

First record of *Leptocaris kunzi* Fleeger et Clark, 1980 (Copepoda: Harpacticoida: Darcythompsoniidae) from the Caribbean coast of Colombia

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ABSTRACT: The benthic harpacticoid *Leptocaris kunzi* Fleeger et Clark, 1980 has only been reported from the United States of America. This species is reported for the first time from Ciénaga Grande, northern Colombia, representing a range extension of the species. A brief description and comparative data on the morphology *L. kunzi* are presented. The Colombian specimens display the diagnostic features of *L. kunzi* as reported in both the original description by Fleeger & Clark (1980) and in the subsequent taxonomical account of Kunz (1994), including the antennal exopod represented by two setae, the seven-segmented antennule in female and male, the mandibular palp represented by two elements, leg 2 endopod-2 with 5 elements (the inner one very slender), and female and male leg 5 with three and four setae, respectively. The present record raises the number of species of *Leptocaris* T. Scott, 1899 known from Colombia to three.

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KEY WORDS: benthic copepod, darcythompsoniid, Ciénaga Grande de Santa Marta, meiofauna, microcrustacean.

Первая находка *Leptocaris kunzi* Fleeger et Clark, 1980 (Соперода: Харпактикоида: Дарцитомпсониидае) на карибском побережье Колумбии

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РЕЗЮМЕ: Бентосная гарпактикоида *Leptocaris kunzi* Fleeger et Clark, 1980 (Copepoda: Harpacticoida: Darcythompsoniidae) была ранее известна только из Соединенных Штатов Америки. Этот вид впервые найден нами в Сьенага-Гранде, Северная Колумбия, что является значительным расширением ареала этого вида. Представлены краткое описание и сравнительные данные по морфологии *L. kunzi*. Колумбийские образцы демонстрируют диагностические признаки *L. kunzi*, о которых сообщалось как в первоначальном описании Fleeger & Clark (1980), так и в последующем таксономическом описании Kunz (1994), включая экзоподит антенн, представленный двумя щетинками, семичленистые антеннулы самки и самца, нижнечелюстные щупики представленные двумя элементами: эндоподит ноги 2 — с 5 элементами (внутренний очень тонкий), нога 5 у самки и самца — с тремя и четырьмя щетинками соответственно. Настоящая находка увеличивает число видов рода *Leptocaris* T. Scott, 1899, известных из Колумбии, до трех.

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КЛЮЧЕВЫЕ СЛОВА: бентосные копеподы, Ciénaga Grande de Santa Marta, мейофауна, микрогракообразные.

Introduction

The family Darcythompsoniidae Lang, 1936 comprises four genera: *Leptocaris* T. Scott, 1899, *Darcythompsonia* T. Scott, 1906, *Kristensenia* Por, 1983 and *Pabellonia* Gómez, 2000 (Gómez, Fuentes-Reinés, 2017). The former is the most species-rich with 30 valid species/subspecies (Walter, Boxshall, 2023). Of these, 14 species (*L. brevicornis* (Douwe, 1904), *L. trisetosa trisetosa* (Kunz, 1935), *L. minima* (Jakobi, 1954), *L. vermiculata* (Oliveira, 1957), *L. doughertyi* Lang, 1965, *L. armata* Lang, 1965, *L. pori* Lang, 1965, *L. kunzi* Fleeger et Clark, 1980, *L. mangalis* Por, 1983, *L. echinata echinata* Fiers, 1986, *L. glaber* Fiers, 1986, *L. stromatolicola* Zamudio-Valdéz et Reid, 1990, *L. colombiana* Gómez et Fuentes-Reinés, 2017, *L. vicina* Gómez et Fuentes-Reinés, 2017) have been recorded in America (Gómez, Fuentes-Reinés, 2017) (i.e., Brazil, Mexico, Colombia, Bahamas, Bonaire, Cuba, El Salvador, and the United States of America (Jakobi, 1954; Oliveira, 1957; Lang,

1965; Fleeger, Clark, 1980; Zamudio-Valdéz, Reid, 1990; Kunz, 1994; Defaye, Dussart, 2011; Gómez, Fuentes-Reinés, 2017)), and ten, viz. *L. brevicornis*, *L. trisetosa trisetosa*, *L. minima*, *L. vermiculata*, *L. kunzi*, *L. mangalis*, *L. echinata echinata*, *L. glabra*, *L. colombiana* and *L. vicina*, in the Neotropical region (Jakobi, 1954; Oliveira, 1957; Reid, 1998; Apostolov, 2007; Defaye, Dussart, 2011; Gómez, Fuentes-Reinés, 2017, present account). Members of this genus are tolerant to a wide range of ecological conditions, having been found in shallow coastal environments including estuaries, brackish coastal habitats (Fleeger, Clark, 1980; Gómez, Fuentes-Reinés, 2017), sandy beaches (Song *et al.*, 2012), salt marshes (Lee, Chang, 2008), inland waters with increased salinity (Zamudio-Valdéz, Reid, 1990), and freshwater (Douwe, 1904; Lee, Chang, 2008; Defaye, Dussart, 2011). A few species are associated with mangrove systems (Por, 1983, Huys *et al.*, 1991).

Our knowledge about the presence of this genus in Colombia is still scarce, and only two

species, *L. vicina* Gomez et Fuentes-Reinés, 2017, and *L. colombiana* Gómez et Fuentes-Reinés, 2017, have been reported from Rodadero, Magdalena (Gómez, Fuentes-Reinés, 2017). Despite the number of marine and brackish systems on both the Atlantic and Pacific coasts of Colombia, the study of the biodiversity of the harpacticoid fauna from Colombia has been largely disregarded probably due to the scarcity of Colombian specialists, insufficient efforts for harpacticoids research, and sampling difficulties.

