

## TWO NEW SPECIES OF KALYPTORHYNCHIA (PLATHELMINTHES) FROM THE N. AMERICAN ATLANTIC COAST

by

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### SUMMARY

The kalyptorhynchs (Platyhelminthes, Rhabdocoela) *Gnathorhynchus riseri* sp.n. (Gnathorhynchidae) and *Placorhynchus doei* sp.n. (Placorhynchidae) are described from coarse sandy shores in Massachusetts, U.S.A.. *G. riseri* and its probable sister species *G. rostellatus* Brunet, 1973 have similar copulatory bulbs with prostatic fascicles enclosing the ejaculatory duct, in the former species differentiated to an eversible penis papilla. *P. doei* is identified by its pointed sclerotic copulatory stylet, dissolved by acid fixatives.

*Key words* : Platyhelminthes, Kalyptorhynchia, N. America, Atlantic coast.

### INTRODUCTION

The two species described here are part of the free-living Platyhelminthes material collected and preliminarily studied by the author in the summer 1972 when working in the Marine Science Institute at Nahant belonging to the Northeastern University in Boston. The material is deposited in the Swedish Museum of Natural History in Stockholm, Sweden (SMNH).

The north west Atlantic kalyptorhynch Platyhelminthes are poorly known, especially compared with the European fauna (see e.g. KARLING, 1963, 1992; NOLDT, 1989a, 1989b). Only twenty species of Kalyptorhynchia have been recorded so far from the north west Atlantic coastal areas, the first one being *Phonorhynchus helgolandicus* (Mecznikoff, 1865) (GRAFF, 1911). More recently *Florianella bipolaris* was described by RIEGER and STERRER (1975) and *Carolinorhynchus follubeachensis* by NOLDT (1987). Nine were found in Canadian brackish water areas by AX and ARMONIES (1987) : *Parautelga bilioi* Karling, 1964, *Acrorhynchides robustus* (Karling, 1931) *Phonorhynchus helgolandicus* (Mecznikoff, 1865), *Phonorhynchoides carinostylis* n. sp., *Gyratrix hermaphroditus* Ehrenberg, 1831 (previously known from fresh water), *Prognathorhynchus eurytuba* n. sp., *Placorhynchus octaculeatus* Karling, 1931, *Placorhynchus dimorphis* Karling, 1947, *Placorhynchus* ? *echimulatus*

Karling, 1947, *Baltoplana magna* Karling, 1949, *Tylacorhynchus vicarus* Boaden, 1963, an unidentified *Prognathorhynchus* species and a presumed species of the Polycystidae. In addition *Utelga heincke* (Attems, 1897), *Itaipusa scotica* (Karling, 1954), *Zonorhynchus seminascatus* Karling, 1956, *Drepanorhynchides hastatus* (Meixner, 1929) and *Gnathorhynchus conocaudatus* Meixner, 1929 were reported by KARLING (1980, 1992). With the two new species described below, *Gnathorhynchus riseri* n. sp. and *Placorhynchus doi* n. sp. the total number of Kalyptorhynchia observed on the N. American Atlantic coast is 22, 19 Eukalyptorhynchia and 3 Schizorhynchia.

## DESCRIPTIONS AND DISCUSSION

### *Gnathorhynchus riseri* sp.n.

(Figs 1-5)

*Material* : : Holotype : SMNH 4674 a specimen sectioned parasagittally. Other material : live specimens and one specimen (paratype) sectioned transversally (*leg.* the author).

*Type locality* : Phillips Beach (USA, Mass.), coarse sandy shore 27 June 1972.

