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ARID LAND *MICROTIS* (ORCHIDACEAE) IN WESTERN AUSTRALIA WITH THE DESCRIPTION OF THREE NEW TAXA

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Abstract

Microtis eremaea, *M. graniticola* and *M. media* R.Br. ssp. *eremicola* are described as new; illustrations are provided together with a distribution map. Discussion of variation within each species and suspected hybrids is included.

Introduction

Bates (1984) recorded seven species of *Microtis* from Western Australia. Only *M. unifolia sensu lato* was thought to occur in the dry inland. Later, Bates (1990) recognised ten Western Australian *Microtis* and identified three inland species which were treated as *M. media* R.Br., *M. parvifolia* R.Br. and *M. unifolia* (Forst f.)Reichb.f. *sens. lat.*

The type forms of *M. media*, *M. parviflora* and *M. unifolia* are all plants of high rainfall coastal regions; *M. media* ssp. *media* occurring in south-western Australia, *M. parviflora* in eastern Australia and *M. unifolia* in New Zealand. In view of the very different habitat requirements of plants from semi-arid Western Australia it seemed most unlikely they were the same taxa. The author spent time collecting *Microtis* in Western Australia in 1990 and after re-examining herbarium collections from PERTH and AD concluded that several undescribed taxa were involved, the three best known being here described as new.

New taxa

1. *Microtis eremaea* R. Bates, *sp. nov.*

M. parviflora *sensu* Bates, J. Adelaide Bot. Gard. 13 (1990) 57.

A *M. pauciflorae* spicibus floralibus rigidioribus, bracteis floralibus longioribus, sepalis dorsalis apiculo erecto, labellique marginibus crenatis differt.

Holotype: 30 km W of Mt Magnet on granite outcrop, 2.ix.1984, R. Bates 4175 (AD; iso.: AD, CANB, PERTH).

Plants to 40 cm high, moderately slender, rigidly erect, dull green; tuber to 1 cm diam. globular, growing point depressed, new tuber produced distant from plant base. *Leaf* linear, hollow-terete, subtended at soil level by a cylindrical, hyaline sheath to 1 cm long; blade erect, to 50 mm long and 4–7 mm diam., apex rigid or not, fistula not inflated, set at 5–10 cm from soil level. *Flowers* numerous, very small, green, erect in a dense, narrow conical spike to 8 cm long, each subtended by an ovate-lanceolate, acute, pale-edged bract 3–4 mm long; pedicel c. 1 mm long, largely within the floral bract; ovary subcylindrical 3–4 × 1–2 mm, strongly ribbed, not humped near the top. *Dorsal sepal* ovate, 2–2.5 × 1.2 mm shallowly galeate, with a short upturned apiculus, not ribbed. Lateral sepals oblong-lanceolate, c. 2.2 × 1 mm, recurved or revolute. *Petals* oblong, subfalcate 1.5 × 0.8 mm, partly within the dorsal hood. *Labellum* simple, pendulous, cordate, 1.5–2 × 1.2 mm, thick textured, apex subacute, decurved, margins slightly crenulate; basal callus rounded, broader than long, 1 × 0.8 mm, with a broad transverse nectary at its base, apical callus with a slight roughening of the surface. *Column* 1 × 0.8 mm; anther retuse, auricles quadrate, 0.2 mm

long, retuse, stigma crescentic, caudicle 0.2 mm long. *Seeds* 0.02 mm long, pale brown. Fig. 1F–I.

Flowering

August to October; flowers not perfumed. Flowering occurs mostly in seasons of favourable rains and is not dependent on fires.

Distribution and habitat (Map 1)

Widespread throughout semi-arid Western Australia south of 28°, mostly on rock outcrops and along ephemeral watercourses where it may form dense colonies perhaps also in similar habitats in northern South Australia and outback New South Wales.

