



Pultenaea pedunculata

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

Pultenaea pedunculata is a small, inconspicuous mat-forming shrub which is easily overlooked. It can be identified with experience from vegetative features, however, it is best surveyed during the flowering period between August and December. The most distinctive features are the prostrate habit with trailing stems, the orange-yellow and red pea-flowers which are borne on stalks to 20mm long and the dark green narrow leaves with a recurved point at the tip and brownish stipules (appendages) at the base.

Pultenaea pedunculata can be easily confused with young plants of Tick Bush *Kunzea ambigua* which grows in similar habitat. *Kunzea* plants differ in having a more erect habit and clustered leaves which are aromatic when crushed due to the presence of oil glands. A large number of prostrate shrubs occur in the same habitat as *P. pedunculata* populations on the Southern Tablelands (eg. *Aotus ericoides*, *Dillwynia sericea*, *Hibbertia pedunculata*, *P. microphylla*, *P. subspicata*), and special care will be required to identify it. The task may only be practically possible when the species is in flower (apparently September - November on the Southern Tablelands).

In the Sydney area, targeted surveys for *P. pedunculata* should concentrate on areas with flat or gentle topography and clay soils with a lateritic and sandy influence from localised occurrences of Tertiary alluvium or sandstone. Typical vegetation is Grey Box Woodland dominated by *Eucalyptus moluccana* with *Melaleuca decora*, *Bursaria spinosa*, *Dillwynia sieberi*, *Acacia falcata*, *Kunzea ambigua*, *Gahnia aspera*, *Aristida vagans* and *Themeda australis* in the understorey. Disturbed, open areas with exposed soils along or close to tracks often provide suitable habitat. It is likely that seed is dispersed by vehicles along these tracks.

Potential habitat for *P. pedunculata* is limited in the Liverpool district, however, due to the resilience of plants it is possible that the species may persist in small, degraded remnants. Larger areas of potential habitat may occur south of Sydney close to the boundary of the Blacktown and Hawkesbury soil landscapes.

On the Southern Tablelands, targeted surveys should be done within an area roughly bounded by Goulburn, Bungonia, Nerriga, Mayfield and Tarago (but especially the Windellama area).

On the South Coast, survey should be conducted in all near coastal communities between Bermagui and the Victorian border (as the species is also found in coastal communities in East Gippsland).

Life cycle of the species

Little information is known on the ecology and life cycle of *P. pedunculata*. It is known, however, that the Sydney populations are generally small, with little regeneration or spread evident (except Appin population), and isolated. Regeneration appears to be predominantly vegetative but this may reflect an absence of fire at known sites. The maintenance of population numbers

and genetic diversity at known sites, therefore, is likely to be critical to the survival of those populations and the species.

Any development or activities that result in loss of individuals or reduce recruitment to populations may have serious impacts. The Prestons and Villawood populations are so small that any action resulting in the loss of individuals or habitat is likely to significantly increase the likelihood of the populations being lost. Direct impacts include losses due to clearing of vegetation or damage to plants. Indirect impacts may result from the modification and gradual degradation of habitat. Developments that require regular mowing or slashing of the understorey for landscaping or fire protection are likely to cause changes in the relative frequency of species, promote weeds and affect soil conditions. In the Sydney area, plants of *P. pedunculata* favour clay soils which retain high moisture levels during wetter periods. Excessive drying out and loss of soil structure may impact on plant growth. The location of buildings or carparks close to plants and habitat of *P. pedunculata* may also result in increased runoff and changes to soil moisture levels as well as cause areas of disturbance prone to weed colonisation. Due to the prostrate habit *P. pedunculata* is vulnerable to competition for establishment sites or overshadowing by dense growth of exotic or native species.

Inappropriate fire regimes may result from locating new developments close to known or potential habitat without provision of adequate fire protection zones. Fire management is likely to be important for stimulating seed germination in *P. pedunculata* and maintaining genetic diversity within populations.

Threatening processes

Clearing of native vegetation is a key threatening process listed on Schedule 3 of the TSCA and relevant to *P. pedunculata*, especially on the Southern Tablelands. 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 number of known populations has significantly declined over the past 100 years in the Liverpool-Fairfield district as a result of urbanisation. Remaining populations are widely separated and occur in small, isolated and degraded remnants (to lesser extent at Appin site). The Prestons and Liverpool sites continue to be threatened by local development. Highly disturbed conditions are evident at many sites including clearing, slashing or mowing, vehicular tracks, logging and weed invasion.

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 *P. pedunculata*. High fire frequency is likely to result in a depletion of the soil seed bank if intervals between fire events are not sufficient for plants to grow to maturity and produce seed.

Infrequent and/or low intensity fires are also a threat to *P. pedunculata* resulting in inadequate seed germination. Small isolated populations combined with limited recruitment of seedlings suggests that populations of *P. pedunculata* are likely to be of low genetic diversity. Populations may be at risk, therefore, of extinction from chance events and/or environmental change.

Drainage, weed invasion and rubbish and fill dumping are also recognised as threats by the Scientific Committee (Final Determination).

Viable local population of the species

The viable population size for of *P. pedunculata* is unknown. Until such information is available all populations should be assumed to be viable.

A significant area of habitat

Until more populations of *P. pedunculata* are found, all new sites are considered important to the survival of the species and the habitat considered significant.

Isolation/fragmentation

Populations of *P. pedunculata* are already completely isolated with no genetic interchange likely. Within the Appin district fragmentation of habitat as a result of clearing could result in isolation of populations. Due to short-distance seed dispersal, any activity that reduces the ability of *P. pedunculata* to disperse between patches, is considered to be a threat as once a species is lost from a patch recovery may not be possible. The dumping of fill or degradation of habitat resulting in weed invasion or dense regrowth could also create a barrier to dispersal and seedling growth.

Regional distribution of the habitat.

P. pedunculata occurs in the Sydney Basin, Southeast Highlands and Southeast Corner Bioregions.

Limit of known distribution

The northern and eastern distributional limit of *P. pedunculata* in NSW is at Villawood in Western Sydney. The southern limit is at Bournda National Park, south of Tathra. The western limit

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is near Windellama on the Southern Tablelands. The western limit in the Sydney region is at Devines Tunnel above the Nepean River, north-west of Appin.

Adequacy of representation in conservation reserves or other similar protected areas

Five populations of *P. pedunculata* are known from conservation reserves on the south coast of NSW (Bournda National Park and Mimosa Rocks National Park). Most reserved populations are small (10 or less plants). The largest reserved population contains at least 100 plants (in Mimosa Rocks National Park). No populations of *P. pedunculata* in Western Sydney are conserved within NPWS estate. Loss of the Western Sydney populations would significantly reduce the known geographical range of the species in NSW. *P. pedunculata* is not considered to be adequately conserved.

Critical habitat

Critical habitat has not been declared for *P. pedunculata*.

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