

VIERAEA	Vol. 37	141-158	Santa Cruz de Tenerife, octubre 2009	ISSN 0210-945X
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Pelagic mysids from the warm-temperate to subtropical NE Atlantic, with a redescription of *Leptomysis capensis* Illig, 1906 (Mysida, Mysidae)

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WITTMANN, K., F. HERNÁNDEZ & A. DE VERA (2009). Misidáceos pelágicos de aguas templadas y tropicales del Atlántico noreste, con la redescipción de *Leptomysis capensis* Illig, 1906 (Mysida, Mysidae). *VIERAEA* 37: 141-158.

ABSTRACT: Pelagic material from the cruises *Salvajes'2000*, *TFMCBM/Canarias*, and *ConAfrica (CTM2004-023119/MAR)* was used to complement the knowledge of mysid faunas in waters off NE Atlantic islands. *Anchialina typica typica* and *Haplostylus normani* are first recorded for the Canary Islands; first records of *A. t. typica* as well as *Euchaetomera intermedia* are reported for the Selvagens Islands. Important shifts of known distribution limits were noted for *Erythrops peterdohrni* from the Gulf of Naples to the Canary Archipelago, for *Longithorax alicei* from the Canaries to the Selvagens Islands, and for *Leptomysis capensis* from 31° S to 28° N along the Atlantic coast of Africa (previous record for 1° S not acknowledged). *L. capensis* is redescribed using British Museum material taken near the type locality (off Cape Town). The most important previously unknown features pertain to adult morphology: notched anterior margin of the carapace in both sexes and sexually dimorphic terminal spines on the telson. These features, together with hispid cuticle and peculiar segmentation patterns of the fourth pleopods in males, indicate that this species is a closely related southern vicariant of the European to NW African species *L. gracilis*.

Keywords: Biodiversity, marine plankton, mysids, Atlantic Ocean, islands.

RESUMEN: El examen de material pelágico procedente de las campañas atlánticas *Salvajes'2000*, *TFMCBM/Canarias* y *ConAfrica (CTM2004-023119/MAR)* complementa la información existente sobre la fauna de misidáceos en aguas de las islas atlánticas nororientales. *Anchialina typica typica* y *Haplostylus normani* se registran por primera vez para las islas

Canarias, *A. t. typica* y *Euchaetomera intermedia* para las islas Salvajes. Se han ampliado los límites de distribución para *Erythrops peterdohrni* desde el Golfo de Nápoles hasta el archipiélago canario, para *Longithorax alicei* desde Canarias hasta las islas Salvajes, y para *Leptomysis capensis* desde 31° S a 28° N a lo largo de la costa atlántica de África (el registro previo para 1° S no se reconoce). Se redescubre *L. capensis* a partir del material del Museo Británico colectado cerca de la localidad tipo (Ciudad del Cabo). Las características más importantes, anteriormente desconocidas, corresponden a la morfología de los adultos e incluyen la presencia de incisiones en el borde anterior del caparazón en ambos sexos y espinas terminales en el telson con dimorfismo sexual. Estas características, junto con la cutícula hispida y los patrones de segmentación peculiar de los cuartos pleópodos en los machos, indican que esta especie es una vicariante meridional estrechamente relacionada con la especie europea y africana noroccidental *L. gracilis*.

Palabras claves: Biodiversidad, plancton marino, misidáceos, océano Atlántico, Islas.

INTRODUCTION

The plankton biodiversity off NE Atlantic islands has been intensively studied by the Pelagic Biodiversity Group of the Tenerife Natural Sciences Museum for almost two decades. In this frame, several works have been published on the fauna of the Canary Islands [Hernández (1986, 1987, 1990a & b; 1991); Hernández & Gibson (2000); Hernández & Jiménez, (1992 a, b, c & d; 1993 a, b, c & d; 1996 a, b & c; 2002a); Hernández & Lozano (1987); Hernández & Tiefenbacher (1999); Hernández *et al.* (1991, 1998); Lindley & Hernández (1999 a & b; 2000); Lindley *et al.* (2000a, b & c; 2001a & b) and Hernández, Jiménez & Silva (1997, 1998)]. Regarding the Selvagens Islands, major progress in our knowledge of plankton biodiversity was already achieved by the *Cancap-III* and *Cancap-IV* expeditions by the National Museum of Natural History in Leiden in 1978 and 1980 (Fransen, 1991). This was followed by the *Salvajes* plankton campaign of the Tenerife Natural Sciences Museum in 2000, which has yielded five publications to date [Hernández & Jiménez (2006), Lindley *et al.*, (2002b), Wittmann *et al.* (2004), de Vera, Seapy & Hernández (2006), and de Vera & Seapy (2006)].

The Lophogastrida and Mysida in offshore or coastal waters belonging to NE Atlantic islands are mainly known from the studies of Nouvel (1943), O. S. Tattersall (1955), Wittmann & Wirtz (1998), and Wittmann *et al.* (2004). The present study deepens our knowledge of biodiversity in this region by studying material from additional plankton campaigns. In particular, it adds two species to the faunal inventories of the NE Atlantic, and presets additions to the island faunas. A detailed morphological study was performed for *Leptomysis capensis* Illig, 1906, in the framework of testing the plausibility of its first record for the northern hemisphere.

