

DELINEATION of IMPORTANT HABITATS of THREATENED PLANT SPECIES in SOUTH-EASTERN NEW SOUTH WALES



RESEARCH REPORT
to the
Australian Heritage Commission

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Westringia davidii Conn

Family: Lamiaceae

Conservation Status: Vulnerable (Code 2V/N/58)

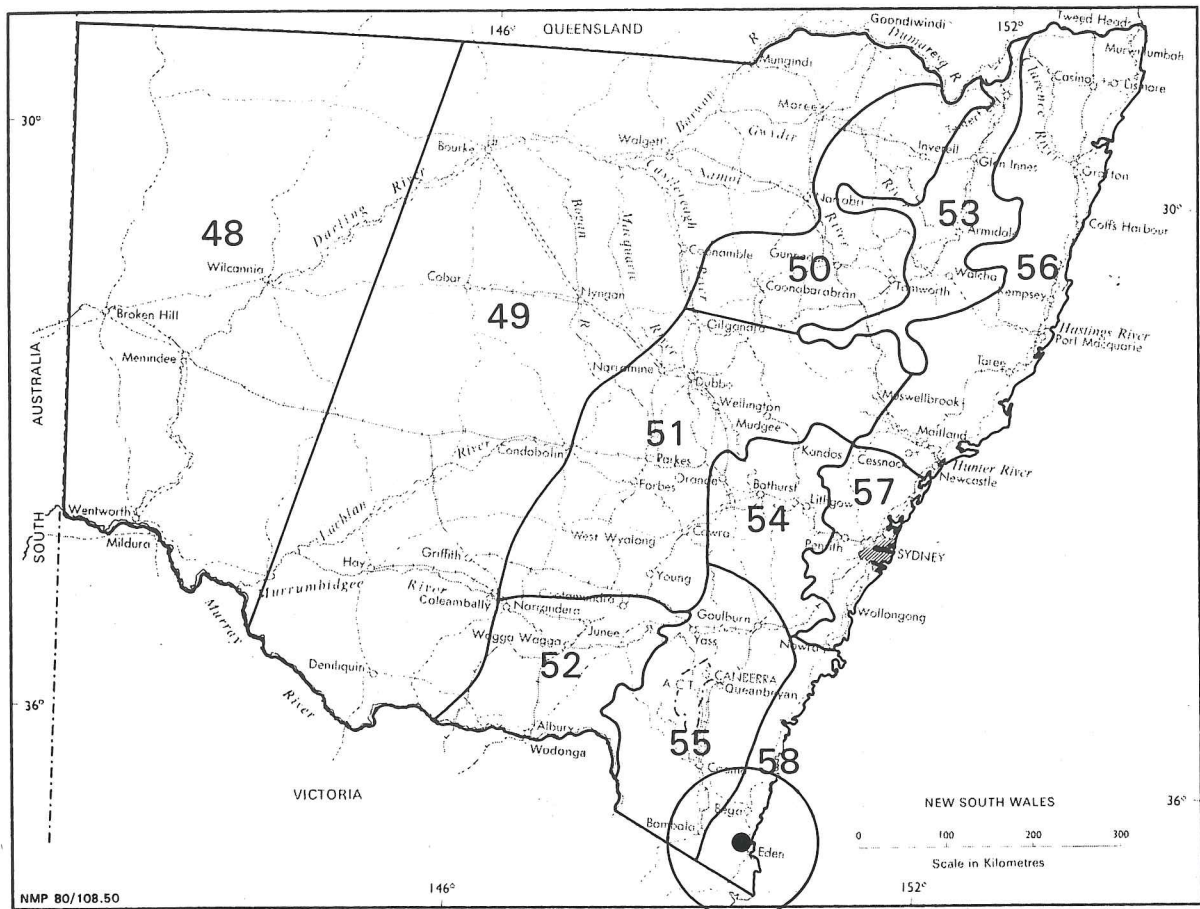


Flowering branchlet.

