

# A new distribution record of *Chambardia wahlbergi* (Krauss, 1848) (Bivalvia: Iridinidae) and *Unio caffer* (Krauss, 1848) (Bivalvia: Unionidae) in South Africa

KN de Kock<sup>1\*</sup>, CT Wolmarans<sup>1</sup>, JH Erasmus<sup>1</sup>, E Lubbe<sup>1</sup>, HM Strauss<sup>1</sup> and GL van Niekerk<sup>1</sup>

<sup>1</sup>Unit for Environmental Sciences and Management, Potchefstroom Campus of the North-West University, Private Bag X6001, Potchefstroom 2520, South Africa

## ABSTRACT

Little is known with regard to the conservation status of invertebrates of South Africa; however, in the revised edition of the IUCN Red Data List (2011) the conservation status of both *Unio caffer* and *Chambardia wahlbergi* is considered as 'of least concern'. In recent reports on the geographical distribution and habitat preferences of these two species in South Africa, concern was expressed regarding their conservation status. However, specimens of *C. wahlbergi* collected at several sites on several occasions in the Vaal River were the first evidence that the geographical distribution of this bivalve was wider and not restricted to water bodies located in east-flowing catchments in the warmer areas of South Africa. The fact that populations of *C. wahlbergi* can become established in habitats on the Highveld was further supported by a number of valves collected on the dry bed of the Schoonspruit (26° 37' 55.2"S, 26° 35' 32.3"E), near Klerksdorp in the North West Province, on 16 February 2016. A number of valves of *U. caffer* which were collected on the same occasion at the same locality are also the first record of this species from this water body.

## A NEW DISTRIBUTION RECORD OF *CHAMBARDIA WAHLBERGI*

Of the 693 recorded extinctions of animal species since the year 1500, molluscs represent 42%, which includes 31 bivalve species (Lydeard et al., 2004). According to these authors only a fraction of the known molluscan species have had their conservation status properly assessed and therefore their level of imperilment is poorly documented and most probably underestimated. Little is known regarding the conservation status of invertebrates of South Africa (Herbert, 1998). In the revised edition of the IUCN Red Data List the conservation status of both *Unio caffer* and *Chambardia wahlbergi* is indicated as 'of least concern' (Seddon et al., 2011). However, in reports on the geographical distribution and habitat preferences of these two species in South Africa, De Kock and Wolmarans (2010; 2012) expressed their concern regarding their conservation status. This concern was based on the absence of these two species in several previously positive localities and the lower numbers recovered from others in the Kruger National Park (De Kock and Wolmarans, 1998; De Kock et al., 2002; Wolmarans and De Kock, 2006). However, specimens of *C. wahlbergi* were collected at a number of sites on several occasions in the Vaal River, as recently as 2007. These records were the first to prove that the geographical distribution of *C. wahlbergi* was wider and not restricted to water bodies located in east-flowing catchments in the warmer areas of South Africa, as suggested by earlier records in the database of the National Freshwater Snail Collection (NFSC) and on reports in literature (Connolly, 1939; Jubb, 1976). The fact that populations of *C. wahlbergi* can become established in habitats on the Highveld was further supported by 8 closed, 9 right and 12 left

valves that were collected in the Schoonspruit, near Klerksdorp in the North West Province (26° 37' 55.2"S, 26° 35' 32.3"E) (Fig. 1). The valves were found over a stretch of 100 m on the dry bed of the Schoonspruit on 16 February 2016. The substratum of this site consists mainly of dry sand and mud and 5 closed valves, 8 right and 5 left valves of *U. caffer* were also found together with those of *C. wahlbergi*. Sand and mud was earlier reported by De Kock and Wolmarans (2010; 2012) as the preferred substratum for both of these species. The size of the valves of *C. wahlbergi* ranged from 6.7 to 14.9 cm and those of *U. caffer* from 4.6 to 7.5 cm. Judging from the growth lines on the valves, the age of the largest specimens of both species seems to have been more than 10 years at time of death, which was most probably caused by the complete drying up of the habitat due to persistent conditions of drought experienced in some areas in the North West Province.

Although this specific site was surveyed on 2 different occasions in 1965 and on 3 different occasions in 1969, by personnel of the Snail Research Unit at the Potchefstroom University and the State Ecologist at Johannesburg, respectively, no specimens of either *C. chambardi* or *U. caffer* were recovered. Furthermore, many samples of other freshwater mollusc species collected during surveys elsewhere in the Schoonspruit between 1960 and 1969 are on record in the database of the NFSC. However, during these surveys also, neither *C. chambardi* nor *U. caffer* were ever collected. This is therefore the first report in print of the occurrence of both these bivalve species in the Schoonspruit.

