Two new host-restricted restioid leafhoppers of the genus *Cephalelus* Percheron (Cicadellidae: Cephalelini), with descriptions of the females of *C. brevipilus* Davies, *C. daviesi* Davies and *C. rawsonia* Davies

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Two new species of restioid leafhoppers of the genus *Cephalelus* Percheron are described. *Cephalelus pickeri* sp. n. is oligophagous on *Elegia filacea* Mast. and *Hypodiscus laevigatus* (Kunth) Linder, whereas *C. linderi* sp. n. is monophagous on *Rhodocoma capensis* Nees ex Steud. The females of *C. brevipilus* Davies, *C. daviesi* Davies and *C. rawsonia* Davies are described. Davies' (1988) key to males of the South African genera and species of Cephalelini is revised.

Key words: Cicadellidae, Ulopinae, Cephalelini, *Cephalelus*, leafhoppers, Restionaceae, South Africa.

INTRODUCTION

The tribe Cephalelini Evans is a group of austral leafhoppers (Cicadellidae: Ulopinae) that originated during the Mesozoic Era (Linnavuori 1972; Evans 1977). These leafhoppers are associated exclusively with plants of the family Restionaceae and manifest a typical Gondwana distribution pattern, similar to their host plants, in the Western and Eastern Cape Provinces of South Africa, southwestern and eastern Australia, Tasmania and the North Island of New Zealand (Evans 1947a,b, 1977; Davies 1986, 1988).

The closely related Australian and New Zealand Cephalelini differ from the South African Cephalelini in several respects (Davies 1986, 1988), demonstrating a well-known biogeographical pattern attributed to the earlier separation of Africa from the post-Gondwana landmass including Australia and New Zealand (Brundin 1965). Evans (1977) therefore retained the four South African species of the tribe in the genus *Cephalelus* Percheron and transferred the 14 Australian and New Zealand species to seven new genera. Davies (1986, 1988) subsequently revised the South African Cephalelini, describing 13 new species of *Cephalelus* and a new genus, *Duospina* Davies, with two new species. *Cephalelus capensis* Evans was transferred to *Duospina* by Davies (1988).

Recently, taxonomic relationships among the South African species of Cephalelini were evaluated by cladistic analysis and the investigation of host-plant preferences, resulting in the discovery of two new species of *Cephalelus*. Species were delimited primarily on differences in male genital structure (pygofer, styles and aedeagus). However, differences in host-plant species were also found to be informative in species delimitation, as has been demonstrated in other insect groups (Ackery 1988). Associations with different host plants have revealed the possibility of at least two species complexes.

In this contribution, two new species of *Cephalelus* are described, together with the previously undescribed females of *C. brevipilus* Davies, *C. daviesi* Davies and *C. rawsonia* Davies. Davies' (1988) key to males of the South African species of Cephalelini is revised. A checklist of the species is provided in Appendix 1.

MATERIAL AND METHODS

Leafhoppers were collected with a canvas sweep-net, using various sweeping and beating techniques according to the size and growth form of the restioid plant being sampled. The contents of the net was sorted and adult Cephalelini were preserved in 70 % ethanol. Male genitalia were dissected and drawn while mounted in glycerine jelly, in which they are preserved. Material examined was deposited in

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the following collections: South African Museum, Cape Town (SAMC); The Natural History Museum, London (BMNH); National Collection of Insects, Plant Protection Research Institute, Pretoria (SANC); University of Stellenbosch Collection (USC). Terminology follows Evans (1977), Davies (1986, 1988) and recent taxonomic treatments of Cicadellidae (Blocker *et al.* 1995; Hamilton 1995).

