

VAMPYROCROSSOTA CHILDRRESSI, A NEW GENUS
AND SPECIES OF BLACK MEDUSA FROM THE
BATHYPELAGIC ZONE OFF CALIFORNIA
(CNIDARIA: TRACHYMEDUSAE: RHOPALONEMATIDAE)

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Abstract.—A new genus and species of deep-sea medusa, *Vampyrocrossota childressi*, is described from the eastern North Pacific. It has been found in San Clemente Basin off Baja California, Mexico, and from the waters off Point Conception, California, U.S.A., at depths between 600 and 1475 meters. This genus is allied to the cosmopolitan rhopalonematid genus *Crossota*, but differs notably in the shape and position of the gonads. It is the only described species of hydromedusa with black pigmentation.

During the course of an ongoing project on the physiology and biochemistry of mid-water gelatinous organisms off California, a distinctive black medusa was commonly recovered in trawls taken deeper than 600 m. The animals were collected by a 10 m² Mother Tucker trawl using a specially designed 30 l insulated cod end to protect the animals from heat and light as they are brought to the surface (Childress et al. 1978). Medusae were captured in very good condition, and fragile hydromedusae of the families Halicreatidae and Rhopalonematidae were often brought aboard ship with tentacles several body heights in length. The black medusa is not included in reports of Pacific Ocean hydromedusae (Alvarino 1967, Kramp 1968, Segura-Puertas 1984), and it is not one of the several new species of mesopelagic rhopalonematid medusae currently being described by Mills & Larson (C. E. Mills, pers. comm.).

Vampyrocrossota, new genus
Figs. 1, 2

Diagnosis.—Rhopalonematidae without gastric peduncle; stomach with four oral lips, extending to or just past the velum when empty; with eight tubular gonads attached

longitudinally to the eight radial canals in all the specimens observed; exumbrellar furrows present; with tentacles all of one kind.

Type species.—*Vampyrocrossota childressi*, new species.

Etymology.—From Serbian *vampira*, a nocturnal demon supposed to eat the heart, blood and soul of its victim, with reference to *Vampyroteuthis infernalis*, the black mesopelagic squid often captured in the same trawls as this animal, and *Crossota* the closely allied rhopalonematid genus.

Relationships.—Both Bigelow (1913) and Kramp (1947) discuss the genus *Crossota* Vanhöffen, 1902 in some detail and are explicit that the pendant nature of the gonads is an important characteristic distinguishing this genus from other related genera. Given the importance that this characteristic has had in conserving the genus *Crossota*, I have erected the genus *Vampyrocrossota* in this paper. This genus is closely related to *Crossota* in general appearance, lack of a peduncle, the large number of tentacles and ribbon-like nature of the radial canals.

Recently, Larson & Harbison (1990) established the new rhopalonematid genus *Benthocodon* which also differs from *Crossota* by having gonads attached to the radial

canals. They reported that the gonads in *B. hyalinus* are ribbon-like and run along most of the length of the eight gastric canals with the most distal portions hanging free. *Vampyrocrossota* is also different from *Benthocodon* in that it lacks a gastric peduncle and has numerous exumbrellar furrows.

Vampyrocrossota childressi, new species
Figs. 1, 2

Types.—Holotype: a 12 mm tall specimen (USNM 91883) taken from 777 m depth on 31 July 1991 off Point Conception from the RV *Point Sur*. Paratypes: two specimens, 11 mm (Paratype A: USNM 91884) and 6 mm (Paratype B: USNM 91885) from 984 m depth, captured on 30 July 1991 off Point Conception, California. All types are deposited in the National Museum of Natural History, Smithsonian Institution.

Description.—This description is based upon observations of ~20 living animals ranging in size from 6 to 14 mm in height and up to 475 mg wet weight. Up to 14 mm tall; up to 10 mm in diameter; velum up to 3 mm; jelly fairly thin, especially at apex; mesoglea colorless; numerous exumbrellar furrows; inner surface of bell is black with pigment fading out posteriorly towards the velum (particularly in immature animals); velum is black in some specimens; up to 400 tentacles, all the same kind; tentacles and radial canals reddish-orange; eight cream-colored tubular gonads attached one-eighth from the top to five-eighths the length of the radial canal; stomach without peduncle, reaching past the velum when extended; stomach cream colored with a wide horizontal black pigmented band located half way to the four oral lips. The immature paratype specimen had a completely orange manubrium when it was collected before preservation in formalin. Upon first inspection with the naked eye, this species looks remarkably like *Crossota rufobrunnea* with black rather than burgundy pigmentation. *Vampyrocrossota childressi* is much

less active after capture and has a lower metabolic rate than many other rhopalonemata which have been captured in the same trawls. These other species include *Crossota alba*, *C. rufobrunnea*, *Pantachogon* sp., *Sminthea eurygaster*, and *Colobonema sericeum* (Thuesen & Childress, unpublished).

Etymology.—Named in honor of James J. Childress of the Marine Science Institute, University of California at Santa Barbara who has devoted a considerable part of his life to the study of midwater organisms off the California coast and is in part responsible for the discovery of this medusa.

