Several pages from faxed (25/4/1996) copy of 'Transcription of Comments while Watching Un-Cut Rushes of Banded Stilts on Lake Ballard'. Present: CDTM, Mark Lamble, David Luffman, Jeremy Hogarth. Recorded at ABC Natural History Unit, 1995.

These pages make reference to aggression by adult BaSt towards BaSt chicks; BaSt life span (CDTM guesses 10-20 years); 'a cat walking down the dune [at shoreline of Lake Ballard] and ... the chicks realise and panic [and] they go straight out into deeper water'. and BaSt chicks' 'panic move' – 'they would still feed, but all march in the same direction'.

TRANSCRIPTION OF COMMENTS WHILE WATCHING UN-CUT RUSHES OF BANDED STILTS ON LAKE BALLARD.

PRESENT: Dr Clive Minton, Mark Lample, David Luffman, Jeremy Hogarth. Recorded at ABC Natural History Unit, 1995.

TAPE START.

Clive Minton:

".....there's a bird trying to mate with an incubating bird - well that is interesting. I saw it happening everywhere but never on an incubating bird.

There's a very good example of a bird in very little breeding plumage a month after the colony started. When we first went there were 25% of the birds that had not gone into breeding plumage, they were mating, breeding, laying eggs, sitting on eggs even incubating in some cases with no breeding plumage and in other cases with only a bit of it. By the time I was there in early April I didn't see any without full breeding plumage.

What's going on here? Is it attempted copulation? Is it two trying to copulate on one - not very willing co-operation.

Just slightly speeded up like this it [the colony] looks just like the main street of Tokyo.

Jeremy. There's no way you can distinguish the sexes?

Clive. No. You see, there's a beautiful bird there in the middle in terms of plumage, that one there with a solid chest band, but no we tried, ah, we saw birds like that with birds with flecked plumage on top of them and we couldn't tell. The ones that we collected and gutted and sexed I tried to predict what sex they were before we knew and I couldn't get it right.

That's someone wanting to mate, but is it wanting to mate with its mate or someone else's mate? He's still got the urge but I don't think he's trying to take over the incubation or anything like that. Now he's being more gentle perhaps, seeing if that will perhaps work. But will he succeed, we'll have to wait and see. Only Mark will remember.

Now that's copulation actually taking place. Yes, this is very interesting. I never saw any of this [attempted copulation] Mark, attempts to copulate with incubating birds. Now there's a very good example of a male in very poor breeding plumage attempting to mate with a bird in very good plumage.

Jeremy. Are the eggs lying around abandoned?

Clive. Those are just the rubbish of abandoned eggs. In each of those squares [transects] about six hundred eggs were laid and I counted the eggs in those pegged squares afterwards and there were about a hundred on average that hadn't hatched, now that looked awful but it's only about 15%.

Jeremy. How long do Stilts live?

Clive. Well no one has got the banding results to know, because this is the first time that a significant number have been banded, but my guess is that they are capable of living ten to twenty years as individuals, but no one is really sure. I would expect them to be very long lived, and that partly compensates for the fact that they are infrequent rather than irregular breeders but equally in some years, like this, that they have a very high breeding success when they do breed.

And off we go [*Clive reacting to footage of a chick trying to make it to the water*]. Is that the one that was attacked, or is it another one?

Mark. Yes [*it was the one that was attacked*]

Clive. Is he still going strong?

Mark. Yes, he got back but he didn't make it. He was too beaten up to survive.

Jeremy. Was that his parent, do you think?

Mark. Yes, it was his parent, he got back to his parent but by that stage he was petty far gone and he didn't make it.

Clive. He didn't make it to the water?

Mark. No. There were four chicks and three of them made it to the water.

Clive. She was unable obviously to go and help him, she had three others to look after. That'll make a very moving bit of commentary, that.

Now we are on roll twenty.

Clive. Excellent, now we've made it into the world, and I'll be a fluffy little white chick, or at least I will be when I'm dry.

Jeremy. When you saw the Lake Torrens colony was that sort of behaviour happening? [*referring to the attacks on the chicks*]

Clive. No, not at all. But you see there was a difference - no, in fact there was no virtually no aggression of Crested Terns towards each other or each other's chicks. But it's quite different with the Silver Gulls down at Mud island, and you'll have to come on the 17th of December, and see the contrast and the difference. A Gull chick will run out from the vegetation and there will be Gulls swooping down and killing it. But never will a Crested Tern do any harm to another Crested Tern chick.

Jeremy. But when you with the Stilt colony on lake Torrens was there that sort of aggression?

.....tape ran out and answer was lost.

136.

Clive. That one looks about ten days old to me, and that one about a fortnight. I don't know, maybe they grow more slowly then the ones I have seen. So all that in the back, it's not adults but the same type of grouping?

Mark. Yes, it's the same as far as we could possibly see.

Clive. Did you ever see a bird brood any chicks at that stage?

Mark. No, not in water, no.

Jeremy. At night time did they stay in the water?

Mark. I don't know, they were there when it was dark and they were there at first light. By moonlight there were birds out there but I couldn't tell if they were chicks or adults, but there were birds out there feeding.

Clive. It almost looks as if they are walking at random, as if they are not part of any group.

Mark. They were in loose associations that would cover the area of this room [David's film editing room]. Then you might have ten metres of clear water and there would be another loose association. Then they would bump into each other, sort of meet and mingle and then depart, they would intermix and then depart again in two groups.

Clive. There's just one adult and about twenty young all together.

Mark. There's a cat walking down the dune, and somewhere here the chicks realise and panic, they go straight out into deeper water.

Clive. It's fascinating to see them still very white, but getting up to a third and a half grown.

Mark. The background is that when we started the wind in the morning was blowing from the south and the water was quite deep and then it swung around fro the north and pushed the water off shore, and in the matter of a few minutes the water level would start to drop and expose these mud flats.

Clive. And that again is 90% chicks over there, is it?

Mark. Yes.

