DRAFT 25/10/90; plant list updated Oct. 1992.

PRELIMINARY REPORT ON THE CONSERVATION VALUES OF OPEN COUNTRY PADDOCK, BOOLARDY STATION.

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INTRODUCTION

Boolardy Station is situated about 150 km north of Yalgoo and 140 km west-north-west of Cue, in the Shire of Murchison, Western Australia. Open Country Paddock (about 16 000 ha) is in the south-east corner of the station, at 27°05'S, 116°50'E. The most prominent named feature is Coolamooka Hill, near the eastern boundary of the paddock. There are no conservation reserves in this region, although there are some small reserves set aside for various other purposes.

Previous biological data for the station consist of broad scale vegetation mapping and land system mapping. Beard (1976) mapped the entire Murchison region at 1: 1 000 000. The Open Country Paddock area was mapped as supporting mulga woodlands and shrublands. More detailed mapping of land system units for rangeland assessment purposes has been carried out more recently at a scale of 1: 40 000 (Payne and Curry in prep.). Seven land systems were identified in open Country Paddock (Fig. 1).

Apart from these studies, no detailed biological survey work appears to have been done in the area.

Open Country Paddock has been only lightly grazed by domestic stock because of the presence of Kite-leaf Poison (*Gastrolobium laytonii*) and a lack of fresh water. Because of this and the generally good condition of the paddock and presence of a wide range of plant species, P.J. Curry and A.L. Payne of the Department of Agriculture recommended that part of the area be considered for setting aside as a permanent reserve for reference purposes. As a consequence of this, and at the invitation of the lessees of Boolardy Station, we carried out a brief biological survey in order to assess the conservation status of the eastern portion of Open Country Paddock. This is an area of about 7 000 ha, bounded to the east by Meka Station and to the south by Mt Wittenoom Station.

METHODS

All observations were carried out from 11 to 13 September, 1990. We carried out a vehicle traverse throughout most of the length of the paddock in company with D. Halleen (Boolardy Station) and T. Eckersley (Dept of Agriculture, Carnarvon). Opportunistic observations and plant collections were made during this and a subsequent traverse. Although access was difficult and slow due to a lack of tracks in the area, all land systems mapped by Payne and Curry (in prep) in the eastern half of the paddock were examined during these traverses.

Two 30 x 30 m quadrats were set up, permanently marked, and sampled for vascular plant species. One was on the Sherwood land system near the northern boundary, and one was on the Ero land system near the southern boundary.

25 medium-sized Elliott mammal traps were set for two nights at a breakaway system in the Sherwood land system near the northern boundary. Vertebrates were also recorded by means of opportunistic observations and recording of scats, tracks and other sign.

RESULTS

Vegetation

The north-east corner of the paddock was relatively dry at the time of our visit and therefore difficult to compare with other areas during such a short investigation.

All other areas appeared to be in good to excellent condition except for a few localized areas such as the tops of some breakaways where there had been recent heavy grazing by goats. From visual assessments, both annual and perennial plant species diversity appeared to be relatively high in all land systems. Few weeds were noted, and most of those that were seen were along stream zones.

Floristics

A total of 205 species of vascular plants were recorded in the eastern part of Open Country Paddock (Appendix 1). Of the 49 families represented, prominent ones included Asteraceae (daisies; 36 species), Chenopodiaceae (saltbushes and bluebushes; 25 species), Mimosaceae (wattles; 18 species, all *Acacia* species), and Poaceae (grasses; 18 species). The genus *Eremophila* (poverty bushes; 6 species) was also prominent.

Animals

Totals of five reptile, 39 bird and eight mammal species (four native and four introduced) were detected in the study area (Table 1). In addition, numerous old and disused nests of Stick-nest Rats (*Leporillus* sp., probably *L. apicalis*) were found under overhangs in the breakaway systems. Three species of birds (Galah, Pipit and Pied Honeyeater) were found to be breeding during the time of our survey. The Galah was nesting in holes in the face of breakaways.

Table 1: Vertebrate animal species recorded in Open Country Paddock, Boolardy Station.

