

# Jim Lane's Field Notebooks Index Contd.

(Revised Index of 11/5/2014)

| <u>PDF Name</u>  | <u>Book Label</u> | <u>Approx. Span of Dates</u> |
|------------------|-------------------|------------------------------|
| JL_(1992 on)_15  | 15                | (29-04-95 / 17-05-95)        |
| JL_(1992 on)_16  | 16                | (18-05-95 / 18-12-95)        |
| JL_(1992 on)_16A | 16A               | (08-11-95 / 11-11-95)        |
| JL_(1992 on)_17  | 17                | (21-12-95 / 19-06-96)        |
| JL_(1992 on)_18  | 18                | (19-06-96 / 03-08-96)        |
| JL_(1992 on)_19  | 19                | (23-09-96 / Mar 97)          |
| JL_(1992 on)_20  | 20                | (Mar 97 / Apr 97)            |
| JL_(1992 on)_21  | 21                | (16-04-97 / 12-06-97)        |
| JL_(1992 on)_22  | 22                | (12-06-97 / Oct 97)          |
| JL_(1992 on)_23  | 23                | (Oct 97 / Dec 97)            |
| JL_(1992 on)_24  | 24                | (Dec 97 / Jan 98)            |
| JL_(1992 on)_25  | 25                | (10-01-98 / 22-01-98)        |
| JL_(1992 on)_26  | 26                | (22-01-98 / 13-02-98)        |

TO BE CONTINUED

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| JL_(1969-70)_1  | '1969-70'         | (Nov 70 / Jan 70)            |
| JL_(1970-84)_1  | 1970-71           | (6-12-70 / 17-2-71)          |
| JL_(1970-84)_2  | 1971              | (08-03-71 / 21/01/72)        |
| JL_(1970-84)_3  | 1972/73           | (24-01-72 / 15-02-73)        |
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| JL_(1970-84)_6  | 1973-74           | (03-12-73 / 28-03-74)        |
| JL_(1970-84)_7  | 1974-76           | (03-05-74 / 24-10-75)        |
| JL_(1970-84)_8  | 1974              | (26-05-74 / 18-11-74)        |
| JL_(1970-84)_9  | 1974-76           | (28-08-74 / 02-10-76)        |
| JL_(1970-84)_10 | 1974-76           | (21-12-74 / 25-01-75)        |
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| JL_(1970-84)_12 | 1977-78           | (16-10-77 / 21-03-78)        |
| JL_(1970-84)_13 | 1977-78           | (24-10-77 / 19-04-78)        |
| JL_(1970-84)_14 | Oct 78-Apr 79     | (06-10-78 / 14-04-79)        |
| JL_(1970-84)_15 | 1979 (Apr-Sep)    | (16-04-79 / 19-09-79)        |
| JL_(1970-84)_16 | 1979-80           | (26-09-79 / 23-05-80)        |
| JL_(1970-84)_17 | 1980              | (14-05-80 / 07-11-80)        |

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| JL_(1970-84)_17A | 1980-81           | (01-12-80 / 15-11-81)                  |
| JL_(1970-84)_18  | 1982-83           | (13-03-82 / 18-03-83)                  |
| JL_(1970-84)_19  | 1984              | (15-03-84 / 16-03-84)                  |
| JL_(1970-84)_20  | 1984              | (20-09-84 / 10-10-84)                  |
| JL_(1992 on)_1   | 1                 | (03-11-92 / 03-08-93)                  |
| JL_(1992 on)_2   | 2                 | (04-08-93 / 18-09-93)                  |
| JL_(1992 on)_3   | 3                 | (18-09-93 / 26-10-93)                  |
| JL_(1992 on)_4   | 4                 | (27-10-93 / Dec-93)                    |
| JL_(1992 on)_5   | 5                 | (14-12-93 / 22-12-93)                  |
| JL_(1992 on)_6   | 6                 | (23-12-93 / 06-01-94)                  |
| JL_(1992 on)_7   | 7                 | (18-01-94 / 18-03-94)                  |
| JL_(1992 on)_8   | 8                 | (21-05-94 / 08-07-94)                  |
| JL_(1992 on)_9   | 9                 | <sup>08</sup><br>(03-07-94 / 02-09-94) |
| JL_(1992 on)_10  | 10                | (02-09-94 / 17-11-94)                  |
| JL_(1992 on)_11  | 11                | (22-11-94 / 9-03-95)                   |
| JL_(1992 on)_12  | 12                | Jan '95 + (15-03-95 / 01-04-95)        |
| JL_(1992 on)_13  | 13                | (02-04-95 / 07-04-95)                  |
| JL_(1992 on)_14  | 14                | (07-04-95 / 29-04-95)                  |

67.59

50837

J. Lane

No. 19



# NOTE BOOK

No. 561

23521'96 → March '97



Mon 23/9/96

Jury Imbeger

(address at INTECOL  $\frac{V}{1}$  Workshop  
Conference in Reth)

Dennis' Town - Th

16 + DM (drive)

School bus (21 seats)

2 WD.

Afternoon with me.

Participants

Allen Hill, Fenger, ES

Israel, SR AF., Malletts 3

2 Gurney, Nelson

Tennant.

\* 1 weller <sup>only</sup> 500 - 1000 m. ♀

Max time: 1 pm → ~~4 pm~~  
or 5 pm.

Say: 4 hrs.

no a/ tea provided by Dennis.

Publi gathering at 6 pm - \$7 for BBQ pack  
for me.



