Zieria involucrata

R.Br ex Benth.

Common name: **none**

Family: **Rutaceae**

The following information is provided to assist authors of Species Impact Statements, development and activity proponents, and determining and consent authorities, who are required to prepare or review assessments of likely impacts on threatened species pursuant to the provisions of the *Environmental Planning and Assessment Act* 1979. These guidelines should be read in conjunction with the NPWS *Information Circular No. 2: Threatened Species Assessment under the EP&A Act: The '8 Part Test' of Significance* (November 1996).

Survey

Survey for *Zieria involucrata* may be undertaken at any time of the year. A combination of leaf and stem characteristics as well as habit should enable the species to be identified in the absence of flowers. However, the species is most readily observed during its flowering season between September to October when plants are covered in a dense mass of white flowers.

Survey should not necessarily be confined to areas of intact remnant vegetation because *Z. involucrata* plants have also been recorded growing in disturbed environments.

Zieria involucrata is found on steep to gentle, mid- to lower slopes and valleys, usually on Hawkesbury sandstone. Surveyed sites cover a range of aspects, but most occur in or adjacent to gullies which support sheltered forest, although some populations extend upslope into drier vegetation. The canopy typically includes *Syncarpia glomulifera* subsp. *glomulifera* (turpentine), *Angophora costata* (smooth-barked apple), *Eucalyptus agglomerata* (blue-leaved stringybark), and *Allocasuarina torulosa* (forest oak). A dense shrub layer is often present. In Hornsby Shire, the species is most strongly associated with *E. agglomerata* open-forest at the interface between the lower Hawkesbury and upper Narrabeen Group strata (Ecological Surveys & Planning 1998).

Where new sites are located, site details including plant numbers, habitat and location should be recorded and forwarded to the DEC.

Life cycle of the species

The ecology of *Z. involucrata* is described in the draft recovery plan (DEC 2004) and summarised in the species profile.

Proposals that are likely to impact upon the life cycle of the species include those that contribute to the following:

- Loss of individuals

The significance of a particular activity that physically destroys individual plants will require an examination of the number of plants to be destroyed in relation to the size of the population and a discussion of how recruitment, gene flow and the overall health of the population will be affected. Translocation should not be considered as an appropriate means of compensating for the loss of individuals due to the uncertainty associated with the long-term survival of translocated plants.

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- Loss and fragmentation of habitat

As the breeding system of *Z. involucrata* is not well understood, the effects of loss and fragmentation of its habitat are not known. Destruction of habitat may place a local population at risk of extinction.

- Altered fire regimes

The response of adult plants of the species to fire is uncertain. Auld *et al.* (2000) have classed the species as fire sensitive, but with limited resprouting capability. Most observations to date are that plants are usually killed by fire (Maryott-Brown 1994). Proposals that result in the frequent burning (ie successive fires <10 years apart) of sites are considered likely to impact upon recruitment of the species. Recommended fire frequencies for the species are provided in the draft recovery plan (DEC 2004).

- Modification of habitat

Development in close proximity to *Z. involucrata* sites is likely to cause modification of habitat through altered hydrological conditions, soil pH and nutrient levels, weed invasion, potential introduction of plant pathogens and altered fire frequency. Subsequent increases in pedestrian and/or vehicular traffic through sites may result in trampling, soil compaction, soil erosion and rubbish dumping. Other proposals that result in grazing, slashing, spraying or burning of *Z. involucrata* habitat are also likely to result in the modification of that habitat.

- Damage to the soil seedbank

Disturbances that will destroy or prevent germination of *Z. involucrata* seed include rubbish dumping, the removal of leaf litter and topsoil, weed invasion and spraying with residual herbicides that are capable of killing seeds in the soil. Frequent disturbances (from slashing, grazing, herbicide spraying or burning for example) may prevent the soil seed bank from being replenished.

Threatening processes

There are six key threatening processes listed in Schedule 3 of the NSW *Threatened Species Conservation Act* 1995 (TSC Act) that are potentially relevant to *Z. involucrata.* These are:

- *High frequency fire resulting in the disruption of life cycle processes in plants and animals and the loss of vegetation structure and composition;*
- *Clearing of native vegetation;*
- *Bushrock removal;*
- *Alteration to the natural flow regimes of rivers, streams, floodplains and wetlands;*
- *Infection of native plants by Phytophthora cinnamomi; and*
- *Anthropogenic climate change.*

Other threatening processes relevant to this species include slashing and herbicide spraying to maintain road verges, grazing and trampling by livestock, weed invasion, rubbish dumping (including green waste, household rubbish and construction materials) and the other disturbances associated with adjacent urban development.

Viable local population of the species

The viable population size for *Z. involucrata* is unknown. In the absence of a detailed assessment demonstrating otherwise, all populations should be assumed to be viable.

A significant area of habitat

Assessment of habitat significance for *Z. involucrata* requires consideration of the following:

- number of *Z. involucrata* plants present (including consideration of the soil seed bank);
- proportion of the local population present;
- location in relation to the current distributional limits of the species;
- size, condition and connective importance of the habitat;
- uniqueness of habitat; and
- management potential including the likelihood of ameliorating any existing threatening processes.

The DEC considers that all viable populations of *Z involucrata* occupy significant area of habitat

until such time as adequate and representative examples are conserved across its range.

Isolation/fragmentation

The distance between populations that will create genetic isolation is unknown because the pollen vectors for *Z. involucrata* are unknown. Seed dispersal is likely to be localised, despite the possibility of secondary dispersal by ants, so interaction via this mechanism is unlikely.

The clearing of interconnected or proximate areas of habitat for the species (or its pollen/seed vectors) is clearly undesirable as this may expose populations to an increased risk of genetic isolation and subsequent decline.

Regional distribution of the habitat

The known distribution of *Z. involucrata* is confined to the Sydney Basin Bioregion as defined in the Interim Biogeographic Regionalisation of Australia (Thackway & Cresswell 1995).

Limit of known distribution

Z. involucrata has a disjunct distribution north and west of Sydney from Melon and Mogo Creeks in Yengo National Park in the north to Hillside in the south. The western limit of its known distribution occurs on the Blue Mountains Plateau north of Katoomba (DEC 2004).

Adequacy of representation in conservation reserves or other similar protected areas

Z. involucrata is not considered to be adequately represented in conservation reserves across its range.

Critical habitat

Critical habitat has not been declared for *Z. involucrata.*

For further information contact

Threatened Species Unit, Metropolitan Branch, Environment Protection and Regulation Division, Department of Environment and Conservation, PO Box 1967, Hurstville NSW 2220.
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References

Auld, T.K., Keith, D.A. and Bradstock, R.A. (2000) Patterns in longevity of soil seedbanks in fire-prone communities of south-eastern Australia. *Australian Journal of Botany* 48: 539-548.

The Department of Environment and Conservation (NSW) (2004) *Draft Zieria involucrata Recovery Plan.* DEC (NSW), Hurstville.

Ecological Surveys & Planning Pty Ltd (1998) *Hornsby Shire Threatened Biota Management Plan.* Unpublished report for Hornsby Shire Council.

Maryott-Brown, K. (1994) *Recovery plan for Zieria involucrata.*. Australian Nature Conservation Agency Endangered Species Program Project No. 371/7.

Thackway, R. & Cresswell, I.D. (1995). *An Interim Biogeographic Regionalisation for Australia: A Framework for Setting Priorities in the National Reserves System Cooperative Program.* Version 4.0. Australian Nature Conservation Agency, Canberra.