

Three new species from the Kimberley region of Western Australia from the families Caryophyllaceae, Convolvulaceae and Poaceae

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Abstract

Barrett, R.L. Three new species from the Kimberley region of Western Australia from the families Caryophyllaceae, Convolvulaceae and Poaceae. *Nuytsia* 27: 287–298 (2016). *Polycarpaea umbrosa* R.L.Barrett (Caryophyllaceae), *Ipomoea johnsoniana* R.L.Barrett (Convolvulaceae) and *Eriachne pindanica* R.L.Barrett (Poaceae) are described as new species endemic to the Kimberley region of Western Australia. A revised description of *Eriachne semiciliata* Lazarides is presented. *Polycarpaea umbrosa* and *Ipomoea johnsoniana* have a Priority One conservation-listing. All new species are illustrated.

Introduction

This paper formally names three new species from the Kimberley region of Western Australia, in the families Caryophyllaceae, Convolvulaceae and Poaceae. Two species are conservation-listed, being known from one or three collections each: *Polycarpaea umbrosa* R.L.Barrett is known from three nearby localities in Prince Regent National Park where it grows under rock overhangs, while *Ipomoea johnsoniana* R.L.Barrett is known from a single location on limestone in the Van Emmerick Range. *Eriachne pindanica* R.L.Barrett is restricted to pindan sands on the Dampier Peninsula and surrounding area. As the original concept of *Eriachne semiciliata* Lazarides included specimens here recognised as *E. pindanica*, a revised description of *E. semiciliata* is presented here. These species descriptions were prepared as part of celebrations of the 50th anniversary of the Western Australian Botanic Garden at Kings Park (see Barrett 2015).

Methods

Most descriptions are based on herbarium specimens though in some cases fresh field material was also utilised. To produce Scanning Electron Microscope (SEM) images, dry material was mounted on stubs using double-sided or carbon tape with conductive carbon paint, coated with gold using an EMITECH K550X Sputter Coater and imaged at high vacuum and high voltage (15 KV) using a Jeol JCM 6000 NeoScope bench-top SEM at Kings Park and Botanic Garden.

Taxonomy

Caryophyllaceae

Polycarpaea umbrosa R.L.Barrett, *sp. nov.*

Type: St Patrick Island, Saint George Basin, north-west Kimberley, Western Australia, 3 June 1984, K.F. Kenneally 8887 (*holo:* PERTH 02170108).

Polycarpaea sp. A Kimberley Flora (K.F. Kenneally 8887), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 01 March 2014].

Sprawling annual *herb* to 0.25 m high. *Stems* c. 4, straw brown, slender, 0.5–1.5 mm diam., almost glabrous or with a sparse indumentum of simple or dendritic multi-septate hairs; internodes 12–35 mm long. *Stipules* white, 2.5–4.1 mm long, very narrowly subulate, apex aristate, margins with scattered erect hairs; glands between stipules conspicuous, black. *Cauline leaves* opposite, occasionally in several pairs at nodes, retaining juvenile form in adult state, pale with prominent, darker green, intricate venation, spatulate or obovate, tapered at base into an indistinct petiole, 8–19 mm long, 2.7–6.7 mm wide, glabrous, obtuse and shortly mucronulate. *Inflorescence* of terminal and axillary cymes, 12–28-flowered, subtended by floral leaves and scarious bracts; *bracts* stipule-like, 2.4–3.6 mm long, entire, white, narrowly ovate, aristate. *Sepals* white, ovate, 2.1–2.8 mm long, midrib present, margin glabrous, apex acute; glands between bases of sepals absent. *Petals* white, free or almost so, narrowly oblong, 1.0–1.4 mm long, 0.5–0.6 mm wide, 0.5 times as long as sepals, glabrous, apex acute. *Stamens* 5, 0.7–0.9 mm long, 0.6–0.7 times as long as petals; filaments 0.4–0.5 mm long; anthers 0.3–0.4 mm long; staminodes absent. *Style* 0.35 mm long; stigma slightly 2-lobed. *Capsule* dark brown, very glossy, ellipsoid, 1.3–1.7 mm long, 0.6–0.7 times as long as calyx. *Seeds* c. 11, mid-brown, minute, rhomboidal-ellipsoid, 0.5–0.6 mm long, 0.35 mm wide, surface foveolate with a minute reticulum. (Figure 1)

Diagnostic characters. Distinguished from *P. corymbosa* (L.) Lam. by the following combination of characters: *leaves* broad, retaining juvenile form in adult state, 10–18 mm long, 3–7 mm wide, glabrous, thinly textured, intricately veined; *culms* with scattered multi-septate hairs; *flowers* small, tepals white; *capsule* very glossy, dark brown.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 27 May 2008, T. Handasyde 3722 (CANB); 27 Aug. 1974, K.F. Kenneally 2153 (PERTH).

Phenology. Flowering and fruiting recorded for May and June.

Distribution and habitat. Only known from St Patrick and St Andrews Islands and the adjacent mainland in the Saint George Basin, Prince Regent National Park, where it was recorded growing in crevices of Warton Sandstone under rock overhangs.

