REPORT ON A 1995 VISIT TO LAKE BOONDEROO

Lake Boonderoo is situated 20km south-east of Kitchener on the western edge of the Nullarbor Plain in Western Australia. The lakebed is normally dry; the last time it had received a major flood event was in 1975 following above average rainfall in 1975 including Cyclone 'Trixie' which on 21/22 February 1975 deposited widespread and very heavy rain in the Murchison and Goldfields including 400mm rain on Pinnacles Station. Water remained in the lake for 8 years following this event. Thus the lake is the repository of waters from the north-eastern Goldfields which flow south-east via the ancient drainages of lakes Raeside and Rebecca into Ponton (Goddards) Creek and finally into Lake Boonderoo.

Cyclone 'Bobby' crossed the Western Australian coast near Onslow on 24 February 1995 and by 26-27 February had developed into a rain bearing depression delivering extremely heavy rain over the north-eastern Goldfields. The following figures are rainfall for February 1995 in mm with the mean in brackets:- Cashmere Downs 367 (23), Kalgoorlie RFDS 241 (12), Leonora 285 (25), Sandstone 271 (26), and Yundamindra 347 (22).

Although water was flowing in Ponton Creek under Goddard's Bridge on 3 March 1995, this was from a previous local rainfall event; it was not until 17 March that water from Cyclone 'Bobby' flowed under the bridge, it peaked on 27/28 March and probably at least a week later it reached Lake Boonderoo. At the time of our visit although Ponton Creek was still flowing strongly the flood level had subsided, however the level in the Lake was still rising. Unlike in 1975 waters from Lake Rebecca did not join Ponton Creek at its confluence in Queen Victoria Spring nature reserve.

Ian Kealley, Warwick Roe, Geoff Young and Andy Chapman from the Kalgoorlie office of CALM visited Lake Boonderoo between 14-17 August 1995. The Lake was accessed from a point 11km south-east of Kitchener. Two dinghys with outboards were used to access the Lake. Apart from waterfowl recording; depth, temperature and conductivity were measured the latter with Cyberscan 100 conductivity meter. Global Positioning Satellite receivers were used to navigate and plot sample points. These data are in Table 1.

ANNOTATED LIST OF WATERFOWL

In this list a record refers to a notebook entry irrespective of number of birds seen. B/4 (2) for example refers to two broods each of 4 dependent young, C/6 (3) refers to 3 clutches each with 6 eggs.

MUSK DUCK (*Biziura lobata*)
Relatively uncommon compared to other ducks on Lake Boonderoo, but frequently recorded compared to other Goldfield lakes. Seven sight records but more frequently heard, most birds were solitary males. Apparently a relatively deep water duck, most records were in 3-4m of water.

BLACK SWAN (*Cygnus atratus*)
Uncommon, five sight records, usually solitary birds, one record of three. Also heard flying at night.

AUSTRALIAN SHELDUCK (*Tadorna tadornoides*)
Relatively uncommon, 11 sight records all but one of which were paired birds

PACIFIC BLACK DUCK (*Anas superciliosa*)
Scarce on Lake Boonderoo, 3 pairs only recorded.

AUSTRALIAN SHOVELER (*Anas rhynchotis*)
Relatively uncommon, 10 sight records,usually paired sometimes solitary. Apparently a shallow water duck on Lake Boonderoo as all records were close to shore.

GREY TEAL (*Anas gracilis*)
Very common, too frequently seen to record all sightings. Present as pairs, flocks on the water to 24 and flying in flocks to 70 birds. Possibly some 5 000-10 000 birds were present at the time of our visit. Breeding records:-B/1 (1), B/3 (1), B/4 (2) and C/7 (1), C/? (1). Both nests were in flooded *Eucalyptus oleosa* trees with hollow spouts in Ponton Creek.

CHESTNUT TEAL (*Anas castanea)*
Relatively uncommon compared to other ducks on lake Boonderoo, however 12 sightings are as many as has ever been recorded on a lake in the Goldfields. All records were of pairs and all were recorded in very shallow water.

PINK-EARED DUCK (*Malacorhynchus membranaceus*)
Common, 150 plus sightings, in pairs and flocks to 50 on the water; usually in inundated vegetation but in very still water conditions hundreds feed out on the deep open water surface. Breeding records:-B/1 (2), and C/5 (1), C/6 (2), C/8 (1), C/? (1). All nests were in hollow spouts in inundated *Eucalyptus oleosa* in Ponton Creek.

