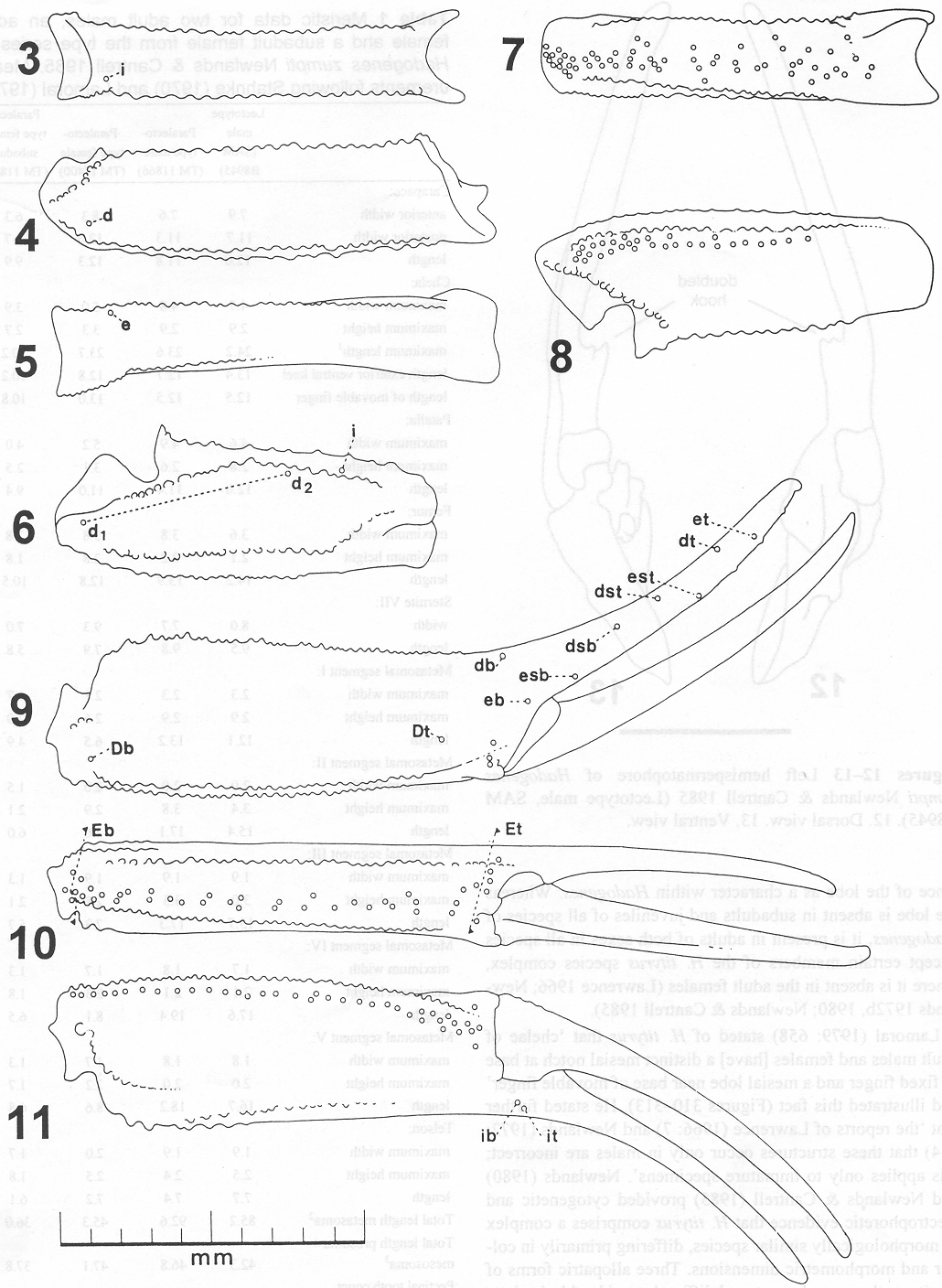
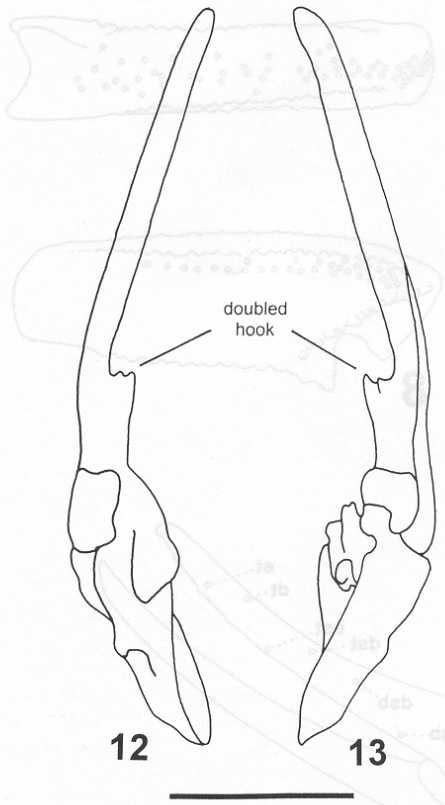