Clive. Good god, just look at it - look at that. Phenomenal, and that's some adults. Now, why have we suddenly come across a group that is 100% adults. Are you at a different location?

Mark. No. But if you come into them from the north, they are off to the east and the chicks are off to the west, if you go east you would find adults and if you go west you would find chicks.

Clive. They are right up to where the water and the mud meet. Now that looks like five chicks or so following an adult.

135.

Mark. That's their panic move, when they were alarmed. they would still feed, but all march in the same direction.

Jeremy. Will those chicks stay at that lake for as long as conditions are right?

Clive. Well, no one really knows. We've got people watching for when numbers of birds start to reappear around Perth and Albany and if they've got leg tags on them and if any are obviously juvenile by plumage. I would think in most cases they would leave the lake pretty promptly, but in this year because of the timing and the water situation they've probably stayed much longer than normal. How deep would that mud be, about ankle?

Mark. No, about waist deep.

Clive. You can't walk on that?

Mark. No. When the water goes away and the ARGO is sitting on it, you're stuck.

Clive. There is no doubt that extensive crèching, in the sense that they have got into a large amorphous mass with few adults, has taken place by now.

[long pause]

Clive. So it would be about one adult to ten chicks.

Mark. That would be pretty right, about one adult to between ten or twelve chicks.

Clive. And they came up right by the boat to feed?

Mark. Yes, and it was when they were a little bigger than that when they were starting to try and fly.

Clive. I would guess that those chicks are about four weeks old.

Mark. Now that would also sometimes happen, a single adult would fly in and start feeding.

Clive. And it wouldn't seem to have much ownership of anything?

Mark. That's right.

Clive. We'd be fascinated to know what they did do at night.
- *[long pause]* - There are some examples of where more than one bird has gone down to the water and although one bird has tried to keep the other bird away the chicks are obviously attached to one bird, and I wonder if that is it's mate and that is the moment of separation, it's saying "go on, you bugger off and get fat and get ready to relay and I'm looking after the chicks".

END OF TAPE

Letter (03/3/1996) from Jeremy Hogarth to JL seeking JL's comments on an attached 'early draft' [18/10/1995] script of 'Bobby and the Banded Stilts'.

Extracted [by JL on 27/3/2014] pages of script refer to defence (by parents) – or lack of it – of BaSt chicks from predators, and aggression by adult BaSt towards BaSt chicks [note that JL has not include all mentions of this behaviour into this RMCR].

125.

Television New Zealand Ltd
Te Reo Tātaki

8 Dowling Street
PO Box 474
Dunedin, New Zealand
Telephone 64 3 4799799
Facsimile 64 3 4799917

NATURAL
HISTORY

TVNZ

cell 64 3 4799876
"direct"

March 3rd, 1996

Jim Lane,
CALM
14 Queen Street,
BUSSELTON WA 6280
AUSTRALIA

Dear Jim,

Thanks for your fax - here is the script on Stilts. Essentially it is the same script that I gave to Clive, but it has incorporated some of the changes that he suggested. As I have said before, it is very much an early draft at the moment.

I'll look forward to your comments when you have the chance to read it.

Best wishes for now,

Jeremy Hogarth

2nd 8.3

BOBBY AND THE BANDED STILT

Jeremy Hogarth
ABC Natural History Unit ©
18/10/95 [11:19]

2. SHORE BIRDS, GULLS, WADERS, PELICANS ETC

1. **STILTS & OTHER BIRDS ALONG WATER'S EDGE;**

Many of Australia's birds are nomadic wanderers, reacting to changing conditions often many hundreds of kilometres distant. It is a way of coping with a capricious climate in a harsh and arid land.

2. **SALT WORKS;**

Along the southern shores of Australia thousands of waterbirds crowd available feeding grounds, often including some many that have been initiated by the works of man. resulted from

3. **RUBBISH TIP;**

Seagulls scavenge at rubbish dumps.

4. **PELICANS;**

Large and graceful Pelicans swim near piers and boat harbours hoping for a free feed of fish.

5. **BANDED STILTS WITH OTHER BIRDS;**

And Banded Stilts also make use of habitats created by humans. The Stilts are no strangers to the salt works and sewage farms, for they make ideal feeding grounds. Some

Amongst the 214 species of wading birds in the world Banded Stilts are unique. They are the only wader to nest colonially; the only wader to have white downy chicks and the only wader to group those chicks into crêches. In this behaviour the are more akin to the African flamingo than to any other bird in Australia.

There are 2 species of flamingo in Africa (greater and lesser). Which is Clive (?) referring to?

Ask Clive re Silver Gulls.

There is a similarity to the Flamingo in their breeding, too, for Banded Stilts only breed in the arid inland when certain large and shallow salt lakes flood. And Banded Stilts are different from other waders in another aspect, they make no attempt to defend their chicks from predators.

little? e.g. do they passively defend them by sheltering with wings?

6. **STILTS FEEDING TOGETHER IN FLOCKS;**

Along the coast they bide their time, feeding upon small shrimps and other crustaceans in the shallows or tidal inlets. These Stilts are a gregarious bird at all times, always being found in flocks which can sometimes number thousands, but their movements to and from between their feeding grounds are erratic and little known.

coastal

?

crustaceans, molluscs and other invertebrates

5. ADULTS FEEDING;

It is thought that the Banded Stilt pairs take turns at incubating the clutch of eggs, allowing each adult a chance to feed during the day.

Banded Stilts feed by picking at individual shrimp, using their long bills with precision. Here again the bird is different from others, for birds which feed in this way normally have large eyes. But the Stilt's eyes are small, perhaps an adaptation to counter the glare from the water that they spend their entire lives feeding from.

Source ?

Source ?

6. FIRST CHICKS HATCH;

On April 3rd the first chicks hatched, a mere 35 days after the rains from Cyclone Bobby had ceased. They wait with their parent until the rest of the clutch hatch, then they are taken down to the lake never to return to the nest again.