MATERIAL AND METHODS

The *TFMCBMC*Canarias campaigns were performed annually in marine waters of the Canary Islands since 1996 and supported by the Natural Sciences Museum of Tenerife. The *ConAfrica* campaigns were conducted every year in waters around the Canary Islands during the project *CTM2004-023119/MAR*, supported by the Spanish Government. The data presented here are from twelve samples containing mysids. The material from waters off the Selvagens Islands was taken during the *Salvajes* (*TFMCBMSV/00*) campaign from 25-30 September 2000 with the oceanographic vessel 'Taliarte' using a triple WP-2 plankton net (200 μ m). Part of these samples was already published by Wittmann *et al.* (2004), and an additional twenty samples are treated here.

Sampling stations of the *TFMCBMC*Canarias, *ConAfrica*, and *Salvajes* campaigns were mostly located off the wind-protected coasts of the respective islands. The material is deposited in the Marine Biology Department of the Natural Sciences Museum of Tenerife, where data on the identified species are available in a MS-Access database.

Material from additional sources is indicated here in order to complement the results from the above-mentioned campaigns. The British Museum of Natural History (London) kindly permitted the inspection of *Leptomysis capensis* material collected in 1927-1933 by the *Discovery* expeditions in South African waters. Reg. nos. are 1958.11.19:2488-2502 for material from stations 279, 406-444, and 1958.11.19:1284-96 for station 844.

Unlike the traditional scheme reflected in Wittmann *et al.* (2004), the taxa from subfamily to order level are now distinguished according to Meland & Willassen (2007). Body size was measured from the tip of the rostrum to the end of the telson, without spines. Notably, the same mode of measurement was used by O. S. Tattersall (1955) and Pillai (1973), whereas Illig (1906, 1930) measured from the basis of the antennae to the end of the telson. For further methods and terminology see Wittmann *et al.* (2004).

SPECIES ACCOUNTS

Family MYSIDAE Haworth, 1825

Subfamily GASTROSACCINAE Norman, 1892

Anchialina agilis (G. O. Sars, 1877)

Material from the Canary Islands

TFMCBMMY/00084 Museum Code, 1 adult male (6.3 mm), El Hierro (27°38,141'N & 18°00,215'W) WP-2 net 200 μ m, vertical haul 500-0 m, 9 September 1991, day, TFMCBM/Canarias Museum Cruise;

TFMCBMMY/00032, TFMCBMMY/00033, TFMCBMMY/00071 (6 ex): Two adult males (5.5, 5.9 mm); 1 female (5.1 mm) with 6 nauplioid larvae, 2 females (5.2, 5.6 mm) with empty marsupium, 1 subadult female (4.9 mm), off Gran Canaria (28°04'08"N & 15°21'52"W), Bongo net 200 μ m, 545 m³ filtered, vertical haul 100-0 m, 20 January 2005, day, lunar phase 0.57, ConAfrica Cruise.

Remarks. — This benthopelagic species is widely distributed in coastal habitats of the NE Atlantic, from Norway to Morocco, and in the Mediterranean. For populations from

Cape Verde Islands, Nouvel (1943) noted the absence of ocular papillae; therefore, this material may not belong to this species. *A. agilis* is well known for its strong, diurnal vertical migrations. The new records fit well with previous records from the Canary Islands (Castro, 1995; Wittmann & Wirtz, 1998; Wittmann *et al.*, 2004).

***Anchialina typica typica* (Krøyer, 1861)**

Material from the Selvagens Islands

ZP/3041-MY/0053 Museum Code; 1 immature female (3.3 mm), 30°06'33''N & 15°51'48''W, vertical haul 500-0 m, 26 September 2000, night, Salvajes Museum Cruise.

Material from the Canary Islands

ZP/3071-MY/0083 Museum Code; 3 juveniles (1.8, 1.9, 2.4 mm), Tenerife (28°01'06"N & 16°45'18"W), WP-2 net 200 µm, vertical haul 500-0 m, September 1990, day, TFMCBM/Canarias Museum Cruise;

ZP/3063-MY/0075 Museum Code; 1 juvenile (3.1 mm), off Gran Canaria (27°45'59"N & 15°21'23"W), Bongo net 200 µm, 748 m³ filtered, vertical haul 100-0 m, 9 February 2005, day, lunar phase 0.00, ConAfrica Cruise;

ZP/3069-MY/0081 Museum Code; 1 juvenile (1.6 mm), off Gran Canaria (27°45'56"N & 15°21'23"W), Bongo net 200 µm, 421 m³ filtered, vertical haul 100-0 m, 28 March 2005, day, lunar phase 0.95, ConAfrica Cruise;

ZP/3068-MY/0080 Museum Code; 2 juveniles (2.7, 2.8 mm), off Gran Canaria (27°40'55"N & 15°40'00"W), Bongo net 200 µm, 391 m³ filtered, vertical haul 100-0 m, 4 March 2005, day, lunar phase 0.47, ConAfrica Cruise.

Remarks. — The holopelagic species *A. typica* is known from open and coastal (sub)tropical waters in all large oceans. Indian Ocean and Pacific populations are referred to the subspecies *A. typica orientalis* Nouvel, 1971, according to Fukuoka & Murano (2002). The nominotypical subspecies occurs in the western and eastern Atlantic and also in the Mediterranean Sea (Sars, 1885; Nouvel, 1943, 1971; Wittmann *et al.*, 2004). It is mostly found in 0-50 m depth. It was expected, but is now new for the Canaries and the Selvagens Islands.

