



## *Pimelea spicata* R.Br.

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

*Pimelea spicata* is cryptic and difficult to detect, particularly when not in flower, so surveys should not be relied upon unless undertaken whilst the species is flowering. *Pimelea spicata* flowers sporadically throughout the year, with flowering likely to depend upon climatic conditions, particularly rainfall. Flowering times recorded for *P. spicata* vary. Rye (1990) noted flowering period as May - January; Benson and McDougall (2001) noted peak flowering period as March - April; and P. Hogbin (pers. obs) noted abundant flowering in Winter and Spring (June-September) of 2003 after the break of a drought. Given that *P. spicata* flowers opportunistically and peak flowering time may vary from year to year, survey of other known nearby sites supporting *P. spicata* should be used as an indicator of flowering time.

Surveys should not necessarily be restricted to the species' known distribution. In particular, suitable habitat in western Sydney and along coastal Illawarra, outside of the species current known distribution.

Given that the species is small and cryptic, when surveying potential habitat, *P. spicata* needs to be the subject of a specific targeted survey. The targeted survey should be undertaken using the random meander method, favouring suitable habitat areas (ie. open areas), and

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survey effort should be at least one hour per hectare of suitable habitat.

Surveys should aim to determine species presence and, when presence is confirmed, an estimate of population size and area should be obtained.

### Life cycle of the species

Proposals which are likely to effect the life cycle of the species, such that a local population is put at risk of extinction would include proposals that:

- result in total destruction of habitat;
- result in a partial destruction or modification of habitat (including changes to hydrology and nutrification of the soil substrate) which may result in changes to vegetation community structure;
- result in a requirement for frequent fire hazard reduction, so that tap roots are unable to develop or seed banks cannot develop;
- increase vehicular, bike, pedestrian, or other, access to a population; or
- increase rubbish dumping and associated weed invasion or arson (for example, through adjacent residential development).

### Threatening processes

Six key threatening processes currently listed under the *TSC Act 1995* are likely to, or potentially, threaten *P. spicata*.

- 'Clearing of native vegetation', has reduced the habitat of *P. spicata* and resulted in the loss of at least two known populations.
- 'Invasion of native plant communities by exotic perennial grasses' is also a major threat to the survival of *P. spicata*, with *Pennisetum clandestinum* (Kikuyu) competing with *P. spicata* at the majority of sites.
- 'High frequency fire resulting in the disruption of life cycle process in plants and animals and loss of vegetation structure and

*composition*', is likely to threaten the viability of *P. spicata* populations.

- 'Invasion of Native Plant Communities by *Chrysanthemoides monilifera*' may also threaten the viability of the coastal Illawarra populations. *Chrysanthemoides monilifera* (Bitou Bush) has been recorded at all headland coastal Illawarra populations of *P. spicata*.
- Other KTPs that may affect *P. spicata* include: 'Infection of native plants by *Phytophthora cinnamomi*' and 'Anthropogenic climate change'. In addition to these listed key threatening processes, a range of other processes are generally recognised as threatening the survival of *P. spicata* as outlined in the accompanying threatened species information profile.

### Viable local population of the species

Very little is known of what constitutes a viable population of *P. spicata*. In the absence of such information the DEC considers that all known populations of *P. spicata* should be considered viable.

It appears the species is capable of persisting at very small population sizes. Half of all populations support less than 50 individuals, with only six populations supporting >200 plants (Department of Environment and Conservation 2004) (Table 1).

Table 1: Size class distribution for the 30 known extant populations of *Pimelea spicata*

Size class <sup>#</sup>	Number of populations*	% of total no. of popns
≤ 10	7	23
11 ≤ 50	8	27
51 ≤ 100	4	13
101 ≤ 200	5	17
201 ≤ 500	2	6
≥ 501	4	13

<sup>#</sup> number of mature individuals

\*using lowest estimate of population size

### A significant area of habitat

The majority of populations occur over a small area, with 80% of all populations occupying an area of less than 0.5ha (Table 2). Only three populations possess an area of occupancy greater than 1ha. Thus consideration of population area as the only criterion for assessing

significance would result in a large percentage of populations being considered insignificant, and ultimately lost. This would result in unacceptable loss of habitat for this species.

Important considerations are the size and condition of other, nearby, populations, whether those populations are secure, and the condition and security of the population and habitat being assessed.

Using these criteria, the NSW NPWS considers that most *P. spicata* populations should be considered as occupying a significant area of habitat.

Table 2: Area of occupancy (AOO)\* class distribution for the 30 known extant populations of *Pimelea spicata*.

AOO (ha)	Number of populations	% of total no. of popns
≤ 0.01ha	10	33
0.011 ≤ 0.1	6	20
0.11 ≤ 0.5	8	27
0.51 ≤ 1	3	10
≥ 1ha	3	10

\*AOO calculated as defined in IUCN 2000.

### Isolation/fragmentation

*Pimelea spicata* occurs within a highly fragmented urban or urban fringe environment. Given the species' likely restricted pollination and seed dispersal mechanisms, the loss of even small areas of vegetation from currently interconnecting or proximate areas of habitat supporting *P. spicata* is likely to cause isolation. In addition, isolation may be caused not only by vegetation loss, but also by vegetation degradation and weed invasion.

### Regional distribution of the habitat

*Pimelea spicata* has a relatively scattered distribution occurring in two disjunct areas, the Cumberland Plain (western Sydney) and coastal Illawarra, both entirely within the Sydney Basin Bioregion.

### Limit of known distribution

In western Sydney, the species' current known distribution extends from Mount Annan and Narellan Vale in the south to Freemans Reach in the north and from Penrith in the west to Georges Hall in the east. In the Illawarra, the species is associated with coastal headlands and hill tops from Mount Warrigal in the north to

Minnamurra and potentially Gerroa in the south.

### **Adequacy of representation in conservation reserves**

*Pimelea spicata* is not adequately represented within conservation reserves. Only one of the 25 known extant populations of *P. spicata* occurs within a formal conservation reserve: Western Sydney Regional Park. Selected other populations are afforded various levels of environmental protection. A large population occurs within the Prospect Reservoir catchment, managed by the Sydney Catchment Authority. A

population also occurs within the Woodland Conservation Area at Mount Annan Botanic Garden. In addition, a population occurs within the St Marys ADI site within an area that will become a regional parkland to be managed by DEC. Eleven populations occur within community land managed by local government. The majority of these sites are currently managed primarily for their recreation rather than conservation values.

### **Critical habitat**

No critical habitat has been declared for *P. spicata*

### **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 [www.npws.nsw.gov.au](http://www.npws.nsw.gov.au).

### **References**

- Benson, D. & McDougall, L. (2001) Ecology of Sydney plant species Part 8: Dicotyledon families Rutaceae to Zygophyllaceae. *Cunninghamia* 7(2): 241-462.
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- Department of Environment and Conservation (2004) *Pimelea spicata* draft Recovery Plan. Department of Environment and Conservation, Hurstville NSW.
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