7. CHICKS TAKEN TO WATER;

As the first chicks begin to totter on unsteady legs down towards the water they must pass through the small territorial space of other incubating adults. This transgression was met with continuous and unabated hostility. The chicks were pecked at, often by three adults at a time, as they were shepherded through the colony, their parent occasionally trying to shield them by stopping and ~~letting them take shelter under the wing.~~ providing with partly opened wings.

But when the chicks arrived at the open stretch of sand between the colony and the water's edge something extraordinary happened.

By now they were out of any occupied territory, yet the attacks continued. Adult birds continued to peck at them, and to trample them underfoot. Sometimes the birds at the shoreline were so aggressive they even attempted to copulate with the escorting parent which is more often than not thought to be the father.

~~The~~ Some attacks continued even into deeper water when the chicks were starting to form into the crêches.

8. CHICKS FEEDING;

But all the while more and more chicks were walking down to the water's edge, sometimes as many as two thousand in a day, and a day or two after hatching commenced, the attacks ceased.

I dont recall this.

The day old chicks immediately begin to feed themselves from the shallow water. They must be hatched into an environment where food is readily available and in vast numbers, which is why the brine shrimp are of such vital significance in the Banded Stilts' life, and why Lake Ballard is one of few places where it is possible for these birds to breed.

one of the reasons

9. CHICKS IN CRÊCHES WITH ADULTS;

Once in deeper water the chicks form into larger crêches, sometimes numbering as many as two hundred. Some adults will always remain with the creche chicks to protect them against predators. Once again these birds are thought to be the males, adults will protect chicks which are not theirs, perhaps an attempt at a form of co-operative breeding.

usually 20–50 but

and presumably enhance their chances of survival.

this frees the females for subsequent nesting ?

On Lake Ballard the guard was unnecessary for virtually nothing came to predate upon the tens of thousands of chicks that were now spreading over the lake. Ballard is so remote and fills so seldom that nothing else can take the long term risk of breeding here.

?

10. AERIALS LAKE BALLARD;

The crêches of chicks with their few protective accompanying adults vanished into the vastness of Lake Ballard, blown by the prevailing winds, all the while feeding upon the shrimp.

the comments about "protection" are in conflict with the last sentence of 2.5, which says "they make no attempt to defend their chicks from predators".

A four-page memorandum from Andy Chapman to JL with a detailed summary of the observations he (ACh) made during aerial surveys of 06/6/1995 [or was it 12/6/1995?], 14/7/1995 and 22/8/1995 and a brief ground visit to Lake Marmion on 10/8/1995.

Inter alia makes reference to two Wedge-tailed Eagles and one Kestrel on Lake Ballard on 14/7/1995.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form CLM 80A

To: JIM LANE

From: ANDY CHAPMAN.

..................19............

or was this flight on 12/6/95 ?

[signature] 10/01/14

Your Ref:
Our Ref:
Enquiries:
Phone:

but see Vol 1, folio 140? did Ballard chase? Compare memo date

Subject: WATERFOWL FLIGHTS. P.1.

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

LAKE MARMION (ONLY)

1×2 MD +1 +2 +2

1×6 B.st. + 30 chicks

1×6 B.st. + 160 chicks

1×50 GT

1×20 B.st.

100s adult B.st w/- 600–700 chicks.

(Island Archipelago.)

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

1000's adults w/- chicks (inclusive)

1×2 Emu

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

(W. arm)

20 × 5–6 groups of chicks some w/o parents.

Nesting colony site.

chicks w/o adults

Adults w/- chicks no major creching here cf. Lake Ballard

1×3, 1×4 GT.

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

100s birds flying – eastern arm

500 Adults w/- chicks

E77036/8/90-500Pds-L/5253 (Recycled Australian Paper)

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

57.

Form CLM 80A

To: ..... From: .....

....19.....

.....

Your Ref:
Our Ref:
Enquiries:
Phone:

Subject: P. 2

14/7/95 LAKES BALLARD & MARION. W/- K.P.J. / G.Y

LAKE BALLARD.

1x GT

1x2 MD

1x WTE Wedge-tailed Eagle

1x 20-25 GT

2x1 UNID WADER

1x100 GT +100

1x2 B.St.

1x 1,500 B.St flying lake centre

1x 4 GT

1x Kestrel

1x30 GT

1x50 UNID WADER ? Re DOTTEREL

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

1x 70 RN Aoocet

1x2 MD. +2

1x100 RN Aoocet

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 Aoocet

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

few GT, RN Aoocets, B.St. breeding colony site camp island

BALLARD
traverse #1.
E → W south shore.

BALLARD
traverse #2
W → E.
N. of S. shore

BALLARD
#3.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form CLM 80A

To: ..... From: .....

..... 19.....

.....

Your Ref:
Our Ref:
Enquiries:
Phone:

Subject: P.3.

Traverse # 4 N. Shore of BALLARD — nothing further

On Lake Marmion pause button on recorder was depressed but my 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 & MARMION w/- W.R., P.B.

PIPER WARRIOR

BALLARD :-

1 x 12 GT

1 x MD + 1 x 2 MD w/- B/4

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

western end of lake - dry.

1 x B.St +10

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

1 x 4,000 B.St " " " " } #2.

1 x MD. 1 x 3 GT.

1 x 10 RN Avocet, 1 x GT, + 2 x 2 GT w/- B/3. - camp is on } #3.

1 x 12 " " 1 x 20 GT, 1 x 2 GT + 1

1 x 8 GT

1 x 1,500 B.St. eastern end of lake } #4

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form CLM 80A

To: ..... From: .....

....19.....

.....

Your Ref:
Our Ref:
Enquiries:
Phone:

Subject: P.4. .....

.....

LAKE MARMION - -

N. ARM dug.

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 + gear from Lake Marmion 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.

One page of notes by JL recording his phone conversation on 15/7/1995 with Andy Chapman concerning observations made by ACh during his aerial survey of Lakes Ballard and Marmion on 14/7/1995.

Inter alia reads: 'He [ACh] saw a few Wedge-tailed Eagles – mainly on [Lake] Ballard'.