Scientific name	Common name
Reptiles	
Gehyra punctata	Spotted Dtella
Gehyra variegata	Tree Dtella
Ctenophorus caudicinctus	Ring-tailed Dragon
Ctenophorus reticulatus	Western Netted Dragon
Gemmatophora longirostris	a dragon
Mammals	
Tachyglossus aculeatus (scats)	Echidna
Macropus robustus (scats)	Euro
Macropus rufus	Red Kangaroo
Tadarida australis	White-striped Mastiff-bat
Leporillus sp. (old nests)	Stick-nest Rat

Oryctolagus cuniculus	Rabbit
Vulpes vulpes	Fox
Capra hircus	Feral Goat
Ovis aries	Sheep

Birds

Dromaius novaehollandiae	Emu
Ardea novaehollandiae	White-faced Heron
Aquila audax	Wedge-tailed Eagle
Falco berigora	Brown Falcon
Falco cenchroides	Australian Kestrel
Charadrius melanops	Black-fronted Plover
Geopelia cuneata	Diamond Dove
Phaps chalcoptera	Common Bronzewing
Ocyphaps lophotes	Crested Pigeon
Cacatua roseicapilla	Galah
Nymphicus hollandicus	Cockatiel
Psephotus varius	Mulga Parrot
Chrysococcyx basalis	Horsfield's Bronze-Cuckoo
Hirundo neoxena	Welcome Swallow
Cecropis ariel	Fairy Martin
Anthus novaeseelandiae	Richard's Pipit
Petroica goodenovii	Red-capped Robin
Pachycephala rufiventris	Rufous Whistler
Colluricincla harmonica	Grey Shrike-thrush
Oreoica gutturalis	Crested Bellbird
Rhipidura leucophrys	Willie Wagtail
Psophodes occidentalis	Chiming Wedgebill
Pomatostomus superciliosus	White-browed Babbler
Malurus splendens	Splendid Fairy-wren
Sericornis brunneus	Redthroat
Acanthiza uropygialis	Chestnut-rumped Thornbill
Aphelocephala leucopsis	Southern Whiteface
Acanthagenys rufogularis	Spiny-cheeked Honeyeater
Manorina flavigula	Yellow-throated Miner
Lichenostomus virescens	Singing Honeyeater
Phylidonyris albifrons	White-fronted Honeyeater
Certhionyx variegatus	Pied Honeyeater
Stagonopleura picta	Painted Firetail
Artamus cinereus	Black-faced Woodswallow
Artamus cyanopterus	Dusky Woodswallow
Cracticus torquatus	Grey Butcherbird
Cracticus nigrogularis	Pied Butcherbird
Gymnorhina tibicen	Australian Magpie
Corvus orru	Torresian Crow

DISCUSSION

Open Country Paddock contains a very good representation of the major upland land systems of the Murchison pastoral area. It includes granite rocks, lateritic breakaways, stony rises and slopes, sandy plains, wash plains with hard pan and mulga and minor

streamzones with both fresh and saline elements. A north-south fence in the position nominated as the western boundary (Fig. 1) would include representation of five of the six major land systems in Open Country Paddock: Kalli, Yanganoo, Challenge, Norrie and Ero (Payne and Curry in prep.).

Represented elsewhere in Open Country Paddock but not in the eastern third are the Tindalarra and Waguin land systems. The Waguin land system only occurs as a small area in the western third of the paddock and so was not investigated during the present survey. The Tindalarra land system occurs very close to the proposed fenceline. Ideally, some of this would be included in the proposed reserve. However, our brief inspection suggested that, in this area, vegetation on local units of the Tindalarra land system is very similar to that on other land systems nearby. This is probably not the case in other areas. Unless part of the Tindalarra system could be included without complicating the boundary alignment and without compromising the practicality of fencing, it is not a high priority in this instance.

The importance of Open Country Paddock for conservation is highlighted by the fact that we recorded 27% of the plant species listed by Cranfield (in press) as occurring in the entire Murchison region. At least one of the species we collected (*Tetragonia cristata*) is endemic to the Murchison region (Cranfield in press). At least one species (*Prasophyllum ringens*) is at its inland limit at Boolardy and our record is an extension of known range by at least 50 km. *Stylidium longibracteatum* is at or near the western limit of its range on Boolardy. This species is only known from here across to Yalgoo and Meekatharra and is not known from any conservation reserve. Further work would no doubt result in an increase in the number of species known from Open Country Paddock.

