MARANDOO RECONNAISSANCE

VERTEBRATE FAUNA

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1.0 OBJECTIVES

The major objectives of the Marandoo reconnaissance survey were to:

- develop a broad familiarity with the Marandoo lease area and its immediate environs by means of a series of ground transects along grid lines and access tracks;
- select a range of representative fauna sampling sites in and adjacent to the lease area suitable for intensive vertebrate fauna studies should these be required in the future;
- widen the scope of the reconnaissance to include potential transport and access corridors traversing portions of the Hamersley Range National Park north-west and south-east of the Marandoo lease area;
- liaise and integrate the vertebrate fauna reconnaissance survey with parallel studies of landforms and soils;
- liaise with CALM personnel carrying out a field study of the status of Mulga *Acacia aneura* valley communities within and beyond the lease;
- produce a report summarising the results of the reconnaissance and detailing any significant points or recommendations resulting from the field assessment.

2.0 METHODS

2.1 Locations Assessed

Lease Area: access throughout the lease was greatly facilitated by the network of grid lines and access tracks established during exploration activities. Initially, a general impression of the range of vegetation communities (fauna habitats) within the lease was obtained by means of a slow vehicle traverse along the main access road. Thereafter, a series of transects along gridlines and pre-existing tracks was carried out to more accurately define community boundaries and establish potential sampling areas. Foot transects were conducted to areas of special interest which were not serviced by gridlines. A log was kept of all traverses and photographs were taken of potential sampling areas. All details have been transferred to the contour map supplied (Attachment 3).

An attempt was made to locate the original Texasgulf trapline sampling areas but was unsuccessful. The grid references from the

CRA files could not be linked to AMG references and the latitudes and longitudes, although convertible to the AMG system will probably be too approximate to find the precise locations.

Immediately Adjacent Areas: during the reconnaissance it was apparent that some habitats beyond the lease, specifically those due north of its eastern half, had the potential to be impacted by altered patterns of surface water run-off or de-watering activity. The area in question is an unusual Coolibah *Eucalyptus microtheca* forest surrounded by a dense Mulga *Acacia aneura* forest. This was traversed by a series of vehicle transects along existing tracks and two extensive foot transects. Detailed notes were taken on the area and potential sampling sites established. This area is not covered by the contour map supplied and has been marked on a 1:100,000 series map (Attachment 4).

Transport Corridors: the south-eastern option was assessed by traversing the Juna Downs track to the eastern edge of the park. Where the track diverged from the conceptual route, photographs were taken from high points.

The section of the extreme north-western route between Marandoo and the water pipeline was traversed in the same fashion with the addition of a transect along the bed of the southern branch of the Fortescue River to the vicinity of the river crossover point and the corridor route along the adjacent valley (Attachment 4).

Apart from the first few kilometres, the potential route due south of the above was not assessed on the ground since CALM staff were of the opinion that the manager of Hamersley Station did not take kindly to trespassing. It was decided that a formal approach from the project co-ordinator would be more politic in the circumstances. This aspect has been postponed to a later date when it can be integrated with the field programme. In addition, vehicle access to much of this alternative route is extremely limited and may require long duration cross-country foot transects.

Other Areas: a wider perspective on the area was gained by traversing and taking notes along the the Marandoo - Milli Milli Spring track and the eastern route to the Hamersley Range National Park ranger's residence.

2.2 Liaison

Daily discussions with Bill McArthur and Jack Lorimer were carried out and were most useful in setting priorities and establishing representative sites.

Informal discussions were held each evening with CALM research staff and generally centered on what had been seen and done during the day. Questions on the future prospects for Marandoo which inevitably arose were fielded by stating that our role was basically an updating of the original Texasgulf information and a possible re-assessment of the lease. On the morning of September 9, K. Youngson and J. Henry showed CALM staff several sites of interest such as a permanent pool in the ranges and bat roosts in an exploration adit (MN-1). One of CALM's Mulga transects was then visited and a discussion was held as to how any future CRA studies could be integrated for mutual benefit. The rest of the morning was taken up with a 9 kilometre foot transect to the previously mentioned Coolibah forest north of the lease.

