

**Report (undated, but must be post 22/08/1995) from ACh to JL with detailed results of aerial surveys conducted on 06/6, 14/07 & 22/8/1995 by him with others. During the 22/8/1995 survey of 'Lakes Ballard & Marmion w/- WR, PB, [in] Piper Warrior' ACh writes, inter alia, 'Ballard ... western end of lake - dry'; 'Lake Marmion - N. Arm dry'. He also writes 'We collected Argo [6 wheel drive amphibious vehicle] + gear from Lake Marmion on 10/8/95. Depth at sample point near camp was 5cm, TDS = 63,350 mg/L'.**

To: JIM LANE

From: ANDY CHAPMAN

19

Your Ref:  
Our Ref:  
Enquiries:  
Phone:

Subject:

WATERFOWL FLIGHTS. P.1.

but see  
Vol 1, page 140  
Lake Ballantyne  
Comp. Mammal data

6/6/95 PIPER WARRIOR w/- TONY BRANDS

LAKE MARMION ONLY

1x2 MD +1 +2 +2

1x6 B.st. + 30 chicks

1x6 B.st. + 100 chicks

1x50 GT

1x20 B.st.

100s adult B.st w/- 600-700 chicks.

100s adult. + 200 + 500 B.st adults

1000's adults w/- chicks (inclusive)

1x2 Eww

uniformly, thinly spread Adults w/- chicks 100s.

20 x 5-6 groups of chicks some w/o parents.

Island  
Aclipelego.

N.  
Arw.

Nesting colony site.

chicks w/o adults

Adults w/- chicks no major crecking here of, Lake Ballantyne

1x3, 1x4 GT.

1000s of Adults w/- chicks 'Hook' Island

100s birds flying - eastern area

500 Adults w/- chicks

To: .....

From: .....

.....19.....

Your Ref:  
Our Ref:  
Enquiries:  
Phone:

P.2

Subject: .....

14/7/95 LAKES BALLARD & MARMION. w/- K.P.J. / G.Y.

LAKE BALLARD.

1x GT

1x2 MD

1x WTE

1x 20-25 GT

2x1 UNID WADER

1x100 GT +100

1x2 B.st.

1x 1,500 B.st flying lake centre

1x4 GT

1x Kestrel

1x30 GT

1x50 UNID WADER ? Re DUTTERAL

5-6 each 100 B.st (flying.)

1x70 RN Accret

1x2 MD +2

1x100 RN Accret

1x GT, 1x B.st.

1x 250 B.st + 100 flying

1x 2,500 - 3000 B.st flying eastern end lake

1x2 MD, 1x40 RN Accret

1x WTE, 1x 2,000 B.st.

few GT, RN Accrets, B.st. breeding colony site camp island

~~MARMION~~ BALLARD.

traverse #1.

E → W South Shore.

BALLARD.

traverse #2

W → E.

N. of S. Shore



BALLARD #3.

To: .....

From: .....

19

Your Ref:

Our Ref:

Enquiries:

Phone:

P.3.

Subject: .....

Traverse # 4 N. Shore of BALLARD - walking fence

On Lake Marmon prairie bottom on record was depressed but by tally recorded 20 - 25,000 B.St. 10% flightless but adult-sized, groups to 2,500 - 3,000. Unlike on 6/6/95 most birds were in tightly packed groups.

22/8/95 LAKES BALLARD & MARMON w/- W.R., P.B.

PIPER WARRIOR

~~12~~ ~~12~~ B.St

2500

10

BALLARD :-

breaking

3500

4000

1500

11500

1x12 GT

1x MD + 1x2 MD w/- B/4

1x 2,500 B.St. (all adults flying)

Western end of lake - long

Traverse #1

1x B.St +10

1x 3,000 - 4,000 all adults walking & flying

1x 4,000 B.St. " " " "

#2

1x MD. 1x3 GT.

1x10 RN Anceal, 1x GT, + 1x2 GT w/- B/3. - comp is

1x12 " " 1x20 GT, 1x2 GT +1

1x8 GT

1x 1,500 B.St. eastern end of lake

#3

#4

To: .....

From: .....

19

Your Ref:

Our Ref:

Enquiries:

Phone:

Subject: .....

LAKE MARULOU :-

N. Army dog

1x25 + 15 B. St.

1x 2,000 B. St 10 small pods each c. 200

1x 50 B. St. flying + 200

1x 2000 " " " " c. 10-20 incapable of flight.

1x 1,500 " " " " c. 3 " " "

1x 50, 1x 20, 1x 100

3x 50 + 300 + 8 + 200 + 150 + 500 +

200.

We collected Argo + geese from Lake Marulou

on 10/8/95. Depth at sample point near

camp was 5cm, TDS = 63,350 mg/l

of c. 200 birds observed from the

shore only 5-6% were adults ie had

bands on their breasts.

Hope all this is of some use,

Andy.

**Extract from Andrew Chapman (Kalgoorlie-based CALM Goldfields Region Ecologist) field notebook ('WATERFOWL #5') recording his 10/8/1995 visit to Lake Marmion with Warwick Roe (CALM Goldfields Region Wildlife Officer). He records water conductivity, water temperature and some waterbirds at 'Lake Marmion peripheral claypan' and water conductivity, TDS, temperature and depth at 'Lake Marmion sample point'.**

BR. BOWL

#5

BOONDI

Aug 45

SEOFF YOUNG

2/8/95.

Walking to Salmon  
Crown pit traps in

1x2 RR

W.W. Wilson (wrens)

1x4 WF Chicks

1x2 Redbs

1x2 WTE

1x3 M.T.

outside use me  
gate

1x12 WTE

2 km S Resome  
T.P.

THURSDAY 10 AUG 95

LAKE MARLION

WF WARWILL ROE

Clay pan on W.

B.O.Y. Sparrow

N.P. N. of road :-

1x2+1 Mountain Duck

1x2 Grey Tied

1x16 H.H. Grebe

Cond = 173.6  $\mu\text{s}/\text{cm}$

=

Temp = 14.4 °C:

10/8/95

Willie Wagtail

Parula Cuckoo

WFHE

SHE

Nineteen White Red:

SHE (c)

2+2 Emm

1+2 M.f.

4R Thornhill (c)

Bobbird (c)

Callis temnon Chapman

(Same as 12/6/95)

Coord = 168.2 NS/lon

temp = 14.6°C

2x2 + 1 c/3 Gray Ted

1x H.H. Grebe

1x Emm

Willie Wagtail (c)

Bobbird (c)

Striped Pardalote (c)

Parula Cuckoo (c)

Little Crow (c)

1x SHE (c)

Donkey Rocks Pt

1+2 Emm c/2

Twin Tails

1+2 goats w/ kid

despatched!

10/8/95

Lake Marmon

peripheral claypan:

174 Gray Fed

0.15 H.H. Gravel

Cond. = 10.23  $\mu\text{S/cm}$

Temp = 16.7°C

Lake Marmon

Sample point:

Cond = 126.7  $\mu\text{S/cm}$

TDS = 63,350  $\text{mg/l}$

Temp = 22.6°C

depth = 5 cm.

Donkey Rocks:-

1 x 2 MPF.

1 x 1 Em w/ - c/b.

Kal - Lake Marmon

via Donkey Rocks

Red 3.25 hours.

**Fax (29/7/1995) from CDTM to JL inter alia asking 'Thanks for message re  
aerial survey. ... What is water level [in Lake Ballard] like?'**

29/7/95

Fax to Tim Lane CALM Busselton 097-521-432. 29/7/95  
From Clive Minion 03-9589-4901

① Thanks for message re aerial survey. Is that the end or do you intend to do another? How many birds were seen? Where? What is water level like?

② Are you organising/coordinating counts at favoured location to document the return of bridled stilts from the breeding areas any signs of this yet? Have you already collected together the early March disappearance data, as birds left these areas to breed?

③ Good news that we have successfully provoked action on the Lake Torrens paper & that a full draft will be available shortly. We need to now get cracking ourselves. We need to discuss who does what - in about a week's time.

Best wishes, P. Minion

Letter (26/6/1995 'FILE: CHEM895') from GBP to Roger Schultz (WA Chemistry Centre) requesting analysis of accompanying water samples. 32 samples are individually listed. They are numbered 1-32. Of these, numbers 1-20 & 32 are listed as being from Lake Marmion (samples 1-9, 12, 15-20), Lake Ballard (samples 10, 14, 32) or Crossover Lake (11, 13). The dates of the 3 samples from Ballard are 02/4 (presumably this one sample was overlooked when a batch was sent to Chem Centre on 24/5/1995, see below) and 09/6/1995. The 2 samples from Crossover Lake are dated 09/6/1995.

The dates of the 16 samples from Marmion range from 10-13/6/1995.

The labelling of the Marmion samples (and the 02/4/1995 Ballard sample) indicates some were associated with collected BaSt (11-12/6/1995 only), while some were not. Some were to be analysed for Total Phosphorus and Total Nitrogen and had already been filtered, 'using millipore 0.45 uM HA filters'.

Some were to be analysed for conductivity (and TDS).

Mysteriously, there is a copy of this 26/6/1995 request, re-dated in GBP's handwriting to 31/8/1995, and faxed from Woodvale to JL on 04/8/1997.

Perhaps this batch of samples was meant to go to the Chem Centre on 26/6/1995 but was delayed until 31/8/1995 and GBP simply re-dated the covering letter by hand.

Department of Conservation and Land Management  
Woodvale Research Centre

Ocean Reef Road Woodvale 6065  
Telephone: (09) 405 5163  
Fax: (09) 306 1641

To: Mr Roger Schultz  
Principal Chemist  
Environmental Chemistry Laboratory  
Chemistry Centre

From: Grant Pearson  
Research Centre Manager

Date: June 26 1995

Subject: Water Analyses  
FILE: CHEM895

I would be grateful if you could analyse the accompanying water samples for conductivity and TDS (reported in Parts per thousand) and for total phosphorous and total nitrogen. The samples are from Lake Marmion, Lake Ballard, Harvey Estuary, and Harvey River.

Some of the samples from Lake Marmion are to be analysed for Total P and N and have been filtered using millipore 0.45 uM HA filters.

No.	Date	Descriptor	Analysis
1	12/6	Marmion Family 2	Tot P and N
2	12/6	Marmion gauge site	Tot P and N
3	12/6	Marmion Family 4	Conductivity
4	12/6	Marmion Family 4	Tot P and N
5	12/6	Marmion gauge site	Conductivity
6	12/6	Marmion family 3	Tot P and N
7	13/6	Marmion Camp site	Tot P and N
8	13/6	Marmion Colony site	Tot P and N
9	10/6	Marmion Camp site	Tot P and N
10	09/6	Ballard Camp site	Tot P and N
11	09/6	Cross over lake	Tot P and N
12	11/6	Marmion Bird 1	Tot P and N
13	9/6	Cross over Lake	Conductivity
14	9/6	Ballard Camp site	Conductivity
15	11/6	Marmion Bird 1	Conductivity
16	10/6	Marmion Camp site 1	Conductivity
17	12/6	Marmion Family 2	Conductivity
18	12/6	Marmion Family 3	Conductivity
19	13/6	Marmion Colony	Conductivity
20	13/6	Marmion Camp site	Conductivity
32	02/4	Ballard BAST 1-9	Conductivity

*Banked Silt 1*  
*Assess Project*  
*J*  
*03/5/12*

Harvey Estuary samples for analysis for conductivity and salinity in PPT by evaporation.

21	30/8	Harvey Est. site 1	Cond. & salinity
22	30/8	Harvey Est. 2	Cond & salinity
23	30/8	Harvey Est. 3	Cond & salinity
24	30/8	Harvey Est 4	Cond & salinity
25	30/8	Harvey Est 5	Cond & salinity
26	30/8	Harvey Est 6	Cond & salinity
27	30/8	Harvey Est. 7	Cond & salinity
28	30/8	Harvey River. Depth Post	Cond & salinity
29	29/6	Harvey Est site 4	Cond. & salinity
30	29/6	Harvey Est site 6	Cond & salinity
31	02/6	Harvey Est site 4	Cond & salinity

*To Jim Lane*

6.

**Department of Conservation and Land Management**  
**Woodvale Research Centre**  
 Ocean Reef Road Woodvale 6066  
 Telephone: (09) 405 5163  
 Fax: (09) 306 1641

**To:** Mr Roger Schultz  
 Principal Chemist  
 Environmental Chemistry Laboratory  
 Chemistry Centre

**From:** Grant Pearson  
 Research Centre Manager

**Date:** 31/8 1995

**Subject:** Water Analyses  
 FILE: CHEM895

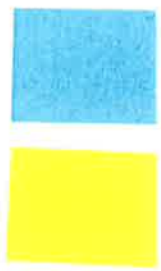
*Need to check GL's reports, phosphate from nitrate to see if I have all the details to go with these.*

*4/8/95*

I would be grateful if you could analyse the accompanying water samples for conductivity and TDS (reported in Parts per thousand) and for total phosphorous and total nitrogen. The samples are from Lake Marmion, Lake Ballard, Harvey Estuary, and Harvey River.

Some of the samples from Lake Marmion are to be analysed for Total P and N and have been filtered using millipore 0.45 uM HA filters.

No.	Date	Descriptor	Analysis
1	12/6	Marmion Family 2	Tot P and N
2	12/6	Marmion gauge site	Tot P and N
3	12/6	Marmion Family 4	Conductivity
4	12/6	Marmion Family 4	Tot P and N
5	12/6	Marmion gauge site	Conductivity
6	12/6	Marmion family 3	Tot P and N
7	13/6	Marmion Camp site	Tot Pand N
8	13/6	Marmion Colony site	Tot P and N
9	10/6	Marmion Camp site	Tot P and N
10	09/6	Ballard Camp site	Tot P and N
11	09/6	Cross over lake	Tot P and N
12	11/6	Marmion Bird 1	Tot P and N
13	9/6	Cross over Lake	Conductivity
14	9/6	Ballard Camp site	Conductivity
15	11/6	Marmion Bird 1	Conductivity
16	10/6	Marmion Camp site 1	Conductivity
17	12/6	Marmion Family 2	Conductivity
18	12/6	Marmion Family 3	Conductivity
19	13/6	Marmion Colony	Conductivity
20	13/6	Marmion Camp site	Conductivity
32	02/4	Ballard BAST 1-9	Conductivity



**Letter (26/6/1995 'FILE: CHEM895') from GBP to Roger Schultz (WA Chemistry Centre) that is IDENTICAL to the letter of 24/5/1995, except for the date. It is apparent from 29/7/1997 copy of results (see above) that the samples weren't delivered to / received by WA Chem Centre until 26/6/1995**

**See 24/5/1995 for a description of the letter's content.**

**Note that this 26/6/1995 copy has later annotations by JL relating to where some of these samples were taken, the depths that were measured at the time; some pH measurements; references to the stakes that were installed to monitor water depth, coordinates (lats & longs) and other details.**

**Department of Conservation and Land Management  
Woodvale Research Centre**

Ocean Reef Road Woodvale 6065

Telephone: (09) 405 5163

Fax: (09) 306 1641

**To:** Mr Roger Schultz  
Principal Chemist  
Environmental Chemistry Laboratory  
Chemistry Centre

**From:** Grant Pearson  
Research Centre Manager

**Date:** June 26 1995

**Subject:** Water Analyses  
FILE: CHEM0595

---

I would be grateful if you could analyse the accompanying water samples for conductivity and <sup>TDS</sup>salinity (reported in Parts per thousand) and for total phosphorous. The samples are mainly from Harvey Estuary, Harvey River and Lake Ballard.

