

# I. INTRODUCTION TO WEST BENDERING NATURE RESERVE

B.G. MUIR

## Location and History

West Bending Nature Reserve (WBR), A25681, is located 16 km north-northeast of Kondinin, between lat.  $118^{\circ}21'30''E$  and lat.  $118^{\circ}23'0''E$  and long.  $32^{\circ}22'0''S$  and long.  $32^{\circ}26'0''S$ . It has an area of 1,602 ha and is one of the larger reserves considered in the Western Australian Museum's biological survey of the wheatbelt. Named after its relation to Bending Reserve (BR) 10 km further east, WBR occupies Lands Department Locations Nos 28045 and 19718 in the Shire of Kondinin, and on lithograph No. 2533-11.

The region of the Reserve was vacant Crown Land until 2 December 1920. At this time *ca* 3,760 ha were declared Timber Reserve (Sandalwood and Mallet) and included 1,602 ha which are now the existing Reserve, plus an additional 2,160 ha immediately to the east. In January 1921 an internal directive from the Forests Department prohibited removal of Jam (*Acacia acuminata*) trees from the Reserve. Around the period 1919-1921 strong pressure was exerted on Government departments to open up land for agriculture for ex-servicemen returning from the 1914-1918 war. This pressure caused a re-examination of the area's economic potential and led to a suggestion by C.A. Gardner that *ca* 200 ha to the south and west of the 'lower Jam patch' (later to become the 'southern plantation') be released for agriculture. It also led to the mapping of the whole Timber Reserve and eventually to release of the eastern portion of the Reserve in November 1922. The Reserve boundaries were amended to approximately their present position on 13 March 1925.

A 'northern plantation' and a 'southern plantation' (for sandalwood and jam) were established on the Reserve by the Forests Department sometime before 1927. Forests Department files do not record if these plantations were natural stands of timber or were, at least in part, artificially established. An experimental plot to examine Jam regeneration was established in the southern plantation in May 1927. A 'cleaning up' programme by the Forests Department removed all dead saleable Sandalwood trees from the area in late 1929 and early 1930.

There are no records referring to this Reserve on Forests Department files from 1929 until 1952; in March 1952, the Assistant Conservator, in a letter to the Conservator of Forests, points out that the Reserve had not been inspected or reported upon for 20 years. In February 1960 a letter from the Conservator of Forests to the Undersecretary for Lands stated:

*This area was originally reserved for the protection and propagation of sandalwood. It is now the only reserve in the wheatbelt areas of which we are aware, that carries any mature sandalwood trees. There are probably at least a hundred and possibly more large specimens.*

*In view of the important part that sandalwood has played in the history of the State in the opening up of the agricultural and mining areas, it is highly desirable that at least one representative area carrying it be reserved. Besides the historical aspect, sandalwood is of considerable scientific interest on account of its dependence through root parasitism on other plants which must be associated with it. From the economic angle, sandalwood is an extremely valuable timber and while the activities of rabbits have in the past prevented its propagation, it may be possible in the future to reconsider this possibility. A satisfactory seed source such as this would be a pre-requisite for any work in this direction.*

*Two areas within this reserve, of about 300 acres each, which carry jam and sandalwood, were at one time fenced by this Department and although the fences are now in a poor state of repair these could be repaired and the fenced areas let for grazing purposes. This would reduce the fire danger on the, at present, more inflammable portion of the reserve.*

*In view of its value from the flora preservation angle the purpose of the reserve should be amended from 'Timber' to 'Flora and Timber (Sandalwood)'.*

This letter renewed interest in the Reserve and led to its reclassification to 'Conservation of Flora and Timber (Sandalwood)' on 24 June 1960. In February 1970, P. Hewitt of the Forests Department examined the Reserve and suggested that WBR and BR contained very different vegetation types and that both warranted retention in their entirety.

A detailed faunal and vegetation study of both these Reserves was undertaken by the Western Australian Museum in 1974-76. Muir (1977a) has previously described the vegetation of Bendering Reserve and discussed its physiography, geology, fire history, isolation, and climate.

### Physiography and Basic Geology

The physiography and geology of West Bendering Reserve is generally that of Bendering Reserve (Muir 1977a). Fig. 1 is a contour map of WBR showing watercourses and breakaways. The highest point of the Reserve is 380 m, and the lowest point about 330 m above sea level; the Reserve therefore has an altitudinal range of 50 m. The basic land forms are: low, rounded granitic outcrops; undulating or flat clayey soils derived from the granite; red-brown clayey soils derived partially from the granites and probably partially from basic intrusives; and lateritic outcrops, mostly degraded but occasionally forming breakaways. There is no permanent water on the Reserve although a 'spring' was observed by Gardner (early 1920s, unpublished Forests Department files) in the 'northern plantation' (see Fig. 2), and there is a shallow gnamma hole near the south boundary of the Reserve. There may be some pooling in watercourses after heavy rain.