Conservation status. *Polycarpaea umbrosa* is listed by Jones (2015) as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora, under the name *Polycarpaea* sp. A Kimberley Flora (K.F. Kenneally 8887).

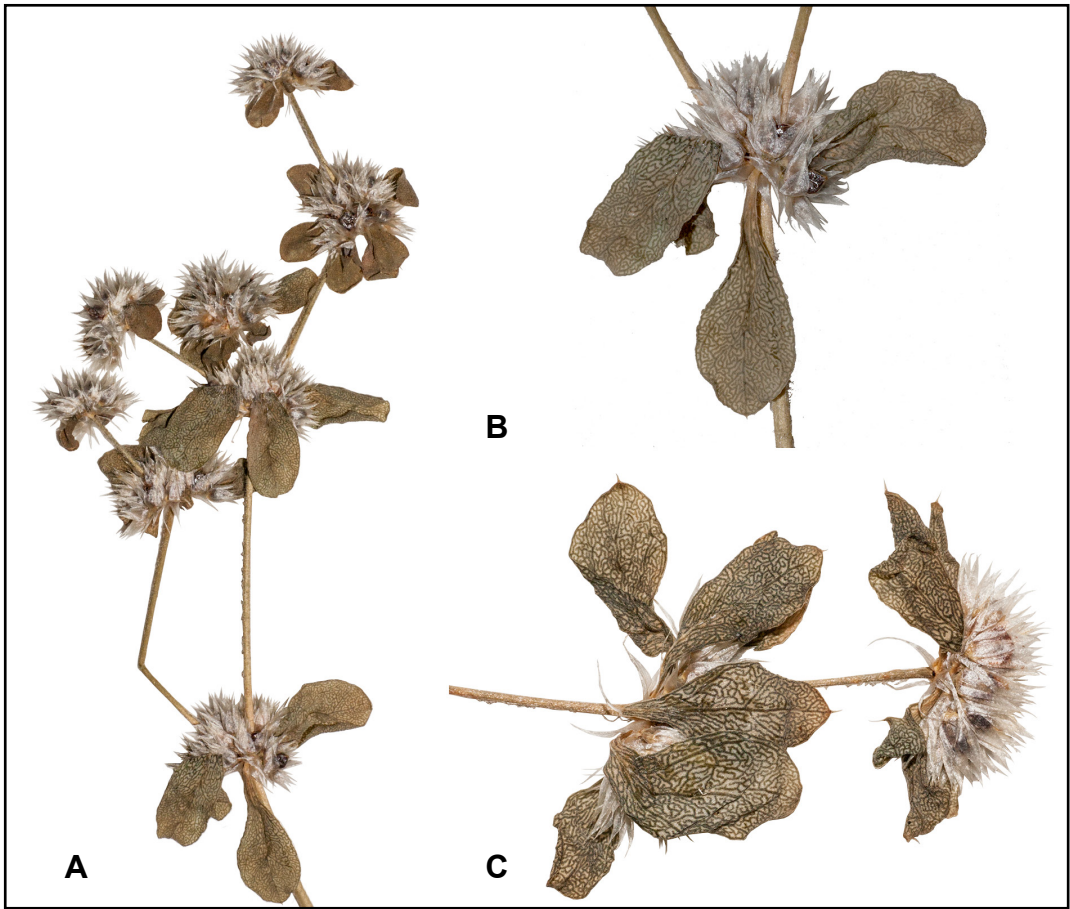


Figure 1. *Polycarpaea umbrosa*. A – flowering plant; B – axillary inflorescence subtended by broad leaves; C – terminal inflorescence and leaves showing distinctive reticulate venation. Images from *K.F. Kenneally* 8887. Photographs by R.L. Barrett.

Etymology. The epithet is from the Latin *umbrosus* (shady, growing in shade) in reference to the habitat under rock overhangs.

Notes. The broad cauline leaves of *P. umbrosa*, which are similar to the seedling leaves, are unique among the Australian species. Similarly broad seedling leaves, which usually wither prior to anthesis, are found in *P. corymbosa* and this is probably the closest relative of *P. umbrosa*. *Polycarpaea umbrosa* can be further distinguished from *P. corymbosa* by its spreading to decumbent habit, sparser indumentum, more-slender petals and dark, shiny capsules. *Polycarpaea umbrosa* is keyed out as *P. sp. A* in Wheeler (1992).

This species was collected by Kevin Kenneally in 1974 and 1984, and recollected by Tricia Handasyde during the Kimberley Islands Survey in 2008 (Lyons *et al.* 2013). Recorded as common at the type locality, it is surprising that more populations have not been discovered during surveys in the Prince Regent River area as rock overhangs have been particularly targeted for potential new species. The type specimen was not seen for the review of Australian *Polycarpaea* by Cowie (1994).

The vernacular name of Cave Polycarpaea is suggested.

Convolvulaceae

Ipomoea johnsoniana R.L.Barrett, *sp. nov.*

Type: Van Emmerick Range, Western Australia [precise locality withheld for conservation reasons], 12 March 2001, R.L. Barrett, T. Handasyde & A.N. Start RLB 2186 A (*holo:* PERTH 08101183; *iso:* BRI, CANB, DNA, MEL, NSW, PERTH 08552509).

