

I INTRODUCTION TO BADJALING NATURE RESERVE, SOUTH BADJALING NATURE RESERVE, YOTING TOWN RESERVE AND YOTING WATER RESERVE

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The biological survey of these reserves is part of a programme documenting the vertebrate fauna and evaluating the relationships between fauna and vegetation on reserves in the Western Australian wheatbelt; see Kitchener (1976) for the background to this programme. Studies published are listed in Dell (1979) and Chapman (1979).

Description of Reserves

Badjaling Nature Reserve, South Badjaling Nature Reserve, Yoting Town Reserve and Yoting Water Reserve are in the central wheatbelt in the shire of Quairading. Quairading, the nearest town, is *ca* 130 km east of Perth in 117°23'E, 32°01'S.

These reserves and the wheatbelt generally are situated on the granites and granitic gneisses (or the erosion products thereof) of the Yilgarn Block of the Precambrian Shield. The general elevation of the area covered by these reserves is 240 m above mean sea level.

BADJALING NATURE RESERVE (No. 23758)

Badjaling Nature Reserve is located at Badjaling Siding in 117°30'E, 31°59'S and is *ca* 10 km east of Quairading. The reserve occupies Avon location 19699. The area is 272 ha. It was gazetted for Flora in 1953. It is not vested.

SOUTH BADJALING NATURE RESERVE (No. 12333)

South Badjaling Nature Reserve is situated 2.5 km south of Badjaling Siding in 117°31'E, 32°01'S. It has an area of 41 ha. It was gazetted for water in 1909, and the purpose changed to Conservation of Flora and Fauna in 1978. It is vested in the Western Australian Wildlife Authority.

YOTING TOWN RESERVE (No. 15123)

Yoting Town Reserve is situated *ca* 10 km north-east of Badjaling, at Yoting Siding in 117°35'E, 31°58'S. It has an area of 61 ha, however *ca* 40% of this has been cleared or is taken up by buildings, the railway siding and wheat bins. Thus there is only 38 ha of uncleared bushland. The reserve was gazetted a townsite in 1913, and this status is still current. It is vested in the Minister for Community Welfare.

YOTING WATER RESERVE (No. 11717)

Yoting Water Reserve is situated 14 km north-north-east of Badjaling in 117°33'E, 31°52'S. It has an area of 34 ha. The reserve was gazetted for water in 1927 and this status is current. It is vested in the Minister for Water Supply.

Climate

At Quairading the annual average and annual median rainfalls are 381 mm and 373 mm respectively. Table 1 indicates the seasonal distribution of rainfall.

TABLE 1

Average monthly rainfall (54 years) for Quairading (mm). From Anon. (undated).

J	F	M	A	M	J	J	A	S	O	N	D
12	15	21	23	52	68	71	51	28	24	11	9

More complete climatic data are recorded at Kellerberrin *ca* 60 km north-east of Quairading, and are indicated in Table 2.

TABLE 2

Temperature and humidity data (9 years) for Kellerberrin. From Anon. (1975).

	J	F	M	A	M	J	J	A	S	O	N	D	Year
Mean daily max. temperature (°C)	33.9	33.1	30.0	24.9	20.8	17.3	16.1	17.2	20.1	24.8	28.9	32.1	24.9
Mean daily min. temperature (°C)	17.7	17.5	15.6	12.2	8.8	7.9	6.1	5.6	7.2	9.4	12.7	15.8	11.4
9 am mean humidity (%)	43	50	55	65	74	86	83	80	69	53	45	41	62
3 pm mean humidity (%)	23	26	31	38	46	60	58	52	43	30	24	21	38

Wind data are not recorded in the vicinity of these reserves. Annual evaporation in the vicinity of Quairading is approximately 1730 mm (figure calculated from interpolation of data in Anon. [undated]).

For the years of the survey the rainfall for Quairading was above average in 1974 (489 mm cf. 381) and below average for 1975 (298 mm). For the period of the survey, 11-18 November 1974, the weather was fine and hot with *ca* 25 mm rain recorded from a thunderstorm on 13 November. For the period 5-10 May 1975 the weather was fine and cool to warm with 5 mm rain recorded on 5 May.

Fire History

There have not been any major, recent fires on these reserves; this is probably a result of their small size and isolation. Muir (this publication) records 'very old fire scars' in locations 1.3, 3.1 and 3.2 on YR and locations 1.3, 3.2, 3.3, 3.7 on BNR. Muir (*ibid.*) considers the vegetation on SBR to be at least 20 years since its last burn and this figure probably represents the latest fire on any of these reserves.

Agricultural Development and Isolation

No particular details of agricultural development in the Shire of Quairading could be found. However the district generally was one of the first opened up for agriculture on account of its relatively high rainfall, good soils, proximity to Perth and road and rail accessibility. First settlement was probably *circa* 1880-90, with cereal production commencing *circa* 1910.

Rates of alienation and clearing of adjoining natural vegetation are documented where possible because the fauna of a reserve, particularly avifauna and other mobile species, e.g. kangaroos, possums and goannas, is dependent to a certain extent on the quantity and spatial arrangement of other uncleared land in its vicinity.

