



Epacris sparsa

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

Epacris sparsa is best surveyed during the flowering period when it is easy to identify. Although occurring in a well-defined habitat, sterile plants are superficially similar to many other heath-like plants occurring in the area. *E. sparsa* can be identified from other *Epacris* species by the long corolla tube (15–19mm long), branchlets with short, fine hairs and its riparian habitat.

Surveys should concentrate on the narrow riparian zone above the river, particularly on shaded, damp south-facing banks with exposed claystone. Plants may occur in small pockets of soil on rock outcrops close to the river, or 5–10m back from the river on rocky ledges or on rock faces 6–8m high.

Key associated species are *Tristaniopsis laurina*, *Leptospermum* spp., *Austromyrtus tenuifolia* and *Lomandra* spp. Although known only from relatively few sites, *E. sparsa* may be more common along the lower section of the Grose River. However, accessibility down to and along the river is difficult in many places due to steep, rocky slopes and cliff-lines.

Life cycle of the species

Plant records suggest that populations have persisted along the lower Grose River for

almost 200 years, but there is no information on changes in population size over this time. Significant fluctuations in population size over time may be related to extreme environmental events. The riparian habitat of *E. sparsa* is an unpredictable environment with alternating periods of flooding and dry spells. Populations may build up over years of relative stability to be significantly reduced or destroyed by a major flood or fire. At the present time populations appear to be in an establishment phase, being relatively large and healthy. The persistence of populations will depend on sufficient numbers of mature individuals survive major events to allow subsequent recovery of the population. A series of major events over a short period may lead to the extinction of some populations. The establishment or recovery stage of populations is, therefore, a critical part of the life cycle of *E. sparsa*. A significant proportion of the population will need to larger, mature plants capable of resisting the force of floodwaters and occupying relatively safe sites above flood levels or protected from fires.

Recruitment of seedlings is important to balance the loss of plants experienced during major events and maintain the genetic integrity of populations. Seedlings and immature plants are the most susceptible to dislodgment during flooding. The survival of seedlings depends largely on the location of plants and the timing and intensity of rising water levels or fire events. Observations indicate that few plants grow within 5m of the river except on high rocky outcrops. Due to the poor soil development in the riparian zone, the soil seed bank is likely to be limited in size with little potential for mass seed germination following disturbance. A study on Epacridaceae by Meney *et al.* (1994) in SW Australia concluded that fire-sensitive species which depend on annual inputs to the soil-seed reserves for post-disturbance recovery are likely to exhibit limited reproductive resilience to environmental stress before or after major events.

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Drier periods are unlikely to pose extreme problems for *E. sparsa* as sites are naturally sheltered and mesic. More open sites are at risk of fire, however, as experienced along Burrellow Creek in 1994. Re-sprouting may occur after low to medium intensity burns but plants are killed by high intensity fires as evident in many other *Epacris* species.

Any loss of individuals at any stage of the life cycle of *E. sparsa* may be significant, particularly in early stages of recovery from a major event.

Any increase in fire frequency or intensity will threaten the survival of populations. *E. sparsa* is essentially fire-sensitive although some re-sprouting of mature plants from lignotubers may occur in low intensity burns. Due to poor soil development the limited soil seed bank will be destroyed readily by high temperatures. Populations in marginal habitat will be most affected.

E. sparsa is restricted to a narrow zone between the river and the steep slopes of the gorge. Any changes to the natural environment is likely to further limit the known and potential habitat and alter ecological processes such as growth and fecundity of individuals, and seed dispersal mechanisms. Modification of habitat may include: changes in flooding or fire regime, construction or maintenance of tracks, altered soil characteristics and drainage conditions, and weed invasion.

Threatening processes

“High frequency fire resulting in the disruption of life cycle processes in plants and animals 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 *E. sparsa*.

Viable local population of the species

The viable population size for *E. sparsa* is unknown but is likely to contain 50 or more individuals, have a varied age structure, including a significant number of mature plants and seedlings, occur in “safe” sites, and be connected with other populations.

In the absence of reliable data, small populations of the species should be considered viable.

A significant area of habitat

The known habitat of *E. sparsa* is naturally restricted to a narrow riparian corridor and exposed to high levels of environmental unpredictability. Protection of the riparian habitat of *E. sparsa* is dependent on maintaining the present flooding regime. Any development which has the capacity to change this regime could destroy part or all of this habitat. Therefore all habitat of *E. sparsa* is considered significant.

Isolation/fragmentation

Known populations of *E. sparsa* are separated by 6-8km of river, but it is possible that further populations or scattered plants occur between sites. Some connectivity between sites may be achieved as a result of seed dispersal along the river during periods of high rainfall. Connectivity is important to maintain genetic variability and adaptability of populations, and provide a seed source for re-colonisation of sites. More detailed surveys are required to establish the degree of connectivity between populations of *E. sparsa* before the risks involved with isolation or fragmentation can be fully evaluated. Until such information becomes available activities which threaten to isolate or fragment populations of *E. sparsa* should be avoided.

Regional distribution of the habitat

The known distribution of *E. sparsa* is restricted to the Sydney Basin Bioregion. Within this region *E. sparsa* is confined to a riparian corridor along the lower Grose River in the north-eastern district of the Blue Mountains between Springwood and Bilpin.

Limit of known distribution

The northern and western limit of *E. sparsa* is Dark Creek, north-west of Brown’s Ridge about 7km south-east of Bilpin and the southern and eastern limit is at Vale of Avoca Reserve, about 10km west of Richmond. The northern limit may have been extended in a recent survey by NPWS but results are not available (Jones pers. comm.).

Adequacy of representation in conservation reserves

Most known populations of *E. sparsa* are conserved within the Blue Mountains National Park. The largest and perhaps the only long-term viable population, however, occurs on Crown land outside the reserve system. Further surveys and monitoring of

populations are needed to determine the adequacy of reservation.

Critical habitat

Critical habitat cannot be declared for *E. sparsa* as it is not listed on Schedule 1 of the NSW *Threatened Species Conservation Act 1995*.

For further information contact

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References

Meney, K.A *et al.* (1994) Seed bank patterns in *Restionaceae* and *Epacridaceae* after wildfire in kwongan in southwestern Australia. *Journal of Vegetation Science* 5: 5-12

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