Ipomoea sp. Napier Range (R.L.Barrett et al. RLB 2186 A), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 01 March 2016].

Perennial *shrub* to 1 m high, with few, erect stems; stems terete, sub-woody, indumentum of dense stellate hairs, rays of hairs straight or sinuose, ascending or spreading, 0.4–1.1 mm long. *Leaves* simple, petiolate; petiole 6–19 mm long, 0.35 times as long as the blade, vestiture as for stem; blade ovate to broadly ovate or ovate-oblong, 21–59 mm long, 12–42 mm wide with a length:width ratio of 1.4–1.8, entire, apex acute, with a short mucro, *c.* 1 mm long, base rounded to sub-cordate, lamina always V-shaped in TS, densely to moderately densely hairy on both sides with ascending hairs 0.4–1.1 mm long, midrib with 8–11 pairs of secondary veins, sunken above and prominently raised below. *Inflorescence* axillary, cymose, 1–3-flowered; peduncle terete, 6–27 mm long, vestiture as for the stem; bracteoles opposite, herbaceous, narrowly lanceolate to linear, 4–6 mm long, 1 mm wide, vestiture as for leaves, caducous by early flowering, apex acute; pedicels terete, 8–12 mm in flower, 11–16 mm in fruit, vestiture as for the stem. *Outer sepals* ovate, 9–12 mm long, 5–6 mm wide in flower, to 7 mm wide in fruit, with a length:width ratio of 1.8–2, apex obtuse, emarginate, rounded at base, smooth, densely stellate hairy with hairs up to 1 mm long; *inner sepals* ovate to broadly ovate, 10–12 mm long, 5–6 mm wide in flower, to 8.5 mm wide in fruit, apex obtuse to truncate, emarginate, rounded at base, with a hyaline apical margin, densely simple-hairy along the exposed spine. *Corolla* funnel-shaped with a slender tube, pink inside, white outside, tube 27–35 mm long, 8–11 mm diam.; petals 10–18 mm long, 15–20 mm wide, lobes rounded, mid-petaline band with scattered simple hairs to within 15–20 mm of base of corolla, hairs 0.3–0.4 mm long, mainly appressed, antrorse. *Stamens* included, attached to the base of the corolla for *c.* 10 mm; filaments free for *c.* 20 mm; anthers oblong, sagittate, *c.* 2.5 mm long; pollen globular, spinulose. *Ovary* 2-locular, glabrous; style *c.* 30 mm long; stigma bi-globular. *Capsule* globular, *c.* 10 mm long, valvate-dehiscent, glabrous. *Seeds* 4, *c.* 5 mm long, dark brown, densely puberulent, with much longer hairs, 2.5–4.0 mm long, on the margins and around the hilum. (Figure 2)

Diagnostic characters. Distinguished from *I. yardiense* A.S.George by the following combination of characters: erect *shrub* to 1 m high; stems densely stellate hairy, rays of hairs straight to slightly sinuose, not crimped and twisted; *flowers* pink inside, white outside, sparsely pubescent; *fruit* with pedicels 11–16 mm long; *seeds* with hairs 2.5–4.0 mm long.

Other specimens examined. Known only from the type collection.

Phenology. The type collection had both flowers and fruit present in March.

Distribution and habitat. Known only from a single location on sandy flats on top of a Devonian limestone range where it grows in *Triodia* grassland with *Abutilon hannii*, *Adenia heterophylla*, *Ampelocissus acetosa*, *Bidens bipinnata*, *Brachychiton viscidulus*, *Buchnera asperata*, *Capparis lasiantha*, *Cayratia trifoliata*, *Cleome viscosa*, *Cochlospermum fraseri*, *Corchorus aestuans*, *Crotalaria medicaginea*, *Cucumis althaeoides*, *Cymbopogon procerus*, *Cynanchum brevipedicellatum*, *Denhamia obscura*,



Figure 2. *Ipomoea johnsoniana*. A – habitat at type location; B – branches in bud (note leaves have been extensively chewed by insects); C – flower (note many beetles inside consuming anthers); D – fruit and leaves. Images from R.L. Barrett, T. Handasyde & A.N. Start RLB 2186 A. Photographs by R.L. Barrett.

Dicliptera armata, *Ehretia saligna*, *Ficus aculeata*, *F. brachypoda*, *F. platypoda*, *Grevillea pyramidalis*, *Hibiscus leptocladus*, *Indigofera linifolia*, *Iphigenia indica*, *Marsdenia angustata*, *Maytenus ferdinandi*, *Melhantha oblongifolia*, *Phyllanthus baccatus*, *Pouzolzia zeylanica*, *Rhynchosia minima*, *Sersalisia sericea*, *Terminalia hadleyana* and *Tinospora smilacina*.

Conservation status. *Ipomoea johnsoniana* is listed as Priority One under Department of Parks and Wildlife Conservation Codes for Western Australian Flora (Jones 2015), under the name *Ipomoea* sp. Napier Range (R.L. Barrett et al. RLB 2186 A).