Revised key to males of South african Cephalelini

1. Styles with a pair of apical appendages (*Duospina*) 2
— Styles without apical appendages (*Cephalelus*) 4
2. Aedeagus with triangular, finger-like appendage arising from socle, below aedeagal shaft 3
— Aedeagus without appendage ..... *Duospina capensis* (Evans)
3. Crown in dorsal view narrow at mid-length and expanding towards apex; apex slightly swollen in lateral view ..... *Duospina twanella* Davies
— Crown in dorsal view tapering gradually towards apex; apex spatulate in lateral view ..... *Duospina sheilae* Davies
4. Pygofer with large beak-like extension posteroventrally 5
— Pygofer not as above 10
5. Aedeagus with pair of apically diverging appendages, arising from socle or base of aedeagal shaft 6
— Aedeagus without appendages 9
6. Aedeagal appendages lyre-shaped and closely adpressed to aedeagal shaft; aedeagal apex with subapical teeth 7
— Aedeagal appendages spine-like, not adpressed to aedeagal shaft; aedeagal apex without subapical teeth ..... *Cephalelus brevipilus* Davies
7. Aedeagal appendages large, with serrated outer edges 8
— Aedeagal appendages extremely small, with smooth outer edges ..... *Cephalelus nivenus* Davies
8. Aedeagal shaft expanded subapically and sinuate in lateral view; aedeagal apex small, with pair of short subapical teeth ..... *Cephalelus pickeri* sp. n.
— Aedeagal shaft not expanded subapically and slightly curved in lateral view; aedeagal apex large, with pair of long subapical teeth ..... *Cephalelus angustatus* Evans
9. Aedeagal shaft expanded subapically and straight in lateral view; aedeagal apex with pair of long subapical teeth; gonopore located subapically on aedeagal shaft ..... *Cephalelus attenuatus* Davies
— Aedeagal shaft not expanded subapically and uncinate in lateral view; aedeagal apex with pair of short subapical teeth; gonopore located distally on aedeagal apex ..... *Cephalelus uncinatus* Davies
10. Pygofer with one or two posteroventral lobes; gonopore with pair of subapical teeth 11
— Pygofer without posteroventral lobes; gonopore without pair of subapical teeth .. 20
11. Aedeagal shaft dorsally concave 12
— Aedeagal shaft not dorsally concave 14
12. Aedeagus without pair of appendages; crown apex spatulate in lateral view 13
— Aedeagal shaft with pair of hook-like appendages arising laterally from middle of shaft; crown apex tapering in lateral view ..... *Cephalelus turneri* Evans
13. Pygofer with one posteroventral lobe; gonopore elongate .. *Cephalelus smithi* Davies
— Pygofer with two posteroventral lobes; gonopore teardrop-shaped ..... *Cephalelus bilobatus* Davies
14. Aedeagus with pair of hook-like appendages arising ventrally from base of shaft or laterally from mid-length of shaft 15
— Aedeagus without pair of appendages 19
15. Aedeagus with pair of small triangular teeth at mid-length of shaft; crown with well developed mid-dorsal and midventral ridges 16
— Aedeagus without pair of triangular teeth; crown with mid-dorsal ridge weakly developed or absent and midventral ridge absent 17
16. Aedeagal teeth poorly defined; aedeagal appendages parallel to shaft; crown apex swollen in lateral view.. *Cephalelus ivyae* Davies

— Aedeagal teeth well defined; aedeagal appendages diverging slightly from shaft; crown apex spatulate in lateral view ..... *Cephalelus rawsonia* Davies

17. Aedeagal appendages arising laterally from mid-length of aedeagal shaft; appendages diverging strongly ..... *Cephalelus linderi* sp. n.

— Aedeagal appendages arising ventrally from base of aedeagal shaft; appendages parallel 18

18. Aedeagal appendages claviform; crown relatively long.. *Cephalelus gonubiensis* Davies

— Aedeagal appendages tapering; crown relatively short ... *Cephalelus campbelli* Davies

19. Aedeagus with one pair of large triangular teeth at mid-length of shaft ..... *Cephalelus daviesi* Davies

— Aedeagus with two pairs of small triangular teeth at mid-length of shaft ..... *Cephalelus bicoloratus* Evans

20. Aedeagus very large, with pair of large ventrally bifurcating appendages arising subapically, appendages hinged ..... *Cephalelus appendiculatus* Davies

— Aedeagus compact, with pair of blade-like appendages arising from mid-length of shaft; appendages not hinged ..... *Cephalelus cygnastylus* Davies

***Cephalelus pickeri* sp. n.**, Fig. 1A–F

Description

Coloration. Pale-yellow. *Crown:* long, tapering and slightly attenuated at apex; without mid-dorsal and mid-ventral ridges; straight in lateral view (Fig. 1A). *Tegminal venation:* obscure.