Mitsch

Wetland. My 11.10.20

<sup>a</sup> Global Distribution of Wetlands  
map by US Agric Dept.  
18.8 x 10 km

Ab (Source: USDA 1996) for wetland  
Intact, impaired, organic, sub-aquatic  
permanently affected, portion of  
values  $\leftrightarrow$  human connection

Threatened + endangered species  
associated with wetlands (at some  
time in their life)

N<sub>2</sub>, Sulfur + Carbon cycles  
- temper - moderate

"ecosystem productivity"

Mitsch

Mitsch, M. 11.2.2

"Global Distribution of Wetlands"  
map by US Agric Dept.  
18.8 x 10 km

Al (Source: USDA 1996) for wetland

Intact, riparian, organic, salt affected,  
permeable affected, wetland of

values  $\Leftrightarrow$  human connection

Threatened & endangered species  
associated with wetlands (at some  
time in their life)

N<sub>2</sub>, Sulfur & Carbon cycles

"Threatened & Endangered Species"



(6)

Det. M

Bill Mitchell

Dryland area  $\rightarrow$   $< 500$  mm/year

typical area 2.0 m<sup>2</sup> per  
 $\times 10 \times 8.81$

Labels of old river valleys of western WA

(Cordilleran land age)

(70 million years)

These very ancient wetlands -

David Deeley

chose indicators where there

is a known / documented link

between glacial activity & sea

level response.

"range finding experiments"

Richard Kingfish

1990 - 90-100,000 pelicans  
bred on Lake Eyre - largest  
breeding colony ever recorded in  
Australia (of pelicans)

> 300,000 on Lake Eyre  
in Dec 1990  
(estimate 450,000)

65 wetlands in central Australia  
support more than 10,000 birds.



Pierre Horowitz

Lebre Synprose.

(ex-cc) mud depth "c. 0.5m"

clear (untreated) water.

pH 3.2  $\rightarrow$  3.7 (of water)

acidic (pH 3.4) mud / water.

98 over screening + deposits

9W. high + Radio values (360-460)

98 0022 RP-SP millivolts

lebre + basin = c 20 ha.

3 principle areas of great

associated

fire in 1985 then 1994.

1994 - 10,000 ha approx 008E -

October.

Dec 1994 fire declared extinguished



(10)

March '96 study of soil

- soil (peat) loss
- cracks in peat? soil
- "pedestals" of soil (30-40 cm high)
- ... (humus) soil

Radiocarbon Dates - S.E. Hg

| Depth (cm) | Depth (cm) | Date    |
|------------|------------|---------|
| 0-22       | 2-5        | 310 BP  |
| (22-45)    | 53-56.5    | 5400 BP |
| 45-100     | 92-95      | 5600 BP |

... 0.5% ...

- initially rapid ( $> 5000$  ybp)  $\Sigma$
- at 1 to 1.5 cm per century over the

last 5000 years BP

- 3800 years worth burnt at one site.
- average across all sites = 1500 years

... worth last ...

- soil loss subject matter
- structural change - cracking, ashing  
+ burning  $\rightarrow$  compaction loss

perthlands  $\rightarrow$  moist all year round  
microclimates - - burning -  
leads to increasing acidity in  
this part of continent

- gondwanaland relicts
- high levels of endemism
- high beta diversity

Future management needs  
only known if ---

Gondwanian = distinct (\* other states)  
for burning = relative to perthlands



(12)

Daren Ryder and Lee -

probes, probes - great students -

Bohannon & S. - probes +

spec to depth c 3 m below sq

- fines - produced clayed

in conditions where accretion

of organic matter is not

longer occurring +

studies and mapping -

instruments for depth of soil -

probes and soil -

when the ground is not

of soil -

(at the bottom of the) - accretion

structure of soil - ground -

14

" An overview of the World's  
Renewable Sites "

Worldwide International

by Scott Freager -

get a copy .



14/10/96

Left Bsn at 0725 hrs.

End of Lehigh Rd (N side of Delaware  
Channel - at 1525 hrs.

100 (90 counted) Ben Shurt

2 Large Sand Dollar

3 Red-capped Plover

1 Greater Scaup

Feeding at water's edge.

1535 hrs - c35 pelicans (29 counted)

on bank well in area to be filled

on N (Lehigh) side of Delaware

Channel - add these to total

from survey conducted earlier

this afternoon. Wind now

moderate  $\rightarrow$  strong from S.

(16)

Mon 14/10/96

Ward Pt 4.04 - 4.13 pm

Caspian Tern - 9

Petrel - 4

Crabbed Tern - 6

Darter - 2

SIGI - 3

CyPI - 3 + 6 - most had large amounts of blood on bellies

LiPE - 1

Rens - 8

LSP - 2

Fairy Tern - 4

All roosting at Ward Pt

Back at vehicle (walked S along shoreline)

@ 1417 hrs - no birds along this short sandy stretch of shoreline (or on adjacent shallows)

Perth at 5.50 pm.



Wed 16/10/96 Ran out of

tape (cassette) at Pt Birch.  $\Rightarrow$   $\searrow$

1536 pm midway down E  
side of Robert Bay

14 Peep

9 Pens

82 Swan

6 Shel

22 SIGI

140 Swans - down

40 Shel - "

9 Pel - "

8 SIGI

large walkers

(18)

Drainage

16/10/96  
contd

Rins - 21

Red CP - 100

Waders - c 330

- 30 St Sp
- 10 Curlew Sp
- 40 Red & Green
- c 250 Plover

P.O. - 2

G. T. - 2

Shov - 1 ♂

Shel 19

S. Gl c 10

4.32pm 50 ~~18~~ S. Gl

2 Shel



(19)

16/10/96 contd

Svens 6 + 2

WTH 1 + 2

Little Egret 1

Greenlets 3 + 4

PABD 2

Gyre 2

At vehicle at 4.46 pm

(ie. end of survey of Robert Bay -  
last part of SE Peel Inlet  
survey by foot)

←

W2

End of survey

(20)

Thurs 24 October 1996

- Pontegrylle sewage to overflow into estuary?
- Water discharging from site via pipe into estuary.