***Haplostylus normani* (G. O. Sars, 1877)**

Material from the Canary Islands

ZP/3066-MY/0078 Museum Code; 2 juveniles (2.3, 2.4 mm), off Gran Canaria (27°40'55"N & 15°40'00"W), Bongo net 200 µm, 391 m³ filtered, vertical haul 100-0 m, 4 March 2005, day, lunar phase 0.47, ConAfrica Cruise.

Remarks. — The two juveniles from Gran Canaria show a straight medio-terminal margin of the carapace. They therefore fit well to the concept of this species by Hatzakis (1977). *H. normani* was expected, but is now new for the Canary Islands. This benthopelagic species is known from the NE Atlantic (North Sea to Sierra Leone Estuary), the Mediterranean, and the Red Sea (O. S. Tattersall, 1957; Lagardère & Nouvel, 1980; Innocenti, 2006). Material from Morocco, reported by W. M. Tattersall (1927) as *Gastrosaccus normani* (now *H. normani*), was identified by Nouvel (1951) as *G. lobatus* upon first description of this species (now *H. lobatus*). Nonetheless, numerous specimens of *H. normani* were found by Furnestin (1959) in the plankton off Morocco.

Material from Madeira, reported by Nouvel (1951) as *G. normani*, was transferred to *H. bacescui* Hatzakis, 1977 by Wittmann & Wirtz (1998).

Subfamily SIRIELLINAE Czerniavsky, 1882

***Siriella thompsonii* (H. Milne Edwards, 1837)**

Materials from the Selvagens Islands (Salvajes Museum Cruise)

ZP/3040-MY/0052 Museum Code; 1 juvenile (1.5 mm), 30°06'33''N & 15°51'48''W, vertical haul 500-0 m, 26 September 2000, night;

ZP/3042-MY/0054 Museum Code; 1 immature male (3.3 mm), 1 juvenile (2.5 mm), 30°06'33''N & 15°51'48''W, vertical haul 500-0 m, 26 September 2000, night;

ZP/3036-MY/0048 Museum Code; 2 juveniles (2.3, 2.4 mm), 30°05'45''N & 15°51'12''W, vertical haul 1000-0 m, 26 September 2000, day;

ZP/3037-MY/0049 Museum Code; 1 juvenile (2.1 mm), 30°05'45''N & 15°51'12''W, vertical haul 1000-0 m, 26 September 2000, day;

ZP/3033-MY/0045 Museum Code; 1 immature female (4.9 mm) in two parts, 30°05'28''N & 15°52'05''W, vertical haul 1000-0, 25 September 2000, day;

ZP/3034-MY/0046 Museum Code; 1 subadult female (4.2 mm), 1 adult male (5.1 mm), 30°05'27''N & 15°52'07''W, vertical haul 500-0 m, night;

ZP/3038-MY/0050 Museum Code; 1 juvenile (2.8 mm), 30°05'24''N & 15°52'08''W, vertical haul 1000-0 m, 26 September 2000, night;

ZP/3039-MY/0051 Museum Code; 1 immature female (3.4 mm), 30°05'24''N & 15°52'08''W, vertical haul 1000-0 m, 26 September 2000, night;

ZP/3044-MY/0056 Museum Code; 2 juveniles (1.6, 1.8 mm), 30°00'19''N & 16°00'29''W, vertical haul 500-0 m, 27 September 2000, day;

ZP/3048-MY/0060 Museum Code; 1 female (4.6 mm) with empty marsupium, 1 immature male (3.5 mm), 29°59'53''N & 16°01'28''W, vertical haul 500-0 m, 28 September 2000, day;

ZP/3049-MY/0061 Museum Code; 1 immature male (3.5 mm), 29°59'53''N & 16°01'28''W, vertical haul 500-0 m, 28 September 2000, day;

ZP/3050-MY/0062 Museum Code; 1 adult male (4.7 mm), 1 juvenile (1.1 mm), 29°59'53''N & 16°01'28''W, vertical haul 500-0 m, 28 September 2000, day;

ZP/3045-MY/0057 Museum Code; 2 juveniles (1.9, 2.1 mm), 29°59'14''N & 16°01'28''W, vertical haul 1000-0 m, 28 September 2000, day;

ZP/3046-MY/0058 Museum Code; 1 juvenile (2.0 mm), 29°59'14''N & 16°01'28''W, vertical haul 1000-0 m, 28 September 2000, day;

ZP/3047-MY/0059 Museum Code; 1 female (4.8 mm) with 5 postnauplioid larvae in brood pouch; 1 juvenile (1.7 mm), 29°59'14''N & 16°01'28''W, vertical haul 1000-0 m, 28 September 2000, day;

ZP/3052-MY/0064 Museum Code; 3 juveniles (1.7, 1.9, 2.4 mm), 29°59'12''N & 16°01'20''W, vertical haul 1000-0 m, 28 September 2000, night;

ZP/3053-MY/0065 Museum Code; 3 juveniles (1.7, 1.9, 2.5 mm), 29°59'12''N & 16°01'20''W, vertical haul 1000-0 m, 28 September 2000, night;

ZP/3054-MY/0066 Museum Code; 1 female (5.6 mm) with 9 postnauplioid larvae in brood pouch, 29°59'12''N & 16°01'20''W, vertical haul 1000-0 m, 28 September 2000, night;

ZP/3055-MY/0067 Museum Code; 1 juvenile (2.7 mm), 29°59'12''N & 16°01'20''W, vertical haul 1000-0 m, 28 September 2000, night.

