



RESEARCH COMMUNICATION

Occurrence of *Neodiplozoon polycotyleus* Paperna, 1973 (Diplozoidae: Monogenea) in cyprinid fish in South Africa

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ABSTRACT

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Neodiplozoon polycotyleus Paperna, 1973 is recorded from *Barbus marequensis* Smith, 1841, *Barbus neefi* Greenwood, 1862, and *Barbus trimaculatus* Peters, 1852 in the Limpopo River System, Northern Province, South Africa.

Keywords: *Barbus* spp., Diplozoidae, fish, helminth parasite, Monogenea, *Neodiplozoon polycotyleus*

INTRODUCTION

The present report is part of an extensive research work done over a period of 2½ years in the former Lebowa and Venda areas, Northern Province, on helminth parasites of 11 *Barbus* species occurring in the drainage systems of the Limpopo and Olifants rivers. The purpose of this work is to record and provide additional morphological information on *Neodiplozoon polycotyleus* including information on prevalence, intensity and mean intensity in the different host species in the study area.

MATERIALS AND METHODS

Specimens of each of the 11 *Barbus* species occurring in the research area were collected seasonally from each locality using beach seine nets, gill nets and an electric shocker. They were transported alive to the laboratory where they were killed immediately before being examined for parasites. The names of the localities sampled are given in Table 1. The terms prevalence, intensity and mean intensity are used as

defined by Margolis, Esch, Holmes, Kuris & Schad (1982).

RESULTS AND DISCUSSION

In the present investigation, mature specimens of *Neodiplozoon polycotyleus*, in permanent copula, were recovered from amongst the gill filaments of *Barbus marequensis* Smith, 1841 and *Barbus trimaculatus* Peters, 1852 from Luphephe and Nwanedzi dams, while larval forms were found attached to the gills of *Barbus neefi* Greenwood, 1962 from the Lingwe river. Eighty-five hosts (*B. marequensis* and *B. trimaculatus*) from Luphephe and Nwanedzi dams were examined and were found to be infected. The prevalence was 14%, the intensity 1–4 and the mean intensity two. Of the 19 *B. neefi* from the Lingwe River examined, two were infected with one larva each.

Neodiplozoon polycotyleus was originally described by Paperna (1973; 1979) from *Labeo victorianus* (type host) in Kenya and *Barbus paludinosus*, *Barbus cercops* and *Barbus macrolepis* in Tanzania, while larval forms were found on *Barbus* cf. *kersteni* and *B. macrolepis* in Tanzania. In the present material, a wider variation in the number of clamps on the

TABLE 1 Geographical location of sampling sites

Sampling locality	Drainage system	Latitudes (South)	Longitudes (East)
Seshego Dam	Limpopo	23°50'–23°51'	29°21'30"–29°22'30"
Lepellane Dam	Olifants	24°35'–24°39'	29°51'–29°55'
Turfloop Dam	Limpopo	23°52'–23°54'	29°46'–29°48'
Piet Gouws Dam	Olifants	24°33'–24°35'	29°36'–29°38'
Mohlapitse River	Olifants	24°04'–24°14'	30°02'–30°06'
Nyl River swamps	Limpopo	24°06'–24°13'	28°54'–28°59'
Luphephe dam	Limpopo	22°37'–22°39'	30°24'–30°26'
Nwanedzi Dam	Limpopo	22°37'–22°38'	30°24'–30°25'
Mutale River	Limpopo	22°24'–22°51'	30°18'–31°
Levuvhu River	Limpopo	22°25'–30°08'	30°04'–31°19'
Lingwe River	Limpopo	23°–23°06'	30°14'–30°21'

opisthaptor, than in Paperna's (1979) original material was noted. Of the ten gravid specimens measured, six possessed ten pairs, one 11 pairs and two 13 pairs of clamps. Paperna (1979), on the other hand, reported that the number of clamps range from eight pairs in newly coupled worms to ten in gravid specimens. The clamps, oral sucker and pharynx in the present material are relatively smaller than those in Paperna's (1979) material, whereas the anchors are more than twice as long when compared to the latter material. The present material is generally more robust than the forms described by Paperna (1979). The features mentioned above are of systematic importance and form part of the criteria for identification of the different species. The differences are, however, not considered to be of specific value and the present specimens are therefore assigned to *Neodiplozoon polycotyleus*.

The egg of *N. polycotyleus* has a long filament attached to it and, according to Van Duijn (1973), this is used to attach the egg to the gills until it hatches producing a free swimming diporpa larva. He maintains that two sexually ripened diporpa larvae then combine by means of sucking discs which are found halfway along the body. The larvae found during the present investigation had not yet developed these discs and were, therefore, not ready for union. Larvae which fail to find partners with which to unite, die.

This is the first record of *N. polycotyleus* on *B. marequensis*, *B. trimaculatus* and *B. neefi*, as well as the first record of this parasite in South Africa. Although *B. paludinosus* occurs widely in the study area, none of the 143 specimens examined harboured this parasite. *Neodiplozoon polycotyleus* is parasitic on members of the family Cyprinidae, but is not restricted to any particular species within this family. Its distribution can, therefore, only be limited by that of the Cyprinidae.

According to Paperna (1979) *Neodiplozoon barbi* was described by Tripathi (1959) from *Barbus chagunio* in India. Paperna (op. cit) maintains that *N. barbi* differs from *N. polycotyleus* mainly in the number of clamps on the opisthaptor (18–28 pairs in the former and 8–10 in the latter) and also in the absence of opisthaptoral anchors. In the present material the number of clamps on the opisthaptor of *N. polycotyleus* varied from 8–13 which is an extension of Paperna's (1979) range.

The family Diplozoidae in Africa is currently represented by only a few species, namely *Diplozoon aegyptensis* Fischthal and Kuntz, 1963 in Egypt, Kenya and Uganda, collected from *Labeo* spp. and *Barbus* spp. (Paperna 1979); *Diplozoon ghanense* Thomas, 1957 collected from *Alestes macrolepidotus* in Ghana (Paperna 1973); *Neodiplozoon polycotyleus* on *Labeo* spp. and *Barbus* spp. in Kenya and Tanzania (Paperna 1979) and a *Paradiplozoon* sp. on *Barbus aeneus* from Vaal River System in South Africa (Hempel, Avenant-Oldewage & Mashego 1999).

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