According to Jubb (1976), adult freshwater mussels possess little means of dispersal, but because of their unique adaptations during their larval stages, which entail a phase where they become compulsory parasites on fish, they can rapidly disperse through an interconnected freshwater system. According to Seddon et al. (2011), little is known regarding these parasitic larval stages. In an investigation of the interaction between the larval stages of several bivalve and fish species, Kenmuir (1980) infected several species of fish successfully under experimental conditions. However, this author could not establish

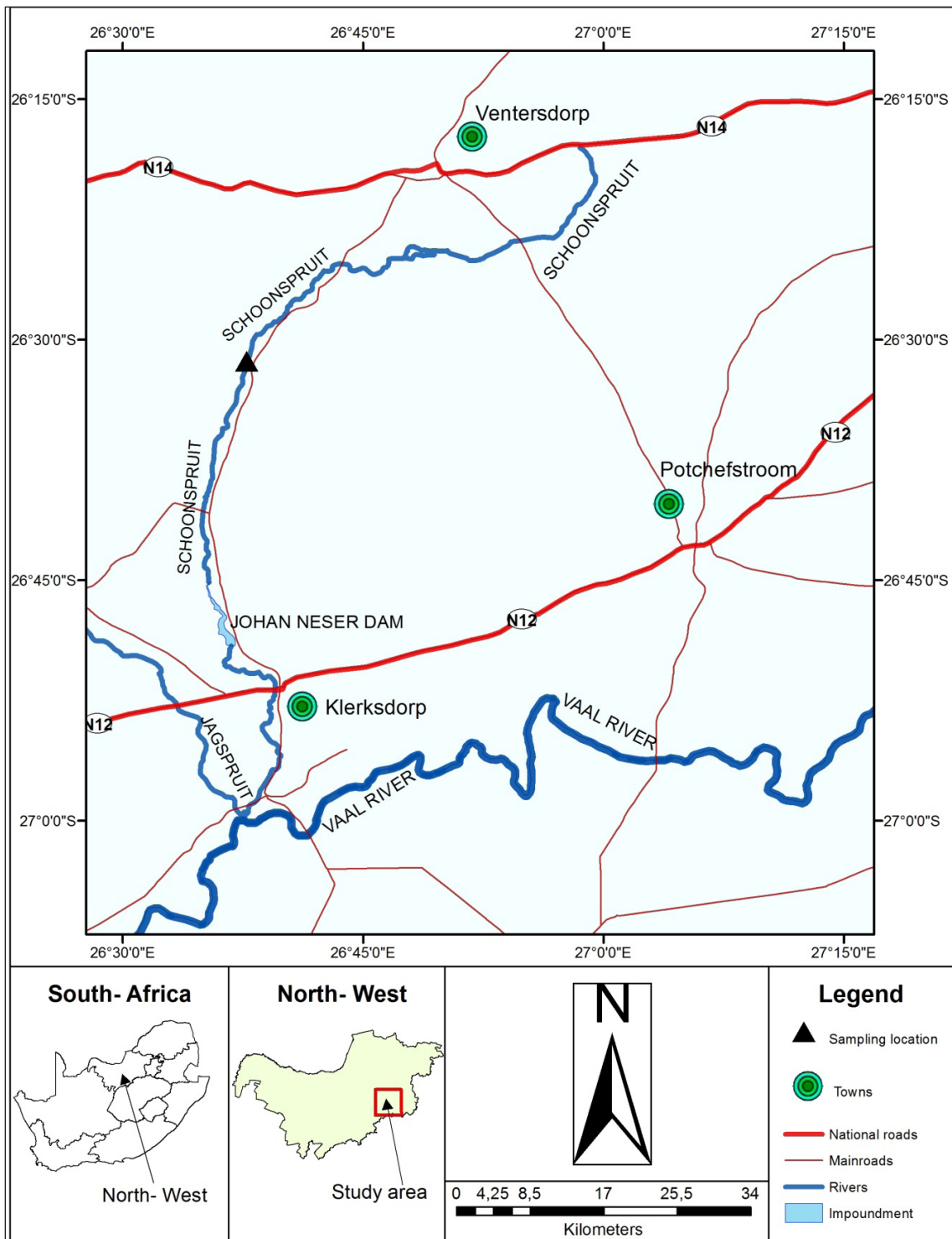
\* To whom all correspondence should be addressed.  
e-mail: [kenne.dekock@nwu.ac.za](mailto:kenne.dekock@nwu.ac.za)

Received 3 May 2016; accepted in revised form 16 November 2016

whether or not these parasitic larval stages are host specific. The Schoonspruit is a tributary of the Vaal River and in view of the means of dispersal mentioned above, it is not surprising that *C. wahlbergi* was found in both these water bodies. However, the Mooi River is also a tributary of the Vaal River and in a recent extensive survey (Wolmarans et al., 2015) no specimens of *C. wahlbergi* were recovered and there are also no

previous records of this species from the Mooi River catchment in the NFSC.