Material from the Canary Islands

ZP/3070-MY/0082 Museum Code; 1 subadult female (4.2 mm), La Gomera (27°58'00"N & 17°13'00"W), WP-2 net 200 µm, 16 September 1992, vertical haul 500-0 m, TFMCBM/Canarias Museum Cruise;

ZP/3056-MY/0068 Museum Code; 1 female (5.5) mm with empty marsupium; 1 adult male (5.9 mm), 2 juveniles (2.7, 2.9 mm), off Gran Canaria (28°04'08"N & 15°21'56"W), Bongo net 200 µm, 813 m³ filtered, vertical haul 100-0 m, 11 January 2005, day, lunar phase 0.01, ConAfrica Cruise;

ZP/3058-MY/0070 Museum Code; 2 juveniles (1.6, 1.7 mm), off Gran Canaria (28°04'08"N & 15°21'56"W), Bongo net 200 µm, 545 m³ filtered, vertical haul 100-0 m, 20 January 2005, day, lunar phase 0.57, ConAfrica Cruise;

ZP/3057-MY/0069 Museum Code; 1 female (6.4 mm) with eggs, off Gran Canaria (27°45'46"N & 15°21'23"W), Bongo net 200 µm, 686 m³ filtered, vertical haul 100-0 m, 11 January 2005, day, lunar phase 0.01, ConAfrica Cruise;

ZP/3060-MY/0072 Museum Code; 1 immature male (4.4 mm), 1 juvenile (3.4 mm), off Gran Canaria (27°45'06"N & 15°21'23"W), Bongo net 200 µm, 519 m³ filtered, vertical haul 100-0 m, 20 January 2005, day, lunar phase 0.57, ConAfrica Cruise;

ZP/3062-MY/0074 Museum Code; 1 immature female (5.7 mm), off Gran Canaria (27°45'56"N & 15°21'23"W), Bongo net 200 µm, 748 m³ filtered, vertical haul 100-0 m, 9 February 2005, day, lunar phase 0.00, ConAfrica Cruise;

ZP/3064-MY/0076 Museum Code; 1 juvenile (3.1 mm), off Gran Canaria (27°45'56"N & 15°21'23"W), Bongo net 200 µm, 509 m³ filtered, vertical haul 100-0 m, 16 February 2005, day, lunar phase 0.50, ConAfrica Cruise;

ZP/3061-MY/0073 Museum Code; 1 juvenile (2.9 mm), off Gran Canaria (27°40'55"N & 15°40'00"W), Bongo net 200 µm, 415 m³ filtered, vertical haul 100-0 m, 20 January 2005, day, lunar phase 0.57, ConAfrica Cruise.

Remarks. — This holopelagic species is the most common Mysidae species in open (sub)tropical waters of all large oceans. It occurs also in the Red Sea and the Mediterranean. It is mostly found in 0-50 m depth and was already reported from waters off the Canaries, Selvagens Islands, and Cape Verde Islands (Nouvel, 1943; O. S. Tattersall, 1955; Castro, 1995; Wittmann *et al.*, 2004).

Subfamily ERYTHROPINAE Hansen, 1910

***Erythrops peterdohrni* Băcescu & Schiecke, 1974**

Material from the Canary Islands

ZP/3067-MY/0079 Museum Code; 1 juvenile (2.3 mm), NE Atlantic, off Gran Canaria (27°40'55"N & 15°40'00"W), Bongo net 200 µm, 391 m³ filtered, vertical haul 100-0 m, 4 March 2005, day, lunar phase 0.47, ConAfrica Cruise.

Further material

1 adult female (4.8 mm), Mediterranean Sea, Gulf of Tunis (37°4'30"N & 10°37'30"E), 110 m, 5 August 1996, leg. Mohamed Néjib Daly Yahia.

Remarks. — The here recorded juvenile from Gran Canaria and the adult female from the Gulf of Tunis are well distinguished at species level by the strikingly white cornea, long antennal scale, serrated inner margin of the endopods of uropods, and subequal telson spines. All previous records of this benthopelagic species were only from the Gulf of Naples, Mediterranean Sea (Băcescu & Schiecke, 1974; Wittmann, 2001). The new records extend the known range to the Gulf of Tunis and again more distantly to the Canary Islands.

***Euchaetomera intermedia* H. Nouvel, 1942**

Material from the Selvagens Islands (Salvajes Museum Cruise)

ZP/3035-MY/0047 Museum Code; 1 juvenile (1.7 mm), damaged, dried, 30°05'27''N & 15°52'07''W, vertical haul 500-0 m, 25 September 2000, night;

ZP/3051-MY/0063 Museum Code; 1 juvenile (2.9 mm), 29°59'12''N & 16°01'20''W, vertical haul 1000-0 m, 28 September 2000, night.

Remarks. — This holo-mesopelagic species is known from open warm-temperate to tropical waters in the E Atlantic, Mediterranean, and western Indian Ocean (Nouvel, 1943; O. S. Tattersall, 1955). It was originally described by Nouvel (1942, 1943) from waters west of the Canary Islands; also known from waters off the Cape Verde Islands (O. S. Tattersall, 1955). *E. intermedia* occurs mostly in less than 500 m depth. It was expected, but is now new for the Selvagens Islands.

