A diagnostic species compendium of the genus *Chonopeltis* Thiele, 1900 (Crustacea: Branchiura) with notes on its geographical distribution

**ANNEMARIÉ AVENANT-OLDEWAGE** and **ELMINE KNIGHT**


A tabulated and illustrated compendium of the diagnostic characters of the 13 species of *Chonopeltis* is presented. This enables any unknown species to be identified. A table and map, showing the geographical distribution of each species, is also given.

Keywords: *Chonopeltis*, Branchiura, Africa, geographical distribution.

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**Introduction**

The genus *Chonopeltis* was erected by Thiele (1900) to accommodate a new argulid parasite collected from a cichlid fish in eastern Africa. *Chonopeltis* differs from *Argulus* in lacking a pre-oral spine in front of the mouth opening, in the absence of the antennule (first antenna) and by the presence of a simple, four-segmented (second) antenna. The absence of scales on the ventral body surface as well as the presence of two pairs of chitinous rods on each side of the second antenna were also regarded by Thiele (1900) as possible generic traits. From 1959 until 1974 Fryer (1959, 1960b, 1961b, 1964, 1974) described five new *Chonopeltis* species from freshwater fishes collected in rivers and lakes in Central Africa. The first *Chonopeltis* species described from South Africa was *Chonopeltis australis* Boxshall, 1976. Fryer (1977) added two further species, *C. minutus* and *C. australissimus* collected from *Barbus* and *Pseudobarbus* species in rivers of the western Cape, South Africa.

Following the recent increase in interest in fish parasites in southern Africa, three more species have been described from rivers in the Transvaal province of South Africa viz. *C. fryeri*, collected from *Clarias* spp. in the Magalakwin River and in Loskop Dam in the Transvaal (Van As 1986); *C. victorii*, collected from *Labeo rosae*, *L. congorto* (= syn *L. rubropunctatus*). *L. ruddi* and *Barbus marequensis* in the Olifants River, Kruger National Park (Avenant-Oldewage 1991); and *C. koki*, from *L. cylindricus* at Katima Mulilo in the Zambezi River (Van As 1992).

In his descriptions of 1960(b) and 1977 Fryer provided identification keys of the then known *Chonopeltis* species. These became outdated each time a new species was de-
scribed and Esser et al. (1976) pointed out some advantages of a diagnostic species compendium over a dichotomous key. It is easier to add new data to a compendium and a compendium facilitates the rapid identification of unknown species.

In addition to morphological and morphometric values Lahille (1926), Ringuet (1948) and Avenant et al. (1989) used relative dimensions to distinguish between certain argulids. Following their example 70 specimens of Chonopeltis australis were measured as indicated in Fig. 1. Individual measurements did not show a significant deviation from the mean ($r > 0.450; p < 0.01$), indicating that relative measurements are reliable as a taxonomic tool.

Since type specimens of some of the remaining 12 described Chonopeltis species were not available for study, the original descriptions were consulted and were used to obtain relative measurements in compiling the synoptic compendium for males (Table 2) and females (Table 1). In cases where authors did not give measurements of species in their texts, they were taken from figures accompanying the description. These measurements, based on one individual i.e. in the drawing, are underlined in the table.

In order to enhance the usefulness of this compendium notes on certain morphological structures of the genus are supplied in the text.

Fig. 1. Chonopeltis australis (schematic) to indicate the position where measurements were taken. AbL, abdomen length; AbW, abdomen width; ACW, cephalic lobe width; AsL, abdomen cleft length; CL, carapace length; CsL, carapace cleft length; CW, carapace width; Spl, spermatheca length; SW, sucker width; TsL, testis length; TL, total body length.

Notes on the morphology

Carapace

The shape of the carapace in the different Chonopeltis species varies from roughly triangular to trifoliate, subquadrangular or circular. The carapace is formed by three lobes, an anterior or cephalic lobe and two lateral lobes. The cephalic lobe usually contains two pairs of chitinous supporting rods, but these are absent in C. flaccifrons and C. fryeri. Furthermore, the relative size of the carapace differs in different species. This has a bearing on the length of the thorax exposed: in some instances the carapace reaches back to the bases of the first pair of legs, as in C. inermis and C. australissimus; in other cases to the
Table 1

A diagnostic compendium of females of the genus Chonopeltis. Measurements were taken from figures accompanying species descriptions when the information was not available in the text and is indicated as such by marking the information in the table with an *`. Abbreviations as in Fig. 1. Numbers with species correspond with numbers used in all figures and tables.