Cindy Clymo's flight over Bellend & Marmion on Fri 14/7/95

as advised to me (J.L.) by telephone on Sat 15/7/95

He did 4 passes over Bellend.

- 6-7000 Best all flying
- no further reading

Over Marmion

- 20-25,000 (ie 2-2,500) with 10% chicks not flying "but allowed up"
- no sign of further reading
- gear still there (trailer with Rego)

Flt time was 3 hrs in Fiji Warrior = $630 in toto.

Other observations

+ HL saw a few Wedge tailed Eagles - mainly on Bellend

- 1000's of Teal
- a few Shield
- c 100 Avocet now Breeding Island No 2 (next to Carp Island at Bellend)

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 reads [all in relation to Lake Marmion] 'Drove up [in Argo] behind creche of 30 [BaSt] chicks and ran all down placing them in a nally bin ...' [This demonstrates how Aborigines could have easily captured BaSt chicks in shallow water in the past]; 'peregrine Falcon flew low over colony putting flock of BaSt on the colony to flight'; 'Wedge-tailed Eagle ... sat and watched'; 'Chapman [ACh] reports that the [Wedge-tailed] eagle was present on the colony at 1400[hrs] when [he] flew the area ...'.

154
155

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

Date: 19/6/95

To: Jim Lane

At: BSD

From: Grant

No of Pages: (including face sheet)

Message: Copy for Your consideration + queries
Thursday
Cheers
GP

Re visit by Bellard + Morrison from
8 – 13 June 95

(1)

(Thurs)

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

(Tues) (Fri)

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

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

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

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 Jeedamya. 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 recconoitre.
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)

1ST
152

Need to confirm ACh departed on 12/6 JR 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
5 young 1 adult

	weight	metatarsus	bill total head		wing	oesophagus	gizzard		teste
number	wt(gms)	mt	th	b	w	Oes	giz	sex	t
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	ℓ 17.2
									r —

brood patch yes Band strong belly 80%

Family 3 Depth 3cm
2 young 1 adult

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
3 young 1 adult

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	
								l	15.5
								r	10.4

Brood patch yes Band full Belly 100%

Family 5 depth 9cm
2 young 1 adult

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		ℓ 14.4
Brood patch yes Band full Belly 100%									r —

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)

49.
150

In large groups of adults there were 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

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

Inter alia the program refers to: 'Other Tasks: make notes of any predator/scavenger activity you see' and 'If too shallow for boats, note that Mark [Lamble] found [Banded] Stilt very shy of people on foot but very accepting of Argo [6 wheel amphibious vehicle].

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

145.
146.

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

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

AT: WRC

Fax No. .....

FROM: J.C.

DATE: 7/6/95

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

Revised program — phone my me when have read.

No. of pages inc. this page: 6

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

REVISED PROGRAM

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

Thurs 8 June

Grant Fearson 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 Jeedamya 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]

44.
147.

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

FAXED

TO: ANDY CHAPMAN **URGENT: YES / NO**

AT: KAL

Fax No.

FROM: JIM C.

DATE: 8/6/95

Your Ref:
Local Ref:

Revised program — for info.

Thanks for the "flight report" — very good info collected.

No. of pages inc. this page: 5

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

REVISED PROGRAM

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

Thurs 8 June

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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]

(1) 142; 145.

GRANT: REVISED LIST OF SOME ODDS AND ENDS REQUIRING ATTENTION

* Is the leg flag glue at Woodvale (if not, it is on Camp Island)? You should obtain another tube in any case as the first tube probably won't do more than 50-100 flags.
* I have mailed Australia Post to you a bag of leg flags, two plastic weighing cones & your pocket radio.
* Banding pliers in dissecting box at Woodvale? I think pair also at Ballard (Camp Island or in trailer).
* 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
* You should have received copy of fax from Mark to me concerning his last trip and location of Argo keys etc. Note that ABC tent has gone back to Melbourne.
* Andy Chapman has one tyre from trailer in Kal (was flat, now fixed).
* 10' punt from Bsn is bungless.

REVISED PROGRAM LAKES BALLARD & MARMION JUNE 1995

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

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

144. (2)

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^2) can be determined.
* photograph island and nesting area.
* sample dominant plant species.
* measure diameter & depth of a scattered sample (20-30) of nest scapes.
* 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:

* ACl 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, ACl 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.

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

* when find chicks, have GP, ACl & ACh in 12' punt towing 10' punt.
* have Nally bin with towel (at camp) in bottom to keep chicks dry/clean.
* Initially at least, ACl 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)
* ACl & 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.

~~139~~. 142. (4)

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.

---

(107)

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

TO: GRANT PEARSON URGENT: YES ~~NO~~

AT: URS

Fax No. .....

FROM: J.C.

FAXED

DATE: 7/6/95

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

Revised program — phone me when have read.

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

Th Fr Sat Sun Mon Tues.

(1)

(106)

GRANT: REVISED LIST OF SOME ODDS AND ENDS REQUIRING ATTENTION

No ordered more

* Is the leg flag glue at Woodvale (if not, it is on Camp 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.

* Banding pliers in dissecting box at Woodvale? I think pair also at Ballard (Camp Island or in trailer).

* 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).

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* You should have received copy of fax from Mark to me concerning his last trip and location of Argo keys etc.

Note that ABC tent has gone back to Melbourne.

* Andy Chapman has one tyre from trailer in Kal (was flat, now fixed).

* 10' punt from Bsn is bungless. Bo Lil

REVISED PROGRAM LAKES BALLARD & MARMION JUNE 1995

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

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Fri 9 June

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

(2) 105

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)

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* sample dominant plant species.
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* 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.

(3) (104)

Collecting Methodology:

* ACl 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**).
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* 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
913 Belly
Bill Brood patch
Head+B Oes
MT 913
Wt Sex
~~Wing~~
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, ACl & ACh in 12' punt towing 10' punt.
* have Nally bin with towel (at camp) in bottom to keep chicks dry/clean.
* Initially at least, ACl driver, GP catcher and bander/flagger, ACh flagger
* **band on right tibia** (i.e. above "knee") and **flag on left tibia** every chick.
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* 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)
* ACl & 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.

