Fax (27/04/1995) from JL (at CALM Kalgoorlie) to CDTM (at BBO) detailing the observations he (JL) made '... this morning (0810-1135hrs') during an aerial survey [on 27/04/1995] of Lakes Barlee and Ballard. Inter alia he reported that: 'Water appears too shallow here ['west of 2nd breeding island on northern side of lake, all the way to the W end of the lake'] for outboards and access difficult'.

~~95.~~
97.

091 922294 fax

TO: CLIVE MINTON (Broome Bird Observatory)

FROM: JIM LANE (CALM Kalgoorlie)

Dear Clive — for info.

I flew Barlee and Ballard this morning (0810 — 1135 hrs).

Barlee: Found one creche of c50 large chicks with c10 adults south-west of Auriferous Island. Also 3 flocks of "adults totalling c1500 in same general area. Found abandoned breeding ?? site (50m × 10m), with many eggs visible, further W at 29°07'77" S and 119°33'42" E.

Ballard: No birds at first breeding island (near camp). Birds still sitting on 2nd island (3.5 km W). No other breeding sites found. Many family parties and some creches (~50) mainly west of 2nd breeding island on northern side of lake, all the way to the W end of the lake. Water appears too shallow here for outboards and access difficult. Total number of chicks in thousands but not tens of thousands. If we can't get to these chicks we will bomb/flag near 2nd breeding island with your modus operandi.

Jeremy Hogarth says John team (Mark and Con) will come to Ballard next week, probably late in the week.

My assistants (1–2) and I will be on Ballard from tonight until next Wed PM (3/5).

Cheers.

27/4/95

Seven page fax (24/04/1995) from CDTM (at Broome Bird Observatory) to JL (at Busselton) with a cover note that reads 'Herewith 6 pages of data – some of it partly processed and/or with comments. It will give you knowledge of what we've got & what we still need!' Note that pages 2, 4 & 6 'spilled over' onto a second page for each.

This fax indicates, inter alia, that on Lake Ballard CDTM:

- **Suspected that on 09/4/1995 (PM), '... most of the birds [incubating BaSt] had just left the nest for a [short?] time to drink, cool down & wet their feathers ...'**
- **Recorded the water depth as follows: 'At marker [which?] beside island. 4pm 14/4/95. 51cm (depth of water)'.**

Note that JL's only copy of this fax has small amounts of important text missing due to cropped borders.

See "JL's recordings (notes) of phone conversation with CDTM in April 1995 ..." below.

98.
94.

FAX to Jim Lane, CALM Busselton

24/4/95 097-521 432

From Clive Minton at Broome B.O.

Herewith 6 pages of data — some of it partly processed and/or with comments, so will give you knowledge of what we've got & what we still need!

Best of luck,

Clive

Biometric data

Adults (collected with 1 or 2 day old broods)

Family	Sex (dissection)	Bill	THL	Wing	Wt.	Plumage
1	♂	74.5	110.7	205	210	Full breeding plumage
2	♀	64.1	101.5	196	197	* Some white feathers in breast band & flight feathers
3	♂	74.6	109.4	209	203	* Some white feathers still in breast band & flight feathers
4	♂	74.2	111.2	210	241	* "
5	♂	69.1	103.9	198	209	* " Testes & Rachis areas as extensive as some

* No active moult occurring in breast feathers.

? appearance that males are bigger than females?

all five birds had active large double brood patches ie. they had been incubating (even the heavy one).

Chicks – collected with above adults 1-2km west of colony (probably 1-2 days after leaving nest) 11/4/95

Family	Bill length	Weight
1	—	23
	—	23.5
	—	23.4
2	24.4	26.3
	20.3	26.6
	20.2	26.3
	22.5	24.6
3	23.3	28.5
	25.2	27.8
	21.7	26.7
4	22.5	— (22.8 giffard)
	19.7	— (24.5 giffard)
	23.1	26.9
5	24.2	25.2
	22.5	26.5
	26.1	26.7

Average chick weight (only of birds in 3 chick broods) = 25.8 gm at 1-2 days after leaving nest

Chicks – caught + released as they left the colony before reaching water ie. just left nest 12/4/95

Bill length	Weight
	28.5
	29.5
	30.5
	24
	29
	31
	22 — had difficulty walking / keeping up with rest of flock
	26
	30
	25.5
	27

Average chick weight (all 3 chicks) at leaving colony = 27.6 gm

28

Eggshell stained & weight ... [illegible]

Chicks – caught & banded some ... from colony 13/4/95 (probably ... da
after leaving ne

Band No.	Bill	Lot.	
11	18.8	27	2½
12	22.2	31	
13	21.2	29.5	2¼
14	18.9	23	
15	19.1	26	2½

Band No.	Bill	Lot.	
17	22.0	29.5	4/4
18	23.6	30.5	
19	20.5	26.5	
20	22.6	28.0	

Average chick weight
= 27.4 gm (soon
after leaving colony)

88, 92.

Brood sizes

Colony 1. Lake Ballard. 1995. 87. 91.

Brood Size \ Date →	as leaving the colony 9/4	%	12/4	%	14/4	%	on water * 1-3 km from colony 11/4
1 Y	0		15		16		9
2 Y	23		40		57		37
3 Y	24		55		61		29
4 Y	11		17		16		6
5 Y	2		3		3		0
6 Y	0		1		—		0
total broods	60		131		153		81
Average brood size	2·87		2·67		2·56		2·40

344
288
56

* probably 1-2 days after leaving colony.

Egg weights — Colony 1, Lake Ballard 19

12/4/95 (S. end of colony) Eggs within a week of hatching. 3 clutches of each clutch size

Clutch Size	Weights (gm)		
1	40	38	33.5
2	41 40	39.5 38.5	39 37
3	40.5 37 33	40 39 37	44 41.5 40.5
4	36.5 33 31.5 30	40 39 39 32.5	37 36 36 30

86.
90.

14/4/95 (S. end of colony – 5m from above sample) Eggs within a few days of hatching. 5 clutches of each size except 1 & 2 egg clutches.

Clutch Size	Weights (gm)				
1	43.5	41	39	36	35.5
2	39 39.5	39.5 38.5	34 33.5	36 34.5	34 33.5
3	40 39 39	40 40 39	41 38 38	36 33 30.5	39 38.5
4	38.5 37 35 35	39 39 38.5 37	38 38 37.5 35.5	41 38.5 36 36	38.5 36
5	40 39 34 33 28	45 42 41 38.5 38.5	38.5 37 36.5 34 28	38.5 36 35.5 35 31	46.5 45 41 41 38.5

* chitting egg.

1	35	33.5
2	40 39.5	

Average egg weights (from combination of above two sets of data

Clutch Size	No. of clutches weighed	No. of eggs weighed	Average egg weight (gm)	% 40g or >
1	10	10	37.5	30%
2	9	18	37.3	17%
3	8	24	38.4	37%
4	8	32	36.5	6%
5	5	25	37.6	32%

or 20% if one clutch is omitted

85.89.

Differences between heaviest & lightest egg in a clutch

Clutch Size	Difference								Average
2	1	6	2	0.5	1	0.5	1.5	0.5	0.5	1.5
3	7.5	3	3.5	1	1	3	5.5	0.5		3.1
4	6.5	7.5	7	3.5	2	2.5	5	2.5		4.6
5	12	6.5	9.5	7.5	8					8.7

84, 88.

Nest changeovers

1pm 9/4/95
1½ hour period. 60 birds watched returning to colony & commencing incubating. 58 returned to unoccupied nest. 2 displaced already incubating birds i.e. a changeover. I suspect most of the birds had just left the nest for a drink time to drink, cool down & wet their feathers (it was a warm afternoon).

9am 12/4/95
1hr. period. 14 birds watched. 11 did changeovers at the nest. 1 went to unattended nests. One wandered around for 20 mins looking for nest (even briefly after 1 egg = unoccupied nest). I then gave up following it. It is possible its mate had deserted the colony with the chick leaving only an addled egg & a puzzled mate!

Conclusion – incubation changeovers do take place though how regularly & in what proportion of nests is not clear.

Water depth

At marked beside island. 4pm 14/4/95. 51 cm (depth of water)

JL's records (notes) of phone conversation with CDTM in April 1995, after CDTM had left Lake Ballard for Broome. Inter alia, the notes record CDTM's observations at Lake Ballard that: '[In] PM [adult BaSt] left nest, drank etc [and] returned [to nest]', and that 'rain added 13cm (51cm [being the] water depth at stake on ... [blank] 4 days after rain)'.

See also "Seven page fax (24/4/1995) from CDTM ... to JL ..." above

Chris — Conversation of — April 95

091 935 600

- data to be posted to Grant (exchange)
- write up ASAP (me, Grant + Chris)
- outline + ~~draft~~ chapters +
- weight pegged over — tools 2 photos of each of 15 parents. Fri last week.
  - don't need to do again.
- also counted addled eggs, dead chicks, + active nests.
- me to exactly ~~measure~~ up Colony 1 once recorded. (guesses 20,000 nests)
- Colony 2 80 × (20 × 5 = av 15) = 1200
  = 12000 nests. -15'000
  - do measure exactly.
- ✳ do aerial survey — other colonies.
  - could find no chicks > 2 days old even 11 days after hatching started.
- ~~end~~ boat ~~of~~ fuel — proper engine oil ✳ at least 2 jerry cans.
- interest evidence of nesting — "4 out of 5 were nests"
  - look check off
- big unknown
  ① When do family parties start creching?
  ② What role do sexes play?
- AM glaucous mechanism changes
  PM left nest chicks die returned.
- what proportion of eggs are obesity mechanism
- no evidence of more than 1 parent with chicks when have colonies.
- nests edged 13 cm (51 cm water depth & 4 days after nests at stakes in)
- banding: did not band in colony
  - didn't band any Jetty to water
  - did collect brooks going to water for measurement purposes.

(2)

- felt is footpads cause they
- bended 10 chicks (4 families) in water.
  scooped with plankton net — easiest way.
- * If tank white brood parent left (disappeared)
  + did not reappear
- 5-10 min to weigh measure, band, leg flag glue.
  ↑ till length.
- take 2,
- keep is right, return to brood.
- drop young when you have chosen before catching the next 2.

- flags: - open maximum + push on
  - dab of glue between the ends
  - hold glued tab for 1-2 mins. — be v. careful
    it doesn't move.

- need more bird bags *

- do 20-40 h day near colony of cent canal.
- expect movement to be very high.
- 7-7.5 mm on "knee".
- did 10 in 2 hours.
- Flag on right tibia (of the bird) bend on left
- Equipment at Tresdern
  first bedroom is shower gardens
  and is locked — need keys to
  Argos.
- Argos is 30 m from wheel
- 1 boat need to trailer. — you're down on
  is at station
- petrol outboard motor — petrol is.
- Fuel tank is trailer.
- electric is on island is NOC tent.

(3)

- lots of good water on ridge
- 2 eyries at start
-

- weighed 10 chicks of 1 – 5'
one chick all 5 eggs over 40 gm (→ 48 ...
- leaving Drome Th May 3/4 → 5 chicks
- not there Wednesday → 20 – 25' May.

- 3.4
  2.8
  2.4 2 days later.
- 2000 per day leaving valley

Fax (13/04/1995) from Ron Johnstone (WA Museum) to JL detailing the observations made during an aerial survey for breeding BaSt that he and ... [not specified in fax, but were Phil Stone and Nick Kolichis] made of Lakes Goongarrie [or Raeside? See notes of 11/04/1995 below], Marmion, Ballard and Barlee on ... [date not specified in fax, but was 07/04/1995]. Inter alia he wrote: 'I will send you details of specimen stomach contents etc. at a later date'.

74. 75.

13/4/95

FAX TO: JIM LANE
CALM BUSSELTON

FAX NO: 097 - 521432

FROM: R.E. JOHNSTONE

Western Australian museum
Francis Street Perth
Western Australia 6000
Telephone (09) 328 4411
Facsimile (09) 328 8686

Date:

Your Ref:

Our Ref:

Dear Jim,

Here are the details of our Banded Stilt survey. We flew over Lake Goongarrie, Lake Harmion, Lake Ballard and the central arm and northern portion of Lake Barlee.

Lake Harmion.
About 500 - 1000 birds on the north end, (one loose group of about 500 another of 300 and several smaller groups).

Lake Ballard.
On the eastern end of Lake Ballard we located your main site with c. 3 - 5000 pairs.
About 4 km further west at 29°27'S. 120°58'E we located another breeding colony (your site 2) with about 2 - 3000 pairs.
Further west at 29°23'S 120°51'E we located another small colony of 500 - 1000 pairs.
Also over the western end of Ballard (one only) there was a group of 500 - 1000 birds which appeared to be breeding on a small circular island. They lifted and returned quickly.

Lake Barlee.
On central northern portion of Lake Barlee at 29°07'56"S 119°32'20"E we found another small colony of about 1000 pairs all sitting at one end of a small island.

