A new species of *Parategastes* (Copepoda, Harpacticoida) from South Africa

H. Kunz
Schwerpunkt für Biogeographie, Universität des Saarlandes

A new species of the genus *Parategastes* Sars, 1904 (Copepoda, Harpacticoida) was found during an ecological study of zooplankton in Langvlei, one of the Wilderness Lakes near George on the southern Cape coast. The species, *Parategastes coetzeei,* is described and a key is given for the identification of the various species of *Parategastes.*
S. Afr. J. Zool. 1980, 15: 186 – 189

'n Nuwe spesie van die genus *Parategastes* Sars, 1904 (Copepoda, Harpacticoida) is tydens 'n ekologiese studie van soöplankton in Langvlei, een van die Wildernismere naby George aan die Kaapse suidkus, gevind. Die spesie, *Parategastes coetzeei,* word beskryf en 'n sleutel vir die uitkenning van die verskillende spesies van *Parategastes* word verskaf.
S.-Afr. Tydskr. Dierk. 1980, 15: 186 – 189

H. Kunz
Universität des Saarlandes, Schwerpunkt für Biogeographie,
66 Saarbrücken 11, Federal Republic of Germany

Received 26 Sept. 1979; accepted 17 March 1980

A sample of harpacticoids (Family Tegastidae) was received for identification. These tegastids were collected on 9 December 1976 during a zooplankton survey in Langvlei, one of the Wilderness Lakes near George on the southern Cape coast. On examination of the sample, a hitherto unknown species of the genus *Parategastes* was found. This species is described here.

Description of material

Parategastes Sars, 1904
Parategastes coetzeei sp. nov.
Material: 10♀♀, 8♂♂.
Holotype: ♀, K-31015, in the Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany.
Allotype: ♂, K-31016, in the Zoologisches Institut und Zoologisches Museum, Hamburg, Federal Republic of Germany.
Paratypes: 3♀♀ and 2♂♂, K-31017, in the Zoologisches Institut und Zoologisches Museum, Hamburg. Further paratypes in the Zoologisches Museum der Universität Kiel, Federal Republic of Germany.
Type-locality: Langvlei, Wilderness Lakes near George, Republic of South Africa, within the Indian Ocean region.

Description

Female

Body bent in a characteristically tegastid manner (Fig. 1). Cephalothorax ventrolaterally pointed (Fig. 2). Posterior edge of the cephalothorax forming a blunt angle (see asterisk). Genital segment rounded in lateral view (Fig. 3). Furca quadratic in ventral view and trapeziform in lateral view (Figs 4 & 5). First antenna six-segmented with aesthetasc on fourth segment (Fig. 6). Exopodite of the second antenna consisting of one segment with three apical setae (Fig. 7). Maxilliped illustrated in Fig. 8. First leg with one-segmented exopodite and endopodite (Fig. 9). Exopodite with five and endopodite with six setae. The proximal seta on the inner edge of the endopodite reaches a little beyond the tip of the endopodite. The middle seta on the inner edge of the endopodite is stout and carries a setal comb (Fig. 10). Second and third legs with exopodite two- and endopodite three-segmented (Figs. 11 & 12). Both rami of fourth leg three-segmented (Fig. 13).

Setal formula:

	Exopodite			Endopodite		
	1	2	3	1	2	3
P 1	032			321		
P 2	1	231		1	2	221
P 3	1	322		1	2	331
P 4	0	1	231	0	2	021