For the following analysis, which is based on 1 : 40,000 aerial photography taken in September 1962 and November 1972, BNR is considered at the centre of an area 51 x 48 km (Fig. 1). This is derived by extending 20 km from the northernmost, southernmost, easternmost and westernmost points of BNR and mapping all cleared, uncleared, lands and salt complex within this boundary. Within this area at September 1962 there were 13,184 ha of uncleared land or 5.4% of the total. By November 1972 this had been reduced to 8,960 ha or 3.7%. These uncleared lands exclude 11,700 ha or 4.9% of salt complex.

Apart from 2 very small patches of *Eucalyptus loxophleba* woodland on the north boundary of YR and the salt complex adjacent to the western boundary of BNR there are no uncleared lands contiguous with these reserves.

Western Australian Museum Surveys

These reserves were surveyed between 11-18 November 1974 by A. Chapman, J. Dell, D. Hembree, J. Henry and D.J. Kitchener and between 5-10 May by A. Chapman, J. Dell, G. Harold, M. Jackson and K.D. Morris. B.G. Muir (with J. Dell) mapped the vegetation between 5-7 September 1977.

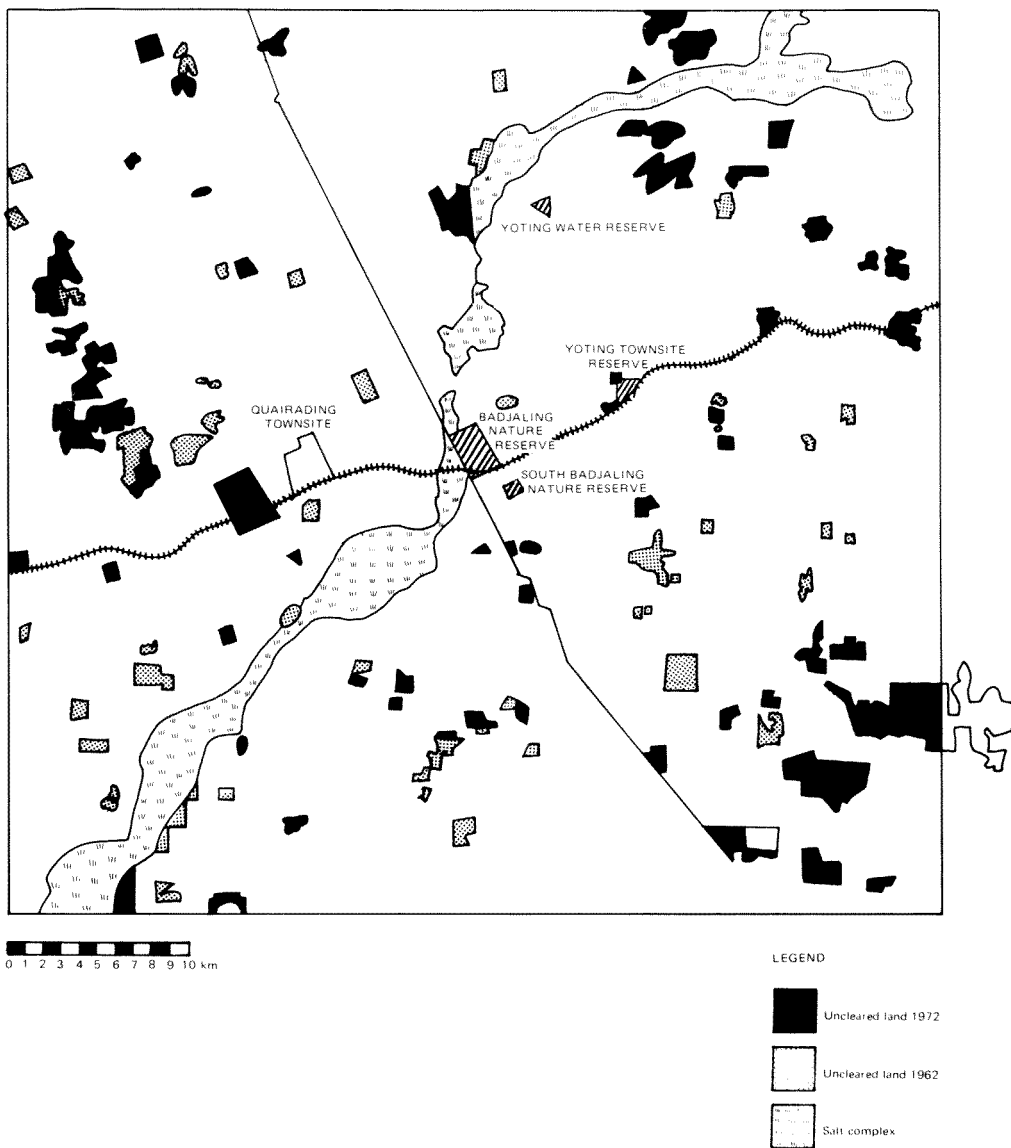


Fig. 1: Map showing amount of uncleared land in a 20 km radius of Badjaling Nature Reserve. Map drawn from aerial photographs taken in 1962 and 1972.