Branches:
Western Australian Maritime Museum
Cliff Street, Fremantle
Western Australia 6160
Telephone (09) 431 8444
Fax (09) 430 5120

Fremantle Museum
Finnerty Street, Fremantle
Western Australia 6160
Telephone (09) 431 8444
Fax (09) 430 5120

Geraldton Region Museum
Marine Terrace
P.O. Box 112, Geraldton
Western Australia 6530
Telephone (099) 21 5080
Fax (099) 21 5158

Albany Residency Museum
Residency Road, Albany
Western Australia 6330
Telephone (098) 41 4844
Fax (098) 41 4027

Museum of the Goldfields
P.O. Box 25
Kalgoorlie, Western Australia 6430
Telephone (090) 21 8533
Fax (090) 91 2791

73. 74.

I will send you details of specimen stomach contents etc at a later date. As I mentioned over the phone I would be grateful if you could help me with the following.

1. Measure a few nest scrapes.
2. Collect some of the semi-buried clutches and some of the groups of eggs that I think are formerly gathered by non-breeders.
3. Collect a series of different age chicks.

Our WAM collections of this species are poor so anything you can get will be useful.

Best Wishes
Ron Johnstone.

Ron J. (7/6/95) he says 1 has 1 of adults that were incubating on his visit (from full clutch to zero clutch) range (10-12 birds)

He also has c 4 chicks.

↑ telephone conversation of 7/6/95

Photocopy (2 A4 pages) of six small notepad pages of notes made by JL during phone conversation with Ron Johnstone (WA Museum) on 11/04/1995 in which RJo shared details of his aerial survey (with Phil Stone & Nick Kolichis) for breeding BaSt on 07/04/1995 and their ground visit to Lake Ballard in kayaks on 08/04/1995. Inter alia, the notes read: 'food – chicks forming small creches – 5 chicks dead, 2 just alive – others crow pecked & too smelly to retain'. It is not clear what the reference to 'food' was about.

(2)

71.
720

2000 pairs on
~3000 pairs on 2nd breeding island.

- eggs for recreation for Landbeach.

- get birds - just a trace of bird + were marking - collected small series. (2 chicks + ?)

- food - chicks of many small species - 5 chicks alive, 2 just alive - often cross perhaps + [illegible] for mostly to return.

Phone call from Ron Johnstone 11/4/95

(1)

72.
73.

Ron Johnstone

Phil Stone (Mammals) ← his overseer
Nick Kolichis

Flew on 7/4/95 central area
Mammals Bellamy, & Barlee
Roaside (central)

Retrieved Mammals 1000 birds feeding parties.

3km west — on ground
another further west — order of couple of 1000 birds.

small colony in central area of Barlee.
&

(3)

70.
71.

(4)

69.
70.

Has notes from:
John Darnell - Randellland
50-60,000 80% incubate

(12/4/95)

and one day only on Bellamy
- eggs (single)

Randellland - below this

Phil Stone took "views CAM"

Thy took photos

Cold squalls.

Counted 50-100 birds.

(a)

Next surveys - please measure
10-12 surveys + distance apart.

(b) collect chicks at various stages. - smallest - plastic bags.

(c) collect eggs from group

formed fresh

large cluster

- partial brood that rolled eggs back to (b)
[illegible] (with feet) tried to sit on it.
~~(Front of 210)~~ (Inaccessible)

(5) (4) Keyahs? 68. 69.

Mouth of
Crows cave off 2nd island
at Ballard

Wedge I.

Ballard Lake
Central Cave

29°07'56" S
119°32'20"

Lots more.

Southeast West on Ballard "Small"
29°23'40"
120 51 91 E.

Mammin - mostly near N end - N of
Big 3 largest island (reservoir
reduced → 427 2739. from N).

---

(6) 67. 68.

West end of Ballard

Simpsons Well

2 tanks + + foundation

Will check his let + logs
+ fax me if incorrect.

Extracts (01/4 to 12/4/1995) from one of GBP'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 ACl, ACh and others) in late April – early May 1995. These extracts include:

- '[On 01/4/1995] 0910[hrs] installed Peg due N of East end of Camp [Island] as Site [No.1]'. Took salinity, Tot P samples. 'Depth = 38 [cm?], 98 [cm?] exposed'. 'Installed Data logger at 0940 [hrs on 01/4/1995] #39873 ... [indecipherable] 6 hrly x 1 hour' (page '43').
- 'Low Mel[aleuca] teretifolia? 20cm-30 above water' [on Crossover Lake on 01/4/1995] (page '45').
- 'Pead [Pink-eared Duck] (definite) [nest] abandoned ... 25cm above water – v strange' [on Crossover Lake on 01/4/1995] (page '45').
- 'Big lake [apparently on Crossover Lake], South end on fence, Depth 77cm, exposed 54cm [on 01/4/1995, page '47').
- Depth measurements and sweeps at and near 'Peg' at 'Site 1'. '110 um [sweep] net' used [Lake Ballard at 1350hrs on 01/4/1995] (page '47').
- 'Lake 1 [definitely on Crossover Lake, see a dot point below] Site 1 on south side of lake on track'. Sweeps made, depth measured, Tot P & salinity samples taken (page '49').
- 'pH Ballard after calibrating ['Hamma'?] ... 7.75'. Lake 1 Crossover Lake pH 8.24'. Looks like GBP pH-tested the water samples for 'Lake 1' and Lake Ballard when reached Camp Island (page '49').
- '[02/4/1995] water level [Lake Ballard] – 161mm from bottom of red tape at 0807' GBP has subsequently (probably in 1997 in response to query from JL) annotated with 'Yahoo!! Lake Ballard south side camp [Island] depth marker' (page '55').
- 'Collected salinity, Tot P, Depth = 10cm' written next to what appears to be a sketch of a cluster of small islands (check against an aerial photo) with a small cross at (SE?) end of one. GBP has later annotated (probably in 1997) with 'Site 1 probably'. Which 'Site 1' and was he correct? (page '61').
- 'Get Redox probe [of pH meter?] to Peter Darch [of Perth Scientific] and get him to calibrate' (page 71).
- Planning? notes referring to water and sweep samples and collecting jar / pot sizes and numbers (page 79).
- Depth (at post / peg) & pH measurements and sweep & salinity samples taken at 'Site 1 Ballard' on 09/4/1995. Also 'Visit island ... measure depth' (page '81').
- Many observations of feeding behaviour of BaSt adults and chicks on 10/4/1995 (pages '83' – '87').
- Depth (at post / peg) & pH measurements and sweep and Tot P & salinity samples taken at 'Site 1 Ballard Camp [Island]' on 11/4/1995.
- Depth at datalogger on 12/4/1995 (page '107').
- 'Crossover lake 87 [cm?] deep, 41 [cm?] exposed' (page '107').

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.

See the 'BaSt adults & chicks collected in 1995 RMCR' for water depths, water samples, sweeps, feeding behaviour (and gut contents) of / associated with birds that were collected during the above time period.

1/4/05 Saturday

0910 Installed Tor Logger

Set up and Completed

as site ①

Top Salinity

Bottom Salinity

Tot # Top Very hard to [illegible]

Depth : 38

38 exposed

Installed Onset logger at 0910

1/4/05 ± 39873 GMT

3 hrs + 1 hour

1/4/95

Cool 4 eggs 49.0 x 35.0
cool not incubating

51.5
① Cool 6 eggs 51.5 36.8
cool

② Cool 5 eggs ... not inc

③
Pale [illegible] Dark [illegible] Incubating
47.7 x 34.7
49.4 34.2
46.5 34.0
orange tape on Melaleuca
how wet [illegible] 2cm to
above water
Marked 3 eggs with 1

1/4/95 45

Cool 5 eggs incubating
④ 49.2 36.2
48.1 36.3
46.6 36.4

Ti tree orange tape
marked 3 eggs 2
⑤ Cool 8 eggs not inc.

⑥ Cool (deposit)
abandoned - down - not in
[illegible] incubators. Cold.
25 cm above water - 1 stage

⑦ Cool 5 eggs. not inc

⑧ Cool 6 eggs
⑨ Hen? No eggs down but no shells

1/4/95

to Cont 3 eggs

Peg hole Southend of pen.
Depth 77 cm
exposed 54 cm.

1200 1-4-95
Sled will Woodside No response. Scrabbled + got a Picture + Tone response

Photo of Site looking South

1350 1-4-95
Ballard Peg at Site 4 Staff for exposed (windy)
Site 1
Sweep 1 10 cm. not 41 cm deep Due SW of peg for 30 cm
Sweep 2 Due South of peg 45 cm and do Sweep 1. for 60 Paces.

Sweep 3 Due east of peg and around to north for 60 Paces

Waipaoa

Lake 1

Site 1 on South Side of lake

on track

Sweep 1. Lot of fish

+ lots of

3 [illegible] fish

depth 50 - 70 cm

Took 1 10 cm depth (surface)

Salinity

Position of Camp 1sd

20 38 42 S

121 02 15 E

PH Bellard after calibrating

Hanna at 7.01 & 10.01.

7.75

Hanna Crossover value

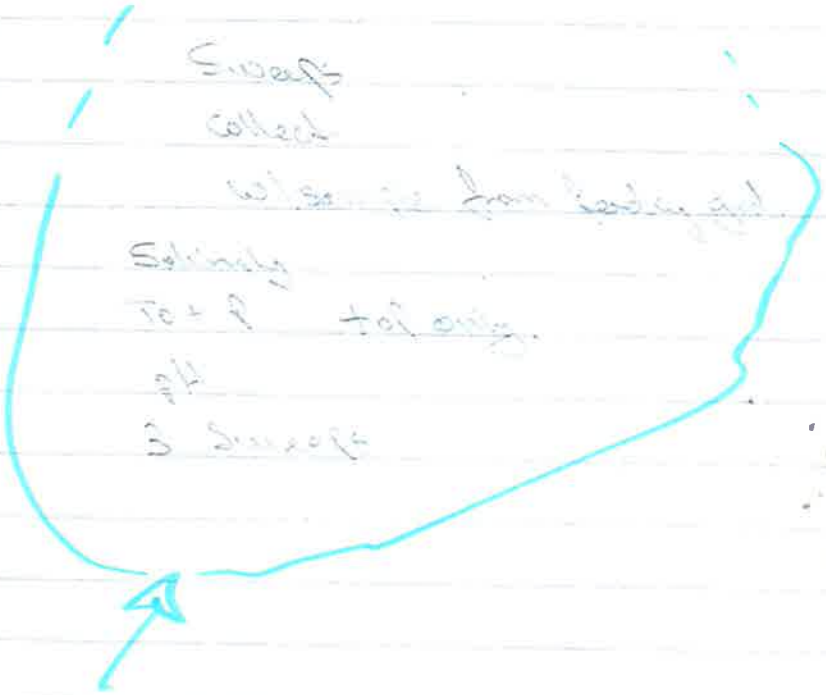
pH 8.24

Collected Equip

4/9/99

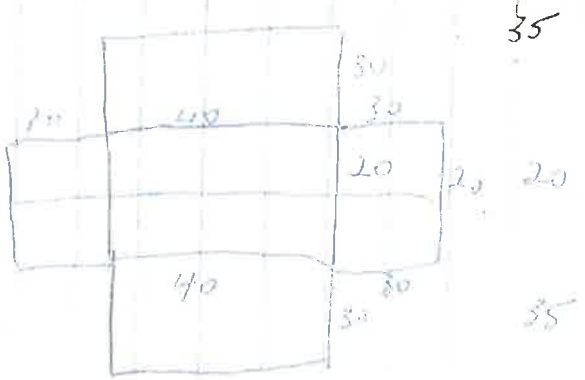
Vegetation Samples 11/4/95
Lake Ballard
Stilt Isl collected 3/3/95
Low sampling + succulents some
fr with new growth from recent rains
growing along top of island in center

± from center of stilt Colonies



1000 x 80

35



2/23/25

water level — 161 m msl

bottom of rod tape at 0807

TAG!!

Lk. Bolland

South side comp rod

depth marker

Sweep

Port

Bird

Depth

Water temp (°F) (°C)

Salinity

Total P.