Some of the samples for total phosphorous (tP) have been filtered using millipore 0.45 uM HA filters. These are recorded below as "filt'd". Samples unfiltered are referred to as "unfilt'd"

All samples are marked on the lids with a number from 1 to 76 corresponding to the numbers listed below. Please report using the sequential numbers, the date and descriptor.

No.	Date	Descriptor
1	09/03/95	Harvey River depth gauge Post
2	09/03/95	Site "00" Harvey River
3	09/03/95	Site 2 Harvey Est.
4	09/03/95	Site 4 Harvey Est.
5	09/03/95	Site 7 Harvey Est.
6	09/03/95	200m South of Island Point
7	21/03/95	Site 3.5km Harvey River.
8	21/03/95	Site 7 Harvey Est.
9	21/03/95	200m South of Island Point
10	06/04/95	Ramp Harvey Est.
11	06/04/95	Site 7 Harvey Est.
12	06/04/95	Mouth, "00" Harvey River
13	06/04/95	Post Harvey River

14 21/04/95 Site 0 North side of Island  
 15 21/04/95 Site 1 North side of Island  
 16 21/04/95 Site 3 Harvey Est.  
 17 21/04/95 Site 6 Harvey Est.  
 18 21/04/95 Site 7 Harvey Est.  
 19 21/04/95 Fishtrap Harvey Est.  
 20 21/04/95 Site 4km Harvey River

21 17/05/95 Site1 Harvey Est.  
 22 17/05/95 Site 2 Harvey Est.  
 23 17/05/95 Site 3 Harvey Est.  
 24 17/05/95 Site 4 Harvey Est.

25 17/11/94 Site "00" Harvey Est.  
 26 17/11/94 Site 5, site 1.0km Harvey River

15/3 -  
 11/4  
 11/4  
 2/4  
 9/4  
 11/4  
 2/4  
 4/5

27 15/03/95 Lake Ballard  
 28 11/04/95 Family 2 Lake Ballard, salinity  
 29 11/04/95 Family 3 Lake Ballard, salinity  
 30 11/04/95 Family 4/5 Lake Ballard, salinity

*Handwritten:* ~~Handwritten~~ Taken in Camp I., lot really strong well.

*Handwritten:* pit 6.75  
 depth 56 cm  
 depth 51 cm, no plt.  
 depth 51 cm, no plt.

31 11/04/95 Family 2,tP Lake Ballard  
 32 11/04/95 Family 3,tP Lake Ballard  
 33 11/04/95 Family 4/5,tP Lake Ballard

34 01/04/95 Site 1,tP,unfiltd Lake Ballard  
 35 01/04/95 Site 1,tP, filt d top Lake Ballard

36 01/04/95 Site 1,tP Ballard  
 37 01/04/95 Site 1, tP,unfiltd Crossover Lake  
 38 01/04/95 Site 1, tP, filt d Crossover Lake

*Handwritten:* (stake)  
 GPP Installed "peg" due north of East end of Camp Island - this is site 2

39 02/04/95 Site 2,Bast 10, tP Ballard  
 40 02/04/95 Site 3,Bast 11, tP Ballard  
 41 02/04/95 Site 4,Bast 12, tP Ballard

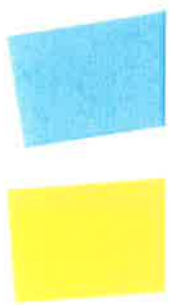
*Handwritten:* use sample 51 from Total P (unfiltered - top) of site 1 (Base 1-9) 2/4/95.

42 09/04/95 Site 1, tP (Camp Island) Ballard  
*Handwritten:* assume unfiltered.

43 11/04/95 Site 1, tP Ballard  
*Handwritten:* Stake at Camp Island

44 02/04/95 Site 1 Crossover Lake, salinity

45 04/05/95 t P+N Crossover Lake, salinity  
 46 04/05/95 Bottom Crossover Lake, salinity  
 47 04/05/95 Top Crossover Lake, salinity



48	01/04/95	Top, site 1	Ballard, salinity
49	01/04/95	Bottom, site 1	Ballard, salinity
50	01/04/95	Site 1	Crossover Lake
51	02/04/95	Bast 1-9 Site 2	Ballard, salinity
52	02/04/95	Bast 10, site 2	Ballard, salinity
53	02/04/95	Bast 11, site 3	Ballard, salinity
54	02/04/95	Bast 12, site 4	Ballard, salinity
55	09/04/95	Top, site 1	Ballard, salinity
56	09/04/95	Bottom, site 1	Ballard, salinity
57	11/04/95	Top, site 1	Ballard, salinity
57 A	11/04/95	Bottom site 1	Ballard, salinity
58	02/05/95	Adult 1	Ballard, salinity
59	02/05/95	Adult 2	Ballard, salinity
60	02/05/95	Adult 3	Ballard, salinity
61	02/05/95	Adult 4	Ballard, salinity
62	02/05/95	Adult 5	Ballard, salinity
63	04/05/95	Camp	Ballard, salinity
64	28/04/95	Camp, tP	Ballard
65	28/04/95	Top Camp	Ballard
66	28/04/95	Bottom Camp	Ballard
67	04/05/95	Camp Island, t P+N	Ballard
68	02/05/95	Adult 1	Ballard
69	02/05/95	Adult 2	Ballard
70	02/05/95	Adult 4	Ballard
71	02/05/95	Adult 5	Ballard
72	02/05/95	Adult 3, t P+N	Ballard
73	14/02/95	Unicup	
74	14/02/95	Muir	
75	14/02/95	Yarnup	
76	15/02/95	Tordit Garp	

E 471

depth at this site was 10 cm

all top samples

depth 29 cm  
depth 49 cm

depth 51 cm  
29° 30' 08"  
121° 03' 41"

no ppt on T-yeast for these sites

pH 6.98  
no temp.



uncertain whether min + sec or min + decims of min

water depth vs 35 cm (105 cm exposed)  
water 43 cm deep (97 cm exposed)  
pH: 6.74  
Temp: none

Sketch of Camp I.

Sketch of Camp II.

"Family 2" no 10 April has about 25 cm of water - no ppt, no temp, no further samples

12 April the depth at the data logger was 42 cm (GP)

location was near shore at Camp Island

**Faxed (19/06/1995) copy of 17/06/1995 report by GBP for JL, headed 'Report on Survey to Lake Ballard and Lake Marmion 8 June 1995 to 13 June 1995'.**

**Inter alia, refers to objectives of obtaining further water chemistry data and downloading datalogger [water level recorder] on Lake Ballard and that, on 09/6/1995, GBP, ACI & ACh measured [Lake Ballard] 'Camp Island site' and 'Crossover Lake site' water depths, temperature and pH (Crossover Lake only) and collected water samples and invertebrate sweep water samples. '[Lake Ballard] Datalogger was downloaded and reset to record every hour and average every 6 hours. Water level varies from 398 to 689 for the 70 days it was in place'.**

**The objectives on Lake Marmion included: 'Collect water samples [and Record depth and install depth post'. On 10/6/1995 they 'Installed depth gauge using an old survey line peg (second from camp side of shore) 770mm above water level ... depth at gauge was 220mm. Installed second marker to denote location of site only. Collected water samples and sweep. pH 7.39; [water] temp 12.0C'. They also measured depths, conductivity / salinity and pH and collected water samples and conducted invertebrate sweeps while collecting BaSt (see another RMCR) on 11/6 and 12/6/1995. On 13/6/1995 GBP & ACI 'Proceeded west across expanse of water to 52cm deep' and apparently installed a 'depth post' at the Lake Marmion BaSt breeding island as GBP writes: 'Depth post installed at colony 211mm exposed. Coordinates of colony 29.44.36, 121.29.13' (Check if deg min sec or deg min decimal min.)**

DEPARTMENT OF  
CONSERVATION AND LAND MANAGEMENT  
SCIENCE & INFORMATION DIVISION  
WILDLIFE RESEARCH CENTRE, WOODVALE  
FAX NO (09) 306 1641 TELEPHONE NO (09) 405 5100



154  
155

Date: 19/6/95

To: Jim Gore

At: BSN

From: Grant

No of Pages: (including face sheet)

Message: Copy for your consideration + queries  
Thursday  
Cheers  
G

Re visit to  
~~Survey~~ of Bellard + Mearns from  
8 - 13 June 95

1

153.  
154.

REPORT ON SURVEY TO LAKE BALLARD AND LAKE MARMION 8 JUNE 1995 TO 13 JUNE 1995

(Thurs)

G Pearson and A Clarke in Toyota Landcruiser 7QE 236. Met Andy Chapman in Kalgoorlie on 9/6 and departed for Ballard. A Chapman had flown the lakes and reported no flightless chicks remained on Ballard but young chicks found at Marmion

(Tues)

(Fri)

OBJECTIVES (from Jims notes) (Jim Lane's)

- Obtain further water chemistry data
- Measure extent of breeding site on Camp Island colony
- Download datalogger
- Withdraw gear from Camp Island
- Record waterbirds seen on crossover lake during trips

Results

Water samples for salinity, Total P (unfiltered) were collected from the camp island site and from the crossover lake site.

Camp Isd... Depth. 775mm... Temp? NA... pH. 8.67..

Crossover ..... 53cm. .... 12.0.... ... 8.76...

Invertebrate sweeps collected at each site

yet (Alon. was)

The extent of the breeding was measured and mapped for Camp island colony

Great has dimensions

Datalogger was downloaded and reset to record every hour and average every 6 hours

Waterlevels varied from 398 to 689 for the 70 days it was in place.

All gear was withdrawn from the island and Crossover camp leaving the sites clear.

Waterbirds

Ballard

BaSt	6
Pipit	1
White-backed Swallow	1
Banded Lapwing	2
RNAV	7
Shel	2
Gytl	11
RCaP	2 plus 1 juv

Crossover Lake

Coot	11 plus 6 juv
MusD	3 male
	2 female
PaBD	2 (pr)
LiGb	1

(2)

152  
153.

10 June

Packed and loaded gear and departed to Lake Marmion  
1108to Jeedanya. Called in to station for first aid kit and  
to talk to Finlaysons. Neither were located. Left a note for  
the latter.  
Drove on to Marmion via Bronc Rock fence line to lake edge.

OBJECTIVES

- Use all available yellow flags
- Band 200 chicks
- Collect water samples
- Record depth and install depth post
- Locate colony if possible and measure extent and size
- Photograph colony
- Collect dominant vegetation

1545 arrived Marmion.

Installed depth gauge using an old survey line peg (second  
from camp side of shore) 770 mm above water level  
depth at gauge was 220 mm  
Installed second marker to denote location of site only  
Collected water samples and sweep.  
pH.. 7.39....  
temp 12.0C.....

Argod to big island at 300 degrees from camp to reconoitre.  
Back to camp at nightfall

11 June 95

Began banding and flagging in argo towing 3m punt  
Banded 200 on left tibia  
Flagged (yellow) 195 on right tibia  
Collected one family of Banded Stilts. 1 adult 5 chicks 3-5  
days old.

Family 1

- 1.1 39 gms yolk sac large
- 1.2 34 gms yolk sac large
- 1.3 33 gms yolk sac large
- 1.4 42 gms yolk sac large
- 1.5 32 gms yolk sac large
- 1.6 adult male 221 gms  
wing length 199 mm  
total head 118.7 mm  
teste 14.4 mm

Brood patch yes Band full belly 100%

sweep taken  
tot P  
conductivity 46% (Andy Chapman)  
pH 7.94

3

15T  
152

Need to confirm ACh departed  
on 12/6 R 10/01/14

12/6/95

Andy Chapman departed for Kalgoorlie at 0700  
AC and GP headed east for 5 mins and then back west when it  
became obvious that there were no chick east of the camp.

Large numbers of loose creches and masses of adults  
extending out of site to the west and north.  
Drove up behind creche of 30 chicks and ran all down placing  
them in a nally bin with a cloth base. Flagged all and  
released with adults which had remained in attention.  
Caught brood of 5 and released with parent.  
Continued catching flagging and releasing all day releasing  
chicks with attending adults.  
Ages varied from 2 to 18 days.

Total flagged. 195  
+ 260  
10  
475

Collect

Family 2 Depth 29 cm

number	wt (gms)	metatarsus		bill		wing	gizzard		sex	t
		mt	th	b	total head		oesophagus	teste		
2a	34	24.4	51.5	27.3	-	-	Y	Y	-	-
2b	32	25.2	49.7	26.5	-	-	Y	Y	-	-
2c	30	25.6	52.3	31.8	-	-	Y	Y	-	-
2adult	238	35.0	111.5	74.7	-	-	Y	Y	m	17.2

brood patch yes Band strong belly 80% R -

Family 3 Depth 3cm

3a	31	23.3	48.8	23.8	-	y	ostracods	y	-	-
3b	34	25.3	50.9	25.9	-	y	y	-	-	-
3adult	232	32.5	107.8	71.9	202	y	y	m	120.1	r14.6

brood patch yes Band full Belly 100%

Family 4 Depth 12 cm

4a	30	22.7	46.3	23.6	36	y	y	-	-	-
4b	34	23.5	49.8	26.3	23	y	y	-	-	-
4c	31	24.1	49.9	26.5	25	y	y	-	-	-
4adult	200	34.3	-damaged bill	189	y	ost.	y	m	15.5	r 10.4

Brood patch yes Band full Belly 100%

Family 5 depth 9cm

5a	35	24.1	52.1	22.2	25	y	y	-	-	-
5b	34	24.9	50.2	29.8	25	y	ost, ants, coleo	-	-	-
5adult	205	32.0	104.9	68.5	193	y	ost, y	m	14.4	R -

Brood patch yes Band full Belly 100%

(4)

150.  
151.