Etymology. The epithet honours the work of the late Robert (Bob) William Johnson (1930–2012), former director at BRI, for his extensive work on the Convolvulaceae of Australia. I am grateful to have had discussions with Bob on the taxonomy of Convolvulaceae from the Kimberley region and he kindly made a number of his draft keys available to me in advance of publication.

Notes. This species was discovered during a survey of the Yampi Peninsula in 2001 for the Australian Heritage Commission (Barrett *et al.* 2001). It is possibly most closely related to *I. yardiensis*, with which it shares a dense indumentum, shrubby habit, prominently veined leaves and habitat on limestone. *Ipomoea yardiensis* (George 1967) differs in being more densely branched, having a simple indumentum of dense, crimped and twisted (woolly) hairs and larger seeds. The two taxa are disjunct by a distance of 1,250 km.

While *I. johnsoniana* was examined by Johnson shortly before his review of Australian *Ipomoea* L. was published (Johnson 2012), he did not have any material of *I. yardiensis* to compare it to and hence was hesitant to recognise it as distinct. The indumentum differences clearly separate these taxa and the overall similarity may be superficial.

The vernacular name of Johnson's Morning Glory is suggested.

Poaceae

Eriachne pindanica* R.L.Barrett, *sp. nov.

Type: 300 m west of Manari Road, 5.3 km south of James Price Point (48 km due north of Broome), Dampier Peninsula, Western Australia, 30 April 2011, *R.L.Barrett, T. Willing, M. Henson, R. Graham & M. Stone* RLB 7060 (*holo:* PERTH 08613443; *iso:* AD, BM, BRI, CANB, DNA, HO, K, MEL, MO, NSW, PERTH 08552517).

Eriachne sp. Dampier Peninsula (K.F. Kenneally 5946), Western Australian Herbarium, in *FloraBase*, <https://florabase.dpaw.wa.gov.au/> [accessed 01 March 2014].

[*Eriachne ciliata* *auct. non* R.Br.: M. Lazarides & J. Palmer in J.R. Wheeler (ed.), *Fl. Kimberley Reg.* p. 1168 (1992), *p.p.*]

[*Eriachne semiciliata* *auct. non* M. Lazarides, *Austral. Syst. Bot.* 8: 415 (1995), *p.p.* as to Western Australian specimens; M. Lazarides *et al.*, *Fl. Australia* 44B: 170 (2005), *p.p.* as to Western Australian specimens.]

Branching, leafy, ascending *annual*, 45–84 cm high. *Culms* subterete or compressed, flat or grooved along one side, ribbed, branched, sparsely hispid with thickened tubercle-based hairs < 2.0 mm long, densely scabrous-pubescent with the hairs often horizontal with retrorse tips; nodes 3–7, shortly bearded, thickened (calloused). *Prophylls* present in axils of branched culms, many-nerved, two-keeled, pubescent on keels, ciliate upwards on margins. *Leaves* hispid like the culms and sparsely scabrous-pubescent; sheaths much shorter than culm internodes, tight on the culms, margins ciliate (outer) and broadly membranous, glabrous and smooth (inner), bearded on orifice margins; ligule ciliate with uneven hairs 0.5–1.5 mm long. *Blades* 18–64 mm long, 1.8–2.7 mm wide, usually flat, incurved when dry, adaxial surface thickened by many ribbed nerves, with firm, blunt apex, the abaxial surface relatively smooth. *Panicle* 140–180 mm long, 110–190 mm wide, very open, prominently exerted on elongated, sparsely scabrous-pubescent peduncle; axis, branches and pedicels compressed or angular, glabrous or with very sparse scabrous hairs; branches 40–110 mm long; pedicels 9–26 mm long, with prominently expanded apex. *Glumes* 2.6–3.1 mm long (excluding mucro), 1.0–1.3 mm wide, membranous with broad scarious margins, ovate or elliptic, subacute to acute, usually shortly mucronate (mucro 0.2–0.3 mm long), 7–9(–11)-nerved, glabrous, smooth between the nerves. *Florets* equal to glumes or exerted by up to 1 mm, with appressed lemma and palea; callus 0.3 mm long, subacute, bearded all over. *Anthers* 0.7–1.0 mm long, terminally exerted. *Lemmas* without grooves, awned, 2.8–3.2 mm long (excluding awn), membranous, elliptic or oblanceolate, acuminate, with 5 ribbed nerves, hirsute in the lower 1/3–3/4 outside with white simple, erect or often horizontal hairs 0.3–1.0 mm long, sometimes reaching or exceeding apex of lemma, ciliate on margins almost to lemma apex, glabrous and smooth above near apex; awn 0.8–1.0 mm long. *Palea* as long as body of lemma, membranous, narrow-elliptic, acute, bifid (from keels), pubescent outside for entire length; keels closely embraced by incurved margins of lemma; flaps wide in lower part, much-narrowed upwards. *Caryopsis* c. 1.7 mm long, 0.7 mm wide, obovate or elliptic and obtuse, acute at base, thickened near base on the front and strongly flattened upwards, blackish red; embryo 1/3–1/5 as long. (Figure 3)

Diagnostic characters. Distinguished within the *E. ciliata* R.Br. and *E. semiciliata* Lazarides species group by the following characters: tall *annual* habit to 84 cm; *inflorescence* openly branched with very slender branchlets; *lemma* awns 0.8–1.0 mm long; lemma hairs 0.3–1.0 mm long.