Shot in Separate Group

BAST # 7

Wt 285

WL 209

TH 111

Ops perforanna

Gis "

Tests ① 25.4

② 17.1

Shot in first group

BAST # 8

Wt 259 gms

WL 203 mm

TH 109.1

Tests ① 25.1

② 18.9

Ops kept Conlands

gis kept

Shot in last group

BAST # 9

Wt 225

WL 206

TH 110.8

Ops ?

gis kept

Tests 1 Wt 5

2 —

Collected Solemly Tox (Side 1 probably)

Depth = 10cm

6700

400

6300

2000

4400 Volt
Auto Cabaret of overheads
$400
Turner
Solenoids
Garmin 330 GPS 2295
Line Cabaret 495
2400
+ [illegible]

Elec pump underpump
2495
400
2895
595
2300

Leave 5pm
Late 6pm

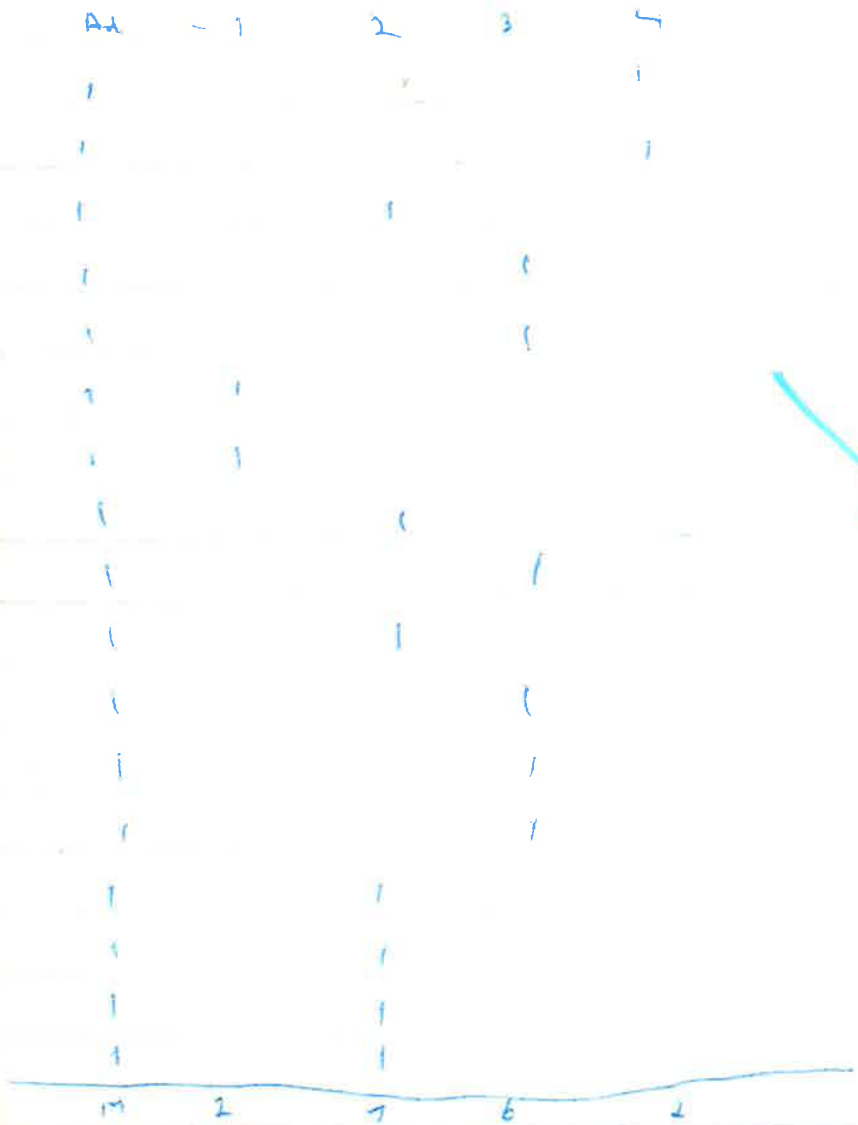
Get Lecky probe to
Peter Darch and get him
to calibrate

Fish Scientific
Hole Borer 345 1950 $184

Bolt Storage Centre

Capital 479199

Water
Fuel
Radio



(28) 37 (19)

(5) 16

5 familles = 4 x

Verf Ois différente.

Verf ~~Dubbele~~ 9:33 in 250 Jaar (5)

Ad 9:33 in 250 Jaar

Salanty 5

Tel f 5

Swarf 5

20 x 250

Sample Size x 2

Sal ~~tel~~ vlieh (200) (2) ✓

Telf Telf (200) (1) ✓

FH ~~in~~ 3 ribs

Swarf 3 (250) (3) ✓

250 25

~~300~~ 2

200 1

Somi: 20 + 5 +6 +6

30 in = 20

200 = 10 + 6 tijd

9/4/95 Site 1 Ballard

Depth 35 0920

Colour 105

pH 6.98 Inside

Salinity Top + bottom

Sweep 1 1-50 Dive Sht

2 50-100 Dive Sht

3 1-25 - 1 Dive Sht

Visit island.

Take vegn samples

Take location

Measure depth

1030 Diver not option work done + mark sorted gear

1130 Raise sleds

1220 Lunch

1300 To carry. photos + replaced sleds for numbered eggs. Dive Counted Nucella eggs within any depth within each of quadrats

1530 Work set up of beam trawl

1600 Packed gear + helped winch to mainland

16/4/95

0700 Observed colony in very heavy rain. 19 Adults feeding and bathing at water's edge. No sign of chicks. Could not observe chicks on island thru rain.

0730 Rain lessened. Observed Adults sheltering young on NE part of isl N of Comp. 1 Adult took 2 young dive East on the rain. Adult fed but young did not appear to.

1 chick + 1 Adult at NE tip of Same point. Ad fed chick swam 1 Ad with 2 chicks protecting them from the rain with outstretched wings. 4 Ads breeding nesting on edge of isl 3 Ads feeding no young

1 young being encouraged by one ad in a group of 5. Ad wanted to breed it should not noticed rom the 4 - 6 m to parent breeding sibling? + nestled in

0810

At Colony No 2 Adults feeding + bathing at edge now 41. Colony sitting tight occasional ad breeding nest above water line

At isl NE tip Ad + 1 chick foraging Ad. feeding will 1 chick feeding running feeding running then under adult. Ad reluctantly stopped feeding to breed.

1 Ad. 2 chicks feeding. Chick running feeding looking down face feeding & foraging Chick agrees they are feeding Adults bathing have thrust by pecking from nest to each other head & unmated

10/4/95

Possible that bride should have been shown with the boy & the AP can catch large rats

AD + 4 picking along edge walking + picking up food along edge. ? is keeping other birds away

Check walking on dry land looking for insects? Not not getting any.

Then washing in water edge + immediately began feeding more successfully. With slight reaction in rear climb come out to dry + feed.

1 male AD. trying to copulate. ? not interested. - in group previously described

10/4/95

0840 Two waders flying west very wary

a wisk over comp

0915 AD + 2 AD + 3 AD + 2 all feeding along edge in front of comp (NW) between carp + isd.

Adults with along feeding + young following feeding + begging still running (right) young want adult to turn up

1 + 2th. the young shuffled ahead + fed ad

16/6/95

Oaks 3 ♀♀ 1 ♂ 6 chicks

Walking feeding brooding in a group in FL inlet

Yellowish Family group #1

Chicks 1·1 wt 23 gms

Yolk sac evident Bill 22·4

Oes empty Giz: plant chem fecal matter Tarsi #5

both ov. Estimate age at 1-2 days.

1·2 wt 23·5 gms

bill 22·9/6

Yolk Sac evident

Oes empty

G133 Quantity of food take. Weight?

Preserved with Oes.

Banded with OBA 74203 on R leg

Yellow flag left leg

16/6/95 Ballard.

#1·3 wt 33·4

Bill 23·6

Yolk sac less evident

Oes empty

G133 Considerable particles

Adult BAST G13 contents

1·0 wt 210

Bill 74·0

T/Head 110·6

R1 Tarsi length 11·05 Tarsi destroyed.

Wing meas 5·0

Pronounced brood patches under entire body.

Bird was walking along edge of lake in front of camp NE side Parking + dabbling 3 chicks behind parking. Flushed into duck weed shot in 25 cm deep water Swept sample along edge. Use Site Sample #1 for water quality

fuel 3 JC9 + OJB tank
food.

Contact Kal. for volunteer
Suitable temperament.

Bellow raincoat from Jeebung
Coll. wfc

Muesli
matches.
3 Tins Beef Steak.
Pkt Peas
2 Tins Condensed Milk Nestles

413

0900 Sked wfc

11/4/95
Site #1. Ballard Complex
Depth 0 43 deep 43cm
97 exposed 97 exposed
3x Swabs ✓
Tot P ✓
Sal - Tot ✓ + Bottom ✓
pH 6.74

Solution
1:2 OKS Early grass left
1:1 OKS very dry left
1:0 OKS
1:0 OK
Annual Notes made 31/7/97

Fuel - oil for gym.

12/4

Chin Cath at 12:20

2.45

Rec'd enclosed by 1000

13/4

Cath Rec'd.

107

12/4

42 cm Deaf at Dalalogga

Crossword Cake 87 beef
41 enlarged

2 Mawi

Length 2 months 2,2

Head 4.2

Coat 6

Width 4

Wuud

Coat 5 eggs

Head No 2 5 eggs inc

Two page memorandum from JL to GBP headed 'GRANT. TASKS FOR SAT 8 – TUES 11 APRIL 95 INCL'. Inter alia these tasks included:

'Take a surface water sample wherever you collect a family group (or single adult) – for salinity and Total P [phosphorus] and turbidity unfiltered. Also measure water depth. Also do a standard, surface-only, invertebrate sweep at each shooting location'.

'Each day, make a note of whether you see any [BaSt] adults (or chicks) drink (re [tolerance of] salinity)'.

'While boating between the two breeding islands, measure depths and record positions (preferably with compass and map or [vertical aerial] photo)'.

GRANT

TASKS FOR SAT 8 → THES 11 APRIL 95 INCL.

1. Find 5 distinct families of BAST on the water (each 1 adult and 3-4 chicks). Preferably families that are feeding, but it is possible that little or no feeding by families will occur while you are there. Shoot the single, most protective adult in each family (sometimes there may be ~~other~~ a second, non-protective adult with a family). Collect all the chicks of the family. Retain the oesophageal contents of each adult and chick. If oesophagus empty — check stomach for contents and retain if any. Measure the bill length (not incl. head) of each chick and identify which oesophageal content go with it (ie. cross reference). Also check for presence and size of yolk sac in each chick.

2. Take a surface water sample wherever you collect a family group (or single adult) — for salinity & and total P and turbidity → unfiltered. Also measure water depth. Also do a standard, surface-only, invertebrate sweep at each shooting location.

3. Opportunistically, record number of adults and chicks in each family group you see, and number of families grouped together. Record only definites, not maybes. Record any genuine crèching (undisturbed families of chicks grouping together).

12. Transcribe your annual survey tapes

→ page 2.

Corrib Tasks Sat 8 → Tues 11 April 95.

4. Each day, make a note of whether you see any adults (or chicks) about (re activity)

5. Take water samples at your standard location on Saturday and Tuesday (top and bottom for activity; top only for total P and pH and transparency) Do standard swim (undertake) samples at same time (was it three on each occasion?)

6. Make a trip to the 2nd breeding colony (3.5 km west) and take water samples from breeding island

7. While boating between the two breeding islands, measure depths and record positions (preferably with compass and map or plate).

8. Survey Crossover Lake for evidence of breeding activity In particular search for young on the water (to compare with Bast). Ideally do each day between 5–6 pm. Essential to do on Tuesday (as you leave?). Don't spend more than 1–1¼ hr on each survey. (I have see GytL, PcaD, ShcL, PaBD, MusD, MarD, BbiD, Swan, Coot, HtGb, WtHn on the Lake).

9. None should walk there or otherwise disturb breeding area which has chicks. No banding of chicks (too small).

10. Keep log flags + bands with your gear and bring back to Perth. 4 colour bands + glue

11. Record any predator activity

Extracts (30/3 to 07/4/1995) 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 others) in late March – early April 1995. These extracts include:

- **Crossover Lake water depth observations and depth ('>1m') and salinity ('fresh') estimates on 30/3/1995.**
- **Comments re flying insect numbers (e.g. 'very few mosquitoes') next to Crossover Lake on evening of 30/3/1995.**
- **Observation concerning wind strength, waves, water colour and turbidity Lake Ballard on 31/3/1995.**
- **Many observations of BaSt (and one Avocet) feeding (incl. 'pecking') and several of BaSt drinking.**
- **'[GBP] said many birds [BaSt] were feeding in pairs [on 02/4/1995]'.**
- **Intention to 'note drinking [by BaSt]' on Monday.**
- **Intention to 'measure lake depths' on Wed 05/4/1995.**
- **JL's estimate [on 05/4/1995] that 'Lake [Ballard] presumably took 4-5 days to fill [at end of Feb 1995] to average depth of c.40cm'.**
- **JL's estimate [on 05/4/1995] that 'First birds [BaSt] nested on top of (highest point) of suitable island (c.1.5m above water level)'.**
- **Comment (on 05/4/1995) that 'Rate at which lake [Ballard] is drying is difficult to determine due to effect of wind'.**
- **'Mark [Lamble] filmed (Thurs PM [06/4/1995]) adults [BaSt] at Island 1 [on Lake Ballard] flying off nest to water's edge, drinking & going straight back - at least 12 birds'. Search through video tapes for this filming.**

Th 30/3/95 contd

to Casey Station + met Grant + refuel
Mark there approx 1115 hrs. More
last minute preparation then
drove to Mawson (Grant + me in
Casey vehicle with trailer – Mark +
Campbell in Bidget hire 4WD Toyota
personnel carrier full of camera gear)
Stopped briefly then drove on to
Tenderup Homestead arriving at
1420 hrs. Met owner John
Finlayson. He took us inside
+ gave advice on best route to
follow to Lake side.