Distribution.—This animal has been recovered in trawls from San Clemente Basin, off Baja California, Mexico where the bottom depth can be greater than 2000 m to northwest of Point Conception, California, U.S.A. where the bottom depth is over 4000 m. The shallowest discrete depth tow in which it has been taken was 600 m and it has been taken in discrete depth trawls reaching to 1475 m. We have not routinely fished at depths greater than this and it is not known how deep *V. childressi* occurs. Although not abundant (never more than three specimens in a trawl), it is routinely taken in the above region all four seasons of the year.

Coloration.—The pigmentation of *V. childressi* is neither a dark blue nor deep burgundy but is truly black. The color does not fade in specimens preserved in 10% formalin in filtered seawater after storage in the dark for two years. Other bathypelagic organisms including fish, crustaceans and molluscs are known to have black pigmentation (Wimpenny 1966, color frontispiece), however no other species of hydromedusa with black pigmentation is recorded in the literature. Kramp (1961) describes the gut of the coronate scyphozoan *Nausithoë globifera* as being black, however the guts of other coronates, such as *N. rubra*, *Periphylla periphylla*, *Atolla wyvillei* and *A. vanhoefeni*, are not black but rather a densely-pigmented deep burgundy in living specimens.

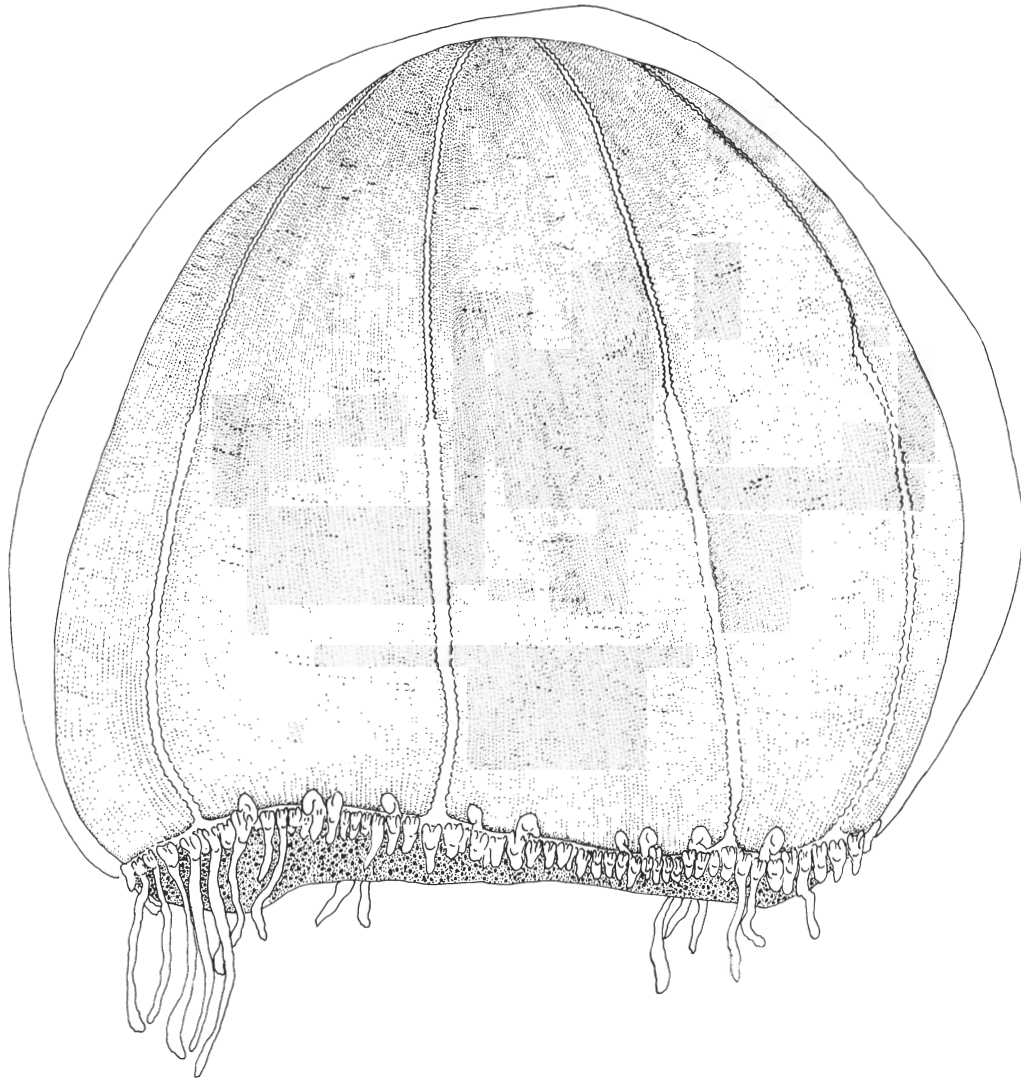


Fig. 1. Side view of *Vampyrocrossota childressi*, new genus, new species, holotype, collected from 777 m depth off Point Conception, California. Inner-bell pigmentation and velum pigmentation is black. Bell is 12 mm in height.