13/6/95

0615 to colony on a bearing of 300degrees determined from flight of aircraft previous day.. Distance unknown

Gytl 4 large waders 8  
small waders 30 shel 2

Masses of adults and broods at north end of Big Island. Proceeded west along north side of Big island. Located colony with telescope from west end of Big Island. Proceeded west across expanse of water to 52cm deep.

Approaching colony 28 chicks and 18 adults in a loose creche. Numerous dead chicks about 1-5 days old along the strand line of the colony island.

300-400 adults at the waters edge in front of the central part of the colony. Agitated and flighty. Occasional dashes by 30-50 birds up the bank to the colony but they would almost immediately fly off in alarm. Peregrine falcon flew low over colony putting flock of Bast on the colony to flight. Wedge-tailed Eagle took off from rear of colony about 100m from active area and flew to a raised tussock about 200 m west of the colony where it sat and watched. On our approach of the colony the eagle departed and during measurements every stilt flew out of site out of sight. Began measurements at 0846 and finished at 0931

#### Observations

21 chicks in nests with unhatched eggs in a small discrete area of the colony

About 100- 200 nests spread around a greater area of the colony, but within a roughly discrete area, with 2-3 eggs all very cold. No incubation for many hours perhaps days. Some covered with fine sand suggesting exposure during rain some days ago.

Numerous (up to 20) moribund chicks in nests in the discrete active area with an egg or often with one healthier but obviously cold stressed chick.

About 10 small chicks wandering through active part of the colony.

Measured length and breadth of colony plus several other satellite colonies.

Photos of colony

vegt'n samples collected

Measured twenty nests for diameter and dispersal

On our departure about 50 -80 adult bast returned and milled about at the front of the colony . Several ran into the active area but left quickly. We continued to observe until 0950

Chapman reports that the eagle was present on the colony at 1400 when Chapman flew the area and there were no Bast on the colony at all or in the area.

Much evidence of ancient nest attempts from egg shards.

#### Notes

(5)

150

In large groups of adults there <sup>were</sup> some copulation attempted. Two families of Rnav with two young each. One had adopted a Bast chick about 3 days old and bigger than Rnav chicks.

Left at the camp is argo inside trailer. Chains had been sprayed but require more  
Engine needs oil change. Have to buy a vaccuum pump to get the oil out of the sump.  
one jerry can of water  
One 3m punt  
lighting and generator

Depth post installed at colony 211 mm exposed  
Coordinates of colony 29.44.36  
121.29.13.  
camp 29.47.01  
121.33.06

G Pearson  
17 June 1995

**Andrew Chapman's (Kalgoorlie-based CALM Goldfields Region Ecologist) field notes (9-12/6/1995), from his field notebook 'WATERFOWL #5', recording observations during his visit to Lakes Ballard and Marmion with GBP & ACl. On 10/6/1995, ACh inter alia recorded water conductivity / TDS & temperature in a 'Peripheral claypan' and at Lake Marmion (on same day?). On 11/6/1995 he recorded, inter alia, water conductivity, temperature and depth at particular times (but locations not indicated, except 'Collection site').**

WATER FOWL

#5

BOOND

AVG. 75 W/

SEOFF YOUNG.

FRIDAY 9 JUNE 95

---

LAKE BALLARD

W/ GRANT PEARSON

& ALLAN CLARKE

GROSSOVER Lake :-

3x1 Mask Duck 2

few Coots in Jaws

1x Whistling Kite

1x2 Black Duck

1x Little Grebe

2x2 BF Plover

Camp Island :-

1x2 Little Cow

breeding site H.1

1x2 H RC Plover

Saw W.W. Wilson

1 ind ♂

1x7 RN Ancoats

1x22 Anst. Shelducks

1x2 Grey Teal

1x72 Banded Plovers

1x6-7 WB Swallow

1x Pipit

Lake ballard :-

1x6 + 1 Grey Teal

Cross-over Lake

morning birds :-

SCH

Bellbird

Wendland (c)

1 BB

RC Robin (c)

Little Crow

SHE (c)

1x4 Crested Pigeon

WHITE (c)

Willie Wagtail (c)

Pollid Cuckoo (c)

1x YTM

BHE (c) Saw

1x Welcome Swallow

1x PLP

1x Horse-field B. Cuckoo

SATURDAY 10 JUNE '95

11:15  
Pack up camp, leave  
c. 10.00 AM.

Jedanya - no one here.  
Donkey Rocks RR via  
Morapoti HST :-

3x2 } RR  
2x1 }

1x Elmer

1x2 w.t. -

1x15 goats  
Tonkins 'new'  
road to front.  
Rock Dam

1x2 + 1x5 w.t.

1x2 RR.

LAKE with MIAW

peripheral clay pan

at :-

1x2 GT w. B/S

1x2 GT w. B/C

1x BW Shift

1x2 L.H. Grebe

c. 20-25 H.H. Grebe

10/6/95 LAKE

Camp in S. side  
Lake warmion at :-

121° 32.90' E

290 47° 00' S.

490 m (GPS.)

3.00 - 5.00 PM

Arzo on lake to  
is land at :-

circa 15,000 banded

stilt. Adults w/  
chicks. Adults

but number chicks

c. 10:1 8

Adult pairs

copulating.

MARMIAN

Also :-

1x Silver Gull

1x2 Aust. Shelduck

1x6-7 Grey Teal.

Peripheral claypan :-

7.64 mS / and

= 3,820 mg/l TDS.

Temp = 12.2°C.

ct

Lake warmion :-

48,200 mg/l TDS

Temp = 7.1°C.

SUNDAY 11 JUNE 95

Count birds :-

PBB

GAB

SCH

144 YTM

173 Gals

1215 goats

and little cows

96.4 ms/cow

7.1 °C

90-2 ms/cow

10.3 °C

4-5 cows

9.40 AM

92.0 ms/cow

11.3 °C

2-3 cows

9.53 AM

91.5 ms/cow

12.5 °C

2-3 cows

10.18 AM

11/6/95

86.1 ms/cm

12.1 °C

5 cm

10.36 Am

90.6 ms/cm

11.7 °C

10-11 cm

10.53 Am

w/ Banded still

chills :-

109 gm = 99 gm

94 gm = 84 g

85 gm = 75 g

91.3 ms/cm

14.3 °C

10 cm

11.44 Am

89.8 ms/cm

16.6 °C

10 cm

12.52 Pm

129 gm (gross)

108 26? 3 woods etc

120 gm (gross)

103 gm (gross)



11/6/95.

LAKE

90.8 ms/cm

17.0°C

10 cm

1.51 PM

90.5 ms/cm

17.9°C

8 cm

2.22 PM

92.4 ms/cm

17.6°C

10 cm

2.56 PM

MARMION.

Island # 1 :-

121° 31.60' E

29° 46.40' S

fresh dog tracks

1 X 5 BFWs

Aboriginal granitic stones

-ve B.S. breeding

Island # 2 est :-

121° 33.30' E

29° 45.60' S

Fox tracks

1 X GAB (C)

Kangaroo shot (plenty)

Rabbit scat & droppings

fresh 'no tracks.

11/6/95.

Collection site :-

92.7 m.s/cm

14.6°C

15 cm

4.15 PM.

Sed. Calu - 0239

7.00 PM. 5270.

7.05 PM. 5833

7.10 PM 8070.

WLR 182.

MONDAY 12 June 95

0.0 Ex camp 7.15 AM

1+2 RR }  
1+3 m.f. } range

3.6 Above Rock Dam.

14.3 Two Tanks

1+2 m.f.

1+2 RR.

18.9, Dooly Rocks Rd  
↑ S

1x m.f.

33.2 Ponto Rd 4 W.

1x1 RR

2x3 m.f.

1+2 + 1 - Exam

12/6/95.

Wetland at 80 km

1 x 16 GT

1 x H.H. Grebe

1 x 2 PED w/ c/2

150.1 hrs/cw

temp = 9.0°C.

2 x 1 RR

93.6 Kad - Manjari  
Rd (Yarni Rd  
Sign)

THURSDAY 15 '95

Lake Miranda :-

1 x 10 W. TERN

1 x 18 Black Swan

1 x 1 c/4

1 x 2 + 1 GT

1 hel B/5

c. 200 coots

few Shelduck

1 x 5 + 4 + 4

RC Dittwell

few Grebes

? H.H. / Anst.

8.58 hrs/cw

= 4,290 kg / L TDS

**Extracts (parts of 08/6 - 13/6/1995) from one of GBP's field notebooks concerning field trip to Lakes Ballard and Marmion. Extracts include:**

### **Lake Ballard**

- **Intentions to collect water ('Tot P, Sal, Turbid') & sweep samples (in alcohol) and download ('computer, tape measure') water level logger at Lake Ballard (pages 1-2).**

### **Crossover Lake**

- **'Xover [Crossover] Lake Depth 53cm' (page 4).**

### **Lake Marmion**

- **'Depth at 77 [GPS waypoint?] 22cm deep'; '2<sup>nd</sup> Peg from shore'; 'Marmion 1[?]' sweep and water ('Tot P') sample and water temperature & pH measurement on 10/6/1995 (1545-1600hrs) (page 9).**
- **Depth 'peg' installation (page 10).**
- **Sweep, water ('Tot P') sample and salinity & pH measurements near Lake Marmion camp site (or near collected BaSt 'family #1?') on 11/6/1995 (page 16).**
- **References to 'deeper water', 'ran behind group' on 12 & 13/6/1995 (pages 21, 35).**
- **'Depth post [where? at BaSt breeding island?] 211 exp' on 13/6/1995 (page 42).**
- **References to 'feeding in shallows 5-10cm', etc. on 13/6/1995 (page 46).**
- **'Depth at post 992 [minus] 880mm [equals] 112 deep' on 13/6/1995 (page 49).**
- **'Dataflow' [after leaving Lake Marmion].**

**These extracts have been printed from the 1995 BaSt project 'Field Notebooks' RMCR PDF. Refer to that RMCR if context or higher quality viewing required.**

✓

8/6/95 Geo

0600 water

1100 water

2130 water 690

Some blue

Hub Fish

Wind direction

outboard oil

9:00 to 9:15  
 not good to test  
 samples

CAC

W/Prober

2

To 1st

Rock gear

Chaparral / Isd

Photos

Rick Sweeps

with Sample Jar

Tray

CR Compuls

Toys (Marine)

Compass

Pen 100

3

1330 Camp Isd

1435 Colony Isd

N



4

Probe #

# 20 One white Nucleolus

22

x0002 tube Dolt  
53cm

Best 10

Right 1

white behind Swallow 1

White behind 2

Round 7

Slab 2

Slab 11

white winged worm

Little Crea (head)

Rec'd 1/4 + 1/2 pin

5

20000  
20000

Down Tube

2 weeks with ygs 3

3 weeks 38

Pass 1/2

Wasp 1

30 AM

0600

WAS heard frequently

Root Tol 3

6

10/6/95

0530 US

book.

0955 To Mamma

1108 30000 mpa

00 Turn East Koolhaas

10:3 Turn at Morafal str

10:8 Railway to fork

Take left

21:5 mill turn left through

edge mill

Henderson

29:2 Track to RT

30:4 Gate open

32:4 catch pit + fork go straight ahead

40:6 Gate

43:1 Pipe track in from left

46:5 Gate closed

48:18 Outstation

48:8 Outstation thru gate

49:2

50:0 Gate closed

54:02 Gate closed

62:8 Gate closed

Continuing down Dorking Rd

64:0 Gate in from left

White tower

quarry?

67:4 Gate Turn Rt along

gravel

69:6 gate

76:0 gate

follow fence

78:5 Spooning NP sign

turn right

turn to 1350

87:5 Grid turn west along

fence

1350

7

8

87.5 West heading

92.2 Gole Kay west

92.5 Gole → take Rt

93.4 Gole → take Rt

100.6 X head track

continues on track

100.1 Gole & Down

103.4 drive over New fence

106?

1560 at water

9

1545 To Lake

Depth at 77 20m deep

2nd leg from shore

Maximum ①

Swamp 180 ft

8 water to 150 m

2nd ditch by net

110 ft

Total

Temp 12°C

9/6 7:30

1000 Project to big 1st to west

10-15000 bait with 10000 fish

in 50 corner

Depth 3.3-2

Shed 1

10

Drove to edge of lake & set

up camp on ridge.

Went to see my pup with

table & acorns

Used 2nd peg to stir

Flashed over over peg

Washed.

Washed to see if

lots of ripples by dunes

accompanied by ads.

Some families of young

birds

T64

12.2

16

11/6/95

1610

Collected. Savings #1

25 1 Ad 5 Chicks - 2-5 days

Placed in bag - presented to Conf

Sweat

Tot P

Sal 46.00 (Ad)

PA 7.94

Fonds 1.1 Chicks 39 qms 6 1/2

Sac 1.00

1.2 34 large Yolks sac

1.3 33 qms large Yolks sac

1.4 42 qms large Yolks sac

1.5 32 qms large Yolks sac

17

Family # 706

Adult

WT 221 gms

Male 071 Test 11.4 mm

WL 199 mm

Fully developed to most band

Total mass 18.7 (+ Bull)

12:16:04

0000 6' birds almost 4500 ft  
spot

07:00 Rainy light

08:00 Depart for Flamingo

08:42 Heated but for 5 mins

No chlorine at all in desflur  
water.

Heated water for 10 min to

prevent catch some

large N's from swales

with 1000s of adults as

few as can see to West &

with 0900

sample 30 & stopped left before

total creche 1 row up behind

✓ no. behind front

12/16/95

01025 To colony

SWR 4

BTCS 8

SWR 30

monitors by Nests & broods  
on the end of ring led

2-3000 hd

of which 1000 with no chuds

Escorted west along N-200

Big dig 1st - into dig

2000

Area to top of west

end of Big End +

with Telescope 1/2 hour

Notes to last 600 show

do not

42

Dogster Post all exp  
 Begon movements 0845  
 10:00 at 0931

No the left now isd  
 30 returned on our departure  
 but would not land  
 recoded us off (18)  
 about 200 m from Cd.  
 Not concerned about day

WTC was at edge of colony  
 when we approached

Days Birds began  
 regrouping in the  
 school very flighty  
 Some car chases some human chase  
 show a fond birds

43

Estimated 100 nests well  
 to 4 eggs mostly 2+3  
 21 with chicks in nests  
 Main part of colony finished  
 More eggs in nests in Nth  
 do apparently active feed  
 but all eggs 3+4+5 + some 5  
 Stone cold + appears covered  
 in sand again suggesting disturbance  
 last week

On return did 4 chicks  
 feeding on stone



Did in last 900 ps  
feeding in shallow 5-10  
cm

Some Cep's occurring on flat

Circle by 60 fish running  
around by us 100-150 fish  
low arrangement caused by  
our movement.