The animals we recorded constitute a good representation of the common species of the Murchison. One of the more interesting sightings includes that of the Painted Firetail, which is at or near its south-western limit in this area (Storr 1985). Again, further work would increase the list of species known in the area.

CONCLUSION

Open Country Paddock is in good condition and supports a relatively diverse array of plants in an area where there are few conservation reserves. It includes a broad cross section of the vertebrates of the region, together with several occurrences of plant species of particular interest. The proposed north-south boundary includes the major types of land systems represented in the paddock as a whole. These are land systems which are representative of the region, with the exception of major drainage systems.

It is therefore recommended that CALM, in consultation with the local community, places a high priority on facilitating the vesting of this area as a reserve.

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REFERENCES

Beard, J.S. (1976) Vegetation Survey of Western Australia. Murchison. 1:1 000 000 Series, Explanatory Notes to Sheet 6. The Vegetation of the Murchison Region. (University of Western Australia Press, Perth).

Cranfield, R. (1991) Plist of vascular plants recorded from the Murchison Catchment Survey area, 1985-1988. *Kingia* 1(4): 327-347.

Green, J.W. (1985) Census of the Vascular Plants of Western Australia. (Western Australian Herbarium, Dept of Agriculture, Perth).

Payne, A.L. and Curry, P.J. (in prep.) An inventory and condition survey of rangelands in the Murchison region, Western Australia. (Dept. of Agriculture, Western Australia).

Storr, G.M. (1985) Birds of the Gascoyne Region, Western Australia. *Records of the Western Australian Museum* Suppl. No. 21.

List updated Oct-'92.

Appendix 1: List of plant species collected in Open Country Paddock, Boolardy Station, September 1990. Nomenclature and taxonomic order are based on Green (1985). Common names (where known) are shown in brackets. Numbers in brackets are site numbers.

Label	Species name/field name
	7 ADIANTACEAE
2	Cheilanthes austrotenuifolia (rock fern)
	26 JUNCAGINACEAE
59	Triglochin calcitrapa Hook. (45) (spurred arrowgrass)
74	Triglochin mucronata R.Br. (prickly arrowgrass)
	31 POACEAE
28	Aristida contorta (sites 44,45)
10	Bromus aff. arenarius Labill.
36	Cymbopogon ambiguus (lemon scented grass)
5	Cymbopogon bombycinus (a scented grass)
18	Enneapogon caerulescens var. caerulescens (limestone grass)
11	Eragrostis dielsii Pilger (mallee lovegrass)
12	Eragrostis falcata (sickle lovegrass)
19	Eragrostis lanipes (creeping wanderrie grass)
35	Eragrostis aff. lanipes (site 45)
31	Eriachne flaccida (claypan grass)
32	Eriachne aff. flaccida
30	Eriachne pulchella (pretty wanderrie grass)
20	Neurachne minor
34	Paspalidium basicladium
4	* Pentaschistus airoides
-	Stipa elegantissima Labill. (feather speargrass)
24	Stipa trichophylla (site 45) (a speargrass)
33	Thyridolepis multiculmis (soft wanderrie grass)
	32 CYPERACEAE
45	Cyperus alterniflorus
47	Isolepis congrua
	54E PHORMIACEAE
-	Dianella revoluta R.Br. (spreading flax lily)
	54F ANTHERICACEAE
62	Arthropodium capillipes (44)
56	Borya sp. 2
57	Thysanotus manglesianus (a fringe lily)
58,520	Thysanotus speckii (a fringe lily)

66 ORCHIDACEAE

- Prasophyllum ringens (laughing leek orchid)

70 CASUARINACEAE

- Casuarina obesa (swamp sheoak)

88 URTICACEAE

- Parietaria debilis (pellitory)

90 PROTEACEAE

89 Grevillea brachystachya
88 Grevillea stenostachya
95 Hakea preissii
- Hakea recurva Meissner
102 Petrophile aff. conifera

92 SANTALACEAE

-,105 Exocarpos aphyllus (leafless ballart) (site 45)
- Santalum acuminatum (sweet quandong)
- Santalum spicatum (sandalwood)

