

I. INTRODUCTION: TARIN ROCK RESERVE

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Location & History

Tarin Rock Reserve, No. A25711, lies about 28 km due west of Lake Grace, in the central Great Southern Agricultural District. Named after Tarin Rock which is situated on the Reserve, it occupies location No. 15161 in the Shire of Dumbleyung, and is shown on Lands and Survey Lithograph No. 2571-IV (Kukerin). Total area of the Reserve is 2011 ha. Previously controlled by the Railways Department for "water supplies" it was reclassified as "Conservation of Flora" on 29 July 1960, and to "Conservation of Flora and Fauna" on 21 February 1969. The Reserve was vested in the Western Australian Wild Life Authority on 14 March 1975.

The reclassification in 1969 to include fauna was encouraged by local farmers, and was due largely to the results of a survey conducted by Fisheries and Fauna Department officers on 27-28 June 1967. They recorded five species of mammals including Tammar, Bandicoot and Echidna, and a number of insectivorous and nectarivorous birds. Also in 1967 the secretary of the Western Australian Gould League (Olive Seymour) in a letter to the Minister of Lands, recorded the presence on the Reserve of the Red-tailed Wambenger (*Phascogale calura*) and Honey Possum (*Tarsipes spencerae*), and stated that many rare plants, including an unnamed *Hemigenia*, were found there. Some plant collections were made in the region by C.A. Gardner and others around 1920-30, but there are no published data.

As far as is known no further studies were done on the Reserve until the Western Australian Museum survey in May 1971.

Physiography & Basic Geology

Situated on the granites and granitic gneisses of the Yilgarn Block, the present topographic form of the Reserve is the result of extensive erosion of the granites coupled with later pedogenic development of laterites. The laterite which caps the uplands has resisted erosion, leaving hilly areas standing out in relief against the lowlands and valleys, some of which now carry seasonal water courses. A contour map illustrating the gently undulating nature of the area, and the location of the watercourses is shown in **Fig. 1**. The highest point on the Reserve and in fact in the region, is the top of Tarin Rock, where a trigonometric point (Dum. 1) is located at a height of 429.3 m above sea level. The lowest point on the Reserve is about 340 m above sea level. It therefore lies within an altitudinal range of about 90 m.

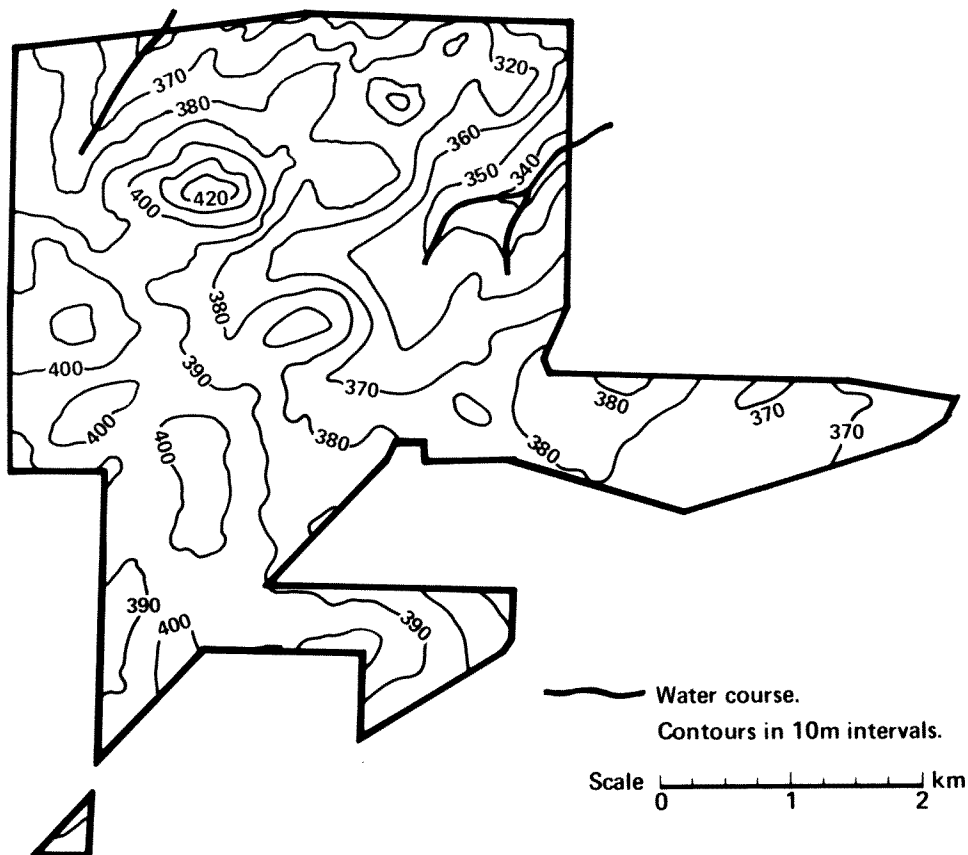


Fig. 1. Tarin Rock Reserve, showing contours and watercourses. Reproduced from Lands and Survey Lithograph No. 2571-IV

The basic land forms of laterite hill caps, hill slopes with granitic sands, and lowlands and watercourses with alluvial and colluvial sediments have produced three distinct vegetation formations: sparse mallee/heaths; dense mallee; and woodlands, respectively. There is no permanent water on the Reserve although some pools may occur in the watercourses after heavy rain.

