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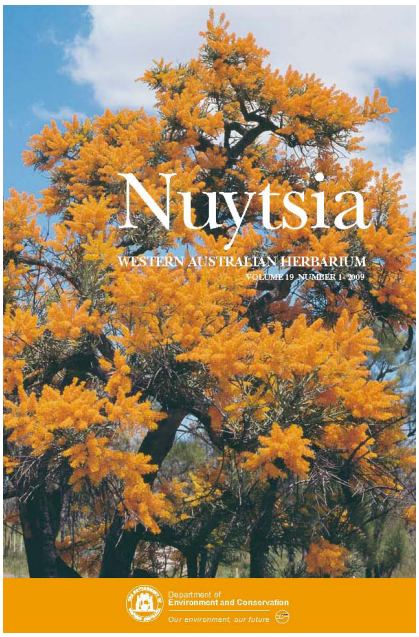

Keighery, G.J.

Six new and rare species of *Darwinia* (Myrtaceae) from Western Australia

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Six new and rare species of *Darwinia* (Myrtaceae) from Western Australia

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Abstract

Keighery, G.J. Six new and rare species of *Darwinia* (Myrtaceae) from Western Australia. *Nuytsia* 19(1): 37–52 (2009). *Darwinia chapmaniana* Keighery, *D. foetida* Keighery, *D. ferricola* Keighery, *D. nubigena* Keighery, *D. polychroma* Keighery and *D. whicherensis* Keighery are newly described. All of these species are endemic in south-west Western Australia and are considered endangered under the Western Australian *Wildlife Conservation Act 1950*.

Introduction

Darwinia Rudge (Myrtaceae) is an endemic Australian genus of *c*. 70 species. It is part of a closely related group of genera (*Actinodium* Schauer, *Chamelaucium* Desf., *Darwinia*, *Verticordia* DC. and *Pileanthus* Labill.) which have diversified in southern Western Australia. Sixty species of *Darwinia* are recognised in Western Australia, of which more than half have not been formally described but are flagged as manuscript or phrase names on the Western Australian plant census (Western Australian Herbarium 1998–). Orchard (2006) raised concerns about the perpetuation and de-facto validation of such informal names in the literature noting that 'in many cases these "temporary" names are still in use 10–15 years later'. This paper begins to address these concerns by formally describing six rare species of *Darwinia* from Western Australia.

Methods

Locality information for all taxa has been omitted for conservation purposes. The distribution maps were compiled using DIVA-GIS Version 5.2.0.2, available at www.diva-gis.org/, and are based on PERTH specimen data.

The genus *Darwinia* has not been revised in total since Bentham (1865). In this treatment species are placed closest to those groups distinguished in his treatment on the basis of morphological characters. Current work by Matthew Barrett on the molecular relationships of the entire '*Chamelaucium* clade' will greatly aid generic and subgeneric placement.

Taxonomy

Darwinia chapmaniana Keighery, *sp. nov.*

Frutex 50 cm altus et 3 m latus. Folia linearia, triquetra, pilifera, aggregata apice, cinerascentia, 2–3 mm longa, acuta, margine ciliata. Capitulum terminale, erectum, bracteae involucri pluri-seriales, 4–7 mm longae, rubro-luteae, marginibus pilis longiusculis, instructis. Stylus erectus vel curvatus, 8–10 mm longus.

Typus: WSW of Coorow, Western Australia [precise locality withheld for conservation reasons], 16 October 1981, *G.J. Keighery* 4216 (*holo*: PERTH 01351753).

Darwinia chapmaniana N.G.Marchant ms, in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.*: *Descr. Cat.* p. 360 (2000); A. Brown, C. Thomson-Dans, N. Marchant, *West. Austral. Threat. Fl.*: p. 78 (1998), *nom. inval.*

Darwinia sp. Coorow (B.A. Fuhrer 96/54), Western Australian Herbarium, in *FloraBase*, http://florabase.dec.wa.gov.au [accessed April 2008].

Illustration. Brown *et al*. (1998), p. 78.

A low, domed, much branched, spreading *shrub,* from a rootstock, to 50 cm tall and up to 3 m wide. Young branches slender, brown, with prominent decurrent leaf bases, becoming grey and woody. *Leaves* crowded at the ends of branches, scattered to absent on main stems, grey-green, linear, erect, covered in short hairs, triangular in section, 2–3 mm long, margin ciliate. *Floral leaves* grey, flattened. *Inflorescence* a terminal head usually composed of 12–16 flowers, erect or spreading, surrounded by red/yellow bracts, 9–15 cm in diameter, curry-scented. *Inflorescence bracts* in several layers, leaf-like to linear with an expanded base, longest before flowers are red-yellow, covered in long, red-yellow hairs on margins, 4–7 mm long. *Flowers* yellowish, floral tube 3–4 mm long, reddish with five indistinct ribs. Each flower base enclosed by two floral bracts, cymbiform, ovate when spread, brown, scarious, 4–5 mm long, acuminate. *Calyx lobes* narrowly ovate, small, *c*. 1 mm long, margin ciliate. *Petals* trullate-obovate, *c*. 2 mm long, margin dentate, apex acute. *Stamens* 10, *c.* 1 mm long. *Staminodes* 10, as long as staminal filaments. *Style* incurved, exserted beyond bracts, 8–10 mm long, yellow-red, apex subtended by a ring of hairs. *Ovules* 2. (Figure 1)

Selected specimens examined. WESTERN AUSTRALIA: 7 Dec. 1968, *C. Chapman s.n.* (PERTH); 4 Nov. 1976, *C. Chapman s.n.* (PERTH); 1 Oct. 1982, *J. Coleby-Williams* 122 (PERTH); 9 Oct. 1982, *J. Coleby-Williams* 157 (PERTH); 1 Sep. 1996, *D. Papenfus & R. Anderson* DP534 (PERTH).

Distribution. Found in a small area west of Coorow and Marchagee (Figure 2A).

Habitat. Occurs on shallow red or yellow clay-loam over sandstone or calcrete, around the edges of saline lakes in winter damp flats under mixed mallee or *Melaleuca* shrubland.

Phenology. This species flowers in mainly in spring (September to November), but a few flowers can be found as late as December.

