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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Zieria sp. 1 (sp. "M"; Bomaderry) Family: Rutaceae

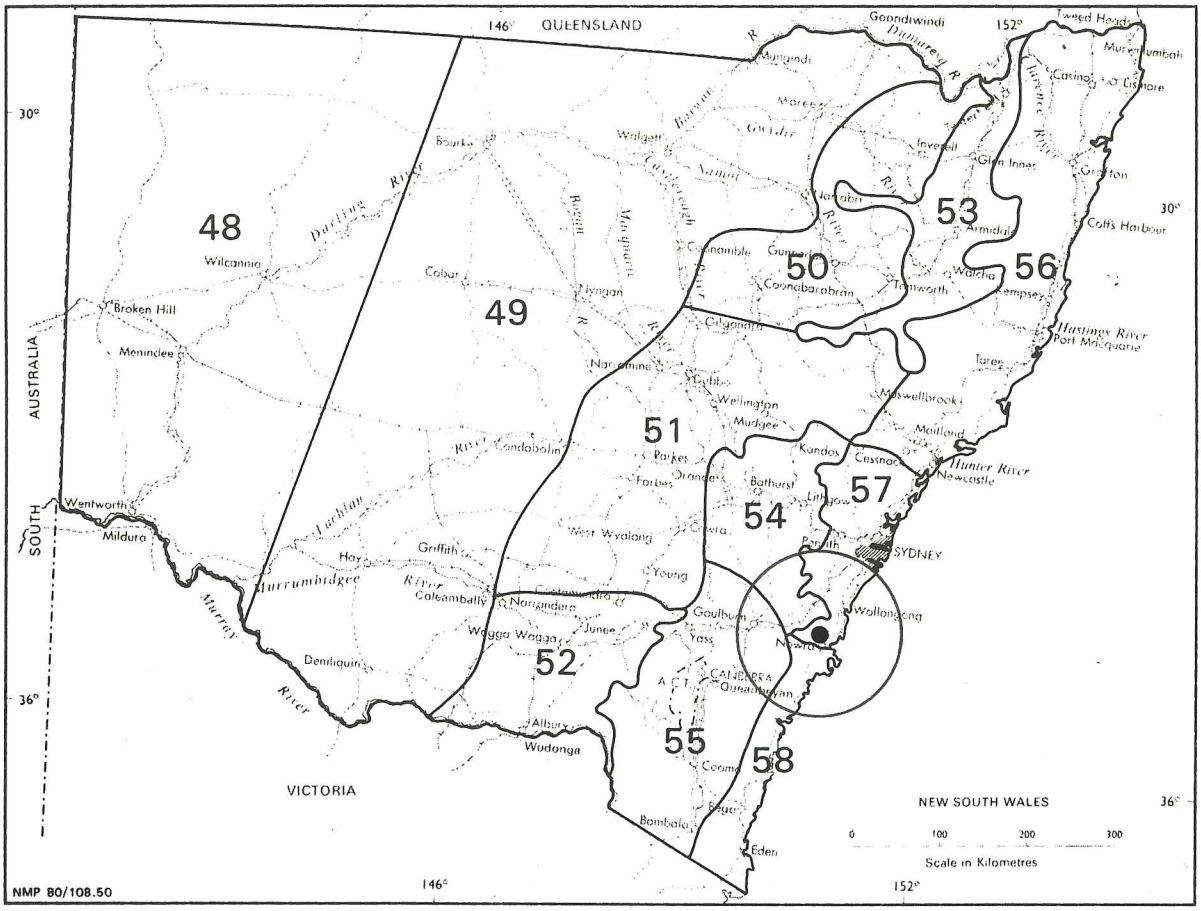
Conservation Status: Endangered (Code 2E/N/58)

Close-up showing the small white flowers and small, hairy trifoliolate leaves.

