

Cycas cupida (Cycadaceae), a new species from central Queensland

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Summary

Forster, Paul I. *Cycas cupida* (Cycadaceae), a new species from central Queensland. *Austrobaileya* 6 (1): 153–160 (2001). The new species *Cycas cupida* P.I.Forst. from sandstone substrates in central Queensland is described (together with illustrations) and compared to *C. couttsiana* K.D.Hill and *C. desolata* P.I.Forst. A key to the species of *Cycas* series *Cairnsianosae* K.D.Hill is presented.

Key words: *Cycas*, *Cycas cupida*, *Cycas couttsiana*, *Cycas desolata*, *Cycas* series *Cairnsianosae*

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Introduction

In early November 2000, pressed material and photographs were sent to me by Tim Perry, then of the Environmental Protection Agency at Townsville, of a blue-leaved *Cycas* from sandstone substrates well to the south of Charters Towers in central Queensland. This population was highly disjunct from other populations of *Cycas* and of immediate interest given the patterns of speciation and taxon rarity in some of the Australian species. Taxonomic accounts of the Australian species of *Cycas* L. have been presented by Hill (1996, 1998) wherein some 27 species were enumerated together with identification keys. This pressed material differed in a number of ways from previously described species, although it was clearly placed in *Cycas* series *Cairnsianosae* K.D.Hill which includes the five species *C. cairnsiana* F.Muell., *C. couttsiana* K.D.Hill, *C. desolata* P.I.Forst., *C. ophiolitica* K.D.Hill and *C. platyphylla* K.D.Hill and is characterised by “Basal pinnae not gradually reducing to spines; pinnae slightly to strongly revolute, strongly glaucous; hypodermis fully continuous, often with more than 1 layer of cells. Cataphylls hard and pungent or soft. Pollen cones medium, ovoid, orange or brown” (Hill 1998).

Investigation of this population in December 2000 enabled collection of a range of fertile material and documentation of

morphological variation from many individuals that is never possible only from herbarium collections. The new species is described in this paper as *Cycas cupida* and differentiated from other taxa in *Cycas* series *Cairnsianosae*.

Taxonomy

Cycas cupida P.I.Forst., **species nova**, affinis speciebus ambabus *Cycadi desolatae* P.I.Forst. et *C. couttsianae* K.D.Hill sed ab illa numero majore foliolis in foliis maturis (174–240 non 90–136), foliolis e basi foliis non angustis et 90–100% latitudinis maximae (non 70–80%), cataphyllis multo longioribus (70–95 mm non 30–45 mm) dense tomentosis per longitudinem integram (adversum basin non nisi), strobilis microsporangiatissimis latioribus (10–16 cm diam. non 8–9 cm) microsporophyllo spina apicali longiore instructo (5–12 mm non 3–4 mm), et ab hac caulibus crassioribus (20–30 cm diam. non 14–20 cm), foliolis e basi foliis non angustis et 90–100% latitudinis maximae (non 70–80%), augmento novo indumento ferrugineo instructo (adversum canum), strobilis microsporangiatissimis magnioribus (25–33 × 10–16 cm non 15–20 × 7–9 cm) et megasporophyllis ferrugineis (adversum grisea) lamina late triangulari (adversum anguste triangularem) differens. **Typus:** Queensland. SOUTH KENNEDY DISTRICT: Terrace Range, 11 December 2000,

P.I. Forster PIF26540B (male plant) & *R. Booth* (holo: BRI [6 sheets and carpological]).

Stems to 6 m high (rarely multiheaded), 20–30 cm thick. Leaves 72–130 cm long, straight or sometimes somewhat wavy towards the apex, strongly keeled in cross-section, the opposing leaflets inserted at 30–50 degrees to the rachis, the rachis usually terminated by paired leaflets; petiole 12–26 cm long, 10–11 mm diameter, strongly blue-grey tomentose, otherwise green-grey beneath, with 12–26 short teeth c. 2 mm long and spaced 10–15 mm apart, rarely spineless. Leaflets 174–240 per leaf, evenly spaced in lower half of leaf, more interleaved and wavy in the upper half of leaf; median leaflets at 40–50 degrees to the rachis, 150–240 mm long, 5–7 mm wide; glaucous blue-pruinose, green-grey when covering removed; more or less flat in cross-section, decurrent for 0–4 mm, not narrowed at base of frond (90–100 % of maximum width), midrib slightly raised above, prominent below. New growth densely tomentose with ferruginous-brown indumentum, glabrescent. Cataphylls pungent, linear, 70–95 mm long, 3–5 mm wide, densely tomentose for entire length with ferruginous-brown indumentum. Microsporangiate cones elongate-ovoid, 25–33 cm long, 10–16 mm diameter, with dense ferruginous-brown indumentum; microsporophyll fertile zone 14–48 mm long, 8–15 mm wide; sterile zone 8–19 mm long; apical spine antrorsely recurved, 5–12 mm long. Megasporophylls 22–30 cm long, when young densely ferruginous-brown tomentose, glabrescent and then glaucous blue-grey; ovules 4 to 6 (usually 4); lamina broadly triangular, 45–60 mm long, 25–35 mm wide, strongly dentate with well developed teeth to 3 mm long, apical spine 15–18 mm long. Seeds ovoid, 35–40 mm long, 32–35 mm diameter, strongly grey-blue pruinose, green beneath wax covering, becoming yellow-purple when ripe; sarcotesta 3–4 mm thick. Figs. 1–6.