Some submerging feeding  
in 5-10 cm

Deep feeding in 5cm  
large mass bit to left  
of each feeding in  
shallow

Colon did not much evidence  
to egg movements from previous  
nesting attempts higher up on  
ridges.

Scattered small colonies

Plan measured all

Water

Is leads

Tool Box

Shovel

350 water divider  
2 sacks

Ground

20 m or 10'

100 375 260

2000  
 2000  
 112 deep

Wash

Taco2

Tools

Water

Level

50

000 Camp  
 300 Dam Ponds To W  
 306 Tuna iron gale  
 Tolia 1st truck  
 14-4 Tank + gale  
 Felho lower Cont  
 19-1 Garingine Rd Inca  
 gaid Tuna Rt  
 33-4 Tonkin Rd Inca  
 Tuna Rt  
 94-7 Koh Mengjoo Rd

51

83 = 161 = 78 days  
 8  
 689  
 505  
 85 65  
 92 installed at Ballad 248  
 92 16-00 288  
 95 551  
 100 590  
 134 604  
 161 189

Arrived 1<sup>st</sup> 2300  
 Wkoo 2330

52

Taylor  
Patterson

5.00 Mrs. Miller

1/20/20  
2  
3  
4

**One page of jottings (11/6/1995) by JL recording some details of his radio telephone conversation on that day with GBP (who was camped at Lake Marmion with ACI & ACh). Includes: '[GBP et al.] collected 1 [BaSt] family. Ostracods & Parartemia'. It is not clear whether this was a reference to what GBP et al. had found in the birds' guts or in the Lake Marmion water (or both). Another jotting is: '[Lake Marmion] bed v. soft – [water] depth up to 30cm – most 10-20cm, too shallow for boat [punt]'.**

Monahan CST - 03 9 589 4901

106  
149

Radio Telephone call from Grant Sun 11/6/95 ✓  
11/5/95

5:50 pm

they are  
- ~~at~~ Monahan - arrived yesterday

or 6<sup>th</sup>? ✓?  
ie June?

- found 10-15,000 adults  
several 1000 chicks

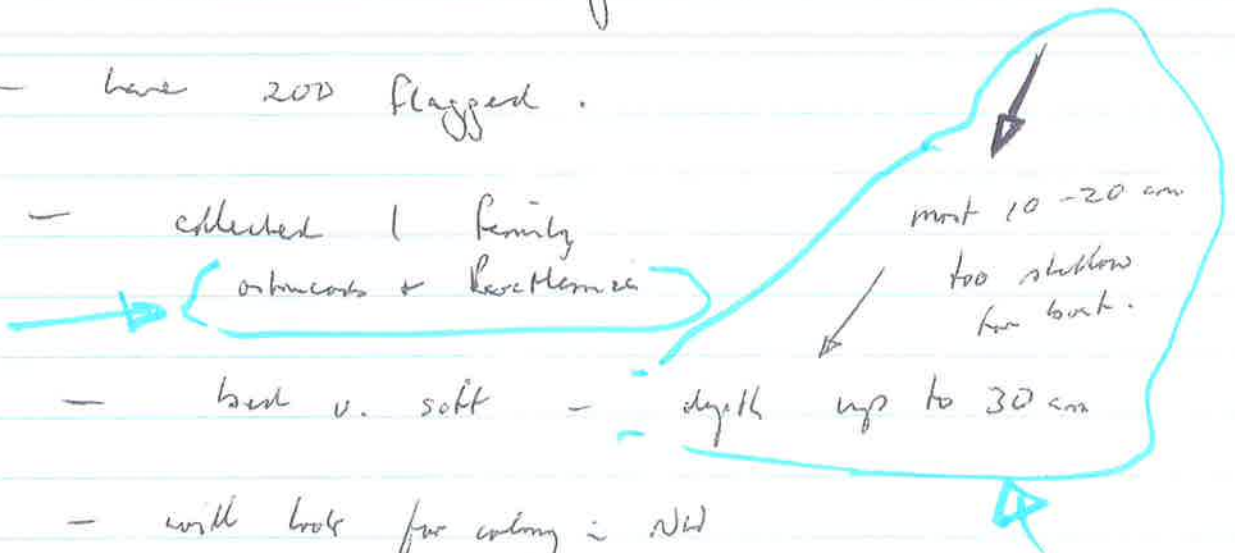
- ~~220~~

220 done today. (removed flags from 20!) ⇒ 200 to date

- have used the 200 fly bands

- have 200 flagged.

- collected 1 family  
outcrops + herit Monahan



- hard v. soft - depth up to 30 cm

- with look for colony - NW

- drive to creche with Argo - chase 20-30 + take back to back

- creches c 30

try to get all them release - adults coming back.

chicks have  
- oldest, well developed 1° 2° + all body except head will fly > 1 week ⇒ 3 weeks old? + mmp

- also chicks  
2-4 days old.

- ~~two~~ have magic composite.

Andy Flight that tomorrow  
photo + had video  
details to Grant from  
listen on radio



**Extract from Alan Clarke's field notes recording:**

- **At Camp Island (Lake Ballard) on 09/6/1995 at 1445hrs 'depth 0.775[m] from top of stick, pH 8.67, [water] temp[erature] not working'.**
- **At Crossover Lake on 09/6/1995 at 1631hrs 'pH 8.76, [water] temp[erature] 12.0 [°C]'.**
- **At Lake Marmion on 10/6/1995 at 1600hrs 'pH 7.39, [water] temp[erature] 12.0 [°C]'.**

9/6/95 Wonsover Lake

1:30 pm

black duck 2

Loon 2+1, 3B, 6

wake much 2+1

whistler 1

Lake Morrison 10/6/95

4:00pm

pH 7.39

Temp 12.0

Lake Buller's

Camp island

9/6/95 2:45

depth 0.775 from top of stick

pH 8.67

temp not working

grass over lake

pH 8.76 4:31

Temp 12.0

**A list of equipment (sent by JL to GBP on 07/6/1995) that was originally provided to ACI by GBP for ACI's trip (with JL & ACh) of 27/4/1995 – 04/5/1995 (approx) to Lake Ballard. Included is the equipment needed for collection of water samples and invertebrate sweep samples.**

G.P.  
~~Alam~~

138.  
1410

(6)

I thought this might be of  
some use for this trip

~~Alam~~

You will need to take the following

7/6

- ① Nally bin in my office with gear in it
- ② 12 gg Shotgun 1 1/2 Pks (35 rds) #6 get another from AW.  
if you have time 1 Pk #4
- ③ get 2 Pks #9 or 10 from AW.
- ④ 410 1 #6. enough.
- ⑤ take 1 bridge + 240 volt cord.
- ⑥ Take 8 HP motor + tank + 4 liters O/B oil + shear pins etc
- ⑦ Take 2 extra jerrycans of U/L petrol for gen + outboards
- ⑧ Take at least 30 tall clear Jars (gizzard + water) ↗  
30 small Vials (oesophagus) ↗  
50 Tot P Jars ↗  
50 Tall 250-300ml bottles Salinity ↗
- ⑨ Purchase food for 3. the Vaccuum packed meat  
ABC people to buy food in Kal.
- ⑩ 3-4 ~~2-4~~ lbs neat alcohol ↗
- ⑪ Food boxes + 1 Nally bin (green) in top shed,  
contain cooking utensils + cutlery.
- ⑫ 2 Dolphin batteries (torch)
- ⑬ A tarp if you have one about 12' x 15' to  
add to shade + shelter/sheeping

**Fax (07/06/1995) from JL to GBP with a four-page 'Revised Program Lake Ballard June 1995' with instructions for GBP, ACh and ACI regarding survey and other work to be undertaken at Lake Ballard and Lake Marmion from Thurs 8<sup>th</sup> to Wed 14<sup>th</sup> June 1995.**

**Inter alia, the program refers to: '... measure this lake's [Crossover Lake] depth and take water samples'; 'Boat to Camp Island [Lake Ballard].**

**Measure water depth, temp, pH & take water samples, do standard invertebrate sweeps near Camp Island'.**

**At Lake Marmion, they were to: 'Establish depth (gauges) and on first and last days measure water depth, water temp, pH & take water samples, do standard invertebrate sweeps at a marked location (i.e. same routine as previously at [Lake] Ballard'. Water depths were also to be measured, water and sweep samples taken, etc., when collecting BaSt specimens on Lake Marmion (see other RMCR). A task to be performed at both lakes (Ballard and Marmion) was to 'record dates of definite drinking by [Banded] Stilt for comparison with salinity'.**

**See JL's fax of 02/06/1995 below to CDTM for the 'draft work program'.**

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
BUSSELTON DISTRICT  
FAX NO: (097) 521 432

107

TO: GRANT PEARSON

URGENT YES  NO

AT: WRC

Fax No.

FROM: J.L.

DATE: 7/6/95

Your Ref:

Local Ref:

Permit program - please ring me  
when have time.

FAXED



No. of pages inc. this page: 6

Please call us on (097) 521 677 if this message was incomplete or illegible

Fri 10 am at 89 Ward St

GRANT: REVISED LIST OF SOME ODDS AND ENDS REQUIRING ATTENTION

- No \* Is the leg flag glue at Woodvale (if not, it is on Camp  
ordered more Island)? You should obtain another tube in any case as the  
first tube probably won't do more than 50-100 flags.
- Got \* I have mailed Australia Post to you a bag of leg flags, two  
plastic weighing cones & your pocket radio.
- L \* Banding pliers in dissecting box at Woodvale? I think pair  
also at Ballard (Camp Island or in trailer).
- L \* I assume you have a work camera you can take.
- L \* If you are buying film the 100 ASA Ektachrome is excellent  
(remember to have Churchills number them).
- L \* You will need to make another wing rule (no less than  
25cm). I have the oversized rule from the last trip.
- L \* The dial calipers are stuffed. You need to buy or borrow a  
"pair" of good quality vernier calipers
- L \* You should have received copy of fax from Mark to me  
concerning his last trip and location of Argo keys etc.
- L \* Note that ABC tent has gone back to Melbourne.
- L \* Andy Chapman has one tyre from trailer in Kal (was flat,  
now fixed).
- L \* 10' punt from Bsn is bungless. B L11

REVISED PROGRAM LAKES BALLARD & MARMION JUNE 1995

[Grant: modify program as circumstances dictate. The important thing is to get the main tasks done]

Thurs 8 June

Grant Pearson and Alan Clarke drive to Kalgoorlie

Fri 9 June

GP and AC1 visit CALM office and pick up Argo keys (from June), wheel for trailer (from Andy Chapman) etc., make radio arrangements and telephone Jeedanya and Lake Marmion station (name?) to advise of plans.

GP, AC1 and ACh drive (2 vehicles) to Lake Ballard and withdraw all gear from Camp Island to Crossover Lake. Camp there overnight.

[Make notes on evidence of waterbird breeding seen while crossing Crossover Lake; measure this lake's depth and take water samples]



Sat 10 June

Boat to Camp Island. Measure water depth, temp, pH & take water samples, do standard invertebrate sweeps near Camp Island

Precisely measure (in order to precisely determine area) the boundaries of the nesting area of 1st breeding island).

Assuming no or very few flightless chicks encountered, return to camp on south side of Crossover Lake, withdraw all gear (except water level recorder & droppers/pickets) from Ballard area, head for Lake Marmion and establish new campsite near its shore.

Sun 11 June to Tues 13 June

At Lake Marmion.

[Note that ACh needs to be back in Kalgoorlie on Sun night]

i) Establish depth gauge(s) and on first and last days measure water depth, water temp, pH & take water samples, do standard invertebrate sweeps at a marked location (i.e. same routine as previously at Ballard)

ii) Locate flightless chicks, collect 5 family parties for oesophagus and proventriculus+gizzard contents analysis (details below).

iii) Band and flag flightless chicks (details below).

iv) Attempt to locate Marmion nesting island. If successful:

- \* ✓ measure (or pace) the nesting area so its area (m<sup>2</sup>) can be determined.
- \* ✓ photograph island and nesting area.
- \* ✓ sample dominant plant species.
- \* ✓ measure diameter & depth of a scattered sample (20-30) of nest scapes.
- \* do in unlikely event hatching chicks being led off island, record number of chicks & adults reaching water in sample (50-100 will suffice) of family parties. Repeat at 1-2 day intervals if not too time consuming (the other work is more important than repeats).

Wed 14 June

Stockpile Argo and other appropriate gear (one punt?) at Lake Marmion, Station Hstd or Kalgoorlie. Return to Perth with remainder.

Collecting Methodology:

- \* ACI in one punt and GP & ACh in other.
- \* choose **solitary** family parties with **single** adults.
- \* ACh shoot the adult, gather chicks and dispatch (ACh technique).
- \* attach waterproof label to each bird and label "Adult (1-5)" and "Chick (1a, 1b etc, 2a, 2b etc to 5a, 5b etc)".
- \* weigh each bird.
- \* record "completeness" of breast band and black belly of adults.
- \* record presence/absence of brood patches (bare skin) on either side of sternum.
- \* dissect out (scissors & tweezers) oesophagus & gizzard (incl proventriculus) of each bird. Store each separately in 70% alc with label (Adult 1, Chick 1a etc **plus date**).
- \* while GP & ACh do the above, ACI to measure water depth, take water samples, do standard invert sweeps (as on last trip).
- \* keep bodies (take back to camp at end of day and that night **sex and measure gonad size of the adults** and measure bill, head+bill, metatarsus & wing of adults and chicks).
- \* **retain bodies of chicks (and preferably of adults also) to give to WA Museum (Ron J. is keen to have even if split up middle & bloody).**
- \* carefully replace alcohol (except dregs) after 24 hrs or so. Replace again one week later.