Other specimens examined. WESTERN AUSTRALIA: Derby–Fitzroy Crossing road, 27.2 km (by road) E of intersection with Derby–Broome road, Dampier Botanical district, 19 Apr. 1985, *T.E.H. Aplin et al.* 120* (PERTH); 3 km S of James Price Point on Manari Rd, 29 Apr. 2011, *R.L. Barrett et al.* RLB 7057 (AD, BM, BRI, CANB, DNA, HO, K, MEL, NSW, PERTH); 5.9 km S of James Price Point, 600 m W of Manari Rd, 30 Apr. 2011, *R.L. Barrett et al.* RLB 7059 (AD, BM, BRI, CANB, DNA, HO, K, MEL, NSW, PERTH); 2 km S of James Price Point on E side of Manari Rd, 2 May 2011, *R.L. Barrett et al.* RLB 7066 (BRI, CANB, DNA, PERTH); 300 m SE of James Price Point on E side of Manari Rd, 4 May 2011, *R.L. Barrett & M. Henson* RLB 7075 (BRI, CANB, DNA, PERTH); S of James Price Point on E side of Manari Rd, [SITE 28], 4 May 2011, *R.L. Barrett & M. Henson* RLB 7077 (AD, MEL, NSW, PERTH); One Arm Point, N Dampier Peninsula, 16 Apr. 1989, *B.J. Carter* 388 (PERTH); Goody Goody, Apr. 1905, *W.V. Fitzgerald* 219 (PERTH); 110 km N of Broome on Beagle Bay Rd, Dampierland, 29 Mar. 1986, *P.R. Foulkes* 413* (CANB, PERTH); King Hall Island, Buccaneer Archipelago, W[est] Kimberley coast, 28 June 1982, *A.J.M. Hopkins* BA 0537* (CANB, PERTH); 5 km N of Point Coulomb, Dampier Peninsula, N of Broome, 17 Apr. 1977, *K.F. Kenneally* 5946* (CANB, PERTH); Sunday Island Buccaneer Archipelago, W[est] Kimberley coast, 11 June 1982, *K.F. Kenneally* 8290 (PERTH).

* = specimens assigned to *E. semiciliata* by Lazarides (1995).