Vasse Estuary floodgate gauge  
read  $+0.31$  m ( $\pm 0.005$  m)  
at 1715 hr. Water level  
below all stop boards except  
at "gateways" 7 and 8 ~~from~~  
(numbered from S to N) where  
one board missing from each end  
water pouring out.  
Wind light SW.  
▲ to moderate



24/10/96

contd

Womacup Estuary floodgates  
Gauge (new) read  $+0.35$  m  
~~( $+0.00$  m)~~ ( $\pm 0.01$  m) at  
1725 hrs. Wind moderate SW.

---

1731 hrs. Water flowing  
from W to E thru culvert  
under Leyman Rd (ie from  
Desser Estuary to Womacup Estuary).

---

(22)

Wed 30/10/96

1358 km

LtO Gb Tern

2.6 km W of Wendlesham Sth  
Rel.

40 + 10 Sigs

7.7 km from bed



30/10/96

"MORELLA"Anne-Marie O'Callaghan - Landcare  
OfficerBetty <sup>Heitman</sup> ~~Heitman~~ <sup>been</sup> here 20 yrs.

- has got water & water
- did not fill every year - was a special occasion.
- used to all drain away ("disappear")
- held water say 4 mths year
- Alf would have better recollection (been here longer)
- "sinkhole" of ~~land~~ <sup>land</sup> + drain
- no other place like it in the area
- now ~~also~~ a bit "slishy" during summer
- plan to siphon (10' height?) west to Wooleya Cr (then Green Brook)
- Frank Dehni suggested siphon idea (he looked at from air + ground)

(24)

- \$7000 from Garden Reid Foundation for exploring.
- Colin Welber
- levels uncertain - Betty went surveying done.
- Russel "Speed" - Eng W & hydrologist (also recommended system)
- \* Kevin (husband -) arrived
- have to lift 4 ft to get out of lake (from floor)
- then another 2 ft rise over 750 yds.
- dig trench out with D8 (also work)
- rising water table in surrounding area.
- water table 2' beneath lake floor in summer.



(2.5)

- system is limestone - perhaps it has collapsed.
- creek to west runs all year  
200 g/g but varies.
- stream systems are seltier downstream
- Merille ~~has~~ is on 2 properties  
(owners)
- could put a trench into Merille  
and drain out of.
- 100' drop down "Yoolaga Cr."
- need 3 km of pipe to siphon.
- siphon cheap.
- 
- no salt at surface in settlement
- groundwater is 650 g/g and  
freshwater is 17 g/g.
- birdshot hasn't been completed
- no plant or animal life.

(26)

Angela Sanders interviewed —  
and reported —

0.0 — onto gravel (head S)

4.3 ] — dog by

4.8 ]

still?

4.9

on Yangon Rd.

5.5 km — before farm road to West.

7.0 km — thru coiries gate to N.

+ head back E. on "track".

7.1 km — swing N.

7.3 shed.

7.5 at Morilla

Dee Kater

Mask Duck

Grey Teal

(heard 1 ♂  
saw 1 ♀)

(JB saw 150)



I saw 100  
Cost.  $\downarrow$   
600 m across?

JB saw 40  
(JB saw 3 broods of Class I chicks  
and 2 nests with 5 eggs each)

(27)

5:30 p-

Black f Plover - 2 (JB saw at least 12)

Man D - 4

Hh Gull - 1 (JB saw at least 12)

Cost - 3 red feedchick (small downy) with adult

BENIT - ~~1~~ ~~more~~ (JB saw 2)

Gelehi

Muller

Grackle - 60

Gray Peck:

Red-bellied Dotted - 1 (JB saw) immature

Peed 2 (JB saw 1 brood  
of 3 class II) + several distraction display

Wfhn 4

$\nwarrow$  2 12 birds

(28)

Pondside (Struck cell)

Willywagtail

Water level mark on trees is 20 cm higher

Raven

Tyrone

Cosmopolite

Heron - 4, 1 ♀ with 4 <sup>v. small</sup> Chicks I chucky

Martins

Blue-billed Duck - 1 ♂ & 1 ♀  
(♂ chugging), 2nd pair,

Mute Duck : 1 (♂?)

+ densely  
chugging leaves exude on trees.

Shoveler - 1 ♀

Little Red C - 1



28 Perch

Faint Wren - 1 ♂ blue neck, black  
rufous 2° crests + 1  
("red-shouldered fairy wren")

Yb Sparrow - 1 adult + 1 egg  
along side in nest on horizontal  
limb of fine. acacia 2 on shore  
within sight  
2nd on nest. dead

Black Duck - 2 (JB saw 1 brood  
of 2 ducklings - ~~MB~~ Class III)  
Cormorant → 10m high

Pacific Heron - 1 + 3

1 sitting on nest in dead tree  
1.5 m above water

(30)

negative on nest (Brown Goshawk)

Common Brongwey (JB)

I heard

Yellow rumped Thornbill

Richards Pipit (in paddock)

Welcome Swallow

White breasted Chat.



Th 31/10/96

31

Beth + Robert  
Peter Mason

Peter Mason - wife Jan? - son Paul

\* these wetlands are  
2-3' above water table

\* they are  
Ely based

\* 4 pens have stayed fresh

\* article in paper

\* steadily growing in his lifetime

\* This one had a few riparian banks

\* 10-15 years - [became] riparian with  
[need]

\* 5 yrs ago - riparian project up 8-10' tall  
v. dense to walk thru

~~need more data~~

~~2 yrs ago - he has been to the site~~

~~tall~~

(32)

31/10/96

- original surveyor's notes describe vegetation of areas they passed thru.
- wetland partially refenced + grazing is controlled
- large wetland doesn't have sheep held in it
- owned from since 1989
- ~~the~~ caliciviruses has arrived in past 2-3 weeks + can smell dead rabbits
- rabbits were inhibiting regeneration in/around wetland.
- caliciviruses jumped from Albany/Pingap straight to Horde
- 4 clippers -

First Lake "The Little One"

- frogs are deepening - as soon as it rains



- surrounded by rolled oats crops.

- old signs of rabbits

- 3" deep only this year

- 3ft last year.

lasted till late Jan - Feb.