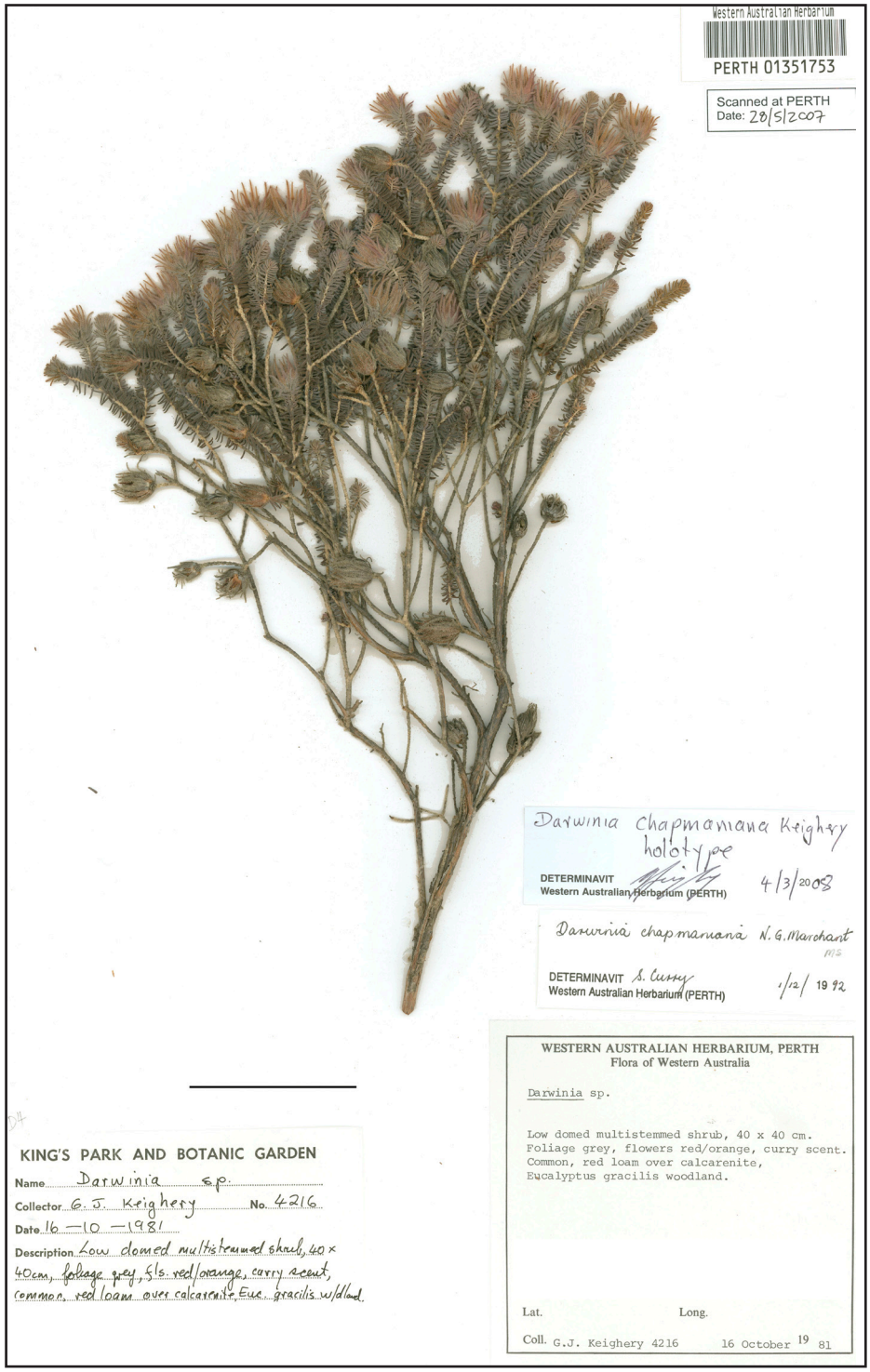

Figure 1. Holotype of *Darwinia chapmaniana*, scale = 5 cm.

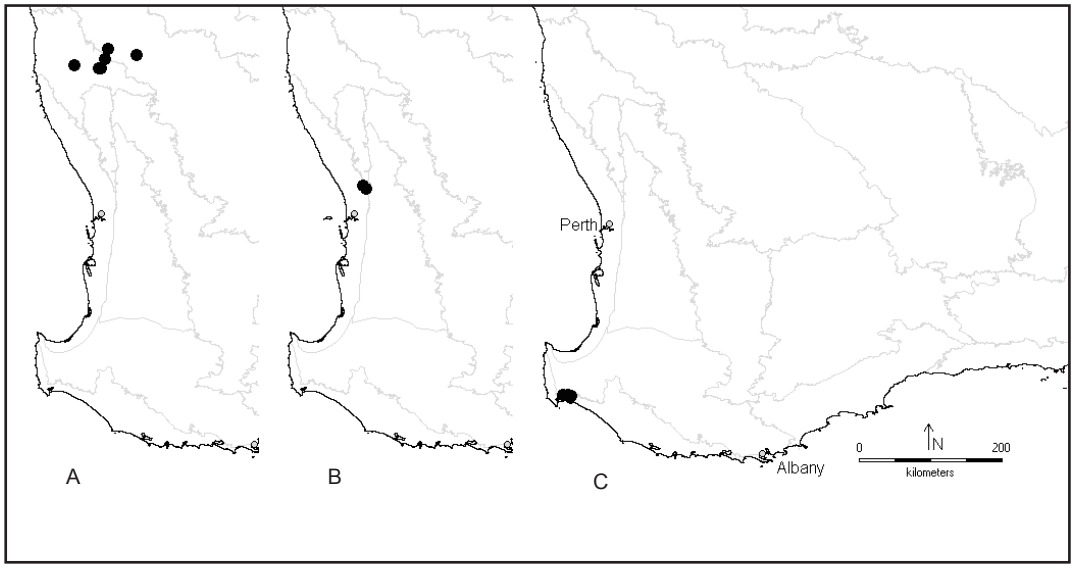

Figure 2. Distribution of *Darwinia* in Western Australia. A – *D. chapmaniana*; B – *D. foetida*; C – *D. ferricola*.

Conservation status. Listed as Declared Rare Flora under the Western Australian *Wildlife Conservation Act 1950*. This species is currently listed as Vulnerable, however, consideration should be given to upgrading its status to Endangered as it is threatened by rising saline groundwater throughout its range.

Etymology. Named after Charles Chapman, farmer, collector and wildflower enthusiast from Winchester, who first collected this species.

Common name. Chapman's Bell or Eganu Bell.