97 LORANTHACEAE

106 Amyema nestor
107 Lysiana casuarinae (on Acacia)

103 POLYGONACEAE

- * Emex australis (double gee)

105 CHENOPODIACEAE

109 Atriplex codonocarpa (dwarf saltbush)
111 Atriplex semilunaris
112 Atriplex aff. vesicaria (bladder saltbush)
113 ?Atriplex sp. 2 (small)
114 Atriplex ?bunburyana
115 chenopod sp. 1 (44,45)
116 chenopod sp. 2 (45)
118 ?Enchylaena lanata
119 ?Halosarcia sp. 1
120 Halosarcia sp. 2
121 Maireana atkinsiana
122 Maireana carnosa (cottony bluebush)
123 Maireana cf enchylaenoides
279 Maireana glomerifolia
124 Maireana thesioides (44) (lax bluebush)
125 Maireana ?tomentosa Moq. (44,45)
126 Maireana ?trichoptera (45)
127 Maireana triptera (45) (three-winged bluebush)
128 ??Maireana sp.1 (44)
129 ??Maireana sp.2
507 ?Maireana sp. 3

131 Salsola kali L. (45)
133 Sclerolaena sp. 1 (wooly, 45)
134 Sclerolaena sp. 2 (cottony, 45)
135 ?Sclerolaena sp. 3 (long leaves; 44,45)

106 AMARANTHACEAE

136 Ptilotus exaltatus (45) (purple mulla mulla)
- Ptilotus gaudichaudii
141 Ptilotus gomphrenoides
142 Ptilotus helipteroides (45,)
139 Ptilotus obovatus (44) (cotton bush)
-,143 Ptilotus polystachyus (green mulla mulla)
140 Ptilotus schwartzii

110 AIZOACEAE

519 Tetragonia cristata (45)

111 PORTULACCACEAE

146 Calandrinia eremaea
144 Calandrinia polyandra
165 Calandrinia pumila

113 CARYOPHYLLACEAE

- * Silene gallica (granite rock) (French catchfly)

138 BRASSICACEAE

152 Lepidium oxytrichum (44)
153,154 Lepidium phlebopetalum (45)
508 Menkea australis (45)
156 Stenopetalum filifolium
157 Stenopetalum aff. lineare
158 Stenopetalum pedicellare (45)

143 DROSERACEAE

160 Drosera menziesii ssp. thysanosepala

149 CRASSULACEAE

164 Crassula colorata

152 PITTOSPORACEAE

- Pittosporum phylliraeoides (native willow)

163 MIMOSACEAE

211 Acacia acuaria (44,45)
240 Acacia acuminata
239 Acacia ampliceps
197,492 Acacia aneura (44,45) (mulga)
199 Acacia grasbyi (miniritchie)
236,237 Acacia kempeana

206,243 Acacia linophylla (45)
200 Acacia palustris
238 Acacia quadramarginea
198 Acacia ?rhodophloia
90,241 Acacia sclerosperma
235 Acacia tysonii
234 Acacia victoriae
242 Acacia sp. 42 (terete, pungent)
550 Acacia sp. 43
557 Acacia sp. 44
567 Acacia sp. 45
579 Acacia sp. 46

164 CAESALPINIACEAE

192 c Senna (Cassia) artemisioides ssp. petiolaris
(sp.2; green, 44)
193 c Senna (Cassia) artemisioides ssp. helmsii
(sp.3; broad leaflets; 44)
194 c Senna (Cassia) artemisioides ssp. x sturtii
(sp.4; narrow leaflets; 45)
- Senna (Cassia) nemophila (desert cassia)

165 PAPILIONACEAE

189 Glycine tomentella (creekline)
177 Mirbelia ramulosa (granite)
190 Mirbelia rhagodioides
180 Mirbelia sp. [?aff. spinosa] (granite)
188 Muelleranthus trifoliolatus (granite)
183 Swainsona elegans (45)
182 Swainsona incei (blue fls; creekline)

167 GERANIACEAE

244,245 Erodium cygnorum (44,45)