Figures 3–11 Distribution of trichobothria on the right-hand pedipalpal segments of *Hadogenes zumpti* Newlands & Cantrell 1985 (Lectotype male, SAM B8945). Trichobothrial notation after Vachon (1973). 3. Inferior view of femur. 4. Dorsal view of femur. 5. Exterior view of femur. 7. Dorsal view of patella. 7. Exterior view of patella. 8. Ventral view of patella. 9. Dorsal view of chela. 10. Exterior view of chela. 11. Inferior view of chela.



Figures 12–13 Left hemispermatophore of *Hadogenes zumpti* Newlands & Cantrell 1985 (Lectotype male, SAM B8945). 12. Dorsal view. 13. Ventral view.

tance of the lobe as a character within *Hadogenes*. Whereas the lobe is absent in subadults and juveniles of all species of *Hadogenes*, it is present in adults of both sexes in all species except certain members of the *H. tityrus* species complex, where it is absent in the adult females (Lawrence 1966; Newlands 1972b, 1980; Newlands & Cantrell 1985).

Lamoral (1979: 658) stated of *H. tityrus* that 'chelae of adult males and females [have] a distinct mesial notch at base of fixed finger and a mesial lobe near base of movable finger' and illustrated this fact (Figures 310–313). He stated further that 'the reports of Lawrence (1966: 7) and Newlands (1972: 134) that these structures occur only in males are incorrect; this applies only to immature specimens'. Newlands (1980) and Newlands & Cantrell (1985) provided cytogenetic and electrophoretic evidence that *H. tityrus* comprises a complex of morphologically similar species, differing primarily in colour and morphometric dimensions. Three allopatric forms of *H. tityrus* that were karyotyped differed considerably in chromosome number, suggesting that three distinct species were involved. This finding was further substantiated by consistent differences in the venom protein banding patterns of these forms. In some of these, the lobe is clearly absent from the

Table 1 Meristic data for two adult males, an adult female and a subadult female from the type series of *Hadogenes zumpti* Newlands & Cantrell 1985. Measurements following Stahnke (1970) and Lamoral (1979)

	Lectotype male (SAM B8945)	Paralecto-type male (TM 11866)	Paralecto-type female (TM 18400)	Paralecto-type female subadult (TM 11867)
Carapace:				
anterior width	7.9	7.6	8.3	6.3
posterior width	11.7	11.3	12.0	8.7
length	12.0	11.8	12.3	9.9
Chela:				
maximum width	4.7	4.8	5.0	3.9
maximum height	2.9	2.9	3.3	2.7
maximum length[1]	24.2	23.6	23.7	20.2
length exterior ventral keel	13.4	12.7	12.8	10.2
length of movable finger	12.5	12.5	13.0	10.8
Patella:				
maximum width	4.6	4.9	5.2	4.0
maximum height	2.8	2.6	3.1	2.5
length	12.0	11.4	11.0	9.4
Femur:				
maximum width	3.6	3.8	3.8	2.8
maximum height	2.1	2.2	2.8	1.8
length	14.2	13.9	12.8	10.5
Sternite VII:				
width	8.0	7.7	9.3	7.0
length	9.5	9.8	7.9	5.8
Metasomal segment I:				
maximum width	2.3	2.3	2.1	1.7
maximum height	2.9	2.9	2.6	2.0
length	12.1	13.2	6.5	4.9
Metasomal segment II:				
maximum width	2.0	2.0	2.0	1.5
maximum height	3.4	3.8	2.9	2.1
length	15.4	17.1	7.6	6.0
Metasomal segment III:				
maximum width	1.9	1.9	1.9	1.3
maximum height	3.0	3.3	2.8	2.1
length	15.7	17.3	7.3	5.7
Metasomal segment IV:				
maximum width	1.7	1.8	1.7	1.3
maximum height	2.1	2.1	2.3	1.8
length	17.6	19.4	8.1	6.5
Metasomal segment V:				
maximum width	1.8	1.8	1.7	1.3
maximum height	2.0	2.0	2.2	1.7
length	16.7	18.2	8.6	6.8
Telson:				
maximum width	1.9	1.9	2.0	1.7
maximum height	2.5	2.4	2.5	1.8
length	7.7	7.4	7.2	6.1
Total length metasoma[2]	85.2	92.6	45.3	36.0
Total length prosoma + mesosoma[3]	42.3	46.8	47.1	37.8
Pectinal tooth count (left/right)	16/17	16/17	—	12/12