Affinities. Probably related to *D. neildiana*, in which it was once placed on the basis of the rounded, pendulous inflorescences with flowers enclosed by the bracts. This bird pollinated group has speciated on the northern sandplains and the morphological characters uniting them are largely related to this pollination syndrome. *Darwinia neildiana* however, is a small erect shrub with large, pendulous inflorescences surrounded by red bracts. Unlike *D. neildiana* this species has grey leaves with a ciliate margin. Unlike many other *Darwinia* species this species also has distinctly curry-scented leaves and flowers.

Darwinia foetida Keighery, *sp. nov.*

Frutex 40–70 cm altus. Folia linearia, triquetra, 3–5 mm longa, reflexa, acuta. Capitulum terminale, magnum, nutans, bracteae exteriores involucrorum pluri-seriales, 18–27 mm longae, rubrae in centro laminarum, marginibus pilis longiusculis instructis. Bracteolae lineares, acutae. Tubus floralis cylindricus, durus, *c*. 3 mm longus. Lobi corollae ovati, *c*. 1 mm longi. Stamina 10. Stylus curvatus, 10–16 mm longus.

Typus: Muchea, Western Australia [precise locality withheld for conservation reasons], 17 November 1994, *B.J. Keighery* 2458 (*holo*: PERTH 06019749; *iso*: CANB, MEL, NSW).

Darwinia sp. A Perth Flora (A.S. George 16943), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.*: *Descr. Cat.* p. 361 (2000).

Darwinia foetida N.G.Marchant & Keighery ms, Western Australian Herbarium, in *FloraBase*, http://florabase.dec.wa.gov.au [accessed April 2008].

Darwinia sp. Muchea (B.J. Keighery 2458), Western Australian Herbarium, in *FloraBase*, http://florabase.dec.wa.gov.au [accessed April 2008].

An erect or spreading *shrub* to 70 cm tall, often using other shrubs for support. Young branches slender, green-brown with prominent, decurrent leaf bases, becoming grey and woody. *Leaves* linear, triangular in section, green, hairless, crowded at ends of branches, reflexed, 3–5 mm long, apex acute, margin entire. *Inflorescence* terminal, nodding or rarely erect in young plants, composed of 12–15 flowers, which do not exceed the floral bracts. *Bracts* enclosing the flowers in several rows, leaf-like to linear with an expanded base, the longest red in centre, green on margins, margins with long hairs, 18–27 mm long, enclosing the flowers. Each flower base enclosed by two floral bracts, cymbiform, ovate when spread, brown, scarious, 2–3 mm long, acuminate. *Floral tube* brown, with 5 ribs, 3 mm long. *Calyx lobes* triangular, small, *c.* 1 mm long. *Petals* trullate-obovate, *c*. 1 mm long, acute, entire. *Style* curved, slightly dilated at base, 12–16 mm long, red, end tapering to apex subtended by a ring of hairs. *Ovules* 2. (Figure 3)

Selected specimens examined. WESTERN AUSTRALIA: 28 Oct. 1960, *A.S. George* 1693 (PERTH); 3 Nov. 1995, *B.J. Keighery* 2345 (PERTH); Dec. 1927, *H. Steedman s.n.* (PERTH).

Distribution. A localised distribution near Muchea (Figure 2B).

Habitat. Occurs on grey-black sandy rises in winter-damp to wet clay flats under *Regelia inops–Kunzea recurva* tall shrubland over *Hypocalymma angustifolium* low shrubland or low *Melaleuca* shrubland.

Phenology. Flowers in late spring (October to November).

Conservation status. Listed as Declared Rare Flora under the Western Australian *Wildlife Conservation Act 1950*.

Etymology. This species is named after the distinctive foetid smell of the flowers.

Common name. Muchea Bell.

Affinities. Probably related to *D. neildiana*, (the only described member of the group) in which it was once placed on the basis of the rounded, pendulous inflorescences with flowers enclosed by the bracts. This bird pollinated group has speciated on the northern sandplains and the morphological characters uniting them are largely related to this pollination syndrome. *Darwinia neildiana* however, is a small erect shrub with large, pendulous inflorescences surrounded by red bracts. *Darwinia foetida* differing in the lax, spreading habit, smaller inflorescences with a foetid scent and red-green dull bracts compared to the bright red bracts of *D. neildiana*.

Notes. Killed by fire, regenerates from seed, flowering from two years after a summer fire.