### Fire History

Forests Department files contain the following records on the fire history of the Reserve: between 4 and 24 December 1926 West Bendering Reserve was excluded from the provisions of the Bushfires Act to allow burning, but there are no records to indicate whether burning took place or what areas were burnt; records show that in 1951 the 'southern plantation' (see Fig. 2) was burnt and a large proportion of the Jam and some Sandalwood trees were killed; on 27 February 1957 a fierce fire destroyed all the Jam area in the 'northern plantation' and any trees that were not completely burnt were killed by the fire.

Virtually all the Reserve has been burnt within the last 30 years as air-photographs taken in 1962 showed the Reserve to have a number of fire scars other than those related to the fires mentioned above. Another series of air-photographs taken in 1972 showed traces of these scars and gave indications of the amount of regrowth in areas burnt prior to 1962. This information plus the above Forests Department records allowed the production of the vegetation age map in Fig. 2.

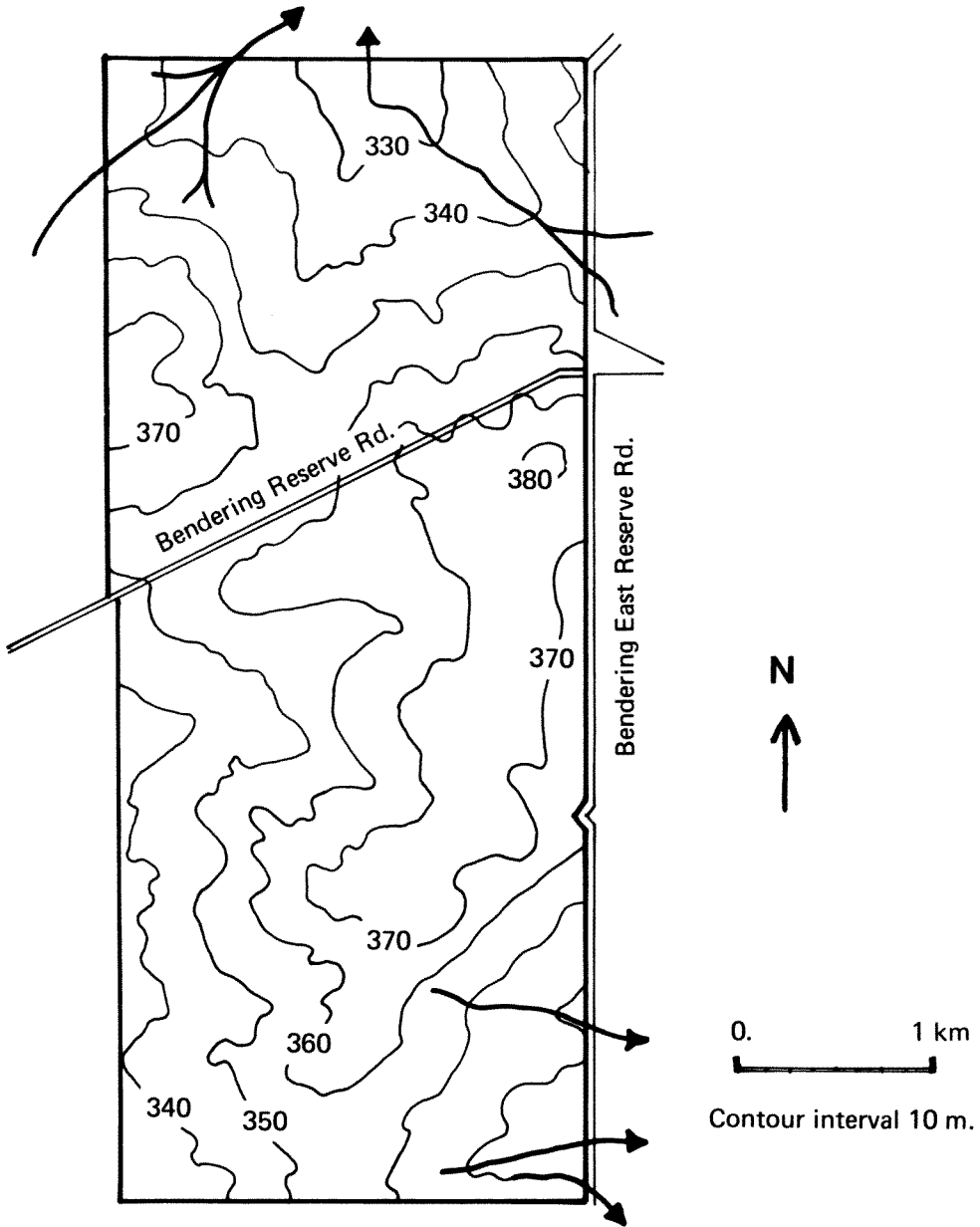
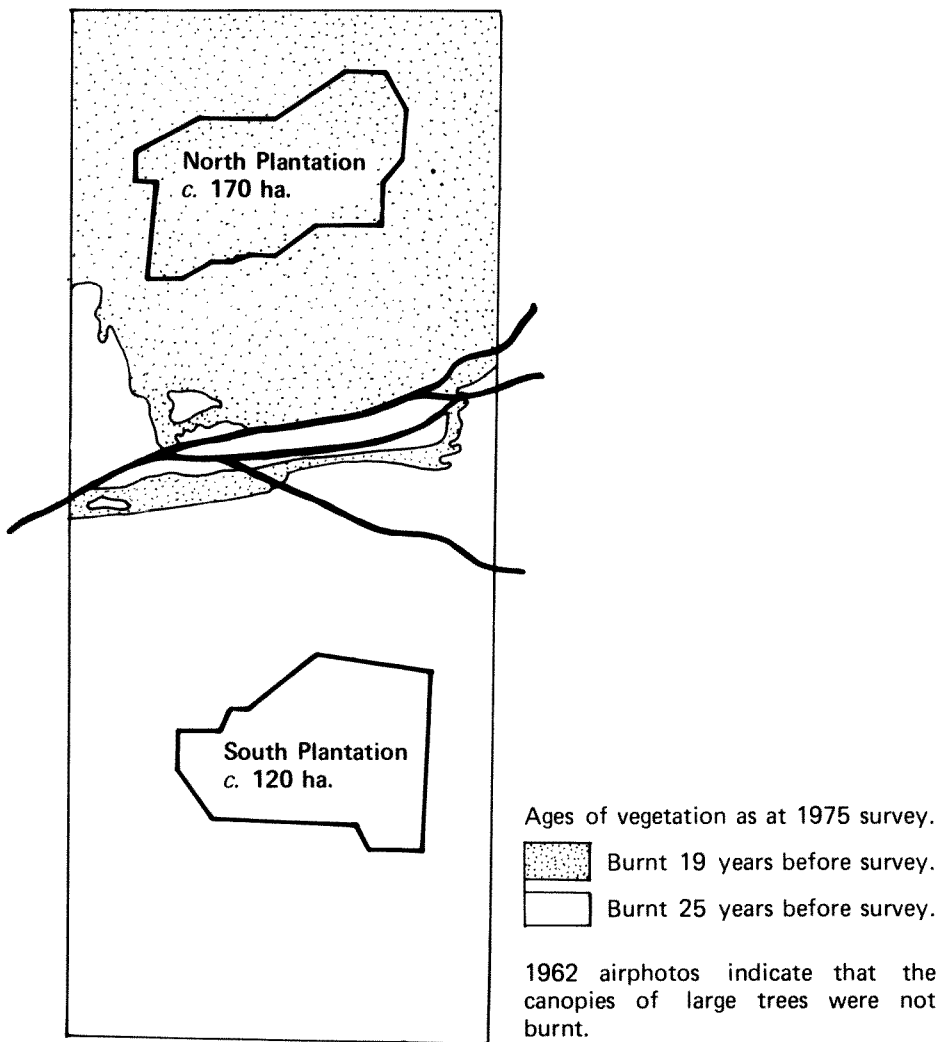
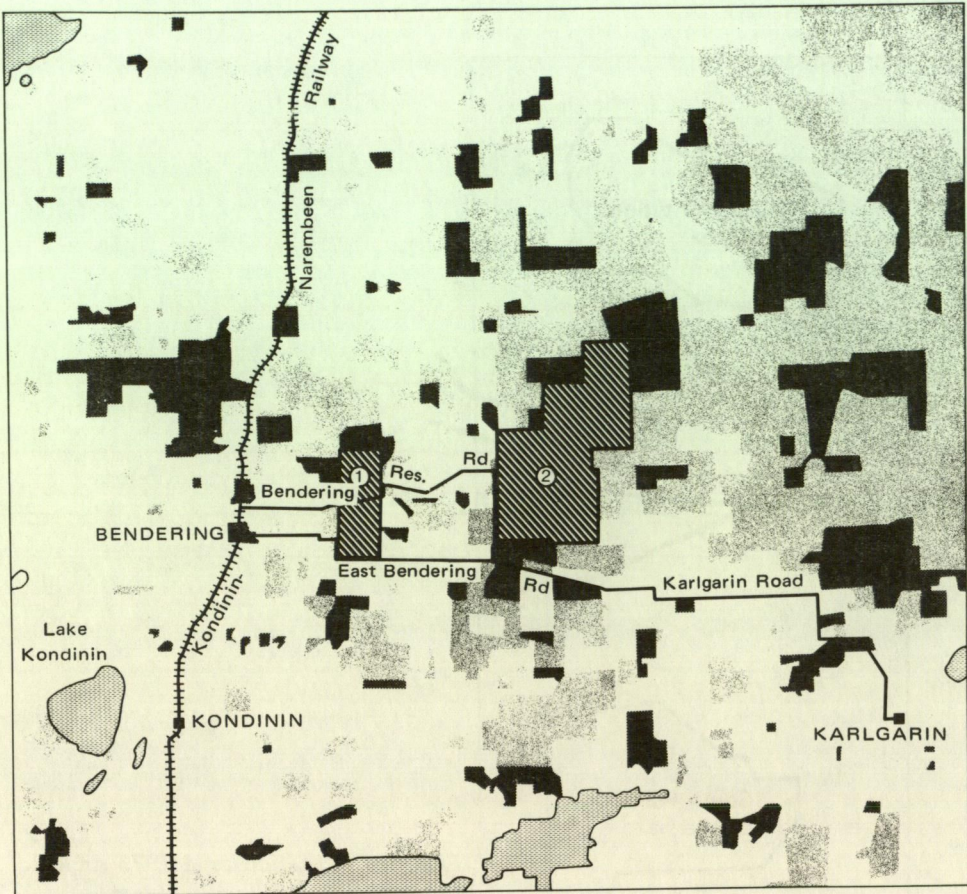