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.

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, 'They [2-3000 adult BaSt] all departed when a wedge tailed eagle flew in [to the main breeding island on Lake Ballard, on 12/5/1995] and landed on the breeding island'; 'Interspersed with the [BaSt] chicks [near the western end of Lake Ballard] 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' and 'If the birds [BaSt] 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'.

A map of where the stilt chicks were is attached (and where they camped and the vehicular route to it).

JL faxed a copy of this fax to CDTM on 06/06/1995. See also JL's jottings on 05/6/1995 (and 18/5/1995) concerning ML's observations of 09-17/5/1995.

12t.
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 ← 1st June 95
Pages including this cover page: 5

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 Jeedamya 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).

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.

south side of Crossover Lake.

3 wheels only.
The key is with Andy Clayman

Comment take another long cord?

120.
132.

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.

from

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

North-West

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.

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 NW variable strength.

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

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

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 say 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.

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.

118
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.

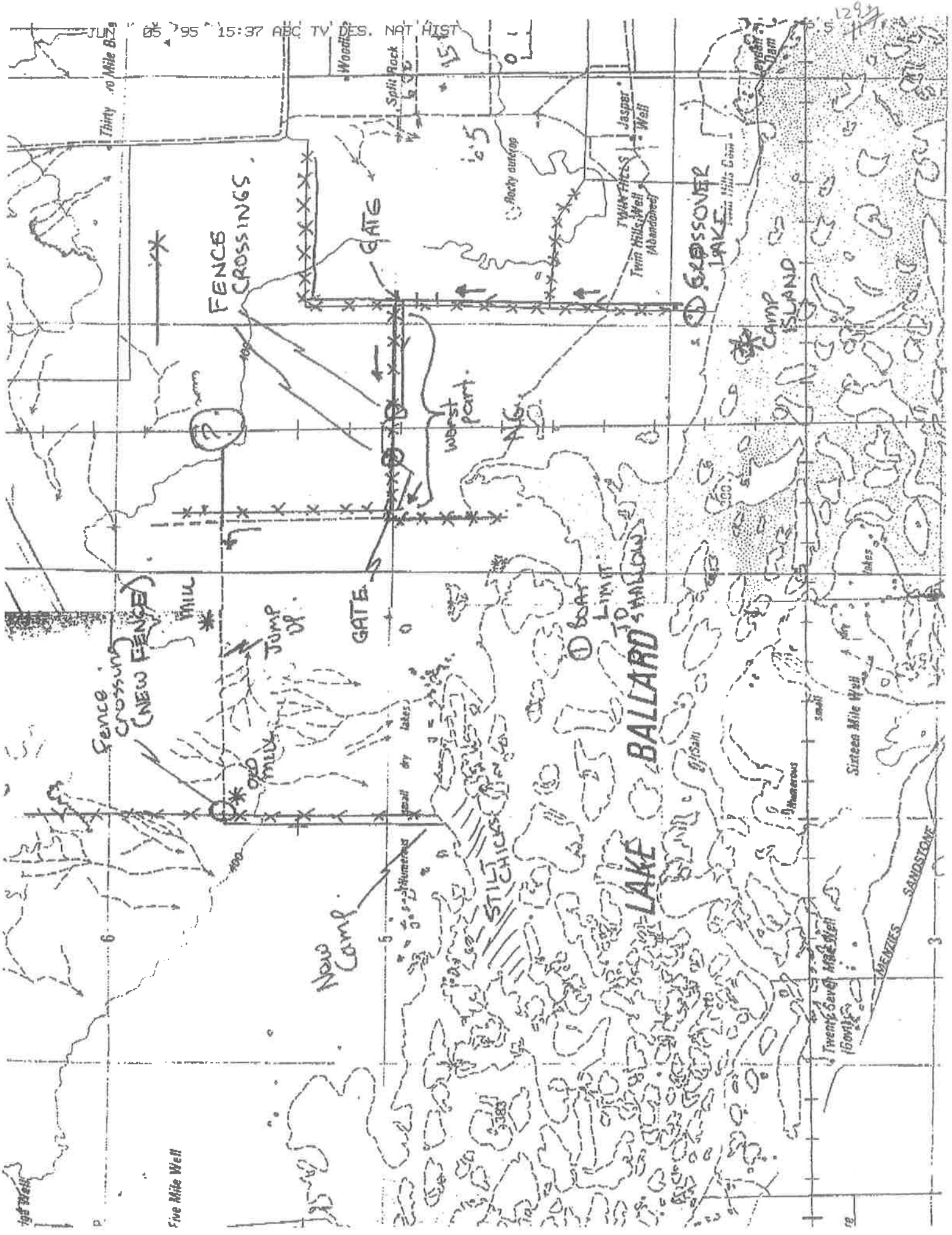
Best of luck on your next trip and if there is anything I can do to help you please don't hesitate to contact me via our fax number as I am working very odd hours at the moment and out more often than not.

Regards

Mark Lamble

Mark sent Argo would be good catching platform Also good for herding chicks where should from

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


Thirty Mile Bar
Woodies
Split Rock
Jasper Well
Geyser Dam
Rocky outcrop
Twin Hills Well Abandoned
Twin Hills Dam
GLASSOVER LAKE
CAMP ISLAND
FENCES
CROSSINGS
GATES
Worst part
GATE
Fence Crossing (NEW FENCE)
Mill
Jump Up
Old Mill
BOAT LIMIT
SHALLOWS
LAKE BALLARD
STILT CHICKS
Numerous
small dry lakes
Gypsum
Sixteen Mile Well
Lakes
New Camp
Twenty Seven Mile Well
MENZIES SANDSTONE
Five Mile Well

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: 'Cat coming down sand dune & birds running away'.

See also jottings of 18/5/1995.

5/6/95 Mark Lepkle

Moved them up with Argo on heart ground c 1 person.