Anecdotal accounts reporting large numbers of a black medusa (Semaestomeae; *Chrysaora* sp.?) in the Los Angeles, California, area were prevalent during July–August of 1989, however the organism has yet to be described in the scientific literature. Other Cnidaria with black pigmentation are known. The anemone *Metridium senile* has a black endodermal melanin (Fox & Pantin 1941), and the siphonophore *Erenna ri-*

chardi has black endodermal pigmentation which is thought to be acquired by feeding on black midwater fishes (Totton 1965). The small size of *V. childressi* suggests that mesopelagic fishes are not the source of its black pigmentation. Some of the burgundy-colored deep-sea medusae, including *Crossota rufobrunnea*, contain porphyrin pigments (Herring 1972, Bonnett et al. 1979). The exact nature of the pigment in *V. childressi*

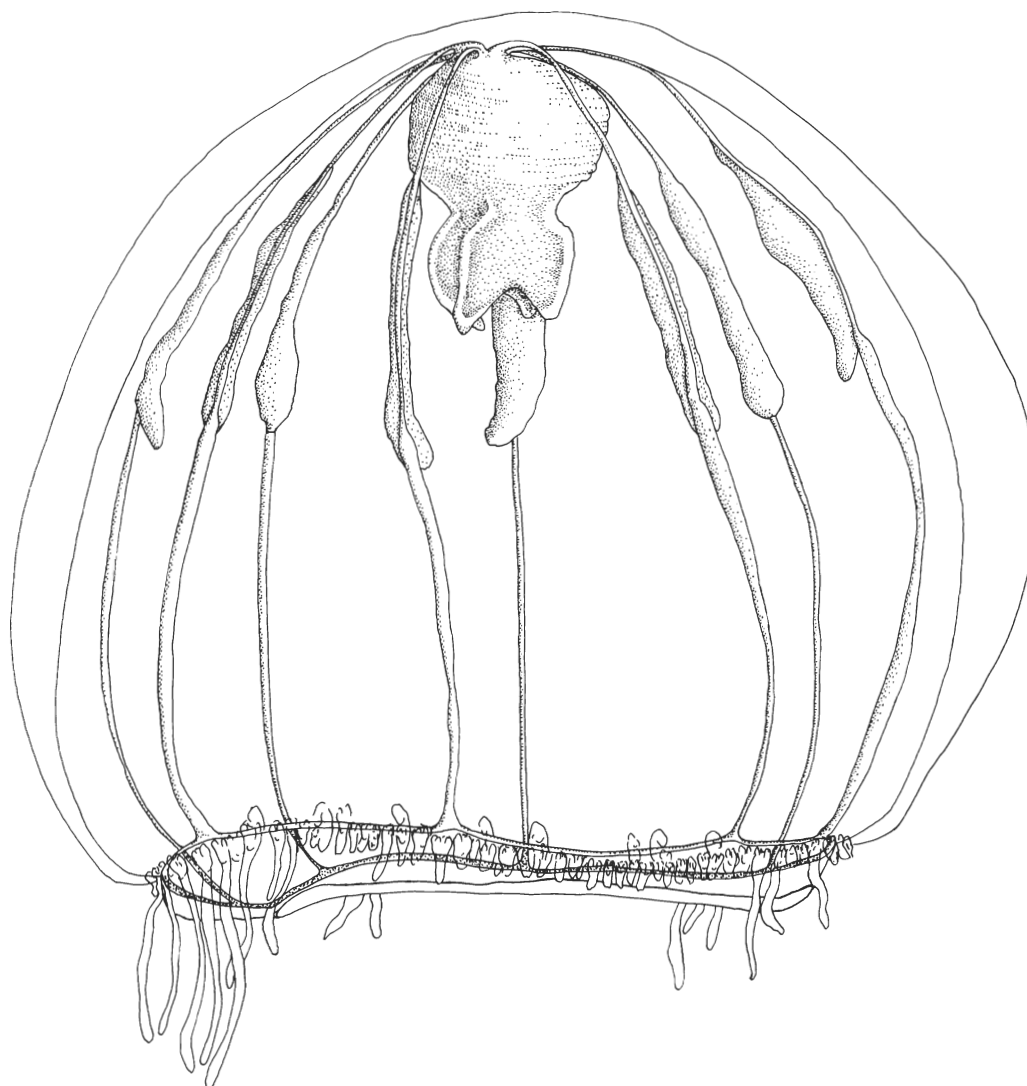


Fig. 2. Side view of *Vampyrocrossota childressi*, new genus, new species, drawn with inner-bell pigmentation "removed" to reveal the gonads and manubrium. The manubrium can reach past the velum when extended in living individuals.

is not known, although spectrophotometric analysis of pigment extracted in ethanol reveals an absorption peak at 479 nm indicating that it has blue-light absorbing component (Thuesen, unpublished data).

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