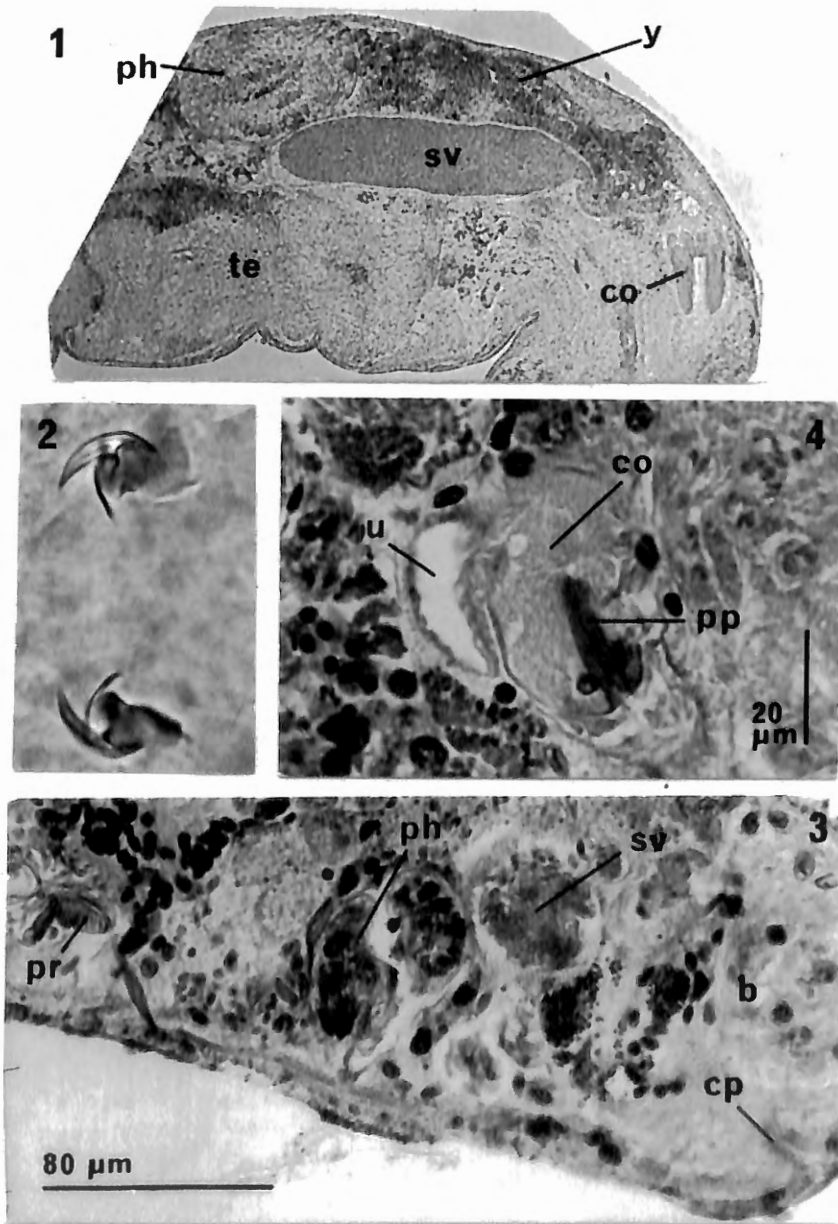
*Etymology* : species name in honour of Dr. Nathan W. Riser, Director of the Marine Science Institute at Nahant.

### *Description*

Filiform, 1-1.5 mm, transparent, yellowish, paired pigmented eyes. Proboscis hooks (Figs 2-3) 30  $\mu$ m including the basal cups based on short muscular pads. Rosulate pharynx in about half body length. Unpaired gonads, testis and yolk gland beside the pharynx, ovary caudally, embedded in bursal tissue. Elongate seminal vesicle (Fig. 1) opening by a tubular seminal duct in the cylindrical copulatory bulb (Figs 1, 4, 5) containing five (?) tubular prostatic fascicles with two kinds of secretion enclosing the eversible ejaculatory duct. No male sclerotic structures. Long tubular common atrium, opening terminally (Fig. 3) with proximally associated uterus and copulatory bulb. Oviduct not observed.