Fire History

No records of fire are available before 1964 when air photographs showed the Reserve to be largely unburnt (or with old regrowth areas) excepting about 60—60 ha in the northern sector. Comparison with air photographs of another reserve which has a known fire history (Bendering Reserve, Muir 1976) shows that the burn was probably about 12—15 years old in 1964.

On 6—7 February 1972 a fierce fire, thought to have arisen from the north central boundary of the Reserve and passing south, destroyed about 1120 ha (about 56% of the reserve). The remaining unburnt area fortuitously contained areas of all major plant formations.

Isolation

In 1964 the Reserve had at least 14,600 ha of uncleared land contiguous to it, including the area now constituting the North Tarin Rock Reserve. This area was reduced to 2748 ha by 1972 with very little clearing since then. If all adjacent agricultural land is cleared the Reserve will be totally isolated, except for an area of 381 ha of woodland and mallee on Water Reserve No. 16776 which lies immediately to the south of, and contiguous to, the Tarin Rock Reserve.

Climate

Data are extracted from a regional climatic survey (Anon, undated). Whenever possible, data from Lake Grace recording station, located about 23 km east-south-east of the Reserve is used. Some observations from Kukerin, 11 km south-west of the Reserve, are also included.

Rainfall:

Mean yearly rainfall is 359 mm of which 254 mm falls in May to September. The highest daily rainfall recorded in any month is set out in **Table 1**.

TABLE 1 (mm)

J	F	M	A	M	J
82	96	90	43	52	47
J	A	S	O	N	D
62	36	33	23	59	45

From this it can be seen that the heaviest falls occur in January to March, and the lightest from August to October. Falls in the latter period are more consistent. Kukerin, 11 km south-west of Tarin Rock, records a mean rainfall of 358 mm (the same as Lake Grace) with extremes of 637 mm in 1955 and 208 mm in 1972. Effective rainfall (that required to initiate and maintain plant growth above the wilting point) is compared with actual rainfall in **Table 2**, and indicates that effective rainfall exceeds actual rainfall for approximately five months, from May to September inclusive.

TABLE 2 (mm)

Month	J	F	M	A	M	J
Actual Rainfall (mm)	13	18	25	25	46	56
Effective Rainfall (mm)	64	56	51	38	25	15
Month	J	A	S	O	N	D
Actual Rainfall (mm)	51	41	31	25	13	13
Effective Rainfall (mm)	13	18	25	38	43	56

Analysis of 52 years of records from Lake Grace, shows that drought periods (when actual rainfall is less than effective rainfall) always exceeds three months duration in every year, and in 6% of the years examined, drought periods equalled or exceeded 10 months duration.

Humidity:

Mean relative humidity for the year is 35%, being highest in July (57%) and lowest in December (21%) (six years' records).

Evaporation:

Evaporation is about 1400 mm per year.

Temperature:

Mean daily maximum temperature for the year is 23.4°C., and mean daily minimum temperature 9.9°C. The mean temperatures for each season are: autumn (March to May) 11.4°C, winter (June to August) 10.8°C, spring (September to November) 15.0°C, and summer (December to February) 22.2°C. Mean daily maximum for the hottest month is 31.7°C in January. An average of 19 days of frost are recorded per year, most of these occurring in July.

Winds:

In summer the strongest winds are from the east; in the winter from the west.

In January 33% of the winds exceed 18.5 km/h in velocity. These arise from the northeast, east, south-east or south. In July, 48% of the winds exceed 18.5 km/h in velocity; they come from the north, north-west, west or south-west.

Climatic conditions at time of survey:

Immediately prior to the first survey (16—29 May 1971) the area had been experiencing a drought. Kukerin (yearly average 425 mm) had received 195 mm of rain for the nine months preceding the survey, compared to the mean of 358 mm for that period. The first intensive winter rains fell during the May survey, and heavy rain fell on most days and nights after 19 May, with mean daily minimum temperature of 5.4°C and mean maximum day temperature of 20°C.

The spring survey (28 September to 3 October 1972) was conducted in cool overcast weather, with mean daily minimum temperature of 12°C and mean maximum temperature of 19°C. Light rain (less than 1 mm) on 1 and 2 October.

INTRODUCTION: NORTH TARIN ROCK RESERVE

Location & History

North Tarin Rock Reserve, No. 29857, lies about 23 km north-west of Lake Grace, and about 14 km north-north-east of Tarin Rock. Named after its location in reference to Tarin Rock Reserve, it occupies location No. 15555 in the Shire of Dumbleyung and is shown in part on each of the Lands & Survey Lithographs No. 2531-I (Lake Grace), 2531-IV (Kukerin), 2532-II (Maublarling) and 2532-III (Koolberin). Total area of the Reserve is 1415 ha.