***Longithorax alicei* H. Nouvel, 1942**

Material from the Selvagens Islands

ZP/3043-MY/0055 Museum Code; 1 juvenile (2.2 mm), 30°00'19''N & 16°00'29''W, vertical haul 500-0 m, 27 September 2000, day, Salvajes Museum Cruise.

Remarks. — This bathy- to mesopelagic species was previously known only from waters of the Canary archipelago (Nouvel, 1943; Wittmann *et al.*, 2004). Among other features, the juvenile examined here is clearly recognizable by the obliquely antero-posterior compression of the cornea, thus yielding the first record for the Selvagens Islands.

Subfamily LEPTOMYSINAE Czerniavsky, 1882

***Leptomysis capensis* Illig, 1906**

Material from the Canary Islands

TFMCBMMY/00077: 1 immature female (4.4 mm), off Gran Canaria (27°40'55''N & 15°40'00''W), Bongo net 200 μ m, 391 m³ filtered, vertical haul 100-0 m, 4 March 2005, day, lunar phase 0.47, ConAfrica Cruise.

Material of the *Discovery* expeditions to South African waters

1 subadult male (6.2 mm), 6 immatures, south of Cape Town (34°S & 18°E), St. 421, net N₁₀₀ B, 77-0 m, 31 August 1930, day;

1 adult male (8.9 mm), north-east of Roman Rocks, Simon's Bay, Cape Peninsula (34°S 18°E), St. 406, net NBR, 29 m, 5 June 1930, day;

1 adult female (9.7 mm), off Cape Peninsula (34°S & 18°E), St. 444, net N₁₀₀ B, 80-0 m, 24 September 1930, night;

10 adult females (7.2-9.7 mm), 3 subadult females (5.3-8.5 mm), 5 adult males (6.8-8.1 mm), 5 immatures, off Cape of Good Hope (34°S & 18°E), St. 844, net N₁₀₀ B, 155-0 m, 8 April 1932, night;

1 subadult female (7.9 mm), off Port Elizabeth (34°S & 26°E), St. 424, net N₁₀₀ B, 59-0 m, 4 September 1930, night;

21 adult females (7.5-10.1 mm), 7 adult males (7.7-8.1 mm), 5 subadult females (6.7-8.3 mm), southwest of Port Elizabeth (34°S & 26°E), St. 443; net N₁₀₀ B, 49-0 m, 23 September 1930, night.

Revised diagnosis (adults). — Body cuticle, carapace, eyestalks, penes, and basal parts of most appendages are covered with scales; only few such scales on mouth parts and thoracic sternites. Anterior margin of carapace with a pair of sublateral notches in both sexes (Fig. 1a, b). Rostrum forms a prominent, broad, triangular plate reaching to about the anterior margin of the eyestalks in males, or slightly less in females. Eyes very large, eyestalk stout, cornea diameter exceeds rostrum length. Antennal scale slender, setose all around; apical segment with ten setae; the scale extends beyond the antennular trunk by 80-130 % the length of the apical segment of the scale. Exopod and endopod of fourth male pleopod each with eight segments; each of the terminal three segments of the exopod bears a large modified seta; penultimate segment of exopod longer than its combined neighbouring segments (Fig. 1d). Telson (Fig. 1e, f) slender, linguiform, armed by a total of 46-70 spines; proximal half of its lateral margins with roughly continuous series of intermediate-sized spines, apical half with discontinuous series of large spines with 1-8 smaller spines in between; rounded apex armed by a pair of large spines with two smaller spines in between.

Revised description. — Body length in the *Discovery* material is 7.2-10.1 mm (n = 32) in adult females and 6.8-8.9 mm (n = 13) in adult males. Body and appendages generally slender, except for the stout eyes and the relatively short carapace. The dense cover with scales gives the animals a hispid appearance. Nonetheless, there are only a few scales on the thoracic sternites in both sexes. Carapace is 24-27 % and pleon (without telson) is 46-51 % of the body length. No sublateral notches are visible on the anterior margin of the carapace in subadults (Fig. 1c) and immatures.

Eyes (Fig. 1a-c). Relative size of cornea increases with increasing body size. Dorsal face of eyestalks with conspicuous organ of Bellonci marked by nervous tissue, pigment, and a small (often indistinct) elevation. This elevation was termed "small tubercle" by Pillai (1973).

Antennae (Fig. 1a-c). Antennular trunk three-segmented; generally slender except in adult males. Basal segment is 45-48 % length of antennular trunk, median segment is 14-21 %, and terminal segment 32-39 % when measured along the dorsal midline. Basal segment of antennular trunk with outer distal corner produced, bearing 3-4 setae that are plumose along the terminal 2/3 of their length. This corner less produced in the median segment, with 5-6 setae of the same type. Terminal segment with a small, smooth seta on dorsal surface a short distance away from the outer distal corner in both sexes; inner distal corner with one large smooth seta in both sexes, plus 0-1 small seta in males or two large, subbasally plumose (terminally naked) setae in females; only the females bear a large plumose seta near the middle of the outer margin. Appendix masculina well developed,

densely setose (Fig. 1b). Apical segment of antennal scale with five large, plumose setae along outer margin, four on inner margin, and one on tip. This segment contributes 24-33 % to scale length.