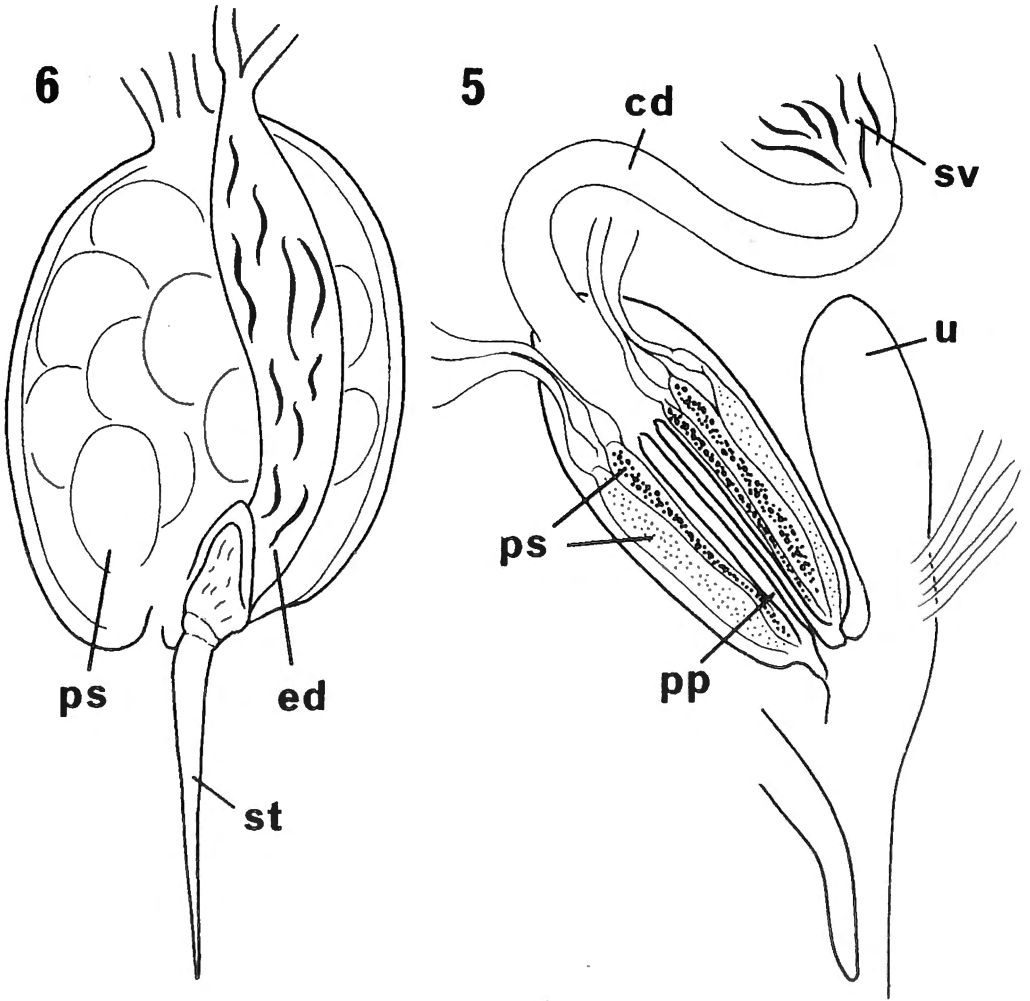
### *Discussion*

The original diagnosis (MEIXNER, 1929, p. 778) of the genus *Gnathorhynchus* and the taxonomic key to the genera in Gnathorhynchidae (DEN HARTOG 1968, pp. 330-340) do not conflict with the structural traits of *G. riseri*. In the related species *G. rostellatus* Brunet, 1973 the copulatory bulb contains two kinds of secretion in 4-5 prostatic fascicles, enclosing the straight, evidently non-eversible ejaculatory duct. This feature is considered a synapomorphy with *G. riseri*. The two species further agree in the topography of the pharynx and the genital organs, but differ in the lack of pigmented eyes and in the differentiation of a proximal filiform out-



Figs 1-4. — *Gnathorhynchus riseri* sp.n. — 1. Part of squeezed live specimen — 2. Proboscis hooks, live specimen — 3. Part of holotype, parasagittal section — 4. Male copulatory organ, the same section.

growth of the proboscis hooks in *G. rostellatus*; in *G. riseri* the structure is replaced by a minute hook (Fig. 2).