Description

Rounded to somewhat straggly shrub usually less than 1.5 m high but occasionally to 2 m. The branchlets are covered with a short dense layer of simple hairs. Leaves arranged in whorls of 3, ovate to obovate, 7-20 mm long and 5-8 mm wide, tapering to an acute tip and the undersurface densely white-hairy. Flowers pale-mauve, with orange spots in the throat, almost stalkless and arranged in small clusters arising from the upper leaf axils. Usually only

Distribution of *Westringia davidii*



one flower in each cluster opens at a time. Individual flowers have a calyx 2-3 mm long with narrowly triangular lobes 3-5 mm long. The corolla tube is about 8 mm long opening into a deeply lobed corolla 8-12 mm long. The larger upper and lower lobes are deeply notched at their tips, whilst the narrower lateral lobes are undivided. *Fruit* a capsule about 2 mm long tapering to a point about 1 mm long at the point of the style attachment and containing slightly flattened seeds about 1.4 mm long.

Flowering: Recorded from July to December but flowering possibly extending over a longer period.



A particularly dense rounded shrub of *W. davidii* (left foreground).

Distribution

Confined to an area of about 11 km x 4 km, centred about 12 km inland and located between Pambula and Eden on the New South Wales far South Coast. The species has now been recorded from 12 sites and the total population for the 5 sites visited during this survey was about 1500 plants. If the estimated populations (based on observations by M. Parris (pers. comm.) and comments by Conn (1987)) for the sites not assessed during this survey are added to this value, the total population for the species approaches 2000 plants.

Westringia davidii was discovered as recently as late 1985 by D. Albrecht and M. Parris whilst they were searching rhyolite outcrops for other rare species. The distribution of *W. davidii* is now relatively well established as the general area and most rock outcrops potentially supporting this species have been extensively surveyed since 1986 by various workers including Albrecht, Parris, Fisher, Keith and J.D.B. As in the case of *Phebalium ralstonii*, it is nevertheless likely that other small occurrences of the species will eventually be found in as yet undiscovered outcrops in the more inaccessible parts of the species range. During the present survey 7 outcrops surveyed independently by D. Albrecht in 1986 (Conn, 1987; unpublished data; pers. comm.) were not re-visited by J.D.B. as it was considered more desirable to direct survey effort to other unexplored outcrops, particularly as Albrecht had already nominated the 4 best of his sites for inclusion on the Register of the National Estate. The 7 sites surveyed independently by Albrecht are not therefore detailed in this report but a summary of their locations is presented at the end of the Site Details section.

Habitat Summary

On rhyolite and ignimbrite rock outcrops with skeletal loamy soils supporting localised shrub communities. It occurs predominantly on northerly and easterly aspects on hillsides of coastal ranges dominated by eucalypt open-forest.

Threat Summary

Similar to that for *Phebalium ralstonii*, viz. because of the natural protection afforded to most sites by the extensive areas of bare rock associated with the outcrops most shrub communities have been infrequently burnt. This is evidenced by the very large specimens of fire sensitive species such as *Kunzea ambigua*, *Melaleuca armillaris* and *Acacia subtilinervis* on most sites. Many sites appear not to have been burnt for more than 50 years. An increased burning frequency for the shrub communities is likely to be detrimental to both *W. davidii* and the general ecology of the sites. Care should thus be taken that hazard-reduction burns conducted in adjacent State Forests and on private property do not encroach upon these shrub communities. Particular care should be taken with any programme using aerial ignition to ensure that incendiaries are not dropped into the shrub communities.

Whilst logging activities are unlikely to directly affect most *W. davidii* sites because they do not support forest, particular care should be taken

during any logging of adjacent forest to ensure that machinery, roading or other activities do not damage the sites and that eroded soil is not deposited onto the outcrops.

There has been some interest in quarrying some of the rhyolite outcrops for use as decorative paving stone (C. Parramore, pers. comm.) and at some rhyolite outcrops, e.g. *Phebalium ralstonii* Sites 10 and 11 there was evidence of exploratory drilling and blasting. Whilst most outcrops supporting *W. davidii* do not appear to be currently affected by feral goats these animals had caused serious damage to parts of Site 4 and could be a potential threat to other outcrops if numbers build up in the general area.