<table>
<thead>
<tr>
<th>Species</th>
<th>Total length</th>
<th>Relative measurements</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CL/TL</td>
<td>CW/CL</td>
</tr>
<tr>
<td>1</td>
<td>C. inermis Thiele, 1900</td>
<td>12 mm</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>44%</td>
</tr>
<tr>
<td>2</td>
<td>C. schoutedeni Brian, 1940</td>
<td>15 mm</td>
<td>36%</td>
</tr>
<tr>
<td>3</td>
<td>C. congicus Fryer, 1959</td>
<td>12 mm</td>
<td>47%</td>
</tr>
<tr>
<td>4</td>
<td>C. raccersoni Fryer, 1960b</td>
<td>7,4 mm</td>
<td>44-47%</td>
</tr>
<tr>
<td>5</td>
<td>C. brevis Fryer, 1961</td>
<td>8,5 mm</td>
<td>57%</td>
</tr>
<tr>
<td>6</td>
<td>C. meridionalis Fryer, 1964</td>
<td>6,2 mm</td>
<td>56%</td>
</tr>
<tr>
<td>7</td>
<td>C. elongatus Fryer, 1974</td>
<td>6,5 mm</td>
<td>39%</td>
</tr>
<tr>
<td>8</td>
<td>C. australis Fryer, 1977</td>
<td>6,8 mm</td>
<td>54%</td>
</tr>
<tr>
<td>9</td>
<td>C. minutus Fryer, 1977</td>
<td>5,5 mm</td>
<td>59,7%</td>
</tr>
<tr>
<td>10</td>
<td>C. australissimus Fryer, 1977</td>
<td>2,8 mm</td>
<td>56,1%</td>
</tr>
<tr>
<td>11</td>
<td>C. fryeri Van As, 1986</td>
<td>8 mm</td>
<td>45%</td>
</tr>
<tr>
<td>12</td>
<td>C. victori Avenant-Oldewage, 1992</td>
<td>4,8 mm</td>
<td>58%</td>
</tr>
<tr>
<td>13</td>
<td>C. koki Van As, 1992</td>
<td>6 mm</td>
<td>53%</td>
</tr>
</tbody>
</table>

OUR = Own unpublished record
Table 2
A diagnostic compendium of males of the genus Chonopehtis. Measurements were taken from figures accompanying species descriptions when the information was not available in the text and is indicated as such by marking the information in the table with a *. Abbreviations as in Fig. 1. Numbers with species correspond with numbers used in all figures and tables.

<table>
<thead>
<tr>
<th>Species</th>
<th>Total length</th>
<th>Relative measurements</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CL/TL</td>
<td>CW/CL</td>
<td>CL/CL</td>
</tr>
<tr>
<td>C. inermis Thiele, 1900</td>
<td>7 mm</td>
<td>59%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>3.6 mm</td>
<td>44%</td>
<td>*106%</td>
</tr>
<tr>
<td>C. schoutedeni Brian, 1940</td>
<td>8 mm</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C. conicus Fryer, 1959</td>
<td>8 mm</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C. flacciprous Fryer, 1960b</td>
<td>5.2 mm</td>
<td>52.55%</td>
<td>*33%</td>
</tr>
<tr>
<td>C. brevis Fryer, 1961</td>
<td>6 mm</td>
<td>55%</td>
<td>*111%</td>
</tr>
<tr>
<td>C. meridionalis Fryer, 1964</td>
<td>3.63 mm</td>
<td>53%</td>
<td>*118%</td>
</tr>
<tr>
<td>C. elongatus Fryer, 1974</td>
<td>2.5 mm</td>
<td>44%</td>
<td>*100%</td>
</tr>
<tr>
<td>C. australis Fryer, 1977</td>
<td>4.5 mm</td>
<td>57%</td>
<td>*110%</td>
</tr>
<tr>
<td></td>
<td>6.8 mm</td>
<td>57%</td>
<td>110%</td>
</tr>
<tr>
<td>C. minutus Fryer, 1977</td>
<td>3.7 mm</td>
<td>58.2%</td>
<td>*113%</td>
</tr>
<tr>
<td>C. australissimus Fryer, 1977</td>
<td>3.2 mm</td>
<td>54.8%</td>
<td>-</td>
</tr>
<tr>
<td>C. fryeri Van As, 1986</td>
<td>3.1 mm</td>
<td>52%</td>
<td>120%</td>
</tr>
<tr>
<td>C. victori Avenant-Odewage, 1992</td>
<td>3.1 mm</td>
<td>59%</td>
<td>101%</td>
</tr>
<tr>
<td>C. koki Van As, 1992</td>
<td>4 mm</td>
<td>51%</td>
<td>*115%</td>
</tr>
</tbody>
</table>
Table 3

The locality, host and sites on the hosts for each of the described Chonopeltis species. Numbers with species correspond with numbers used in all figures and tables.

