

New genera of African Acrididae (Orthoptera: Acridoidea)

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Two new genera of Acrididae are described from South West Africa, viz. *Damaracris* for the type-species *D. rupestris* spec. nov. from the Central Namib Desert; and *Ovambohippus* for the type-species *O. anderssoni* spec. nov. which is widely distributed over northern S. W. Africa and southern Angola. Brief notes on the habitat preferences as well as geographical distribution are given.

DAMARACRIS gen. nov.

This genus is erected for an unusual species of Calliptaminae from the Central Namib Desert of South West Africa. In a key to the genera within this subfamily (Jago, 1967: 401) the new genus keys out near the West African genus *Stobbea* Rammé, sharing with it such features as the poor development of pronotal carinae and the more rounded posterior margin of pronotum. *Damaracris* may be at once distinguished by its longer antennae, by its conical and sharp prosternal process, by its unmodified distal abdominal tergite and, especially, by the differently shaped male cercus which has a tapering apex. Its phylogenetic relationships are difficult to assess. The new genus is unusual in that the epiphallus is bridge-shaped and not simply plate-like as in other members of the subfamily Calliptaminae.

Description: Small to medium sized with smooth to matt integument. Antenna filiform, longer than combined lengths of head and pronotum. Head large, subconical. Fastigium of vertex, from above, narrow with elongate concavity and high lateral carinulae which are slightly convergent between eyes. Frontal ridge narrow with weakly raised and thick lateral margins and shallowly punctate surface, roundly merging with fastigium of vertex. Frons in profile almost perpendicular, slightly sloping backwards. Facial carinulae strongly developed, curved. Compound eyes ellipsoidal, strongly convex; ocelli large, lateral ones located on raised tubercles.

Pronotum subcylindrical, weakly carinate; median carina weak, lateral carinae absent, indicated only by faint rugosity, dorsum crossed by three deep sulci; prozona 1.42 × as long as metazona, hind margin of latter broadly rounded and projecting slightly posteriorly, with finely punctate integument. Prosternal process conical, almost perpendicular with subacute apex and weakly sloping anterior surface. Mesosternal interspace about three times as wide as long, lateral lobes rounded. Metasternal interspace triangular and closed behind. Elytra shortened. Coxa of foreleg with slender triangular projection on anterior surface; hind femur strongly widened with expanded lower marginal area, serrated dorsal carina and strongly convex external surface. Spurs of hind tibia unspecialized, upper inner spur not much longer than external one.

Tympanum large and well developed. Supra-anal plate, elongate, shield-shaped with longitudinal groove and rounded apex in male; more triangular and with transverse ridge across middle in female. Male cercus powerfully developed, tapering towards apex which is bilobed and with inwardly directed apical tooth; female cercus simple, compressed and of triangular shape. Subgenital plate, short and subconical, upturned and with obtuse apex in male; flat and with small median projection in female. Ovipositor valves short with recurved subacute apices, especially the ventral pair, which have large tooth-like ventral projections.

Epiphallus with narrow bridge, and broad membranous plate, with prominently raised anterior processes and with small lobiform lophi whose surface is shagreen; ancorae absent. Ectophallic membrane connected to epiphallus, sclerotized, especially along middle, and with recurved and projecting hind margin. Cingulum consisting of arch and valves, zygoma broad and horseshoe shaped. Endophallus with broad thickened basal valves which diverge behind with long, slender, flexure and tapering, upcurved, apical valves.

Spermatheca with long apical and shorter pre-apical diverticulum and short duct.

Type-species: *Damaracris rupestris* spec. nov.

