I INTRODUCTION TO MARCHAGEE NATURE RESERVE

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Location and History

Marchagee Nature Reserve No. C23601 lies *ca* 11 km north of Marchagee in the Shire of Coorow in the North Coastal Meteorological District. It is shown on Lands and Survey Lithograph No. 90/80. Total area of Reserve is *ca* 577 ha.

Part of the land which is now Marchagee Nature Reserve was set aside for 'Protection of Native Flora' in 1952 but not vested. The area of 364 ha was increased to 581 ha in 1961 and vested in the Shire of Carnamah. In 1963 the Shire of Coorow was created and the Reserve was vested with that shire. In 1966 *ca* 4 ha were excised from the Reserve and gazetted as Reserve 27978 for purposes of Cemetery.

In August 1974 Warden R. Gardiner from Department of Fisheries and Wildlife inspected the Reserve and recommended that it be made a Class A reserve for conservation of flora and fauna. On 17 January 1975 the Reserve consisting of 577 ha was gazetted Class C for the Conservation of Flora and Fauna and vested with the Western Australian Wildlife Authority.

Physiography and Basic Geology

Marchagee Nature Reserve is situated near the western edge of the Yilgarn Block *ca* 15 km east of the Darling Fault. A Bench Mark in the Reserve and another at the eastern end indicate height above sea-level of 255 and 258 m respectively. No contour maps of the Reserve are available but it is estimated that the Reserve has an elevation range of approximately 40 m. The most notable feature of the Reserve is a salt-marsh draining northwest through the eastern side and a number of salt pans scattered throughout. Basically 2 soil types are represented on the Reserve: sand and clay lacustrine deposits in the low-lying areas; and quartz aeolian sand in the higher parts. Soils are described in Muir (this report).

Fire History

Age of vegetation on Marchagee Nature Reserve was estimated from examination of 1969 and 1959 air photographs and previous experience elsewhere in the wheatbelt. **Fig. 1** shows estimated ages since last being burnt. It appears that there are basically 4 different burn ages. Much of the area indicating more than 30 years since being burnt is heathy salt flats which rarely burn; consequently some of these areas are probably quite old. Generally lake ecotones show no evidence of fire.

Isolation

Examination of aerial photographs taken on 26 August 1959 (Perenjori runs 21-23) and 25 January 1960 (Moora runs 1-2) show that in a square consisting of 104,600 ha centred around Marchagee Nature Reserve there were *ca* 26,382 ha

(25.2%) of uncleared vegetation in addition to *ca* 11,137 ha (10.6%) of saltlakes, samphires and salt-affected heath. Most of this uncleared vegetation was west of the Geraldton Highway. By 3 December 1969 (Perenjori runs 14-17 and Moora runs 1-3) these *ca* 26,382 ha of uncleared vegetation had been reduced to *ca* 17,071 ha. Despite this clearing, the Reserve was still contiguous with a large area of uncleared land to the west (**Fig. 2**).

Climate

Data are extracted from Anon (1975) for Carnamah, the nearest meteorological station, *ca* 35 km northwest of the Reserve.

Rainfall: Mean yearly rainfall (90 years) is 397 mm of which 263 falls in May to August. The mean monthly rainfall and the highest daily rainfall recorded in each month are shown in **Table 1.**

TABLE 1

Mean monthly rainfall, humidity and temperature for Carnamah.

	J	F	M	A	M	J	J	A	S	O	N	D
Mean monthly rainfall	11	14	22	22	52	84	72	55	29	17	10	9
Highest daily rainfall	103	103	180	121	170	231	188	192	84	73	91	56
Mean monthly humidity	25	23	28	36	43	54	52	51	44	34	22	18
Mean maximum temp.	34.9	35.8	33.0	26.7	22.0	18.5	18.0	18.4	20.8	26.1	30.2	34.6
Mean minimum temp.	17.5	18.5	17.3	12.8	10.6	8.4	7.2	7.2	7.9	10.6	12.9	16.8

Humidity: Only 3 months have a mean relative humidity of over 50%, and 5 months have below 30%. The annual mean relative humidity is 36%. Figures for each month are set out in **Table 1.**

Evaporation: Charts in Anon (1959) show that annual evaporation at Carnamah is *ca* 2125 mm.