Description

Much-branched rounded to somewhat straggly shrub to 50 cm high. *Leaves* opposite, small and comprised of three leaflets (trifoliolate) with both surfaces covered with a dense velvety layer of mostly stellate hairs. The central leaflet is 7-10 mm long and 5-8 mm wide whilst the secondary leaflets are similar in shape but slightly smaller (approximately three-quarters the size). *Flowers* white with 4 broad lanceolate petals, arranged in small 3-7-flowered clusters arising from the leaf axils on a common stalk up to 10 mm long. The flower

Distribution of Zieria sp.1(sp."M")



clusters are surrounded by 4 large, green, leaf-like bracts. *Fruits* not seen but if present would be deeply divided 4-chambered capsules. **Flowering:** September-October.

A typical shrub of *Zieria* sp. 1 growing amongst small sandstone boulders.

Distribution

Known only from a single population of about 120 plants distributed over an area of 1 ha beside Bomaderry Creek near Bomaderry at the southern boundary of the Central Coast region of New South Wales. Prior to its re-discovery in 1987 by M. Richardson and Mrs F. Davies from the Australian National Botanic Gardens, Canberra, it had been recorded only twice (J. Armstrong, pers. comm.). The Type collection was made in 1883 from the 'lower Shoalhaven' and the second collection was made in 1943 from 'Bomaderry Creek'. In 1976 Armstrong (pers. comm.) conducted an unsuccessful search for the species along Bomaderry Creek. During a second search by Richardson and Davies the main colony of 100 plants was re-discovered in an extremely localised area about 100 m from the creek. A

second, small colony of 20 plants was very recently discovered by K. Mills (pers. comm.) about 150 m south of the main colony. These plants are not within the area nominated for inclusion on the Register.

Taxonomic Status

Since its re-discovery several visits at different times of the year have been made to the site but at no stage have any plants bearing fruit been found (J. Armstrong, pers. comm.).

Hand pollination of flowers on plants grown in the glasshouse (by JDB) with pollen obtained from a close relative (*Z. littoralis* Armstrong ms) failed to produce fruit. Armstrong also tested pollen viability from plants in the field and found it to be 95% sterile (Richardson 1980). These observations of sterility suggest the 'species' may be of hybrid origin and if so Armstrong (pers. comm.) believes its most likely parents are *Z. cytisoides* (chromosome number n = 36) and either the undescribed *Z. littoralis* Armstrong ms (n = 18) or *Z. minutiflora* (n = 18). Neither of the possible 3 parents now occur close by. Chromosome studies of the probable hybrid would assist in resolving the taxonomic status of this taxon. A hybrid involving the above species would be expected to have chromosome number n = 27.

If the hybrid status of the species is proved then interesting questions arise as to the age of the Bomaderry population and how the plants have spread to appear as 120 individuals scattered over more than 1 ha. If the species is a hybrid then it is likely that both previous collections would have come from this one population. This distinct self-maintaining entity is of particular botanical interest and should be protected. Armstrong (pers. comm.) proposes to formally describe this taxon.

Habitat Summary

Level area with skeletal grey, sandy loam overlying sandstone and supporting *Eucalyptus* open-forest and woodland with an open, shrub understorey.

Threats Summary

This small population close to urban development is highly vulnerable to localised disturbance or development. Recent publicity of the species re-discovery led to the revelation that the site was in the path of a proposed road. When initially alerted to the occurrence and significance of this species the

local council expressed a sympathetic attitude towards its protection and indicated that they would re-route the road to avoid the site (M. Richardson, pers. comm.).

Recently the Shoalhaven Branch of the Australian Conservation Foundation has become concerned (Van-Steenwyk, pers. comm.) that the route now proposed for the road is too close to the *Zieria* population and may have an adverse impact on the species.

Reservation

Not reserved.

Cultivation

A total of 33 plants originating from 5 individuals have been established from cuttings at the Australian National Botanic Gardens, Canberra. Strike rates have been good (M. Richardson, pers. comm) (90%+ for JDB at CSIRO) and the plants are healthy. The small inconspicuous flowers do not endow this species with horticultural appeal.