***Damaracris rupestris* spec. nov., figs 1-10**

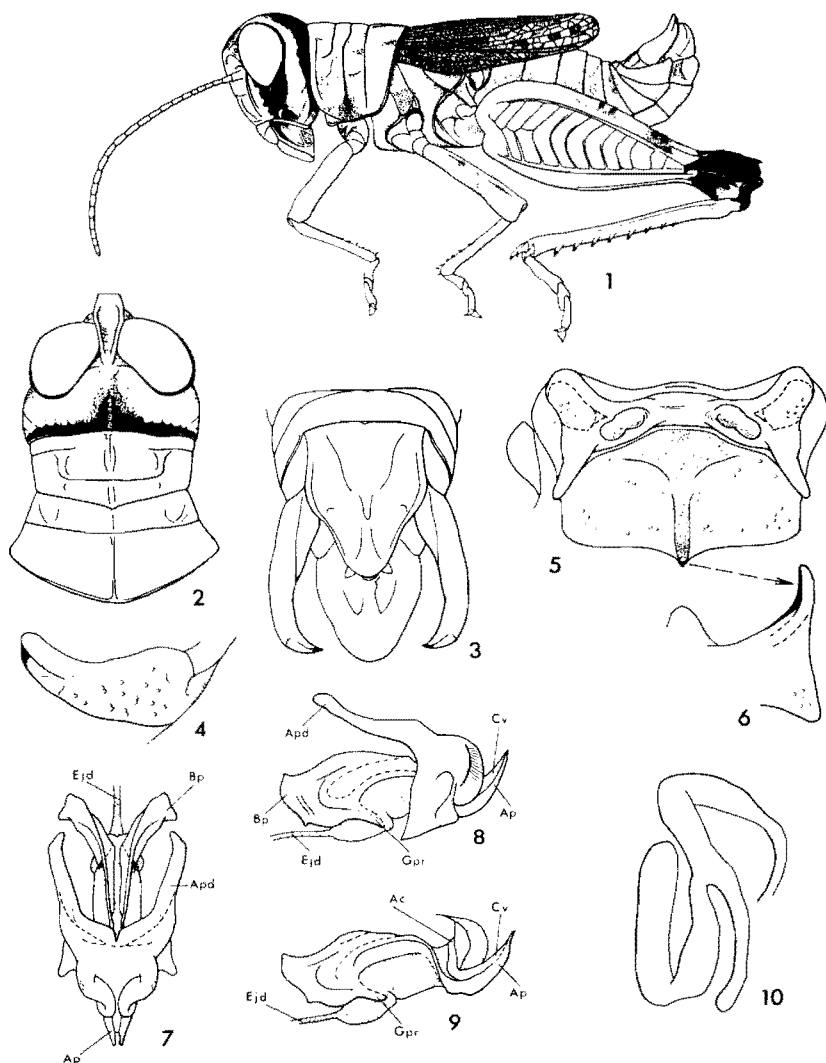
Type locality. S. W. Africa, Walvis Bay district, Farm Greylingshof.

♂-*Holotype.* Medium sized with shortened wings. Antenna thick filiform, basal segments compressed, longer than combined lengths of head and pronotum. Fastigium of vertex narrow, elongate, widening anteriorly and sloping downwards, with concave longitudinal depression and with high lateral margins; interocular distance slightly narrower than antennal scape. Frons slightly sloping backwards. Frontal ridge merging roundly with fastigium of vertex, narrow, convergent above and with low marginal carinulae which become constricted just below median ocellus, its surface coarsely punctured.

Pronotum widened posteriorly, weakly tectiform and with low median carina; metazona about half length of prozona, its posterior margin projecting posteriorly and broadly rounded; entire surface of metazona finely punctured. Prosternal tubercle conical, perpendicular with subacute apex; mesosternal interspace broad; metasternal interspace with deep lateral pits. Elytra shortened with expanded costal margin and tapering towards apex, reaching about two thirds along abdomen. Middle femur with dorsal and ventral grooves on anterior surface, lower outer knee lobe expanded; hind femur with convex external surface and regular fish-bone reticulation, its upper carina serrated; spurs of hind tibia of normal length. Supra-anal plate large and elongate, weakly sulcate along base and with broadly rounded apex. Cercus large, incurved with bilobate apex, dorsal lobe fleshy, ventral one toothed. Subgenital plate short, subconical and upcurved.