HARDHEAD (*Aytha australis*)
Uncommon, 5 sight records only,usually flying in small flocks 4-9 birds, only seen on water in small shallow embayment with turbid water.

HOARY-HEADED GREBE (*Poliocephalus poliocephalus*)
Uncommon, 7 sight records, solitary birds and pairs, one small flock of 8. Usually in water 3-4m deep.

WHITE-FACED HERON (*Egretta alba*)
Relatively uncommon, 13 sight records,usually solitary birds, several pairs and one flock of 3

GREAT EGRET (*Egretta alba*)
Very scarce, one pair only recorded.

BLACK-TAILED NATIVE HEN (*Gallinula ventralis*)
Very scarce, only one bird recorded.

EURASIAN COOT (*Fulica atra*)
Very common, too numerous to record all sightings, present in small flocks to 10-15 birds throughout lake system. Present in shallow water near shore, in inundated woodland and on deep open water surfaces.

BLACK-WINGED STILT (*Himantopus himantopus*)
Uncommon, one flock of 40-50 birds on open water surface near centre of lake.

GULL-BILLED TERN (*Sterna nilotica)*
Very scarce, one bird recorded flying over open water surface near centre of lake.

TABLE 1 LAKE BOONDEROO 1995 PHYSICAL PARAMETERS

LOCALITY	DEPTH (m)	TDS (mg/l)	TEMP. (^{0}C)
31^0 06.24'S	8.8	3 900	15
124^0 15.64'E			
31^0 05.99'S	2.2	4 370	11.9
124^0 15.77'E			
31^0 04.73'S	2.3	4 440	12.5
124^0 16.32'E			
31^0 05.71'S	11.5	4 320	13.1
124^0 16.92'E			
31^0 07.90'S	3.5	3 000	14.1
124^0 17.29'E			
31^0 07.84'S	3.4	3 310	15.5
124^0 16.61'E			
31^0 08.95'S	1.3	3 595	15.6
124^0 16.11'E			
31^0 09.73'S	0.2-1.0	11 850	15.8
124^0 16.07'E			
31^0 07.64'S	3.3	3 010	13.6
124^0 17.27'E			
31^0 06.56'S	2.8	2 980	14.4
124^0 19.24'E			
31^0 07.01'S	20.4	2 870	13.6
0124^0 21.77'E			
31^0 08.68'S	19.0	NA	NA
124^0 22.00'E			
31^0 10.51'S	21.0	2 895	13.9
124^0 21.56'E			
31^0 08.34'S	2.7	3 185	14.8
124^0 16.52'E			
31^0 06.38'S	8.0	3 950	13.6
124^0 16.24'E			
31^0 06.00'S	1.6	4 220	13.6
124^0 15.71'E			

At the time of our visit Lake Boonderoo had a maximum east-west dimension of 20km, a maximum north-south dimension of 20km and an area of approximately 20 000ha with a maximum depth of 21m. Total dissolved salts ranged from 2 980-4 440 mg/l in the lake itself with a sample from Ponton Creek measuring 11 850 mg/l.

As a wetland and waterfowl refuge the lake provides habitat for 16 species of waterfowl which compares with an average of 11 species for 23 wetlands surveyed in 1992 by Chapman and Lane (in prep). In that survey 22 was the maximum number of waterfowl recorded from a Goldfields wetland. Eight of the 11 species of duck recorded from the Goldfields were recorded at the time of our visit. Of particular significance is the presence of Chestnut Teal; a species only very infrequently recorded from inland wetlands in Western Australia.

Breeding habitat seems to be limited to inundated Eucalypt woodland along the defined Ponton Creek channel. As much of the Lake Boonderoo wetland is either deep open water surface or inundated Black Oak (*Casuarina pauper*) or Myall (*Acacia papyrocarpa*) woodland with a chenopod understorey which together do not appear to present suitable breeding habitat, the potential of the wetland as a breeding site appears to be limited. However as the lake is likely to retain water for at least 6-7 years it has the potential to be a significant waterfowl refuge, particularly as most of the present Goldfields lakes are unlikely to retain water beyond the summer of 1995/96. Additionally Lake Boonderoo has particular significance as part of a vast inland wetland system originating in gum-lined creeks north west of Leonora, extending through Lakes Raeside and Rebecca into Ponton Creek.

A further assessment of the wetland values of Lake Boonderoo should be undertaken in 1996 when most other Goldfields wetlands will have dried out.

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SEPT. 1995