Left homestead at 1445 hrs
and drove generally WSW. See
road log of previous pages
for route in (end 250,000 map)

Stopped – 1 km short of

1.

Th 30/3/95 contd

Lake Dellbeck when fence line ran
into water. I waded about
till too deep to wade (crotch
height + sickening off) at edge
of lake near to Dellbeck. Waded
back. After much discussion
decided to move camp 600 m
back from water. Grant prepared
dinner while Mark + Campbell + I
(at 1700 hrs)
loaded 2 packs with camera + other
gear and backed in one across flooded
area to pitch camp 600 m from
Dellbeck. Unloaded gear +
backed (towing 10' mast) back
to Grant at camp if complete.
By this time it was approx
1750 hrs and dusk.

The lake we were near to

Th 30/3/95 Contd

bees fresh with flooded shrubs (+a few trees) and open water. At deepest point (guessed) it was ≥ 1 oar depth (— m)

Many single + paired ducks scattered over the lake — spp incl PcrD, GyTL, MusD, MarD, Coot, small grebe. (each seen at all times 2–5 birds at once). MarD swam off with body low and head low on water — leaving nest?

No young seen. Describe eggs?

Had dinner (Cup-a-Soup, spag. bolognese) around ~~1800~~ 1815 – 1845 has a wash open fire. Sat + talked around fire (+ drank brandy, coke, tonic)

Th 30/3/95 contd

Went off to bed under mozzie net at c 8.45 pm. Complete around 9.15 pm. Woke at 1015 hr. I post work on fire and did day's notes (these).

Note that there were very few mozzies — I had only one up till 1115 pm. A few other flying insects (beetles, cricket, + small dipteran) but certainly not in numerous numbers.

Used some fresh water from one jerry can + replenished from freshwater lake (for cooking at least).

Me off to bed at 1130 pm.

Tomorrow

- photos of camp + logistics
- sticker.

Fri

Start 31/3/95

Pressure gauge + ~~Reg~~ Argo ~~book in~~ ~~System~~

Screen Difference

0925 – photo of cock nest (with cock!) has 9 warm (incubating eggs)

Sel call

* 0201 is Wadwell
* 5001 : Long Connection
* (1 Reg is + switch to it) to use

Set up aerial, + earth. Make off aerial. Connect to working terminals.

Volume 2/3.

Press sel call code then push lever down to s/c (brown). Photo transmission.

If Reg receive at other end you will hear 4 rising notes.

Fri 31/3/95 Contd

Our main college is "Research 182"

Channel 9 is Keighworth (Reg 8070) from stock

6 .. Woodside (Reg 5270) from stock.

If you are selling you can use any frequency over the base (eg Woodside) ~~stock~~ scans all of them. Keighworth scanner is not working at the moment.

If you are working in at stock time you must use the appropriate (quieter) frequency.

Fri 31/3/95 Contd

1330 hrs set up table at W end of island and began working along with Annie.

1351 hrs — 70 along water's edge on E side of island. Second pair completing in water.

Start 1354 flocks leaving S from island

1, 4, 1, 1, 1, 1, 2, 2, 1, 3, 3 [illegible]

[illegible], 2, 4, 1, 1, 2, 4, 3, 1, 2, 1

2, 1, 2, 1, 3, 3, 2, 1, 2, 2, 2, 3, 1, 2, 3, 4, 1,

1, 3, 2, 2, 3, 1 and 1404

⇒ in these 10 mins, the above is a sample (approx 20%) of flocks going flying S from along ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ flying only were 0.5 – 1.5 m above water

during this period there were birds steadily returning from the

Fri 31/3/95 Contd

direction and birds on the water in closer view. — mainly in twos, some in 3's, some in 1's.

eg 1, 1, 1, 2, 1, 2, 1, 2, 3, 2, 2, 2, 2, 2

1413 hrs — 24 along island shoreline section (E)

Note that redshank E until 1430 when leaving elk day (+ old lost right). Water of Dalford is muddy brown over unusually calm water due (from island) — probably caused by [illegible] there often in sediments.

1440 — only 5 along E shoreline section of island.

Fri 31/3/95 contd

1446 hrs — from the past 10 mins or so many more birds seem to be leaving than returning — which doesn't appear to be the case before.

1449 18 birds along E shoreline section of island — some washing, preening, courting, feeding. Most are standing in shallow water.

1501 Have noticed that there is less frenetic activity going on in colony than on last visit (15/3).

The colony appears to be at least 2x as large as on 15/3.

1402 — 1 Razorbill feeding at edge

Fri 31/3/95 contd

of our table is land.

1st [Cormorants - 28 in line - fish. type

2nd [mutton gens (2)

3rd [mutton gens - dunnocks flying 2m pipit sp.nov]

Count 3

1 Walked to end of our island and sat down at 1538 hrs. 3 Red-legged Shags on our shoreline.

No frenetic interaction going on in colony as was the case on 15/3. 95-98% of birds in the colony times are sitting quietly. Those not sitting undertake some standing, mostly with head tucked behind; some preening.

A few birds additionally (at least) moving in colony.

Many unattended eggs on slopes below colony area

Sat 1/4/95 contd.

0700 – 0712 hrs. 136 on E beach section.

95% pecking, 4% washing

a few feeding – 4 chasing in shallows

IN	OUT
2111112111111111111311111	2321314222214111211222131112
1111 2121312311112116	(10)(20)1121113111231111112252221
	42122511342521311143222212
	2311142121(15)1111411422111112
Total: 62	1252111323111253431121138214
	21
	TOTAL: 298

0700 → 0710 hrs

(339 → 499 on tape)

0810 – 0812 hrs – 82 on E beach section

all pecking except 2 washing, 6 feeding

end 1 per chasing round

Temp 0817 hrs = 16.7°C

0822 hrs 16.2°C

(thermometer in shrub in shade 0.5m above ground)

0800 → 0810 hrs.

(499 → 699 on tape)

Sat 1/4/95 contd

IN	OUT
25315331162212	261423312123241111 (25) 33
3131111331331221	2112113110 4311142111211121
1213211111132121112	41(10)3111121(10)22221111 4312
3	5121630 3112122322215211
	1113
Total: 98	Total = 290

2 Grey Teal seen flying by earlier.

2 Stilt seen briefly

0830 wind dropped to light.

0840 Sun started to shine

(while this morning it was almost continually overcast with rain → strong E wind)

0858 Heron disturbed chasing centre – dropped – to – they (Birst) all lifted – then to follow out – they returned

0910 – 0912 hrs only 12 birds on E beach section

(6 washing, 3 feeding, 3 preening)

0914 hrs – 18°C in shade.

0900 → 0910 hrs

(755 → 876) (first part of 2nd side)

IN	OUT
R221124111421411 2	32231111343222231111221 21
1314 21 21 3 1 4 7321	2:1 1 25 4 3121 1 221 4 52 4 3 1
	1321153112211211232136
TOTAL: 66	4 (30) (28) 3213
	TOTAL = 200

Attempted expulsion in sleep under near wheel at 0910 hrs.

0930 hrs - Mark handle moved in S end of colony - much disturbance.

1010 - 1012 hrs — 22 Bees in E beech section

5 working, 11 feeding, 1 clinging to mesh,
1 waving mesh, 4 guarding

1013 hrs — temp = 18.5 °C

1/4/95 Cold

1000 → 1010 hrs.

(876 → 009 on type)

IN	OUT
1112111132112311211	1121311411112111131512111
4111121551211511111	2211119211112212122211111211
222 1111111141111	1143221 1212212136213121
	1131127512112 22112321 1
Total: 84 birds	234312
	Total: 192 birds

1 correct flying past

TODO: height of wheel — coloring stickers on!

1110 - 1112 hrs. 21 birds

(4 working, 5 guarding, 1 clinging mesh, 1 waving mesh, 10 feeding.

1113 hrs — temp = 20.8 °C

1100 → 1110 hrs 009 → 162 on type

IN	OUT
1111211212411221211221	223111222212222141117231121
1112123122111 31	2111311 (25) 2121131112143321
	1112131212212162121212
Total: 63	(12) 8232412116 1133112141
	41115321 21
	Total: 232

Sat 1/4/95 Contd

1210 – 1214 hrs 43 birds on E beach section

16 passing, 13 washing
13 feeding, 1 drinking

1215 hrs – temp = 22.9 °C

1200 → 1210 mm 162 → 330 on tape

IN	OUT
3111111112115611311212	1311222111131221121327
2111111822121	3121421122231121131162
	1122112122121111312222
	1111311
Total: 65	Total 125

1 Crowned on water

Mute Swan left water (feeding)
at 1255 hrs

Sat 1/4/95 contd.

1310 – 1312 hrs – 59 birds on E section of beach

incl 29 passing, 10 washing
7 feeding (sitting by to moult)
1 preening.

(exits L left.

1316 hrs – 22.2 °C temp.

1300 – 1310 hrs (764 → 880)

IN	OUT
2.1111111151111312111112	1123121232221312112552212121
32112231112121211111	3231122111112212(10)1141232121
1111111141211131132132	1411212212135552
Total = 97	Total = 133

1414 – 1415 hrs Types count of E section of beach

37 birds →
- passing 18+1+2+2 = 23
- feeding 1+1 = 2
- washing 3+2+1+4+1 = 11
- drinking 1 = 1

At 1417 hrs – temp = 23.7 °C

Lake Bellard contd Sat 1/4/95 contd

1400 → 1410 hrs

(330 → on beat)

IN	OUT
2112121141111432312111	1112211311112331224122222
222152121123111113122	12152115211215111115212
1112231112311122221	12
Total: 102	Total: 91

@1515 hrs – Temp = 23.5°C

1500 – 1510 hrs (20 → on beat)

IN	OUT
1121161212111211111111111321	2111232311211111132211
1124111222213211211113	4112141452112231111233
11131113	1131111222322211131141
	222
TOTAL: 85	TOTAL: 119

Sat 1/4/95 contd.

1510 → 1512 hrs.

39 Boats on E beach sector

(23)		
preening	preening	2+1+4+3+3+2+2+2+2 (+2)
washing (8)	~~washing~~	1+1+3+1+2
dabbling in water (2)	~~dabbling in water~~	1+1
walking (4)	walking	2+1+1
standing (1)	~~standing~~	1
drinking (1)	drinking	1
39		

Stock type at 199 at 1600 hrs.

Temp at 1611 hrs = 23.8 °C

ABCD EFGH IJKL MNOP

Photos 28 → 31 incl of Extra 100 ASA in old camera (mine) with 28 mm lens

Distributed the boats

4.25 → 4.32 hrs – did laying rate gradients in separation

in 7 mins

4.41 → 4.48 hrs – 10 gradients

in 7 mins

a repeat of yesterday's photos but without tape. Mainly to see if any hatching yet – NO. Count also did usual check of middle row of 5 gradients – NO hatching

Used 12 exposures

Sat 1/4/95 contd.

1600 → 1610 hrs.

(199 →

IN	OUT
1113115112411111314	212113214521131,2
1212 21121122111	413112211411113(3)21
1111121324116223	2111121122122113113
11	21223111114 111221
	212
TOTAL: 91	TOTAL: 130

1610 → 1612 hrs birds in E Beach section

* preening 2+1+3+2+2+1 = (11)
* walking 1 (1)
* washing 1+1+1+1+4 (8)

feeding 3+2 (5)

dipping (Preen?) 3 (3)

28 birds in toto.

Sat 1/4/95 contd.

1714 hrs — Temp = 22.9°C

1702 → 1712 hrs (710 →

IN	OUT
221121111221211	22221111111112111111111
211119223132121111	123112121421181113322
124221121142211211	1111211
41	
TOTAL: 92	TOTAL: 77

1712 → 1713 hrs

Eastern beach section

preening: 9,2 = (11)
washing: 1,4 = (5)

16 birds only

1745 hrs — leave 2 Greenshanks calling -

Quercus photographed @ 4.25 → 4.32 pm week

ABHG, BCJH, CDJE, DEKJ, EFLK, QRIW, PQWV, OPVU, NOUT, MNTS in that order.

2/4/95

5.48 - 5.58 am (→ 217)

6.00 → 6.10 am (217 → end)

6.10 → 6.12 am 82 birds on E beach anchor

- feeding = 8
- washing 4
- preening : 60
- other (eg watching cleaning) : 10

6.30 → 6.40 (726 → 869)

6.14 am - temp = 15.0 °C

clear sky (very little loss on horizon) - light E wind

2/4/95 Contd

The sunlight front fell on the colony at 0619 hrs (before it was in shadow of Cony island)

Temp at 6.43 = 15.1°C

6.30 → 6.40 am count results

IN	OUT
121111 1311231	5 (10) 1213321 2112 (20) 2
111 3131211121112551	3261331613112211113 (20) 52
1112111431211123111	1121212121131 (14) 61212
11	33111321124312215232
	1111534 (15) 1 (11) 73323
	212 (12) 21
Total: 83	TOTAL: 290

0641 – 0643 hrs

E beach Section

Pecking - 3 (12) (17) 435485 (12) 1 (10) 555 35 = 108

Walking - 23+112 = 10

Feeding - 1241 = 8

126 birds

2/4/95 Contd

0713 hrs temp = 16.3°C

0701 → 0711

(875 → on 2nd tape)

IN	OUT
2151121111	1111222111111111111113
11233311111134	3143142221235135 2134
1132112111231	1321 (14) 1633431212311
9111211121111122	12 (25) 3112621321221121
11	12111233142425611 2
	61 22 (12) 232113 (14) 1
	1121211272611122.
	1121 (16) 2211112
Total: 93	Total: 335

not flock signs

10 Skd

0711 – 0712

birds on E beach

Hydrometrists

3/4/95 London

0741 hrs – temp = 17.5°c

0730 = 988 on type.