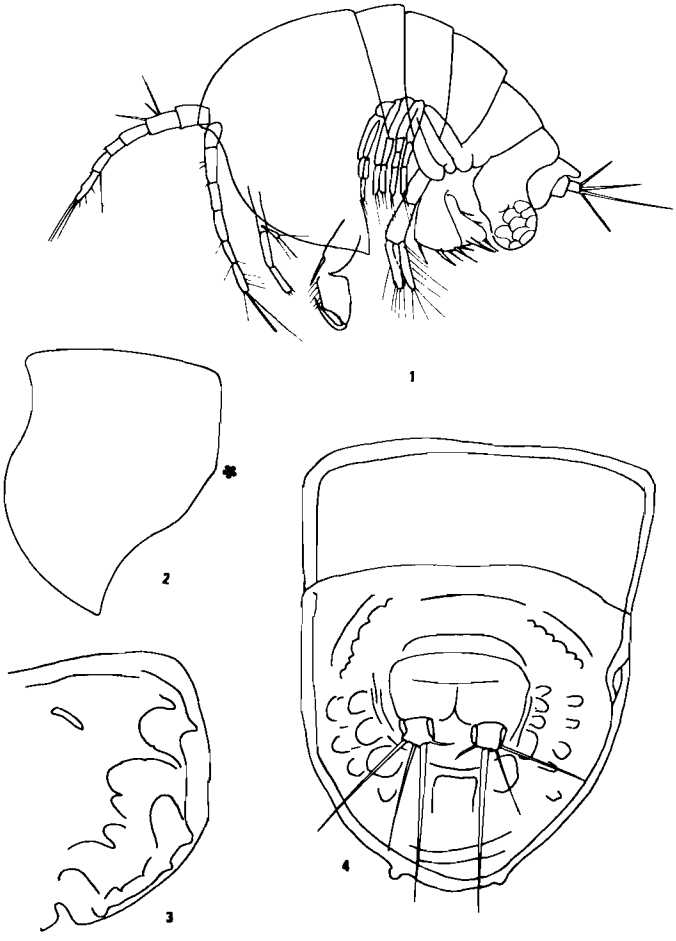
Occasionally single setae are shortened (Fig. 14). Fifth leg two-segmented (Fig. 15). Basoendopodite with three setae on its inner edge and two apically. The inner apical seta is 1,1 times as long as the outer. Exopodite about twice as long as broad with two apical setae and two setae on its outer edge. Inner apical seta 1,3 times as long as the outer. Egg sacs with 3–4 eggs.

Male

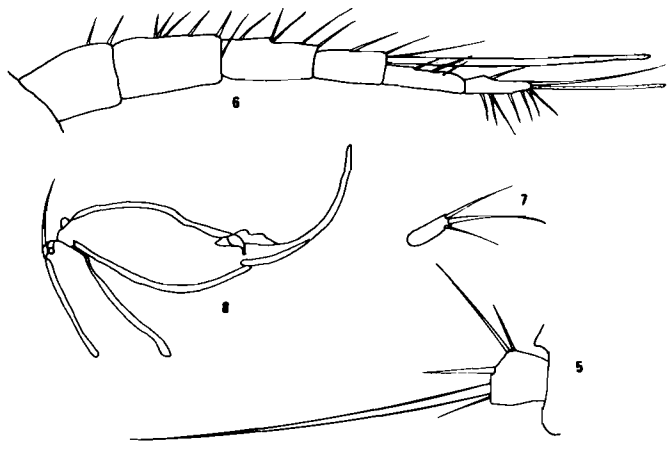
First antenna eight-segmented (Fig. 16). Fifth leg two-segmented (Fig. 17). Exopodite with four setae of which two are apical and two on the outer edge. The distal seta on the outer edge has an almost terminal position. Genital segment is rounded off (Fig. 18).

Measurements (mm): ♀ length 0,37, longest furcal seta 0,07
♂ length 0,37, longest furcal seta 0,13

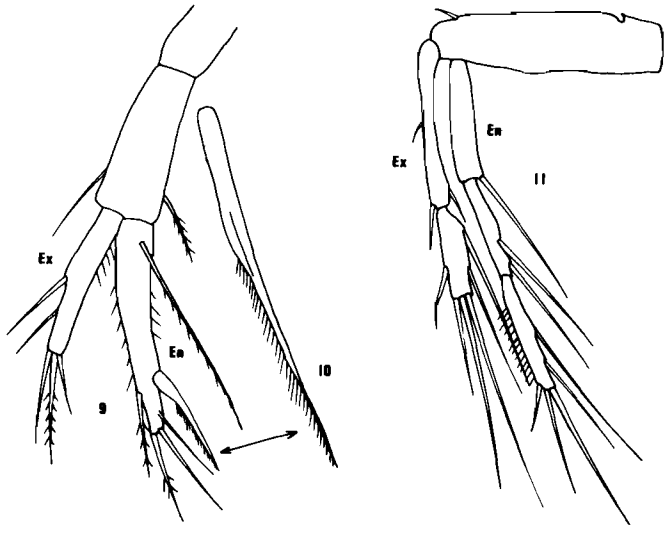
The species is named after D.J. Coetzee.