Specimens of *L. kunzi* were found during a survey of the plankton community of Ciénaga Grande de Santa Marta on the Caribbean coast of Colombia. The aim of this paper is to report the first occurrence of *L. kunzi* in the Caribbean and to provide additional morphological data for the species.

Material and methods

Biological samples were collected from littoral habitats of Ciénaga Grande de Santa Marta, northern Colombia (10°52'11.25"N, 74°19'31.64"W). Qualitative surveys were performed in July 2022; water samples were collected from areas with mangrove vegetation using a 25 L bucket. Environmental parameters (water salinity, pH, and temperature) were measured in situ with a WTW350i Multimeter (Weilheim in Oberbayern). Water samples were filtered with a plankton net (45 µm mesh size) to obtain concentrates of 500 mL that were preserved in 96% ethanol. In the laboratory, samples were stained with Bengal rose, concentrated to a volume of 50 mL and preserved in 70% ethanol. Copepods were separated using a Bogorov counting chamber, counted under a Fisher Scientific a stereo- and compound optical microscope, and examined in a drop of glycerol. Specimens of *Leptocaris* were measured in lateral position, from the anterior end of the rostrum to the posterior margin of the caudal rami, and then dissected to observe the taxonomically relevant appendages, which were mounted in semi-permanent slides using glycerin as mounting medium and sealed with nail varnish. The appendages of taxonomic relevance were photographed at 1000× magnification using a Kodak EasyShare C140 digital camera adapted to a compound microscope. The identification of the specimens was done following the keys, illustrations, and descriptions by Fleeger & Clark (1980) and Kunz (1994).

Morphological terminology follows Huys & Boxshall (1991). The following abbreviations are used in the morphologic description and tables: BENP — basoendopod; EXP — exopod; ENP — endopod; EXP1-3 — first to third exopodal segments; ENP1-3 — first

to third endopodal segments; P1–P5 — first to fifth swimming legs.

Voucher specimens of *L. kunzi* were deposited at the Center for Biological Collections, University of Magdalena, (CBUMAG) with accession number: CBUMAG:ART:01049

Results

Systematics

Order Harpacticoida Sars, 1903

Family Darcythompsoniidae Lang, 1936

Genus *Leptocaris* T. Scott, 1899

Leptocaris kunzi Fleeger et Clark, 1980

Figs 1–4.

MATERIALEXAMINED: 7 adult females and 2 adult males collected by the first author (JMF-R) from Ciénaga Grande de Santa Marta located in Pueblo Viejo-Magdalena, northern Colombia (10°52'11.25"N, 74°19'31.64"W) during July 2022.

DESCRIPTION OF FEMALE. Habitus elongate and cylindrical (Fig. 1A). Total body length ranging from 532 to 560 µm ($n = 7$, mean = 542 µm). Rostrum triangular, with two sensilla subdistally (Fig. 1B). Posterior margins of pro- and urosomites with small spinules laterally and ventrally (Fig. 1C); posterior margin of urosomites ventrally with posterior row of irregular spinules (Fig. 1D), dorsally with posterior row of smaller and uniform spinules (Fig. 1E). Seminal receptacle located in the anterior part of genital somite (Fig. 1E). Anal somite about 1.4 times as long as wide (Figs 1D, E, 2A) conical truncated, tapering posteriorly; anal operculum crescentic, displaced posteriorly, with about 34 small spinules along its posterior margin; pair of dorsal sensilla associated to the anal operculum displaced proximally (arrowed in Fig. 2A). Caudal rami (Fig. 2B, C) short, about 1.3 times as long as wide, tapering distally, with setules along inner margin (arrowed in Fig. 2B); with six setae as follows: seta I absent; seta II located in the proximal fourth of ramus, and seta III arising in the middle of ramus, the former shorter than ramus, the latter 1.3 times as long as seta VII; seta IV located subdistally at outer distal corner, about 1.6 times as long as seta VI; seta V thick and longest; dorsal seta VII arising medially, articulated basally (Fig. 2B, C).

Antennule (Fig. 2D, D1) seven-segmented. Armature formula as follows: I (1)-II (7)-III (4)-IV (2+ae)-V (1)-VI (2)-VII (5+acrothek)

Antenna (Fig. 2E) with abexopodal seta longer than allobasis (arrowed in Fig. 2E). Exopod represented by two setae. Endopodal segment with two stout lateral spines on inner margin, distally with four spines and one seta.

