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A revision of the bathyal and abyssal necrophage genus *Cyclocaris* Stebbing, 1888 (Crustacea: Amphipoda: Cyclocaridae) with the addition of two new species from the Atlantic Ocean

TAMMY HORTON[1] & MICHAEL H. THURSTON
National Oceanography Centre, Southampton, European Way, Southampton SO14 3ZH, UK
[1]Corresponding author. E-mail: tammy.horton@noc.ac.uk

Abstract

Two new species of the deep-sea scavenging genus *Cyclocaris* (Crustacea: Amphipoda) are described from bathyal and abyssal depths in the North and tropical Atlantic Ocean, bringing the total number of species in the genus to four. An account of all four species is given and an updated key to the genus *Cyclocaris* is provided.

Key words: *Cyclocaris*, necrophage, Atlantic Ocean, bathyal, abyssal, new species, Amphipoda.

Introduction

The use of baited traps in the deep sea has a long history. Traps were deployed from the *Hirondelle* in 1888 (Richard, 1934) and as early as 1892 amphipod specimens were recovered (Chevreux, 1903). Baited traps and cameras have been used in Institute of Oceanographic Sciences and National Oceanography Centre investigations for more than thirty years and have captured or pictured large numbers of amphipods (Thurston, 1979, 1990; Lampitt *et al.*, 1983; Horton, 2004, 2005: Diffenthal & Horton, 2007; Horton & Thurston, 2009, 2011; Horton *et al.*, 2013).

Cyclocaris Stebbing, 1888 is a small and distinctive genus, recently assigned to the family Cyclocaridae by Lowry & Stoddart (2011), and currently containing just two species: *C. tahitensis* Stebbing, 1888 from the South Pacific Ocean off Tahiti and *C. guilelmi* Chevreux, 1899 from the Norwegian Sea. Material trapped off the Cape Verde Islands (Atlantic) was reported by Chevreux (1903) as *C. tahitensis*, but this identity has been questioned (Barnard & Karaman, 1991; Lowry & Stoddart, 1994). Examination of extensive collections taken at various localities in the eastern North Atlantic Ocean and off Angola justify these doubts, and this new material comprises two new species described herein as *Cyclocaris lowryi* **sp. nov.** and *Cyclocaris franki* **sp. nov.**

Methods

Specimens were collected within two metres of the sea floor using a variety of free-fall devices. Specimens were found in bait recovered from deployments of an experimental fish trap (TRAP B), a baited benthic camera system (BSNACK), in purpose-designed amphipod traps (AMPHITRAP, DEMAR (de-rated Mark & Recapture) VET (Vertical Eurythenes Trap)) and in simple auxiliary traps attached to benthic landers. In addition, specimens have been caught in various towed gears; benthic nets (BN 2.4, BN 1.5/5C, BN 1.5/3M), supra-benthic nets (SBN) attached to bottom nets, and single and multiple rectangular mid-water trawls (RMT 8, RMT 1+8M). Material was fixed in 4% formaldehyde and transferred to 80% Industrial Denatured Alcohol for sorting and storage.

Sorting, initial observation and dissection were undertaken using Wild M5 and Leica™ MZ 7.5 stereomicroscopes. Dissected parts were mounted in Polyvinyl-lactophenol stained with lignin pink. Illustrations were prepared using Wild M20 and Olympus™ BX51 compound microscopes. Illustrations of *Cyclocaris lowryi*

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66 specimens were trapped in the same area centred around 30º N 158ºW and 31ºN 158ºW at 5600–6000 m (Hessler *et al*., 1979; Ingram & Hessler, 1983). No description has been given and the status of this material remains uncertain.

Key to the species of *Cyclocaris*

1. Head without prominent eye lobe; single pair of eyes or eyes covering whole of head (may fade in alcohol).. 2
- Head with distinct subtriangular eye lobe; two pairs of eyes present (may fade in alcohol) 3
2. Eyes covering whole of head; Arctic Ocean, north-west Pacific Ocean, cold water species . . . .*Cyclocaris guilelmi*
- Large eye not covering whole of head; Pacific Ocean species. . . . . *Cyclocaris tahitensis*
3. Pereopods 5–7 merus expansion broad, (L/W ratios 1.6, 1.7, 2.2 for P5–7 respectively) (see Figure 10: P5–7); Pereopod 6 basis with bevel; basis broadly expanded, subquadrate (see Figure 10:P6). . . . . *Cyclocaris franki*
- Pereopods 5–7 merus expansion narrower, (L/W ratios 2.2, 2.8, 2.9 for P5–7) (see figure 6: P5–7); Pereopod 6 basis without bevel; basis expanded, oval (see Figure 6:P6) . . . . . .*Cyclocaris lowryi*

*Arrows in Figure 6 and Figure 10 indicate key differences in Pereopods.

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