Figs 5-6. — Male copulatory organ, drawings from live specimens — 5. *Gnathorhynchus riseri* sp.n. — 6. *Placorhynchus doei* sp.n.

***Placorhynchus doei* sp.n.**

(Figs 6-10)

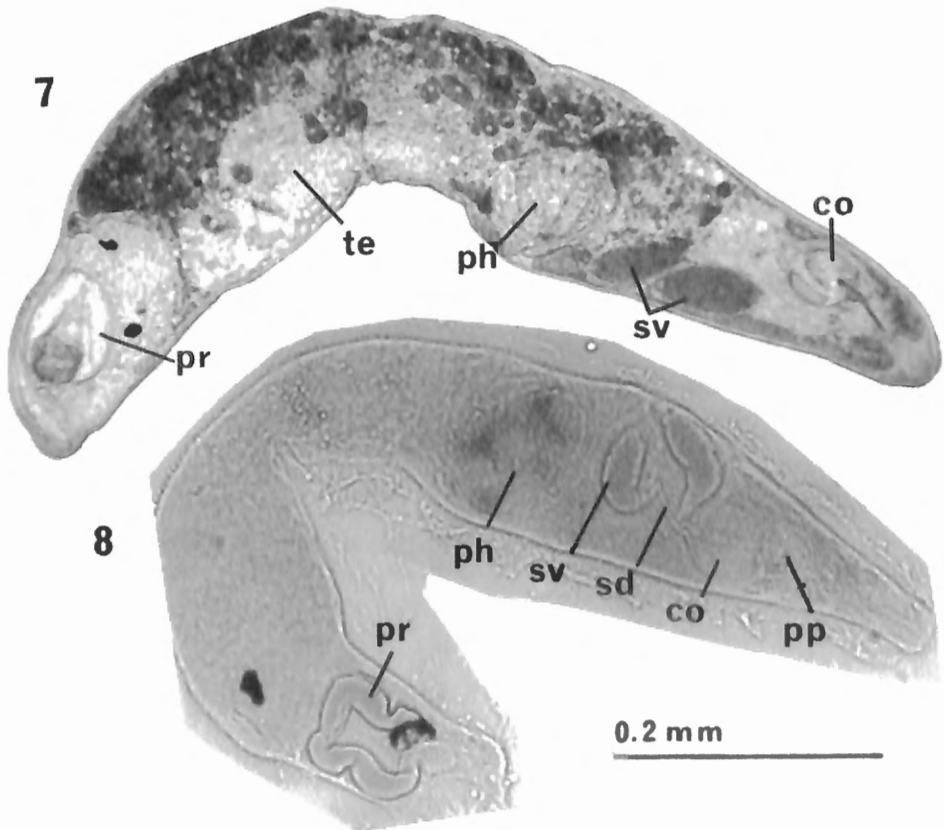
*Material* : Holotype : SMNH 4675 a whole-mounted specimen. Other material : live specimens from the type locality and the near-by Nauset Beach.

*Type locality* : Cackle Cobe Beach, coarse sandy shore (USA, Mass.), 2.7.1972.