[1] Measured from base of condyle to tip of fixed finger

[2] Sum of metasomal segments I–V and telson

[3] Sum of carapace and tergites I–VII

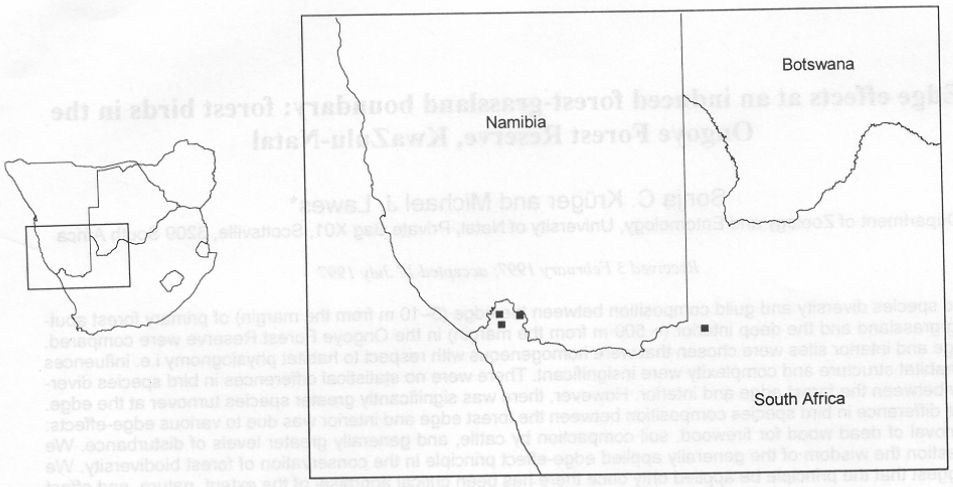


Figure 14 Map showing the distribution of *Hadogenes zumpti* Newlands & Cantrell 1985 in the Richtersveld and Kenhardt district of the Northwestern Province, South Africa.

movable finger of the adult female. For example, the lobe was found to be absent in adult females (in a gravid condition) of two allopatric forms of *H. tityrus* collected from several localities in the Richtersveld: a small, translucent form and a larger, dark brown-black form. In contrast, the lobe is known to be present in adult females of two allopatric Namibian forms: a small yellow form from Awasib Mountain and a larger, dark brown-black form widespread in southern Namibia (illustrated by Lamoral 1979). The presence or absence of a lobe on the movable finger of the adult female may therefore provide one means of discriminating between certain members of the *H. tityrus* species complex. Similarly, the shape of the lobe, i.e. the degree of development of the lobe and corresponding notch on the fixed finger of the chela, may provide additional diagnostic characters within the complex, as has been found among other closely related species of *Hadogenes* and species of *Liocheles* Sundevall (Prendini, pers. obs.).

The absence of a lobe on the movable finger of the adult female appears to be the plesiomorphic condition in *Hadogenes*, as revealed by outgroup comparison with other genera of Ischnuridae, e.g. *Cheloctonus* Pocock, *Iomachus* Pocock, *Liocheles* Sundevall and *Opisthacanthus* Peters, where the lobe is also absent from the movable finger of the adult female. Accordingly, the presence of a lobe in the adult female would be synapomorphic for the remaining species of *Hadogenes*. However, the absence of a lobe on the movable finger of the adult male appears to be autapomorphic for *H. zumpti*. The absence of a lobe on the movable finger of the adult male is also autapomorphic for another ischnurid, *Liocheles karschii* (Keyserling) from Papua New Guinea.

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