Fig. 1: West Bending Reserve showing contours and watercourses.



**Fig. 2:** West Bending Reserve showing ages of vegetation as at 1975 survey and position of the northern and southern Jam and Sandalwood plantations.



**LEGEND**

- ① West Bending Reserve      ■ Uncleared land 1972
- ② Bending Reserve          ▨ Lake country
- ▩ Uncleared land 1962

Fig. 3: Bending and West Bending Reserves showing extent of surrounding cleared and uncleared land at 1962 and 1972.

## Isolation

In 1962 there were *ca* 2,600 ha of uncleared land and *ca* 400 ha of recently scrub-rolled land contiguous to the northern and western boundaries of the Reserve. Another *ca* 900 ha of uncleared land were contiguous with the eastern boundary. By 1972 this area had been reduced to *ca* 340 ha uncleared and *ca* 650 ha recently scrub-rolled land contiguous to the northern and western boundaries and *ca* 60 ha uncleared and *ca* 300 ha recently scrub-rolled land to the east. In 1976 the 340 ha to the northwest and the 60 ha to the east were still uncleared.

The extent of uncleared and cleared land in the general area of the Reserves was calculated using 1962 and 1972 aerial photographs. The area used for this appreciation was selected by extending the dimensions of the Reserves by 20 km from their most northern, western, southern and eastern boundaries (twenty kilometres being an arbitrary figure chosen to enable comparison between the extent of clearing around these Reserves). The area thus circumscribed is 294,920 ha. In 1962 the total area of reserved and uncleared land within this boundary was *ca* 105,114 ha or 35.6% of the area. In 1972 this had been reduced to *ca* 36,634 ha or 12.4%. This situation is illustrated in Fig. 3.

## Climate

Climate may be considered the same as that for Bending Reserve (Muir 1977a).

## Terminology

Faunal papers follow Muir's (1977a) vegetation classification except in a few instances. The first survey was conducted before this classification was available, hence in some situations the density and exact height of the vegetation was not recorded. To avoid confusion, direct quotes from Muir's key are used where specific groups are known (these are capitalised, e.g. Low Woodland A). Where the groups are not known, or the authors wish to summarise several specific groups, the formation term (uncapitalised) is used, e.g. woodland.