Chicks	Ad
Oes	Breast
giz	Belly
Bill	Brood patch
Head + B	Oes
MT	giz
Wt	Sex
<del>Wing</del>	1 Bill
	2 H
	3 mt
	4 wt
	5 wing

Banding and Flagging Methodology (based on water deep enough to use boats)

- \* when find chicks, have GP, ACI & ACh in 12' punt towing 10' punt.
- \* have Nally bin with towel (at camp) in bottom to keep chicks dry/clean.
- \* Initially at least, ACI driver, GP catcher and **bander/flagger, ACh flagger**
- \* **band on right tibia (i.e. above "knee") and flag on left tibia every chick.**
- \* note that the bands are difficult to close properly and patience is required.
- \* to apply flags, hold flag open, slip onto tibia, apply glue to both surfaces, hold together for 1 minute (timed).
- \* note that flag surfaces to be glued **must** be clean and dry and **must not** move at all while being held together.
- \* remove any miss-applied bands (special pliers) and flags (separate "wings" with knife)
- \* ACI & ACh can advise on the most efficient tactics in catching and returning chicks
- \* If you run out of bands (unlikely), continue with flags only.
- \* record band numbers of chicks in same brood (where identifiable) and band numbers used each day.

4

103<sup>3</sup>

If too shallow for boats, note that Mark found Stilt very shy of people on foot but very accepting of Argo.

**OTHER TASKS**

- \* record dates of definite drinking by Stilt for comparison with salinity.
- \* make notes of any predator/scavenger activity you see.
- \* record other waterbirds seen on Lake Ballard.
- \* keep me informed (every day or two) of progress/findings.

-----

**A report (06/06/1995) from Andy Chapman (ACh) to JL and GBP headed 'Banded Stilts – Lakes Ballard & Marmion'. This reports details ACh's observations, made during an aerial survey 'today' [06/6/1995], of BaSt numbers, water depth (inferred), etc., on Lake Ballard (including 'Most of the larger rafts were in the NW sector ... and would be inaccessible to dinghy with outboard').**

**On Lake Marmion he referred to stilt '... standing in water E. of 'islands'' and 'The [Lake] Marmion water is very shallow – too shallow for outboard I reckon'.**

**An attached map by ACh shows the locations of the 'sites with stilt chicks' on Lake Ballard. JL subsequently mapped ACh's coordinates (locations 1-5) of the 'Banded Stilts main rafts' on Lake Ballard and this map is attached.**

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form CLM 80A

133  
140.

To: JIM LANE  
GRANT PEARSON

From: ANDY CHAPMAN  
6/6/95 19

Your Ref:  
Our Ref:  
Enquiries:  
Phone:

See also Vol 2, photos ---

Subject: BANDED STILTS - LAKES BALLARD & WARMON.

Today between 1100-1330 hrs Jan Kealley & I  
New lakes Ballard & Warmon in CESHA 210  
in a strong NW wind. Flew 4 E/W faverses on Ballard.

Lake Ballard :-

Banded stilts main rafts

See map

- ① 1x 10,000 + 2x 1,000 + 1x 100 at 29° 23.79'S, 120° 48.56'E
- ② 1x 5,000 at 29° 25.52'S, 120° 51.77'E
- ③ 1x 2000 + 1x 100 + 1x 100 + 1x 250 at 29° 28.09', 120° 58.77'E
- ④ 1x 1,500 + 1x 200 + 1x 500 + 3x 20 + 1x 100 at 29° 25.75'S, 120° 50.59'E
- ⑤ 1x 70 at 29° 28.21'S, 120° 47.18'E

Definitely no flightless checks on Lake Ballard or sign  
of any further nesting activity. Most of the larger  
rafts were in the NW sector of Lake Ballard and  
would be inaccessible to dingy with outboards.

Cry teal were present in 1,000s (I have better  
data) and Aust. Shelducks in 100s.

Lake Warmon :-

banded stilt counts 2x 12, 1x 20, 1x 10, 2x c. 100,  
1x 150, 1x 200 all standing in water E. of 'islands'  
two groups of checks (see map) near 29° 44.55'S  
121° 30.61'E w/ adults c. 600 checks c. 1,500 adults.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form CLM 80A

132  
139

To: .....

From: .....

19

Your Ref:  
Our Ref:  
Enquiries:  
Phone:

Subject: .....

The chicks on Warmin are at about the same stage as the ones on Ballant Jew we were there in May i.e. sole not long out of the nest. We did not locate the precise nesting site - but I believe we could locate it on the ground. The Warmin water is very shallow - too shallow for outboard I reckon. Also 100s of Crag Reed plus few dust. chicklets on Warmin.



EXTRACT  
EDJUDINA  
1:250,000 SHEET.

sites w/  
still chicks.

Requies,  
Andy.



**Fax (02/06/1995) from JL to CDTM (also sent to ACh & GBP) with: ‘draft work program for Grant [GBP] and co. to work to next week. I ... would appreciate any comments’. This copy of the draft program has subsequent annotations [by JL]. See JL’s fax of 07/06/1995 above to GBP for ‘Revised Program’ and what was finally decided about (inter alia) measuring of water depths, collection of water samples and invertebrate sweeps, etc.**

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
BUSSELTON DISTRICT

FAX NO: (097) 521 432

127  
128  
129

TO: CLIVE MENTON URGENT: YES / NO

AT: MELB.

Fax No. ....

FROM: JIM LAWE



DATE: 2/6

Your Ref: .....

Local Ref: .....

*Accompanying is a draft Work Program for  
Grant and co to work to next week.*

*I thought you would be interested to see it  
and would appreciate any comments. Cheers*

No. of pages inc. this page: 5

Please call us on (097) 521 677 if this message was incomplete or illegible

*Jim Lawe*

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
BUSSELTON DISTRICT  
FAX NO: (097) 521 432

125  
126  
127

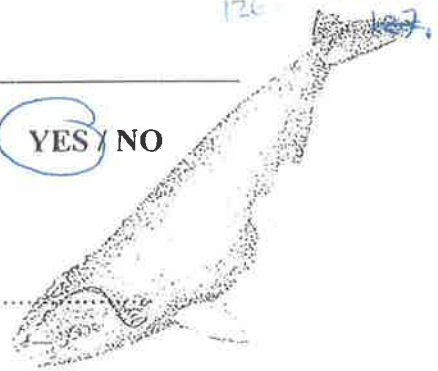
TO: ANDY CHAPMAN

URGENT  YES  NO

AT: KAL

Fax No. ....

FROM: JIM LANE



DATE: 2/6

Your Ref: .....  
Local Ref: .....

Accompanying is a draft Work Program for  
comments (if any) from Grant, Clive  
+ yourself. Ple contact me if any  
queries.

No. of pages inc. this page: 5

Please call us on (097) 521 677 if this message was incomplete or illegible

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
BUSSELTON DISTRICT  
FAX NO: (097) 521 432

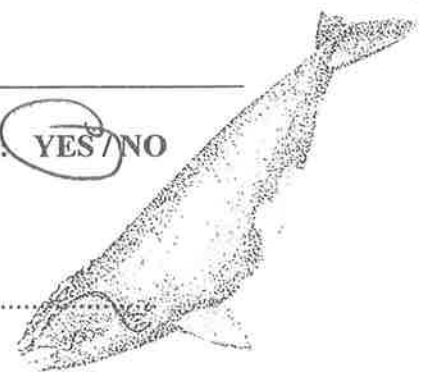
125  
126  
124

TO: GP URGENT: YES/NO

AT: WRC

Fax No. ....

FROM: J.L



DATE: 2/6 Your Ref: .....  
Local Ref: .....

Re Bellerud - Draft

No. of pages inc. this page: 5

Please call us on (097) 521 677 if this message was incomplete or illegible

129  
125  
124  
P

Some urgent

**GRANT: SOME ODDS AND ENDS REQUIRING ATTENTION**

- \* Is the leg flag glue at Woodvale? You should obtain another tube in any case as the first tube probably won't do more than 50-100 flags.
- \* I have today mailed Australia Post to you a bag of leg flags and two plastic weighing cones. *↓ your radio*
- \* Banding pliers in dissecting box at Woodvale?
- \* I assume you have a work camera you can take
- \* If you are buying film the 100 ASA Ektachrome is excellent (remember to have Churchills number them).
- \* You will need to make another wing rule (no less than 25cm). I have the oversized rule from the last trip.
- \* The dial calipers are stuffed. You need to buy or borrow a "pair" of good quality vernier calipers
- \* I have sent fax today to Jeremy Hogarth asking whether ABC tent still on island; where Argo keys are and how much fuel and water is a) at the trailer and b) on the island

**DRAFT PROGRAM LAKE BALLARD JUNE 1995**

Wed 7 June Morning

Andy Chapman + 2nd observer fly Lake Ballard. Telephone or fax Grant Pearson at Woodvale immediately after flight to confirm still chicks on lake.

Objectives (priorities highlighted)

- i) Are there still Banded Stilt (BaSt) on the Lake? If so, how many and in which part(s) of Lake?
- ii) **Are there still flightless chicks on the Lake?** If so how many and where?
- iii) **Is there any current nesting activity on the Lake?** If so, what is location of island(s) and approx number of nests?

Methodology

- \* Fly east-west transects of lake to find BaSt and any current nesting.
- \* Fly low over flocks to see if capable of flight or not.

Equipment

- \* Maps (1:250,000 ?) to record locations of BaSt, flightless chicks and current nesting islands.
- \* GPS (plane's?) to fix location of any current nesting islands
- \* 35 mm camera with Ektachrome 100 ASA (or Kodachrome 64 ASA) to photograph current nesting islands).

Extra



*Cosette recorder*

228.  
1245  
123.

(25)

\* Fly one transect of Lake Marmion on way back to Kalgoorlie to check for nesting and/or chicks. Record appropriate info.

**Thurs 8 June**

Grant Pearson and Alan Clarke drive to Kalgoorlie

**Fri 9 June**

Morning

Gp, ACI and ACh drive (2 vehicles) to Lake Ballard and establish camp on Camp Island. Make notes on evidence of waterbird breeding seen while crossing Crossover Lake; measure depth; take water sample(s).

Afternoon

Measure water depth, temp, pH & take water samples, do standard invertebrate sweeps near Camp Island

Precisely measure (in order to precisely determine area) the boundaries of the nesting area of 1st breeding island).

If time permits, start collecting family parties for oesophagus and proventriculus+gizzard contents analysis (details below)

**Sat 10 June**

Morning

Collect family parties for oesophagus and proventriculus+gizzard contents analysis (continue until 5 family parties collected).

Afternoon

Banding and flagging of chicks.

**Sun 11 June**

Banding and flagging of chicks.

ACh needs to be back in Kalgoorlie on Sun night. Make notes on evidence of waterbird breeding seen while crossing Crossover Lake in the afternoon.

127.  
128.  
122.

(3)

**Mon 12 June and Tues 13 June**

Banding and flagging of chicks.

**Wed 14 June**

Again measure water depth, temp, pH & take water samples, do standard invertebrate sweeps near Camp Island (same procedure as Fri afternoon).

Return to Perth

Summer lake notes depth

**Collecting Methodology:**

- \* ACI in one punt and GP & ACh in other.
- \* choose **solitary** family parties with **single** adults.
- \* ACh shoot the adult, gather chicks and dispatch (ACh technique).
- \* attach waterproof label to each bird and label "Adult (1-5)" and "Chick (1a, 1b etc, 2a, 2b etc to 5a, 5b etc)".
- \* weigh each bird.
- \* record "completeness" of breast band and black belly of adults.
- \* record presence/absence of brood patches (bare skin) on either side of sternum.
- \* dissect out (scissors & tweezers) oesophagus and gizzard (incl proventriculus) of each bird and store <sup>each</sup> separately in 70% alcohol with label (Adult 1, Chick 1a etc **plus date**).
- \* while GP & ACh do the above, ACI to measure water depth, take water samples, do standard invert sweeps (as on last trip).
- \* keep bodies (take back to camp at end of day and that night **sex and measure gonad size of the adults** and measure bill, head+bill, metatarsus & wing of adults and chicks).
- \* bury bodies.
- \* carefully replace alcohol (except dregs) after 24 hrs or so. Replace again one week later.
- \* Andy Chapman has one tyre from trailer in Kal (was flat, now fixed).
- \* Also ask Andy whereabouts of 2nd outboard and any other gear ABC may have left with him.
- \* 10' punt from Bsn is hungless.

← **plus Date!**

→

→

**Odds + socks.**

**Banding and Flagging Methodology**

- \* when find chicks, have GP, ACI & ACh in 12' punt towing 10' punt.

126  
122  
121

- \* have Nally bin with towel (at camp) in bottom to keep chicks dry/clean.
- \* Initially at least, AC1 driver, GP catcher and **bander**/flagger, ACh flagger
- \* **band on right tibia** (i.e. above "knee") and **flag on left tibia** every chick.
- \* note that the bands are difficult to close properly and patience is required.
- \* to apply flags, hold flag open, slip onto tibia, apply glue to both surfaces, hold together for 1 minute (timed).
- \* note that flag surfaces to be glued **must** be clean and dry and **must not** move at all while being held together.
- \* remove any miss-applied bands (special pliers) and flags (separate "wings" with knife)
- \* AC1 & ACh can advise on the most efficient
- \* If you run out of bands (unlikely), continue with flags only.
- \* record band numbers used each day

← methods -  
+ number ~~of~~ fledged each day

### Nesting Colony Methodology

If you find one and can readily get to it on the ground (one visit will suffice):

- \* measure (or pace) the nesting area so its area (m<sup>2</sup>) can be determined.
- \* visually assess stage(s) of development of colony (laying, incubating, hatching).
- \* photograph island and nesting area.
- \* sample dominant plant species.
- \* in unlikely event hatching is underway and chicks are being led off the island, record the number of chicks & adults reaching the water in a sample (50-100 will suffice) of family parties. Repeat at 1-2 day intervals if not time consuming (the other work is more important than repeats).

### OTHER TASKS

- \* make notes of any predator/scavenger activity you see.
- \* record other waterbirds seen on Lake Ballard.
- \* keep me informed (every day or two) of progress/findings (radio?).

**Fax (05/06/1995; typed 01/06/1995) message from Mark Lamble, ABC Natural History Unit, to JL with a 'rough diary' of observations he made while at Lake Ballard from 09/05 to 17/05/1995. Observations include, inter alia, '10/5/1995: ... I got approximately 15kms up [i.e. up Lake Ballard to the NE] but then water became too shallow and forced to return to camp'; 'I feel that the Adult birds [BaSt] were feeding to the east and returning to the west ...'; 'The water surrounding Camp Island appeared to contain many more brine shrimp than our previous trip ...'. '...about a four fold increase ...'. 'We also shoot footage [film] of the brine shrimp'. '... during the time at New Camp I saw very few brine shrimp in the water'. 'Interspersed with the [BaSt] chicks [near the western end of Lake Ballard] were adults that ... at any sign of a threat would lead the chicks toward deeper water or away from the threat' and 'If the birds [BaSt] saw a human form ... they would run for hundreds of metres ...'. A map of where the stilt chicks were is attached (and where they camped and the vehicular route to it).**

124.  
133.

