#)

Autor(en)/Author(s): Coe Wesley R.

Artikel/Article: [The Genus Carcinonemertes. 409-414](#)