Epiphallus with narrow bridge, wide plate, large anterior processes and small lobiform lophi. Zygoma broad, incised behind, apodemes short with incurving apices. Valves of cingulum tapering to fine points. Basal valves of penis broad, slightly divergent; apical valves comparatively slender with tapering upcurved apex. Gonopore process short.

General body colour brown; but below eyes, lateral occipital area, apex of hind femur and base of hind tibia, with jet black. Antennae and area immediately



Figs 1-10. *Damaracris rupestris* gen. et spec. nov. 1-4. ♂-Holotype. 1. Lateral aspect. 2. Head and pronotum, dorsal. 3. End of abdomen, dorsal. 4. Right cercus, lateral. 5-9. ♂-Paratype. 5. Epiphallus, dorsal. 6. Detail of plate showing apex, lateral. 7. Phallic complex, dorsal. 8. The same, lateral. 9. Endophallus, lateral. 10. ♀-Paratype: spermatheca. Ac—arch of cingulum; Ap—apical valves of penis; Apd—apodemes; Bp—basal part of penis; Cv—valves of cingulum; Ejd—ejaculatory duct; Gpr—gonopore process.

posterior to compound eye white; internal surface of hind femur orange, dorsal and external surface with irregular dark transverse fasciae; hind tibia orange, spines and spurs with black apices. Hind wing hyaline, basally milky blue.

♀-*Paratype*. Similar to male but larger and of a more robust habitus. Supra-anal plate triangular with weak transverse ridge and short longitudinal sulcus towards base; cercus triangular with tapering apex; subgenital plate with small median, triangular, projection. Valves of ovipositor short, upper pair weakly recurved, ventral pair more strongly so and with strong tooth-like projections at base. Spermatheca with long, sinuous, apical and preapical diverticula.

General body colour differing only slightly from male and speckled with more black; external surface of hind femur with irregular black fasciae; hind knee jet black; internal surface of hind knee ochreous; hind tibiae and tarsi orange, spines and spurs with black apices.

Measurements. Length of body, ♂ 15,0–17,1; ♀ 24,3–29,8; pronotum, ♂ 3,0–3,7; ♀ 5,4–6,3; elytron, ♂ 6,7–8,1; ♀ 13,3–16,2; hind femur, ♂ 8,5–10,4; ♀ 14,0–15,5 mm.

MATERIAL EXAMINED. ♂-Holotype, 20 ♂-, 11 ♀-Paratypes, all from the following locality: SOUTH WEST AFRICA, Walvis Bay district, Greylingshof Farm No. 107, 20.v.1969 (*H. D. Brown* and *W. D. Haacke*).

Holotype and paratypes in the National Collection of Insects, Plant Protection Research Institute, Pretoria; paratypes deposited in the Transvaal Museum, Pretoria; in State Museum, Windhoek; and in British Museum (Natural History), London.

Ecological notes. Rupicolous and frequenting steep-sided, rock strewn, washes cutting through tilted schistose hills at the inland edge of the Namib plain—an area referred to biogeographically as Pro-Namib. Weathering of the schist has resulted in a wild profusion of fallen rock either as huge slabs or loose splinters. The overall impression of barrenness is heightened by a sparse plant cover of *Stipagrostis* grasses and an occasional stunted *Commiphora* tree. From the ripe condition of the grass the area had obviously experienced good earlier rains. Specimens of *Damaracris* sprang powerfully about, making high bounding leaps and proved difficult to collect amongst the rocks. Disturbed specimens generally made several consecutive leaps, which enabled them to cover distances of about 4–5 m at a time, and in this way readily eluded capture. Often landing clumsily they struck the rocks with such force that they could be heard some distance away which was useful in trying to relocate their whereabouts. They also had the remarkable habit of crawling into cracks or hiding beneath stones when pursued and it was sometimes necessary to turn large stones over in order to secure their capture. Males were more abundant than females and were also the more active sex. Females sometimes spread their wings and undertook short gliding flights but males jumped about apparently without the aid of their wings. Both sexes regurgitated a light brown fluid on being removed from the net and males made a short stridulatory sound when held in the fingers.