# Facsimile Cover Sheet

**To:** Jim Lane**Company:** CALM, Busselton District**Phone:** (097) 521 677**Fax:** (097) 521 432**From:** Mark Lamble**Company:** ABC Natural History Unit**Phone:** 03-524-2341**Fax:** 03-524-2373**Date:** 06/01/95**Pages including this cover page:** 5

1 June 95

**Comments:**

Jim

Here is information as to where everything is and the state of things when we left.

1. In the Kalgoorlie CALM lock up: 87 Ward street, Kalgoorlie, we have left the Outboard Motor and fuel tank (1/2 full), the CALM H.F. radio (the antenna is still up on Camp island), several empty water Jerry cans and one empty fuel Jerry can.

2. At the CALM Kalgoorlie office, the Argo key was left with June Anderson for safe keeping.

3. We left the first aid kit at Jeedamyia station in the shearers' quarters.

4. The 12 ft and 10 ft punts are on the north side of Crossover Lake as are the trailer with lifejackets, the Tirfor winch, and one 20 Lt drinking water Jerry can (full).

south side of Crossover Lake

5. The Argo is where you left it last trip, we washed it with fresh water and lubed the chains with the adhesive lubricant. The bungs are attached to the steering brakes as we found them. The fuel tank is a little over 1/2 full.

3 wheels only.

The 4th is with Andy Chapman

120.  
132.

Comment like another long card?

6. On Camp Island we have taken our tent. Your pegs are in Grants shelter. Also in Grants Shelter are the generator, the electric outboard, both 12 volt batteries (the big yellow one we charged up and the other one still reads as being charged), the gas bottle and burner (we didn't use it), the cutlery box and some odds and ends of non perishable food, the lights (we did take back our power cord though yours is still there), a Jerry of unleaded fuel, 10 Lt of drinking water and your other bits and pieces. Your outboard oil is still on Camp Island as we bought our own in form Kalgoorlie.

7. The outboard while running well is a bit difficult to start when cold. It is very easy to flood so use the choke sparingly and do not pump the bulb to pressurise the system. If in doubt use only a small amount of throttle and keep pulling.

I think that takes care of the bits and pieces of gear that we used on the last trip. Here is a rough diary of where we were, the weather for the day and some of the things we saw during the last trip that I think will interest you and may be of value.

Tues

09/5/95 Collected gear, food, fuel etc. in Kalgoorlie and drove up to Crossover Lake that night. Rained over night, just a mm or three

Wed

10/5/95 To Camp Island and then up the lake to the north east to reconnoitre way to chicks seen from the air. I got approximately 15kms up but then water became to shallow and forced to return to camp. Wind NW strong enough to flatten our tent. Rained overnight again less than five mm.

~~North-West~~  
North-West ✓

11/5/95 To mainland to explore route to north western end of the lake to find the crèches via station tracks (see map and instructions). Returned to Camp Island. Wind NW strong but moderating, overcast rain and showers. Rained overnight again.

12/5/95 Filmed about Camp Island and deserted colony. Weather partly cloudy, but fine. Wind light and variable. Clear cold night.

13/5/95 Filmed about Camp Island and second colony Island. Weather fine, some high cloud increasing. Wind south easterly, light but strengthening.

14/5/95 Filmed about Camp Island and second colony Island. Weather cloudy but fine, Wind south easterly moderate strength.

15/5/95 Moved from Camp Island to New camp on NNW shore of lake. (see map). Weather cloudy but fine, Winds SE changed to N-W variable strength.

16/5/95 Filmed chicks on lake. Weather fine and warm patchy cloud. Winds SE moderate strength.

149  
131

17/5/95 Filmed chicks on lake. Returned to Crossover lake camp.  
Weather fine but cloud increased during the day. Winds NW/  
moderate to strong. Rain overnight heavy at times

18/5/95 Returned to Kalgoorlie

the 1st

### OBSERVATIONS

1. On Friday 12th May, many adult birds, estimate of 2,000 to 3,000 individuals, all arrived in large flocks to the south and south west of the main breeding island. These birds did not appear to be feeding but formed into a large flock that moved right up to the island. Within the flock many birds were apparently trying to copulate while still in the water. The flock was very vocal in fact this was what got our attention in the first place. When they reached the island they remained in the water were not seen to come up onto land however they did disappear behind the colony island. They were very flighty and for this reason I did not try to approach them. I shot several minutes of material for Camp Island 20 metres south of your observation point up on Camp Island. They all departed when a wedge tailed eagle flew in and landed on the breeding island. This activity was not repeated while we were on Camp Island.

2. While we were on Camp Island we saw many flocks of up to 25 birds flying from the west to the east and east to west. I feel that the Adult birds were feeding to the east and returning to the west where they were seen in large numbers, (1000,s), to the south east of the main body of chicks.

3. The water surrounding Camp Island appeared to contain many more brine shrimp than our previous trip. This is an empirical observation only, but we both felt that there was about a four fold increase in numbers visible in the water. We also shot footage of the brine shrimp.

subjective

4. On Wednesday 10th May, I encountered a small group of seven chicks and three adults, about 3kms north west of Camp Island at approximately 2pm. One of these chicks was banded but I did not manage to record its band number (sorry about that).

5. When we moved to New Camp to the north west of Camp Island (see map), we found hundreds perhaps thousands of chicks all in various stages of development (stages all on film), On the 17/5/95 Campbell and I both saw chicks flapping along about 30cm to 50cm above the water/mud for about 10 to 15 metres. These were the oldest chicks we had seen. This was seen only three times during our time at New Camp.

the fledging time

48  
130

6. The chicks were spread out over the lake in loose clusters of groups of 3 to 20 odd birds. It was hard to tell where one group started and another ended with chicks of all ages frequently being present in one group. Interspersed with the chicks were adults that acted like sentry/alarm birds, that at any sign of a threat would lead the chicks toward deeper water or away from the threat. It did not appear that the adults were attached to any particular chicks as they came and went from group to group quite frequently. It may be of interest that during the time at New Camp I saw very few brine shrimp in the water.

7. When we moved to New Camp we took the Argo in the tandem trailer. On the lake the Argo did not fare well, constantly sinking and bogging in soft spots in the mud. However it was totally accepted by the birds who came to within feet of it on several occasions and so made a great filming/observation platform. If the birds saw a human form on the shore or out in the lake they would run for hundreds of metres and not return until the person was long gone.

The final page of this fax is a map that we have marked up with the route to New Camp. John Finlayson (Jeedamya) gave us the general directions and told us of the track that goes right to the edge of the lake at New Camp that I have marked on the map.

Best of luck on your next trip and if there is anything I can do to help you please don't hesitate to contact me via our fax number as I am working very odd hours at the moment and out more often than not.

Regards

Mark Lamble

Mark said Argo would be good catching platform  
Also good for herding chicks when ground firm.

P.S. Jim the fully marked up map will follow tomorrow.



**A page of jottings (05/6/1995) by JL recording some of the observations detailed by Mark Lamble in his faxed message of 05/06/1995 (typed 01/06/1995). Included is reference to: '>6cm firm for Argo'; 'No *Artemia* near New Camp, v. thick around breeding island'; 'Birds marched E during day & west at night. 2-3cm depth. Chicks are wading – not swimming'. See also jottings of 18/5/1995.**

5/6/95

Mark Leslie

Round them up  
with Argo on beach  
ground  
1 person

\*  
Both columns were  
empty. 130  
120  
119

3 juvs flying - date & place

key - with  
Janice

boat - CAROL depot

Conditions changed  
day to day.  
- wind down  
water condit.

> 6cm from low tide

If water supports weight - ok  
> 1 hour away.

big sand dune - possibly for ~ 2 km.

New camp - 2 days -

Birds v.v. shy to people -> 1 km +

Argo like platform.

Cat coming down  
sand dune & birds  
moving away.



1/2 km - from New camp  
had walking past v. close.

at least 2 thousand  
birds at last Island!  
- fly behind it.  
over 2 1/2 - 3 hrs.

Adults interposed & come and went.

No Anthonia near New camp, v. thick around  
breeding island.

No strict creeks  
- loose jumps - all diff stages.

e2 has funny trailer from Casser Label  
to New Camp when you  
have done it once.



Birds marked E during day  
+ west at night.

2-3cm depth

Chicks are walking & not swimming

60 km / hr in  
good stretches  
3 times to cross  
then say only 500 m  
from Label.

**Undated page of jottings by JL headed 'Next Ballard Trip (6/95) [June 1995]' that records some preliminary thoughts of JL about the trip to be undertaken to Lake Ballard (and Lake Marmion) by GBP, ACI & ACh in June 1995. Inter alia reads 'depth, temp, salinity, P, turbid?, etc. & sweeps'; 'photos of – water clear – turbid', and 'download depth [water level logger]'. See faxes above for draft (02/06/1995) and revised (07/06/1995) programs.**

Decide when + how long. 134.

## NEXT BACKCASTS TRIP (6/95)

124.  
130

- GP, ACI, ACh
- air survey? who? when? where? new island
- depth, temp, salinity, P, turbid?, etc. + sweeps.
- gut samples (family fishes) + sweeps + other data

- measure lat colony precisely.
- photos of - water clear - turbid

- pull out gear?
- down back depth?
- tractor wheel.
- my vehicle → Perth.
- no weekend o' time?
- I have flogs.
- advice re: beach appra and procedure - bin, towel, nets.
- how long to flogs?
- establish monitoring sub-project on coast.

- year  
- daily work program.

**One page fax (01/6/1995) from JL to GBP that reads: 'I found the instrument screwdriver (and the phillips) from the Hamon [salinity measuring instrument] box in my office this morning and have mailed them ... to you. You should receive them early next week'.**

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
BUSSELTON DISTRICT  
FAX NO (097) 521 432

45.  
117.

TO: GRANT P.

URGENT: YES/NO

AT: WRC

Fax No.

FROM: J.L



FAXED

DATE: 1/6

Your Ref: .....

Local Ref: .....

I found ~~in~~ the instrument scanner (and the philips) from the Harmon ~~to~~ box in my office this morning and have mailed them (Australia Post) to you this afternoon. You should receive them at early next week.

No. of pages inc. this page: ...1.....

Please call us on (097) 521 677 if this message was incomplete or illegible

Letter (24/5/1995 'FILE: CHEM0595') from GBP to Roger Schultz (WA Chemistry Centre) requesting analysis of accompanying water samples. 77 samples are individually listed. They are numbered 1-57, 57A, 58-76. Of these, numbers 27-57, 57A, 58-72 are listed as being from Lake Ballard (samples 27-36, 39-43, 48-49, 51-57, 57A, 58-72) or Crossover Lake (samples 37-38, 44-47, 50). The dates of the 40 samples from Lake Ballard range from 15/3 to 04/5/1995. The dates of the 7 samples from Crossover Lake range from 01/4 to 04/5/1995.

The labelling of the Ballard samples indicates some were associated with collected BaSt (02/4, 11/4, 02/5/1995 only), while some were not. Some were to be analysed for Total Phosphorus (of these, some had already been filtered, 'using millipore 0.45 uM HA filters', and some were unfiltered). Some were to be analysed for salinity (and conductivity). Those without analysis-specific 'descriptors' were presumably also to be analysed for salinity (and conductivity).

A copy of the results was sent by WACC to GBP on 29/7/1997. Note that all 77 samples were analysed for conductivity (mS/m), Tot P and TDS (mg/L) and 3 of the 77 samples (45, 67, 72) were analysed for Tot N.

Note also that these samples were not delivered to / received by WA Chem Centre until 26/6/1995 (see above for that copy - annotated - of this letter).

Also see another letter of 26/6/1995 for the next (second) batch of water samples delivered to WA Chem Centre.

A hand-written, draft list for inclusion in the letter of 24/5/1995 is also here.

**Department of Conservation and Land Management  
Woodvale Research Centre**

Ocean Reef Road Woodvale 6065  
Telephone: (09) 405 5163  
Fax: (09) 306 1641

**To:** Mr Roger Schultz  
Principal Chemist  
Environmental Chemistry Laboratory  
Chemistry Centre

**From:** Grant Pearson  
Research Centre Manager

**Date:** May 24 1995

**Subject:** Water Analyses  
FILE: CHEM0595

---

I would be grateful if you could analyse the accompanying water samples for conductivity and salinity (reported in Parts per thousand) and for total phosphorous. The samples are mainly from Harvey Estuary, Harvey River and Lake Ballard.

Some of the samples for total phosphorous (tP) have been filtered using millipore 0.45 µM HA filters. These are recorded below as "filt'd". Samples unfiltered are referred to as "unfilt'd"

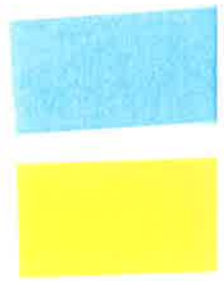
All samples are marked on the lids with a number from 1 to 76 corresponding to the numbers listed below. Please report using the sequential numbers, the date and descriptor.

