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HAKEA PULVINIFERA L. JOHNSON (PROTEACEAE): A REDISCOVERED SPECIES UNDER THREAT

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Abstract

Hakea pulvinifera, discovered only in 1949 from a single population and subsequently believed extinct, has been rediscovered. Its reproductive biology and limited distribution indicate that it will require careful husbandry to survive.

Hakea pulvinifera is one of the more recently discovered and described species of a large Australia-wide genus, presently being revised by R.M. Barker, L. Haegi and one of the authors (W.R.B.). The species was first collected in 1949 and named in 1962 (Johnson 1962). It belongs to the 'corkwood' component of Sect. *Grevilleoides*. L.A.S. Johnson revisited the area in April 1966, collected material and made notes on the plant population, exact location, aspect and ecology. McGillivray (1975) reported that a search in April 1971 with R.C. Coveny failed to locate the species in a site which had been partially cleared and flattened for a car parking area. McGillivray proposed that it was likely that the species was extinct.

In June 1988, one of us (S.P.M.) discovered the species in a localised population on a steep slope of a hillside of similar features and aspect to the type locality as quoted in Johnson's notes in McGillivray (1975). The identity of the population was confirmed by the other (W.R.B.) on a visit to the site on 13th September 1988.

Is this a new or the original population?

The newly found population is almost certainly the original one, despite it not being associated with any car park. Firstly, the new locality is 1.75 km SSE of the Keepit Dam spillway. The original site is recorded almost identically as "1 mile SSE of Keepit Dam" (*L.A.S. Johnson NSW 90975*); on the specimen Johnson has disputed Pacholke's locality of "½ mile below Keepit Dam site". Secondly, new and old localities have been recorded as occurring on the east side of Charcoal Bend on the Namoi River. Thirdly, none of the car parks searched by McGillivray and Coveny (McGillivray 1975) are located on the westerly aspect upon which the original population was noted by Johnson.

Reproductive biology

The species cannot reproduce from seed. J.B. Heywood found no fruits in two years' observation (Johnson 1962). In 1966 Johnson noted the lack of fruits, notably old ones, in his population (McGillivray 1975). This was again noted in the present population. Fruits of a number of corkwood species open readily, apparently seasonally, and the valves usually weather and eventually break away. However, one would expect to find some remnants of the woody rachis and fruit stalks (formed from the pedicel and gynophore) in the population. None were evident.

Investigation of fresh, fixed and dried flowers has shown them to be sterile, with no evidence of pollen.

A brief examination indicated that plants are likely to regenerate by suckering from roots running just below the soil surface. Other corkwood species exhibit a similar means of vegetative reproduction (W.R. Barker, unpublished observations).

Conclusion

A detailed study of the reproductive biology of this species is needed to determine the most appropriate way to conserve the only known population. Its limited known distribution and sterility indicate that it will require careful husbandry to survive.

Following a visit to the site in November 1988 National Parks and Wildlife Service Botanist J. Benson (1988) produced an internal report setting up monitoring of the population and making recommendations on conserving the species.

A search of the general region, not just the immediate neighbourhood, is needed to ascertain if more populations exist. *H. aenigma*, a similarly sterile Kangaroo Island endemic reproducing solely by suckering, has extended over an area of approximately 30 x 15 km (Haegi & Barker 1985). Other corkwood species often occur as very localised populations (W.R. Barker, unpublished observations).

Cuttings have been collected for propagation by the Department of Botany, University of New England (Armidale), the National Botanic Gardens (Canberra) and the Mount Annan Annexe of the Royal Botanic Gardens (Sydney) (Boden 1988).

Grafting onto stock of other readily grown *Hakea* species may be another worthwhile avenue of research. This has proved successful with grass-leaf Hakeas (*H. francisiana* and its allies) using *H. salicifolia* stock (P. Ollerenshaw, pers. comm. 1988).

Specimens examined (in chronological order)

NEW SOUTH WALES. NORTHWEST SLOPES REGION: *G.J. Pacholke s.n.*, 7.xi.1949, ½ mile below Keepit Dam Site, Namoi River; moderate size clump; indications of further clump in the vicinity, NSW 54042. — *J.B. Heywood s.n.*, 9.x.1950, near Keepit Dam; up to 12′ high, inclined to be straggly, on hard rocky hillside, steep slope, on area of several acres; no fruits seen in 2 years; no similar trees except in the one patch, NSW 54043 (holotype). — *L.A.S. Johnson s.n.*, 12.iv.1966, 1 mile SSE of Keepit Dam, N.E. of Gunnedah (E side of Charcoal Bend); shrubs or stunted treelets to 4 m, often less, bark ± corky, thick, ± tessellated; no old parts found; very localised to crest and W. side of very dry, barren conglomerate hillside, with scattered *Callitris columellaris* ssp. *glauca* and *Alstonia constricta*; no eucalyptus; [does not occur "½ mile from Keepit Dam"], NSW 90975. — *W.R. Barker 5649, S. Morrison, I.R. Telford & J.B. Williams*, 13.ix.1988, Keepit State Recreation Area; Little Klori Hill, c. 0.5 km W of park Visitors Centre and Office, c. 1.75 km SSE of Keepit Dam spillway, overlooking and on E side of Charcoal Bend on the Namoi River; locally abundant population of c. 50-100 plants (small trees and ?suckers) over an area c. 100 m along x 50 m down steep W-facing slope with brown loam on conglomerate outcropping with *Callitris glaucophylla*, *Acacia decora*, *Alstonia constricta*, *Dodonaea viscosa*. Small trees to c. 3½ m high with twisted limbs . . . The trees occur in groups which may have formed by suckers . . . No evidence of lignotubers but one 3-branched plant c. 30 cm high produced from ?horizontal root (?sucker) . . . Fruits not evident on any plant (no evidence of . . . remnant stalks), AD (dupl. to be distributed).

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