Currently all sites are in a virtually weed-free condition and providing the above threats are controlled the shrub communities should persist for the foreseeable future.



Hazard reduction burns should not be permitted to encroach onto shrub community sites as in this case where a fire had burnt the south-eastern edge of Site 2. Numerous plants of *W. davidii*, the Vulnerable *Phebalium ralstonii* and the Rare *Acacia subtilinervis* were killed by this fire. Whilst the community is likely to regenerate well from an occasional event such as this, frequent burning could be detrimental.

Reservation

Not reserved.

Cultivation

This species has horticultural potential, being similar in most features to the widely cultivated species *W. fruticosa*. The pale mauve flowers of *W. davidii* offer additional appeal over the white flowers of *W. fruticosa*. In view of its rocky habitat *W. davidii* could be expected to be tolerant of shallow stony soils and seasonally dry conditions. It is readily propagated from cuttings (Conn, 1987) and a total of 20 plants from 7 individuals have been established at the Australian National Botanic Gardens, Canberra (M. Richardson, pers. comm.).

Recommendations Summary

Sites 1-4 were nominated for inclusion on the Register of the National Estate by J.D.B. and another 4 sites were nominated independently by D. Albrecht. All sites are now on the Register. Some of the best sites, e.g. Sites 1 and 2 should be declared as flora reserves or nature reserves so as to formally protect the species. Once such action is taken then it is likely that the conservation status of the species will be amended to Rare.

SITE DETAILS

Site 1 - Nullica State Forest Shrub Community - Central Site

(= Site 1 for *Phebalium ralstonii*)

Latitude and Longitude: 36° 57' 52", 149° 46' 14".

Altitude: 250-370 m.

Location: Rock outcrop on a hillside 1.5 km direct north-west of 'Ocean View' homestead, 10 km directly west-south-west of Pambula. The nominated site encompassing this and Site 2 is bounded by straight lines joining the Pambula 1:25,000 map sheet 8824-11-S grid reference points 461052-47450470-476055-461059-461052. (See map page 212).



Looking south-west from the Lochiel-Back Creek road toward Site 1. The shrub community supported by this site can be seen on the lower hillsides behind the hill in shadow. There is a sharp transition line between the shrub community and the adjacent open-forest.

Land Status: Nullica State Forest.

Area: ca. 15 ha.

Population: An estimated 800-1000 mature plants and numerous seedlings.

Habitat

Soil: Skeletal humus-rich brown loam.

Substrate: Ignimbrite with extensively exposed sheets of rock.

Topography: Extensive rock outcropping on steep lower slopes of hillside overlooking a creek in hilly terrain.

Aspect: Northerly.

Vegetation: Shrub community dominated by *Kunzea ambigua*, *Melaleuca armillaris* and *Acacia subtilinervis*. Other associated shrub species include *Platysace lanceolata*, *Beyeria lasiocarpa*, *Lasiopetalum ferrugineum*, *Lepidosperma concavum*, *Dodonaea multijuga*, *Olearia iodochroa* and *Phebalium ralstonii*.

Threat: See summary section.

Recommendation: This site is now on the Register of the National Estate. It also supports populations of 250-300 mature plants of the nationally Vulnerable *Phebalium ralstonii* and 100-150 mature plants and numerous seedlings of the Rare *Acacia subtilinervis*.

Survey Date: 20/7/86.

Voucher Specimen: J.D.B. and D. Albrecht No. 1991.

Site 2 - Nullica State Forest Shrub Community - East Site

(= Site 2 for *Phebalium ralstonii*)

Latitude and Longitude: 36° 58' 00", 149° 46' 40".

Altitude: 220-300 m.

Location: Rock outcrops on hillsides surrounding the junction of two small creeks 800 m directly north-west of 'Ocean View' homestead, 10 km directly west-south-west of Pambula. The nominated site encompassing this and Site 1 is bounded by straight lines joining the Pambula 1:25,000 map sheet 8824-11-S grid reference points 461052-47450470-476055-461059-461052. (See map page 212).