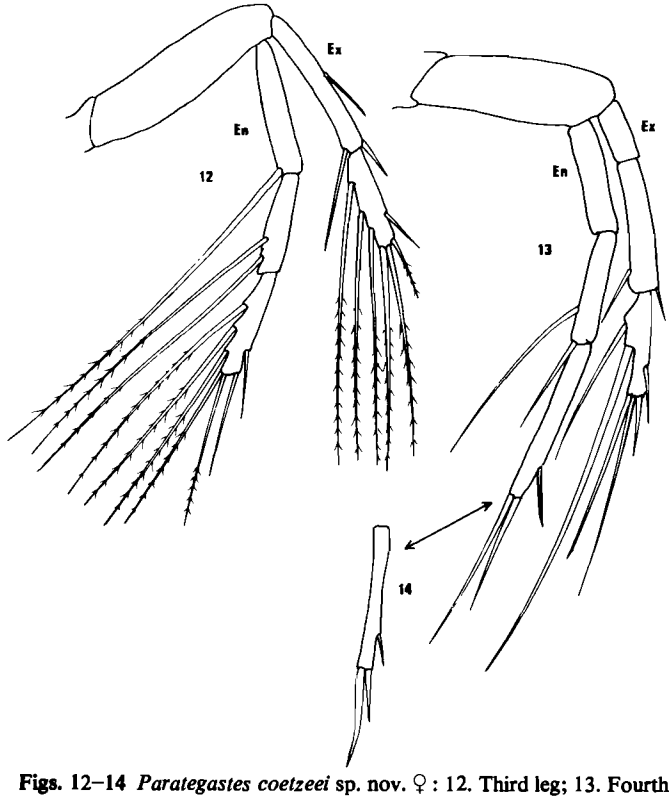
Figs. 1–4 *Parategastes coetzeei* sp. nov. ♀ : 1. Habitus, lateral; 2. Lateral view of cephalothorax; 3. Outline of genital segment with chitinous structures, lateral view; 4. Ventral view of abdomen and furca, with chitinous structures.



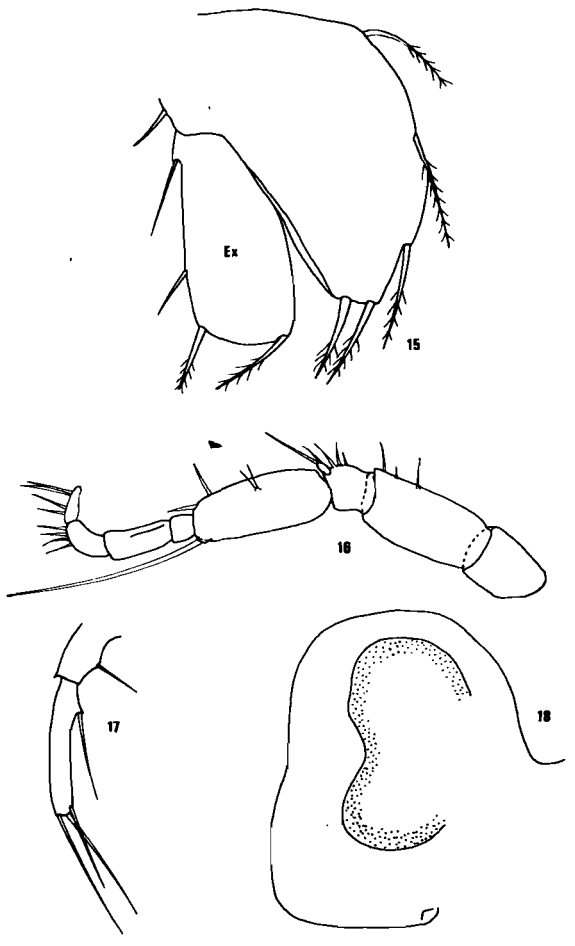
Figs. 5–8 *Parategastes coetzeei* sp. nov. ♀ : 5. Lateral view of furca; 6. First antenna; 7. Exopodite of second antenna; 8. Maxilliped (double outline indicates chitinous structure).