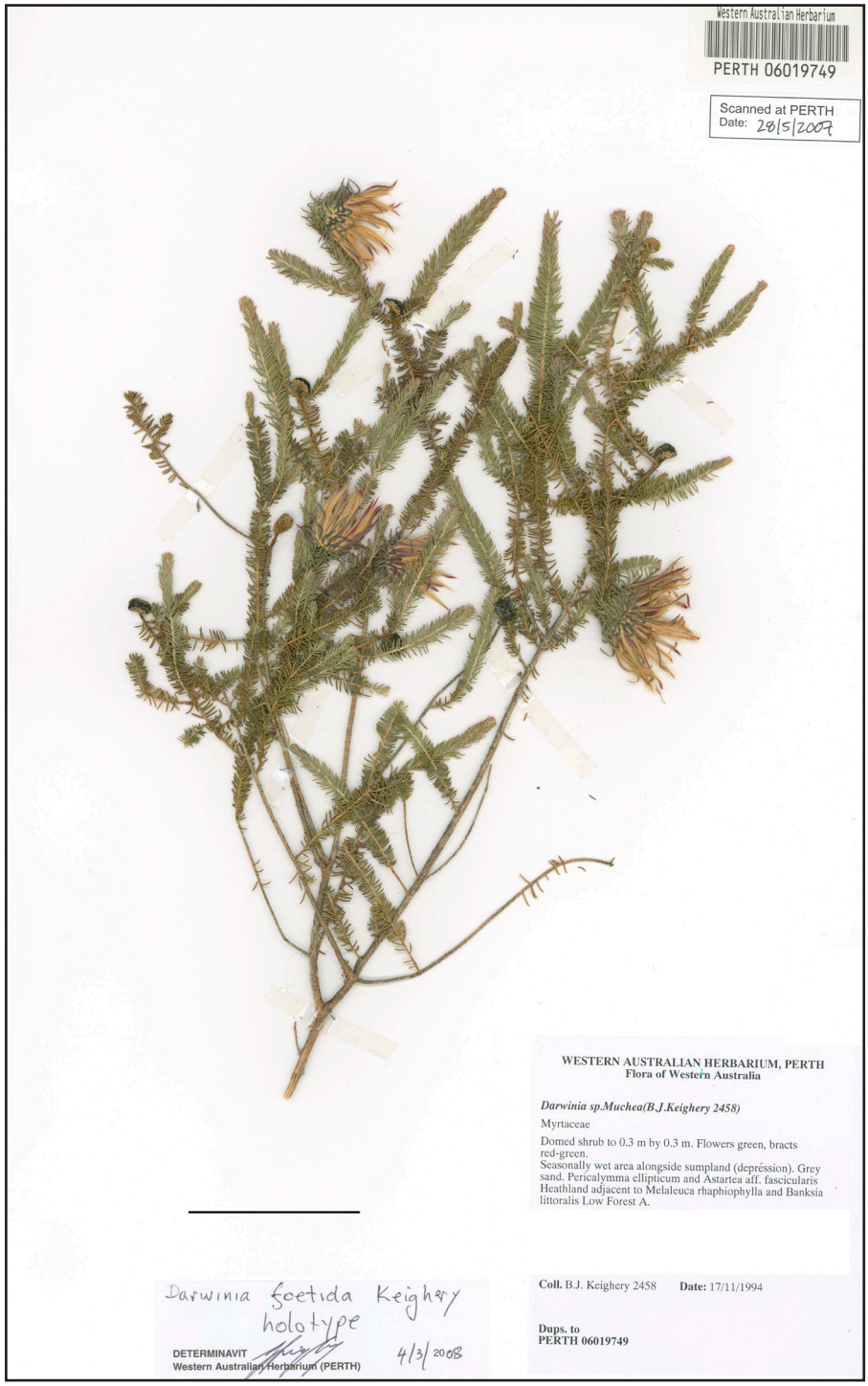

Figure 3. Holotype of *Darwinia foetida*, scale = 5 cm.

Darwinia ferricola Keighery, *sp. nov.*

A *D. apiculata* N.G.Marchant differt brevibus bracteis inflorescentiae (5–7 mm versus 10–15 mm), floribus numerosis inflorescentiam (14–22 versus 4–8) et stylo longiore (12–15 mm versus 6–9 mm).

Typus: Scott River, Western Australia [precise locality withheld for conservation reasons], 18 November 1980, *G.J. Keighery* 3582 (*holo*: PERTH 01357085; *iso*: CANB, NSW).

Darwinia ferricola N.G.Marchant ms, in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.*: *Descr. Cat*. p. 360 (2000); A. Brown, C. Thomson-Dans, N. Marchant, *West. Austral. Threat. Fl*.: 136 (1998), *nom. inval.*

Darwinia sp. Scott River (G.J. Keighery 3582), Western Australian Herbarium, in *FloraBase*, http://florabase.dec.wa.gov.au [accessed April 2008].

Illustration. Brown *et al*. (1998), p. 136.

A large, much branched, semi-climbing or rounded *shrub,* to 1.5 m tall ×1 m wide. Young branches slender, greenish-brown with prominent, decurrent leaf bases. *Leaves* densely packed on the ends of branches, scattered to leafless on main stems, spreading to recurved when mature, linear-triquetrous in section, adaxial surface convex, with slightly raised keel, hairless, green, apex acute, margin entire, petioles 0.1–0.2 mm long, lamina 2–5 mm long on young stems, 5–7(–9) mm on mature stems. *Floral leaves* green, flattened, 5–8 mm long. *Inflorescence* a terminal, globular head of (14–)20–40 flowers in which the styles greatly exceed the floral bracts, usually erect at the ends of branches, 20–30 mm diameter. *Floral bracts* in several layers, leaf-like to linear with an expanded base below the flowers, yellow-green, flowers extending beyond the floral bracts. Outer involucral bracts narrowly ovate, long acuminate, triquetrous, 5–7 mm long, green or greenish-red, flattened at base. Inner involucral bracts narrowly ovate, long acuminate, 5–7 mm long, greenish-yellow or greenish-red, adaxial surface deeply concave. Each flower base enclosed by two floral bracts, cymbiform, ovate when spread, brown, scarious, 3–4 mm long, 1–2 mm wide, acuminate. *Floral tube* obconical, yellow green, with 5 indistinct ribs, 2–3 mm long. *Calyx lobes* narrowly ovate to triangular, small, 2 mm long, 1 mm wide, entire, apex obtuse. *Petals* trullate-obovate, *c*. 3 mm long, 1–2 mm wide, acute, entire, margins slightly involute. *Stamens* 10, filaments slightly dilated at base, fused to staminodes in lower half, *c*. 1 mm long. *Staminodes* 10, as long as staminal filaments, narrowly triangular, margins coarsely divided. *Style* straight or slightly curved inward, slightly dilated towards base, 12–15 mm long, often reddish, tapering to apex which is subtended by a ring of hairs, *c*. 1 mm wide. *Ovules* 2. (Figure 4)

Selected specimens examined. WESTERN AUSTRALIA: 17 Dec. 2002, *J.A. Cochrane* 4370 (PERTH); 3 May 1989, *G.S. McCutcheon* 2040 (PERTH); 20 Nov. 1996, *A. Webb* 16 (PERTH).

Distribution. Confined to the Scott Coastal Plain, east of Augusta (Figure 2C).

Habitat. Usually shallow red or brown clays over winter-wet ironstone, with one record from shallow sand over ironstone. Normally in tall *Hakea tuberculata* shrubland over *Dryandra nivea* shrubs over *Loxocarya magna* and *Chordifex isomorphus* sedgeland.

Phenology. Flowers from late winter to early summer, with a peak in spring.