No.	Date	Descriptor	
1	09/03/95	Harvey River depth gauge Post	
2	09/03/95	Site "00"	Harvey River
3	09/03/95	Site 2	Harvey Est.
4	09/03/95	Site 4	Harvey Est.
5	09/03/95	Site 7	Harvey Est.
6	09/03/95	200m N.th of Island Point	
7	21/03/95	Site 3.5km	Harvey River.
8	21/03/95	Site 7	Harvey Est.
9	21/03/95	200m N.th of Island Point	
10	06/04/95	Ramp	Harvey Est.
11	06/04/95	Site 7	Harvey Est.
12	06/04/95	Mouth, "00"	Harvey River
13	06/04/95	Post	Harvey River

14	21/04/95	Site 0 North side of Island	
15	21/04/95	Site 1 North side of Island	
16	21/04/95	Site 3	Harvey Est.
17	21/04/95	Site 6	Harvey Est.
18	21/04/95	Site 7	Harvey Est.
19	21/04/95	Fishtrap	Harvey Est.
20	21/04/95	Site 4km	Harvey River
21	17/05/95	Site1	Harvey Est.
22	17/05/95	Site 2	Harvey Est.
23	17/05/95	Site 3	Harvey Est.
24	17/05/95	Site 4	Harvey Est.
25	17/11/94	Site "00"	Harvey Est.
26	17/11/94	Site 5, site 1.0km	Harvey River
27	15/03/95	Lake Ballard	
28	11/04/95	Family 2	Lake Ballard, salinity
29	11/04/95	Family 3	Lake Ballard, salinity
30	11/04/95	Family 4/5	Lake Ballard, salinity
31	11/04/95	Family 2,tP	Lake Ballard
32	11/04/95	Family 3,tP	Lake Ballard
33	11/04/95	Family 4/5,tP	Lake Ballard
34	01/04/95	Site 1,tP,unfiltd	Lake Ballard
35	01/04/95	Site 1,tP, filtd top	Lake Ballard
36	01/04/95	Site 1,tP	Ballard
37	01/04/95	Site 1, tP,unfiltd	Crossover Lake
38	01/04/95	Site 1, tP, filtd	Crossover Lake
39	02/04/95	Site 2,Bast 10, tP	Ballard
40	02/04/95	Site 3,Bast 11, tP	Ballard
41	02/04/95	Site 4,Bast 12, tP	Ballard
42	09/04/95	Site 1, tP	Ballard
43	11/04/95	Site 1, tP	Ballard
44	02/04/95	Site 1	Crossover Lake, salinity
45	04/05/95	t P+N	Crossover Lake, salinity
46	04/05/95	Bottom	Crossover Lake, salinity
47	04/05/95	Top	Crossover Lake, salinity

*Banded Skink  
breeding  
Reservoir*

*23/5/12*



48	01/04/95	Top, site 1	Ballard, salinity
49	01/04/95	Bottom, site 1	Ballard, salinity
50	01/04/95	Site 1	Crossover Lake
51	02/04/95	Bast 1-9	Ballard, salinity
52	02/04/95	Bast 10, site 2	Ballard, salinity
53	02/04/95	Bast 11, site 3	Ballard, salinity
54	02/04/95	Bast 12, site 4	Ballard, salinity
55	09/04/95	Top, site 1	Ballard, salinity
56	09/04/95	Bottom, site 1	Ballard, salinity
57	11/04/95	Top, site 1	Ballard, salinity
57 A	11/04/95	Bottom site 1	Ballard, salinity
58	02/05/95	Adult 1	Ballard, salinity
59	02/05/95	Adult 2	Ballard, salinity
60	02/05/95	Adult 3	Ballard, salinity
61	02/05/95	Adult 4	Ballard, salinity
62	02/05/95	Adult 5	Ballard, salinity
63	04/05/95	Camp	Ballard, salinity
64	28/04/95	Camp, tP	Ballard
65	28/04/95	Top Camp	Ballard
66	28/04/95	Bottom Camp	Ballard
67	04/05/95	Camp Island, t P+N	Ballard
68	02/05/95	Adult 1	Ballard
69	02/05/95	Adult 2	Ballard
70	02/05/95	Adult 4	Ballard
71	02/05/95	Adult 5	Ballard
72	02/05/95	Adult 3, t P+N	Ballard
73	14/02/95	Unicup	
74	14/02/95	Muir	
75	14/02/95	Yarnup	
76	15/02/95	Tordit Garmp	

Sample Name	Date	Sample Name	Date
Harvey Est, #4	9.3.95	Lake Ballard, Family 3, total P	11.4.95
Harvey Est, 200m Sth Island Pt	9.3.95	Lake Ballard, Family 2, total P	11.4.95
Harvey Est, #7	9.3.95		
Harvey Est, #2	9.3.95	Lake 1, site 1, total P, unfiltered	1.4.95
Harvey Est, 200m Sth Island Pt	21.3.95	Lake 1, total P, filtered	1.4.95
Harvey Est, #7	21.3.95		
Harvey Est, Ramp	6.4.95	Ballard site 1, total P, filtered	1.4.95
Harvey Est, #7	6.4.95	Ballard site 1, total P, unfiltered	1.4.95
Harvey Est, #1 Nth side of Island	21.4.95	Ballard site 1, total P	1.4.95
Harvey Est, #6	21.4.95	Ballard Site 4, Bast #12, total P	2.4.95
Harvey Est, #7	21.4.95	Ballard Site 3, Bast #11, total P	2.4.95
Harvey Est, Fish trap	21.4.95	Ballard Site 2, Bast #10, total P	2.4.95
Harvey Est, #0 Nth side of Island	21.4.95	Ballard Site 1, total P	9.4.95
Harvey Est, #3	21.4.95	Ballard Site 1, total P	11.4.95
Harvey Est, ①	17.5.95		
Harvey Est, ②	17.5.95	Crossover Lake, site 1, salinity	2.4.95
Harvey Est, ③	17.5.95	Crossover Lake, total P+N	4.5.95
Harvey Est, ④	17.5.95	Crossover Lake, Bottom, Salinity	4.5.95
		Crossover Lake, Top, Salinity	4.5.95
Harvey R, Post	9.3.95		
Harvey R, 00	9.3.95	Ballard Top, Site 1, salinity	1.4.95
Harvey R, #3.5	21.3.95	Ballard Lake 1, Salinity	1.4.95
Harvey R, Mouth 0.0	6.4.95	Ballard Bottom, Site 1, salinity	1.4.95
Harvey R, Post	6.4.95	Ballard Bast #12, site 4, salinity	2.4.95
Harvey R, 4 km	21.4.95	Ballard Bast #11, site 3, salinity	2.4.95
		Ballard Bast #10, site 2, salinity	2.4.95
Lake Ballard, Salinity	15.3.95	Ballard Bast 1-9, salinity	2.4.95
Lake Ballard, Family 4/5, Salinity	11.4.95	Ballard Top, site 1, salinity	9.4.95
Lake Ballard, Family 3, salinity	11.4.95	Ballard Bottom, site 1, salinity	9.4.95
Lake Ballard, Family 2, salinity	11.4.95	Ballard Bottom, site 1, salinity	11.4.95
		Ballard, Camp	28.4.95
Lake Ballard, Family 4/5, total P	11.4.95	Ballard Top Camp	28.4.95

Sample Name	Date	Sample Name	Date
Ballard Bottom Camp ✓	28.4.95		
Ballard Adult 3, salinity ✓	2.5.95		
Ballard Adult 2 ✓	2.5.95		
Ballard Adult 4 ✓	2.5.95		
Ballard Adult 5, salinity ✓	2.5.95		
Ballard Adult 1, salinity ✓	2.5.95		
Ballard Adult 2, salinity ✓	2.5.95		
Ballard Adult 4, salinity ✓	2.5.95		
Ballard Adult 1 ✓	2.5.95		
Ballard Adult 5 ✓	2.5.95		
Ballard Adult 3, total P+N ✓	2.5.95		
Ballard Camp, Salinity ✓	4.5.95		
Ballard Camp, 5, total P+N ✓	4.5.95		
Harvey Est, site "00" ✓	17.11.94		
Harvey R, #5, site 1.0 km ✓	17.11.94		
Unicup ✓	14.2.95		
Mur ✓	14.2.95		
Yarnup ✓	14.2.95		
Tordit Camp ✓	15.2.95		

NAME	DATE	NAME	DATE
<del>Harvey R. Est 200m Sth Island Pt</del>	<del>21.3.95</del>	Ballard Adult 1	2.5.95
Harvey Est 200m Sth Island Pt	21.3.95	Ballard Adult 2	2.5.95
Harvey R. # 3-5	21.3.95	Ballard Adult 4	2.5.95
Harvey Est # 7	21.3.95	Ballard Adult 1	2.5.95
Harvey Est Camp	6.4.95	Ballard Adult 5	2.5.95
Harvey Est # 7	6.4.95	Ballard Adult 3	2.5.95
Harvey R Mouth	6.4.95	Ballard Camp Salinity	4.5.95
Harvey R. Post	6.4.95	Ballard Camp 15	4.5.95
Harvey Est # 4	9.3.95	Crossover Lake total P+N	4.5.95
Harvey Est 200m Sth Island Pt	9.3.95	Crossover Lake Bottom Salinity	4.5.95
		Crossover Lake top Salinity	4.5.95
Harvey Est # 7	9.3.95	Ballard Top Site 1 Salinity	1.4.95
Harvey Est # 2	9.3.95	Ballard Lake 1 Salinity	1.4.95
Harvey R Post	9.3.95	Ballard Bottom Site 1	1.4.95
Harvey R 00	9.3.95	Crossover Lake Site 1	2.4.95
Harvey Est # 1 Nth side of Isd	21.4.95	Ballard Bast # 12 site 4	2.4.95
		Ballard Bast # 11 site 3	2.4.95
Harvey Est # 6	21.4.95	Ballard Bast # 10 site 2	2.4.95
Harvey Est # 7	21.4.95	Ballard Top Site 1	9.4.95
Harvey Est fish trap	21.4.95	Ballard Bottom Site 1	9.4.95
Harvey Est # 0 Nth side of Isd	21.4.95	Ballard Bottom Site 1	11.4.95
		Lake Ballard Family 4/5	11.4.95
Harvey Est # 3		Lake Ballard Family 3	11.4.95
Harvey R 4 Km.	21.4.95	Lake Ballard Family 2	11.4.95
		Ballard Site 1	11.4.95
Lake Ballard Salinity	15.3.95	Ballard Site 1 Total P	1.4.95
Ballard Camp	28.4.95	Ballard Site 1 Total P unfiltered	1.4.95
Ballard Top Camp	28.4.95	Ballard Site 1 Total P	1.4.95
Ballard Bottom Camp	28.4.95	Lake Ballard Site 1 total P unfiltered	1.4.95
Ballard Adult 3	2.5.95	Lake Ballard Site 1 total P filtered	1.4.95
Ballard Adult 20	2.5.95	Ballard Site 4 Bast # 12	2.4.95
Ballard Adult 4	2.5.95	Ballard Bast # 14	
Ballard Adult 5	2.5.95	Ballard Bast # 11	2.4.95

6

2 Salinity. Ballard Bast 1-9, 2.4.9

3

4

DRAFT

Sample Name Date

Ballard Site 2 Bast #10 <sup>total P</sup>	2.4.95.	✓
Ballard Site 1 total P	9.4.95.	✓
Ballard Site 1 total P	11.4.95.	✓
Lake Ballard Family 3 <sup>total P</sup>	11.4.95.	✓
Lake Ballard Family 2 total P	11.4.95.	✓
Lake Ballard Family 4/5 <sup>total P</sup>	11.4.95.	✓

<del>Harvey Est ①</del>	<del>17.5.95</del>	
<del>Harvey Est ②</del>	<del>17.5.95</del>	
<del>Harvey Est ③</del>	<del>17.5.95</del>	✓
<del>Harvey Est ④</del>	<del>17.5.95</del>	
<del>Harvey Est Site "00"</del>	<del>17.11.94</del>	
<del>Harvey River # Site 10</del>	<del>17.11.94</del>	
<del>Unicup</del>	<del>14.2.95</del>	
<del>Mur</del>	<del>14.2.95</del>	
<del>Yarnup</del>	<del>14.2.95</del>	
<del>Tord + Gormp</del>	<del>15.2.95</del>	



### **Extract from Alan Clarke's field notes recording:**

- **Planned measurements and water & sweep sampling (probably to be undertaken on 28/4/1995, as that is the next page of this notebook). Refers to 'top & bottom salinity at star picket', 'T + P + N at top', 'pH [at] star picket top, temp top + bottom', '3 x 50m sweeps @ surface', and 'depth'.**
- **On 28/4/1995, at Lake Ballard: 'depth top [presumably of depth measuring stick] to water 0.89m' and 'bottom to top of water 0.54m'; 'pH top 7.89'; [water] temp top 19.0 Bottom 19.0), and an attempted calibration of pH meter.**
- **Mention of 'red tape' associated with a coot nest with 4 eggs, on Crossover Lake on 28/4/1995. So keep in mind that red tape was used at this nest as well as on a depth stick on Lake Ballard (there might be some potential for confusion in cryptic field notes).**
- **On 02/5/1995, at Lake Ballard: depths at sites of collected BaSt (see other RMCR).**
- **On 04/5/1995, at Lake Ballard: '0.97[m] depth top of stick to water' and '0.44[m] depth from bottom to water level of stick'; calibration of pH meter; pH measurement; water temperatures (top & bottom).**
- **On 04/5/1995, at Crossover Lake: pH; water temperature; 'salinity top & bottom' and 'Total P & N top' [presumably samples were taken as no measurements recorded]; 'depth ... from top of star picket'.**
- **Testing of pH calibration buffers on 17/5/1995.**

18/4/95  
Demerain 7:00 am  
Manginap 7:00 pm

19/4/95  
Manginap 7:15 am  
Allany 4:45 pm

20/4/95  
Allany 7:00 am  
Demerain 6:45 pm

21/4/95  
Demerain 7:30 am  
Woodkole 1:15 pm

- ① top + bottom salinity  
at star picket
- ② T+P+N at top
- ③ PH star picket top  
temp top + bottom
- ④ 3x50m sweeps @ surface
- ⑤ depth



28/4/95 8.30

depth top  $\rightarrow$  water 0.89m  
bottom to top of water 0.54m

pH Top 7.89

Temp Top 19.0

Bottom 19.0

Calibration - Solution 7.01 read 6.95

Solution 10.01 read 9.78

Tried to calibrate, meter read E4

28/4/95 3.00

Crossover lake

little Pied Cormorants!

coot 4 + 2 brood 6 + 1 S1

grey teal 6 + 2 + 2  
coot 8

grey teal nest down (life)  
coot nest + 5

nest with 4 eggs below with  
red tape (cloned) coot nest

coot nest 7 eggs 50m along

3 eggs coot + 1 S1



coot nest empty  
teal 3+1

Small female with duck  
↳ separate areas

2 grown

2/5/95

1st Photo 10:30 am

1 Km south of 2nd  
island. depth 0.47m

adult No. 1

chicks No. 1 + 2

2/5/95

ADULT 2

depth 0.48m

adult 2

chicks A+B+C

11:45 am

ADULT 3

12:10 pm

depth 0.49m

chicks

ADULT 4

depth

0.33m

chicks

1:50 pm

2/5/95

ADULT 5

depth 0.31 2.20 pt

4/5/95

0.97 depth top of stick to water  
0.44 depth from bottom to water  
level of stick

Standardization

buffer 7.01 read 6.99

buffer 10.01 read 9.75

ph at surface 7.78

Temp top 12.6 bottom 12.6

4/5/95

Grass cover Lake

PH 7.59

Temp 15.7

Salinity top + bottom

total P.D.N top

depth 0.445 from top of  
star picket

45  
26/4/95 Depnt woodcock 13.00  
arrive 1 Kolygodus 22.15

27/4/95 0830  
Ballard 22.00

28/4/95

12/5/95 pH Buffer test

calibrated with original  
solution buffers 7.01 10.01  
~~3.94~~

Standard buffers were  
3.87 7.08 10.18

**Extracts (late April – early May 1995) from JL’s field notebooks concerning water depths, samples, measurements, sweep samples, drinking, food, feeding, etc., on Lake Ballard (and Crossover Lake) during his field trip there (with ACI, ACh and others) in late April – early May 1995. These extracts include:**

- **Reference to ACI’s collection [‘0830-0915’] of water samples (‘salinity to & bottom, Total P top’), sweep samples and measurements of pH (‘top’) and water temperature (‘top & bottom’) at ‘campsite [Camp Island] stake’ on 28/4/1995.**
- **Observations of incubating adult BaSt drinking on 28/4/1995.**
- **ACI’s Lake Ballard water depth (‘star picket’ corrected to ‘wooden stake’), pH, temperature measurements of 0830-0845hrs on 28/4/1995.**
- **Description of water depths while boating on 29/4/1995. Note reference to map and ‘straight line course [of] 300 degrees.**
- **‘Water clear to bottom. Hoards of *Parartemia*, some mating’ at 1255hrs on 30/4/1995.**
- **‘[Coot] Nest was 20cm above water level [of Crossover Lake]’.**
- **‘Crossover Lake depth and salinity’ [to be measured on 02/5/1995].**
- **‘Water level 9cm below bottom of tape on stick on S side of Camp Island at 0844hrs [on 03/5/1995]’.**

Anti-dumping Contd.