- at 3ft it's full

- no yuccas in this lake

- not indigenous to area.

- big flocks of ducks - 1000's

- always some stoddards.

- Mal. prairie or brevifolia?

- birds appeared before fences  
off.

- one change line in - during

9-10 of miles

- had 12" <sup>rain</sup> this winter.

- couch - using Roundup to

get rid of.

used 24 exp. print film. 1220 pm

(34)

31/10/96

2nd week - layer

WFA - 3

ducks.

Also has fringe of (sparse) Casuarina obesa

Red breasted Duck - (+) + 2 + 1

- essentially undyed (except for "needs")
- had more grey pressure (products for sheep)
- congress unsuitable to sheep  
" palatable to rabbits



- previous water probably filled for 3 ft -
- lake bed tilted down towards SSE (roughly)
- N to S is probably 1 km. (20%)  
Hattings
- other people from north end
- fence goes across lake
- they don't have sheep on either
- rabbits eat young wire-grass in preference to 1080 oats.
- now has only c 2 cm of water in it -
- had swans on lake in 1995 but not 1996
- hordes of black-backed native geese in 1995 - come most years - few this year -

(36)

31/10/86

- nests (?) of pygmybats + leaves  
at centre (+ base)
- <sup>old</sup> bone at edge of lake  
(not discharging)

Inter 2nd lakes got a conservation  
noting - SW of Jone EPP.

- den excavated (old) on E side  
of lake - turn of century
  - original owners were Fragers.
  - Ray Frager was one of sons of  
original owner. Died 2 yrs ago.
- New history of lake.

- no salt has yet come to the  
surface in the catchment - but  
Paul thinks it could happen.
- most of catchment would have  
been cleared by 1930.



— Miner (Y+?)  
in Midland —

- Little Condors — 2 flew by.
- Mule deer — photos of nest.

### 3rd Wetland

Yak grass around it came up  
in 1963 (flood year) (24" min)  
got 6" from cyclone in the summer  
and then wet winter.

- only a few (to 6?) inches  
when the other 2 have 3' of  
water.

- some sedge (new) + bely

grass

- caryopas around them on SE side.

(38)

31/10/86

- suspects this lake closer to the saline groundwater.

"Lunch Stop"

approx 2pm -

- Mini Toolbin

- road goes thru, but now  
floods in ~~last~~ average winter  
and depression goes around S side
- only v. large Cas + Mel  
are alive (+ doing well). Stumps  
(dead) of smaller trees in lake bed.
- much regrowth of Cas -  
and Mel around parts of perimeter  
(higher ground)
- road is v. old + suggest  
originally the lake was rarely wet.



## Gons Lee (Garry)

- Garry salty
- the creek flowing in is quite salty
- the dams used to have muddy water and now its clear (+ permanent whereas before it was not)
- have constructed bank to
- 10 yrs ago the creek was not saline - now its salt
- Town dam is also under threat
- wants to keep it fresh
- once
- in last 5 years has flooded twice
- normally once in 5 years
- "things have been changed in town"
- & this may have caused the creek

(40)

31/10/96 contd.

to flow

- thinks the saltiness of the dam is due to rising groundwater
- c 10 yrs ago the road was built up to present level.
- Mel Reynolds (seedling)  
1'-3' high on verges of road.
- this <sup>whole</sup> area was called the  
"Lawson Forest"
- Mel has come up around  
xoo
- don't have a personometer in the area but "would be a good idea"
- John Dyck tested water in dam on north side of road & it tested  
salty (high boron) . Black-f. Plover.  
2 Pied Shill,  
Tin Dog  
- catchment area is 10 mile long  
& 2-3 mile wide. 6-7 farms



- there is also another creek feeding to this lake.
- "heaps of ducks" come in when it's wet - also heaps of "little ones" (chickens).
- used to have the frogs (plant plants) but now don't.
- water in lake is alright for stock and gardens but only just.
- the <sup>main</sup> creek runs past the lake but also feeds into the lake.
- I suspect on 2nd ~~dam~~ dam

5th Wetland - 3.15 - 3.30 pm.

- "awfully weedy"
- will rubbish in middle
- it's a water reserve
- shallow fresh choppy ~~water~~ <sup>water</sup>

(42)

- dried time we inspected
- probably only was a few inches of water when wet.

6th Wetland = 3.35 - pm

- on property
- naturally saline seepage
- osprey nest?
- something on nest
- seepage flowing strongly at time of inspection
- Robert Austin called this "Salt River" in 1854 - his journal.
- son <sup>Craig</sup> ~~Chris~~ has recorded many Lichabird species here
- Austin said it was salt. <sup>Cheney</sup> has added.



(43)

- deep runs all year round
- always  $22^{\circ}\text{C}$
- took water samples.

4.15 - 4.25 pm

- small rock with tadpoles in it
- took one photo
- " water samples for salinity  
+ ionic composition (re tadpole  
presence)
- frogs here are *Rana* and *Heleophryne*  
(according to Robert)



(44)

FROGS AT ARINYA

*Pseudophryne guentheri*

*Neobatrachus kunapalari*

*Litoria moorei*

*Heleioporus albopunctatus*

*Limnodynastes dorsalis*

*Ranidella pseudoinsignifera*

*Myobatrachus gouldii*

*Neobatrachus pelabatooides*

*Heleioporus eyreii*

Property of Robert & Beth BOASE

near Doverin. Supplied 1/11/96



(45)

5pm

- large lake property on Rodgers property  
(they have recently bought - live in Tammun)

- 10 Acres — c10

- 20 P. Shelt — c100-200

- Silver Golds — c20

- Coot — c20

- Bt Nodules — 2 seen

- 14h fish — c200-250

- Man Duck — 6

- Gray Teal — c10

Met owner Ivan Rodgers

- water start flowing in in autumn, before winter rains

- has water all year round now (?)
- water level doesn't fluctuate a lot.