On the morning of Monday, September 10, K. Youngson and J. Henry visited the park Head Ranger, Keith Cunningham and discussed in very general terms the reconnaissance survey and possible future objectives of fauna studies.

2.3 Opportunistic Sampling

All fauna seen in and beyond the lease was noted (Attachment 1). Habitat data and sighting location were recorded for integration with future studies.

3.0 RESULTS

3.1 Lease and Immediately Adjacent Areas

Very good coverage was obtained and 16 potential sampling sites representing, and in some cases replicating, the major habitats of the lease and immediately adjacent areas were chosen. Grid references have been calculated for these (Attachment 2). Final choice of sites will be made after the results of the vegetation reconnaissance survey are available and further discussions have been held with Bill McArthur and Jack Lorimer. This will allow for a co-ordinated approach to sampling.

In general the lease shows a high level of disturbance compared to areas immediately east. This has been brought about by the establishment of grid lines and tracks and by the intensity of the 1986 wildfire. However, most of the grid lines have substantial regrowth and partitioning of habitats should not be a major problem unless grid lines are upgraded prior to, or during, the proposed sampling periods in 1991. The effects of the wildfire will tend to be most apparent in Mulga communities where major die-off of trees

has taken place. CALM data from less disturbed areas should give some insight into the original conservation status of the lease but the information gained on its present status will, in itself, be a valuable contribution to an upgrading of the original Texasgulf data and to knowledge of the Hamersley Range National Park as a whole.

3.2 Transport Corridors

South-eastern Option: this and the other options were assessed after an insight had been gained on the lease itself. It was immediately apparent that the country traversed by this option differs substantially from the lease in terms of landform, soils and vegetation. Major watercourses are present, calcrete exposures and small quartzite plains occur and a complex mosaic of vegetation communities more typical of southern areas of the park intrude into this corridor. Some differences in vertebrate fauna, especially terrestrial species with links to soil types can therefore be expected. In addition, tree-lined watercourses with permanent or semi-permanent water will also tend to result in suites of fauna differing from the lease. Similar fauna habitats were noted along the Milli Milli Spring track to the south of the lease area.

Unlike the options to the north-west, it would be unproductive to attempt to extrapolate from the lease to these southern and south-eastern areas since a high degree of speculation would be involved. Should this potential route be considered as the only alternative, a separate study would be required to adequately and confidently define its vertebrate fauna and conservation status.

North-western Options: the northernmost option was considered in most detail but problems with access did not allow the same amount of effort to be applied to the southernmost. While confirmation from the vegetation reconnaissance is required, it is our opinion that the major portion of both these routes does not differ substantially from the lease, indicating that a separate, intensive fauna study is not required. After the first intensive sampling period within the lease there should be sufficient field results to set aside two or three days during the second survey to carry out a more detailed assessment of these routes, including the use of intensive hand foraging techniques and observations. This will enable reliable extrapolation from the lease habitat data. However, the fact that the Marandoo access corridors are within the boundaries of the Hamersley Range National Park for part of their length may influence future decisions by CRA Services on the level of intensity which it is felt that this study requires.

3.3 Liaison

As stated earlier, liaison with Bill McArthur and Jack Lorimer was productive in setting daily objectives and defining representative areas. During the overlap period neither team had finalised their own opinions on the area therefore it was not possible to adequately discuss results in more than a general sense. However, at later stages in the project when results are integrated and discussions have been held, this co-ordinated approach will be extremely valuable.

Liaison with CALM was productive and has opened up lines of communication which will assist in ensuring that misunderstandings do not occur. CALM has not established a format for their fauna sampling methods and further discussions are necessary to establish compatibility between both studies.

3.4 Opportunistic sampling

A species list for the reconnaissance period is provided in Attachment 1 and summarised below.

Birds: 50 species of bird representing 51% of the original Texasgulf list were recorded within the lease during the reconnaissance period. Two species, the Spinifexbird and Grey Fantail, are new records for the lease and one, the Peregrine Falcon, is classified as rare under the Wildlife Conservation Act (1950). A further five species were recorded in outlying locations.

Mammals: six native and one introduced mammal were recorded. One of these, the Pebble-mound Mouse is classified as rare.