0730 → 0740 hrs

IN	OUT
2213111111112313	1113222143352442138
12142112111211	12411212112112211111211233
	21223421111321233143121
	1211111234115232122232
	31
Total: 47	Total: 186

0740 – E beep sector

processing: 14+35+33436 = 33

working: 1221 = 6

Fetching: 13 = 4

closing: 2 = 2

working 2 = 2

47 bits

* go back + do 710 → 712 bench count

(per 988 on type)

3/4/95 London

Start 0800 hrs at 131 on type

0811 at 277 – –

0811 hrs temp = 20.3°c

0800 – 0810 hrs

IN	OUT
1111212521111111	1113122141133232 1
1111112142	5221226111121311
	1111121121221111111
	131211121511
Total: 40	Total: 134

E beep light → module (receiver)

DHL machine (3+)

Coventi VHF is on Channel 38

2/4/95 Cont

0811 → 0812 hrs. E beach section

preening — 14
washing — 1
feeding — 0
15 in total!

Almost deserted!

0710 – 0712 E beach section

preening: ?? 13 11 ??? = 24+
washing: 1212 = 5??+
feeding: 4 = 4(+?)
chasing: 2 = 2(+?)
??? ...

35+

Bettines said during typing as some wpm numbers inaudible.

(173 →

2/4/95 Cont

0548 → 0558 (1st hr/c)

IN	OUT
1111211221323212111	1112112 2121122122143
(10) 213121211111111	12121(40)2212122242122
1121211112131111131	223112211231127132111
23 113632222511111	12221223122112221221
1112212 2	2114211122122226415
	32312225212132313 4
	42121133333311 1323
	3523232311 (10)
TOTAL: 131	TOTAL: 328

60–70 feeding in field of view at 0549 hrs

0539 hrs E beach section

preening: 11313211121 = 16
washing: 111 = 3
feeding: 621 = 9
standing: 2 = 2
walking — 1 = 1
chasing — 22 = 4
chasing with interaction — 1 = 1
36 birds

1 Shel beach

2 Sweet beach

0545-55

Start of colony — Little beach
flock of c80 standing in water, most preening, some feeding, some chasing

Play area — 150 feeding energetically at end of colony colony

2/4/85 Contd

0600 – 0610 hrs

(338 → on type)

IN	OUT
24 (11) 4 (11) (11) (11) (11) (11) 1121	2233 (20) 52211111121
21 (10) 3514816134	1315133233
831 1131171128313 33	1321111121 (20) 1225
13221211212132221111	2523357112 2333
1113111221112151 3231	49292125112211
421115 (10) 112611 (12)	
1116241141122	
TOTAL: 266	TOTAL: 198

C not flock sizes

No birds on water in viewing area at 0606 hrs.

Start 1000–1010 count at 530 on type

finish at 688 on type

1012 hrs – temp = 24.7 °C

1000 – 1010 hrs

IN	OUT
3622113113111221212 1	1121151111 2
1112311121111222 1122	2311111242211111221 1
121712111112211221	1121111112111111111211
214111	5122111
TOTAL: 109	TOTAL: 89

Large mob → storm from NE at 1002 hrs.

Gyr Fl heard at 1018 hrs

Overcast at 1018 hrs

1010 → 1011 hrs. E beach section

walking : 1 = 1

preening : 22 = 4

washing : 2 = 2

dabbling in water 3 = 3

10

Strong NE wind blowing + showers to N of us.

No birds elsewhere along E shore.

2/4/95 Contd

Start $1107^2 - 1118^2$ at 690 on tape

1113 hrs. temp = 25.0 °C

1102 — 1112 hrs.

IN	OUT
2111412141126111112	5121022222~~2~~3111111112
1221(3121)1	2111221(2)1121211111111112
	12121211132111211
	41
TOTAL : 49	TOTAL : 110

3 Tech flying out at 1117 hrs.

1112 — 1118 hrs. E block sector

printing : 23552222 = 28
washing : 1214 = 8
"feeding : 21 = 3
39 bits

none at S end

Summary of counts on 2/4/95

Time	IN	OUT
0548 - 58	131	328
0600 - 10	266	198
0630 - 40	83	290
0701 - 11	93	335
0730 - 40	47	186
0800 - 10	40	134
1000 - 10	109	89
1102 - 12	49	110
1400 - 10	89	94
1500 - 10	75	97

2/4/95 Londrk

Start 847

1314 hrs - temp = 28.5°C

1300 – 1310 hrs

IN	OUT
1111211232822132121211111121111122211212111232132121121111111	11322(12)12114112221111112211311311224121111322÷128112248132111
Total: 93	Total: 122

- Wind = non-existent to light from 1200–1300 and light chand
- At 1300 wind picked up to moderate from NW
- Was a low pressure trough passing thru between 1200 + 1300 hrs ?

2/4/95 Londrk

1310 – 1342 hrs Eastern Beach section

(none on S section of beach)

- preening 9732(1) = 22
- working 13222 = 10
- feeding 31 = 4
- walking 41 = 5
- resting 22 = 4

35 birds

Start 034

Temp at 1412 hrs 29.7°C

1400 – 1410 hrs

IN	OUT
1112111212111112112111211211232132121111211111211	1113211113112311231132111224121111212121211132
Total: 89	Total: 94

2/4/95 Contd

10 – 1411
14[illegible] – [illegible]

Eastern Breed section

– more on S section of E lines

- preening : 4310712111 = 40
- washing : 22136 = 14
- mounting : 1 = 1
- stretching : 2 = 2
- walking : 11 = 2
- closing : 1 = 1
- feeding : 1 = 1

61

cc500 . heard to call

2 / reverses (neck, neck) passed

high over over valent from S to N

close

to N shore of lake at 1445 hrs.

866 = start of 3 pm count

1512 hrs Temp is 29.6 °C

2/4/95 Contd

1 definitely duetting in 3.10–3.11 count of E birds – seriously?

1547 hrs – temp is 29.8 °C

4.12 – 4.20 pm – dist 4 lying male products.

Used photos 22–25 (?) incl.

Then reversed film + started new one

in old camera (mine) with 28 mm lens. and 400 ASA

4.36 → 4.44 pm

photos 10 products (5 x 2 5m)

Used photos 2–21 incl. in old camera with 28 mm lens (400 ASA)

2/4/95 Contd.

Plotted the 12 birds (9♂ 3♀) in sequence (Grant last figure them (–12)

♀ ~~#~~ ringed plate was bird #1
♂ " " " " #2

#1 has 2 ~~#~~ pulp released from follicles ??

Grant took ~~#~~ swabs out of each female and put in separate vials with formalin (only 3 of the 12 birds were ♀)

2/4/95 contd

Skyed with Grant via mobile at 9am on Thursday

* Transcribe 1500–1510 tape of 2/4/95

2–3 Black-winged Stilts heard flying east past island at 9.40 pm — this is ~~our~~ first record for this species on Bellert!

Summary of Study 2/4/95

Got up at 5.30 am and counted Stilt in and out of roosting from SE sector ~~#~~ at half hour intervals until 8 am.

Sent Grant out in boat at

2/4/95 contd

approx 9 km in SE direction to find feeding flocks; shoot 10–15 birds feeding, take out oesophagus contents, take 3 water samples for salinity and phosphorus, do an invertebrate sweep (50 m?) for each bird shot, and measure depth.

(Grant also measured the birds, sexed them, weighed them)

I expected Grant to be back about 1 pm but he didn't get back till approx 3 pm.

While waiting for him I transcribed ½ hr counts of morning and then did some more / hr counts

2/4/95 Contd

(till 3 pm). When Grant returned he had lunch + drink — at 3.50 pm we walked to S end of breeding colony and replotted the 4 2m×2m quadrats (with 20 mm pvc frame), namely ABCD, EFGH IJKL, MNOP., for egg laying rate. We returned then moved to N side of island and moved in to take photos of the 10 5m×2.5m quadrats in same order as before, but with no tape. No trampling evident.

Afterthat (at 5 pm) we went back to camp island + photoed the 12 Best Grant

2/4/95 contd

had shot ~~in the morning~~ earlier (photos just for record of breast-abdomen plumage).

Note that 9 of the 12 birds were male. Grant said many birds were feeding in pairs but he was only able to shoot one of each pair.

Approx 5.40 pm Grant + I boated to land, ~~put~~ put post on Argo, took post to Crossover Lake launched it, boated to vehicle. I left Grant to drive back to Esq + fly to Perth (~~left~~ vehicle at airport). I boated / rowed back to camp in dark.

2/4/95 contd

Mark + Campbell had nearly finished packing reel.

Diane — notebook.

Monday

- Temps — ~~early~~ AM, PM
- Eggs, coted, colour, weted
- ~~hatching photos~~ (general)
- legg note photos
- chicks on Crossover Lake?
- note drinking

earlier, legs, photo of) marked from other eggs (each day)

- 12 nom media ~~shots~~
- observe on island — tape recorder + tape recorder.

1500 – 1510 hrs on 2/4/95

IN	OUT
11121112111111111111223	13113121131211221311112
11111121122121221111111	11211112121213122232111
21111111112221	11111111121221121121211
TOTAL: 75	TOTAL: 97

6 in water in field of view at 1505

1510 – 1511 hrs E beach sector

– none at S end of E beach

	Wading	411	= 6
preening –	preening	21257	= 17
definite →	drinking	1	= 1
	feeding	1	= 1
	resting	1	= 1
	pecking at water	2	= 2
			28

Mon 3 April 95

0600 hrs – temp in 19.7°C !

(doesn't feel like it!)

0608 – approx 300 Bcst skeltering from light → moderate N wind in lee of small but high "mound" island on NW side of Camp island. Shag are all preening, with much chattering

When Shag moved at 0612 they flew to join others in lee of island further W.

0616 – stroll of predator? (dogs? dog?)

3/4/95 Contd

0617 hrs fresh digging by rabbit (still droppings). Also rabbit footprints. (One of the others has actually seen a live rabbit on our island.

Even tracks on island are also part veins.

0628 Approx 3000 Brent in shallows beyond to N of resting islands. These are preening & feeding. Ipr seem to copulate successfully

0635 – ♀ Red egret with broken wing etc.

3/4/95 Contd

Band

28 – birds examined – 1
birds feeding at 0645 – indeterminate – c4
well/fully developed – c23
28

0648 hrs – another successful copulation observed in water (among preening/feeding birds)

When preening/feeding – flocks then is continual wind clattering going on – reason?

0700 hrs – temp is 19.7 °C

To Do Tue 4/4/95 contd

Wed 5/4/95

- observe birds on nestboxes
- observe chicks
- replate at 3.20 pm new colony (from both directions) ✓
  (+ label plates + veg suppliers)
- Number more plates * and record their egg numbers + test for warmth? ✓ the same time as first done on Monday ✓
- replate laying rate gradient + labeling gradient.
- measure lake depths
- survey Crossover Lake
- need for ABC interviews
- ~~transcribe from tape (4/4)~~ ✓
- photograph birds on nestboxes next week SDD on lens

Rachel Stroet i/2 hours

3.20 pm

5.16 pm

4.10 pm

5pm → 6pm

tomorrow

Tue 4/4/95 contd

- print outboard oil.
-
- Mark individual nest at 2nd 1 to verify egg numbers
  colony and count No's off eggs and test eggs for warmth — do Wed, Thurs + Fri. Photo eggs in each nest on last day.
- need HANZAB to see what needs to be done
- need DNA papers to see how late eggs are.

3.20 pm

in gradients?

Wed 5/4/95 contd

Photographed gradual 1234 5678 sunrise 13 14 15 16-, 17 18 19 20, 21 22 23 24, 25→28, 29→32 and QUIET and ARRIVE. Photos each from N side then S side (if horse) then moved to next. Used photos 2-20 on colt new camera (100 ASA).

Nest	Eggs	Nest	Eggs	Nest	Eggs
1	2	11	2	21	3
2	2 (1 hatched one)	12	2	22	5
3	1	13	3	23	2
4	2	14	2	24	2
5	2	15	2	25	1
6	3	16	2	26	2
7	3	17	3	27	1
8	2	18	1	28	1
9	3	19	2	29	3
10	2	20	3	30	3

(except one near edge)

See 3 pages on for 31→5

Wed 5/4/95 contd

Cyclone Betty crossed the coast near... on... Started raining at Dillard on Saturday 25/2/95. Rivers rose nearby for 2-3 days (?). Lake presumably took 4-5 days to fall to its average depth of c 40 cm.