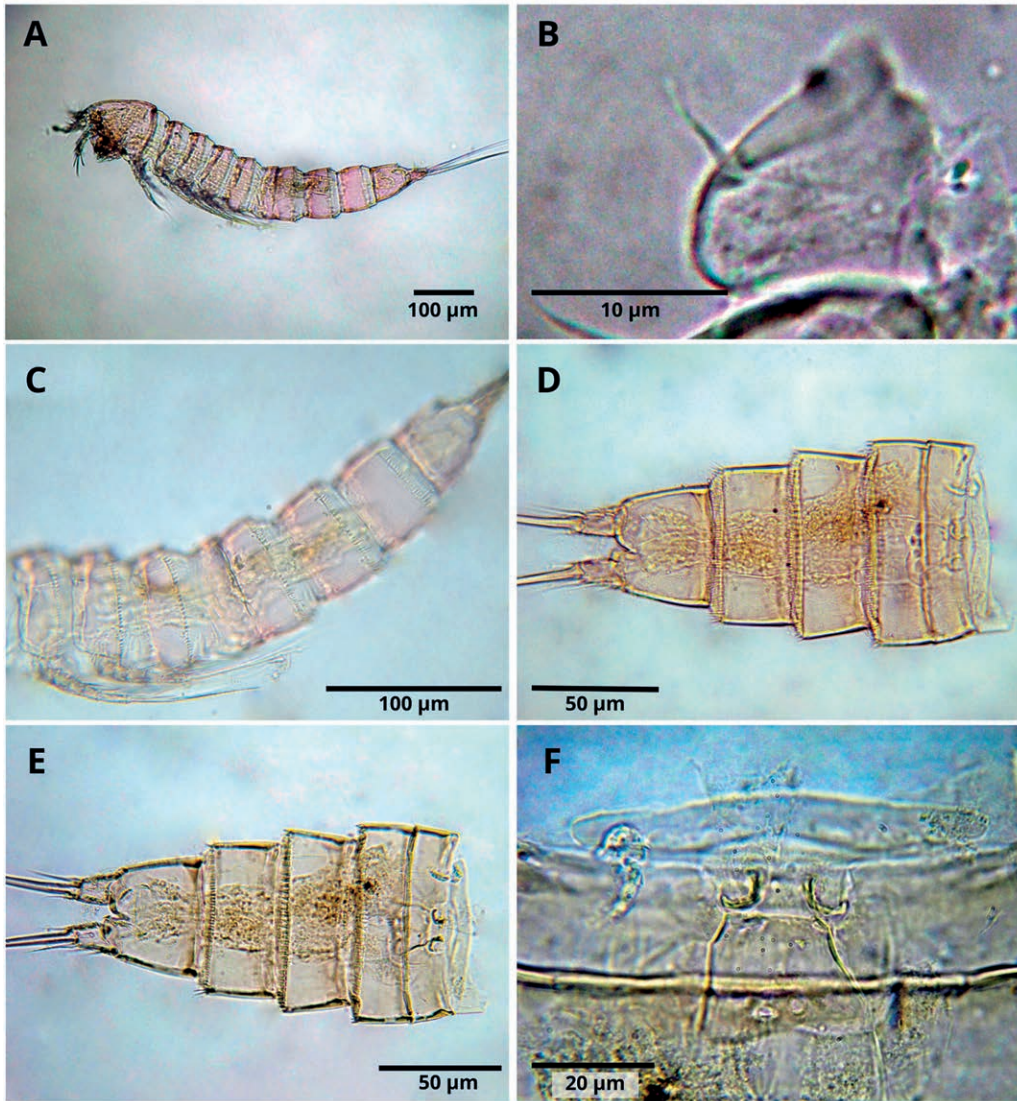


Fig. 1. *Leptocaris kunzi*. Female from Ciénaga Grande de Santa Marta Colombia. A — habitus; B — rostrum; C — P3–P4-bearing somites and urosome, lateral view; D — urosome, lateral view; E — urosome, dorsal view; F — genital field.

Рис. 1. *Leptocaris kunzi*. Самка из Сьенага-Гранде-де-Санта-Марта, Колумбия. А — габитус; В — ро-
струм; С — сомиты, несущие P3–P4, уросома, вид сбоку; D — уросома, вид сбоку; E — уросома, вид
сверху; F — генитальное поле.

Mandible (Fig. 2F, F1) with well-developed gnathobase bearing several multicuspidate teeth and one lateral seta. Mandibular palp reduced and represented by two setae (Fig. 2F1).

Maxillule (Fig. 3A) with unornamented praecoxa. Arthrite well-developed, with five spines of which three probably with an accessory spinule (not multi-

cuspidate). Coxal endite, basis, exopod, and endopod fused, with eight elements.

Maxilla (Fig. 3B) with two endites on syncoxa. Proximal endite with two setae, distal endite with one spine. Allobasis drawn out into strong claw. Endopod represented by two setae. Maxilliped reduced, each represented by a small lobe (arrowed in Fig. 3B).