Male. Dimensions: length from apex of crown to tip of tegmen 7.45–9.45 mm; transocular width 0.93–1.07 mm; greatest width of pronotum 0.88–1.01 mm; median length of crown 3.10–4.21 mm; crown 5.76–6.74 times as long medially as pronotum. *Male genitalia. Pygofer:* rounded posterodorsally; with beak-like extension posteroventrally; posteroventral margin with relatively long setae (Fig. 1B). *Aedeagal shaft:* dorsoventrally flattened, sinuate in lateral view and expanded subapically (Fig. 1C$_1$,C$_2$). *Aedeagal apex:* extremely small, shovel-shaped, with a pair of short subapical teeth; distal edge obtuse (Fig. 1C$_1$,C$_2$). *Aedeagal appendages:* long, slender and lyre-shaped; arising from base of aedeagal shaft and adpressed to it for most of their length; diverging weakly from aedeagal shaft (Fig. 1C$_1$,C$_2$). *Gonopore:* round; positioned subapically on aedeagal shaft (Fig. 1C$_1$). *Styles:* elongate, with blunt apex curving laterally (Fig. 1D). *Connective:* as in Fig. 1E.

Female. Dimensions: length from apex of crown to tip of tegmen 7.33–9.85 mm; transocular width 0.88–1.04 mm; greatest width of pronotum 0.81–0.99 mm; median length of crown 3.15–4.81 mm; crown 5.25–5.36 times as long medially as pronotum. *Pregenital (seventh) sternite:* distal margin with small incision medially (Fig. 1F). *Ovipositor:* extending far beyond edge of tegmina.

Etymology. This species is named after M.D. Picker (University of Cape Town) for his contribution to southern African entomology.

Remarks

This new species belongs to a complex of species that are morphologically very similar, including *C. angustatus* Evans, *C. attenuatus* Davies, *C. nivenus* Davies and *C. uncinatus* Davies. *Cephalelus pickeri* is morphologically most similar to *C. nivenus,* which shares the following characters: pygofer with beak-like extension; aedeagal shaft dorsoventrally flattened and sinuate in lateral view; aedeagal apex shovel-shaped, with short subapical teeth; gonopore round, located subapically on the aedeagal shaft. However, *C. nivenus* is distinguished from *C. pickeri* by its much smaller pair of lyre-shaped appendages.

On aedeagal morphology, *C. pickeri* could be confused with *C. angustatus,* which shares the following characters: pygofer with beak-like extension; aedeagal shaft dorsoventrally flattened; aedeagal apex shovel-shaped; gonopore round, located subapically on the aedeagal shaft; pair of large, lyre-shaped appendages adpressed to the aedeagal shaft. However, *C. pickeri* may be distinguished from *C. angustatus* by a subapical expansion of the aedeagal shaft and an extremely small aedeagal apex. In *C. pickeri* the maximum width of the aedeagal apex is thus considerably less than the subapical width of the aedeagal shaft, whereas in *C. angustatus* the maximum width of the aedeagal apex is equal to, or greater than the subapical width of the aedeagal shaft. Additional characters separating *C. pickeri* from *C. angustatus* and *C. nivenus* are provided in Table 1.