Amphibians and Reptiles: two species of frog and 14 reptiles were identified within the lease; one additional species was observed in an outlying area (Juna Downs track). One species, the Pilbara Olive Python is classified as rare and two further species, the Gecko *Oedura marmorata* and the skink *Cryptoblepharus carnabyi* are new records for the lease. Two additional new species for the area were identified from a video film and photographs taken by Jimmy and Jan Cox: a Monitor lizard *Varanus panoptes* and a Dragon lizard *Caimanops amphiboluroides*.

4.0 DISCUSSION POINTS

North-western Transport Corridors: it needs to be confirmed from the results of the parallel studies of soils, landform and vegetation

whether these areas are sufficiently similar to the Marandoo lease such that a fauna assessment of these potential corridors could be based on extrapolation from the lease results. There are enough precedents to suggest that this approach may be acceptable although partitioning of new areas in the park may be a complicating factor.

South-eastern Transport Corridor: a decision needs to be made as to whether this is the preferred option. Two aspects worth considering are that it will almost certainly involve a survey of the same or greater magnitude than the lease and will be extremely controversial because of the area of the Hamersley Range National Park which it will partition (see last paragraph of Section 3.2).

Open Drill Holes and Costines: a large number of drill hole edges have degraded over the years, plastic inserts have been broken by vehicles and caps have been knocked off by animals. These holes act as self-baiting, permanent fauna traps and may have had an adverse influence on local terrestrial fauna. Dead kangaroos and small animal skeletons were found in deep costines. As CALM personnel mentioned the drill holes during the survey and may well make a formal approach about them, it may be politic to anticipate this by making arrangements to deal with this problem. Conservation activists tend to exploit aspects such as this and the location of the lease in a national park can only complicate matters.

Grid Line Upgrading: upgrading of gridlines prior to or during the proposed survey will remove the continuous cover which has regrown across most of the lines. This will disrupt movement of many small animals which are reluctant to cross open space. Partitioning of territories will also occur, resulting in an undue influence on sampling. Once sampling sites have been finally defined, however, it should be possible to work around these areas provided that sufficient clearance is allowed on either side. The location of the CALM transects from the ranges to the valley floor also needs to be established to avoid the possibility of new tracks or grid lines crossing them.

Fauna Sampling Techniques: CALM has not yet established the format of their fauna sampling programme. The techniques used by Ninox, particularly for bird sampling and terrestrial vertebrate hand foraging are generally more intensive than theirs although trapping techniques are very similar. There should be no problems with the approach outlined by Ninox in their original proposal but discussions should be held with CALM to ensure that the Marandoo field studies can contribute to the concurrent CALM Mulga study. To this end, a strong bias towards Mulga communities has been included in the series of potential sampling sites in the lease.

Aerial Photography: recent colour aerials of the lease and outlying areas would be invaluable in establishing final site choice.

Pit Trap Establishment: access to the tractor-mounted auger located at Marandoo would allow pit traps to be dug much more rapidly than by hand (One series of 10 pits at Channar, for example, took four personnel 1.5 days to establish). While this is a necessary exercise, it is not an efficient use of field time if an alternative is available. One of the proposed personnel for the Marandoo project has had many years experience with tractors and hydraulic attachments and could operate the machine.

Access Tracks: while overall access within the lease is good, some of the outlying areas have no tracks in their vicinity. The most important of these is the Coolibah and Coolibah/Mulga forest north of the lease which CALM is extremely interested in having sampled as part of the proposed Marandoo survey. To reach sites within these areas on foot would involve one person for a whole morning and it would not be difficult to get lost during nocturnal sampling. Discussions need to be held with CALM to explore the feasibility of allowing a temporary track into this woodland from its eastern edge. No bulldozing or tree removal would be necessary.

CALM Access to Information: both CALM research personnel and the Head Ranger were most interested in having access to the updated and summarised Texasgulf data and the results of this most recent reconnaissance survey. This appears to be a reasonable request considering that the area is within a national park. If CRA is agreeable they could be given the updated Texasgulf information when it is available and Attachments 1 and 2 of this report.

Attachment 1 Vertebrates recorded at Marandoo and adjacent areas between September 5 and 12, 1990.