Mouth parts as normal in this genus (see Wittmann, 1986a, b). Mandibular palp three-segmented, small basal segment without seta, large median segment with basally sparsely plumose setae, 29-35 along (obliquely oriented) frontal margin plus 13-16 along caudal margin; intermediate-sized terminal segment with 35-41 setae representing diverse modifications. Left mandibular trunk with 3-4 large plus 3-5 small, smooth (*i.e.* not serrated) teeth on pars incisiva, three large plus 2-3 smaller smooth teeth on digitus mobilis, and three strongly serrated spines on pars centralis; pars molaris with weak grinding surface. Right mandibular trunk with three large plus 2-3 small smooth teeth on pars incisiva, two large serrated teeth on digitus mobilis, and five serrated spines on pars centralis; pars molaris with strong grinding surface.

Thoracopods. Basal plate of all exopods with rounded outer, distal corner. Flagellum of first exopod with eight segments, remaining exopods each with nine. First thoracic epipod linguiform, with one long, weakly microserrated seta. Dactylus of first and second endopods with powerful, smooth, acute nail, in each case accompanied by a number of strong, partly serrated, spine-like setae. Third to eighth endopods with well-developed, but shorter nail, smooth and acute as well, not bearing spine-like structures; these endopods always with three-segmented carpopropodus.

Marsupium and penes. Marsupium formed by three pairs of oostegites, emerging in series from thoracopods six to eight. First oostegite small but well developed, representing a linguiform plate with 5-8 long, microserrated setae emerging near its basis. Plate sizes and respective setae numbers increase strongly from first to third oostegites. First and second oostegites with smooth cuticle all around (apart from setae), whereas the outer wall of the third oostegite is densely covered with scales. Penes short, stout, with 6-8 smooth setae arranged in a semicircular above the terminal opening.

Pleopods (Fig. 1d). Female pleopods reduced to small, setose, entire lobes with small, setose, laterally directed apophysis (exite). Males with biramous pleopods throughout; sympod large, with frontal face more densely covered by scales compared to the caudal face (the latter shown in Fig. 1d). First endopod entire (*i.e.* one-segmented); remaining endopods and all exopods each with eight segments. Basal segment of each endopod with laterally directed apophysis, only the fifth endopod with a smaller additional apophysis on the same segment. Two plumose setae insert terminally on most segments that belong to multi-segmented limbs. By contrast, each of the terminal three segments of the fourth exopod bears a strong, modified seta plus an additional small or minute seta.

Uropods. Generally slender. Endopod 0.7-0.9 times the length of exopod, or 1.2-1.5 times that of ultimate pleonite. Endopod with 25-38 spines along inner margin between statocyst and tip, in discontinuous series of larger spines with smaller spines in between. The terminal spine inserts shortly below tip; it is always the strongest and faces straight backwards, whereas all remaining spines face obliquely backwards-inwards. Statocyst very large, statolith composed of fluorite, statolith diameter 190-260 μm .

Telson (Fig. 1e, f). Length is 1.1-1.4 times that of ultimate pleonite, 0.7-0.8 times the exopod of uropods, or 0.8-1.0 times the endopod. Lateral margins double bent, each margin with 21-33 spines, not counting the two pairs of apical spines. A slight subterminal constriction of the telson is marked by the penultimate pair of large spines. The two medio-terminal spines are about half the length of the submedio-terminal spines in females (Fig. 1e), whereas less than half this length in males (Fig. 1f). Average size differences between large spines and intercalary small spines are stronger in males. At a given body size, both sexes show about the same total number of spines. No sex-specific differences are evident for telson size and shape as well.

Distribution. — Known from numerous stations in the Atlantic and Indian Ocean shelf areas of South Africa, 31-35° S, 18-33° E (Illig, 1930; O. S. Tattersall, 1955; Pillai, 1973). Type locality is Agulhas Bank off Cape Town (34° S, 18° E; Illig, 1906, 1930). We do not acknowledge Tattersall's record for 1° S (off Cape Lopez; see discussion). The subadult female sampled off Gran Canaria corresponds morphologically very well with the immatures described by Illig (1906, 1930) and with the subadult females studied in the *Discovery* material. The new record implies a considerable extension of the known distribution range to 28° N, 16° W.

DISCUSSION

Revised concept of *Leptomysis capensis*

The types of this species described by Illig (1906, 1930) were a total of four immature females and six juveniles taken by the '*Deutsche Tiefsee-Expedition*' in 1898-1899 at daytime with near-surface plankton tows at three stations (34-35° S, 18-20° E) above the Agulhas Bank. Most immature individuals in this material, except one, were from waters off Cape Town (34° S, 18° E), so this position can be defined as the type locality. In 1930 and 1932, the first (sub) adults of this species were taken by the *Discovery* expedition at six stations, four of which were in the Atlantic (34° S, 18° E) and two in the Indian Ocean sector (34° S, 26° E) of South African waters (same total number but not always the same stations indicated by O. S. Tattersall, 1955; see below). The four Atlantic stations (nos. 406, 421, 444, 844) have the same geographical coordinates as the type locality, if the geographical degrees are rounded to integers.

In her study of the *Discovery* material, O. S. Tattersall (1955) noted the large eyes, but did not indicate any additional characteristics of adults. A first detailed description of adults of both sexes was given by Pillai (1973) for material taken by the '*International Indian Ocean Expedition*' in 1960-1965 at eight stations (31-35° S, 20-33° E) in the Indian Ocean sector. He also studied part of the *Discovery* material, yet overlooked important characteristics of adults as revealed by the present study: sublateral notches in the anterior margin of the carapace and sexually dimorphic spine patterns on the distal half of the telson.