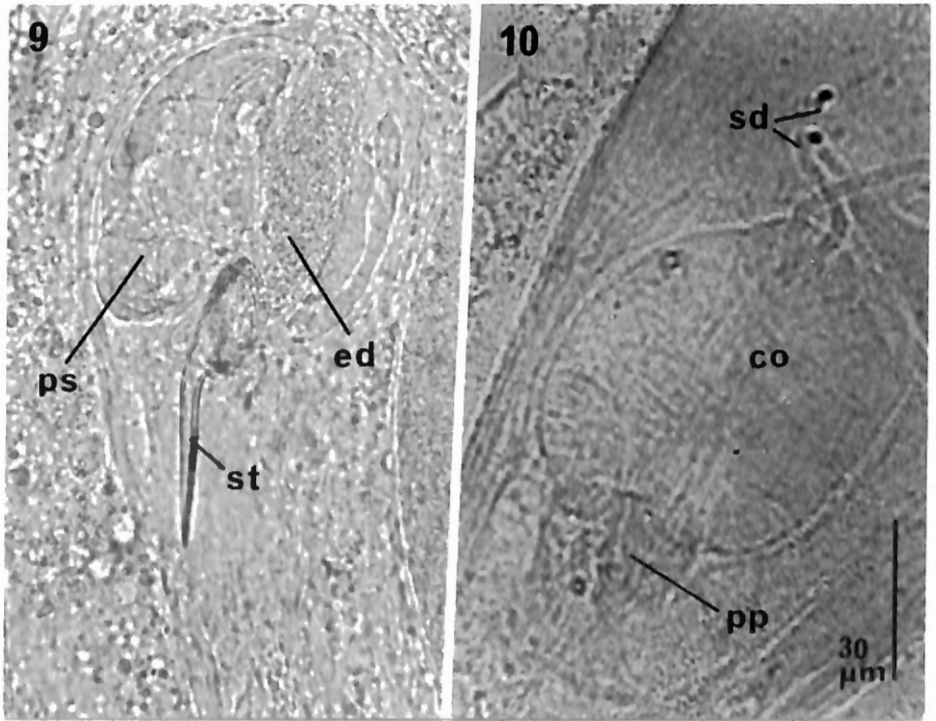
*Etymology* : species name in honour of Dr. David Doe, collector of the material.

*Description*

Filiform, 2 mm, paired pigmented eyes. Muscular plates of proboscis proximally separate. Rosulate pharynx slightly behind the mid-body. Paired testes in front and paired large seminal vesicles behind the pharynx. Yolk glands dorsally, paired ovaries beside and in front of the globular caudally situated copulatory bulb. Sperm is discharged from the seminal vesicles through filiform seminal ducts (Fig. 10) into the tubular internal ejaculatory duct, embedded in prostatic fascicles within the copulatory bulb. In live specimens (Figs 7, 9) sperm was seen discharged through the straight, proximally widened, distally pointed, approximately 100  $\mu$ m long sclerotic stylet and the prostatic secretion through a separate pore beside the stylet. In preserved specimens (Figs 8, 10) the stylet is absent, the copulatory bulb distally forming a soft irregular papilla, arisen by eversion of the prostatic outlet of the bulb, evidently combined with the basal funnel of the stylet. Apparently the sclerotic wall of the stylet is dissolved by the acid fixative.



Figs 7-8. — *Placorhynchus doei* sp.n. — 7. Squeezed live specimen — 8. Squeezed preserved specimen, holotype.



Figs 9-10. — *Placorhynchus doei* sp.n., male copulatory organ — 9. Squeezed live specimen — 10. Squeezed preserved specimen.

### Discussion

In the absence of a phylogenetic analysis of the genera within the Placorhynchidae Meixner, 1938 (*Placorhynchus* Karling, 1931, *Clyporhynchus* Karling, 1947, *Harsa* Marcus, 1951, *Oneppus* Marcus, 1954), the generic position of *Placorhynchus doei* is provisionally determined on the general structural conformity with the type species *P. octaculeatus* Karling, 1931.

KARLING (1989, p. 21) considered sclerotic penial stylets as transformed cirrus hooks in *Harsa obnixa* Marcus, 1951 and as a sclerotized basement membrane of the penis papilla in *Placorhynchus pacificus* Karling, 1989. Penial structures of « aragonite », soluble in acid fixatives, like the stylet of *Placorhynchus doei*, have been described in the planarian *Dendrocoelopsis spinosipenis* Kenk, 1973 and in the polycystidid *Acrorhynchides styliferus* Schockaert and Karling, 1975 (see also discussion in SCHOCKAERT and KARLING, 1975, p. 134). Aragonite structures in the shape of spicular skeletons are known from several plathelminths (RIEGER and STERRER, 1975).

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## ABREVIATIONS IN THE FIGURES

b	bursal tissue	pr	proboscis
cd	common seminal duct	ps	prostatic secretion
o	male copulatory organ	st	stylet
co	common genital pore	sv	seminal vesicle
ed	ejaculatory duct	te	testis
ph	pharynx	u	uterus
pp	penis papilla	y	yolk glands

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