Abstract

This, the third report describing the biological survey of the Eastern Goldfields, covers the Jackson–Kalgoorlie Study Area which lies between 30° and 31° South and 118°30′ and 120°45′ East. Most of the Study Area is within the Coolgardie Botanical System of the South-western Interzone; a major vegetation boundary (the Mulga-Eucalypt line) occurs along its northern boundary.

Seven landform units are present in the Study Area. Sandplain and Broad Valley are the most extensive units; Salt Lake Feature is prominent in the South-West; Granite Exposure is prominent in the west; and two sub-units of Hill are present: Hill (banded ironstone formation) in the central portion and Hill (quartz) in the south-east. Breakaway and Undulating Plain (greenstone) are scattered throughout the Study Area.

Vegetation and flora were examined at 166 sites. These sites, when broadly classified, represent 52 vegetation types. Most are characteristic of the Coolgardie Botanical District, although some northern sites were more typical of the Austin Botanical Province. Woodlands, Low Woodlands and Mallee were common on several landform units; Tall Shrubland occurred on five landform units; Low Shrubland was common on Salt Lake Feature; and Breakaway and Granite Exposure had Complexes of various associations.

The vascular flora comprised 3 species of fern, and 777 species, 16 subspecies and 20 varieties of flowering plants. Fifteen undescribed species were collected and a further 19 had been poorly collected previously. Some notable extensions of range are documented. Although no Gazetted Rare Flora were recorded, 18 taxa appear confined to the Study Area.

The vertebrate fauna of the Study Area was documented, principally from two survey areas. Two amphibian, 55 reptile, 89 bird and 30 mammal species were recorded. The area is of biogeographic significance, being an interzone between mesic south-west and arid interior faunas. Sandplain has the richest small mammal assemblage recorded in the Eastern Goldfields. Several important extensions of known range for reptiles are documented; a new species, *Ctenotus xenopleura*, was described from specimens from the Study Area.

Nature Reserves cover only 4.8% of the Study Area; four landform units are not represented in reserves and two others are inadequately represented. The creation of a large central reserve to extend the Mt Manning Range Nature Reserve to include the Mt Jackson, Helena and Aurora Ranges and the land enclosed by these major features is advocated.

I Introduction

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The Jackson–Kalgoorlie Study Area (Figure 1) is a rectangle of approximatel 21,500 km² situated between 30° and 31°S and 118°30′ and 120°45′E north east of Southern Cross in the central western section of the Eastern Goldfields. I comprises the whole of the 1:250,000 geological survey Jackson sheet, SH 50-1 (Chin and Smith 1981), and the western half of the Kalgoorlie sheet, SH 51- (Kriewaldt 1969). It is located predominantly in the Coolgardie phytogeographi region in the South-western Interzone between the South-West and Eremaea Botanical Provinces (Beard 1980).