173 ZYGOPHYLLACEAE

246 Tribulus astrocarpus (45)
247 Tribulus occidentalis (45)
248 Zygophyllum aff. aurantiacum (?45)
249,251 Zygophyllum fruticulosum (45)
250 Zygophyllum iodocarpum (45)

175 RUTACEAE

255 Eriostemon brucei
256 Eriostemon sericeus (woolly petals; breakaway)

183 POLYGALACEAE

262 Comesperma integerrimum

185 EUPHORBIACEAE

264 Euphorbia drummondii
265 Euphorbia tannensis

207 SAPINDACEAE

274 Dodonaea viscosa (breakaways)

221 MALVACEAE

491 Abutilon sp. (45)
278 Alyogyne pinoniana (creekline)
282,517 Sida calyxhymenia (breakaway,site 44)
281a Sida aff. currugata
281b Sida filiformis
283 Sida aff. filiformis

236 FRANKENIACEAE

291 Frankenia pauciflora

263 THYMELAEACEAE

271,293 Pimelea microcephala (Ero creek & site 45)

273 MYRTACEAE

323 Callistemon phoeniceus (in creekline)
350 ?Pileanthus sp. 1 (breakaway)

276 HALORAGACEAE

499 Gonocarpus confertifolius (granite)
501 Haloragis odontocarpa (granite)
502 Haloragis aff. odontocarpa (granite)

281 APIACEAE

352 Daucus glochidiatus
- Trachymene cyanopetala
353 Trachymene aff. glaucifolia
- Trachymene ornata

293 PRIMULACEAE

- * Anagallis arvensis L.
516 Samolus junceus

305 ASCLEPIADACEAE

- Rhyncharrhena linearis

307 CONVOLVULACEAE

496 Convolvulus erubescens

307A CUSCUTACEAE

149 Cuscuta sp.

310 BORAGINACEAE

-,441 Omphalolappula concava (45)
- Trichodesma zeylanicum

315 SOLANACEAE

377 Nicotiana cavicola
378 Nicotiana rosulata (granite)
379 Solanum lasiophyllum

326 MYOPORACEAE

382 Eremophila forrestii (45)
394,395 Eremophila georgei (44,breakaway)
398,401 Eremophila glutinosa (top of breakaway)
387,396,399 Eremophila latrobei
397 Eremophila longifolia (creek line)
400 Eremophila oppositifolia (breakaway slopes)

329 PLANTAGINACEAE

402 Plantago cf. varia (45)

337 CUCURBITACEAE

- * Citrullus lanatus

341 GOODENIACEAE

413a Scaevola spinescens (45)
413b Scaevola tomentosa (45)
417 Goodenia mimuloides (45)
418 Goodenia occidentalis (granite)
420 Velleia rosea
419 Velleia ?rosea

343 STYLIDIACEAE

- Stylidium longibracteatum Carlq.

345 ASTERACEAE

451 Actinobole sp.
424 Brachycome aff. bellidioides
433 Brachycome cheilocarpa
426 Brachycome ?iberidifolia
432 Brachycome lineariloba (44)
428 Brachycome sp. 1 (white; 45)
440 Calocephalus sp. 7 (44)
447 Calocephalus sp. 8 (45)
448 Calocephalus sp. 9 (breakaway)
442 Calotis hispidula (45)
434 Calotis multicaulis (granite rock)
443 Cephalipterum drummondii (45)
445 Chrysocoryne pusilla
449 Chrysocoryne sp. 4 (breakaway)
483,524 Erymophyllum ramosum ssp. involucratum (44)

450 Helichrysum sp.1 (creekline)
455 Helichrysum davenportii
480 Helipterum battii (granite)
484 Helipterum humboldtianum (creekline)
473 Helipterum maryonii
489 Helipterum propinquum (breakaway slopes)
453 Helipterum strictum (45)
474 Helipterum sp.1 (breakaway)
490 Hyalospermum demissum (44)
469 Hyalospermum glutinosum ssp. venustum (granite)
475 Hypochoeris glabra (granite)
- Isoetopsis graminifolia (44, granite)
476 Kippistia suaedifolia (breakaway rim)
457,481,482 Myriocephalus guerinae
488 Osteospermum clandestinum (Ero ck)
- Podolepis canescens (45)
470 Pogonolepis stricta
461 Senecio glossanthus (45)
- Senecio lautus
477 * Sonchus oleraceus (Ero ck)
478 Urospermum picroides (creekline)

