# *Grevillea juniperina* subsp. *juniperina*

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

*Grevillea juniperina* subsp. j*uniperina* is a small to medium sized shrub which can be readily identified in the field at any time of the year. It is unlikely to be confused with any other species of *Grevillea* growing in the region. Distinctive features include the often spreading or horizontal habit, short lateral branches and prickly, narrow and often bright green leaves. Distinctive "spider" flowers may occur at anytime of the year in a range of colours including red, pink, yellow, pale orange and green.

Potential habitat comprises woodland areas on Wianamatta Shale and Tertiary alluvium (often close to the boundary between the two geologies), and is usually associated with lateritic gravels. Populations are often found in relatively open and/or disturbed sites and wetter areas. Key associated species include *Eucalyptus tereticornis, E. fibrosa, Melaleuca decora, Bursaria spinosa, Dillwynia sieberi, Daviesia ulicifolia, Goodenia hederacea* and *Themeda australis*.

## Life cycle of the species

Little information is available on the life cycle of *G. juniperina* subsp. *juniperina*. Plants are generally killed by fire and regeneration is only from seed. The production and accumulation of seed in the soil seed bank and seed germination, therefore, are likely to be critical parts of the life cycle.

Inappropriate fire regimes are a primary threat to the life cycle of *G. juniperina* subsp. *juniperina* . Urban development in which buildings are located close to populations may result in the absence of fire or low fire frequency resulting in reduced seedling recruitment. The smaller the remnant the more significant this impact is likely to be. High fire frequency (e.g. control burns to protect buildings) is also likely to impact on seedling recruitment if there is insufficient time intervals between successive fires to allow the accumulation of seed in the soil seedbank. Developments without an adequate buffer or fire protection zone between the bushland and buildings are not likely to be compatible, therefore, with the fire requirements of the species.

The growth and maturation of plants of *G. juniperina* subsp. j*uniperina* may be affected by any development or activity which impacts adversely on its habitat. Urban development, including road construction, in close proximity to populations is likely to cause degradation of habitat by overshading, altered hydrology, increased soil nutrients, introduction of weedy species, and dumping of fill and waste. High levels of disturbance often results in dense regrowth of aggressive native or exotic species, reducing suitable open habitat conditions for *G. juniperina* subsp. j*uniperina*. Rural subdivision may result in grazing of habitat by domestic animals, introduction of fill and high nutrient levels. Although larger plants of *G. juniperina* subsp. *juniperina* are usually left by animals it is likely that young plants are more palatable. Sites of

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*G. juniperina* subsp. *juniperina*.which are actively grazed appear to have a dominance of larger, mature plants with limited seedling recruitment.

## Threatening processes

Clearing of native vegetation is a key threatening process listed on Schedule 3 of the TSCA and relevant to *G. juniperina* subsp. *juniperina*. Impacts may include direct loss of habitat and local populations, reduced size of populations, physical and genetic isolation of populations and reduced size and quality of habitat. The core distribution of *G. juniperina* subsp. *juniperina* coincides with major growth areas. The gradual loss of small areas of habitat has a marked cumulative effect. Remaining patches of *G. juniperina* subsp. j*uniperina* are surrounded by urban development and subject to high levels of disturbance including rubbish dumping, trampling, road works, changes in drainage, recreational activities, weed invasion and inappropriate fire regimes.

High fire frequency resulting in the disruption of life cycle processes and loss of vegetation structure and composition is also listed on Schedule 3 of the TSCA and should be considered in relation to *G. juniperina* subsp. *juniperina*. High fire frequency is likely to result in the depletion of the soil seed bank if intervals between fire events are not sufficient for plants to grow to maturity and produce seed. Frequent fire may also promote the growth of weedy species. Infrequent and/or low intensity fires are also a threat to *G. juniperina* subsp. *juniperina* resulting in inadequate seed germination.

## Viable local population of the species

The viable population size for *G. juniperina* subsp. *juniperina* is unknown. Until such information is available all populations should be assumed to be viable.

## A significant area of habitat

Until there is adequate protection of *G. juniperina* subsp. *juniperina*. all sites are considered important and the habitat considered significant. Sites of particular significance would include the following:

- Areas of intact habitat away from high disturbance areas.
- Areas of intact habitat greater than 2 ha.
- Population sizes of >50 plants and a varied age structure with active recruitment of seedlings.

## Isolation/fragmentation

In view of the restricted distribution of *G. juniperina* subsp. j*uniperina* and its occurrence within a range of plant communities, it is likely that populations were once well connected, at least within the core habitat area. Relatively intact corridors can still be identified, particularly in the Blacktown-Mt.Druitt area. Populations of *G. juniperina* subsp. j*uniperina*, however, are becoming increasingly isolated as bushland areas are cleared or degraded. Isolation of populations is likely to result in reduced gene flow and low genetic diversity which may affect long-term viability. Due to limited natural seed dispersal (probably <-3 m) in *G. juniperina* subsp. j*uniperina*, even minimal clearing may act as an effective barrier. The greater the barrier the less potential for recolonisation of sites following local extinctions.

Most developments will create barriers and include the construction of roads, tracks, houses and factories. Activities such as mowing, frequent fires or the dumping of fill may also isolate populations. Degradation of habitat is also likely to cause isolation of populations in *G. juniperina* subsp. j*uniperina* by creating barriers of dense weed growth and reducing availability of potential seedling establishment sites.

## Regional distribution of the habitat.

*G. juniperina* subsp. *juniperina* is restricted to the Sydney Basin Bioregion.

## Limit of known distribution

The northern limit of *G. juniperina* subsp. *juniperina* is at Pitt Town & the western limit is around Londonderry. The southern and eastern limits are at

Kemps Creek and at Quakers Hill respectively. Old records extend further east to the Prospect district, however, these populations are now believed to be extinct.

## Adequacy of representation in conservation reserves or other similar protected areas

One small population of *G. juniperina* subsp. *juniperina* (11 plants) occurs at the edge of Castlereagh Nature Reserve in marginal habitat along the Northern Road. There is an unsubstantiated record from Windsor Downs Nature Reserve (Haddin 1992) although if still present it appears to be uncommon. Populations occur within three council reserves (Nurragingy, Dr Charles Mackay and Durward Reserves) within the Blacktown local government area, however, these are managed primarily as recreational reserves. Most other known sites of *G. juniperina* subsp. *juniperina* occur on privately owned land or on Commonwealth land. *G. juniperina* subsp. *juniperina* is not considered to be adequately conserved.

## Critical habitat

Critical habitat cannot be declared for *G. juniperina* subsp. *juniperina* as it is not listed on Schedule 1 of the TSC Act.

## For Further Information contact

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