It has a similar history to Tarin Rock Reserve but was gazetted as a 'C' class Flora and Fauna Reserve on 8 August 1969 and vested in the Western Australian Wildlife Authority.

Physiography and Basic Geology

This Reserve is located on the same basic rock types as Tarin Rock Reserve. In-situ deposition of sands has occurred, and the laterite duricrusts

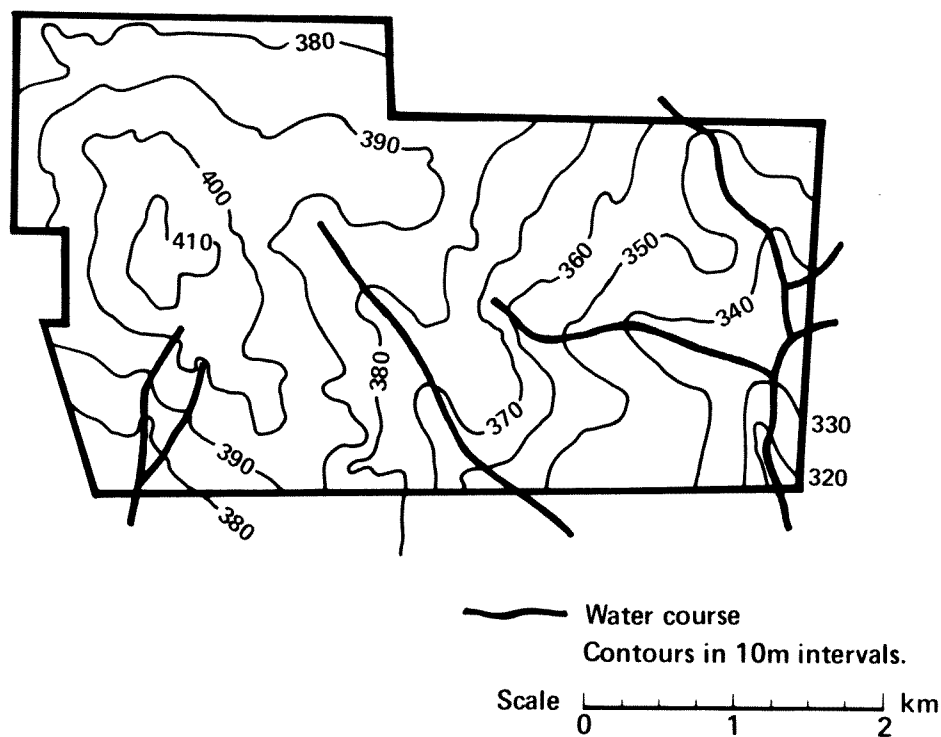


Fig. 2. North Tarin Rock Reserve, showing contours and watercourses. Reproduced from Lands and Survey Lithographs No. 2531-I,IV and 2532-II,III.

are only exposed on tops of undulations and where watercourses have cut back into the gentle hill-slopes, producing breakaways. These have in turn encouraged watercourse formation, leading to valley floors with alluvials and consequently woodlands. The dominant land form, and hence vegetation, is the granitic sand slopes which support mallee and heath of varying density.

A contour map illustrating the dominant north-west to south-east downslope is shown in **Fig. 2**. The highest point on the Reserve is in the midwestern sector and is about 410 m above sea level. The lowest is in the extreme south-east about 320 m above sea level. This Reserve, like Tarin Rock Reserve, thus lies within an altitudinal range of about 90 m.

There is no permanent water, although some pools may form in watercourses after heavy rain.

Fire History

No definite burns are visible on the 1964 air photographs. The 1972 air photographs show about 2 ha burnt in the extreme south-east corner of the Reserve. This burn is believed to be about seven years old at the time of this vegetation survey (September 1975).

Isolation

In 1964 North Tarin Rock was part of about 14,600 ha of uncleared land including Tarin Rock Reserve. By 1972 this had been reduced to about 1,100 ha of uncleared, unreserved land contiguous with the Reserve. In September 1975 a further reduction to 884 ha was noted, giving the Reserve plus uncleared land a total of about 2300 ha. Once clearing is complete the only contiguous uncleared land will be 30 ha on Water Reserve No. 10694 (location No. 15556), which lies on the western boundary of North Tarin Rock Reserve.

Climate and climatic conditions at time of survey

Climate is as described for Tarin Rock Reserve. Climatic conditions at the time of the autumn (16–29 May 1971) survey was the same as for Tarin Rock because the surveys were performed concurrently. The spring survey at North Tarin Rock immediately preceded the Tarin Rock survey and took place between 22–28 September 1972. The weather in this period was fine and warm, the mean daily minimum temperature being 7°C and mean daily maximum temperature 24°C.