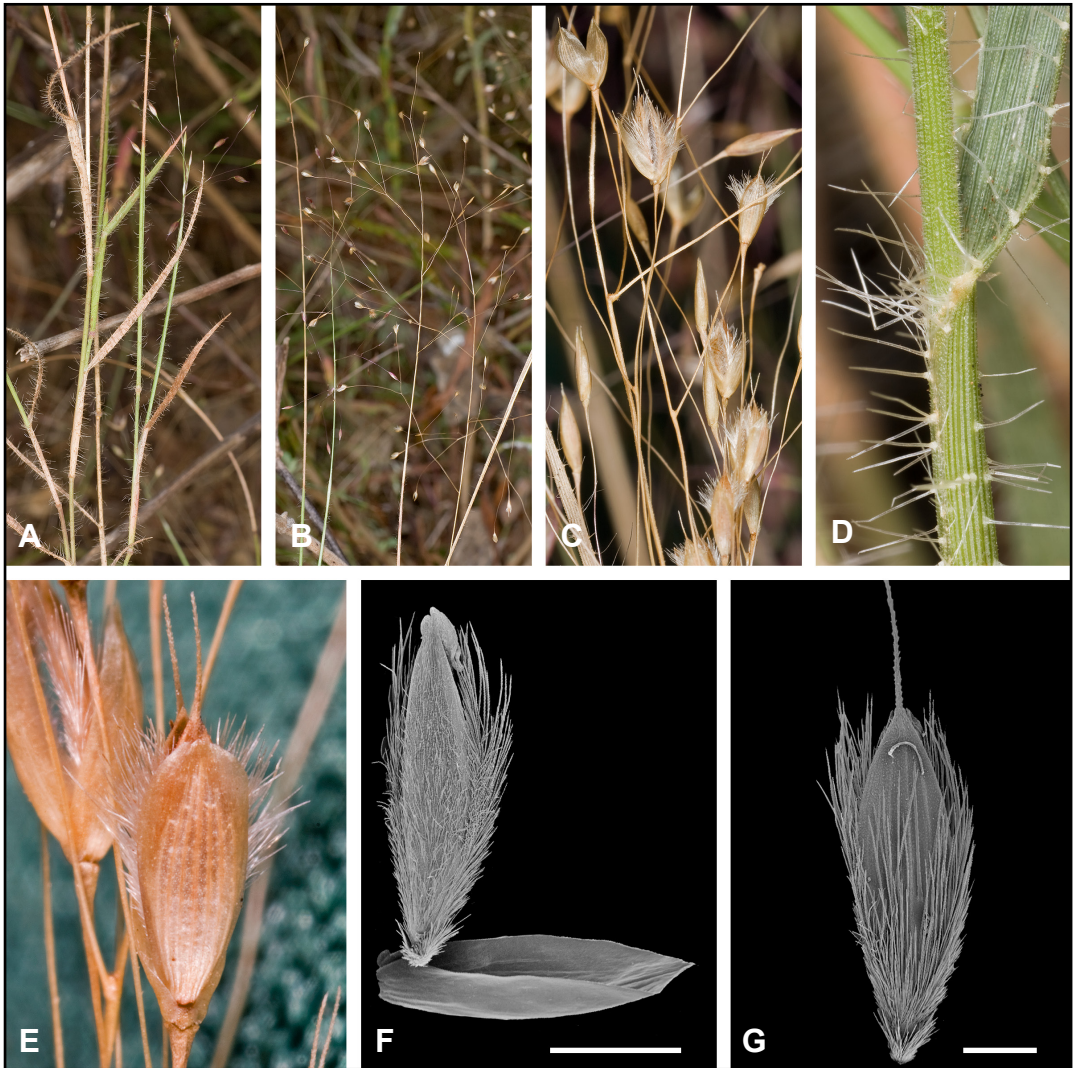


Figure 3. *Eriachne pindanica*. A – long leaves and slender inflorescence; B – open inflorescence; C – long, slender peduncles and spikelets; D – leaf base *in situ*; E – glume with projecting awns and hairs from lemma; F – SEM image of glume and floret with palea *in situ*; G – SEM image of lemma with awn. Scale bars = 1 mm (F, G). Images from R.L. Barrett, T. Willing, M. Henson, R. Graham & M. Stone RLB 7060. Photographs by R.L. Barrett.

Phenology. Flowering and fruiting mainly February to May with occasional fruiting records as late as August.

Distribution and habitat. Mostly restricted to pindan sands or sandy clay on the Dampier Peninsula and the base of the Yampi Peninsula, from Broome north to about the Robinson River, and also on Sunday Island and King Hall Island, occasionally on sand below sandstone outcrops. Recorded growing below the following small trees—*Acacia colei*, *A. eriopoda*, *A. monticola*, *A. platycarpa*, *A. tumida*, *Corymbia bella*, *C. dampieri*, *C. flavescens*, *C. zygophylla*, *Hakea arborescens*, *Persoonia falcata* and *Lysiphillum cunninghamii*—and over the following shrubs and ground layer plants—*Abutilon otocarpum*, *Bulbostylis barbata*, *Corchorus pumilio*, *Crotalaria crispata*, *Indigofera colutea*, *Melhantha oblongifolia*, *Ptilotus calostachyus*, *Sida rohlenae*, *Solanum cunninghamii*, *Spermacoce occidentalis*, *Trianthema pilosa* and *Waltheria indica*. It grows with a variety of other grasses including *Aristida holathera*, *A. hygrometrica*,

Cymbopogon ambiguus, *Eriachne aristidea*, *E. ciliaris*, *Panicum decompositum*, *Setaria apiculata*, *Thaumastochloa major*, *Triodia caelestialis* and *Yakirra australiensis*.

Conservation status. This species is not considered to be of conservation concern. It is locally common in the vicinity of James Price Point and several other collections record the species to be locally abundant.

Etymology. The epithet is derived from the pindan vegetation and red pindan sands on which this species grows.

Notes. Although included under *E. semiciliata* by Lazarides (1995) and Lazarides *et al.* (2005), *E. pindanica* does not readily key to that species using either treatment and is here considered to be more closely related to *E. ciliata* with which it regularly grows on the Dampier Peninsula. *Eriachne ciliata* is still a rather variable taxon as currently circumscribed (Lazarides *et al.* 2005) and comparisons here are with the form occurring on the Dampier Peninsula, sympatric with *E. pindanica*. This form is larger than usual for *E. ciliata*, growing to 45 cm. Most populations of *E. ciliata* are only 15–20 cm tall. Phylogenetic studies based on the nrDNA ITS region confirm that *E. pindanica* is distinct from, but sister to *E. ciliata* s. lat., and both are distinct from *E. semiciliata* (M.D. Barrett, unpubl. data).

Eriachne pindanica differs from *E. ciliata* and *E. semiciliata* in having a much larger stature (to 84 cm vs to 32 cm in *E. semiciliata* and to 45 cm in *E. ciliata*), broader (and often longer) leaves (to 3 mm vs to 1.5(–2.2) mm in *E. semiciliata* and to 1.5 mm in *E. ciliata*, but note that young basal leaves can be 1.5–4 mm wide hence this range in Lazarides *et al.* 2005), and in the distribution of hairs on the spikelets in *E. semiciliata*.