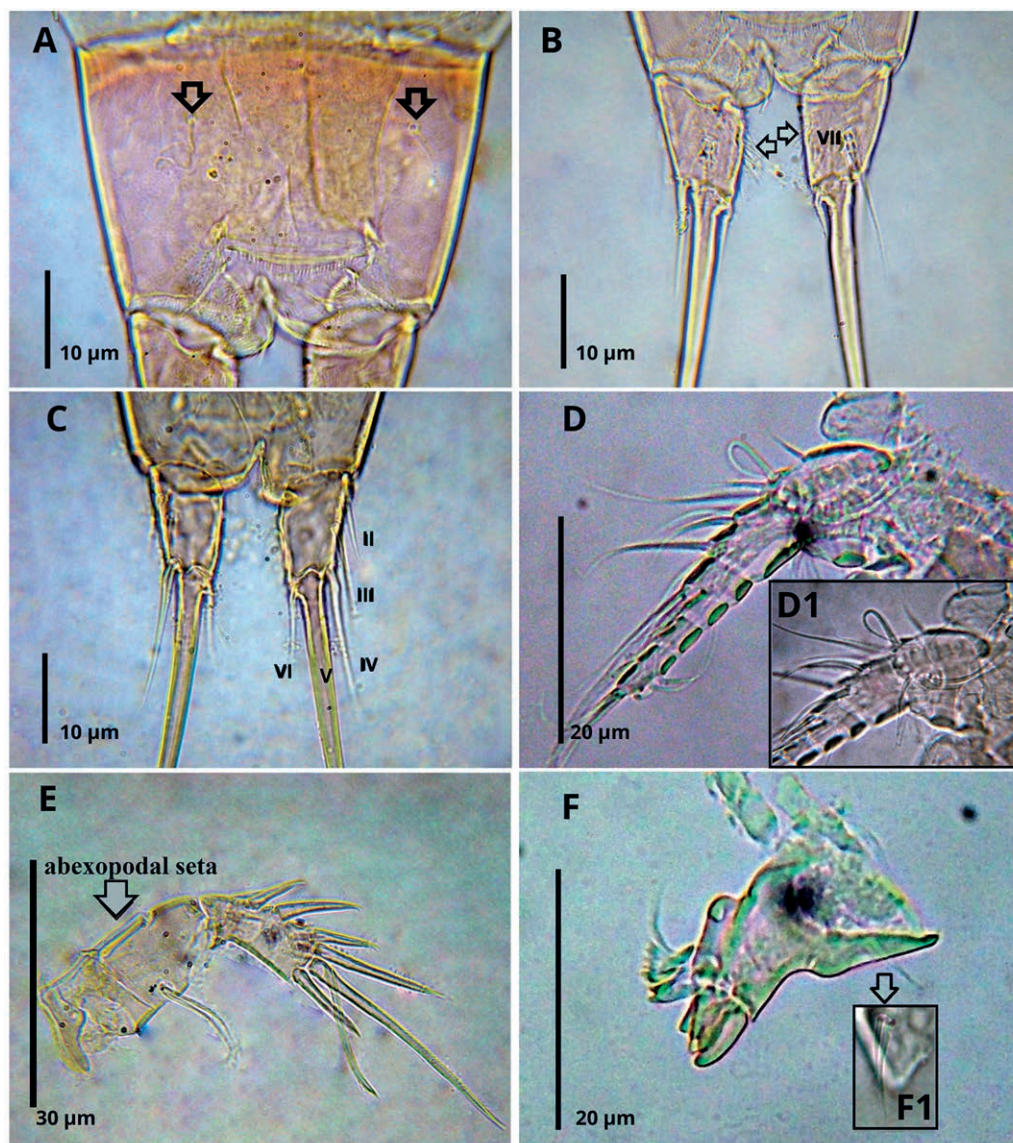


Fig. 2. *Leptocaris kunzi*. Female from Ciénaga Grande de Santa Marta Colombia. A — anal somite, dorsal view (sensilla associated to the anal operculum indicated with arrow); B — caudal rami, dorsal view (inner setules indicated with arrow); C — setae of caudal rami (each seta indicated with Roman numerals); D — antennule, dorsal view, D1 — setae on the first–third antennular segments; E — antenna (abexopodal seta indicated with arrow); F — mandible, F1 — mandibular palp.

Рис. 2. *Leptocaris kunzi*. Самка из Сьенага-Гранде-де-Санта-Марта, Колумбия. А — анальный сомит, вид сверху (сенсилла, ассоциированная с анальным оперкуломом, обозначена стрелкой); В — каудальные ветви, вид сверху (внутренние щетиночки обозначены стрелкой); С — щетинки каудальных ветвей (пронумерованы римскими цифрами); D — антеннула, D1 — щетинки на первом–третьем сегментах антеннулы; E — антенна (абэкзоподитная щетинка обозначена стрелкой); F — мандибула, F1 — мандибулярный щупик.