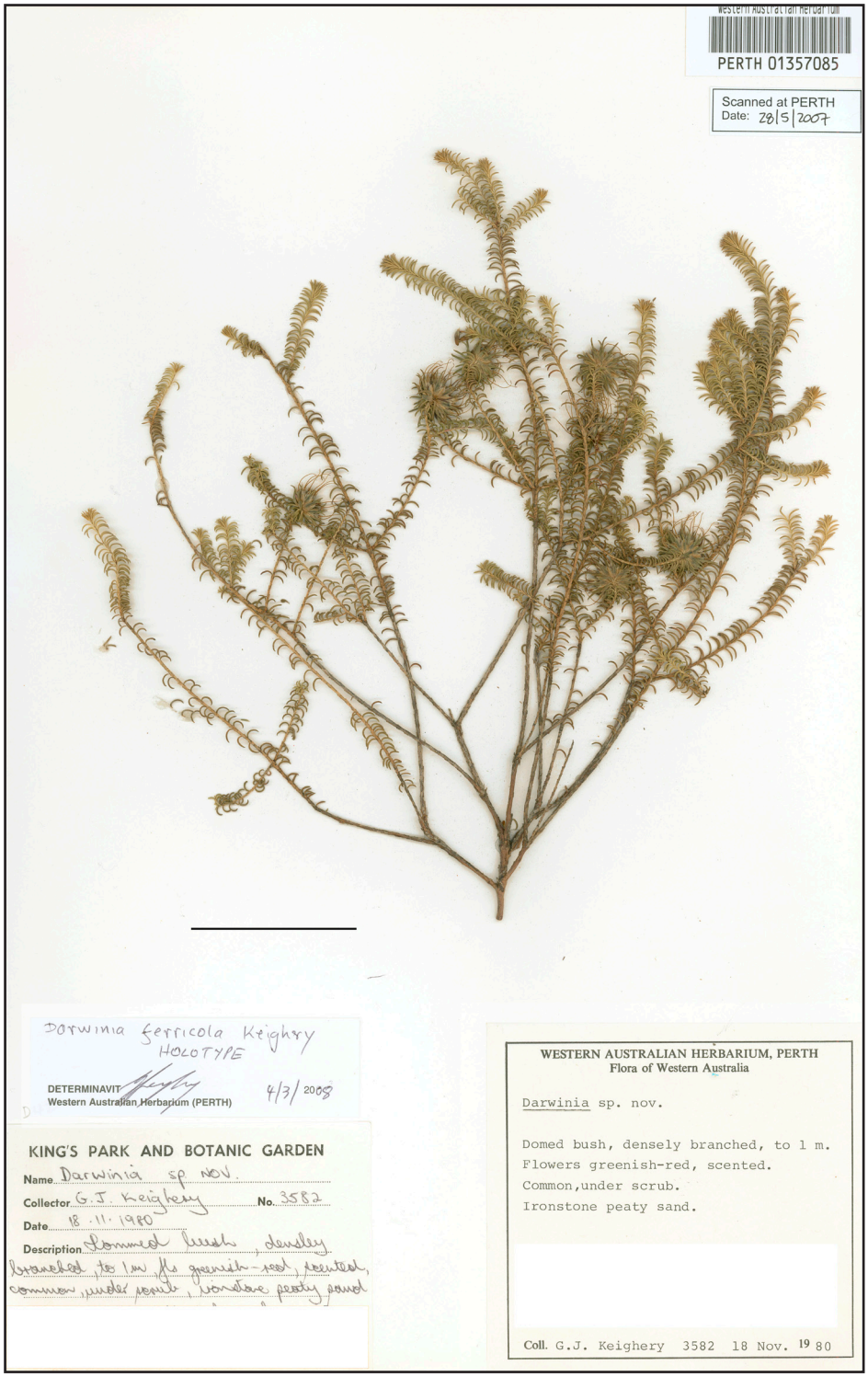

Figure 4. Holotype of *Darwinia ferricola*, scale = 5 cm.

Conservation status. Listed as Declared Rare Flora under the Western Australian *Wildlife Conservation Act 1950* with a ranking of Endangered (Atkins 2008).

Etymology. This specific epithet refers to this species habitat preference (iron inhabitant).

Common name. Scott River Darwinia.

Affinities. Part of the *Darwinia oederoides* complex (Bentham 1865), which comprises *D. apiculata*, *D. oederoides*, *D. ferricola* and *D. whicherensis*. Closely related to *D. apiculata* and *D. oederoides*, but this is a much larger shrub, lacking apiculate leaves, with over double the number of flowers in the inflorescence and the flowers larger in most aspects. This species also differs from all other members of the group in the inflorescence being an erect, rounded head with the flowers extending beyond the floral bracts.

Notes. Pollinated by birds. Killed by fire, regenerates from seed, normally flowering four years after a fire. Plants continue to grow throughout their lives and long unburnt areas can have very large plants to 2 metres tall by 2 metres wide, unlike *D. oderoides* which is always a small short lived shrub.

Darwinia whicherensis Keighery, *sp. nov.*

Frutex 30–70 cm altus. Folia linearia, triquetra, adulta reflexa, 2–3.5 mm longa. Capitulum terminale, magnum, nutans; bracteae involucri pluri-seriales, exteriores rubrae; bracteae interiores rubrae in centro laminarum, 12–16 mm longae, margine pilosae. Tubus floralis cylindricus, durus, 3–4 mm longus. Lobi calycis minuti, *c*. 1 mm longi. Lobi corollae ovati, cremei, *c*. 3 mm longi. Stylus curvatus, 10–16 mm longus.

Typus: Whicher Range, Western Australia [precise locality withheld for conservation reasons], 16 October 1995, *N. Gibson* 2375 (*holo*: PERTH 04183606).

Darwinia sp. Williamson (G.J. Keighery 12717), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.: Descr. Cat.* p. 361 (2000).

Illustration. Brown *et al*. (1998), p. 136.

An erect or spreading *shrub*, to 70 cm tall, often using other shrubs for support. *Leaves* linear, triangular in section, green, crowded at ends of branches, reflexed on mature branches, 2–3.5 mm long, oil glands not prominent, hairless. *Inflorescence* terminal, nodding or rarely erect in young plants, to 30 mm long, with 22–24 flowers. Floral leaves green, flattened, 2–4 mm long. *Floral bracts* in several rows, upper inflorescence bracts reddish, 12–16 mm long with an expanded base to 3 mm wide, and fringed along the margins. Longest floral bracts linear, red in centre, green on margins, margins with long simple hairs, 22–27 mm long, 2.5–3 mm wide, enclosing the flowers. Inner *inflorescence bracts* similar but green. Each flower base enclosed by two floral bracts, linear, strongly keeled translucent, brown, margins fringed, linear, 8–10 mm long. *Floral tube* brown, ribbed, 3–4 mm long, with 5 ridges. *Calyx lobes* white, translucent, triangular, margins entire, *c*. 1 mm long. *Petals* white, margin entire, *c*. 3 mm long. *Style* curved, 10–16 mm long, red. *Ovules* 2. (Figure 5)

Specimens examined. WESTERN AUSTRALIA: 27 Nov. 1991, *G.J. Keighery* 12717 (PERTH); 16 Oct. 1992, *B.J. Keighery & N. Gibson s.n.* (PERTH).

Figure 5. Holotype of *Darwinia whicherensis*, scale bar = 5 cm.

Distribution. Only known from two populations at the base of the Whicher Scarp, SE of Busselton (Figure 6A).