Specimens examined: Queensland. SOUTH KENNEDY DISTRICT: Terrace Range, Dec 2000, *Forster* PIF26540A (BRI); ditto, PIF26540C (BRI); ditto, PIF26543 (BRI); ditto, PIF26544 (BRI); ditto, Nov 2000, *Perry* s.n. (BRI).

Notes: *Cycas cupida* clearly belongs in *Cycas* series *Cairnsianosae* as defined by Hill (1998). The new species appears to be closest morphologically to both *C. couttsiana* and *C. desolata*, both of which are also the closest geographically, albeit over 200 km to the north. *Cycas cupida* differs from *C. desolata* (Forster 1995) in the greater number of leaflets in mature leaves (174–240 versus 90–136), the leaflets at the base of the leaf not narrowed and 90–100% of maximum width (versus 70–80%), the much longer cataphylls 70–95 mm (versus 30–45 mm) that are densely tomentose for the entire length (versus base only), the thicker microsporangiate cones (10–16 cm diameter versus 8–9 cm) with a longer apical spine on the microsporophyll (5–12 mm long versus 3–4 mm). *Cycas cupida* differs from *C. couttsiana* (Hill 1998) in thicker stems (20–30 cm diameter versus 14–20 cm), the leaflets at the base of the leaf not narrowed and 90–100% of maximum width (versus 60–80%), the new growth with ferruginous-brown indumentum (versus grey-white), the longer and larger microsporangiate cones (25–33 x 10–16 cm versus 15–20 x 7–9 cm) and the ferruginous-brown megasporophylls (versus grey) with a broadly-triangular lamina (versus narrow-triangular).

All species in *Cycas* series *Cairnsianosae* have blue-coloured leaves to some extent. In some species such as *C. cairnsiana*, this colour is intense and held for the life of the leaf. Other species such as *C. platyphylla* and *C. ophiolitica* are blue-coloured when the leaves are young, however this colour is soon lost. Both *C. couttsiana* and *C. desolata* are somewhat intermediate in this feature. By comparison *C. cupida* appears to retain the blue coloration, but not to quite the intensity of *C. cairnsiana*.

The six species in *Cycas* series *Cairnsianosae* may be distinguished in the following key. This key is designed for leaves from mature plants and will not work on juvenile material. It is important to collect cataphylls and to note indumentum colour on young leaves and the cataphylls if possible.