Related species

Part of the *M. parviflora* complex of very similar species, with tiny simple flowers on rigid stems, differing from other species in having a triangular labellum, with reduced apical callus. *M. eremaea* differs from *M. parviflora sens. strict.* (which is a taxon of summer-damp areas of east-coast forests and swamplands) in the dull, green stiffly erect flower spike, longer floral bracts which are conspicuous early in bud formation, an upturned apiculus on the dorsal sepal, crenulate margins on the labellum and distinctive, broad pit-like nectary. *M. eremaea* is the only member of the *M. parviflora* complex in Western Australia and is apparently the only common *Microtis* throughout vast areas of inland Australia. A very constant species through its western range but further collections from inland South Australia and New South Wales may confirm its occurrence in those states.

Conservation status

Widespread and locally common – not at risk.

Etymology

From 'eremaea' (Latin) in reference to the preferred arid-land habitat of the species.

Selected collections (from 23 seen at AD)

WESTERN AUSTRALIA: Kodjerner Rock, 14.x.1990, *R. Bates 24092*; Holt Rock, 12.x.1990, *R. Bates 24076*; Newmann Rock, 20.x.1984, *R. Bates 4675*; Woodline via Coolgardie, 2.ix.1916, *J.B. Cleland s.n.*; W of Red Kangaroo Hill, Kalgoorlie, xi.1891, *R. Helms s.n.*

2. *M. graniticola* R. Bates, *sp. nov.*

M. unifolia sensu Bates, J. Adelaide Bot. Gard. 13 (1990) 58.

A *M. unifoliae* floribus depressis, sepalis dorsalis apiculo erecto, labello bifido, calli labelli projectura horizontali caudiculaque crassiore differt.

Holotype: Wave Rock, Hyden, 13.x.1990, *R. Bates 24077* (AD; iso.: PERTH).

Plants 20–50 cm high, slender to robust, wholly green; *tuber* 6–12 mm diam., globular, growing point depressed, new tuber produced distant from plant base. *Leaf* linear, hollow-terete, subtended at soil level by a cylindrical hyaline sheath to 1 cm long; blade erect to 50 cm long and 5–8 mm diam., apex lax; fistula often inflated, set at 5–15 cm from soil level. *Flowers* numerous, large, green, nodding, in a moderately dense spike to 6 cm long, each subtended by an ovate-lanceolate, falcate, acuminate bract c. 6 mm long; pedicel 2 mm