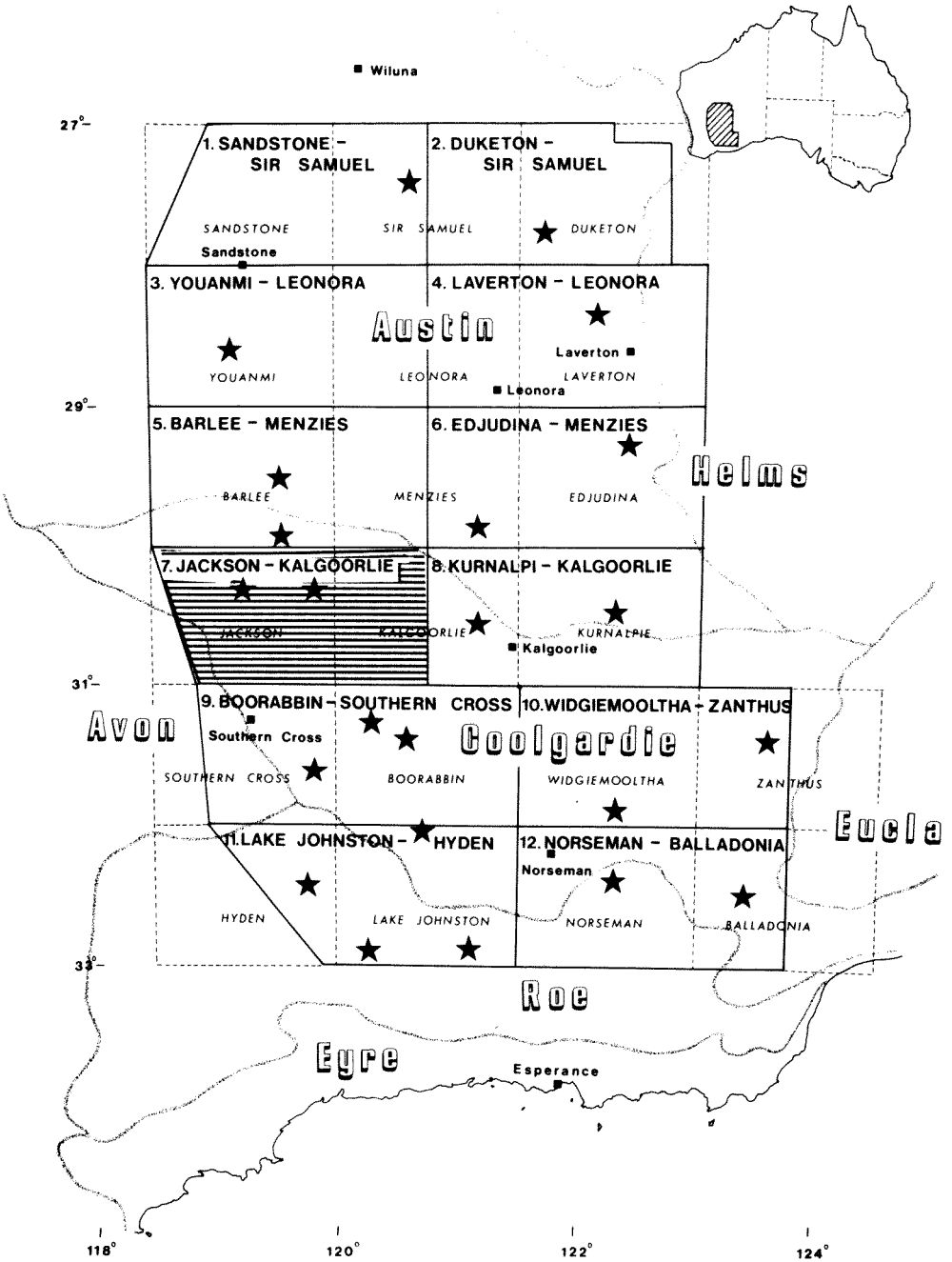

Figure 1 The extent of the Eastern Goldfields Region, the vegetation districts and the boundaries of the Study Areas included in the biological survey. The shaded portion shows the Jackson-Kalgoorlie Study Area covered by this report.

The Jackson–Kalgoorlie Study Area was selected as part of the biological survey of the Eastern Goldfields which commenced in 1978. The rationale for, and methods used in the survey are outlined in Biological Surveys Committee (1984). This report is the second presenting baseline data on the Eastern Goldfields survey; the first was by Newbey *et al.* (1984).

The botanical survey work was carried out by K.R. Newbey during September 1979; August, September and December 1981; and September 1982. Field traverses are shown on Figure 2 which also shows the main landform features outlined later.

The vertebrate fauna was recorded in a representative area of each of the major vegetation formations within 15 km radius of a campsite at Mt Jackson (30° 15′25″S, 119°16′15″E) and within 10 km radius of a campsite at Bungalbin (30°18′40″S, 119°43′40″E). Collections of invertebrates were also made and will be reported in later papers. The Study Area was visited in September 1979, April 1980 and November-December 1981 for a period of seven days at each of the two campsites.

The first European exploration in the Study Area was in 1846 by the three Gregory brothers who, while searching for good grazing country, ventured north-east to Mt Jackson which they named. The country was extremely dry around Mt Jackson in August 1846 with whirlwinds of red dust rising to heights of between 200 and 500 feet (Feeken *et al.* 1970). Disappointed with the area, the Gregory brothers left and travelled north-west towards Lake Moore.

Later explorers avoided the largely waterless Mt Jackson area. Forrest, in 1869, travelled northwards through the belt of granite outcrops just west of the Study Area, and Giles during his epic continental crossing in 1875 travelled westwards just north of the area.

Chin and Smith (1981) outlined the economic geology of the Study Area. On 20 October 1887, Ed Payne discovered gold in the part of the Yilgarn Hills now known as Highclere Hills (McMahon 1972). Prospecting activity spread rapidly throughout the area following declaration of the Yilgarn Goldfield in 1888. By 1894 two gold mines were operating near Mt Jackson. Small quantities of silver were also produced as a by-product of gold mining.

The town of Bullfinch on the southern edge of the Study Area was founded in 1909 with the opening of an important gold mine there (Beard 1972). The goldfields pipeline brought water to the town in 1911, the same year that a railway line was completed from Southern Cross. A second railway linking Bullfinch to Lake Brown was constructed in 1929. Gold production declined and the mine was closed in 1921 but was re-opened during the 1950s. Both railways were closed in 1963. During the time the mine was in operation, woodlands around Bullfinch were heavily cut for timber.

Iron ore production in the Koolyanobbing Range in the south of the Study Area commenced in 1950 (Chin and Smith 1981). Other iron ore deposits at Bungalbin Hill and near Mt Jackson have been located and test samples extracted.

With the closure of the Koolyanobbing mines in 1983, these deposits are unlikely to be mined for economic reasons.

Beard (1972) outlined agricultural and pastoral activities in the Study Area. During 1871 G. Lukin and D.B. Clarkson overlanded sheep from Toodyay to 'Yilgarn Station', now known as 'Ennuin'. Very limited water and drought caused the sheep to be sold (McMahon 1972). Much of the Study Area is unsuitable for pastoral industry because of the difficulty of obtaining reliable water. Also, sandplain vegetation has poor grazing qualities. The few sheep leases operate in woodland valleys where saltbush (*Atriplex* spp.) provides palatable food. However, these stations are hardly viable and have been abandoned on a number of occasions. Beard (1972) considered that grazing has had little impact on the vegetation. Wheat and sheep farms were established on the South-West portion of the Study Area from 1922 onwards.