

***Lambertia rariflora* subsp. *lutea* (Proteaceae): revised geographical distribution and habitat notes**

Lambertia rariflora subsp. *lutea* Hnatiuk is a recently described tall shrub or small tree from the Walpole Region, south western Australia (Hnatiuk 1995). At the time of its original description the taxon was known from only two collections, habitat details were few, and information on abundance and geographical distribution inadequate. Consequently it has been considered to be possibly rare. As part of our work on a Recovery Plan for the rare, endangered and conservation priority flora of the Department of Conservation and Land Management's Southern Forest Region (Hearn *et al.* in prep.), we undertook a field survey of *L. rariflora* subsp. *lutea*. The results are reported here ahead of the Recovery Plan in order to improve the available published information on the species as soon as possible.

This taxon was apparently first collected by A.R. Annels in 1990, although the specimen was lost after its identity had been investigated. Subsequently all occurrences of the taxon found during surveys for earlier regional ecological studies (Wardell-Johnson *et al.* 1995) and for our report on conservation taxa (Hearn *et al.* in prep.) were documented. During this work, we have visited most populations and noted relevant features. Additional information was contributed by other people interested in the flora of the area.

Distribution. Approximately eight collections of *Lambertia rariflora* subsp. *lutea* are known (see below), representing six populations. These populations extend over a range of 25 km, and represent two clusters: (1) Sharpe Forest Block and edge of Mount Frankland National Park, NNW of Walpole, and (2) Nornalup Road area, NE of Walpole. The two specimens cited by Hnatiuk (1995), *Weston* 93.3.6 (representing population 1) and *Weston* 95.4.1 (which is the type specimen of the subspecies, representing population 2), were not available for this study. They are from Sharpe Block. The Sharpe Block populations (populations 1-4) are tightly clustered, whereas the two populations near Nornalup Road (populations 5 and 6) are approximately 9 km apart.

Specimens examined. WESTERN AUSTRALIA (localities simplified): population 3: 19 km N of Walpole, Mt Frankland National Park, 34° 48' S, 116° 43' E, 10 Jan. 1990, A.R. Annels 1024 (PERTH, Manjimup); population 6: near Nornalup Road, 1.5 km S of Boronia Rd, 34° 50' S, 116° 59' E, 1 Feb. 1995, B.G. Hammersley 1334 (PERTH); population 4: c. 3.5 km SE of Granite Peak, 34° 44' S, 116° 44' E, 22 Feb. 1996, R. Hearn 5706, 5707, 5708 (PERTH, Manjimup, duplicates to be distributed); population 5: 29 km NE of Walpole, 34° 46' S, 116° 57' E, 4 Mar. 1993, G. Wardell-Johnson 3223 (PERTH, Manjimup).

Habitat. Our observations of all the populations are that the plants are most often found on lower slopes or on slopes that are gradual and without any substantial overall relief. Although not occurring very close to watercourses like subsp. *rariflora*, subsp. *lutea* seems to prefer sites with a good water supply.

Most of the populations are on the margins of roads or tracks in disturbed soil or are close to the roads in undisturbed soil. This could be considered as a favourable effect of disturbance on the regeneration of the subspecies, or a preference for gaps in the forest canopy. However, our interpretation is that the most important benefit of these situations is concerned with fire protection (see Fire response below).

Associated vegetation is usually a forest of Jarrah (*Eucalyptus marginata*), sometimes accompanied by Marri (*E. calophylla* = *Corymbia calophylla*) with shrubs such as *Agonis* spp., *Banksia grandis*, *Podocarpus drouynianus* and *Dryandra formosa*. Population 6, however, occurred in heath, including the shrubs *Hakea cygna* and *Pericalymma elliptica*, and trees of *Nuytsia floribunda*.

Fire response. *Lambertia rariflora* subsp. *lutea* is sensitive to fire, even large plants being readily killed by fires of various intensities. In several populations, the plants are restricted to or most frequent on the edges of roads. We speculate that these situations lead to the plants being either protected from fire by the disturbed soil or experiencing the relatively mild, and therefore often non-fatal, edging fires that are part of the fire management regime. There is currently no information on regeneration after fire.

Conservation status. CALM Conservation Codes for Western Australian Flora: Priority 3. Population sizes for *Lambertia rariflora* subsp. *lutea* ranged from small (with 7 and c. 20 plants recorded for populations 4 and 3 respectively) to large (e.g. c. 300 plants recorded for population 6). Of the six known populations, two were found in the Mount Frankland National Park, so the occurrence of the species on conservation land has been established.

Conclusion

In describing *Lambertia rariflora* subsp. *lutea* for the first time, Hnatiuk (1995) had seen only two specimens, which had been collected within about one kilometre of each other. The additional collections reported here represent four more populations which extend over 25 km. Although the region north of Walpole has had a relatively low intensity of botanical collecting, there has been sufficient to show that the subspecies genuinely has a restricted range and low abundance. The subspecies is therefore of continuing conservation concern.

Possible threats to *Lambertia rariflora* subsp. *lutea* include intense fires and possibly *Phytophthora* infection, given the known sensitivity of many Proteaceae to the latter. Investigations of the response of the subspecies to these two threat factors are required. It is also desirable to establish *ex situ* material to guard against loss of all wild populations.

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