Figs. 9–11 *Parategastes coetzeei* sp. nov. ♀ : 9. First leg; 10. Middle spine of inner edge of the endopodite of the first leg; 11. Second leg.



Figs. 12–14 *Parategastes coetzeei* sp. nov. ♀ : 12. Third leg; 13. Fourth leg; 14. End segment of the endopodite of the fourth leg, abnormal.



Figs. 15–18 *Parategastes coetzeei* sp. nov. : 15. ♀ fifth leg; 16. ♂ first antenna; 17. ♂fifth leg; 18. Outline of ♂genital segment, lateral view.

Discussion

The following taxa have been described from the genus *Parategastes: P. sphaericus* (Claus 1863), *P. sphaericus* var. *similis* Sewell, 1924, *P. sphaericus* var. *punicus* Monard, 1935, *P. herteli* Jakobi, 1953 and *P. caprinus* Wellerhaus, 1970. *P. sphaericus* was again described by Sars (1911), de Vos (1945) and Pallares (1970), and the form *punicus* by Jakobi (1953). Monard (1935) suspected the form *similis* to be an independant species. The description of the form *punicus* by Jakobi (1953) does not agree with the original description (Pallares 1970), but resembles the main form *P. sphaericus*, as described by Sars (1911).

P. coetzeei is distinguishable from the other *Parategastes* species by the combination of different characteristics: A 1 six-segmented; exopodite A 2 with three setae; endopodite P 1 with six setae; middle segment of endopodite P 4 with two setae; terminal setae on exopodite P 5 (♀) as well as on endopodite P 5 (♀) almost equally long; genital segment of ♀ and ♂ rounded. *P. coetzeei* is nearest to *P. herteli*, but differs from the latter in the following:

– The ratio between the length of the endopodite and exopodite of the first leg is 1,4 in *P. coetzeei* and 0,85 in *P. herteli*,
– the proximal inner seta of the endopodite of the first leg is equal in length to the endopodite in *P. coetzeei* and 1,6 times as long as the endopodite in *P. herteli*,
– the middle inner seta of the endopodite of the first leg is thickened at its base in *P. coetzeei* and normal in *P. herteli*,
– the middle inner seta of the endopodite of the first leg is attached 4/5 from the base of the endopodite in *P. coetzeei;* the corresponding seta is attached in the middle of the endopodite in *P. herteli*,
– the two outer setae of the basoendopodite of the ♀fifth leg are spiniform in *P. herteli* and normal in *P. coetzeei*,
– the first inner seta of the exopodite of the♀fifth leg is spiniform in *P. herteli* and normal in *P. coetzeei*,
– the second inner seta of the exopodite of the ♀ fifth leg is 2,2 times as long as the first inner seta in *P. herteli* and somewhat shorter than the first inner seta in *P. coetzeei*,
– the exopodite of the fifth leg (♀ and ♂) has on its outer edge two setae in *P. coetzeei* and three setae in *P. herteli*.

Ecological notes

Langvlei is a shallow coastal lake with a maximum depth of about 4 m. Its salinity varied between 8–12 % , temperature between 13,5–28,5 °C and pH between 8,2–9,2 during the 1976 zooplankton survey (Coetzee 1978). During this 12 month period in which 24 daytime pump samples (filtered through a 80 μm mesh size nylon net) were taken at a station in the middle of Langvlei, only nine tegastid specimens were found in 24 m^3 of water. However, during a night survey in December 1976 in this lake, 209 specimens were obtained in 2 m^3 of water. This shows that the tegastids migrate upward from the bottom of Langvlei during the night (Coetzee 1978). The sample of *P. coetzeei* received from South Africa was collected at a depth of 2 m during the night of 9 December 1976.