A survey is planned for the near future to determine whether any reservoir habitats might have remained elsewhere in the Schoonspruit which could lead to reestablishment of populations of these two bivalve species.



**Figure 1**  
Location of the study area

## REFERENCES

- CONNOLLY M (1939) A monographic survey of the South African non-marine Mollusca. *Ann. S. Afr. Mus.* **33** 1–660.
- DE KOCK KN and WOLMARANS CT (1998) A re-evaluation of the occurrence of freshwater molluscs in the Kruger National Park. *Koedoe* **41** (1) 1–8. <https://doi.org/10.4102/koedoe.v41i1.240>
- DE KOCK KN and WOLMARANS CT (2010) Verspreiding en habitats van *Unio caffer* Krauss, 1848 (Bivalvia: Unionoidea: Unionidae) in Suid-Afrika gebaseer op rekords in die databasis van die Nasionale Varswaterslakversameling. *S. Afr. Tydskr. Natuurwet. Teg.* **29** (4) 173–186. <https://doi.org/10.4102/satnt.v29i4.21>
- DE KOCK KN and WOLMARANS CT (2012) Verspreiding en habitats van *Chambardia wahlbergi* en *Chambardia petersi* (Bivalvia: Iridinidae) in Suid-Afrika. *S. Afr. Tydskr. Natuurwet. Teg.* **31** (1) 15–22. <https://doi.org/10.4102/satnt.v31i1.39>
- DE KOCK KN, WOLMARANS CT and DU PREEZ LH (2002) Freshwater mollusc diversity in the Kruger National Park: a comparison between a period of prolonged drought and a period of exceptionally high rainfall. *Koedoe* **45** (2) 1–11. <https://doi.org/10.4102/koedoe.v45i2.23>
- HERBERT DG (1998) Molluscan conservation in South Africa: diversity, issues and priorities. *J. Conchol. Spec. Publ.* **2** 61–76.
- JUBB RA (1976) Freshwater mussels, Unionidae, what is their distribution in South African Inland waters today? *Piscator* **97** 73–75.
- KENMUIR DHS (1980) Aspects of the biology and population dynamics of freshwater mussels in Lake Kariba and Lake Mcilwaine. PhD thesis, Dept. of Zoology, University of Natal.
- LYDEARD C, COWIE RH, PONDER WF, BOGAN AE, BOUCHET P, CLARK SA, CUMMINGS KS, FREST TJ, GARGOMINY O, HERBERT DG, HERSHLER R, PEREZ KE, ROTH B, SEDDON M, STRONG EE and THOMPSON FG (2004) The global decline of nonmarine mollusks. *BioScience* **54** 321–330. [https://doi.org/10.1641/0006-3568\(2004\)054\[0321:TGDONM\]2.0.CO;2](https://doi.org/10.1641/0006-3568(2004)054[0321:TGDONM]2.0.CO;2)
- SEDDON M, APPLETON C, VAN DAMME D and GRAF D (2011) Freshwater molluscs of Africa: diversity, distribution and conservation. In: Darwall WRT, Smith KG, Allen DJ, Holland RA, Harrison IJ and Brooks EGE (eds) *The Diversity of Life in African Freshwaters: Under water, Under Threat. An Analysis of the Status and Distribution of Freshwater Species throughout Mainland Africa*. IUCN, Cambridge and Gland. 92–125.
- WOLMARANS CT and DE KOCK KN (2006) The current status of freshwater molluscs in the Kruger National Park. *Koedoe* **49** (2) 39–44. <https://doi.org/10.4102/koedoe.v49i2.122>
- WOLMARANS CT, WEPENER V, PRETORIUS U, ERASMUS JH and DE KOCK KN (2015) 'n Vergelyking van die Mollusca-diversiteit in die Mooirivier (Noordwes-Provinsie) soos gevind met opnames wat gemaak is in 1963 en weer 50 jaar later. *S. Afr. Tydskr. Natuurwet. Teg.* **34** (1) Art. #1294, 7 pages. <http://dx.doi.org/10.4102/satnt.v34i1.1294>.