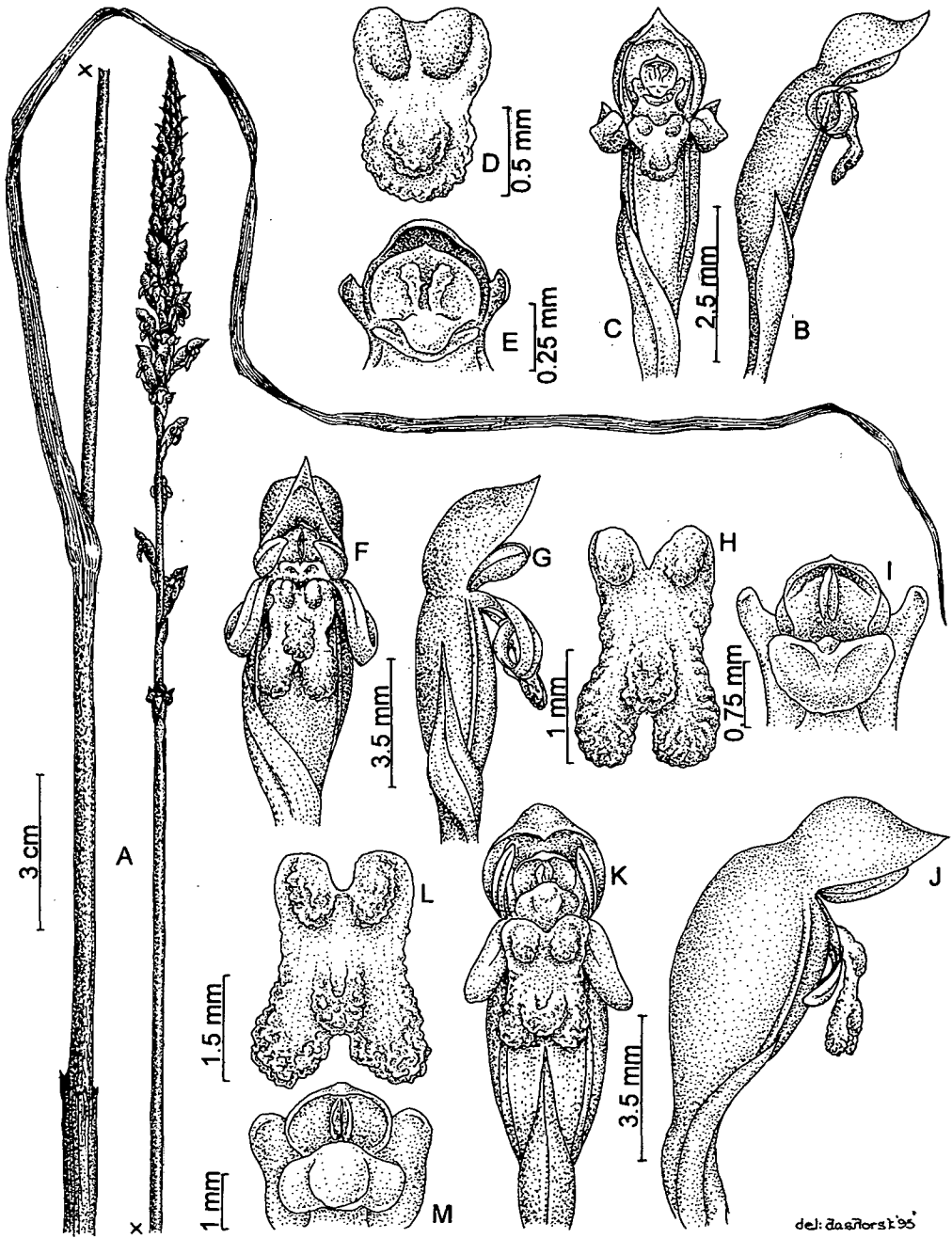


Fig. 1. A–E, *Microtis eremaea* R. Bates. A, whole plant; B, flower in side view; C, flower in front view; D, labellum; E, column (R. Bates 4175). F–I, *M. graniticola*. F, flower in front view; G, flower in side view; H, labellum; I, column (R. Bates 24077). J–M, *M. media* ssp. *eremucola*. J, flower in side view; K, flower in front view; L, labellum; M, column (R. Bates 4670).

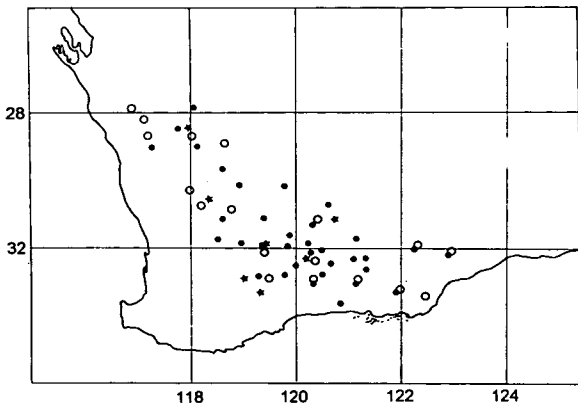
long, largely enclosed within the floral bract; ovary ovoid, 4–5 × 2 mm, humped above, strongly ribbed, with a ring of tubercles at the summit. *Dorsal sepal* ovate, 3–3.5 × 2 mm, with a short straight or upturned apiculus, arched forward, moderately concave below, the margins incurved. *Lateral sepals* short, oblong, 2–2.5 × 1 mm, obtuse, recurved. Petals oblong, subfalcate, 1.8–2 × 0.6 mm, obtuse, largely hidden within the dorsal hood. *Labellum* oblong in outline, c. 3 × 1.4 mm, decurved abruptly near the base, apex bifid, apiculate, margins thickened, undulate, crenulate sometimes papillose; basal calli variable, rounded or oblong never comma-shaped, separated by a deep v-shaped nectary their apices often with a forward projecting, shelf-like thickening; apical callus quadrate, 0.5 × 0.5 mm, cauliflower-like, the apex often decurved. *Column* 1.9 × 0.8 mm, auricles quadrate, 0.4 × 0.4 mm, apex truncate to tridentate; anther retuse, 0.8 mm high, mucronulate; stigma semilunular, caudicle thick, 0.2 mm long. *Seeds* c. 0.08 mm long, pale brown. Fig. 1A–E.

