Zieria granulata

(F. Muell.) C. Moore ex Benth

Common name: Illawarra Zieria, Hill Zieria

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 granulata may be undertaken at any time of the year. A combination of leaf characteristics and habit should enable the species to be identified in the absence of flowers. The species is most readily observed however during its flowering season when plants are covered in a dense mass of white flowers.

Survey should not necessarily be confined to areas of remnant native vegetation. *Z. granulata* plants have been recorded growing in highly disturbed environments including along roadsides and fencelines, amongst regrowth in cleared paddocks and in dense Lantana thickets.

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. granulata* is described in the draft recovery plan 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 effected.

- Loss and fragmentation of habitat

As the breeding system of *Z. granulata* is not understood, the effects of loss and fragmentation of its habitat are not known. Total destruction of habitat will place a local population at risk of extinction.

- Modification of habitat

Urban development in close proximity to *Z. granulata* sites is likely to cause modification of habitat through altered hydrological conditions and soil pH, soil nutrification, 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 the regular slashing, grazing, herbicide spraying or burning of *Z. granulata* 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. granulata* seed include rubbish dumping, the removal of leaf litter and topsoil, 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 of the species from being recharged.

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- Altered fire regimes

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 2005).

Threatening processes

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

- *Anthropogenic climate change;*
- *Clearing of native vegetation;*
- *Invasion of native plant communities by bitou bush and boneseed;*
- *Invasion of native plant communities by exotic perennial grasses; and*
- *High frequency fire resulting in the disruption of life cycle processes in plants and animals and the loss of vegetation structure and composition.*

Other threatening processes include slashing and herbicide spraying to maintain paddocks and road verges, grazing and trampling by livestock, weed invasion, rubbish dumping (including green waste, household rubbish and construction materials) and the modification of habitat associated with urban development.

Viable local population of the species

The viable population size for *Z. granulata* 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. granulata* requires consideration of the following:

- The number of plants that are present, including consideration of the soil seed bank;
- The proportion of the local population that is present at the site;
- The location of the site in relation to the current distributional limits of the species;
- The size, condition and connective importance of the habitat;
- The uniqueness of the habitat; and
- The management potential of site including the likelihood of ameliorating existing threatening processes.

The DEC considers all viable populations as occupying a significant area of habitat until such times as adequate and representative examples are conserved across the species' range.

Isolation/fragmentation

Z. granulata habitat has been fragmented by habitat clearance for agriculture, quarrying, residential development and road construction throughout its range.

The distance between populations of *Z. granulata* that will create genetic isolation is unknown as the species' pollen vectors are unknown. Seed dispersal is localised so interaction via this mechanism is unlikely.

The clearing of interconnected or proximate areas of habitat for the species (or its pollen 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. granulata* is confined to the Sydney Basin Bioregion as defined in the IBRA (Thackway & Cresswell 1995).

Limit of known distribution

The known distribution of *Z. granulata* extends from Oak Flats in the north to Toolijooa in the south. The western limit of distribution follows the upper slopes of the Illawarra escarpment.

An extant population of the species occurs at Kanahooka, eight kilometres north of Oak Flats. This population is likely to have been transported to the site via propagules contained in fill material (Mills & Jakeman 1993; Robinson 1999).

Adequacy of representation in conservation reserves or other similar protected areas

Z. granulata is not considered to be adequately represented in conservation reserves.

Critical habitat

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

For Further Information contact

Threatened Species Unit, Metropolitan Region, Environment Protection and Regulation Division, Department of Environment and Conservation (NSW), PO Box 1967, Hurstville NSW 2220. Phone 02 9585 6678.

www.npws.nsw.gov.au

References

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.

Mills, K. and Jakeman, J. (1993) Survey of the rare plant species *Zieria granulata* (Rutaceae) Illawarra Region, New South Wales. Unpublished report prepared for Kiama Municipal Council.

Robinson M.V. (1999) Section 5A Assessment of the Endangered *Zieria granulata* at the proposed North Kiama By-pass. Unpublished report for the NSW Roads and Traffic Authority.