Still were on eggs (one on one full clutches) on 15/3 which is 18 days after rain started - probably only 13-14 after lake fallen.

First birds noted on top of (highest point) of nesting island (c. 1.5 m above water level).

Hatching began 3/4 i.e. 37 days after rain started. Incubation period is at least 19 days - may be more. Photos will tell.

Wed 5/4/95 contd

Laying rate, average clutch size will be determined from plots.

Chicks appear to hatch over 2 days – plots will tell – certainly not in one day.

Rate at which late is laying is hopeless to determine due to effect of wind.

2nd colony is approx 3.5 km from 1st.

Wed 5/4/95 contd

Nest	Eggs	Nest	Eggs
31	3	41	3
32	2 (1 gj 15 cm away)	42	1
33	4	43	1
34	2	44	1
35	3	45	1
36	3	46	2
37	2	47	1
38	2	48	1
39	2	49	2
40	1	50	2

Left island at 23 mins (ie 3.38 pm)

3.40 pm walking back to boat 20 m from N side – great majority back at nests except along N edge.

3.41 pm – under power + 50 m from landing in bay 2. + back walking

Th 6/4/95 contd

from 9am (or possibly earlier)

Mark said chicks were moving off in groups of 3-4 - they then branch up if they meet others - they then head off downwind - after 2 hours (not always) that don't peck the chicks

When provides protection, another "neutral" bird seems to stay along - then there are aggressive birds that chase & attack the chicks

Estimate 30 chicks were off this morning (till 11.15 am)

Most then found edge of colony & water (25 mins)

Th 6/4/95 contd

Takes c 3-5 minutes. But threading them then the colony may take an hour (stop frequently to preen).

Chicks hit water, peck at everything, then swim & walk - water until parents - usually 30 cm from parent but may go 2 m away if not being harassed. If no water & being harassed they parent tries to get between the & the person. Most at risk is stragglers when chicks swim back adults absent. May be killed under water.

Th 6/4/95 Cont'd

1:00 pm – released chick
4 family parties available
in berg
each is 1 adult with 3 chicks
3 owned (now 2 – was 4?) other
adults in area joined once –
– other partners?

Th 6/4/95 Cont'd

Size 8 = 6.5 mm ID

Tibia (A → P) = 3.6
" (D → P) = 2.6

"Knuckle" Width = 6.5
A → P = 6.8

Rubble width = 6.0
A → P = 5.6

2:53 pm 44331 34 ← sign of breeding
of Best unmarked bird with E end of
[illegible] nearby island for 2nd colony – they
were swimming W with the wind. Moth → strong
E wing wind in been blowing for ? 24 hrs

Thurs PM (6/4)

Mark followed adult at Inlet 1 flying of nest to water edge, drinking & going straight back — at least 12 trips

Others were washing.

Measurement of legs of adult (adult) taken this morning (6/4) by Madge-t.

Eagle

	mm.	
	Leg 1	Leg 2
Tibia width (L→P)	2.4	2.2
Tibia width (A→P)	5.1	5.1
"Knee" width (L→P)	7.5 7.9	7.5
"Knee" (A-P)	8.0	8.0

Note that these legs were very dry and skin shrivelled tight onto bone and sinews.

Th 6/4/95 Inside

Transcription of 6/4 visit to 2nd Breeding Island

3.13pm — leaving nesting island in boat.

Here nest numbers 32-70. To part is (they are white tags with numbers in red number per), no other markings on them. Number is on both sides

Nest	N° Eggs	Warmth/Cold
70	2	warm
69	2	"
68	2	definitely warm
67	2	warm
66	3	warm

JL's draft list (made 07/4/1995) of tasks for GBP to perform while at Lake Ballard (JL was leaving the lake on 08/4/1995). This list included collection of water samples (salinity, Tot P), pH measurement and invertebrate sweeps '(same mesh size)'at standard location/s' and measurement of depths. See 'Two page memorandum ...' above, for finalised list.

JL planned to measure depths between Camp Island and '2nd [BaSt breeding] colony' on 07/4/1995.

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

See the 'BaSt adults & chicks collected in 1995 RMCR' for water depths, water samples, sweeps, feeding behaviour (and gut contents) of / associated with birds that were collected during the above time period.

Lake Bellaire Contd 7/4/95 Contd

- 1 parent closely associated protective – 2nd bird loosely associated – indifferent – not protective
- broods mostly 3 some 4.
- mostly large + straggler chicks likes collapsing frequently
- parent (protective) waits for straggler to catch up
- brood protect + water (strong) if nursery

Adults – seem dumbing agent

- Raptor ("sparrow hawk") almost over always flies over approx 1120 am (photos – 500 min)

Lake Bellaire Contd Fri 7/4/95 Contd

Events to Do at Bellaire

1. Take water samples
   - salinity – top + bottom
   - Total P – top – unfiltered
   - pH – top

   Do at standard locations and next to [illegible] boat (salinity + Total P, top only)

2. [illegible]

3. Survey Crossover Lake (5 pm → 6 pm) each day for evidence of hatched young. Monitor nest contents of three species.

4. [illegible]

Lake Ballard Contd Fri 7/4/95 Contd

5. Shoot 5 adults feeding with chicks and their chicks and keep oesophageal contents. Measure bill length of each (numbered) chick (for aging). Sex the adult and most closely associated with the chicks.

6. Stockpile gear — don't leave bones or leg flags — take to Perth

7. Take water samples (Sal, Total P, top only) next to shore breeds and (top only) dip standard invertebrate sweeps at each shorebird site.

8. Do standard invertebrate sweeps (same each site) at standard location

Lake Ballard Contd Fri 7/4/95 Contd

(Long Island).

9. Look along note if adults (+ chicks?) drinks (re salinity)

10. Record types of breeds and crèches opportunistically.

11. Better to have both of adults on a few than a little data over a lot of waters.

12. Diatoms

Yellow sea plankton

Vegn.

Lake Ballard Contd Fri 7/4/95 Contd

Radio Traffic Fri 7/4

Out — Grant at far transmitter
— planning next leg + boundary c 3 weeks
— need ½ jerry on boat.
* Tony Starr re GLWN Contract P.

Me — take ½ jerry fuel
& water jerry out for Grant to refill.

Lake Ballard Contd Fri 7/4/95 Contd

MEDO DO ARE 7/4

1. Take egg clutches (need Cartons & tissue paper)
2. Fuel + water jerrys to Hel
3. Pack my gear
4. Depths → 2nd colony
5. 2nd colony photos etc
6. 1st colony " "
7. Eggs!
8. Pick up gear.
9. Crossover Lake Disney
10. → Kalg.
11. Thank Hel CAMP. Hopefully Inca.

Extract from GBP's field notebook which indicates that, during aerial survey on 303/1995, GBP was to, inter alia, look for and record 'Where on [Lake] Ballard [BaSt] feeding groups [are and] How many in each group. Get locations'.

30/3/95

0630 Up Caldbeck Works

0730 Tea

0722 Flag

Look for

Loc on Derby Cdns

Rear Vehicle Mirrors on Cdns

Signs

Work on Behind Leading gear

Ref ring in each gear

opt location

1033 land Ldr.

Radio Stuck 12.00 Derby

enc w/c

090 212677 Ref No

9933 Tons 53.55 44.79

650

97687 From UK

Fax (20/3/1995) from JL to GBP with a list of equipment for the upcoming trip to Lake Ballard. Inter alia, the list includes collecting equipment for aquatic invertebrates (sweep) samples, water samples and in situ water testing.

It looks to JL (on 30/3/2014) that this was a typed list of GBP's, with JL having placed a 'yes', 'no' or 'maybe' against each item and some 'also's and other annotations.

Equipment with a 'yes' against it includes 'formalin 10% buffered', 'alcohol neat / 70%', pH meter', 'spare [pH] meter] probe', '110um [plankton] nets', 'Total N & P filters and jars', 'salinity jars [250ml]', 'Turbidity 250ml bottles', 'Labels (adhesive)', 'tape measure' & 'depth line'. Concerning the Hamon salinity meter, JL annotated this item with 'too big – get pocket size or rely on jars' [but note email of 01/6/1995].

Regarding the list of equipment for 'Data [water level] Loggers', JL annotated 'Would be nice but probably too much gear / trouble for <u>this</u> trip – maybe <u>next</u> trip?'

Fax cover note refers to kayak repair, but JL, GBP & ACl did not end up using kayaks on Lakes Ballard or Marmion in 1995.

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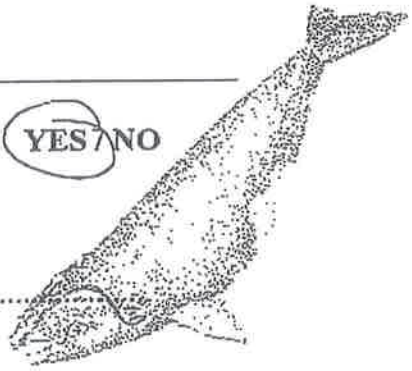

TO: GRANT PEARSON **URGENT:** YES / NO

AT: WOODVALE

..... **Fax No.** .....

FROM: JEM L.

DATE: 20/3/95

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

(as discussed) please have someone (preferably if necessary) replace the green angle touring kayak.

No. of pages inc. this page: 6

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

FAXED

Jim
Not all of this needs to go with us of course. Any additions?

FIELD EQUIPMENT

Collecting

Y formalin 10% buffered
Y Alcohol neat 70%
Y pH meter new ~~fastflow~~ probe
Y spare probe
N ~~DO meter new membranes~~
? 50um nets
Y 110um nets
Y net handles
Y Total N & P filters and jars
? Cl/A phaeophytins filters, jars,
? Vaccuum kit
? 250ml jars
? 125 ml jars
? 25 ml vials

I want to do standardised samples (3 areas) once each dep, near surface waters for Stilt prey species

can we use smaller? Yes

250

Salinity 500ml jars
Y Turbidity 250ml bottles
Y Labels (adhesive)
Y ~~Plant press~~ + cardboards +paper + labels

for aquatic plants.

Y Dissecting Kit + spare blades etc
Y Balance 300gm, 1000gm, ~~5000gm~~
Y 12gg shotguns
N ~~222 rifle~~
25 ? rds #6
25 ? rds #4
? rds 222
Y Clip board pencils notebook
Y Marker pens

fat nib thin, coloured permanent

N ~~Macrophyte, quadrat, bags, labels~~

N ~~Hamon, probe, probe protector, pot,~~
? calibration solutions 35%, 3%, tap water
Y tape measure
Y depth line
? depth pole
? range finder
? star pickets
Y hammer
Y nally bins
Y jacket
? boots
? waders
Y lunch + breakfast + dinner
Y water
Y maps
Y tape
? binos
Y scope, tripod

too big — get pocket size or rely on jars

(2)

Communication
- Y HF Radio
- ? VHF portable radio
- Y aerial wire
- Y Batteries

Recording
- Y Tape recorder
- Y Batteries AA, 9 volt
- Y Tapes

SURVEY EQUIPMENT

HIDE
- Y 1.8m pegs
- Y Hessian
- Y hammer
- Y Tie wire
- Y Knee pads
- Y Chicken netting trap
- Y Fence wire
- ? Fishing line
- ? Steel rods

Banding
- Y 20 leg bands of each color ← This trip if possible
- Y 500 yellow leg ~~bands~~ flags ← certainly for next trip
- Y Pliers
- Y Band removers
- Y Banding box
- ? Binoculars
- Y Telescope
- Y Tripod
- ? Dumpy Level
- ? Staff
- ? Tripod

Observation/ Survey
- Y Camera, film, lenses, battery
- Y Note book, pens
- Y GPS
- Y Tape recorder , tapes , batteries aa
- Y Maps ,local 250,000,1mill., Noah

Gas Bottle
Masks 2/81

Boat

- Y Punt 12 ft ~~, 15 hp~~ + tank + plugs+ tools
- N ~~Punt 10ft~~ , 8 hp +tank + plugs +tools
- Life Jackets
- Y Oars +rowlocks
- N ~~4.8m Savage~~
- N ~~50 hp + 3 tanks + plugs +tools~~
- Y Anchor, ropes, flares (smoke and rockt)
- Y L/jackets
- ? Spare prop
- Y Compass ?? ← personal (for you)
- ? Epirb
- ? Radio 27 mghz VHF
- Y handheld VHF Radios (compatible)

VEHICLE EQUIPMENT AND SPARES

Y

- Tool box
- Tools
- Fridge
- Hoses, belt, plugs, fuses, razor
- Tyres x3
- First aid

RECOVERY EQUIPMENT

Y

- Thomas winch
- Additional cable x1
- Turfor winch + 2 cables
- Chain
- Star pickets x 5
- Sledge
- Shovel
- Compressor and hose
- Tyre repair kit inc crisscross patches
- Tubeless repair kit
- Tyre levers x3
- Rubber mallet
- Steel mesh x2
- Nylon rope
- Pulley
- Gloves
- Degreaser and cleaner

CAMPING EQUIPMENT

- Y Mosquito nets x3
- Y Stretchers

↑ I have one stretcher

Data Loggers
- Computer, Dataflow booklet
- Cable
- plastic bag
- Insulating tape
- Silica chrystals
- Vaseline
- Marking pen
- PVC 40 mm
- Gal pipe 40 mm
- Sensor
- Probe
- Clamps

would be nice but probably too much gear / trouble for this trip
– maybe for next trip ?