Temperature: Mean daily maximum temperature for the year at Carnamah is 26.6° and the mean daily minimum is 12.3°. Mean maxima and mean minima are set out in **Table 1.**

The highest recorded temperature is 45.7°C on 1 January 1976 and the lowest is 0°C on 22 June 1955. An average of 2.7 days of frost are recorded each year, these occur between April and October. The earliest recorded frost is 11 April and the latest is 8 October.

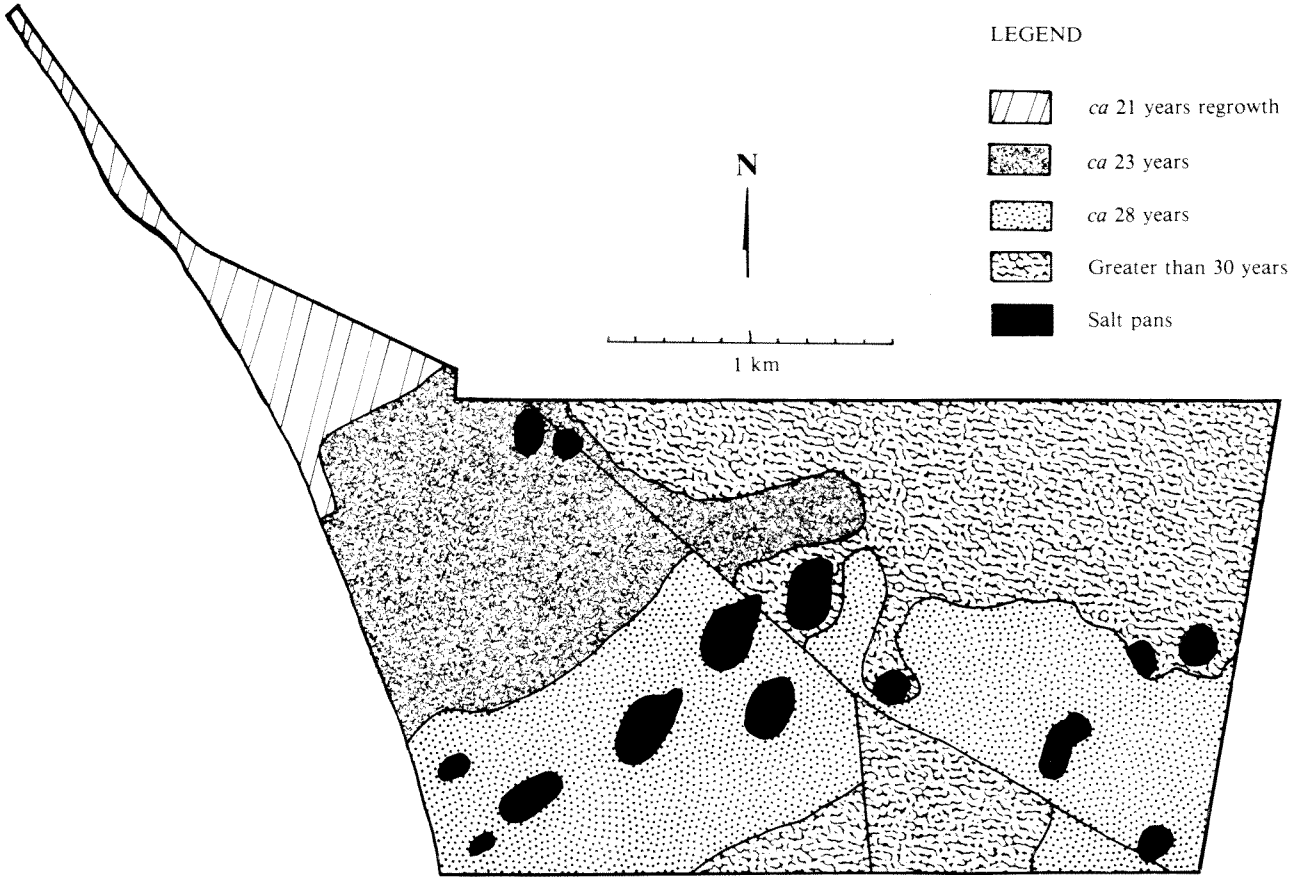
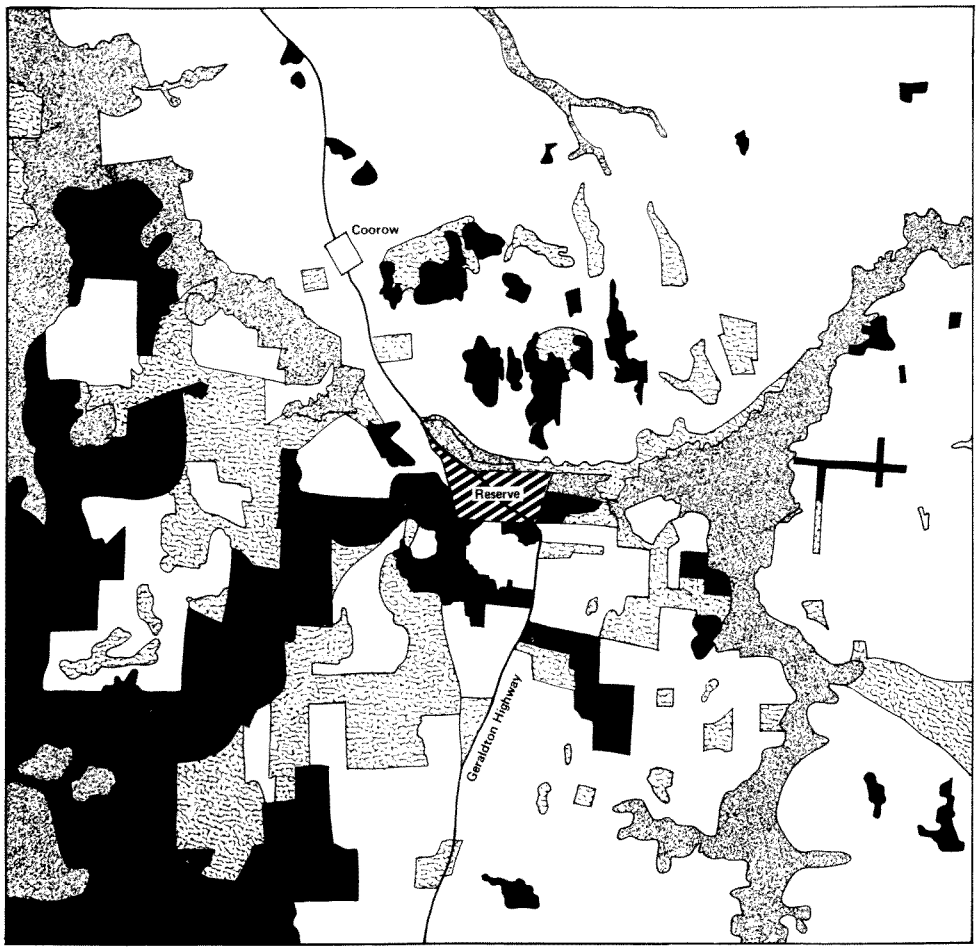