With the newly discovered features, the concept of *L. capensis* adopts a strong similarity with *L. gracilis* (G. O. Sars, 1864) from European and NW African coastal waters in the Atlantic and the Mediterranean. This makes *L. capensis* appear as a closely related southern vicariant of *L. gracilis*. Exclusive features shared by these two species

within the genus *Leptomysis* G. O. Sars, 1869, are the notched anterior margin of the carapace in adults and a body cuticle densely covered with scales.

These two species, together with *L. megalops* Zimmer, 1915, constitute the *Leptomysis gracilis*-group, as defined here and characterized by the penultimate segment of the exopod of the fourth male pleopod being longer than its combined neighbouring segments, this exopod sharing the same number of segments with its endopod, and by the sexually dimorphic telson. This is opposed to the remaining species in the genus *Leptomysis*, constituting the *L. truncata*-group as defined by Wittmann (1986a) and characterized by a shorter penultimate segment, fewer endopodal segments, and sexually non-dimorphic telson. Additional features shared by *L. gracilis*, *L. capensis*, and *L. megalops* are the slender antennal scale, the slender telson, and the exopods and endopods of most male pleopods bearing eight segments each (except for the non-divided first endopod).

Within the *L. gracilis*-group, *L. capensis* differs from *L. gracilis* by a distinctly shorter antennal scale, stouter eyestalks, and – at a given body size – a larger cornea; from *L. megalops* by hispid body cuticle, larger rostrum, notched anterior margin of the carapace, and smaller eyes; and from both species of a given sex (valid also for immatures) by average shorter intercalary spines on the telson.

Our study did not fully confirm the species identifications by O. S. Tattersall (1955) in the *Discovery* material. The only *Leptomysis* specimen (not considering the two specimens quoted by Tattersall as *L. apiops*, and transferred to *Paraleptomysis dimorpha* upon first description of this taxon by Wittmann, 1986c) at St. 279 (off Cape Lopez; 1° S, 9° E) – a male without head – is not *L. capensis* but *L. megalops*, as clearly evident based on the spine patterns on the telson and the absence of scales on the body cuticle. Materials from stations 421 (south of Cape Town) and 844 (off Cape of Good Hope) are a combination of both species rather than only one as indicated by Tattersall in each case. Currently there is no evidence for the occurrence of *L. capensis* in equatorial regions, but its presence there seems plausible due to our new record of this species from the Canaries at 28° N.

Most specimens of *L. capensis* appeared so far in plankton samples taken during the day and night in less than 200 m depth. Adults showed a higher frequency in night samples. One adult specimen was sampled by the *Discovery* expedition at the sea bottom during the day. These findings, together with the restriction of the distribution range to shelf areas, suggest that the animals exhibit diurnal vertical migrations, possibly extending down to the sea bottom.

Pelagic mysid biodiversity off the Canary and Selvagens Islands

With the material reported in the present contribution (marked by heavy print), the following 13 essentially pelagic species belonging to the family Mysidae are known from the Canaries (C) compared to only five species from the Selvagens (S) Islands:

- Anchialina typica typica*** (Krøyer, 1861) (C, S)
- Boreomysis arctica* (Krøyer, 1861) (C)
- Boreomysis illigi* O. S. Tattersall, 1955 (C)
- Boreomysis microps* G. O. Sars, 1883 (C)
- Euchaetomera glyphidophthalmica* Illig, 1906 (C)

Euchaetomera intermedia H. Nouvel, 1942 (C, S)
Euchaetomera tenuis G. O. Sars, 1883 (C)
Euchaetomera typica G. O. Sars, 1883 (C, S)
Katerythrops oceanae Holt & Tattersall, 1905 (C)
Katerythrops resimora O. S. Tattersall, 1955 (C)
Longithorax alicei H. Nouvel, 1942 (C, S)
Longithorax nouveli O. S. Tattersall, 1955 (C)
Siriella thompsonii (H. Milne Edwards, 1837) (C, S)

Benthopelagic species may enter pelagic sampling gears during vertical migration, potentially in combination with passive drift due to marine currents, including wind-driven currents (Wittmann *et al.*, 2004). Twelve benthopelagic species have appeared so far in pelagic samples taken off the Canary Islands, none off the Selvagens Islands:

Anchialina agilis (G. O. Sars, 1877) (C)
Erythrops peterdohrni Băcescu & Schiecke, 1974 (C)
Gastrosaccus sanctus (Van Beneden, 1861) (C)
Haplostylus bacescui Hatzakis, 1977 (C)
Haplostylus lobatus (H. Nouvel, 1951) (C)
Haplostylus normani (G. O. Sars, 1877) (C)
Leptomysis capensis Illig, 1906 (C)
Parerythrops bispinosa Nouvel & Lagardère, 1976 (C)
Siriella armata (H. Milne Edwards, 1837) (C)
Siriella clausii G. O. Sars, 1877 (C)
Siriella gracilipes H. Nouvel, 1942 (C)
Siriella norvegica G. O. Sars, 1869 (C)

The much smaller species numbers known from the Selvagens Islands may have anthropogenic reasons, namely much less research activity in the 19th and 20th centuries. This is combined with natural factors: this archipelago has a smaller areal extension and less complex geomorphologic and hydrological conditions than the Canaries. Most benthopelagic species listed above (10 out of 12) are shared with the Mediterranean, whereas this fraction is smaller (6/13) for essentially pelagic species. Wittmann *et al.* (2004) explained this difference by the re-colonization history of the Mediterranean and by current hydrological conditions in the Strait of Gibraltar and in the Mediterranean basins.