<table>
<thead>
<tr>
<th>Species</th>
<th>Locality</th>
<th>Site</th>
<th>Host</th>
<th>Reference</th>
</tr>
</thead>
</table>
| 1. C. inermis  
Thiele, 1900 | Lake Malawi  
Lake Malawi  
Banga River  
Luphephe River | –  
Mouth  
– | “Chromis”  
Clarias spp.  
Clarias gariepinus  
Clarias theodorei | Thiele (1900, 1904), Fryer (1977)  
Fryer (1956, 1977, 1968)  
Fryer (1956)  
Van As & Van As (1992, 1993) |
| 2. C. schoutedeni  
Brian (1940)  
= C. inermis var schoutedeni  
Brian (1940) Dartiveille (1951) | *Zaire River  
*Zaire River tributaries  
*Zaire River | –  
–  
– | –  
Gnathostomus spp.  
Marcusenius spp.  
Mormyrus spp.  
Hippopotamus dischorhynchus  
Gnathostomus moereniensis  
Gnathostomus spp.  
Mormyrus longirostris  
Gnathostomus monteiri | Brian (1940), Fryer (1956, 1959)  
Dartiveille (1951), Fryer (1956)  
Monod (1928), Fryer (1956)  
Fryer (1960b, 1968)  
Fryer (1960b)  
Fryer (1960b, 1965 & 1968)  
Fryer (1959, 1960b & 1968)  
Fryer (1959)  
Fryer (1959) |
| 3. C. conicus  
Fryer, 1959  
= C. inermis var schoutedeni  
Brian, 1941,  
Dartiveille, 1951 | *Zaire System  
Lake Bangweulu  
Lake Mweru  
Ango ango near Matodi  
– Zaire River | Under operculum  
Gill chamber  
–  
Flanks | Marcusenius sp.  
Marcusenius monteiri  
–  
Gnathostomus monteiri | Brian (1940), Dartiveille (1951)  
Fryer (1960b & 1977)  
Fryer (1959, 1968)  
Fryer (1968)  
Fryer (1959, 1968) |
| 4. C. flaccifrons  
Fryer, 1960b | Lake Mweru  
Zaire River System  
Malagasy Swamps  
Fimi River | Under operculum  
–  
Under operculum  
Under operculum | Hippopotamus dischorhynchus  
Hippopotamus sp.  
Hippopotamus sp.  
Hippopotamus werleri | Fryer (1960b & 1968)  
Fryer (1960b & 1968)  
Fryer (1960b & 1968)  
Fryer (1960b) |
| 5. C. brevis  
Fryer, 1961 | Victoria Nile  
Lake Victoria  
Tana River System  
Mugambi River at  
Lake Tanganyika  
Tana River & Ragati River  
Nile & Congo River Syst. | Belly & pelvic fins  
Pelvic fins & belly  
–  
–  
Belly & fins  
– | Barbus altianalis radcliffi  
Labeo victorianus  
–  
Garra sp.  
Cyprinid fishes  
Labeo cylindricus  
Cyprinid fishes | Fryer (1961a, 1968)  
Fryer (1961a, 1968)  
Fryer (1968)  
Fryer (1968b)  
Fryer (1961b)  
Fryer (1961a)  
Fryer (1964, 1968)  
Fryer (1968) |
<table>
<thead>
<tr>
<th>Species</th>
<th>Locality</th>
<th>Site</th>
<th>Host</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>larvae</td>
<td>Konkoure &amp; Mamou Rivers</td>
<td>–</td>
<td><em>Amphilius grandis</em></td>
<td>Fryer (1961a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>A. rheophilus</em></td>
<td>Fryer (1961a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>A. grammaticus</em></td>
<td>Fryer (1961a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Amphilius sp.</em></td>