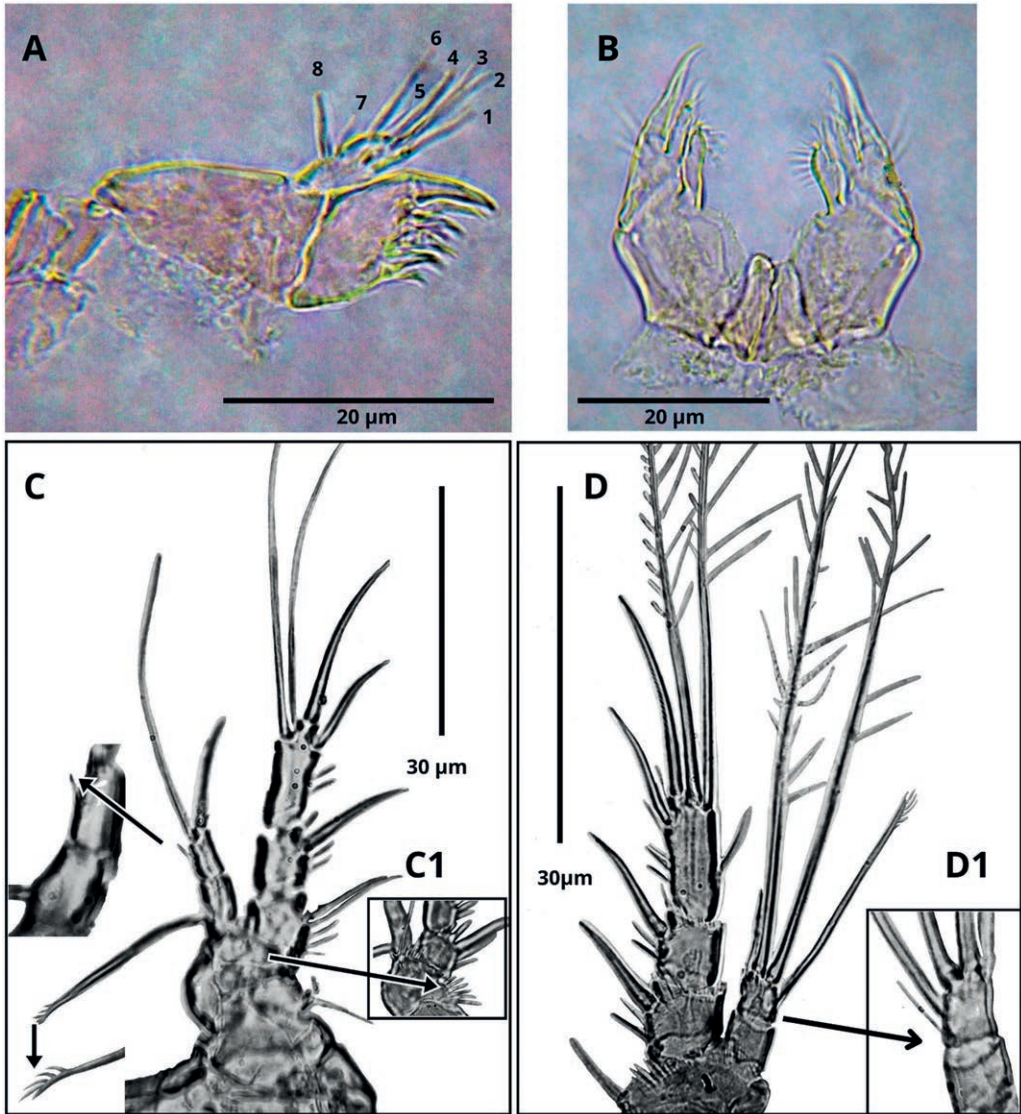


Fig. 3. *Leptocaris kunzi*. Female from Ciénaga Grande de Santa Marta Colombia. A — maxillule; B — Maxilla; C — P1, C1 — transverse row of spinules on the basis; D — P2, D1 — P2ENP.

Рис. 3. *Leptocaris kunzi*. Самка из Сьенага-Гранде-де-Санта-Марта, Колумбия. А — максиллула; В — максилла; С — плавательная нога 1 (P1), C1 — поперечный ряд шипиков на базисе; D — плавательная нога 2 (P2), D1 — эндоподит P2.

P1 (Fig. 3C, C1) with unornamented coxa. Basis with one subdistal spinular row medially, and one transverse spinular row close to exopod (arrowed in Fig. 3C1), with one inner and one outer seta, the former longer than the first endopodal segment. EXP three-segmented; all segments with outer spinules; EXP1 and EXP2 without inner seta, EXP3 with 2 outer spines and 2 distal setae. ENP two-segmented,

slightly beyond distal end of EXP2; ENP1 with one inner seta directed downwards and with comb-like tip (arrowed in Fig. 3C); ENP2 with one short outer spine, one long distal seta, and one very small inner seta (inner seta very small, arrowed in Fig. 3C).

P2 (Fig. 3D, D1) with unornamented coxa. Basis with distal spinular row and one transverse spinular row close to exopod. EXP three-segmented; all seg-