Two out of the eight species sampled by the campaigns reported here, namely *Erythrops peterdohrni* and *Leptomysis capensis*, are new for the NE Atlantic. Four species are new for the Canaries and three for the Selvagens Islands. These high fractions show that the current faunal inventories are far from saturation, and many more species are to be expected. The still poor faunistic knowledge of key biogeographical areas such as the Canaries is a challenge for future biodiversity research.

ACKNOWLEDGEMENTS

Thanks to the British Museum of Natural History (London) for the kind permission to inspect material of *Leptomysis capensis* and *L. megalops*, collected in 1927-1933 by the *Discovery* expeditions in South African waters.

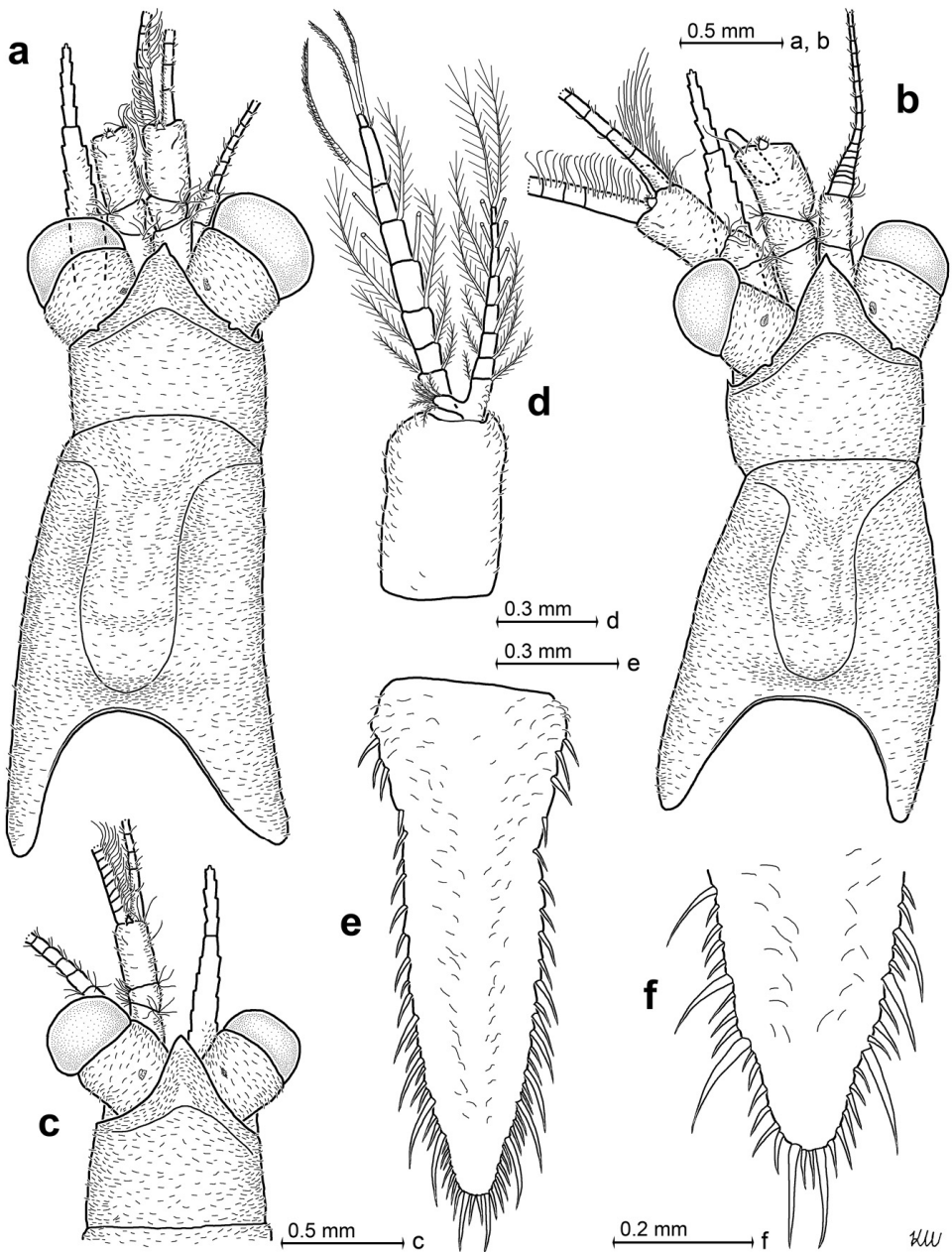


Fig. 1. *Leptomysis capensis* Illig, 1906, from *Discovery* station 844, off Cape of Good Hope; (a) anterior body region of adult female with body length 8.0 mm; (b) the same for adult male, 7.6 mm; (c) cephalic region of subadult female, 5.3 mm; (d) caudal face of fourth pleopod in adult male, 8.1 mm; (e) telson of adult female, 9.7 mm; (f) terminal portion of telson in adult male, 8.1 mm.

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