Flowering

September to November; the flowers rarely with a sweet fragrance. Flowering only occurs in seasons of favourable rainfall and is not dependent on fires.

Distribution and habitat (Map 1)

Of sporadic occurrence on larger granite inselbergs throughout drier parts of the wheat-belt and into semi-arid country to the edge of the Great Victoria Desert; mostly occurring as single plants or small groups in deeper soil pockets often with *M. eremaea* or *M. media* and occasionally hybridising with the latter. Possibly extending into South Australia and western New South Wales.



Map 1. Distribution of *Microtis eremaea* ●, *M. graniticola* ★, *M. media* ssp. *eremicola* ○ in Western Australia.

M. graniticola could easily be confused with *M. media* ssp. *eremicola* with which it seems to intergrade in disturbed areas, but *M. graniticola* has a more concave dorsal sepal, thickened labellum margins without granular excrescences and never has comma-shaped labellum calli.

Variation

In addition to variation caused through hybridising with *M. media* there is a puzzling range of forms which suggest that other species may be involved. Some plants closely approach *M. arenaria* a species common in western parts of South Australia and would

Distinguishing features

Previously confused with *M. unifolia*, a New Zealand species, which may extend to eastern Australia. *M. graniticola* differs in the more nodding flowers, the bifid labellum, the upturned apiculus of the dorsal sepal, the shelf-like projections to the labellum basal calli, the deeper, distinctive nectary, the cauliflower shaped apical callus and the thicker caudicle. The habitat of *M. graniticola* is also distinctive, whereas *M. unifolia* favours damp woodland and grasslands, *M. graniticola* does not occur outside of semi arid areas where it is confined to granitic inselbergs. *M.*

indicate that there may have been natural introductions of that species into the West which have been absorbed through hybridism into local species including *M. graniticola*.

Conservation status: 3RC (cf. Briggs & Leigh 1988).

Etymology

The specific epithet refers to the species preference for granite outcrops; '*graniticola*' (Latin) = granite dweller.

Selected collections (18 seen)

WESTERN AUSTRALIA: Strawberry Rocks, 13.x.1990, *R. Bates 24888* (AD); Geeraning Rock, 14.5 km E of Bonnie Rock, 11.x.1988, *B.H. Smith 1116A* (MEL); Jingemarra, 13.ix.1988, *R.J. Cranfield 6155* (PERTH); Walkaway, 26.ix.1965, *A.C. Burns 6* (PERTH); Woodbine, 17.ix.1935, *J. Cleland s.n.* (AD).

3. *Microtis media* R.Br. ssp. *eremicola* R. Bates, ssp. *nov.*

A ssp. *mediae* labello brevior, labelli marginibus crenatis sine paginae textura granulata et labelli calli basala breviora differt.

Holotype: Newmann Rock, 26.x.1984, *R. Bates 4670* (AD, iso.: AD, PERTH).