5/6/95

* Both columns were empty.

130.
120.
119

Conditions changed day to day.
— wind direction
water condit.

>6cm firm for argo

3 june flying — date + place

Kerry — with Jenna

boat — CALM depot

If water supports weight — OK
> 1km away.

New camp — 2 days — big sand dune - visibility for c 2 km.

Birds v.v. flighty to people → 1 km +

Argo film platform.

Cat coming down sanddune + birds running away!

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

at least 2 thousand
birds on that Island!
— they filmed it.
over 2 1/2 - 3 hrs.

Adults interspersed + come and went.
↓
No strict creches
- loose groups - all diff stages.

— No Artemia near New camp, V. thick around breeding island.

c 2 hrs towing trailer from Cowan Lake to New Camp when you have done it once.
60 km / hr in good stretches.
3 lakes to cross then camp 500 m from Lake

Birds marched E during day
+ west at night.
2-3 cm depth
Chicks are walking not swimming

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'.

The draft program includes: 'make notes of any predator/scavenger activity you see'.

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'.

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

127 125

TO: CLIVE MENTON **URGENT: YES / NO**

AT: MELB.

Fax No. .....

FROM: JIM LANE

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

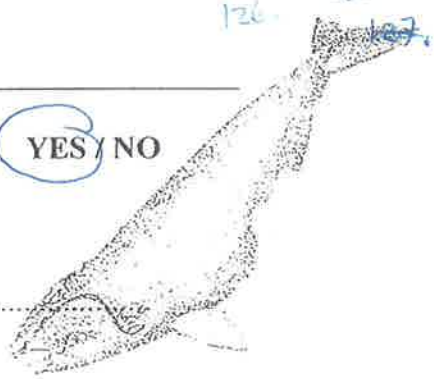
No. of pages inc. this page: 5

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

Jim

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

123.
126. 127.



TO: ANDY CHAPMAN **URGENT** YES / NO

AT: KAC

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

FROM: JIM LANE

DATE: 2/6

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

Accompanying is a draft Work Program for comment (if any) from Grant, Clive + yourself - Pls contact me if any questions.

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

126 & 124.

TO: GP. **URGENT:** YES / NO

AT: WRC

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

FROM: J.L

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

Re Bellarb — Draft.

No. of pages inc. this page: 5

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

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).

cassette recorder.

Extra

* 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, ACl 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.
123.
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 — Bronsmer Lake notes slight

Collecting Methodology:

* ACl 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 separately in 70% alcohol with label (Adult 1, Chick 1a etc **plus date**).

Each — Don't Date!

* while GP & ACh do the above, ACl 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 bungless.

Odds + sods.

Banding and Flagging Methodology

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

* have Nally bin with towel (at camp) in bottom to keep chicks dry/clean.
* Initially at least, ACl 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)
* ACl & ACh can advise on the most efficient
* If you run out of bands (unlikely), continue with flags only.
* record band numbers used 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^2) 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?).

Jottings by JL recording message (18/5/1995) from Jeremy Hogarth with some of the observations made by Mark Lamble near the western end of Lake Ballard earlier in the month, including: 'no predators except uid [unidentified] raptor'.

See jottings of 05/6/1995 and fax of 05/6/1995 for more details.

~~43~~
115.

Message from Jeremy Hogarth Th 18/5/95 at 1310 hrs

(Mark + Cam) flew around 1000's of chicks – at least some near flying stage

– 70 k from Iceland

– ~~out~~ Mark will fly to Mill Sat

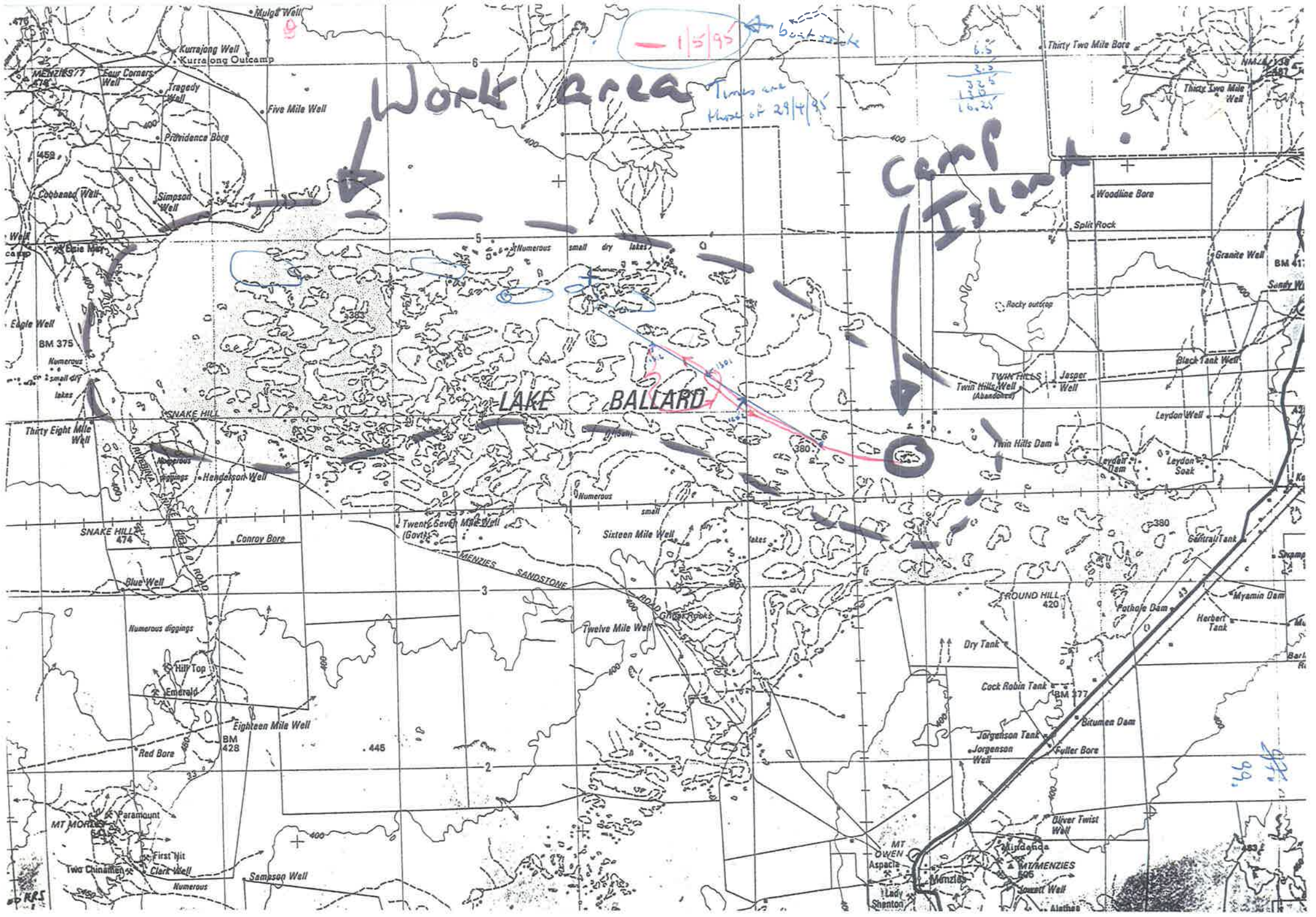
– Will fax his maps / notes to me next week and may me