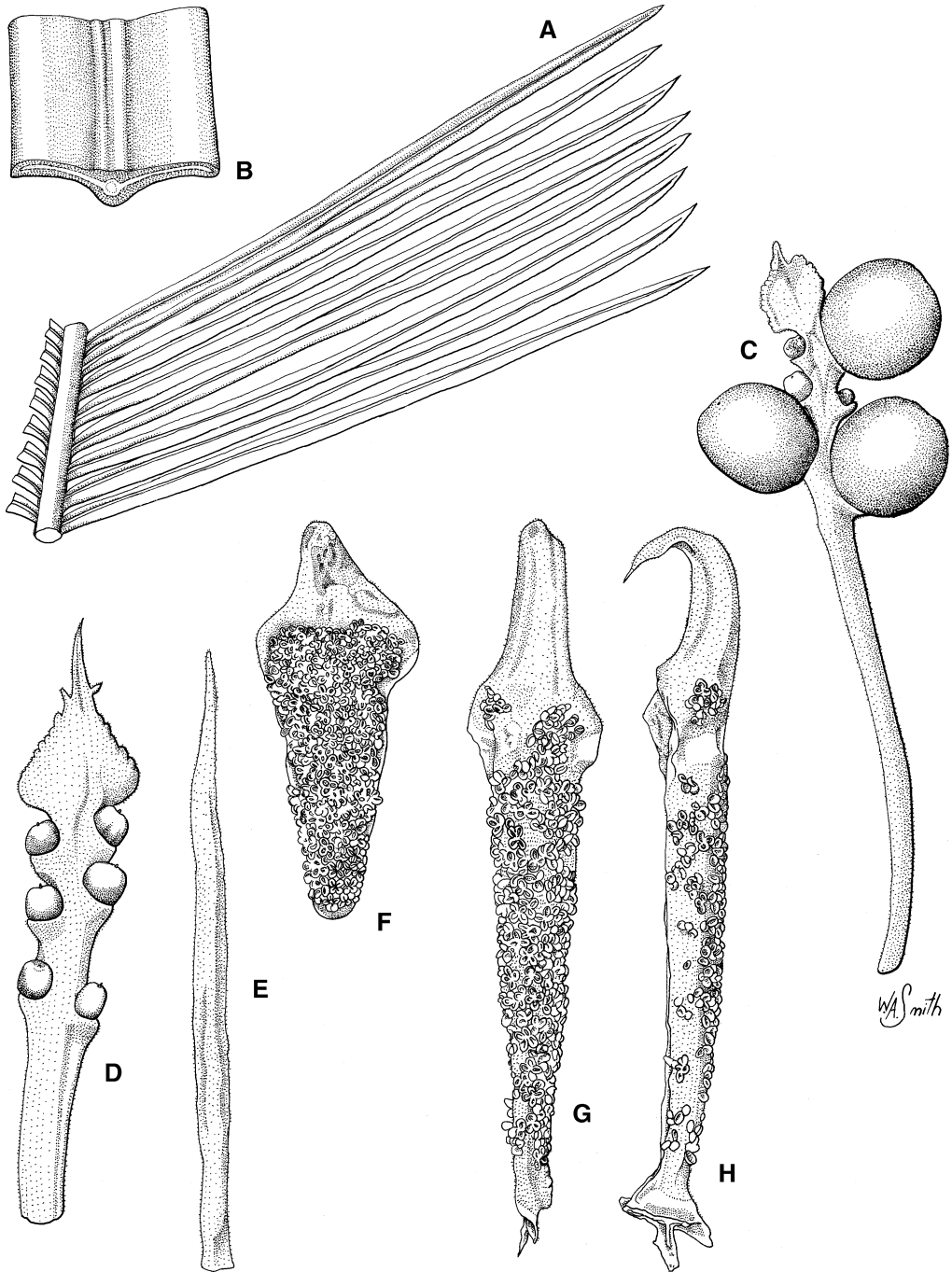


Fig. 1. *Cycas cupida*. A. median part of leaf where leaflets are at maximum length. $\times 0.6$. B. cross-section of a median leaflet. $\times 4$. C. fruiting megasporophyll. $\times 0.4$. D. immature megasporophyll. $\times 0.6$. E. cataphyll. $\times 1$. F. microsporophyll from near cone apex. $\times 3$. G. & H. microsporophyll from near cone middle. $\times 3$. A–D from *Forster* PIF26540A (BRI); E & F from *Forster* PIF26540B (BRI); G & H from *Forster* PIF26543 (BRI). Del. W. Smith.



Fig. 2. *Cycas cupida* habit.

Key to the species of *Cycas* series *Cairnsianosae*

1. Median leaflets in leaf 2–3 (4) mm wide, margins revolute **C. cairnsiana**
 Median leaflets in leaf 4–7.5 mm wide, margins recurved to more or less flat 2
2. Basal leaflets in leaf not narrowed (80–100% of median leaflets width) **C. cupida**
 Basal leaflets in leaf narrowed (55–80% of median leaflets width) 3
3. New growth with white or grey trichomes; median leaflets 6–7.5 mm wide;
 cataphylls narrow-triangular **C. couttsiana**
 New growth with orange-brown trichomes; median leaflets 3.5–6 mm wide;
 cataphylls linear 4
4. Median leaflets 6–7.5 mm wide; cataphylls soft **C. ophiolitica**
 Median leaflets 3.8–6 mm wide; cataphylls pungent 5
5. Short teeth at base of leaf petiole present; leaflets more or less straight,
 120–260 per leaf; median leaflets 90–170 mm long; indumentum covering
 entire cataphyll **C. platyphylla**
 Short teeth at base of leaf petiole absent; leaflets antrorse, 90–136 per leaf,
 median leaflets 180–210 mm long; indumentum only at base of cataphyll **C. desolata**



Fig. 3. *Cycas cupida* habit of large plant.