5-

Rope
S/pickets x 4
Poles
String
Tarp x 2
Water 1 x 20 ltrs, 3 x 5 ltrs
Table, chairs x 4
Cutlery 4 sets each supply own
Cups 4, plates 8 "
Pots, billy etc
Fire grate and utensils

heavy + bulky gear to a minimum

keep

Also

- Get an extra 10 rolls of Extachrome 64 ASA (or similar)

- Obtain a thermometer (max/min?) so we can monitor ambient ~~temp~~ (air) temperature through the day (and night).

- Bring a copy of Williams' Aquatic Invertebrate Identification Guide (there should be an old copy in my office)

- Also borrow a copy of Sainty's (spelling) little identification book for aquatic plants in Australia (maybe Stuart or Greg Keighery?)

- 9mm – white marker approx 100 short (30-40 cm) wooden stakes with white tops. (We will number these with a broad marker pen so that we can read the numbers from our photos)

One page of jottings (undated, but almost certainly on or before 20/3/1995) by JL headed 'Grant'. It appears to be some initial thoughts on equipment to take to Lake Ballard and included 'gear for daily sampling of aquatic invertebrates (near surface) in at least 3 areas'; 'Sainty – Williams [aquatic science books]', and 'Data logger?' The note 'kayak repairs' suggests these jottings were written on or prior to 20/3/1995 (see fax above of that date).

Gear

- gear for daily sampling of aquatic invertebrates (near surface) in at least 3 areas

- 10 mm fdm

- Sandy — Williams

- Dimens. (to 400 gm) (g 300g to 1000g)

- Data logger?

- personal organiser.

- transect equip.

One page extract (undated, but probably soon after 15/3/1995 helicopter trip to Lake Ballard) from one of GBP's field notebooks. This extract appears to be some initial thoughts on arrangements and equipment for the proposed ground trip to the Lake Ballard BaSt breeding colony(ies). Inter alia, the 'list' includes 'Vials [for what?]' and 'Water Jars 250-300 ml'. Note that GBP used to refer to plastic pots as 'jars'.

Vials 50 ml

Jars quite large

water jar 250 - 300 ml

10 or a shotgun

outboard oil

outboard spare line purgette

gas.

Add to Jims list

8 HP motor

Dolphin Batteries

Vaccuum packed meat

Plan for pet supplies

meals. 3 for 2 days

2 for 3 days

3 for 3 days

Able to get their own food

in Kol.

11/21 188

Jim read this 8/91

Undated page of jottings by JL listing stuff for him to take to Lake Ballard, probably (judging on 29/3/2014 by what is in and not in the list) for the one day helicopter trip from Kalgoorlie to Lake Ballard and return on 15/3/1995. Includes: 'water samples', plankton net' and tape measure'.

Water samples
Plankton net.

Grant: LPO books
Gonengy rods.
] home. egg mark pens?

HC.
66.

*

Work

tape measure
film
camera lenses + camera
notebook
pens
* calipers.
~~bag~~ + tape
compass

binoculars

Drink

Water in al. bottles
or 2 plastic lemon drink bottl

Work (cave) ?

Food

Lunch
Veno: Sandwiches.

Muesli Bars
Chocolate (Energy)
nuts / fruit.

or Boulder
in mainst
5th Beg dam
Burt St

plastic bags (waterproof)

Shelter / Warmth

Green matches
space blanket?

sunglasses

Clothes

footwear (travel)

hat
sunscreen
shorts
shirt.

blue bag
brown bag.

toilet paper.

~~bandage~~

~~bandage~~ bandage

Cash
min. keys

wet suit boots
fins.
wetsuit top
thermal underwear top
board + string.

Diary
matches ✓
cash ✓
notebook ✓
~~[illegible]~~
drinks / food
plastic bags ✓
shirt ✓
bandage ✓

Fax (20/3/1995) from JL (at CALM Busselton) to Raelene [Hick] (at CALM Woodvale) with corrections (typos) to her typescript of the 'Banded Stilt Research Programme – Lake Ballard, March/April 1995' that CDTM had hand-drafted (see 14/03/1995 below).

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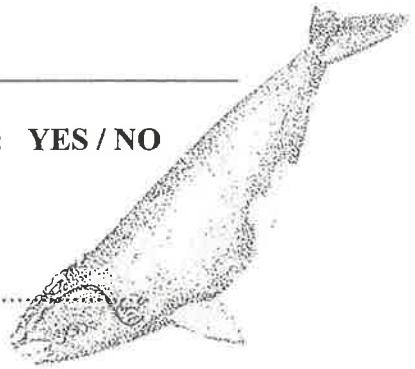
BUSSELTON DISTRICT
FAX NO: (097) 521 432



TO: KAELENE **URGENT: YES / NO**

AT: WOODVALE

Fax No.

FROM: JEM L.

DATE: 20/3/95 **Your Ref:**
Local Ref:

Please amend draft [redacted]
and place copy [redacted] in my Region hole for Wed.
(and fax to me in Bsn if completed today)
Thanks.

No. of pages inc. this page: 5

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

Of the 70 species of wader which have been recorded in Australia (55 regularly), it is one of the eight resident endemic species.

There are estimated to be 250 000 Banded Stilts in Australia (Watkins 199). Some 60-70% of these live in Western Australia, the remainder being in South Australia and Victoria.

Breeding has only been recorded about 20 times (Higgins ~~1984~~ 1993) since it was first proved in 1930 (at Lake King in W.A. and at Lake Callabonna in S.A.). All but three of these attempts have been in Western Australia, with Lakes Barlee, Ballard and Marmion most favoured. The last known breeding occurred at Lake Barlee in 1992 and at Lake Torrens (S.A.) in 1989.

The Banded Stilt is one of the least studied species of wader in Australia. In particular its breeding biology is little understood. This is because breeding takes place in remote locations, which are especially inaccessible after the heavy rains which precede such events. In fact most breeding records relate to colonies found after

~~DRAFT~~ Single Space plse 29

BANDED STILT RESEARCH PROGRAMME - LAKE BALLARD, MARCH/APRIL 1995

(drafted by C.D. Minton) ~~following discussion with Barbara~~

Background

See folios 3-10 of this file for Clive's handwritten originals of this.

The Banded Stilt is unique amongst the 214 species of wading birds in the world in that it

(a) nests colonially

(b) rears its chicks in crêches

(c) only nests intermittently - when inland salt lakes become flooded by exceptional rains

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The Banded Stilt is one of the least studied species of wader in Australia. In particular its breeding biology is little understood. This is because breeding takes place in remote locations, which are especially inaccessible after the heavy rains which precede such events. In fact most breeding records relate to colonies found after

breeding has finished (often abandoned in mid-breeding because of declining water levels/food supplies) or at the chick stage (often roaming many kilometres from the actual breeding site).

The discovery of a nesting colony on Lake Ballard on 12th March 1995, only 15 days after the commencement of a three day 'wet' from the aftermath of cyclone "Bobby", provides a unique opportunity to study the breeding process throughout the full cycle. The aerial survey showed several thousand (3-5000) birds apparently already with nests but there was another 5000+ birds (mostly in pairs) on adjacent parts of the lake which seem likely to join the colony in the near future. The colony is thus still at the formative stage.

There are many scientific reasons why the systematic study of a Banded Stilt breeding event should be undertaken. Basic information such as even the incubation period is still not known. And for a species where the majority of the world population lives in one area (the southern half of W.A.) and is subject to vagaries of the climate for rare breeding opportunities it is important to determine breeding success and lay the foundations for future survival measurements - and to determine the factors governing these.

It is important also, from a conservation viewpoint, to assess the predator impact at a Western Australian breeding colony. Historical information suggests this has in the past been very low. However at Lake Torrens (S.A.) in 1989 there was a huge influx of Silver Gulls during the breeding event and this resulted in severe egg losses (and some chicks too) - the last two thousand nests were totally predated because the Banded Stilts were outnumbered by gulls. The Silver Gull population in Australia has increased enormously over the past 50 years and may well pose a long-term threat to the Banded Stilt (at least at South Australian locations).

Objectives

The broad objective should be to collect all practicable data on the breeding event, with a particular emphasis on the special adaptations developed by the Banded Stilt to maximise its breeding productivity in the limited 'window of opportunity' which it seeks to exploit.

The specific parameters which should be studied/measured/assessed include (not in order of priority):

a) Courtship, pairing, nest site selection (within a colony).

b) Plumage of breeding birds, especially early in the event.

c) Frequency of laying and commencement of incubation (and egg protection prior to incubation).

d) Clutch size and nest density.

e) Incubation period and sharing of incubation duties.

f) Hatching success (related to clutch size e.g. can they successfully hatch 5 egg clutches?).

g) DNA analysis of clutches (especially 5 egg ones) to assess egg dumping and ex-pair copulation frequency.

h) Crêche formation - initial formation and development over the fledging period.

i) Fledging success.

j) Re-nesting attempts.

k) Predator activity at the colony and subsequently on chick crêches.

l) Food availability/water level/salinity.

m) Dispersal after breeding (by banding/colour marking adults and chicks).

n) Survival/mortality rates (by banding/colour marking of adults and chicks).

o) The practicability of visits by other ornithologists, film crews etc. to the breeding site without undue disturbance of nesting birds.

Fieldwork programmes

Marj

The initial visit by Jim Lane, Grant Pearson, ~~Marj~~ Reni and Clive Minton on 15th March can make initial observations and measurements on many of the specific study objectives (a, b, part of c, d, part of e, k, l, and o).

In particular the main existing nesting area can be 'pegged out' and eggs (particularly of incomplete clutches) marked as a foundation for future follow up (e.g. to determine incubation period/hatching success).

It is desirable that ~~a scientist be made available to undertake the~~ a detailed study be conducted over the whole nesting cycle. This would involve extended periods of observation and activity at the breeding colony, preferably commencing whilst new pairs are still arriving and especially covering the hatching period (likely to be extended). Subsequent follow up during the fledging period could be done more intermittently by boat and/or from the air.

It is also desirable that occasional (aerial and/or ground) surveys be made of Lake Barlee to determine breeding activities there and their outcome.

This breeding event is likely to continue until the end of April, and longer still if any re-nesting occurs.

Publication

Results should be published in both the scientific literature (e.g. Emu), and in more widely circulated "popular" journals. If the ABC decides to make a half hour documentary then this will provide further dissemination of the information gained of this spectacular Banded Stilt breeding phenomena.

stet

References

alphabetic order

Watkins, D. (199..). A national shorebird plan for Australia - WWF and RAOU Publn.

Marchant, S. and P.J. Higgins (Eds) (1993. Handbook of Australian, New Zealand and Antarctic Birds. Vol II Raptors to Lapwings. Oxford University Press, Melbourne

Extracts (appear to have been written soon after helicopter flight of 15/3/1995) from GBP's field notebooks that refer to, inter alia: 'water quality'; Depth stake 1 ½ [inches] x 6 [ft]' & 'hammer'; 'invertebrate [sampling] gear'. These were, no doubt, early thoughts on gear to be taken on first ground visit to Lake Ballard, at end of March 1995.

Bird Study

Bird Marking

Water Quality

Camping

HF Radio Portable
VHF Portable
Tape recorder
Tapes
Batteries
Hide 4 x 6 pole + Hessian
1.8 x 1.5 m.
Tie wire
Pegs
2 x Telescope + tripod
2 x knee pads
Film 25 x 2 x 36
64 x 6 x 36
200 - ① 901 2.

Colored Stakes Red Blue Grey Yellow
30 cm + 60 cm Stakes 20 of each

Depth Stake ½ x 6

Hammer

Felt Pens Sharpies Variety Packs

Make a trap.

Big Jim at DSN

Camping

Jerry cans & water

Tarp + Poles.