Distribution. So far only known from the foregoing area and the adjoining Kuiseb canyon, where specimens were sighted.

OVAMBOHIPPIUS gen. nov.

This genus is required for a distinctive new species from Ovamboland and the adjoining parts of Angola and is characterized as follows:—

Description. Small and slender with abbreviated or lobiform elytra. Antenna filiform, much longer than combined lengths of head and pronotum. Head conical. Fastigium of vertex angular in shape with concave dorsal surface and with strong, carinate, lateral margins which converge posteriorly on vertex. Fastigial foveolae practically obliterated, represented by coarse punctures; frons in profile, almost straight, curving weakly between antennae and sloping backwards. Frontal ridge narrow, constricted slightly at median ocellus, sulcate between antennae, and with raised lateral carinae which fade out towards clypeus. Compound eyes large and convex.

Pronotum subcylindrical with three transverse sulci present on dorsum, only the basal one cutting the median carina. Lateral carinae absent, median carina only slightly developed; entire metazona, which is about half length of prozona, finely punctate. Prosternal process low, collar-like with sloping surfaces; mesosternal interspace as long as wide. Metasternal interspace small, inversely triangular, deeply impressed and closed behind. Elytra with reduced venation; in male brachypterous with expanded costal and medial area and thickened stridulatory vein; reaching back to 5–7th abdominal segments, somewhat inflated and forming a covering over tympanum; in female, elytra lobiform and located laterally. Wing vestigial. Hind femur slender with regular fish-bone reticulation, external surface convex; lower internal carina bearing row of stridulatory pegs towards base. Hind tibia with upper spur of inner side more than twice as long as external one and armed with ventral and preapical dorsal setae. Tarsi short. Arolia small.

Tympanum large, open; first abdominal segment strongly inflated. Supra-anal plate elongate and triangular in shape; cercus narrow and conical; subgenital plate short, conical and upturned in male and with median projection and rounded sides in female. Ovipositor valves short.

Phallic complex: epiphallus bridge shaped with erect ancorae and large lobiform lophi; oval sclerites small; zygoma of cingulum with short horseshoe-like apodemes; basal valves of penis comparatively large with long gonopore process; apical valves smaller with erect dorsal appendices and fine tapering apex.

Spermatheca with recurved apical and large sac-like preapical diverticula; spermathecal duct long and coiled.