<td>Fryer (1961a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>A. grandis &amp; Garra sp.</em></td>
<td>Fryer (1961a, 1968)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Barbus altianalis radcliffi</em></td>
<td>Fryer (1961a, 1961b)</td>
</tr>
<tr>
<td>6 C. meridionalis</td>
<td>Nuanezzi River (Limpopo) 1964</td>
<td>–</td>
<td><em>Labeo rosae</em></td>
<td>Fryer (1964)</td>
</tr>
<tr>
<td></td>
<td>Limpopo System</td>
<td></td>
<td></td>
<td>Fryer (1977, 1968)</td>
</tr>
<tr>
<td>8 C. australis</td>
<td>Vaal River &amp; Boskop Dam Fryer, 1977</td>
<td>Externally on host</td>
<td><em>Labeo capensis</em></td>
<td>Boxshall (1976)</td>
</tr>
<tr>
<td></td>
<td>Orange River System</td>
<td>–</td>
<td></td>
<td>Boxshall (1976)</td>
</tr>
<tr>
<td></td>
<td>Doornkraal Dam (Magalakwin)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boskop Dam</td>
<td></td>
<td><em>Labeo rosae</em></td>
<td>Van As &amp; Basson (1983)</td>
</tr>
<tr>
<td></td>
<td>Bloemhof, Mockes,</td>
<td></td>
<td><em>L. unbranis &amp; L. capensis</em></td>
<td>OUR</td>
</tr>
<tr>
<td></td>
<td>PMK Le Roux dams</td>
<td></td>
<td><em>once L. unbranis</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Orange River System)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>larvae</td>
<td>Orange River System</td>
<td>Inside operculum</td>
<td><em>Barbus aeneus</em></td>
<td>Van Niekerk &amp; Kok (1989)</td>
</tr>
<tr>
<td></td>
<td>Ollifants System (A)</td>
<td>Mouth</td>
<td><em>B. calidus &amp; B. erubescens</em></td>
<td>Fryer (1977)</td>
</tr>
<tr>
<td>10 C. australisximus</td>
<td>Great Berg Rivers</td>
<td>Mouth</td>
<td><em>Barbus burgi</em></td>
<td>Fryer (1977)</td>
</tr>
<tr>
<td>11 C. fryeri</td>
<td>Magalakwin River Van As, 1986</td>
<td>Gill chamber</td>
<td><em>Clarias theodora</em></td>
<td>Van As (1986)</td>
</tr>
<tr>
<td></td>
<td>Loskop Dam, Ollifants Rivers (B)</td>
<td>Gill chamber</td>
<td><em>Clarias gariepinus</em></td>
<td>Van As (1986)</td>
</tr>
<tr>
<td>12 C. victor</td>
<td>Ollifants River (B), Kruger</td>
<td>Body surface</td>
<td><em>Labeo rosae</em></td>
<td>Avenant-Olewdage (1991)</td>
</tr>
<tr>
<td></td>
<td>Park</td>
<td></td>
<td><em>Labeo congoro</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>L. ruddi</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Barbus marquensis</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>Labeo cylindricus</em></td>
<td>OUR</td>
</tr>
</tbody>
</table>
bases of the second pair of legs as in *C. brevis*, *C. meridionalis* and *C. australis*. A median indentation in the anterior rim of the cephalic lobe may be present (*C. congicus*, *C. fryeri*, *C. victori* and *C. koki*) or absent (*C. australis*, *C. australissimus* and *C. brevis*) or the anterior rim of the cephalic lobe may show a slight prominence (*C. flaccifrons*). (See Figs. 2 & 3).