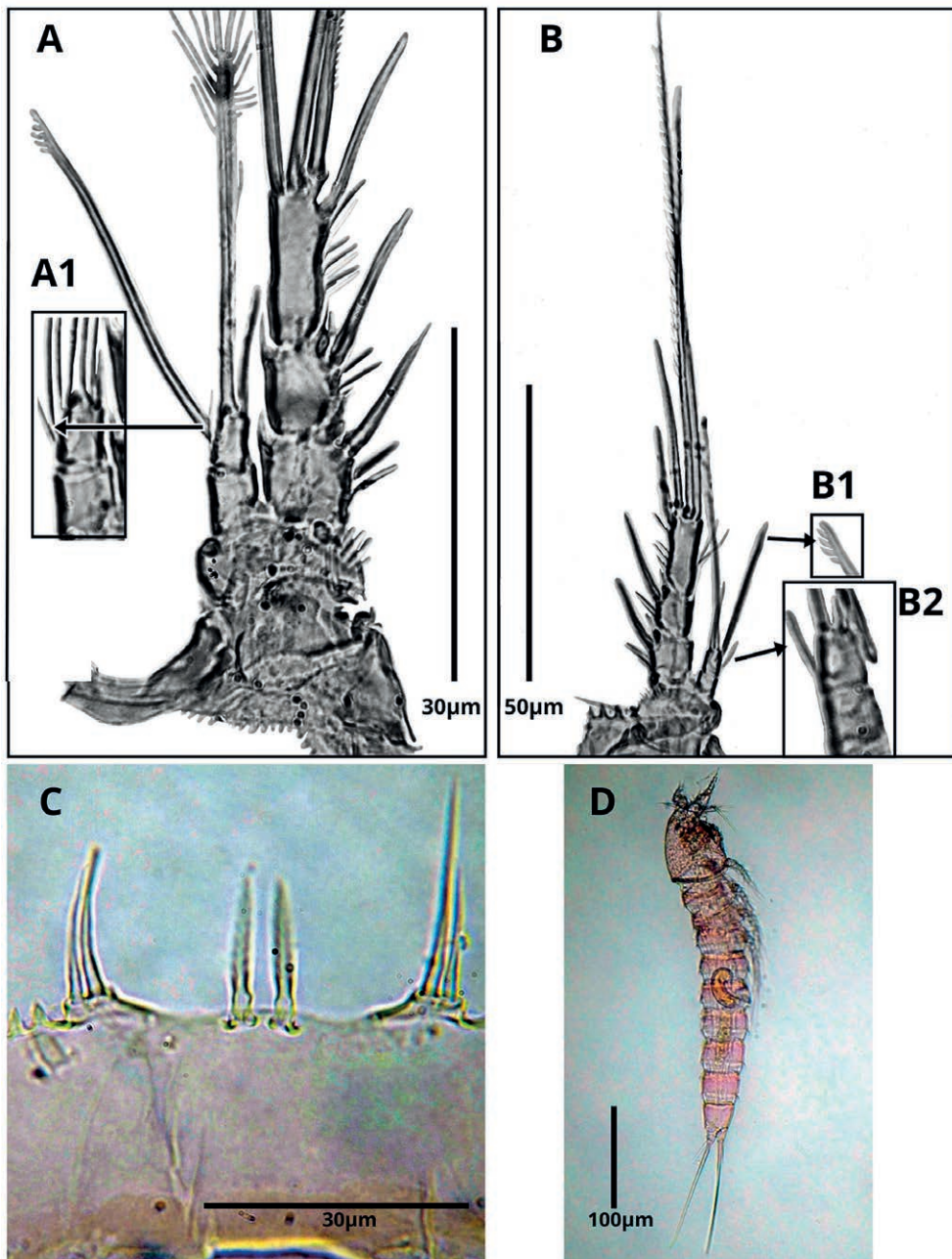


Fig. 4. *Leptocaris kunzi* from Ciénaga Grande de Santa Marta Colombia. A–C — female; D — Male. A — P3, A1 — P3 endopodite; B — P4, B1 — seta with comb-like tip on P4 endopodite, B2 — inner seta on P4ENP2; C — P5; D — habitus, lateral view.

Рис. 4. *Leptocaris kunzi* из Сьенага-Гранде-де-Санта-Марта, Колумбия. А–С — самка; D — самец. А — плавательная нога 3 (P3), А1 — эндоподит P3; В — плавательная нога 4 (P4), В1 — щетинка с шектовидным кончиком на эндоподите P4, В2 — внутренняя щетинка на втором сегменте эндоподита P4, (P4ENP2); С — плавательная нога 5 (P5); D — габитус, вид сбоку.

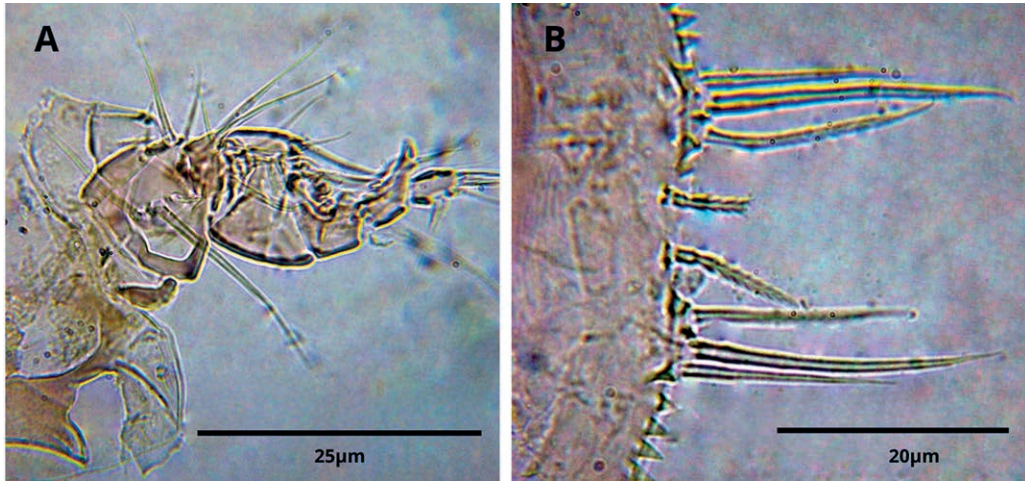


Fig. 5. *Leptocaris kunzi*. Male from Ciénaga Grande de Santa Marta Colombia. A — antennule; B — P5.
 Рис. 5. *Leptocaris kunzi*. Самец из Сьенага-Гранде-де-Санта-Марта, Колумбия. А — антеннула; В —
 плавательная нога 5 (P5).

ments with outer spinules; EXP1 and EXP2 without inner seta; EXP3 with two inner small setules, and 2 outer spines and 2 distal setae. ENP two-segmented; ENP1 without inner seta; ENP2 with one short outer spine, two long plumose distal setae, one subdistal long inner seta (with comb-like tip) and one proximal slender inner seta (Fig. 3D1).

P3 (Fig. 4A, A1) with coxa and basis as in P2. Exopod as in P2. Endopod two-segmented; ENP1 without inner seta; ENP2 with four elements (inner proximal seta reduced, arrowed in Fig. 4A1), subdistal inner seta with comb-like tip.

P4 (Fig. 4B, B1, B2) as in P3, but endopod comparatively shorter.

Armature formula of P1–P4 as follows:

	P1	P2	P3	P4
EXP	0-0-022	0-0-022	0-0-022	0-0-022
ENP	1-210	0-221	0-211	0-211

P5 (Fig. 4C) with EXP and BENP fused, the former poorly-developed and with two bare unequal setae; both BENP fused medially, each endopodal lobe represented by one spinulose element a little distant from the exopodal setae.

DESCRIPTION OF MALE. Habitus (Fig. 4D) as in female. Total body length ranging from 490 µm to 504 µm (n = 2; mean = 497). Sexual dimorphism expressed in antennule, segmentation of urosome, and P5.

P6 was not observed.