Habitat. Occurs on shallow, red, sandy clay over ironstone, in winter-wet flats under a tall shrubland of *Dryandra squarrosa*. This Critically Endangered ecological community is almost totally cleared and is affected by hydrological change through mining and dieback infection.

Phenology. Flowers in late spring, October to November, finishing in early December.

Conservation status. Listed as Declared Rare Flora under the Western Australian *Wildlife Conservation Act 1950* with a ranking of Critically Endangered as *Darwinia* sp. Williamson (G.J. Keighery 12717) (Atkins 2008).

Etymology. This species is confined to one population at the base of the Whicher Escarpment, south-east of Busselton and is named after this geomorphic feature.

Common name. Abba Bell.

Affinties. Part of the *Darwinia oederoides* group (see previous species). Morphologically related to *D. oederoides* (Bentham 1865) and *D. apiculata*. These species are all small shrubs, killed by fire, bird pollinated, with small, dull red or green bracted rounded inflorescences that are found mainly in the Jarrah Forest Bioregion. It differs from *D. oederoides* in the reflexed leaves, larger (containing more flowers), pendulous inflorescence and its erect habit. Easily differentiated from *D. apiculata* in the blunt reflexed leaves and long fringed bracts around the inflorescence.

Notes. Killed by fire, regenerates from seed. Flowers two years after fire, abundant for 3–4 years after fire then declines to be almost absent 7–10 years post fire.

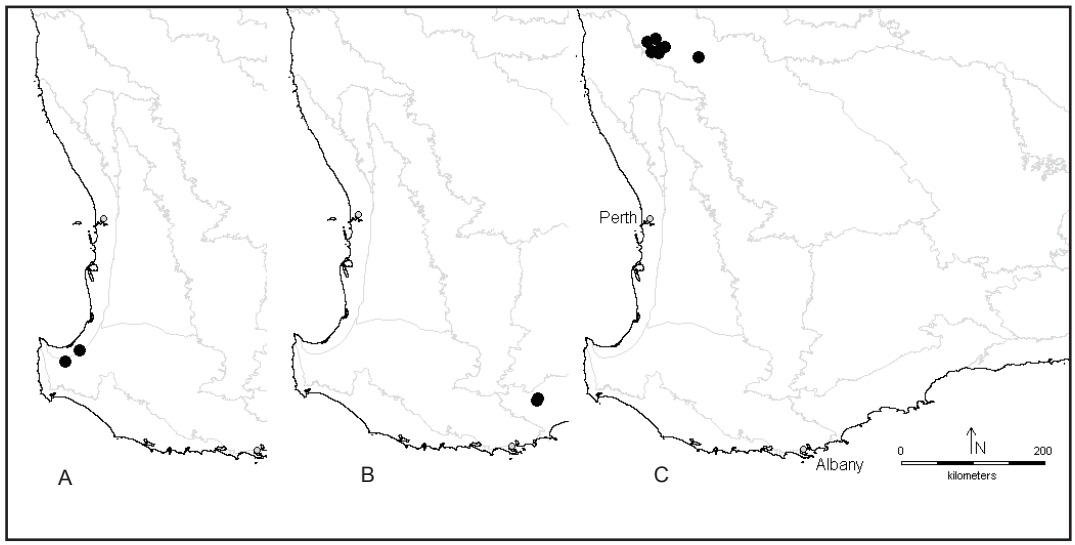

Figure 6. Distribution of *Darwinia* in Western Australia. A – *D. whicherensis*; B – *D. nubigena*; C – *D. polychroma*.

Darwinia nubigena Keighery, *sp. nov.*

Frutex 40–80 cm altus. Folia ovato-elliptica, 4–6 mm longa, 2–3.3 mm lata, margine cilato, apice obtuso. Capitulum terminale, nutans; bracteae exteriores pluri-seriales, rubrae, 15 mm longae, ad marginen fimbriato-denticulatae. Stylus curvatus, cremeus, 15–16 mm longus.

Typus: Stirling Range National Park, Western Australia [precise locality withheld for conservation reasons], 8 December 1997, *E.J. Hickman* 24 (*holo*: PERTH 05734320).

Darwinia sp. Stirling Range (G.J. Keighery 5732), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.: Descr. Cat.* p. 361 (2000).

Darwinia sp. Mt. Success (G.J. Keighery 2299), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.: Descr. Cat.* p. 361 (2000).

Illustrations. Keighery (1985), p. 4.

An erect *shrub,* 40 to 80 cm tall, often using other shrubs for support. *Leaves* ovate-elliptic in outline, green but paler underneath, scattered, opposite and not crowded, 4–6 mm long, 2–3.3 mm wide, oil glands not prominent, margins fimbriate to ciliate-denticulate, margin slightly recurved, apex obtuse. *Inflorescence* nodding, slender and tubular, to 20 mm long with 4 or 5 flowers. Upper *inflorescence bracts* green, leaf-like at apex of inflorescence, to 4 mm long with an expanded base, to 2 mm wide, fringed along the margins, apex recurved. *Bracts* in 3 rows, longest oblong-elliptic, red, margins fimbriate, 15 mm long, 6 mm wide, apex recurved, acute, exposing the styles. Inner inflorescence bracts similar, 5.5 mm long by 4 mm wide, red with a green tip. Each flower base enclosed by two *floral bracts*, oblong to narrow-elliptic, translucent, brown, margins entire, 6–7.5 mm long. *Floral tube* cylindric-turbinate, brown, ribbed when dry, 4.5–5.5 mm long. *Calyx lobes* white, translucent, triangular, margins fimbriate, *c*. 0.3 mm long. *Petals* red, margins deticulate, 2.4–3 mm long. *Style* curved, 15–16 mm long, pale creamy yellow. *Ovules* 2. (Figure 7)

Specimens examined. WESTERN AUSTRALIA: 5 May 1979, *G.J. Keighery* 2299 (PERTH); 19 Oct. 1982, *G.J. Keighery* 5732 (PERTH); 22 Sep. 1993, *C.J. Robinson* 1165 (PERTH).

Distribution. Endemic to the Stirling Ranges National Park (Figure 6B).

Habitat. Upper valleys and ridgelines over 800 m altitude. Shallow humic black peaty sands over metamorphosed sandstone. Mallee Jarrah over dense montane shrubland.

Phenology. Flowers in spring (September to November).

Conservation status. Listed as Declared Rare Flora under the Western Australian *Wildlife Conservation Act 1950* with a ranking of Endangered as *Darwinia* sp. Stirling Range (G.J. Keighery 5732) (Atkins 2008).