Cephalelus pickeri was incorrectly identified as

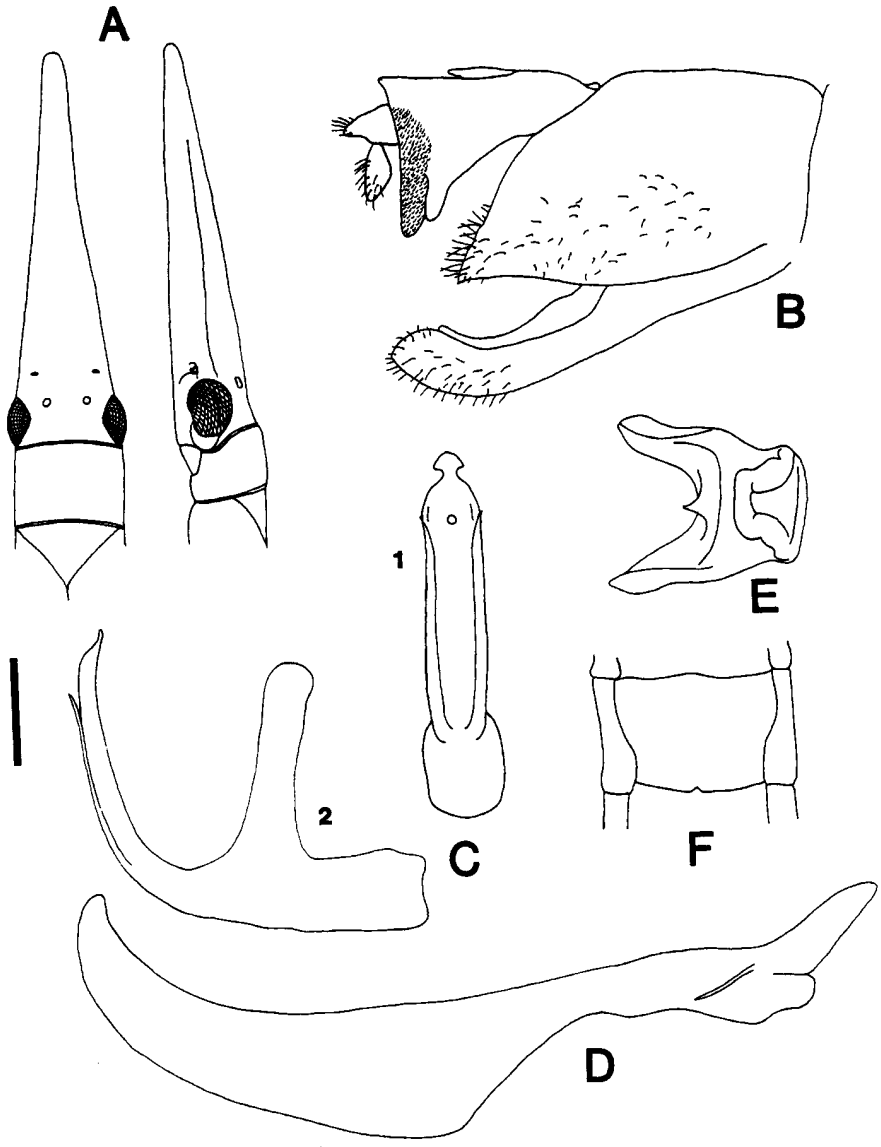

Fig. 1. *Cephalelus pickeri*, **A–E** holotype male. **A**, head and thorax, dorsal and lateral views; **B**, pygofer, lateral view; **C**, aedeagus, **1**, ventral and **2**, lateral views; **D**, style; **E**, connective. **F**, paratype female, pregenital sternite. Scale bar = 1 mm (A), 0.01 mm (B), 0.008 mm (C–E), 0.5 mm (F).

C. angustatus by Davies (1986, 1988). Davies (1986: 67) noted considerable aedeagal variation in *C. angustatus*, stating that '*C. angustatus* at Cape Point is smaller in size and has long, slender aedeagal appendages situated close to the shaft, while specimens of the same species found in the Hottentots Holland Mtns. are larger and have shorter, broader aedeagal appendages diverging from the shaft'. Davies (1988: Figs 6–9) illustrated variation in the aedeagus. However, he maintained that this variation was 'the result of the isolation of Cape Point habitat from the rest of the mainland' (Davies 1986: 67). This suggestion is unfounded, as specimens of both species have been collected

Table 1. Diagnostic differences between *Cephalelus pickeri* and two closely related species.

Character	*C. pickeri*	*C. nivenus*	*C. angustatus*
Aedeagal shaft			
Expanded sub-apically	present	absent	absent
Lateral view	sinuate	sinuate	curved
Aedeagal apex			
Size	small	small	large
Teeth	short	short	long
Aedeagal appendages			
Size	large	small	large
Diameter	slender	slender	broad
Outer edges	serrated	smooth	serrated
Diverging from shaft	weakly	weakly	strongly
Host plants	*Elegia filacea* Mast. *Hypodiscus laevigatus* (Kunth) Linder	*Chondropetalum nudum* Rottb. *Chondropetalum tectorum* (L.f.) Rafin.	*Chondropetalum tectorum* (L.f.) Rafin. *Hypodiscus* spp. *Willdenowia*

within approximately 1 km of each other at Cape of Good Hope Nature Reserve (material in SAMC). Moreover, *C. pickeri* has been collected extensively in the coastal fynbos between Rooi Els and Pringle Bay and Davies' own material (USC) includes six males from the Houwhoek Pass in the Hottentots Holland Mountain range.