**Suckers**

The maxillules are modified into powerful suckers. The diameter of a sucker relative to that of the carapace differs among species. The suckers can be small i.e. 28-29% of carapace width, as in *C. meridionalis*, *C. fryeri* and *C. brevis* or large (35-36%), as in *C. flaccifrons* and *C. minutus*. (These percentages reflect females).

**Maxilla**

In some species the third podomere of the maxilla shows a distinct indentation enabling the maxilla to grasp. Such a prehensile maxilla has been described in *C. flaccifrons*, *C. schoutedeni*, *C. australis*, *C. minutus*, *C. australissimus*, *C. fryeri*, *C. victori* and *C. koki*, whereas the maxilla is not prehensile in *C. brevis* and *C. elongatus*. (See Fig. 4).

**Thorax**

In some species (*C. elongatus*, *C. fryeri*, *C. australis*, *C. flaccifrons* and *C. brevis*) the thorax shows distinct segmentation, whereas in all other species segmentation is indistinct. Two distinct bands of pigment spots are visible on the dorsal surface of the thorax in some species (*C. brevis*, *C. minutus*, *C. meridionalis* and *C. australis*). Fryer (1964) and Van As (1986) found that *Chonopeltis* species, which occur on the fins or the external body surface of their hosts have pigment spots, whereas such spots are absent in species that occur on the inner wall of the operculum or in the buccal cavity. In *C. australis* it was established that pigment spots were not a permanent species characteristic. On some
Fig. 2. Chonopeltis females (Second digit corresponds with species numbers used in all tables and figures)
2.1a C. inermis, dorsal; 2.1b C. inermis, ventral; 2.2 C. showedeni, dorsal; 2.3 C. congicus, dorsal; 2.4a C. flaccisfrons, dorsal; 2.4b C. flaccisfrons, ventral; 2.5a C. brevis, dorsal; 2.5b C. brevis, ventral; 2.6 C. meridionalis, dorsal; 2.7a C. elongatus, dorsal; 2.7b C. elongatus, ventral;
Fig. 2. (continued) *Chonopeltis* females

2.8a *C. australis* dorsal; 2.8b *C. australis*, ventral; 2.9a *C. minutus*, dorsal; 2.9b *C. minutus*, ventral; 2.10 *C. australissimus*, dorsal; 2.11a *C. fryeri*, dorsal; 2.11b *C. fryeri*, ventral; 2.12a *C. victori*, dorsal; 2.12b *C. victori*, ventral; 2.13a *C. koki*, dorsal; 2.13b *C. koki*, ventral.
Fig. 3. Choropeltis males (Second digit corresponds with species numbers used in all other tables and figures). 3.1 C. inermis, ventral; 3.4 C. flaccifrons, dorsal; 3.5 C. brevis, dorsal; 3.6 C. meridionalis, dorsal; 3.7 C. elongatus, dorsal; 3.8 C. australis dorsal; 3.9 C. minus, dorsal; 3.10 C. australissimus, abdomen, dorsal; 3.11a C. fryeri, dorsal;
Fig. 3. (continued) *Chonopeltis* males 3.11b *C. fryeri*, ventral; 3.12 *C. victori*, ventral; 3.13 *C. koki*, ventral.

Fig. 4. *Chonopeltis* female thoracic appendages (Second digit corresponds with species numbers used in all other tables and figures). 4.2a *C. schoutedeni* maxilla, dorsal; 4.2b *C. schoutedeni* maxilla; 4.3 *C. conicus* maxilla, ventral; 4.4 *C. flavifrons* maxilla, ventral; 4.8 *C. australis* maxilla; 4.10a *C. australissimus* first swimming leg; 4.10b *C. australissimus* maxilla; 4.12 *C. victori* maxilla; 4.13 *C. koki* maxilla.
Fig. 5. *Chonopeltis* male thoracic appendages (Second digit corresponds with species names used in all other tables and figures).

5.1a *C. inermis* leg 3, ventral; 5.1b *C. inermis* leg 3, dorsal; 5.1c *C. inermis* leg 4, dorsal; 5.1d *C. inermis* leg 4, ventral; 5.2a *C. shoutedeni* legs 2-4, ventral; 5.2b *C. shoutedeni* legs 3-4, dorsal; 5.3a *C. congicus* legs 2-4, ventral; 5.3b *C. congicus* legs 3-4, dorsal; 5.4a *C. flaccifrons* legs 3-4, ventral; 5.4b *C. flaccifrons* legs 3-4, dorsal; 5.5a *C. brevis* legs 2-4, ventral; 5.5b *C. brevis* leg 4, dorsal.
Fig. 5. (continued) Chonopeltis male thoracic appendages
5.6a C. meridionalis legs 2-4, ventral; 5.6b C. meridionalis leg 2, posterior face; 5.6c C. meridionalis leg 4, dorsal; 5.7 C. elongatus legs 2-4, ventral; 5.8 C. australis legs 2-4; 5.9a C. minutes legs 3-4, dorsal; 5.9b C. minutes legs 3-4, ventral; 5.10a C. australissimus legs 3-4, ventral; 5.10b C. australissimus legs 3-4, dorsal; 5.12a C. victori legs 1-2, ventral; 5.12b C. victori leg 3, ventral; 5.12c C. victori leg 3, dorsal; 5.12d C. victori leg 4, ventral; 5.12e C. victori leg 4, dorsal.
occasions they were present, in others absent, and this was related to the coloration of the position on the host as well as to the sexual maturity of the parasite, i.e. animals with genetic products display a distinct band of pigment shielding these from sunlight as was suggested by Fryer (1964).