Antennule (Fig. 5A) haplocer, seven-segmented, fourth segment swollen, sixth segment with a small projection apically. Armature formula difficult to discern, purportedly as follows: I(0)-II(4)-III(6)-IV(4+ae)-V(1)+VI(1)-VII(4+acrothek)

P5 (Fig. 5B) fused to somite ventrally; EXP represented by two bare setae and one pinnate seta; ENP represented by one spinulose seta.

DISTRIBUTION AND ECOLOGY. *Leptocaris kunzi* was originally described from a shallow estuarine lake in Louisiana (USA) by Fleeger & Clark (1980) and redescribed by Kunz (1994) based on type material. In Colombia, the species was found in Ciénaga Grande de Santa Marta, Magdalena, on the Caribbean coast, and represents a range extension of the species from the Gulf of Mexico to the Guajira Province (see Morrone, 2014). The site where the species was found is a shallow mangrove area, 0.7 m deep, with water temperature 26–31 °C; local salinity 15–20 PSU, and pH 7.5–8.1.

Discussion

In an early attempt to understand the phylogenetic relationships within the genus *Leptocaris* Lang (1965: 106) suggested that four species, *L. gurneyi* (Nicholls, 1944), *L. minus* (Jakobi, 1954), *L. marinus* (Por, 1964) and *L. armatus* Lang, 1965 could represent a well-defined group within the genus. Kunz (1978: 48) noticed that *L. armatus*, *L. marinus*, and *L. minus* share the presence of strong spines on the first segment of the female antennule, and believed that *L. gurneyi* did not belong to this group. It was Kunz (1978: 48) who first referred to this group of three species (*L. armatus*, *L. marinus*, and *L. minus*) as the *minus*-group, which

was defined by the presence of three setae only on P2–P3EXP3, while the other species bear four or five setae on that segment. Some years later, Kunz (1983: 135) proposed two additional groups, the *brevicornis*- and the *ignavus*-group, based on the armature of P3–P4EXP3, and P2–P3ENP2, and noticed that *L. azoricus* Kunz, 1983, albeit somehow related to *L. pori* Lang, 1965, occupies an isolated position within the genus. In a continuous attempt to understand the relationships amongst the species of *Leptocaris*, Kunz (1994) sank *L. azoricus* into synonymy with *L. biscayensis* (Noodt, 1955), included some of the species of *Leptocaris* described after 1983 into his previous groups and proposed the *mangalis*-group for *L. mangalis* Por, 1983, *L. stromatolicolus* Zamudio-Valdéz et Reid, 1990, and *L. noodti* Kunz, 1994. Kunz's (1994) groups were based on the number of segments of P1ENP, and armature of P2–P4EXP3. Probably unaware of Kunz's (1994) work, Apostolov (2007) challenged Kunz (1983) subdivision. Fiers believed that the genus *Leptocaris* should be subdivided into eight genera (see Kunz, 1994: 51), and Fiers (1986) noticed the rather inadequate subdivision of the genus and that the discovery of the males of several species in future investigations (*e.g.*, *L. emekdasi* Köroğlu, Kuru et Karaytuğ, 2015, *L. glabra*, *L. echinata echinata* Fiers, 1986, *L. colombiana*, *L. vicina*), and careful analysis of the female and male P5 would shed some light on the phylogenetic relationships amongst the species of the genus.

A more extensive historical account of the family and on the groups of *Leptocaris* can be found in Lee & Chang (2008), Song *et al.* (2012) and Köroğlu *et al.* (2015).

At present, and as suggested by Kunz (1994), the genus is subdivided into four groups: *brevicornis*-, *mangalis*-, *ignavus*- and *minimus*-group. Here we followed Kunz's (1994) subdivision for identification purposes only.

Leptocaris kunzi belongs to the *ignavus*-group by having a 2-segmented P1ENP and P2–P4EXP3 with armature formula 4,4,4 setae/spines. The *ignavus*-group is at present composed of *L. minuta* T. Scott, 1899, *L. ignavus* (Noodt, 1953), *L. biscayensis* (Noodt, 1955), *L. insularis* (Noodt, 1958), *L. pori* Lang, 1965, *L. doughertyi* Lang, 1965, *L. canariensis* Lang, 1965, *L. kunzi*, *L. ignea* Cottarelli et Baldari, 1982, *L. glabra*, *L. islandica* Apostolov, 2007, *L. ryukyuensis*

Song, Dahms et Khim, 2012, and *L. emekdasi*.

The specimens of *L. kunzi* examined (seven adult females and two adult males) agree with the descriptions and illustrations by Fleeger & Clark (1980) and Kunz (1994). This species can readily be identified by the combination of the following characters: 1) antennary exopod reduced and represented by two setae only, 2) female antennule seven-segmented, 3) mandibular palp reduced, represented by two elements, 4) P2ENP2 with 5 elements of which the inner one slender, 5) female and male P5 with three and four setae, respectively. Fleeger & Clark (1980: 56) reported the P1 ENP2, and P3–P4 ENP2 with 2, 3, and 3 elements respectively. Fleeger & Clark's (1980) armature formulae of *L. kunzi* was corrected by Kunz (1994: 39) who noted 3, 4, and 4 setae on P1ENP2, and P3–P4ENP2, respectively. Probably unaware of Kunz's (1994) redescription and amendment, Song *et al.* (2012: 1079, table 2) kept Fleeger & Clark's (1980) erroneous armature complement of P1ENP2, and P3–P4ENP2.