"Gambier Isle

Th 27/4/98 contd.

50m



29° 07' 77" S

119° 33' 42" E

found at 0847 hrs

Photos 2-7 (6x40A) of nest area

Ground E. side of Beale's A

0851 hrs → 20' land.

Reached west shore of Lake Ballant

at 1010 hrs.

1036 Camp I.

1044 Transit W end.

1123 reach E end + head for Kelg.

Kelgambie

27/4/98 contd.

Land at Kelgambie segment

at 1134 hrs

Mike Steverson.

~~3.4~~ 3.4 hrs x \$305/hr.

= \$1037

+ 12 C

\$1049

! Rob Thomas - <sup>Engagement Office</sup> ~~Photography~~

Set - 2nd blue bird #s? TO

Timing horizon water depth. DO

Sun wind.



Labre Bellard

Th 27/4/95 Cont'd

Summary of Phase 27/4/95

Left ~~at~~ approximately 07:30 hr.  
Alan changed me at airport at  
07:50 hrs and he went shopping for  
gear/food.

I did take Debra & John Bellard away  
at 08:08 → 1134 km in Casaca  
210. Open woods for pines.

Pilot flew too fast (landing gear warning  
began came on at 100 kts).

I caught taxi to COOP office, made  
phone calls, Alan joined me for fruit  
shopping. Left that in my new 4 hour  
at 1350 km. Met Rob Thomas (COOP) on  
road before Mayze. He followed in his Fairway,  
passed up gear, down to Casaca lake, all  
gear over in 2 hrs. Reached Lake Debra approx  
1900 hr. Boated over to Camp 3 in 500  
decimeters & 4 hrs min. that must all gear  
by 8:30 pm. Had dinner. Did around 10 gm  
Raining! - started when we left Mayze. Hotel -

Labre Bellard

Sat Fri 28/4/95

Got up at 06:30 hr - breakfast - espresso  
Candy - little better.

08:30 - 09:15 hr. had Alan Clarke take  
water samples (only top bottom, Total P top) sent  
because pH (top) and water temp (top & bottom) - (C  
composite  
shale

put Yellow flag on left tibia  
put metal band on right tibia

100 gm proso

wet paper

empty tins

camera ✓

bending pliers ✓

beats ✓

Shops ✓

Gene ✓

Calypso ✓

band removed pliers ✓

Also let him collect 3 x 50 m  
horizontal auger (top 20 cm) sent  
inclosure with weight at site (shaded)

28/4/95 Contd

the chicks there — ~~some~~ somewhere  
later (1/2 hr plus) heading them  
back to the chowline — or  
they ~~would~~ would walk along  
the ~~edge~~ northern side (along)  
of the island, between the shore  
and the nesting area, pecking  
at this and that (now  
seeming to find any thing substantial)  
with chicks following along  
along the shore. They  
usually walked to  $\frac{1}{2}$  -  $\frac{3}{4}$  the length  
of the island and then returned  
along the same thing. Then  
they either brooded on the island  
(not in nests) or went straight  
back to water's edge

28/4/95 Contd

Drinking: during the 11.20 - 16.40  
period scores of adults came  
down to N shore to have a  
quilt bath / pee / wash / feed  
before returning to the nesting  
area. Only 2-3 of these  
were observed to drink — and  
even this was not viewed very clearly.  
— no doubt the cool-wet clay  
prevented the need to drink.

Pecking at Chick: around 4 pm  
I saw a ~~few~~ "day old" chicks  
being singly pecked (+ held) by  
incubating adults who could reach  
it. As the nest were close  
it was always within reach and  
was pecked at continuously until  
it rolled (threw!) down edge and

Fri 28/4/95 Cont'd

of sand. It moved a little further W and tried to reenter nest soon - again it was attracted by sitting birds and fell back down slope. This continued for at least 20 mins until it got still - no doubt exhausted. No parent came to it. Even shouting/singing should prevent it when it was within range. In the morning we had seen eggs 5 ~~with~~ weak chicks scattered about empty. Some were on their backs and unable to rise again. Others appeared about ~~in~~ short distances - some with parents, wobbling.

Fri 28/4/95 cont'd

These chicks no doubt die.

Egg rolling One adult was seen to accidentally kick a stray (mistaken) egg to the nest west down to slope to start eat the egg rolled 1 metre further down slope. Another bird was seen to flick an egg a metre or so down slope with one action of its bill.

Another bird was seen to carry an egg high over the back of sitting birds for several metres - its bill jabbed into the egg - do some birds jab eggs to get movement?

Fri 28/4/95 contd

Predator The only predator/scavenger seen near the

2nd breeding island between 1120 - 1640 hrs was a Peregrine Falcon (not by any probability  $\sigma^7$ ).

A faint noise  $\approx 50$  or 60 whistles <sup>(Fig)</sup> ~~heard~~ <sup>heard</sup> the water from W ~~side~~ <sup>side</sup> end of

island. Saw a raptor flying away, then coming back to fly at W end of island at height of 30m and moderate speed.

Peregrine Falcon! It made 3 more passes and then on the 4th pass flew lower, on the SW side of the island, out of sight and when I came of had a chick (Best) in its talons. It flew off to NNE.

Fri 28/4/95 contd

Albatross data from Campbell Sampling Site 28/4/95 AM

island data  
- Top of ~~island~~ <sup>island</sup> down to water surface = 0.89 m  
- Bed of lake to top water surface (next to ~~the~~ wooden stake) = 0.54 m.

- pH at surface was 7.9 (against pH 10.0 standard the instrument read 9.8 ; against the pH 7.0 standard the instrument read 6.95)

- Temperature (from pH meter) read 19.0°C at top and bottom of water

- Time was run passed 0830 - 0845 hrs. Weather was overcast ~~was~~ but not yet raining

L. Bellard

29/4/85 contd

once rejected it ran back up to the nesting area and was collected by another adult - no doubt ended in slow death.

A few jumps (2-3 chicks)

of chicks came down to ~~edge~~ edge of island without adult and jumped in without and adult not

seen to join them. Some

parents were more diligent in

keeping their chicks with them

(by walking + calling) than

others which rejected a flycatcher.

No predators/scavengers

seen this morning.

After counting ~~the~~ 184

birds of we stopped for lunch.

L. Bellard

29/4/85 contd

After lunch we plotted a straight line course in the

direction ~~(300°)~~ (300°) of the

largest number of Skitt I saw

on Thursday (27/4) around

swampy. See map to

see how far we got before

water too shallow. We

then looked to nearest beach

to land + scanned with binocular

for Best. Decided to jig

Jig our way back towards

2nd boundary island catching

chicks and bunting them on

the way. We banded

10 chicks (band numbers

band no.s 30/4/95  
Corkhill

family of 084  
with 092  
1 adult ← brooder  
150 ← new bird  
1255 km. - (dark "day old"  
chick - no band)

Stopped for lunch on water at 1255 km.  
Water clear to bottom. Hundreds  
of Parotinae, some making  
Rust 1.15 pm. ~~Cloud~~ ~~approach~~

Band No	Bill	Flagged?
151	-	F1
152	-	F1
153	-	F1
154	-	F1
155	-	-
156	-	-
↓ 168	-	-
↓ 175	-	-

band no. 30/4/95  
Corkhill

Flagged!

band no.	bill	Flagged!
↓ 179	-	-
180	-	-
89	-	F1
90	-	F1
91	-	F1
92	-	-

Totals

244 (last bird)  
128 → 244 = 117  
~~128~~ + 2  
119

one catch of 8  
" " " 7  
" " " 11

19 flagged.

3 biggest  
catches with  
strong net

Final 1601 km.

Totals: 119 banded - of  
these, 19 were yellow  
flagged on left to 15 km.

30/4/95 Contd

Groundwater level - about 1656 cm

- 1 nest empty
- 2 nest chicks
- 2 nest emptying and some seen to drive.

- 1 nest (empty) with 3+ tiny chicks on water near nest. (red bird) Red was

20 cm above water level and

completely empty.

- 1 nest level.

- 1 nest with 6 seen eggs, hatched

2 in water - nest in my hand

needed fresh leaf material in nest

(green) - looks like a nest of

in an "old" nest.

- 1 nest with 2+ new fresh egg nearby

empty chicks (not tiny)

- 1 little fresh mound (by)

30/4/95 Contd

- 1 ♂ Nest Dried leaves

- 1 nest level.

- 3+ nest - large red fresh morning

nest chicks seen fledged

nest (completely empty but with

fresh green leaves - Melodious.)

- 1 nest level (see 2) and

light (1) in the nest

Banked like among grass 6 pm.

Booted (and sprayed) back

to Camp Toluca.

Went over grass from E except

early AM (4.45 am) when there was

no breeze. Sunny in AM, cloudy in

PM: The largest (see photos)

chicks were fledged. Nest was strong

only + some birds.



Colony Island

Sat Mar 3/5/95

Up at 0630 hrs

Breakfast

Plan Repair Store

Reorganizing Sheds

- only 100 Shit

Water level 9am below backbone  
of pipe on island on S side of  
Camp Inland at 0844hrs

Zoo breeding island at 0906 hrs

- only 10 Shit sitting and 7 standing  
on island, < 10 chicks walk

- c. 120 Shit on "spit" (census) on  
at end of island

- c. 10 broods of chicks with Shit on "spit"

One ~~more~~ Redwinged Plover on structure on

3/5/95 Contd

front of is - on island island.

Conditions: 100% overcast - moderate

- strong E wind - cool.

416 FL

417 FL

418 FL

419 FL

420 -

421 FL

422 FL

423 FL

424 FL

425 FL

} } all played.

444

445 F-1

446 F-1

447 F-1

**Notes (from JL discussion with ACh?) referring to: Peter Hudson doing PhD at Flinders Uni, Lake Lefroy, invertebrates, salt lakes, discharge of highly saline water, Western Mining, open pits in middle of Lake Lefroy, new invertebrate in bed of Lake Barlee.**

**These extracts have been printed from the 1995 BaSt project 'Field Notebooks' RMCR PDF. Refer to that RMCR if context or higher quality viewing required.**

Johnston's Silver Lake was seen  
house — once  
sitting on water, 30m from a  
bank of cherts with peering stems.

Peterborough — Fossiliferous

Stratigraphy marked with + Lake Leppoy.

Peterborough system (after Leppoy)

area is sterile brown limestone

available for waste drainage

(of highly calcareous water) etc.

1/10th Mining operations on Lake  
Leppoy — mining gold from open  
pits in middle of lake.

Water very pH 5 — was

coming to a heavy carbonate

of plays lakes w/ low frequency

Biology sketch.

Andrew Dudgeon + Andy Chapman

collected terrestrial invertebrates

from bank of Lake Dudgeon (possible

in salt crust + pile of sand

next to it) WPA museum collection

✓

**Map of Lake Ballard with markings by JL showing 'Camp Island' and 'Work Area' (essentially all that part of the lake around and west of Camp Island). Also shown (by JL) is the 'boat route' taken on 01/5/1995 by JL & ACI (& ACh?) and 'times [1252, 1301, 1312hrs] are those of 29/4/95' and a distance (presumably) calculation of 16.25. Compare with JL's field notes. There are also six hand-drawn circles near the north (western) shore of the lake and a straight line (indicating?). Compare calculation of 16.25 with 'Tables (faxed 22/7/1997, from ACI/GBP to JL)' where there is also a map of Lake Ballard annotated by ACI that inter alia indicates ... 'Dist. between Tripod & Camp [Islands] 16km'.**






**List of equipment that provided to ACI by GBP for ACI's trip (with JL & ACh) of 27/4/1995 – 04/5/1995 (approx) to Lake Ballard. Inter alia, the list includes 'tall clear jars' for 'gizzards + water'; 'Tot P jars'; 'Tall 250-300ml bottles salinity' and 3-4 litres neat alcohol'. Note that GBP used to refer to what others might call 'plastic pots' as 'jars'.**

date ?

out bids 158  
- was for Alab's first trip 27/4 -> 4/5

~~Alan~~

You will need to take the following

- ① Nally bin in my office with gear in it
- ② 12 gg Shotgun 1 1/2 Pks (35 rds) #6 get another from AW.  
if you have time 1 Pk #4
- ③ get 2 Pks #9 or 10 from AW.
- ④ .410 1 #6. enough.
- ⑤ take 1 bridge + 240 volt cord.
- ⑥ Take 3 HP motor + tank + 4 ltrs oil + shear pins etc
- ⑦ Take 2 extra jerry cans of Ull petrol for gen + outboards
- ⑧ Take at least ~~30~~ tall clear Jars (gizzards + water)  
~~30~~ small vials (oesophagus)   
50 Tot P Jars  
50 Tall 250-300ml bottles Salinity 
- ⑨ Purchase food for 3 the vacuum packed meat  
ABC. People to buy food in Kal.
- ⑩ ~~3-4~~ lbs neat alcohol 
- ⑪ Food boxes + 1 Nally bin (green) in top shed, contain cooking utensils + cutlery.
- ⑫ 2 Dolphin batteries (torch)
- ⑬ A tarp if you have one about 12' x 15' to add to shade + shelter/shae ping