Etymology. From the Latin, meaning born of the clouds.

Common name. Success Bell.

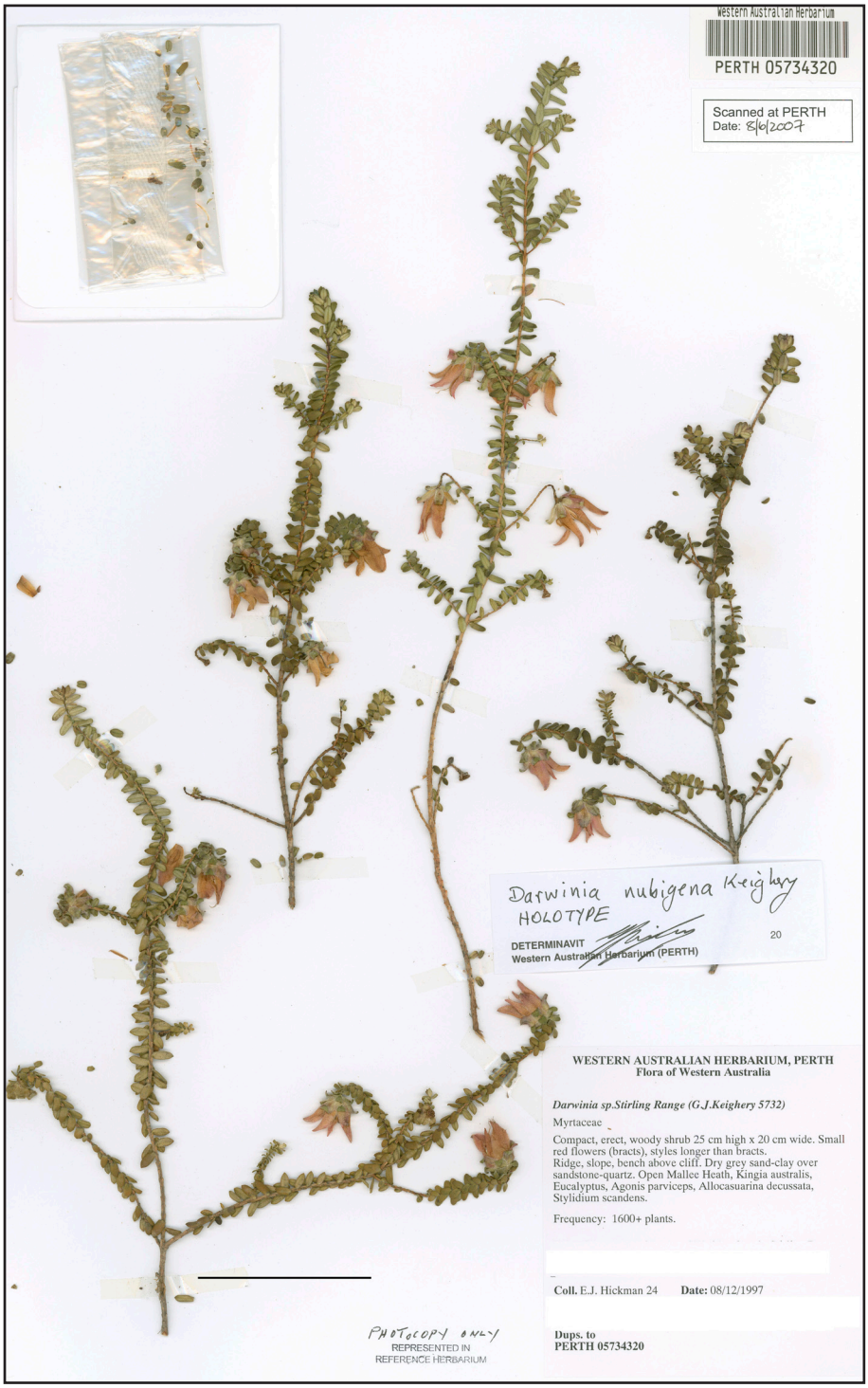

Figure 7. Holotype of *Darwinia nubigena*, scale = 5 cm.

Affinities. Part of a large complex of erect shrubs with large showy inflorescences confined to the Stirling Ranges, known as the Mountain Bells (aspects of their distribution, biology and relationships are detailed in Keighery (1985) and Keighery and Marchant (1993). Most closely related to *D. squarrosa* which occurs on the adjacent Bluff Knoll plateau, with which it shares the same leaf morphology and the small inflorescences with fringed bracts. It differs in the small narrow flower heads, normally with only 4 flowers compared to 6–8 and the red inflorescence bracts which are recurved to expose the cream styles of the flowers.

Notes. Pollinated by birds, killed by fire and regenerates from seed. A band of hybrids between this species and *Darwinia leiostyla* (which grows adjacent to this species under *Eucalyptus talyuberlup*/*E. marginata* mixed mallee) is found on Mount Success (*G.J. Keighery* 5731). Details of these hybrids are discussed and illustrated in Keighery (1985).

Darwinia polychroma Keighery, *sp. nov.*

Frutex 120 cm altus et 150 cm latus. Folia linearia, triquetra, pilifera, ad apicem, aggregata cinerascentia, 2–3 mm longa, acuta, ad marginen ciliata. Capitulum terminale, bracteae involucri pluri-seriales, 4–7 mm longae, rubro-luteae, marginibus pilis longiusculis instructis. Stylus erectus vel curvatus, 8–10 mm longus.

Typus: Near Carnamah, Western Australia [precise locality withheld for conservation reasons], 21 August 1995, *D. Papenfus* DP 113 (*holo*: PERTH 06267599; *iso*: CANB).

Darwinia sp. Carnamah (J. Coleby-Williams 148), in G. Paczkowska & A.R. Chapman, *West. Austral. Fl.*: *Descr. Cat*. p. 361 (2000).

Illustration. Brown *et al*. (1998), p. 79.