Zoogeographical notes

The genus *Parategastes* has been recorded from the Atlantic and Indian Ocean. *P. sphaericus* is widely distributed. Many records are from the European Atlantic coast, the Mediterranean and the Black Sea. Further records are from the North American Atlantic coast (Lang 1948), the South American Atlantic coast (Pallares 1970) and from Ceylon (Thompson, according to Lang, 1948). The other species are known in each case from only one place: *P. sphaericus punicus* from Tunis (Monard 1935), *P. similis* from Calcutta (Sewell, according to Lang, 1948), *P. caprinus* from Cochin Bay, South India (Wellerhaus 1970), *P. herteli* from Santa Catarina, Brasilia and *P. coetzeei* from the Wilderness Lakes, South Africa.

Identification key to the *Parategastes* species

1. Endopodite of first leg with six setae 2
   Endopodite of first leg with five setae 5
2. Exopodite of second antenna with two setae .... *sphaericus sphaericus*
   Exopodite of second antenna with three setae 3
3. Proximal seta of inner edge of endopodite of first leg 1,6 times longer than endopodite ..... *herteli*
   Proximal seta of inner edge of endopodite of first leg not longer than endopodite 4
4. Middle seta of inner edge of endopodite of first leg attached half-way along segment, not spiniform. Setae of outer edge of exopodite of ♀ fifth leg attached at 1/3 and 1/2 of the length of the segment respectively . . . *caprinus*
   Middle seta of inner edge of endopodite of first leg attached 3/4 to the distal end, spiniform. Setae of outer edge of exopodite of ♀ fifth leg attached at 1/8 and 3/4 of the length of the segment respectively ..... *coetzeei*

5. Middle apical seta of exopodite of first leg spiniform. Endopodite of first leg not shorter than exopodite . . *similis*
Middle apical seta of exopodite of first leg thin and slender. Endopodite of first leg shorter than exopodite . . . . . *sphaericus punicus*

Acknowledgements

I wish to thank Dr D.J. Coetzee, of the Cape Department of Nature and Environmental Conservation, Republic of South Africa, for sending me this interesting sample and supplying information about the aquatic environment of these animals.

References

CLAUS, C. 1863. Die frei lebenden Copepoden mit besonderer Berücksichtigung der Fauna Deutschlands, der Nordsee und des Mittelmeeres. Leipzig, Verlag Engelmann.

COETZEE, D.J. 1978. A contribution to the ecology of the zooplankton of the Wilderness Lakes. Ph.D. thesis, University of Stellenbosch.

DE VOS, A.P.C. 1945. Contributions to the copepod fauna of the Netherlands. *Arch. Neerl. Zool.* 7: 52–90.

JAKOBI, H. 1953. Neue Tegastiden (Harpacticoida - Copepoda) von der Küste Santa Catarinas (Brasilien). *Dusenia* 4: 173–180.

LANG, K. 1948. Monographie der Harpacticiden. 1–1682 (Ohlson, Lund).

MONARD, A. 1935. Les harpacticoides marins de la région de Salammbo. *Bull. Stat. Océanograph. Salammbo* 34: 1– 94.

PALLARES, R.E. 1970. Copepodos marinos de la Ria Deseado (Santa Cruz, Argentinia) contribucion sistematico-ecologica. III. *Physis* 30: 255–282.

SARS, G.O. 1911. An account on the Crustacea of Norway 5: I–VIII, 1–449, pls. 1–284 (Bergen Museum, Bergen).

SEWELL, R.B.S. 1924. Fauna of the Chilka Lake. Crustacea Copepoda. *Mem. Indian Mus.* 5: 772–842.

WELLERHAUS, S. 1970. On the taxonomy of some Copepoda in Cochin Backwater (a South Indian estuary). *Veröff. Inst. Meeresforsch. Bremerhaven* 12: 463–490.