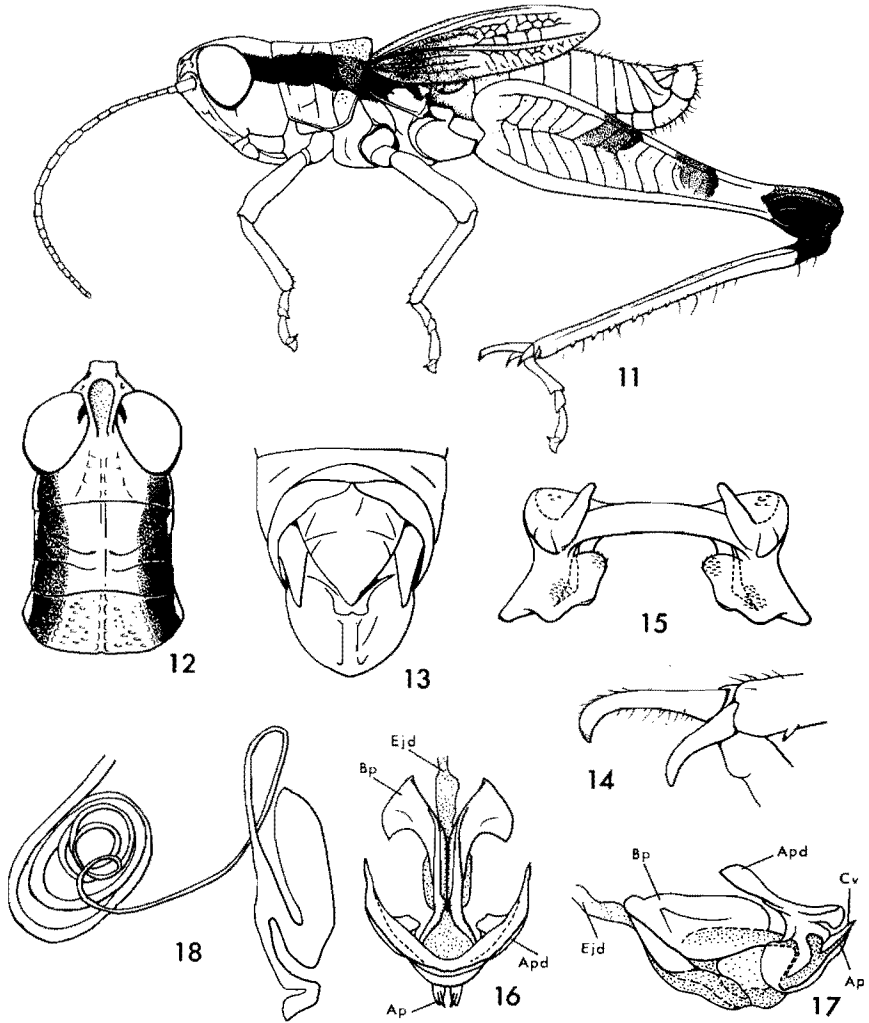
Type species: *Ovambohippus anderssoni* spec. nov.

The presence of stridulatory pegs on the internal surface of the hind femur places the genus unmistakably in the subfamily Truxalinae. Here its nearest relative appears to be *Afrohippus* Uvarov which has a similar general habitus and alary specialization and also inhabits a similar flood plain habitat. The new genus is distinct and is characterized primarily by the more conically shaped head with its almost obliterated and weakly punctate fastigial foveolae and sulcate frontal ridge, by the differently shaped pronotum, by the strongly reduced elytra and wings and, finally, by the distinctive long inner spur of the hind tibiae.

***Ovambohippus anderssoni* spec. nov., figs 11–18**

Type locality. S. W. Africa, Ovamboland, 19 km NW. Ondangua.

♂-*Holotype.* Brachypterous, small with smooth integument; ventral parts covered with pale pubescence. Antenna filiform, compressed in basal third, composed of 26 segments, and much longer than combined lengths of head and pronotum. Fastigium of vertex sulcate, with raised lateral margins which converge posteriorly on vertex; fastigial foveolae indistinct, punctate. Occiput with traces of cell-like reticulation



Figs 11-18. *Ovambohippus anderssoni* gen. et spec. nov. 11-14. ♂-Holotype. 11. Lateral aspect. 12. Head and pronotum, dorsal. 13. End of abdomen, dorsal. 14. Inner spur on hind tibia, lateral. 15-17. ♂-Paratype. 15. Epiphallus, dorsal. 16. Phallic complex, dorsal. 17. The same, lateral. 18. ♀-Paratype: spermatheca and duct. For abbreviations, see figs 1-10.

in middle. Frons straight, sloping backwards and slightly expanded between antennae; frontal ridge, narrowing towards apex with deep sulcus, especially between antennae, and with raised obtuse margins which disappear below. Facial carinulae obtuse and broadly curved.