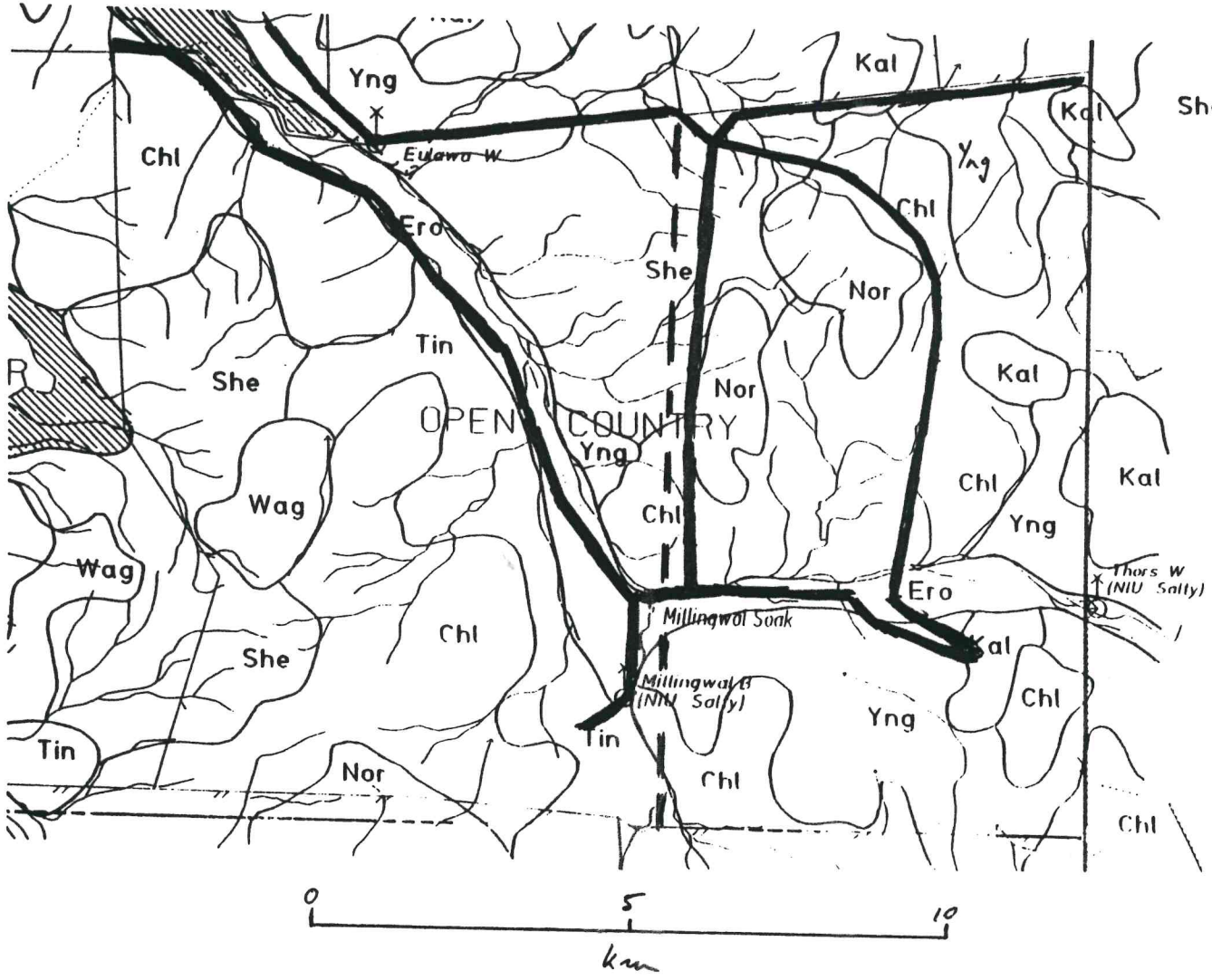

Figure 1: Land system boundaries (from Payne + Curry in prep.) and locations of ~~transects~~ traverses in Open Country Paddock, Boolardy Station.