Host-plant records provide further ecological evidence that *C. pickeri* is quite distinct: it appears to be monophagous on *Elegia filacea* Mast. at low altitudes and on *Hypodiscus laevigatus* (Kunth) Linder at high altitudes, whereas *C. angustatus* is polyphagous on several restioid species in the genera *Chondropetalum* Rottb., *Hypodiscus* Nees and *Willdenowia* Thunb. These differences were found to be consistent in the Cape of Good Hope Nature Reserve, where both species are sympatric.

Type material examined. Holotype ♂, SOUTH AFRICA: *Western Cape Province,* marsh by roadside just past turn-off to Olifantsbos, Smitswinkelvlakte, Cape of Good Hope Nature Reserve, 34.17S 18.28E, 25.viii.1995, L. Prendini (SAMC). Paratypes: 1♂, 2♀ (wingless), same data as holotype (SAMC); 4♂, 1♀ (wingless), same locality but 28.viii.1995, L. Prendini (SANC); 9♂, Cape Point, 34.14S 18.25E, 3.v.1985, D.M. Davies (USC); 6♂, Houwhoek Pass, 34.13S 19.09E, 3.v.1985, D.M. Davies (USC); 40♂, 4♀ (wingless), marsh by roadside between Rooi Els and Pringle Bay, 34.19S 18.50E, 12.iii.1995, L. Prendini (20♂, 2♀ SANC, 20♂, 2♀ BMNH); 61♂, 17♀ (wingless), same locality but 2.vii.1995, L. Prendini (21♂, 6♀ SAMC, 20♂, 6♀ SANC, 20♂, 5♀ BMNH); 1♀ (wingless), same locality but 14.viii.1995, L. Prendini (SAMC); 10♂, 2♀ (wingless), 2♀ (winged), marsh by roadside of sand road to Pringle Bay, 34.21S 18.50E, 12.iii.1995, L. Prendini (4♂, 1♀ (wingless), 1♀ (winged) SAMC, 3♂, 1♀ (wingless), 1♀ (winged) SANC, 3♂ BMNH).

***Cephalelus linderi* sp. n.**, Fig. 2A–F

Description

Coloration. Various shades of brown. *Crown:* relatively short, tapering initially, but expanding slightly towards the apex, which is often swollen; with (or often without) a weakly-developed mid-dorsal ridge; straight in lateral view (Fig. 2A). *Tegminal venation:* distinct.

Male. Dimensions: length from apex of crown to tip of tegmen 5.63–6.70 mm; transocular width 0.79–0.88 mm; greatest width of pronotum 0.75–0.84 mm; median length of crown 1.78–2.37 mm; crown 3.34–3.95 times as long medially as pronotum. *Male genitalia. Pygofer:* rounded posterodorsally and with well-developed lobe-like protrusion posteroventrally; ventral and posterior margins setose (Fig. 2B). *Aedeagal shaft:* cylindrical and straight in lateral view (Fig. 2C$_1$,C$_2$). *Aedeagal appendages:* hook-like, laterally flattened and tapering; arising laterally from mid-length of aedeagal shaft; diverging strongly from aedeagal shaft (Fig. 2C$_1$,C$_2$). *Aedeagal apex:* small, wedge-shaped and distally acute (Fig. 2C$_1$,C$_2$). *Gonopore:* teardrop-shaped, with a pair of short subapical teeth; located apically on aedeagal shaft (Fig. 2C$_1$). *Styles:* long, narrow, with blunt apex curving laterally (Fig. 2D). *Connective:* as in Fig. 2E.