Land Status: Nullica State Forest.

Area: ca. 10 ha.

Population: An estimated 200 mature plants and occasional seedlings.

Habitat

Soil: Skeletal brown loam.

Substrate: Extensively exposed ignimbrite rock and small boulders.

Topography: Ignimbrite rock outcropping on adjacent, moderately steep hillsides in hilly terrain.

Aspect: Predominantly westerly and northerly but occasionally easterly.

Vegetation: Shrub community dominated by *Kunzea ambigua*, *Melaleuca armillaris*, *Allocasuarina littoralis* and *Acacia subtilinervis*. The sub-shrub layer includes *Lasiopetalum ferrugineum*, *Lepidosperma concavum*, *Boronia rigens* and *Phebalium ralstonii*.



Part of the shrub community at Site 2. The low mid-green shrubs in the immediate foreground are *Westringia davidii* and the taller silvery green shrubs behind are the Rare species *Acacia subtilinervis*.

Threat: See summary section.

Recommendation: This site is now on the Register of the National Estate. It also supports populations of 200-300 mature plants of the nationally Vulnerable *Phebalium ralstonii*, 250-300 mature plants and numerous seedlings of the Rare *Acacia subtilinervis* and is the site of a highly disjunct southern occurrence of *Boronia rigens*.

Survey Date: 20/7/86.

Voucher Specimen: J.D.B. and D. Albrecht No. 1983.

Site 3 - Box Range Shrub Community Site A

(= Site 3 for *Phebalium ralstonii*)

Latitude and Longitude: 36° 56' 42", 149° 46' 04".

Altitude: 220-320 m.

Location: Rock outcrop and associated cliffs at head of east-running creek at the south-east corner of Box Range Farm property, 9 km direct west-south-west of Pambula. The nominated site is bounded by straight lines joining the Pambula 1:25,000 map sheet 8824-11-S grid reference points 46500720-46320762-46330775-46600770-46550750-46620740-46500720. *Westringia davidii* occurs on the upper central and southern parts of the site. (See map page 213).



Looking south-south-west to the southern half of Site 3. The northern half is hidden by the hill in the foreground.

Land Status: Private freehold.

Area: ca. 8 ha.

Population: An estimated 100 mature plants and a few seedlings.

Habitat

Soil: Skeletal humus-rich black loam.

Substrate: Rhyolite, extensively exposed.

Topography: Rock outcrop on upper slope of a hillside. The outcrop is bisected by a deep gorge and drops away to sheer cliffs on the lower side.

Aspect: North-east to south-east.

Vegetation: Shrub community including *Kunzea ambigua*, *Melaleuca armillaris*, *Platysace lanceolata*, *Lepidosperma urophorum*, *L. laterale*, *Plectranthus parviflorus*, *Phebalium ralstonii*, *Acacia subtilinervis* and *Pseudanthus divaracatissimus*. The site is surrounded by *Eucalyptus agglomerata* - *E. globoidea* - *E. sieberi* - *Allocasuarina littoralis* open-forest.

Threat: See summary section.

Recommendation: This site is now included on the Register of the National Estate. This site also supports populations of about 150 mature plants of the nationally Vulnerable *Phebalium ralstonii*, about 20 mature plants of the Rare *Pseudanthus divaracatissimus* and several hundred mature plants of the Rare *Acacia subtilinervis*.

Survey Dates: 14/7/86 and 21/9/87.

Voucher Specimen: Collected by D. Albrecht and M. Parris.

Site 4 - Box Range Shrub Community Site C

(= Site 4 for *Phebalium ralstonii* and Site 1 for *Zieria* sp. 15)

Latitude and Longitude: 36° 56' 28", 149° 45' 47".

Altitude: 270-310 m.

Location: Rocky slopes near head of small creek on the southern part of Box Range Farm property. The nominated site is bounded by straight lines joining the Pambula 1:25,000 map sheet 8824-11-S grid reference points 45920785-46050825-46180820-46280790-46220778-46130788-46050778-45920785.