1/11/96 (46)

Plans of Rental Bee Eaters on Boose's property.

Arrived 8/10/96 and other  
geant it has been 10/10

John says 2/10/ they arrive at  
Crawley.

Leave around 1st to last week  
of March each year.

---

8.15 am —

Patch of brash (v. signif. remnant).

Betula, Woody Pear,

Was owned by a Maizey. Swales

2 days ago by Hagburn.



(49)

150 cuss of land

$\leq \$100 / \text{year} \sim \text{ratio}$

- Here only seen for 2 years.

- Surface water - 2-5 cm, brackish to taste.

- Highly brackish surface water, all brackish, ~~the~~ ridge all around.

- Degradation must be due to rising saline groundwater. Probably in the last 10-15 years (degradation)

- Took photos from land area in middle.

- basin is approx 200 m x 300 m with 10 m ridge (sand) around.

- *Barbarea prunifolia* } dead/dying <sup>near</sup>

- *Actinostichus* } edge of basin.

- Crested Pigweed

- Black faced Cuckoo Shrike

BF Wood Swallow

Willie Warbler

Song Sparrow

Gray Shrike Thrush

Sand Boase's info on East work.

Celine + Gavin Hagbom

Song Sparrow

Whymorning 1150 - 1305

11,000 Bend Stilt

Pink Stilt - 100+

5+ Cur S, ~~100+~~ 100+ Sh + S, 10+ Rapp,

ostracods

Val sew White Formed Chats (2)



(51)

hundreds  
Coot, Shelducks, swans

Pink-eyed Duck - 150 +  
in case of Best.

Contact adhesive glue - "Quik-grip"

- clean with metho first
- put with metho (old ~~metho~~ <sup>wedder</sup>)

Clear gel - tube - dab on hole  
- let set - build up  
- for wet suits.

Wed 6 Nov 1996

Lake Pleasant View

- Utricularia was in flower, climbing small sedge in general vicinity of depth gage
- Clamorous Red Warblers heard calling from tall Baumea to north of <sup>depth</sup> gage access point.

Wellstead: Man of stone at Wellstead showed me his rainfall figures for Sep, Oct + Nov 96. Not enough to put water into Mittler Swamp (which was dry in Sep). He also said a fire travelled through the eastern half of the Mittler Swamp reserve in May.



(53)

or June of this year. "Killed  
a lot of trees". He  
fought the fire.

1250 hrs - \$1.00 (coms)  
phone call to CARM Bsn office  
from Wellhead - claim it.

Yellings: Using builder's line + level,  
calculated depth as 2.76 m ✓

0.83 metres from bottom of gauge  
plate (ie from 4.00 m) down  
to ground level at <sup>base</sup> of tree  
(directly below gauge plate)

⇒ ground level here = 3.17 m

18 Tools platers (9-12) with  
64 ASA film to compare with

(54)

Sep 96 plots to check Sep 96  
depth.

Note that in Sep there was a  
v. strong E W wind and today there  
is a moderate E wind.

$$\begin{array}{r} 4.00 \\ - 1.24 \\ \hline 2.76 \end{array} \quad \checkmark$$

Saw 2 small "merron" (yellow?)  
at water edge of Yell.

Some old I evidence



(55)

↑ 25386 !

Plantegadet 1620 - 1630 hrs

Assoc: 21

SGL: 12

Shel: 2 adults + 7 low in

water - probably Class III

(or late II) ducklings.

Bone shrimp very abundant

Depth: 0.61 m ↗

both dead (black)

and alive.

Thurs 7 Nov 96

Kworming: 0815 - 0830

Depth 0.66 m

Swam: ~~4~~ 49

Shelmet: 9

Small Goose: est. 90 (counted 76)  
in one flock.

Muskrat Duck — estimate 10  
(counted 7)

scanned lake with Telexid (Leica)  
scope (+ tripod) — light wind, good light.

Water crystal clear; Ruppia in  
flower; small crustaceans abundant  
in water column.

Yarnup 1035 —

Depth 0.97 (K&W gauge)

[This equals  $\times 10$  m on the  
Waterbury gauge 1 m from the  
K&W gauge]

Clemons Red Wobblers (several)  
heard.



(57)

Unmanned 1110 — 1135  
Depth: 1085m

Little Black Cormorant — 1

Black Duck — 4

Mosk/Hamer — 1

Blue-Billed Duck — at least 5

Small Grebe — 14+ (is minimum)

Shelduck — 13

Musk Duck — at least 1

Purple Swamphen — 2

Hairy-L Grebe — at least 2 of

\* [Muscivorous duck or coot: 130  
scattered near far SE shore

Scanned from West side (near shore)  
with Leica telescope & binoculars

(58)

light brown

- large tadpoles in the shallows.
- Gentonia-like fish " " ~
- broken tortoise eggs in 20 cm of water - some yolk still evident
- flying damselflies & dragonflies numerous.
- PWD gauge reads 11.89 m

viewed with binoculars from N end,  
next to drain.

Labre Minor 1455 - 1505

Hth Cuckoo - 35+

Shelduck - 54+

Swan - 70+ hundreds

Marsh Wren - 2

Rufous Scamper - one in vega along  
drain as enters lake

GyTL -

Black Duck -



(59)

Minor count

Egret - 1 +

Silver Gulls - 10 +

Muskrat Duck - 1 +



Sat 4/1/96 (60)

Mouth of Henry River delta

Start 1015 hrs

680 Ducks - 53 Sheldons

- c10 PABD

- rest GtL

Pink Shl - 35

Silver Gull - 80

Avocet - 5

Greenback - 2

Mulhous myf waters - c15

Pelicans - 6 seen

Cory's Tern - 1

Scaup - 5

Finish 1025



(61)

Reached hole at ~~4.4~~ <sup>4.4</sup> km  
at 2:21 pm. River  
still flowing at but now gently

had caught 2  
meow in this hole

Have tried holes from where  
tree nearly crosses river <sup>13.95 km</sup> up to  
this hole, but caught none

One meow caught at 5.5 km.  
hole (at 3:17 pm) and then  
one just under size  
(Tag reads <sup>21</sup>14689)

14685

4/1/97 (62)  
cont'd.