Female. Dimensions: length from apex of crown to

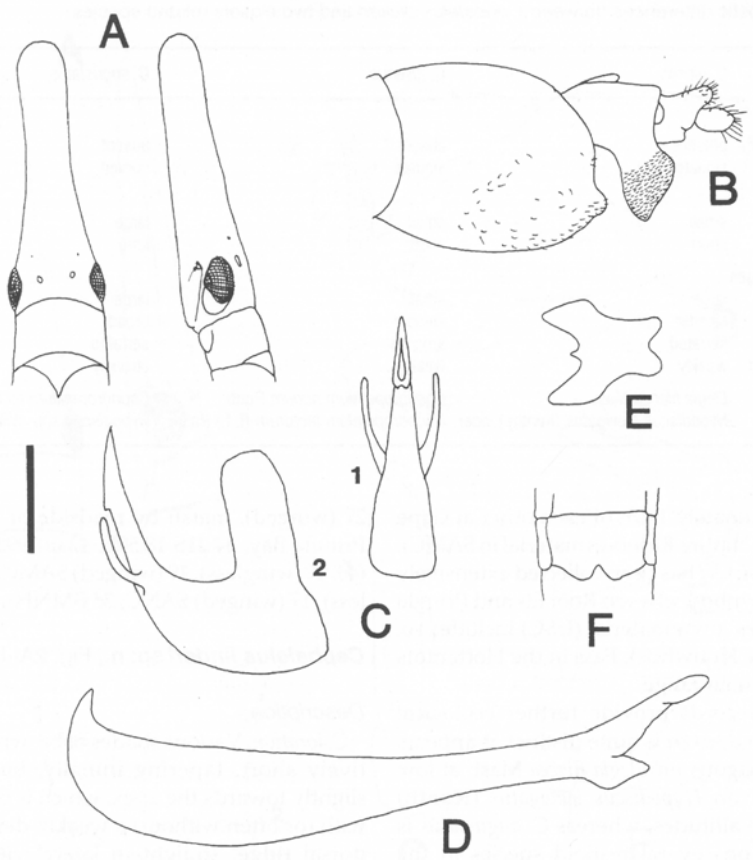

Fig. 2. *Cephalelus linderi*, **A–E** holotype male. **A**, head and thorax, dorsal and lateral views; **B**, pygofer, lateral view; **C**, aedeagus, **1**, ventral and **2**, lateral views; **D**, style; **E**, connective; **F**, paratype female, pregenital sternite. Scale bar = 1 mm (A), 0.01 mm (B), 0.008 mm (C–E), 0.5 mm (F).

tip of tegmen 6.67–8.10 mm; transocular width 0.85–0.99 mm; greatest width of pronotum 0.78–0.91 mm; median length of crown 2.92–3.14 mm; crown 5.50–5.81 times as long medially as pronotum. *Pregenital (seventh) sternite:* distal margin with short groove medially (Fig. 1F). *Ovipositor:* extending just beyond edge of tegmina.

Etymology. This species is named after H.P. Linder (University of Cape Town) for his contribution to the systematics of the southern African Restionaceae.

Remarks

This species is morphologically similar to *C. ivyae* Davies, *C. rawsonia* and *C. campbelli* Davies, with which it shares the following characters: pygofer lobed; aedeagal shaft cylindrical; aedeagal apex wedge-shaped; gonopore teardrop-shaped, with a pair of subapical teeth; pair of hook-like aedeagal appendages arising from the aedeagal shaft. *Cephalelus linderi* can be distinguished from *C. campbelli* by its diverging aedeagal appendages, that arise laterally from the the mid-length of the aedeagal shaft; in *C. campbelli,* the aedeagal appendages are parallel and arise ventrally from base of the aedeagal shaft. *C. linderi* can be distinguished from *C. ivyae* and *C. rawsonia* by the absence of a pair of small triangular, dorsally angled, lateral teeth at the mid-length of the aedeagal shaft. Additional characters distinguishing *C. linderi* from these species are provided in Table 2.

This species is monophagous on *Rhodocoma*

Table 2. Diagnostic differences between *Cephalelus linderi* and three closely related species.

Character	*C. linderi*	*C. campbelli*	*C. rawsonia*	*C. ivyae*
Crown				
Apex shape	swollen	swollen	spatulate	swollen
Mid-dorsal ridge	weakly developed	weakly developed	strongly developed	strongly developed
Mid-ventral ridge	absent	absent	strongly developed	strongly developed
Aedeagal teeth	absent	absent	present	present
Aedeagal appendages				
Arising on shaft	laterally	ventrally	laterally	laterally
Arising on shaft	at mid-length	from base	at mid-length	at mid-length
Diverging from shaft	strongly	absent	weakly	absent
Elbowed	absent	absent	present	absent
Host plants	*Rhodocoma capensis* Nees ex Steud.	*Ischyrolepis sieberi* (Kunth) Linder	*Staberoha vaginata* (Thunb.) Pillans	*Restio* spp.

capensis Nees ex Steud. It is unknown beyond the type locality in the Koue Bokkeveld, but may be more widespread, since its host plant has an extensive, albeit patchy distribution in the rainshadow of coastal mountains from the Cedarberg to Grahamstown (Linder & Vlok 1991). *Cephalelus bicoloratus* Evans was collected sympatrically at the type locality, but this species only occurred on *Calopsis paniculata* (Rottb.) Desv. growing in a mixed stand with *R. capensis* on which *C. linderi* was collected, revealing a distinct host-plant 'segregation' between the two sympatric species.