Recommendations

The site should be protected and its significance continue to be recognised in any development plans for the area. Site 1 which encompasses the main colony of 100 plants is now included on the Interim List of the Register of the National Estate but this area should be slightly enlarged to include the recently discovered colony of 20 plants.

SITE DETAILS

Site 1 - Bomaderry Creek

Latitude and Longitude: 34° 50' 40", 150° 35' 15".

Altitude: 35 m.

Location: 2.9 km north-west of the Princes Highway at Bomaderry on Illaroo Road, then 1.2 km north-east on track along power lines towards Bomaderry Creek. The site is centred on the Berry 1:25,000 map sheet 9028-111-N grid reference point 79354135. (See map pages 242 and 243).

Looking south-west across a cleared turn-around area and along a vehicular track which follows powerlines back to Illaroo Road. The turn-around area and track are adjacent to the south side of the main *Zieria* population.

Land Status: Appears to be Crown Land.

Area: ca. 1 ha.

Population: 100 mature, healthy plants in the main colony and 20 mature plants in the small colony. No seedlings were found.

Habitat

Soil: Skeletal grey, sandy loam.

Substrate. Sandstone bedrock, with numerous loose sandstone rocks on the surface.

Aspect: East

Topography: Plateau area sloping very gently to breakaway into creek.

Vegetation: *Eucalyptus globoidea - E. gummifera - E. maculata - E. agglomerata* woodland/open-forest with shrub understorey including *Kunzea ambigua, Leptospermum flavescens, Acacia suaveolens, Banksia spinulosa, Daviesia ulicifolia, Platysace lanceolata, Hakea sericea, Lomandra glauca, Themeda triandra* and *Plectranthus parviflorus*.

The *Zieria* shrubs are concentrated in the more open areas of the site shown in this photo, but the population extends into the adjacent open-forest.

Threats: A vehicular track runs along the south side of the main population, ending in a cleared turn-around area. Any widening of the track or turn-around area on the north side would threaten the *Zieria* habitat. An underground pipeline crosses Bomaderry Creek immediately east of the site. Any major maintenance or re-development works associated with this pipeline could impact on the *Zieria* site unless due care is taken.

Survey Date: 10/12/87.

Voucher Specimen: J.D.B. No. 2296.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O= Occurrence of Zieria sp.1(sp."M")
(Site 1)
Nominated Site
Berry 1:25,000
map sheet 9028-3-N
BOMADERRY
NORTH NOWRA
NOWRA
Bomaderry Creek
Abernethys Creek
Mulgen Creek
PRINCES HIGHWAY
SOUTH COAST
Garbage Depot
Abattoirs
Sawmill
Rubber Factory
Oval
Reservoir
Football Field
Technical College
Electricity Sub-station
Bush Fire Brigade
Playing Field
ROCK HILL LOOKOUT
"Cliftops"
Thompsons Point
"The Depot Farm"
Camping Area
Boat Ramp
GOLF CLUB
NOWRA BRIDGE
Swimming Pool
Hospital
NOWRA PARK
War Memorial
NOWRA HIGH SCHOOL
Sewage Treatment Works
Level Crossing
Nowra Sec 2
"Rosebank"
"Ross Ness"
"Mundroola"
"Mountview"
"Maylands"
Hayshed
132,000 Volt
PESTELLS LANE
BELLS LANE
TAYLORS LANE
LAMONDS LANE
BOOLONG
RIVERVIEW RD.
MILTON 57km
35′
Kilometres 0·75 0·5 0·25 0
gravel pit
; Police Station; Church
th height), Landmark; Other
ELEVATIONS: To the nearest metre on the Australian Height Datum.
CONTOU

Sketch map giving location of Bomaderry Ck. Zieria sp. nov
population