Back in the river.

— cc 200 GgTL

— 1 Moorhen

— 1 ScaT.

— ~~2~~ 3 cS PADD

— 14 WHTN flew  
overhead.

— 2 Skel flew overhead.

— 2 juv CPC.

— 2 Whimbly White

— 1 darter heard

— GgTL with distinctive display.

Island Pt

Depth gauge reads -0.02  
m at 5.14 pm.



(63)

Mon 13 Jan 97 left Isen 0920 hrs.

Labre Minor — depth gauge  
reads 0.99 m at

4.50 pm. Took water sample  
— analyse for TSS & major ions.

19 Feb — Inland Aquatic meeting?

Tues 14 Jan 97

left house near car of Minor Hwy  
and Avenue Rd (opposite Gatunings  
Swamp NR) and drove to car  
park on north side of Labre Minor  
(south side of Minor Hwy). Alan Chute,  
Andrew Storey & David Lake followed me  
in their vehicle, then Alan took my  
vehicle down to south end of Labre

Lake Minn Contd.

13/1/97 contd.

64

Minn (- - - - - Rd) and left it  
there. I fought my way thru heavy  
vegetation to Lake Minn. The water  
level was into the Melaleuca



(65)

Great Crested Grebe ~ 4+

Small water grebe ~ 20+

Mute Duck ~ 40+

viewed with telescope from 2nd  
headland (of 2 major) south on  
west side of Lake Minic. Viewed  
from 5.10 → 5.35 pm on Wed  
15 Jan 97.

$$\begin{array}{r} 2482 \\ 329 \\ \hline 2153 \end{array}$$

$$\begin{array}{r} 329 \\ 254 \\ \hline 75 \end{array}$$

$$\begin{array}{r} 2482 \\ 75 \\ \hline 2407 \end{array}$$

66

Pajero

Speedo

W 19/2/97

Th 20 Perth (Alencastre)  
↳ Mh area

1821 km  
~~1877~~

F 21 Mendonça creek

1886

S 22 Lower Itany

1960

S 23 ↳ Bsn

2153

M

2153

T Bsn ↳ Perth

2407

W Perth ↳



(67)

Mon 17 March 97

Calibrated at 36.0 (read 35.4)  
on ocean side of Vasse estuary floodgates.

Depth at 0912 hrs.  
Salinity

|     |      |
|-----|------|
| 0.1 | 36.6 |
| 0.2 | 36.6 |
| 0.4 | 36.9 |
| 0.6 | 36.9 |
| 1.0 | 37.0 |

1.5 (bottom) 37.0

Note that floodgate gauge read +0.10 m at 0850 hrs.

↓ Palm tree c 100 m upstream  
of floodgates

| Time | Depth | Sal  | Temp |                      |
|------|-------|------|------|----------------------|
|      |       |      | ↓    | Dissolved Oxygen %   |
| 0912 | 0.1   | 36.3 | 21.3 | <del>53.7</del> 52.2 |
|      | 0.2   | 36.4 | 21.2 | 52.4                 |
|      | 0.4   | 36.4 | 21.2 | 51.6                 |
|      | 0.6   | 36.4 | 21.2 | 52.3                 |

Temp 17/3/97 (68) contd.

| Time | Depth | Sal  | Temp | Diss. O <sub>2</sub> % |
|------|-------|------|------|------------------------|
|      | 0.8   | 36.4 | 21.1 | 51.6                   |
|      | 1.0   | 36.5 | 21.0 | 44.3                   |

Back to ocean side of floodgate

|      |     |      |      |        |
|------|-----|------|------|--------|
| 0952 |     |      |      |        |
| 0.1  | 0.1 | 36.8 | 21.2 | 70.5   |
| 0.2  | 0.2 | 36.8 | 21.2 | 67.0   |
| 0.4  | 0.4 | 37.0 | 21.0 | 52.9   |
| 0.6  | 0.6 | 37.0 | 21.0 | 47.3   |
|      | 0.8 | 37.0 | 21.0 | 46.6   |
|      | 1.0 | 37.0 | 20.9 | 45.4   |
|      | 1.2 | 37.0 | 20.9 | 44.6 v |
|      | 1.4 | 37.0 | 20.9 | 43.6   |
|      | 1.6 | 37.0 | 20.9 | 41.3   |



(69)

17/3/97 contd.

NB: at 0850 hrs <sup>on 17/3/97</sup> (ie at start of day) ~~the~~ all flap valves were closed. Stop boards in all but 2 bays. Water leaking fast in past the flap valves of these bays (could hear it 100 m upwind).  
Gauge board ~~is~~ need +0.10 m

| Time                                        | Depth | Sal  | <del>Temp</del> <del>Stm</del> | Do <sub>2</sub> <del>Stm</del> |
|---------------------------------------------|-------|------|--------------------------------|--------------------------------|
| First haul (2 <sup>nd</sup> of Vero + Jini) |       |      |                                |                                |
| 1016                                        | 0.1   | 36.7 | 22.1                           | 42.6                           |
|                                             | 0.2   | 36.7 | 22.0                           | 43.2                           |
|                                             | 0.4   | 36.6 | 22.0                           | 42.7                           |
|                                             | 0.6   | 36.4 | 21.7                           | 42.0                           |
|                                             | 0.8   | 36.5 | 21.5                           | 41.3                           |
|                                             | 1.0   | 36.4 | 21.0                           | 39.1                           |