Fig. 1: Marchagee Nature Reserve showing estimated ages of vegetation since being burnt.



LEGEND

Scale 1:63,000

Uncleared 1969

Samphires, salt lakes and salt affected vegetation at 1969

Uncleared 1959

Fig. 2: Map of Marchagee Nature Reserve and surrounds showing land cleared between 1959 and 1969. Blank areas were cleared prior to 1959.

Winds: Figures show that in summer (December-March), winds are predominantly southeast and in winter (May-August) are northeast to west. In summer over 60% of winds are 1-30 kph and in winter over 50% of winds are 1-30 kph but calms are relatively frequent, being recorded over 25% of the time.

Biological Survey

Dell (1979a) listed 7 publications presenting data on 8 wheatbelt reserves. This report continues the series by presenting data on Marchagee Nature Reserve.

Prior to the surveys undertaken by us, little was known of the biota of Marchagee Nature Reserve. Warden R. Gardiner of the Department of Fisheries and Wildlife made a brief report (unpublished files) in August 1974 when recommending that the Reserve be made a Class A reserve. He recorded 12 species of birds and made brief notes on the vegetation and soils of the Reserve.

Our surveys were carried out from 16-21 July 1975 (K.D. Morris, M. Jackson, G. Harold), 20-26 May 1976 (A. Chapman, J. Dell, G. Harold, T.M.S. Hanlon) and 26 September - 1 October 1976 (A. Chapman, J. Dell, P.J. Fuller, M.J. Odgers). B.G. Muir recorded the vegetation during June 1977. D.J. Kitchener and B.G. Muir made a brief visit on 10 July 1975.

Results of the above surveys are included as separate papers in this report.