* = Gazetted rare species

BIRD SPECIES

DROMAIIDAE	
Dromaius novaehollandiae,	Emu (droppings)
ARDEIDAE	
Ardea pacifica,	Pacific Heron (video)
ACCIPITRIDAE	
Accipiter fasciatus,	Brown Goshawk
A. cirrhocephalus,	Collared Sparrowhawk
Aquila audax,	Wedge-tailed Eagle
FALCONIDAE	
* *Falco peregrinus*,	Peregrine Falcon
F. berigora,	Brown Falcon
F. cenchroides,	Australian Kestrel
TURNICIDAE	
Turnix velox,	Little Button-quail
RALLIDAE	
Gallinula ventralis,	Black-tailed Native-hen (video)
COLUMBIDAE	
Geopelia placida,	Peaceful Dove
G. cuneata,	Diamond Dove
Phaps chalcoptera,	Common Bronzewing
Ocyphaps lophotes,	Crested Pigeon
Petrophassa plumifera,	Spinifex Pigeon
CACATUIDAE	
Cacatua roseicapilla,	Galah
C. sanguinea,	Little Corella
PLATYCERCIDAE	
Melopsittacus undulatus,	Budgerigar
Barnardius zonarius,	Port Lincoln Ringneck
Neophema bourkii,	Bourke's Parrot
AEGOTHELIDAE	
Aegotheles cristatus,	Australian Owlet-nightjar
ALCEDINIDAE	
Halcyon pyrrhopygia,	Red-backed Kingfisher (nests)
HIRUNDINIDAE	
Cecropis ariel,	Fairy Martin (nests)
MOTACILLIDAE	
Anthus novaeseelandiae,	Richard's Pipit
CAMPEPHAGIDAE	
Coracina novaehollandiae,	Black-faced Cuckoo-shrike
MUSCICAPIDAE	
Petroica goodenovii,	Red-capped Robin
Melanodryas cucullata,	Hooded Robin
Pachycephala rufiventris,	Rufous Whistler
Colluricincla harmonica,	Grey Shrike-thrush
Oreoica gutturalis,	Crested Bellbird
Rhipidura fuliginosa,	Grey Fantail
R. leucophrys,	Willie Wagtail
TIMALIIDAE	
Pomatostomus temporalis,	Grey-crowned Babbler
SYLVIIDAE	
Eremiornis carteri,	Spinifexbird
MALURIDAE	
Malurus lamberti,	Variegated Fairy-wren

Attachment 1 Continued

ACANTHIZIDAE	
Smicrornis brevirostris,	Weebill
Gerygone fusca,	Western Gerygone
Acanthiza apicalis,	Inland Thornbill
A. uropygialis,	Chestnut-rumped Thornbill
CLIMACTERIDAE	
Climacteris melanura,	Black-tailed Treecreeper
MELIPHAGIDAE	
Acanthagenys rufogularis,	Spiny-cheeked Honeyeater
Manorina flavigula,	Yellow-throated Miner
Lichenostomus virescens,	Singing Honeyeater
L. keartlandi,	Grey-headed Honeyeater
L. penicillatus,	White-plumed Honeyeater
DICAEIDAE	
Dicaeum hirundinaceum,	Mistletoebird
PARDALOTIDAE	
Pardalotus rubricatus,	Red-browed Pardalote
P. striatus,	Striated Pardalote
PLOCEIDAE	
Emblema picta,	Painted Firetail
Poephila guttata,	Zebra Finch
PARADISAEIDAE	
Chlamydera maculata,	Spotted Bowerbird
GRALLINIDAE	
Grallina cyanoleuca,	Australian Magpie-lark
ARTAMIDAE	
Artamus cinereus,	Black-faced Woodswallow
A. minor,	Little Woodswallow
CRACTICIDAE	
Cracticus nigrogularis,	Pied Butcherbird
Gymnorhina tibicen,	Australian Magpie
CORVIDAE	
Corvus orru,	Torresian Crow