70

DD 2

| Time | Depth        | Salinity | Temp | DD 2 |
|------|--------------|----------|------|------|
| 1025 | 1.2          | 36.5     | 20.9 | 37.5 |
|      | 1.4          | 36.5     | 20.9 | 34.6 |
|      | 1.6          | 36.6     | 20.9 | 25.5 |
|      | 1.8          | 36.6     | 20.9 | 22.6 |
|      | 1.9 (bottom) | 36.7     | 20.9 | 21.9 |

(3) of Vero + Jura

|      |     |      |      |      |
|------|-----|------|------|------|
| 1029 | 0.1 | 36.7 | 21.8 | 60.5 |
|      | 0.2 | 36.7 | 21.8 | 58.1 |
|      | 0.4 | 36.7 | 21.8 | 53.9 |
|      | 0.6 | 36.7 | 21.9 | 54.6 |
|      | 0.8 | 36.7 | 21.8 | 52.2 |
|      | 1.0 | 36.7 | 21.7 | 47.2 |
|      | 1.2 | 36.7 | 21.6 | 41.4 |
|      | 1.4 | 36.7 | 21.6 | 37.1 |
|      | 1.6 | 36.8 | 21.3 | 23.2 |
| 1042 | 1.8 | 36.8 | 21.2 | 19.4 |



(71)

Temp

| Time                | Depth        | Salinity | DO <sub>2</sub> |
|---------------------|--------------|----------|-----------------|
| (3.5) of Vero & Tim |              |          |                 |
| 1049                | 0.1          | 36.9     | 21.6 76.4       |
|                     | 0.2          | 36.9     | 21.6 75.7       |
|                     | 0.4          | 36.8     | 21.5 73.2       |
|                     | 0.6          | 36.9     | 21.5 70.2       |
|                     | 0.8          | 36.9     | 21.4 64.9       |
| 1053                | 1.0 (bottom) | 36.8     | 21.3 48.6       |

|                   |     |      |           |
|-------------------|-----|------|-----------|
| (4) of Vero & Tim |     |      |           |
| 1058              | 0.1 | 36.8 | 21.8 92.4 |
|                   | 0.2 | 36.8 | 21.8 91.8 |
|                   | 0.4 | 36.9 | 21.6 90.8 |
|                   | 0.5 | 36.8 | 21.6 91.5 |

|                   |     |      |            |
|-------------------|-----|------|------------|
| (5) of Vero & Tim |     |      |            |
| 1118              | 0.1 | 36.6 | 22.2 130.5 |
|                   | 0.2 | 36.6 | 22.3 130.7 |
|                   | 0.4 | 36.6 | 22.3 130.4 |

17/3/97

Contd.

Temp

(72)

Time

Depth

Salinity

DO<sub>2</sub>

(6) of Vert + Tim

|      |     |      |      |       |
|------|-----|------|------|-------|
| 1131 | 0.1 | 36.2 | 22.1 | 131.5 |
| 1131 | 0.2 | 36.3 | 22.0 | 133.2 |
| 1133 | 0.3 | 36.4 | 22.1 | 136.3 |

(7) of Vert + Tim

|      |     |      |      |       |
|------|-----|------|------|-------|
| 1143 | 0.1 | 35.7 | 21.4 | 139.7 |
|      | 0.2 | 35.9 | 21.3 | 138.5 |
|      | 0.4 | 36.0 | 21.3 | 137.7 |
|      | 0.6 | 36.1 | 21.3 | 138.5 |
|      | 0.7 | 36.4 | 21.6 | 139.3 |

(8) of Vert + Tim

|      |     |      |      |       |
|------|-----|------|------|-------|
| 1154 | 0.1 | 36.1 | 21.8 | 134.9 |
|      | 0.2 | 36.0 | 21.9 | 138.4 |
|      | 0.4 | 36.0 | 22.0 | 160.2 |
|      | 0.5 | 36.8 | 22.4 | 175.0 |

depth measured = 60 cm.



73

10/1/17

| Time | Depth             | Salinity | Temp | DO <sub>2</sub> |
|------|-------------------|----------|------|-----------------|
|      | (9) of Vern + Tim |          |      |                 |
| 1212 | 0.1               | 34.5     | 23.5 | 171.5           |
|      | 0.2               | 34.5     | 23.7 | 169.1           |
|      | 0.25              | 34.4     | 23.5 | 137.6           |

Depth measured = 36 cm

|      |                    |      |      |       |
|------|--------------------|------|------|-------|
|      | (10) of Vern + Tim |      |      |       |
| 1237 | 0.1                | 32.3 | 23.8 | 160.1 |
|      | 0.2                | 32.4 | 23.7 | 160.3 |
|      | 0.3                | 32.4 | 23.7 | 160.6 |

Depth measured = 34 cm (measured)

|      |                    |      |      |       |
|------|--------------------|------|------|-------|
|      | (11) of Vern + Tim |      |      |       |
| 1249 | 0.1                | 33.5 | 23.6 | 165.7 |
|      | 0.2                | 33.4 | 23.7 | 165.9 |
|      | 0.4                | 33.3 | 23.7 | 165.5 |

Depth measured = 40 cm

17/3/97 Contd

(74)

Time | Depth | Salinity | DO<sub>2</sub>

[7] of Water Authority

|      |     |      |      |       |
|------|-----|------|------|-------|
| 1305 | 0.1 | 32.1 | 23.6 | 175.5 |
|      | 0.2 | 32.8 | 23.8 | 175.0 |

GPS reading | 33° 39' 06.7"  
115° 23' 29.9"

[8] of Water Authority

|      |     |      |      |       |
|------|-----|------|------|-------|
| 1329 | 0.1 | 33.1 | 25.8 | 161.2 |
|------|-----|------|------|-------|

Depth measured = 20 cm.

