Zieria covenyi

J.A. Armstrong Unpublished

Previously known as *Zieria sp. F*

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) and with the accompanying "Threatened Species Information" sheet.

Survey

Identification is not dependent on flowers being present. *Z. covenyi* is most easily confused with *Z. cytisoides* which may also grow in similar habitats. *Z. covenyi* is distinguished from *Z. cytisoides* in having a narrow central leaflet (to 10mm), with the upper surface of the leaves dotted with oil glands and leaf margins recurved to revolute. The flowers are at least as long as the leaves (Harden 1991; Armstrong unpubl.)

Surveys should target any area within potential habitat where plants of *Zieria* species occur, particularly if there is evidence of hybridisation. The distribution of the Mount Sinai soil landscape on which *Z. covenyi* is found is highly restricted, with the only other main occurrences on the King's Tableland and on the southern side of the Govetts and Grose River Gorges.

Sandstone Plateau Forest is a widespread community at higher altitudes and is also potential habitat for this species, although no confirmed records exist.

The number of plants can be difficult to record as it is often not clear if a plant is separate or a clone without digging up the root system.

Life cycle of the species

The biology and life cycle of *Z. covenyi* is poorly known. The sole population has survived at the Narrow Neck site for over 60 years. Any changes to population size over this time has not been documented.

Vegetative spread and regeneration by root suckers appears to have been sufficient to maintain the population. The population of *Z. covenyi* has poor genetic variability, as is typical of clonal species (Armstrong unpubl.). It is likely that the current gene pool of *Z. covenyi* is a relic of the original genetic diversity. Species with poor genetic diversity are more prone to extinction through disease and rapid environmental change. *Z. covenyi* is vulnerable, therefore, to any activity that results in such change or reduces the resistance or adaptability of the population.

Z. covenyi is extremely rare and represented by a single population. The loss of any hybrids or clones from such a small population is likely to have a negative impact on the regenerative potential (depending on the extent of damage) and the genetic variability or the species. Destruction of plants may also increase the vulnerability of the species to chance events such as disease and fire.

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The significance of a particular activity which 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 whether and how regeneration and the overall health of the population will be affected.

In the absence of seed production, fire does not appear to play an important role in the lifecycle of *Z. covenyi* other than to promote new growth. High frequency and high intensity fire events are likely to put the population under stress, particularly if there is also significant root damage. The regenerative capacity of root suckers and the time required for them to develop into mature plants is unknown.

Habitat modification affects the life cycle of *Z. covenyi* by altering the ecological processes within suitable habitat. Such changes may result in the loss of individuals and a decline in regenerative ability. Habitat modification may include excavation and dumping of soil impacting on soil characteristics and drainage conditions and weed invasion.

Threatening processes

"High frequency fire resulting in the disruption of life cycle processes in plants and animal and loss of vegetation structure and composition" is listed in the NSW *Threatened Species Conservation Act* 1995 as a key threatening process which may affect *Z. covenyi*.

Potential impacts on *Z. covenyi* should be considered when management undertakes fire works that may affect *Z. covenyi* habitat.

Other identified threats include widening of the fire trail and associated drainage works, the collection of scientific and horticultural specimens and disease.

Viable local population

The size of a viable population is unknown. *Z. covenyi* has survived at the site for over 60 years with an estimated 100-150 plants and 20-30 hybrids recorded in 1999. Under relatively constant conditions this population size is probably adequate to maintain population levels by vegetative recruitment. Longer-term survival will depend, however, on the adaptability of the population to environmental change, which in turn depends on the level of genetic diversity within the population.

A significant area of habitat

Although potential habitat of *Z. covenyi* is widespread in the local area, the known habitat is currently restricted to an area of only about. 1.2ha. Any part of this area or any new area must be considered as significant.

Isolation/fragmentation

Z. covenyi occurs as one small and isolated population which has been divided by construction of a fire trail along the Narrow Neck Peninsula. Any further fragmentation is undesirable.

Regional distribution of the habitat

Z. covenyi occurs in Blue Mountains Sandstone Plateau Forest on Narrabeen Sandstone which is restricted to the Sydney Basin Bioregion

Limit of known distribution

Z. covenyi is restricted to one site on the Narrow Neck Peninsula in the Central Blue Mountains. This restricted distribution may be explained through natural evolutionary development, lack of targeted survey or, alternatively, restricted habitat requirements that are currently unknown. A targeted survey along the length of Narrow

Neck Peninsula on either side of the fire trail failed to find further plants.

Adequacy of representation in conservation reserves

The single population of *Z. covenyi* is protected within the Blue Mountains National Park.

Critical habitat

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

For further information contact

Threatened Species Unit, Central Directorate, NSW NPWS, PO Box 1967, Hurstville NSW 2220. Phone (02) 9585 6678 or visit our website at www.npws.nsw.gov.au.

References

Armstrong, J.A. (Unpubl.) Systematics of *Zieria* (Rutaceae) Draft manuscript.

Harden, G.J. (Ed.) (1991) *Flora of New South Wales Vol. 2.* UNSW Press, Kensington.