MAMMAL SPECIES

MACROPODIDAE	
Macropus robustus,	Common Wallaroo
M. rufus,	Red Kangaroo
MEGADERMATIDAE	
Macroderma gigas,	Ghost Bat
EMBALLONURIDAE	
Taphozous hilli,	Hill's Sheathtail-bat
VESPERTILIONIDAE	
Chalinolobus gouldii,	Gould's Wattled Bat
Eptesicus finlaysoni,	Little Cave Bat
MURIDAE	
* *Pseudomys chapmani*	Pebble-mound Mouse (mounds)
CANIDAE	
Canis familiaris dingo,	Dingo (droppings)
BOVIDAE	
Bos taurus,	Domestic Cattle

AMPHIBIAN AND REPTILE SPECIES

HYLIDAE	**Frogs**
Cyclorana platycephala	
Litoria rubella	

Attachment 1 Continued

GEKKONIDAE	**Geckos**
Gehyra variegata	
Heteronotia binoei	
Oedura marmorata	
AGAMIDAE	**Dragon Lizards**
Caimanops amphiboluroides (photograph)	
Ctenophorus c. caudicinctus	
C. reticulatus	
Gemmatophora longirostris	
SCINCIDAE	**Skinks**
Cryptoblepharus carnabyi	
C. plagiocephalus	
Lerista muelleri	
Omolepida branchialis	
Tiliqua occipitalis	
VARANIDAE	**Monitors**
Varanus giganteus	
V. panoptes rubidus (photograph)	
BOIDAE	**Pythons**
* *Morelia olivacea barroni*	
ELAPIDAE	**Elapid Snakes**
Acanthophis pyrrhus	
Pseudechis australis	

Attachment 2 Site descriptions with AMG reference and approximate distance and direction from Marandoo camp.

Mulga woodland/spinifex on deep loam (1) Approx. 1 km NE of camp	615 100mE	7 497 100mN
Mulga woodland/spinifex on deep loam (2) Approx. 1.9 km E of camp	616 100mE	7 496 400mN
Open Mulga woodland/dense spinifex on silty loam (3) (Picture 15) Approx. 3.6 km E of camp	617 750mE	7 496 500mN
Snappy Gum/spinifex on stony rises Approx. 1.8 km SE of camp	615 000mE	7 495 000mN
Densely vegetated creekline with Mulga,Bloodwood,Sandalwood/grass, spinifex on silty loam (1) (Picture 16) Approx. 4.45 km ESE of camp	618 400mE	7 495 000mN
Mulga/Bloodwood gully (2) Approx. 7.75 km ESE of camp	621 400mE	7 493 550mN
Acacia citrinoviridis broad valley with patches of Eucalyptus species (Picture 1) Approx. 4.5 km SE of camp	618 100mE	7 494 300mN
Low Mulga woodland on rocky hillside (Picture 7) Approx. 7.25 km ESE of camp	620 750mE	7 493 500mN
Spinifex grassland with scattered Mulga, Bloodwood on pebbly loam (1) (Picture 14) Approx. 8.75 km ESE of camp	623 850mE	7 493 300mN
Mulga/Bloodwood/spinifex on pebbly loam (2) Approx. 10.4 km ESE of camp	623 850mE	7 492 750mN
Low Mallee woodland (Eucalyptus gamophylla)/mixed shrubs and spinifex (Picture 6) Approx. 10.15 km ESE of camp	623 400mE	7 492 200mN
Broad valley with Mallee species/spinifex on low pebbly rises (Picture 4) Approx. 10.1 km SE of camp	622 900mE	7 491 500mN
Rocky gully with permanent waterhole. Dense Mulga stream zone, Ficus sp. on cliff faces (Picture 3) Approx. 10.85 km SE of camp	623 100mE	7 490 500mN
Very open Mulga woodland/grasses on silty loam (Picture 8) Approx. 12.55 km ESE of camp	626 250mE	7 493 500mN
Dense Mulga woodland with emergent Coolibah on deep loam (Picture 9) Approx. 10.5 km ENE of camp	625 000mE	7 497 000mN
Open Coolibah forest/woodland on deep loam (Picture 10-12). Approx. 9 km ENE of camp	623 000mE	7 497 000mN

The last two of these sites, although not on the Marandoo lease, are in the area of potential impact since most drainage from the lease flows to the north. This distinct vegetation community requires intensive sampling for this reason and because it is poorly represented in surrounding areas.