Westringia davidii is confined to the upper eastern section of the nominated site. (See map page 213).

Land Status: Private freehold.

Area: ca. 1 ha.

Population: ca. 50 mature plants and numerous seedlings.

Habitat

Soil: Shallow humus-rich dark brown loam.

Substrate: Rhyolite, extensively exposed.

Topography: Rock outcropping on mid slope of moderately steep hillside.

Aspect: North.

Vegetation: Shrub community dominated by *Kunzea ambigua*, *Melaleuca armillaris* and *Acacia subtilinervis* but also including *Platysace lanceolata*, *Plectranthus parviflorus* and *Phebalium ralstonii*.

Threat: See summary section.

Recommendation: This site is now included on the Register of the National Estate. The site also supports populations of about 50 mature plants of the nationally Vulnerable species *Phebalium ralstonii* and a few hundred plants of the Rare *Acacia subtilinervis*. The only known population (about 40 plants) of the Endangered species *Zieria* sp. 15 occurs on the western part of the nominated site.

Survey Dates: 14/7/86 and 21/9/87.

Voucher Specimen: Not collected.

Site 5 - Ocean View

(= Site 5 for *Phebalium ralstonii*)

Latitude and Longitude: 36° 58' 30", 149° 46' 53".

Altitude: 310-360 m.

Location: Rock outcrop 600 m direct south-south-west of 'Ocean View' homestead. The site is centred on the Pambula 1:25,000 map sheet 8824-11-S grid reference point 47600420. (See map page 212).

Land Status: Private freehold.

Area: ca. 2 ha.

Population: About 100 mature plants and occasional seedlings.

Habitat

Soil: Skeletal loam.

Substrate: Rhyolite, extensively exposed.

Topography: Rock outcrop on lower slopes of moderately steep hillside.

Aspect: North-east.

Vegetation: Shrub community dominated by *Kunzea ambigua* and *Acacia subtilinervis* but also including *Stypandra glauca*, *Melaleuca armillaris*, *Plectranthus parviflorus*, *Lomandra confertifolia*, *Persoonia linearis*, *Platysace lanceolata*, *Dodonaea triquetra*, *Phebalium ralstonii*, *Acacia myrtifolia* and *Lasiopetalum ferrugineum*. The site is surrounded by *Eucalyptus sieberi* - *E. agglomerata* - *Allocasuarina littoralis* open-forest.

Threat: See summary section.

Recommendations: See summary section. This site also supports a population of about 30 mature plants of the nationally Vulnerable *Phebalium ralstonii*.

Survey Date: 1/8/86.

Voucher Specimen: J.D.B. and M. Parris No. 2026.

Additional Sites

The following sites supporting *W. davidii* were surveyed independently by D. Albrecht (pers. comm. and unpublished report) and were thus not re-surveyed by J.D.B. The best four of these sites (as indicated below) were nominated (and are now included) independently by D. Albrecht (pers. comm.) for inclusion on the Register of the National Estate because of their rare plant habitat values. All these sites are within Nullica State Forest.

Albrechts Rock Outcrop No.	Grid Reference for Centrepoint of Site	Nominated for Register of National Estate
1	Pambula Sheet 8824-11-S: 489977	Yes
3	Pambula Sheet 8824-11-S: 464046	No
4	Pambula Sheet 8824-11-S: 46350340	No
5	Eden Sheet 8823-1-N: 47309930	Yes
6	Eden Sheet 8823-1-N: 46759957	No
7	Eden Sheet 8823-1-N: 47359915	Yes
8	Eden Sheet 8823-1-N: 46759825	Yes

 = areas of shrub community



55'

Zieria sp.14(sp."P")
Box Range North Site
(Site 1)

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Zieria sp.15(sp."Q")
Box Range South Site
(Site 1)

Phebalium ralstoni & Westringia davidii
Box Range Shrub Community Site C
(Site 4)

Phebalium ralstoni & Westringia davidii
Box Range Shrub Community Site A (Site 3)

Phebalium ralstoni
Box Range
Shrub Community -
Site B (Site 10)