– they biggest the Cargo many times

– no predators except sea raptor

– caught one banded chick – didn't get number but did record date, time, location

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 ... (CHECK). and 'times [1252, 1301, 1312hrs] are those of 29/4/95' and a distance (presumably) calculation. There are also six hand-drawn circles near the north (western) shore of the lake and a straight line (indicating?).


Work Area
Camp
LAKE BALLARD
Mulga Well
Kurrajong Well
Kurrajong Outcamp
MENZIES 477
Four Corners Well
Tragedy Well
Five Mile Well
Providence Bore
Cobbanld Well
Simpson Well
Eagle Well
BM 375
Numerous small dry lakes
SNAKE HILL
Thirty Eight Mile Well
Henderson Well
Twenty Seven Mile Well (Govt)
Sixteen Mile Well
Twelve Mile Well
SNAKE HILL 474
Conroy Bore
Blue Well
MENZIES SANDSTONE ROAD
Numerous diggings
Hill Top
Emerald
Eighteen Mile Well
BM 428
Red Bore
Paramount
MT MORGAN
First Hit
Two Chinamen
Clark Well
Sampson Well
Numerous
Thirty Two Mile Bore
Thirty Two Mile Well
Woodline Bore
Split Rock
Granite Well
Rocky outcrop
Black Tank Well
TWIN HILLS
Twin Hills Well (Abandoned)
Jasper Well
Leydon Well
Twin Hills Dam
Leydon Dam
Leydon Soak
Central Tank
Potholes Dam
Myamin Dam
Herbert Tank
ROUND HILL 420
Dry Tank
Cock Robin Tank
BM 377
Bitumen Dam
Jorgenson Tank
Jorgenson Well
Fuller Bore
Oliver Twist Well
MT OWEN
Aspacia
Lady Shenton
Menzies
Mindarnica
MT MENZIES 505
Jowett Well
Alethea
6.5
3.5
3.25
1.30
16.25

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 Ron shared details of his aerial survey (with Phil Stone and Nick Kolichis) for breeding BaSt on 07/04/1995 and their subsequent ground visit to Lake Ballard, in kayaks, which JL recorded as being on 12/04/1995 but couldn't have been, given date (11/04) of phone conversation [It was on 08/04/1995 (JL 16/3/2014)] .

Inter alia the notes read: 'Hoard of crows came off 2nd [BaSt breeding] island at [Lake] Ballard. Wedge-t [Wedge-tailed Eagle]'.

(2) 71. 72.

2000 pairs on
– 3000 pairs on 2nd barely island.

– eggs for variation for handbook.

– get birds – just a trace of band & were marked – collected small series. (2 clutches + ?)

– food – chicks fanning small creeks – 5 chicks dead, 2 just alive – others were perched & too much to return.

Phone call from Ron Johnstone 11/4/95 (P) 72. 73.

Ron Johnstone
Phil Stone (Mermaid) & his caravan.
Nick Kolichis

Flew on 7/4/95 Mermaid, Bedout, & Bedee Roseside (central) central area

Noticed Mermaid 1000 birds feeding parties.

3 km west – on ground

another further west – order of couple of 1000 birds.

small colony in [illegible] arm of Bedee.

has notes from. (4) 69. 70.
John Darnell – Port Hedland
50–60,000 80% incubate

(12/4/95)
and one day only on Bedout
– targets (single)

–

Handbook – take this

Phil Stone took "video CAM"

They took photos

Cold squalls.

Creches of 50–100 birds.

(3) 70. 71.

(a) nest scrapes – please measure
10–12 scrapes + distance apart.

(b) collect chicks at various stages. – fridged – plastic bags.

(c) collect eggs from groups

formed fresh

– partial banded bird rolled egg back to (a) large cluster
(with foot) tried to sit on it.
~~(Foot of 210g) (broadcast~~

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

Hoard of
Crows came off 2nd island
at Ballard

Wedge L.

Baker Lake
Central Cam

29°07'56" S

119°32 20

1000 birds.

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

Mammi – mostly near N end – or of
Bay 3 shaped island (viewed
marker → 427 2739. from N).

---

(6) 67. 68.

West end of Ballard

Simpsons Well

2 [illegible] + [illegible]

Will check his lat + longs
+ fax me if incorrect.

Handwritten notes by JL headed 'Grant's [GBP's] Tasks Sat 8 → Tues 11 April 95'. Inter alia they read: '[Item] 11: Record any predator activity'.

GRANT

TASKS FOR SAT 8 → THES 11 APRIL 95 INCL.

1. Find 5 distinct families of DAST 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 ~~a second protective~~ 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 sampling 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 creching (unrelated families of chicks grouping together).