Distribution and habitat: *Cycas cupida* is restricted to the Terrace Range, south of Charters Towers. The Terrace Range is an isolated low-lying sandstone range with occasional low outcrops and clifflines of exposed sandstone rock. The vegetation (Fig. 6) comprises an open woodland dominated by *Corymbia clarksoniana*, *C. dallachiana* and *Eucalyptus crebra* with a midstorey of *Acacia bidwillii*, *A. salicina*, *Eremophila mitchellii*, *Lysiphyllum hookeri*, *Planchonia careya* and *Terminalia oblongata*. The cycads are widely spread in this habitat, being most abundant on the low hills, but can also be found concentrated in gullies and creeklines where they may occur

on sandstone colluvium. Occasionally plants grow in crevices on low sandstone cliffs. The habitat is seasonally dry and very hot in the summer months from reflected heat from the exposed rocks.

Conservation status: This new species is abundant at the type locality and is widely distributed throughout the Terrace Range. An accurate population size is as yet unknown, but thousands of plants exist with no immediate threats to the population from land clearing or agriculture. Under the IUCN Red List Categories (Anon. 1994), *C. cupida* fulfils the criterion of 'vulnerable' under Category D2. It



Fig. 4. *Cycas cupida* female plant with megasporophylls.

is estimated that the area of suitable habitat comprises less than 60 km² and although diffuse, there is only one large population of this cycad. Blue-leaved cycads are desirable to cycad collectors (cf. Forster 1999) and it is likely that interest in *C. cupida* will be intense.

Etymology: The specific epithet is derived from the Latin *cupidus* (desirous) and alludes to the desirability of this cycad to collectors.

Acknowledgements

Thanks to Tim Perry and Step Lawler for bringing this species to my attention and for guidance in the field; Ron Booth for field

assistance; the property owner for access; Peter Bostock for translation of the diagnosis into Latin and comments on the manuscript; and Will Smith for the illustrations.

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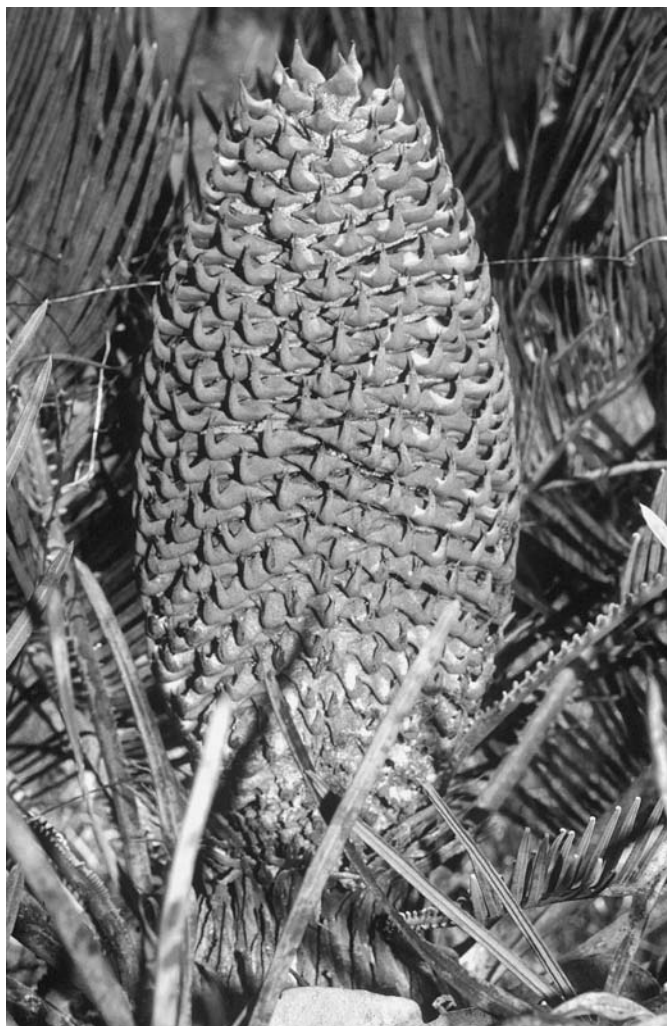


Fig. 5. *Cycas cupida* male plant with cone.

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Fig. 6. Habitat of *Cycas cupida*.