Eriachne pindanica further differs from *E. ciliata* in the lemma awns being only half as long, the short length of the hairs on the lemma and the openly branched inflorescence with many very fine branches. Contrary to the inclusion of these specimens in *E. semiciliata* by Lazarides (1995), the distribution of the hairs on the lemma is actually more similar to *E. ciliata*, with ciliate hairs extending to the apex (or almost so) while the marginal hairs of *E. semiciliata* are only in the lower 3/4. *Eriachne pindanica* and *E. ciliata* have relatively short hairs 0.3–1.0 mm long on the lemma (longest on the margins), while *E. semiciliata* often has long hairs on the lemma, 0.6–1.9 mm long, the hairs on the body often almost as long as those on the margins.

The descriptions of *E. semiciliata* by Lazarides (1995) and Lazarides *et al.* (2005) mostly refer to *E. semiciliata* s. str., but do include some characteristics of the taxon recognised here as *E. pindanica*, in particular the size of the inflorescence. Confusingly, specimens of the poorly known *E. axillaris* Lazarides were also included under *E. semiciliata*, accounting for many of the smaller size measurements in the descriptions of Lazarides (1995) and Lazarides *et al.* (2005). A new description of *E. semiciliata* is presented below.

Eriachne pindanica was included in a broad concept of *E. ciliata* by Lazarides and Palmer (1992). *Eriachne ciliata* was described from specimens collected by Robert Brown at Melville Bay, Northern Territory. This collection consists of numerous small plants corresponding to a widespread form of *E. ciliata*. Considerable morphological variation is present in this species and further studies combining morphological and molecular data are required to determine whether additional taxa should be recognised.

The spikelets of *E. pindanica* fall soon after the end of the wet season, hence there are relatively few collections as most plants are sterile by the time habitats can be accessed following the wet season.

The vernacular name of Pindan Wiregrass is suggested.

Eriachne semiciliata Lazarides, *Austral. Syst. Bot.* 8: 415 (1995).

Type: 3 miles [4.8 km] north-east of McMinns Siding, 18 miles [29 km] east-south-east of Darwin, Northern Territory, 19 March 1965, *M. Lazarides & L.G. Adams* 266 (*holo*: CANB 151932 (three sheets); *iso*: B *n.v.*, BRI AQ0300233, DNA A0039429 (three sheets), E *n.v.*, NSW 550679, P *n.v.*, US *n.v.*).

Illustrations. M. Lazarides, *op. cit.*, Figures 29F, I, 30A.

Slender, leafy, usually ascending *annual* 6–32 cm high. *Culms* subterete, ribbed, branched, densely hispid with thickened tubercle-based hairs 0.4–1.5 mm long, densely scabrous-pubescent with the hairs often retrorse or horizontal with retrorse tips; nodes 4–6, pubescent and/or bearded, constricted or thickened (calloused). *Prophylls* present in axils of branched culms, many-nerved, two-keeled, pubescent on keels, ciliate upwards on margins. *Leaves* hispid and scabrous-pubescent like the culms; sheaths much shorter than culm internodes, tight on the culms, outer margins ciliate and inner margins broadly membranous, glabrous and smooth, bearded on orifice margins; ligule ciliate with uneven hairs 0.4–1.0 mm long. *Blades* 9–26 mm long, 1.2–1.5(–2.2) mm wide, involute upwards or flat, thickened by many ribbed nerves, with firm, blunt, often reduced apex, the upper surface smooth. *Panicle* 10–50 mm long, 7–30 mm wide, at first contracted, becoming loose to open, prominently exerted on elongated, densely scabrous and sparsely pubescent peduncle; axis, branches and pedicels compressed or angular, densely scabrous; branches 7–42 mm long; pedicels 5–13 mm long, with prominently expanded apex. *Glumes* 2.9–3.4 mm long (excluding mucro) and sometimes almost as wide, membranous with broad scarious nerveless margins, broadly ovate or elliptic to almost orbicular, usually obtuse or subacute, usually mucronate (mucro 0.3–0.7 mm long), 7–11-nerved, very finely scaberulous between the nerves (appearing glabrous under low mag.). *Florets* equal to glumes or exerted by < 0.8 mm, with appressed lemma and palea (rarely divergent at apex); callus 0.2–0.3 mm long, obtuse or subacute, bearded all over. *Lemmas* without grooves, awned, 3.0–3.5 mm long (excluding awn), membranous, elliptic or oblanceolate, acuminate, with 5 ribbed nerves, hirsute in the lower 1/3–3/4 with white, simple, erect or often horizontal or reflexed hairs 0.6–1.9 mm long, sometimes reaching or exceeding apex of lemma, ciliate on margins in lower 3/4, glabrous and smooth above or scaberulous near apex; awn 1.9–2.4 mm long. *Palea* as long as body of lemma, membranous, narrow-elliptic, acute or acuminate, bifid (from keels), pubescent or long-pubescent between keels; keels closely embraced by incurved margins of lemma; flaps wide in lower part, much-narrowed upwards. *Anthems* 0.5–0.7 mm long, terminally exerted. *Caryopsis* 1.5–1.8 mm long, 0.7–0.8 mm wide, usually obovate or elliptic and obtuse (rarely cuneate and truncate), acute at base, thickened near base on the front and strongly flattened upwards, blackish red; embryo 1/3–1/5 as long.