Amongst the species of the *ignavus*-group, *L. kunzi* is morphologically similar to *L. insularis* and *L. emekdasi*. These species are unique within the *ignavus*-group in sharing a mandibular palp with two setae, the armature of P1ENP2 with three (?) elements, and P3–P4ENP2 with four elements, respectively, and the female P5 with three elements. *Leptocaris kunzi*, *L. emekdasi*, and *L. insularis* can be distinguished by 1) the number of segments of the female and male antennule (with seven segments in *L. kunzi* (Fleeger, Clark, 1980: 55, fig. 3; Kunz, 1994: 39, fig. 5A; present study, Fig. 2D), but with six segments in the female and seven segments in the male of *L. insularis* (Noodt, 1958: 66, figs 41, 42)), and six segments in the female of *L. emekdasi* (Köroğlu *et al.*, 2015: 386, fig. 3a)); 2) the armature complement of P2ENP2 (with five elements in *L. kunzi* (Fleeger, Clark, 1980: 56, fig. 11; Kunz, 1994: 41, fig. 4E; present study, Fig. 3D), but four in *L. insularis* (Noodt, 1958: 66, fig. 38; Song *et al.*, 2012: 1079, table 2) and *L. emekdasi* (Köroğlu *et al.*, 2015: 387, fig. 4c)); 3) the number of setae on the male P5 (with four setae in *L. kunzi* (Fleeger, Clark, 1980: 55, fig. 9; Kunz, 1994: 41, fig. 5B; present study, Fig. 5B), but five in *L. insularis* (Noodt, 1958: 66, fig. 47) (the male of *L. emekdasi* remains unknown)); 4) length/width ratio of caudal ramus (about

1.3 in *L. kunzi* (Fleeger, Clark, 1980: 55, fig. 2; Kunz 1994: 40, fig. 3B; present study, Fig. 2B), but 2 in *L. insularis* (Noodt, 1958: 66, fig. 36) and *L. emekdasi* (Köroğlu *et al.*, 2015: 385, fig. 2d–f); 5) spinular ornamentation of the anal operculum (with small spinules in *L. kunzi* (Kunz, 1994: 40, fig. 3B; present study, Fig. 2A, B), but without spinules in *L. insularis* (Noodt, 1958: 66, fig. 36) and *L. emekdasi* (Köroğlu *et al.*, 2015: 385, fig. 2a, d)).

The specimens of *L. kunzi* from Colombia are identical in most respects to the type material from Louisiana but differ in some subtle differences: 1) the inner margin of the caudal rami is furnished with setules in the Colombian population (present study, Fig. 2B), but the rami are unornamented in the North American specimens (Fleeger, Clark, 1980: 55, figs 1, 2; Kunz, 1994: 40, fig. 3B); 2) the inner seta of P1 basis is longer than ENP1 in the Colombian population (present study, Fig. 3C), but it is shorter in the type material (Kunz, 1994: 41, fig. 4D); 3) the dorsal caudal seta VII is longer than ramus in the specimens reported herein (present study, Fig. 2B; Fleeger, Clark, 1980: 55, fig. 2), but it is shorter in the North American specimens according to Kunz (1994: 40, fig. 3B); 4) the dorsal surface of the anal somite is ornamented with a row of spinules in the specimens examined by Kunz (1994, fig. 3B), but naked in the specimens reported herein (Fig. 2A); 5) anal operculum ornamented with small spinules in specimens reported herein (Fig. 2A, B) and those observed by Kunz (1994: 40, fig. 3B), but it is unornamented in the specimens examined by Fleeger & Clark (1980: 55, fig. 2). Overall, we do not regard such differences as sufficient evidence to consider our specimens as representatives of a new species. Darcythompsoniids exhibit a wide range of variability (Fiers, 1986; Apostolov, 2007), and the morphological plasticity observed in *L. kunzi* is therefore not surprising. Complete and more precise morphological redescriptions, and the molecular characterization of the populations of *L. kunzi*, including the assessment of the intra- and interpopulation variability, are needed for a more precise separation of the different populations of the species.

KEY TO THE NEOTROPICAL SPECIES OF *LEPTOCARIS*

- 1. P1ENP 1-segmented2
- P1ENP 2-segmented3

- 2. Female antennule five-segmented, P5 with three setae
*L. vicina* Gómez et Fuentes-Reinés, 2017
- Female antennule four-segmented, P5 with 2 setae*L. mangalis* Por, 1983
- 3. P2EXP3 with three setae
*L. minima* (Jakobi, 1954)
- P2EXP3 with four setae 4
- 4. P3–P4EXP3 with four setae 5
- P3–P4EXP3 with five setae 6
- 5. P2ENP2 with five setae.....
 *L. kunzi* Fleeger et Clark, 1980
- P2ENP2 with four setae ... *L. glabra* Fiers, 1986
- 6. Female P5 with two setae
 *L. brevicornis* (Douwe, 1904)
- Female P5 with three setae 7
- Female P5 with four setae
 *L. vermiculata* (Oliveira, 1957)
- 7. Caudal ramus about twice as long as wide 8
- Caudal ramus about 1.5 times as long as wide
 *L. echinata echinata* Fiers, 1986
- 8. P1ENP2 with three elements, mandibular palp represented by two setae
 *L. trisetosa trisetosa* (Kunz, 1935)
- P1ENP2 with two elements, mandibular palp represented by one long seta
 *L. colombiana* Gómez et Fuente, 2017

Compliance with ethical standards

Authors declare that they did not violate or omit ethical or legal norms in this research. JMFR processed the collection permit through the environmental process and permits of the research vice-rectory of the University of Magdalena within the framework of collection permit of the National Environmental Licensing Authority (NELA) in Colombia.

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