Type material examined. Holotype ♂, SOUTH AFRICA: *Western Cape Province,* marsh alongside sand road between Cedarberg and Ceres, just south of Blinkbergpas, Koue Bokkeveld, 33.46S 19.26E, 8.x.1995, L. Prendini (SAMC). Paratypes: 4♀ (wingless), same data as holotype (SAMC); 16♂, 16♀ (wingless), 1♀ (winged), same locality as holotype but 26.iii.1996, L. Prendini (5♂, 4♀ (wingless), 1♀ (winged) SAMC, 6♂, 6♀ (wingless) SANC, 5♂, 6♀ (wingless) BMNH).

Cephalelus brevipilus Davies, Fig. 3A

Cephalelus brevipilus Davies, 1988: 38.

Description of female

Dimensions. Length from apex of crown to tip of tegmen 10.18–12.24 mm; transocular width 1.22–1.44 mm; greatest width of pronotum 1.13–1.32 mm; median length of crown 4.30–5.35 mm; crown 5.31–6.77 times as long medially as pronotum. *Genitalia. Pregenital (seventh) sternite:* distal margin entire (Fig. 3A). *Ovipositor:* extending to edge of tegmina, or stopping short thereof.

Remarks

Two paratype females (Davies 1988) from Suurvlak, Wolseley, 33.42S 19.20E, 16.iii.1971, J.G. Theron (USC), were incorrectly identified as *C. brevipilus.* They are *C. uncinatus* Davies.

Material examined. SOUTH AFRICA: *Western Cape Province,* 13♀ (wingless), marsh at the top of Blinkwater Ravine, Echo Valley, Table Mountain, Cape Town, 33.58S 18.25E, 1.viii.1995, L. Prendini (4♀ SAMC, 5♀ SANC, 4♀ BMNH); 1♀ (wingless), same locality but 29.x.1995, L. Prendini (SAMC).

Cephalelus daviesi Davies, Fig. 3B

Cephalelus daviesi Davies, 1988: 53.

Description of female

Dimensions. Length from apex of crown to tip of tegmen 5.94–7.75 mm; transocular width 0.84–0.97 mm; greatest width of pronotum 0.83–0.94 mm; median length of crown 2.28–3.05 mm; crown 4.65–4.84 times as long medially as pronotum. *Genitalia. Pregenital (seventh) sternite:* distal margin with short incision medially (Fig. 3B). *Ovipositor:* extending just beyond edge of tegmina.

Material examined. SOUTH AFRICA: *Western Cape Province,* 4♀ (wingless), near stream below Platteklip Gorge, Table Mountain, Cape Town, 33.57S 18.25E, 29.x.1995, L. Prendini (2♀ SAMC, 2♀ SANC); 17♀ (wingless), near stream, Assegaaibosch Nature Reserve, Jonkershoek, Stellenbosch, 33.58S 18.55E, 5.viii.1995, L. Prendini (5♀ SAMC, 6♀ SANC, 6♀ BMNH); 7♀ (wingless), near stream by road, Bain's Kloof Pass, 33.37S 19.07E, 20.viii.1995, L. Prendini (3♀ SAMC, 2♀ SANC, 2♀ BMNH); 64♀ (wingless), roadside, Klein Drakenstein, Du Toit's Kloof Pass,

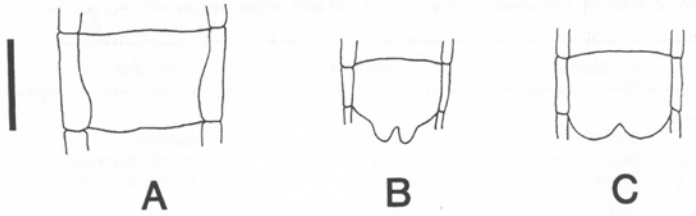

Fig. 3. **A**, *Cephalelus brevipilus* female, pregenital sternite; **B**, *Cephalelus daviesi* female, pregenital sternite; **C**, *Cephalelus rawsonia* female, pregenital sternite. Scale bar = 0.5 mm.