Diagnostic characters. *Annual* habit. *Inflorescence* slender, branched, with relatively few, very slender branchlets. Apex of *lemma* ciliate on margins in lower 3/4, hairs 0.6–1.9 mm long; awns 1.9–2.4 mm long.

Selected specimens examined. NORTHERN TERRITORY: Kakadu National Park: near Mary River Ranger Station on track to Ferny Pool, 24 Apr. 1990, *A.V. Slee & L.A. Craven* 2820 (CANB); 70 km NE of Pine Creek, 5 Mar. 1985, *G. Wightman & C. Dunlop* 1748 (BRI, CANB, DNA, NSW); Thoraks Reserve, c. 10 mi. SE of Darwin, 21 Mar. 1961, *G. Chippendale* 7847 (CANB); near Hayes Creek, 27 June 1946, *S.T. Blake* 16180 (CANB); Cannon Hill Airstrip, 9 Feb. 1973, *P. Martensz* AE821 (BRI, CANB, DNA, NT); c. 5 km NW of Jabiru, 20 Mar. 1981, *L.A. Craven & G. Whitbread* 8047 (CANB).

Phenology. Flowering and fruiting mainly February to June.

Distribution and habitat. Endemic to the top-end of the Northern Territory (see notes below). Recorded as common in skeletal, often gravelly, soils over sandstone, laterite, quartzite, conglomerate and shale, on hillslopes, ridges and rocky plateaux. Grows with *Acacia* spp., *Chrysopogon* spp., *Corymbia bleeseri*, *C. dichromophloia*, *Eucalyptus miniata*, *E. tetradonta*, *Micraira* spp., *Sehima nervosa*, *Sorghum stipoides* and *Triodia* spp.

Conservation status. This species is locally common in a wide range of habitats and is not threatened.

Etymology. Refers to a key difference from *E. ciliata*, the lack of cilia near the apex of the lemmas.

Notes. A single collection from Mt Hope in Queensland (*E.J. Thompson* BUC527 & *B.K. Simon*, CANB) was identified as *E. semiciliata* by M. Lazarides in 1995, but I consider this collection to be atypical of *E. semiciliata* and more closely allied to the variable *E. ciliata* s. lat. which is still in need of a detailed review.

The description above excludes diminutive plants from sandstone habitats that were included by Lazarides (1995) in *E. semiciliata* as these appear to be more closely related to *E. axillaris*.

The key from Lazarides (1995) can be adapted to include *E. pindanica* as follows:

29. Panicles terminal and axillary; axillary panicles borne throughout plant in leaf axils and subtended by prophylls; axillary florets cleistogamous **5. *E. axillaris***
- 29: Panicles terminal only; spikelets chasmogamous **30**
30. Palea pubescent between the keels (body); glumes unevenly pilose or glabrous **30B**
- 30: Palea body hirsute in lower 1/2–2/3, glabrous above; glumes evenly hispid between the nerves or glabrous **32**
- 30B. Plants tall and very slender, to 84 cm; leaves broad, 1.8–2.7 mm wide; lemma hirsute in the lower 1/3–3/4 outside ***E. pindanica***
- 30B: Plants moderately slender, usually less than 30 cm tall, occasionally to 45 cm; leaves slender, usually 1–1.5(–2.2) mm wide; lemma hirsute in the lower 1/2 to full length **31**
31. Glumes acuminate, longer than wide, glabrous or pilose; florets (excluding awn) slightly shorter than glumes; lemma ciliate on margins for their entire length; hairs on culms and foliage chiefly antrorse **12. *E. ciliata***
- 31: Glumes obtuse, almost as wide as long, appearing glabrous or almost so; florets (excluding awn) equal to glumes or slightly longer; lemmas glabrous on margins near apex; hairs on culms and foliage chiefly retrorse **41. *E. semiciliata***

Acknowledgements

Preparation of this paper was funded by the Botanic Gardens and Parks Authority as part of the 50th anniversary celebrations of the Western Australian Botanic Garden at Kings Park. I particularly thank Zoe Davies for her support during the preparation of this paper. Kevin Thiele is thanked for support at the Western Australian Herbarium. The Australian Heritage Commission (AHC) supported the discovery of *Ipomoea johnsoniana* in 2001 and preliminary research through the Kimberley Heritage

Assessment Project in 2009. Field studies of *Eriachne pindanica* were conducted during surveys in the vicinity of James Price Point on the Dampier Peninsula. Assistance in the field from Kevin Kenneally, Tim Willing, Martin Henson, Melinda Trudgen, Prue Anderson, Rebecca Graham, Megan Stone, Keran McCann and Conrad Slee is gratefully acknowledged. The traditional owners of Goolarabooloo Jabirr Jabirr land are thanked for permission to access their traditional lands. Three referees, Terry Macfarlane and Juliet Wege are thanked for comments that improved the manuscript. Directors and staff at BRI, CANB, DNA, MEL, NSW and PERTH are thanked for assistance with access to their collections.

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