Forerunner pick up

with or without radio

Outboard 8HP

oars

anchor

spares

1 tank

Electric

Invertebrate gear

Extracts (15/3 – c.25/3/1995) from JL's field notebook with notes made:

- **during return helicopter flight from Lake Ballard to Kalgoorlie (including 'depth gauge' – to be installed at Lake Ballard);**
- **while waiting at Kalgoorlie Airport for return flight to Perth (reference to chicks feeding);**
- **soon afterwards ('Field guides – inverts (Williams), aquatic plants (Sainty)'; on Fri 24/3/1995 ('salinity of lake [Ballard] water last week?' – with a line through and a cross next to, perhaps indicating that no water sample (or measurement) was taken during helicopter visit on 15/3/1995);**
- **on c.25/3/1995 (2 [sweep] nets (250-500 micron) [are] in shed on grey shelf'. 'MS [Mike Scanlon? – worked for Stuart Halse] recommends 250 micron & subsample after'.**

Driving flight from Bellarat to Kalgoorlie

Wed 15/3/95 contd

- HANZAB account of Best
- need dip recorder
- 25 ASA film, mapping pins
- hide 4 x 6 shelter, hessian to cover 6 sides + over top. Use large safety pins + cut slits for camera etc.
- digital gauge
- test all the questions + work out least disturbing ways of answering -
- 2 x 2 way radios
- buy Dept ref collection, paint like Torrens rocks.

Landed back at Kalgoorlie at 1758 hrs.

Wed 15/3/95 contd

Eggs for pitfalls -

Clutches better than 50:50

- 4 days nest watch
- 4 days banding
- 4 days fledging
- lot of behaviour from (partic for chicks)
- ~~amount~~ to be here more
- $1500 to recompense expenses so far.
-

2

John ---? is wonder- at Broome

Andy Clayton will provide name of station owner in north side — re tracks in.

We should do fixing rebleds of Dalkeith and Barker early next week (from Kal)

Contact ~~Chris Minton~~ 091 935 600 Broome Bird Observatory — much of the time — till May 2nd. (from Fri 17th March)

Late Torres account ~~was~~ was in AWH → Bowra Natural History magazine (Natural History Bulletin) also in Bird International.

Kalgoorlie Airport Wed 15/3/95 contd.

Subsequent resexing? (another go after mine + Cracks)

Once the chicks hit the water they should be feeding themselves.

Bandy / Color Marking.

If can have chicks — the more the better — colour flag ~~bird~~ with yellow (from Broome or Melbourne).

Can you band them?

Put band on one tibia + flag on other Tibia

~~Get~~ Get birds + fledges now. (ecology) 500 - 1000 birds from

2

Film for 1 wk/day (student monitoring)

Thermometer

Canoes, daggers * + coloured tape.

* tranny?, cards.

~~Head~~ things, pillow *

new sheet / pads

* sleeping bag liner

large plastic bags.

1 large pad + clipboard.

Field guides — insects (Williams)
— aquatic plants (Scientific)
binoculars sharp?

watch beep.

camera batteries

thread.

magnets melting?

Small torch + batteries

shoot for candle.

basin boots + dibbin

seeds (eggs + berries)

Dutch Levels?

"Waders" + (Hole?) book

"Eggs" book

how collect samples for DNA testing?

Bumble's guide plant common methods
(+ Abrilloss?)

Me ~~pick up~~ photos - liked!
views

Jack garden sticks from home.

nappy pins

Dalby → Perth (via Perth)

Fri 24/3/95 See Thursday ~~etc~~

→ ~~Perth Hotel with gear~~ ✓

~~Perth to Cloverdale (cancelled)~~ ✓

~~gear from Cloverdale~~ ✓

~~films back from Cloverdale~~ 10.45

~~35mm lens adapter~~ ✓ ~~tripod ring~~ ✓

~~gear overnight~~ ~~tickets on Chris~~

~~photo Sunday tuesday~~ ~~flying pens~~ ✓

Cloverdale

Battery report

~~Briefing for Friday~~ ✓

* map the Greedy island

~~Hire vehicle $220.00~~ ✓ ✓

~~8m x 20mm pipe + elbows.~~

~~Dam drill jaws~~ ✓

~~air tickets~~ ✓

~~wood.~~

~~Perth to BGI (+ Sunday dr)~~

~~for basic labour~~

camera flash + ~~camera batteries~~ ✓

~~Pulley shop~~ ✓

~~Safety of lake water test kits~~ ?

watering

~~film for Sally~~ ✓

~~Cloverdale~~ ?

print hole in Chris wall.

sunglasses — Mitchum wipes

Chris Sermon (Sermon) Lesson Lesson — Northdowns etc at Abergeldie — Ann Wheeler student

Ring Anyinga Head Arm Arm.

QF 439 HK 234

re 3.40 pm 11F Kal → Perth

→ 4.50 pm 090 ~~Kal~~ 212 677 (Cairns 100k)

Fri 24/3/95 lunch

Saturday (25/3)

In bed

on Grey shelf

500

2 nets (250 micron)

MS recommends

+

Extract (undated) from GBP's field notebook with neatly written account (summary) of helicopter trip (with JL, CDTM & MR) to Lake Ballard on 15/3/1995. One observation is of BaSt male 'feeding' [?] immediately following copulation.

Jeremy Hogarth 220 2700 Ph
03 626 1500
03 524 2348
Mobile 015 867464

Mark Hebblewhite. Kingsley - Wed Am. 29/3

Hospitality Inn Kal 090 212888

16 Mega 306 1642

1

Lake Ballard 15/3/95

0620 Departed [illegible]
0725 Kal. Tripods left behind [illegible]
0805 Take off.
0905 Land at Ballard [illegible]
[illegible] 40 secs [illegible]
[illegible]
[illegible]
45 secs [illegible]
[illegible] Complete [illegible]
[illegible] present feeding [illegible]
[illegible]

30 secs Cop'n time
[illegible]
[illegible] about [illegible]
[illegible] Helicopter [illegible]
[illegible] island [illegible]
x 50 m

Fax (14/03/1995) from CDTM to JL with his (CDTM's) draft manuscript headed 'Banded Stilt Research Programme – Lake Ballard, March/April 1995'. Inter alia, CDTM refers to: '... when inland salt lakes become flooded by exceptional rains'; '[colonies] ... abandoned in mid breeding because of declining water levels / food supplies or at the chick stage ...';, and '... the limited 'window of opportunity' [for breeding by BaSt]'. CDTM also lists '... specific parameters which should be studied / measured / assessed', including: '(l) Food availability / water level / salinity'.

14/3/95

DRAFT (1)

Banded Stilt Research Programme – Lake Ballard March/April 199

Background

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of a three day 'wet' from the aftermath of cyclone "Bobby", provides a unique opportunity to study the breeding process throughout the full cycle. The aerial survey showed several thousand (3-5,000) birds apparently already with nests but there was another 5000+ birds (mostly in pairs) on adjacent parts of the lake which seem likely to join the colony in the near future. The colony is thus still at the formative stage.

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(k) Crèche formation — initial formation and development over the fledging period
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(h) Predator activity — at the colony and subsequent on chick crèches
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(m) Dispersal after breeding (by banding / colour marking adults + chicks)
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(o) The practicability of visits by other ornithologists, film crews etc. to the breeding site without undue disturbance

Fieldwork programme

The initial visit by Jim Lane, Grant Pearson, Mary Reni and Clive Minton on 15th March can make initial observations and measurements on many of the specific study objectives (a, b, part of c, d, part of e, h, l, and o).

In particular the many existing nesting area can be 'pegged out' and eggs (particularly of complete clutches) marked as a foundation for future follow up (eg to determine incubation period / hatching success).

It is desirable that a scientist be made available to undertake the detailed study over the whole nesting cycle. This would involve extended periods of observation and activity at the breeding colony, preferably commencing whilst new pairs are still arriving and especially covering the hatching period (likely to be extended). Subsequent follow up during the fledging period could be done more intermittently, by boat and/or from the air.

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Two typed pages by JL headed 'LAKE BARLEE – MON 2nd – FRI 6th NOV 1992'. This is a plan of work to be done by JL & GBP at Lake Barlee during that period. Two of the listed 'Tasks to be performed at Lake Barlee' are: '1.2. Water Depth and Quality Sampling (GP). Need: pH meter; sample containers (2 for sal; 4 for phos); tape measures (3m JL&GP; 30m JL); labels', and '1.4. Aquatic Invertebrate Collections (GP). Need: sweep net; containers; preservative; labels'.

These pages are included in this RMCR as a link to the bird (BaSt) and gut content sampling that undertaken at Lake Barlee in 1992 by JL & GBP. Note that Lake Barlee turned out to be dry in Nov 1992, so no water or sweep samples were taken then. Note also that JL intends (03/4/2014) to prepare a separate RMCR covering the BaSt work undertaken by him & GBP at BaSt breeding locations pre (and post) 1995.

JL6

LAKE BARLEE - MON 2nd - FRI 6th NOV 1992

Leave Woodvale 10am Mon. Return Fri evening. JL to pick up Toyota Fri evening from Woodvale for depth gauge trip following week (Alan to prepare vehicle).

1. TASKS TO BE PERFORMED AT LAKE BARLEE

1.1 Search Islands for Banded Stilt Nesting

Need: search plan (re-do all previous islands & extra as time permits); binoculars (JL&GP); spotting scope (GP); air photos (JL); maps (JL); microfiche (JL): orienteering compasses (JL&GP)

1.2 Water Depth and Quality Sampling (GP)

Need: pH meter; sample containers (2 for sal; 4 for phos); tape measures (3m JL&GP; 30m JL); labels

1.3 Banded Stilt Gut Content Sampling (GP)

Need: shotgun & ammo; gut content containers & labels; bird carcass bags & water-proof tie-on labels; preservatives etc.

1.4 Aquatic Invertebrate Collections (GP)

Need: sweep net; containers; preservative; labels

1.5 Natural History Observations

Need: bird field guide (JL); vegn & other sample bags (GP); labels (GP); cameras (JL&GP); film (GP to buy print film for GP and **3 rolls of 36exp x 64ASA slide and 2 rolls of 24 exp x 200ASA slide for JL**)

1.6 Capture Banded Stilt Chicks to Hold at Zoo (only if run into small chicks on last day)

Need: cardboard box; Neil Hamilton's phone no.

2. SAFETY

* make formal (by fax) radio sched arrangements (1/day) (GP).
* carry plenty of water (plastic jerry cans) (GP).
* personal waterbottles (JL).
* waterproof matches (JL).
* tarp (or similar) for shade (GP).
* first aid kit & handbook (GP).
* two orienteering compasses (GP&JL).
* Argo tool kit (GP).

3. OTHER

* one personal tent (JL)
* sleeping bags (JL&GP)
* hats; sunscreens
* flynets (GP)
* insect repellent

4. FOOD & COOKING

* GB to look after entirely. Please include "Trail Mix" and muesli bars for JL!

Two typed pages headed 'INVERTEBRATE FAUNA OF LAKE BARLEE: Survey of lake Barlee; Date July 3 1992', probably prepared by GBP for JL. The first page indicates what was found in a number of aquatic invertebrate sweep samples at various named locations on Lake Barlee on 02/7/1992.

These pages are included in this RMCR as a link to the water and aquatic invertebrate (sweep) sampling undertaken at Lake Barlee in 1992 by JL & GBP. Note that JL intends (03/4/2014) to prepare a separate RMCR covering the BaSt work undertaken by him & GBP at BaSt breeding locations pre (and post) 1995.

INVERTEBRATE FAUNA OF LAKE BARLEE

Survey of Lake Barlee
Date July 3 1992

Source	Site	Family	Species	Abundance
Sweep 2/7/92 110um d=.4m	Isd 12	Ostracod	eggs	common
			Diacypris sp	?
			Cypridae sp	abundant
		Copepoda		
			Calamoecia sp	common
		Anostracan		rare
		Aracnida sp		rare
		Coleoptera (terrestrial)		uncommon
		Dipteran	sp1	
			sp2	
			sp3	
			sp4	
			sp5	
Sweep 2/7/92 110 um d=.4m	Isd 6	Copepoda	calomoecia sp (salina?)	commom
		Anostracan	nauplii	v common
			adul F ovigs	rare
			adult M	uncommon
		Ostracoda	Diacypris sp	abundant
			eggs	v common
Sweep 3/7/92 d=.4m	Isd 11	Ostracoda	Diacypris sp	abundant
		Ostracoda	eggs	v common
		Copepoda	Calamoecia sp	uncommon
		Algae		
Sweep 2/7/92 d=.4	Isd 7			
		Ostracoda	Diacypris	Abundant
		Copepoda	Calamoecious	uncommon
		Algae		

Banded Stilt #1 juv			
oes		Anostrocan	Parartemia
Gizz	"	"	
		larvae	
		grit	
Banded Stilt #2 juv			
oes	Anostracan	Parartemia	
gizz	"	"	
	"	"	eggs abundant
	grit		
Banded Stilt #3 juv			
oes	empty		
gizz	coleopteran bits		terrestrial abundant
	grit		
	Anostracan	parartemia pieces	rare
Banded Stilt #4 juv			
oes	dipteran		
gizz	coleopteran terrestrial		
	parartemia mandibles		
	dipteran pieces		
	ascaridae sp		
Banded Stilt #5		Data missing	
Banded Stilt #6 juv			
oes	empty		
gizz	dipteran larvae		tipulidae?
	"		chironimidae
			parartemia
	coleoptera		
			dytiscidae?
Banded Stilt #7 juv			
oes	empty		
gizz	coleoptera		
			tipulidae?
			parartemia

Check of another page of #7 info