Plants slender to robust, 10–50 cm high, wholly green; tuber 6–10 mm diam., globular, growing point depressed, new tuber produced adjacent or distant from plant base. *Leaf* linear, hollow terete, subtended at soil level by a cylindrical, hyaline sheath about 8 mm long; blade erect, to 40 cm long and 5–8 mm diam., apex lax; fistula variable usually 2–10 cm above soil level, not inflated, scape variable according to climatic conditions, usually rather long (5–20 cm). *Flowers* numerous, small, dull green, fragrant, nodding, in a moderately dense subcylindrical spike to 8 cm long, each subtended by an ovate-lanceolate, subfalcate bract 3–4 mm long, apex acuminate; pedicel 1 mm long, enclosed in bract; ovary 4–6 × 2–3 mm, strongly ribbed, tuberculate at the top. *Dorsal sepal* shallow, ovate, 2 × 3 mm, tip acuminate, upturned, margins pale. Lateral sepals oblong, 2.5 × 1 mm, recurved or revolute, apex subacute. *Petals* ovate-lanceolate, 2 × 1 mm, subfalcate, obtuse, partly enclosed in the hood. *Labellum* oblong, 3–3.5 × 1.5 mm, decurved in a semicircle, apex bifid with a distinct apiculus between the lobes, margins crenulate, slightly thickened and with indistinct granular excrescences, basal calli smooth, comma-shaped but not elongate, 0.8 × 0.2 mm, the nectary a transverse W in outline, apical callus quadrate, 0.2 × 0.2 mm, tuberculate. *Column* 1.2 × 1 mm, rounded, the auricles 0.2 mm long, truncate, tuberculate; anther 0.6 × 0.6 mm, mucronulate; stigma 0.8 mm wide, semi-lunular, rostellum short, caudicle 0.2 mm long. *Seeds* 0.04 mm long, pale-brown. Fig. 1J–M.

Flowering

September–November depending on rainfall.

Distribution and habitat (Map 1)

Widespread and locally common especially about rock outcrops throughout the wheatbelt and adjacent interior of Western Australia; also along the edges of ephemeral watercourses and drainage lines. Less common in woodland, mallee, and along roadsides, rarely in swales between semi-arid sandhills or on the edges of salt lakes. Its spread into South Australia would appear to be prevented by the Nullarbor Plain; ssp. *eremicola* does not favour calcareous soils.

Distinguishing features

Ssp. *eremicola* differs from other subspecies of *M. media* in having the labellum margins somewhat crenulate and sometimes thickened but it does sometimes have the granular excrescences typical of the species. The basal calli although comma-shaped as in the other subspecies are much shorter (although the degree of elongation varies from population to population). Most similar to ssp. *quadrata* R. Bates a summer flowered plant from coastal areas which has a deeply concave dorsal sepal and shorter, broader labellum. Resembles some forms of *M. arenaria* Lindley from the eastern states but that species never has comma-shaped labellum calli or granular papillose excrescences. It is possible that ssp. *eremicola* has evolved through hybridisation of *M. media* ssp. *media* with other species, notably *M. graniticola* and perhaps *M. arenicola*.

Key to the subspecies of *Microtis media*

1. Dorsal sepal deeply concave, labellum about as long as broadssp. *quadrata*
- 1: Dorsal sepal shallow, labellum longer than broad 2.
2. Labellum margins slightly crenulate, the papillose excrescences indistinct, basal calli shorter than 1 mm ssp. *eremicola*
- 2: Labellum margins not crenulate, with distinct excrescences, basal calli 1 mm or longer 3.
3. Labellum margins with regular excrescencesssp. *media*
- 3: Labellum margins with irregular excrescences..... ssp. *densiflora*

Variation

Varies considerably in size and density of inflorescences depending on rainfall. Size of labellum calli varies from population to population. Some variation probably due to hybridising with other taxa.

Etymology

The epithet *eremicola* (Latin) dweller of dry places referring to the habitat of this subspecies which contrasts to the preferred swampy habitat of the other subspecies of *M. media*.

Conservation status

this is the most abundant subspecies of *M. media* and perhaps the most widespread *Microtis* in Western Australia.

Selected collections (about 45 seen)

WESTERN AUSTRALIA: Wave Rock, Hyden, 13.x.1990, *R. Bates 24687* (AD); Dumbleyung in dry forest, 12.x.1990, *R. Bates 24628* (AD); Orchid Rocks, 29.ix.1990, *R. Bates 23488* (AD); Mount Jackson, 17.x.1983, *G. Bruce 234*, (PERTH); Newman Rocks, 16.x.1984, *C. Stewart 765* (AD).

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