Erect when young, but becoming a low spreading *shrub* to 1.2 m tall by 1.5 m wide when mature, with numerous old grey woody stems spread along ground. Young stems slender, brown, with prominent decurrent leaf bases. *Leaves* densely packed on ends of branches, leafless on main stems, erect, closely appressed to the branch, linear-triquetrous in section, hairless, green, 2–3 mm long, petiole *c*. 0.5 mm long, oil glands prominent, margin sparsely denticulate. *Inflorescence* nutant, surrounded by shiny yellow-green, green and red coloured bracts in several overlapping rows with margins denticulate-ciliate, leaf like at base. Basal bracts red with a green tip, expanded at base, 6–7 mm long. Second layer yellow to yellow-green, red with an acute, green tip, 10–11 mm long and 4–5 mm wide. Inner bracts base yellow then green then red, 10–12 mm long. Each flower subtended by two floral bracteoles, cymbiform, ovate when spread, scarious, 6 mm long, 2 mm wide, acuminate. *Floral tube* obconical, yellow-green, 3 mm long. *Calyx lobes* narrowly ovate-triangular, *c*. 1 mm long. Petals trullate-obovate, 2–3 mm long, acute, margins enire and slightly involute. *Stamens* 10. *Staminodes* 10. *Style* reddish, slightly incurved at apex, end tapering to apex which is subtended by a sparse ring of hairs, 7–9 mm long. *Ovules* 2. (Figure 8)

Selected specimens examined. WESTERN AUSTRALIA: 8 Oct. 1982, *J. Coleby-Williams* 148 (PERTH); 4 Nov. 1992, *R.J. Cranfield & P.J. Spencer* 8380 (PERTH); 30 July 1996, *E. Holland* 1108 (PERTH); 22 July 1997, *R. Wolstenholme* 10 (PERTH).

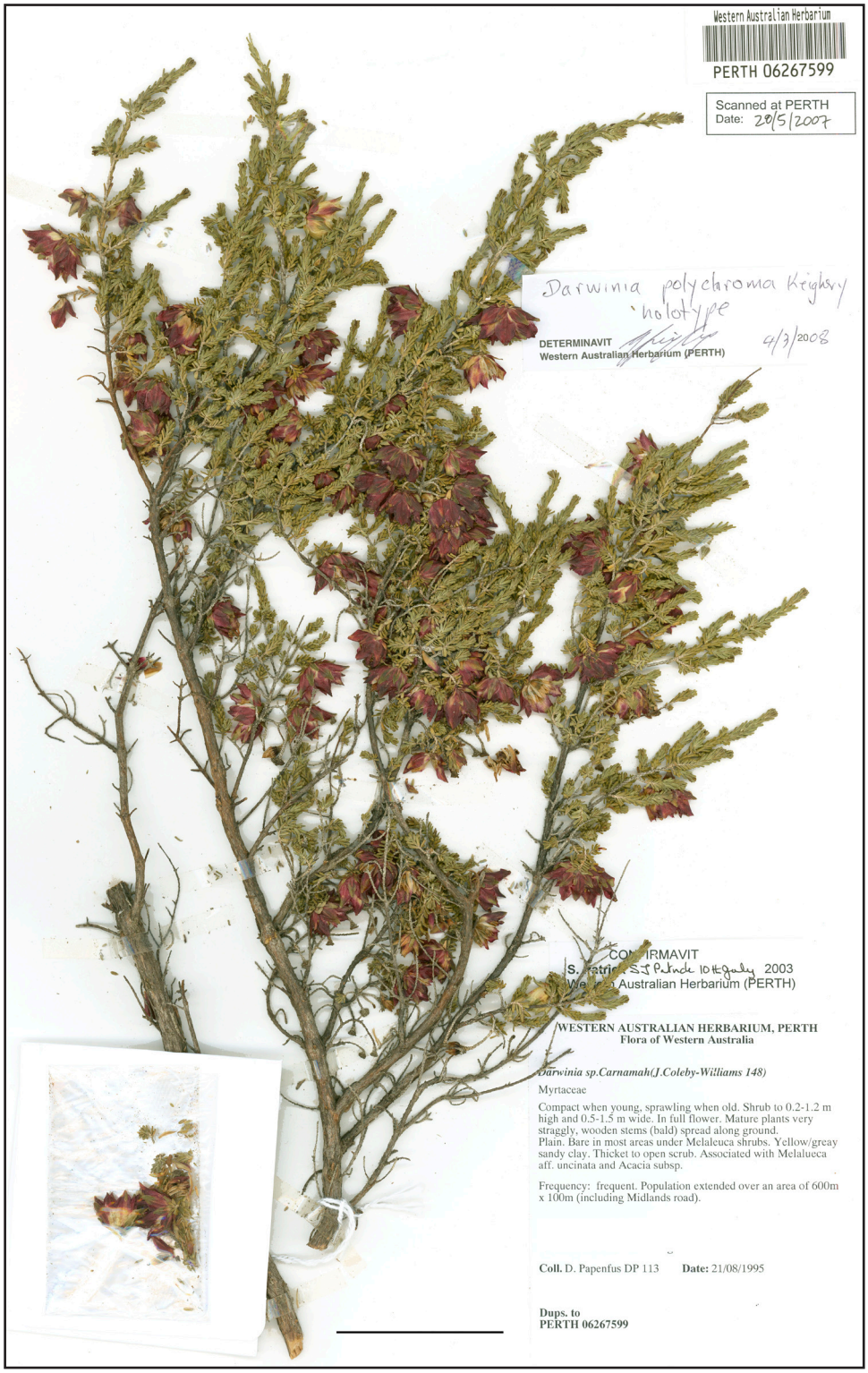

Figure 8. Holotype of *Darwinia polychroma*, scale = 5 cm.

Distribution. Because of past clearing for agriculture, since intensive settlement commencing in 1929, this species is now confined mainly to a few road and rail verges in the Carnamah area (Figure 6C).

Habitat. Usually found on grey, yellow or brown sandy loam over granite or rarely laterite under *Melaleuca* (*M. uncinata sens. lat*., *M. radula* or *M. sclerophylla*) shrublands, rarely under Tammar (*Allocasuarina campestris*) or mallee shrubland.

Phenology. Flowers in winter and spring, July to September, with a few flowers extending to November.

Conservation status. Listed as Declared Rare Flora under the Western Australian *Wildlife Conservation Act 1950* with a ranking of Endangered as *Darwinia* sp. Carnamah (J. Coleby-Williams 148) (Atkins 2008).

Etymology. From the Greek, meaning many colours: a reference to the bright multi-hued inflorescence bracts, which are pale yellow, green and red.

Common name. Harlequin Bell.

Affinities. Part of a group of four species from the Geraldton Sandplains and NE Avon–Wheatbelt Bioregions which have a spreading habit, long lived but killed by fire, bird pollinated with small nodding inflorescences, usually with numerous flowers with the short styles exceeding the inflorescence bracts. Related to *D. purpurea* differing in the pendant red-green, bell-like inflorescences, with the bracts exceeding and enclosing the flowers and partly the styles.

Notes. Killed by fire, regenerates from seed.

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