12. Transcribe your aerial survey tape

→ 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 salinity, top only for total P and pH and turbidity) Do standard swipe (invertebrate) 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 veg. samples from breeding island

7. While boating ~~~~ between the two breeding islands, measure depths and record positions (preferably with compass and regs on plots).

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 1–1½ hr on each survey. (I have seen GytL, PcaD, ShcL, PaBD, MusD, MarD, BSiD, Swan, Coot, MtkGb, WfHr on the Lake).

9. Noone should walk through or otherwise disturb breeding area which has chicks. No banding of chicks (too small).

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

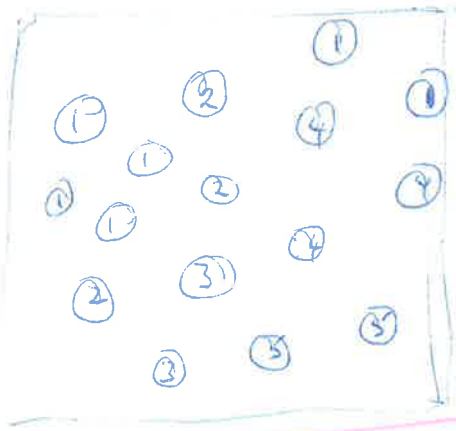
11. Record any predator activity

One (*Folio 54)* of fourteen small pages of notes by JL on red 'Shellabear & Son' note paper (which suggests to JL that he was in transit in Perth when he made these notes). Folio 65 has the following written on it: 'These notes made in preparation for 2nd visit ([proposed to be in] March 95), JL 14/5/96'. The pages are numbered as file *folios 65-52*.

***Folio 54* has a sketch labelled '15/3/95' that appears to show the number of eggs in each of a number of nests in a hypothetical quadrat on that date. Underneath is written 'If no predators and eggs don't roll out, no problem. If predators, need to be able to identify which eggs predated versus which eggs hatched'.**

54

15/3/95



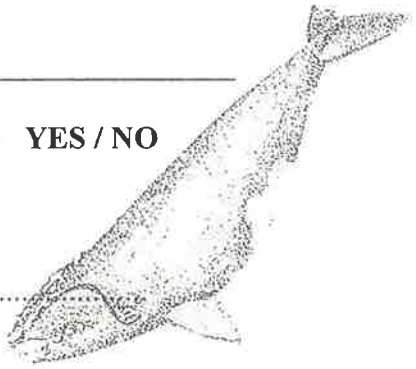
and eggs don't roll out

If no predators, no problem.

If predators, need to be able to identify which eggs predators ate & which eggs hatched.

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.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
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 tab 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 ~~1987~~ 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. Tinton) ~~following discussion with Tinton~~

Background

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

The initial visit by Jim Lane, Grant Pearson, 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 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.

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 decided to make a half hour documentary then this will provide further dissemination of the information gained of this spectacular Banded Stilt breeding phenomena.

References

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

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 lists '... specific parameters which should be studied / measured / assessed', including: '(k) Predator activity – at the colony and subsequent on chick creches'.

CDTM also writes: 'It is important also, from a conservation viewpoint, to assess the predator impact at a Western Australian [BaSt] breeding colony. Historical information suggests this has in the past been very low. However ...' (CDTM goes on to describe the impact of Silver Gulls on BaSt eggs 'and some chicks too' at Lake Torrens in South Australia in 1989).

See 20/3/1995 for a typed copy of this draft manuscript.

14/3/95

DRAFT (1)

Banded Stilt Research Programme – Lake Ballard March/April 199

Background

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

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(2) 5.

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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 + lay the foundations for future survival measurements - and to determine the factors governing these.

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(3) 4.

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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 + commencement of incubation (and egg protection prior to incubation)
(d) Clutch size and nest density
(e) Incubation period + the sharing of incubation duties
(f) Hatching success (related to clutch size eg. can they successfully hatch 5 egg clutches?)
(g) DNA analysis of clutches (especially 5 egg ones) to assess egg dumping / ex pair copulation frequency
(h) Creche formation - initial formation and development over the fledging period
(i) Fledging success
(j) Re-nesting attempts
(k) Predator activity - at the colony and subsequent on chick creches
(l) Food availability / water level / salinity
(m) Dispersal after breeding (by banding/colour marking adults + chicks)
(n) Survival / Mortality rates (by banding / colour marking of adults + chicks)
(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 incomplete 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.

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

The breeding event is likely to continue until the end of April, and longer still if any renesting occurs.

Publication

Results should be published in both the scientific literature (eg 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

Two pages of notes by JL headed 'Telephone Discussion with Clive Minton (at Kalgoorlie) on Monday ... February [1995] (± 1 day)'. Is February correct? Or was it March? The notes 'all on one egg today?' and '15 days since' suggest this conversation was on the day of the first aerial survey in 1995, i.e. on Sunday 12/03/1995.

In relation to predators/scavengers, these notes read: 'get in before predation (gulls)'

This appears to have been one of CDTM's thoughts in relation to work that should be done / started on the day of the first visit to the main BaSt colony on Lake Ballard, i.e. on 15/03/1995 (helicopter trip.

Telephone Discussion with Clive Minton (at Kalgoorlie) on Monday – February (± 1 day)

– incubation period

– assess productivity of pairs at Bedout – Barlee –

– mark 100's eggs (incomplete clutches) to follow up

– get – before predation (gulls)

– all on one egg today? or on full clutches. – 15 days since

– all – breeding plumage or not yet.

– Cindy Clayson can't

– or Helicopter Jet Ranger on Wed (whole day)

$685 / hr (1 hr – in and out)

8 hrs.

– carry 4 people – + ladder +

- sit + observe
- more eggs
- photos

Prospector Marana Park

Plane Grant at 7am

Qantas

~~$~~ 6am or 7am Ansett

Ansett 4pm or 8pm Ansett.

~~$320~~ ~~$660~~

$700
.640
700
2,040

M