Pronotum with rounded anterior and almost straight posterior margin, prozona almost one and a half times as long as metazona; median carina low crossed by basal sulcus only, lateral carinae absent; surface of metazona finely punctate. Elytra strongly reduced, brachypterous, usually leaving apical segments of abdomen exposed; venation reduced, costal and medial areas expanded and with a series of hyaline transverse veinlets. Hind femur slender, extending well beyond abdomen with strong dorsal and ventral carinae; outer surface convex and covered with regular fish-bone reticulation. Inner spur of hind tibia twice as long as external one, its ventral and preapical dorsal surface armed with setae. Tarsi short. Arolia small. Tympanum large, open. Supra-anal plate triangular with weakly curved sides, attenuate apex, shallow basal sulcus and faint transverse ridge across the middle. Cercus conical, elongate. Subgenital plate short and conical with obtuse apex.

Epiphallus bridge-shaped with large sinuate lophi, their inner surface shagreen and with erect and converging ancorae; penis with short apical valves and relatively massive basal valves which are basally recurved; gonopore process elongate; flexure long and straight.

General body colour yellowish green with a broad black, lateral, stripe extending from behind eye across pronotum and mesonotum. Face suffused with brown. Base of elytra dark, costal and medial areas hyaline, cubital area whitish. Hind femur with two dark transverse patches, external surface tinged with red; knee black; hind tibia whitish, its basal and upper surface black; spines and spurs capped with black.

♀-*Paratype*. Similar to male but with a stouter habitus; head more rounded; fastigium of vertex broader with weak transverse furrow; pronotum more squat, median carina more strongly developed; elytra lobiform and lateral without expanded venation and less hyaline. Supra-anal plate more elongate, triangular; cercus short, triangular; subgenital plate flat with upcurved sides and small, triangular, median projection; ovipositor valve, short.

General body colour paler than male, generally greenish tinged with brown. Lateral body stripe grey but on pronotum, edged with white. Hind femur with lunule of knee black becoming white below; tibia whitish but tinged with black along upper surface.

Measurements. Length of body, ♂ 12,9–16,1, ♀ 19,2–23,3; pronotum, ♂ 2,4–3,1, ♀ 3,3–4,1; elytron, ♂ 5,4–7,6, ♀ 3,7–4,5; hind femur, ♂ 9,2–10,6, ♀ 12,0–15,0 mm.

MATERIAL EXAMINED. ♂-Holotype, 69 ♂-, 42 ♀-Paratypes with the following data: SOUTH WEST AFRICA, Kungveld, 53 km E. Tsumkwe, 9.iv.1970, 4 ♂, 6 ♀; Okavango River, Katwitwi, 17.iv.1970, 1 ♂; Ovamboland, Odimbo, 19.iv.1970, 1 ♂; Oshikango, 20.iv.1970, 14 ♂, 1 ♀; 19 km NW. Ondangua, 20.iv.1970, 4♂, 4 ♀ (including the holotype); Ondangua, 20.iv.1970, 2 ♀; 8 km E. Oshakati, 20.iv.1970 3 ♂, 3 ♀; 21 km NW. Oshakati, 21.iv.1970, 3 ♂, 4♀; 36 km NW. Oshakati, 21.iv.1970, 3 ♂, 3 ♀; Ombalantu, 21.iv.1970, 2 ♀; 73 km NW. Oshivelo 20.iii.1971, 1♂, 2 ♀ (all leg. *H. D. Brown*); Ondangua 38 km SE., 9.v.1971, 4 ♂, 3 ♀ (H2471) (leg. State Museum, Windhoek). ANGOLA, Huila district, 23 km NW. Pereira de Eca, 21.iii.1971, 19 ♂, 5 ♀; 3 km NW.

Calequera, 21.iii.1971, 3 ♂; Otchinjau, 10.iv.1971, 8 ♂, 5 ♀; 8 km SW. Jau, 15.iv.1971, 2 ♂, 2 ♀ (all leg. *H. D. Brown*).

In some of the foregoing specimens from Otchinjau and Pereira de Eca elytra length is greater than in the topotypical series and extends back to the supra-anal plate. In certain specimens the transverse black pattern found on the external surface of the hind femur is also more boldly marked.

