



## ***Kataplana celeretrix* n. sp. (Platyhelminthes: Proseriata: Otoplanidae) from the Coast of North Carolina, USA**

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*Kataplana celeretrix* is described as a new species of proseriate flatworm belonging to the Otoplanidae. This species was found in low-tide-level surface sediments at two high-energy beach sites in North Carolina and is unique among described Otoplanidae in possessing post-pharyngeal germaria. In addition, we consider the intermediate taxonomic position that this new species occupies between Parotoplaninae and Otoplaninae, and point to the utility of confocal microscopy in routine species descriptions.

Sediment was collected in October 2010 from the lower mid-tide level (LMTL 0 to 15 cm sample depth), resurgence (“shiny” 0 to 10 cm) and retention (0 to 15 cm) zones of a high-energy beach near Emerald Isle (EI), North Carolina (within 10 m of N34°38'41"; W77°5'22.8"—Type Locality), and from the shiny, swash, and shallow subtidal at a beach near Oak Island (OI), North Carolina (within 10 m of N33°54'46"; W78°13'1.5") in June 2011. Specimens were extracted from the sand samples, photographed and drawn, processed for Confocal Laser-Scanning Microscopy (CLSM) and resin-embedment/serial-sectioning (Whitson *et al.* 2011). DNA was extracted from single specimens as described in Whitson *et al.* (2010) and an approximately 400bp fragment of the 18s rDNA gene was recovered by PCR and sequenced using “universal” 18s primers (Fonseca *et al.* 2010). Material examined included 5 sets of serial sections, photographs and/or drawings of 15 living, squeezed specimens, and CLSM stacks of 18 whole-mounted specimens. CLSM stacks were rendered with the following colors: Blue: Hoechst 33342 for DNA; Green: Alexa488 phalloidin for muscles; Red: Anti-phosphoH3 for mitotic cells (and artefactual binding to certain glandular secretions); Yellow: Anti-acetylated Tubulin for cilia and flagella. Positions along the longitudinal body axis are expressed as percentage of the body length and given as “U-values”, where U0 is the anterior tip of the body and U100 is the posterior end.

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The specific epithet (L. “swift harlot”) refers to the extremely rapid movement and bivaginate condition of the organism. Since the early 1970s, this species has been known from the EI site as “OtoStumpf” (Rieger, unpublished). Type material was deposited at the Smithsonian National Museum of Natural History (NMNH) as follows: Holotype—a whole-mounted specimen from EI (NMNH 1156977); Paratypes: two serially-sectioned specimens from OI (NMNH 1156978-1156979). A 412-base sequence from the 18s rDNA gene of a specimen from OI was deposited at GenBank under accession number JQ180234; blastn returned the sequence from *Parotoplana renatae* at an E-value of  $2e^{-171}$ , placing our specimens firmly into Parotoplaninae.

In transmitted light, the free-swimming animal was golden brown with a peripheral translucent zone; the body shape was an elongated oval with a slightly pointed tail and blunt head (Fig. A). *Kataplana celeretrix* were exceptionally fast-moving, darting from grain to grain in a fast stop-and-go pattern by means of ciliary gliding. The animals were also remarkably adhesive.

*Kataplana celeretrix* possessed intraepithelial nuclei throughout, with rare mitoses (detectable by anti-phosphoH3 staining) always beneath the body-wall muscle (CLSM data not shown). The head region had numerous sensory bristles with two pairs of larger bristles arising laterally from regions of ciliation found on either side of the head (Fig. B). Smaller bristle groups were spaced along the sides of the body running to the posterior end (Figs. B, F). A pair of photoreceptors (“Sehkolben”), slightly pink in life, occurred in the posterior part of the brain (Fig. B). Pericerebral ciliary aggregates, visible only with CLSM, were anterior to the brain dorsally underneath the epidermis (Fig. C). The statocyst