33.43S 19.04E, 24.viiii.1995, L. Prendini (22♀ SAMC, 21♀ SANC, 21♀ BMNH); 27♀ (wingless), vegetation in shade of rock outcrops, Rustig, Worcester, 33.35S 19.27E, 25.viiii.1995, L. Prendini (9♀ SAMC, 9♀ SANC, 9♀ BMNH); 2♀ (wingless), summit of Piketberg Mountain, Piketberg, 32.40S 18.37E, 1.x.1995, L. Prendini (SAMC); 1♀ (wingless), near mountain stream, Driehoek, Cedarberg, 32.16S 19.11E, 7.x.1995, L. Prendini (SAMC).

Cephalelus rawsonia Davies, Fig. 3C

Cephalelus rawsonia Davies, 1988: 46.

Description of female

Dimensions. Length from apex of crown to tip of tegmen 7.88 mm; transocular width 0.97 mm; greatest width of pronotum; median length of crown 0.94 mm; crown 4.45 times as long medially as pronotum. *Genitalia. Pregenital (seventh) sternite:* distal margin with short incision medially (Fig. 3C). *Ovipositor:* extending just beyond edge of tegmina.

Material examined. SOUTH AFRICA: *Western Cape Province,* 1♀ (wingless), marsh at the top of Blinkwater Ravine, Echo Valley, Table Mountain, Cape Town, 33.58S 18.25E, 1.viii.1995, L. Prendini (SAMC).

SPECIES COMPLEXES

Two species-complexes within the tribe could not be resolved using traditional morphological approaches. Davies (1988: 42) noted two distinct forms of *C. nivenus:* 'Specimens from the Hottentots Holland region have a longer and more acute crown than those from the Cape Peninsula ... are also lighter brown in colour and have a pair of parallel dark, median lines between the eyes and medially on the pronotum .... Moreover the pygofer lobes are more slender and less setose ... the aedeagal shaft is more slender and the styles are not as broad at mid-length.' The short-crowned Cape Peninsula form has subsequently been collected further inland (material in SAMC), but appears to be allopatric with the long-crowned Hottentots Holland form. Both forms share the host-plant *Chondropetalum tectorum* (L. f.) Rafin., but the former also occurs on *Chondropetalum nudum* Rottb., whereas Davies (1988) records *Elegia capensis* (Burm. f.) Schelpe as a host plant of the latter.

Cephalelus uncinatus also appears to comprise a species complex. Consistent crown and aedeagal differences have been found between populations occurring sympatrically on *C. nudum, Ischyrolepis gaudichaudiana* (Kunth) Linder and *Mastersiella digitata* (Thunb) Gilg-Ben. in comparison to an allopatric population occurring on *Willdenowia incurvata* (Thunb.) Linder. However, a decision cannot be reached at present because of insufficient records from the various host plants.

In both these cases the morphological differences are more subtle than those between *C. angustatus* and *C. pickeri,* or between *C. linderi* and *C. ivyae, C. rawsonia* or *C. campbelli,* and molecular techniques or mate-choice experiments are required to resolve the uncertainty. A detailed investigation of host-plant preferences may provide additional ecological characters to supplement classical morphological taxonomy in these species complexes, as has been found in other groups (Ackery 1988).

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APPENDIX 1

Checklist of the South African species of Cephalelini.

***Cephalelus* Percheron, 1832**
C. angustatus Evans, 1947
C. attenuatus Davies, 1988
C. appendiculatus Davies, 1988
C. bicoloratus Evans, 1947
C. bilobatus Davies, 1988
C. brevipilus Davies, 1988
C. campbelli Davies, 1988
C. cygnastylus Davies, 1988
C. daviesi Davies, 1988
C. gonubiensis Davies, 1988
C. ivyae Davies, 1988
C. linderi sp. n.
C. nivenus Davies, 1988
C. pickeri sp. n.
C. rawsonia Davies, 1988
C. smithi Davies, 1988
C. turneri Evans, 1947
C. uncinatus Davies, 1988

***Duospina* Davies, 1988**
D. capensis (Evans, 1947)
D. sheilae Davies, 1988
D. twanella Davies, 1988