Holotype and paratypes of both sexes deposited in the National Collection of Insects, Plant Protection Research Institute, Pretoria, other paratype material deposited as follows: Transvaal Museum, Pretoria; State Museum, Windhoek; Insect Collections of Museu do Dundo, Angola; British Museum (Natural History), London.

This species is named in honour of Charles John Andersson (1827–67), the great naturalist explorer who undertook collecting in Ovamboland as long back as 1851, and whose grave in the wilderness lies, largely forgotten, somewhere along the border to the west of Oshikango near where the new species was collected.

Ecological notes. This is a species of the seasonal flood plains of Ovamboland and neighbouring Angola which favours flooded pans or "oshanas" with a short grass cover. Such grasslands may be extensively developed and support a characteristic, scattered palm (*Hyphaene ventricosa*) parkland, as in Ovamboland, or they may be restricted to relatively small glades amongst dense mopane woodlands, as in the Huila district of Angola. Although specimens were sometimes encountered in flooded situ-

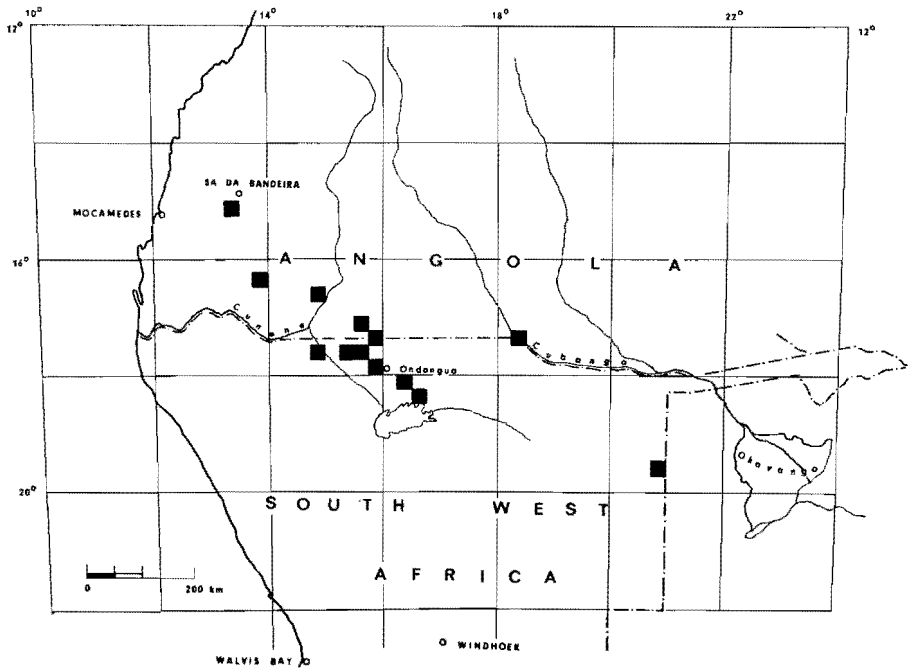


Fig. 19. Distribution of *Ovambohippus anderssoni* gen. et spec. nov.

ations, by far the majority were collected from the floors of the pans after these had dried up at the end of the rains. The substrate of such areas consists of white sand, and the remarkable development of the hind tibial spurs of this grasshopper is seen as an adaptation to such sandy habitats. Specimens jumped strongly and were difficult to spot amongst the grass. Males appeared to be more common than females and actively stridulated throughout the hot part of the day. The insect's main areas of abundance receive a mean annual rainfall of 400–800 mm between November to March when the area becomes inundated. This summer flood is in turn followed by a marked and prolonged dry season.

Distribution (Fig. 19). *O. anderssoni* is widely distributed over the Sandveld of northern South West Africa and Huila district of southern Angola where it appears associated with the Cunene—Etosha and Okavango drainage systems. It ranges across central and northern Ovamboland to the Humpata plateau, Angola, and upper reaches of the Caculavar River in the north west and thence to the Okavango River and to the border of Botswana in the east.

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