Thoracic appendages

The shape and size of the thoracic appendages differ considerably in the different species. In the females legs 1-4 are similar in structure, each being somewhat smaller than the preceding pair, except for C. schoutedeni and C. flaccifrons where leg 3 reaches back more than halfway along the abdomen, beyond the extremity of leg 4 and in C. schoutedeni where the fourth leg is remarkably shorter. In males leg 2 differs as papillated structures occur on its posterior face in C. meridionalis, C. brevis, C. schoutedeni, C. fryeri, C. victori and C. koki. Furthermore, a socket is present on leg 3 of males and a peg on leg 4. The differences in these structures are used as diagnostic criteria. (See Fig. 5).

The peg on leg 4 has been indicated as a sperm transfer instrument (Van As & Van As 1993). Serial sections of male individuals of C. australis and C. victori studied in our laboratory clearly indicate that no connection exists between the reproductive system and this structure. A second possibility, that sperm is collected by the peg from the genital opening in a manner resembling the performance of the pedipalps of spiders, can also be ruled out as the configuration of the structures on leg 4 renders it impossible for the peg to reach the genital opening. This structure serves purely for grasping the female during copulation as is certainly the case in Dolops.
ranarum (Stuhlmann, 1891) and D. geayi (Bouvier, 1877) a related genus where sperm is transferred in a spermatophore (Fryer, 1958, 1960a) but a clasping structure is still present although on the third leg (Avenant et al. 1989). In other species of Dolops, e.g. D. longicauda (Ringuelet, 1948) an elaborated peg and socket is present, but it is unfortunately not known whether spermatophores occur in this species.

The natatory lobe, situated on the fourth leg in both sexes, differs in shape and size and helps to distinguish species. It is bifid in C. flaccifrons, rectangular in C. minutes, circular in C. brevis, C. australissimus and C. fryeri, small in C. elongatus and very large in C. australis. These lobes differ between males and females—a fact which in our opinion indicate that these structures are more than mere swimming lobes as proposed by Van As & Van As (1993), but rather have a reproductive function. Furthermore, the natatory lobes are usually setose. In C. minutes the setae are minute and in C. flaccifrons setae are even absent.

Abdominal lobes

The abdominal lobes differ in length and in shape in different species. C. schoutedeni for instance, has very long abdominal lobes comprising 41% of the total body length. The length of the abdominal cleft also differs among species, being deep in C. schoutedeni, C. elongatus and C. inermis, but shallow in C. minutes, C. australissimus and C. australis. The abdominal lobes of the males generally resemble those of females, but are proportionally longer, except in C. schoutedeni (Tables 1 & 2). The shape of the testis is usually ellipsoid and the lateral capsular wall is smooth except in C. brevis, C. fryeri, C. inermis, C. victori and C. koki, where the lateral capsular wall is undulated. Although not mentioned in the species descriptions pigment spots are indicated on the abdomen of the males in the figures accompanying the descriptions of C. brevis and were observed in C. australis. These pigment spots are indicated in C. koki and where noted by the second author in C. victori although it is not mentioned in the species description.

The furcal rami are situated at the base of the abdominal cleft, except in C. brevis and C. schoutedeni, where they are situated more posteriorly on the median wall of the abdominal lobes.

The geographical distribution of Chonopelitis

The genus Chonopelitis is confined to Africa. The hosts and sites of attachment on the host are summarised in Table 3. Geographical distribution is illustrated in Fig. 6.

It is noteworthy that C. brevis and C. inermis are the only species which occur in more than one river system (see Fig. 6) with C. brevis in the Tana River and in Lake Victoria in the Nile river system, whereas C. inermis occurs in Lake Malawi as well as the Limpopo River. A wide variety of Chonopelitis species on the other hand occur in the Zaire and Limpopo rivers respectively (see Fig. 6). In the Limpopo river system C. fryeri and C. inermis occurred exclusively on clariid fishes whereas C. meridionalis, C. victori and C. australis occur on cyprinids and all three on Labeo rosea although at different localities (see Fig. 6).

References


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