GPS = 33° 39' 06.3"  
115° 22' 9.24"

"mid bay"

|      |     |      |      |       |
|------|-----|------|------|-------|
| 1405 | 0.1 | 31.2 | 25.1 | 157.6 |
|      | 0.2 | 31.0 | 25.2 | 156.9 |



(75)

Landed 7/15/71

| Time                          | Depth | Salinity | DO <sub>2</sub> |
|-------------------------------|-------|----------|-----------------|
| GPS reading for previous page | 33°   | 39.084   | 1               |
|                               | 115°  | 22.297   | 1               |

On east side of low island at

West end of estuary, where it sharply narrows

| Time | Depth    | Salinity | Temp | DO <sub>2</sub> |
|------|----------|----------|------|-----------------|
| 1420 | 0.1      | 30.1     | 26.5 | 170.0           |
| hrs. | (bottom) |          |      |                 |

Best flock on north side of Vessel estuary at 2.30 pm (the westernmost basin before Foulhol (towards the west end)).

One had leg flag above it. Couldn't see colour due to light. When flocks flew over several times saw one very brief flash of yellow (once). This bird had well developed band. In flock of a 300-400.



17/3/97 Contd

Temp (76)

| Time                          | Depth | Salinity | DO <sub>2</sub> |
|-------------------------------|-------|----------|-----------------|
| v. approx 100 m E of Ford Rd. |       |          |                 |
| 1446                          | 0.05  | 29.0     | 28.4            |

h.s. Water was 5 cm deep and probes were laid on there side.

| Butterfly Check         | Folk Museum structure | °C                 | %     |
|-------------------------|-----------------------|--------------------|-------|
| 1556                    | 880 ppm               | 24.2               | 185.6 |
| h.s.<br>downstream side | 0.1                   | <del>880 ppm</del> |       |
|                         | 0.2                   | 783 ppm            | 181.4 |
|                         | 0.4                   | 770 ppm            | 166.0 |
|                         | 0.6                   | 785 ppm            | 114.0 |
|                         | 0.8                   | 787 ppm            | 76.1  |
|                         | 1.0                   | 790 ppm            | 64.5  |

| upstream side of check structure |     |         |      |       |
|----------------------------------|-----|---------|------|-------|
| 1604                             | 0.1 | 682 ppm | 25.2 | 254.1 |
| h.s.                             | 0.2 | 676 ppm | 25.5 | 253.2 |
|                                  | 0.4 | 677 ppm | 25.7 | 250.5 |
|                                  | 0.5 | 683 ppm | 25.1 | 189.1 |



(77)

JAN 5P/2/FI

| Time                                                                         | Depth | Salinity | Temp<br>DO <sub>2</sub> |
|------------------------------------------------------------------------------|-------|----------|-------------------------|
| Green unicellular algae extremely abundant on both sides of structure - sump |       |          |                         |

Redney bridge

|      |     |         |            |
|------|-----|---------|------------|
| 1613 | 0.1 | 754 ppm | 24.0 191.7 |
|      | 0.2 | 749 ppm | 24.1 190.9 |
|      | 0.4 | 747 ppm | 24.1 183.4 |
|      | 0.6 | 728 ppm | 23.8 162.1 |
|      | 1.2 | 686 ppm | 22.3 87.5  |

Green algae (unicellular) very abundant in water column ("bloom")

1803  
hms Carey Street drain

Water in it, but no flow

Mon 17/3/97 contd

(78)

Time Depth Velocity DO<sub>2</sub>

Outflow from pipe of Port George  
development into Vasse Estuary

depth (section) 5, 9, 7, 6 cm

average = ~~0.0675~~ 0.0675 m

x 1.0 m wide

⇒ cross section = 0.0675 m<sup>2</sup>

12 secs to travel 5m

13 " " " "

[Concrete pipe internal diameter  
= 37 cm]

~~Water flow rate~~

5 metres in 12.5 sec

= 0.4 metres per sec

⇒ flow rate = 0.4 x 0.0675 m<sup>3</sup>/sec

= 0.027 m<sup>3</sup>/sec



88.5  
(79)

17/3/97 Contd.

| Time | Depth | Salinity | DO |
|------|-------|----------|----|
|------|-------|----------|----|

Ucnse eating flounder

geige needs + 0.115 m  
at 1840 hr on 17/3/97

(measured with type measure)

The breeze has blown lightly  
from the west for much of  
the day (incl at 1840 hr)

There was some rain from Sat  
15/3 (6pm) till early morning  
on Mon 17/3. There

was also significant rain  
several Mondays previously  
(rained most of the day).

| Time                                    | Depth | Salinity | DO <sub>2</sub> |
|-----------------------------------------|-------|----------|-----------------|
| Continued from 2nd last page (previous) |       |          |                 |

$$0.027 \text{ m}^3 / \text{sec}$$

$$+ 10\% \text{ (2nd stream)}$$

$$= 0.0297 \text{ m}^3 / \text{sec}$$

$$\approx 0.03 \text{ m}^3 / \text{sec}$$

$$= 0.03 \times 60 \times 60 \times 24 \text{ m}^3 / \text{day}$$

$$= 2592 \text{ m}^3 / \text{day}$$

$$= 18144 \text{ m}^3 / \text{week}$$

$$= 90720 \text{ m}^3 \text{ and } 0.2 \text{ m deep}$$

$$= \text{area of } \approx 9 \text{ hectares and } 0.2 \text{ m deep}$$

$$= \text{ " " } \approx 36 \text{ ha and } 0.2 \text{ m deep}$$

in four weeks

$$= \text{area } 1.8 \text{ km long and } 200$$

metres wide and  $0.2 \text{ m}$  deep

in four weeks. Compare

with experimental value.



(81)

Time Depth Salinity DO<sub>2</sub>

Salinity of sample from  
Port George outflow  
was 16.2 ppt.

Pool on west (upstream) side of  
17/3/97 Ford Rd (in Vase R. channel)

| Time | Depth | Salinity | DO <sub>2</sub> |
|------|-------|----------|-----------------|
| 1630 | 0.1   | 5.34     | 27.2 104.5      |
|      | 0.2   | 5.20     | 27.1 104.0      |

and approx 50 m from it.