

WESTERN AUSTRALIAN WILDLIFE RESEARCH CENTRE

RESEARCH PROGRAMMES SEMINAR

11 APRIL 1980.

JIM LANE.

## Monitoring of Depth and Salinity of Wetland Nature Reserves.

### 1.1.

#### Objectives.

*Explained previously*

Routine monitoring of the depth and salinity of selected Wetland Nature Reserves in the south-west of the state will assist in

- i) the annual evaluation of conditions for waterfowl breeding.
- ii) the prediction of summer conditions
- iii) the determination of annual and long-term variations in water depth and salinity - important aspects of the condition of WNRs.
- iv) the development of <sup>a</sup> salinity and water-permanence classification system for WNRs.
- v) the determination of salinity tolerances and preferences of various species of waterbirds for breeding and other purposes
- vi) the determination of salinity and depth tolerances of other aquatic fauna and flora.
- vii) the management of particular WNRs eg Lakes Chittering, Nonalling, Byenup, Tordit Garrup, Poorginup, Chandala and Benger.

### 1.2.

#### Procedures.

- i) Gauge Installation: 41 depth-gauges (staffs) were installed during 1979/80, bringing the total number of gauged wetlands to 68. 63 of these are WNRs vested in W.A.W.A.

*See Map for Location*

- ii) Monitoring: Depth and salinity have been monitored by Research Staff at two-monthly intervals since November 1978.

W.A. Field and Game Association members have provided some assistance in monitoring since January 1980.

1.3.

Results.

*Already Seen.*

See figures 1-24 for a sample of results.

1.4.

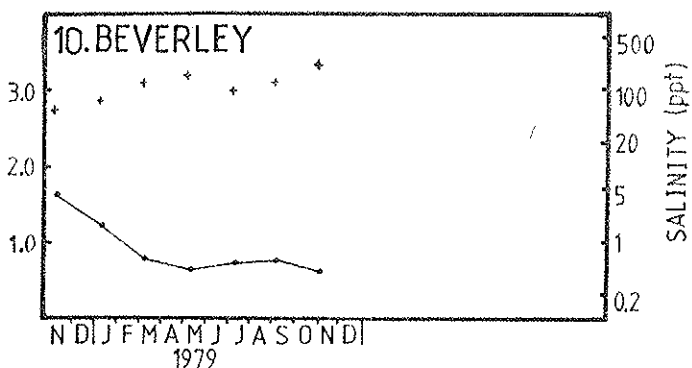
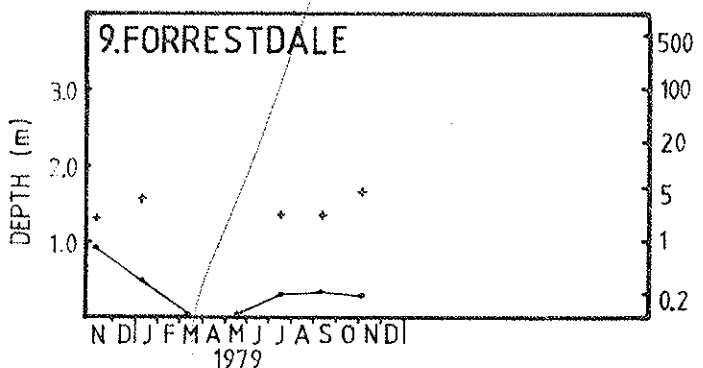
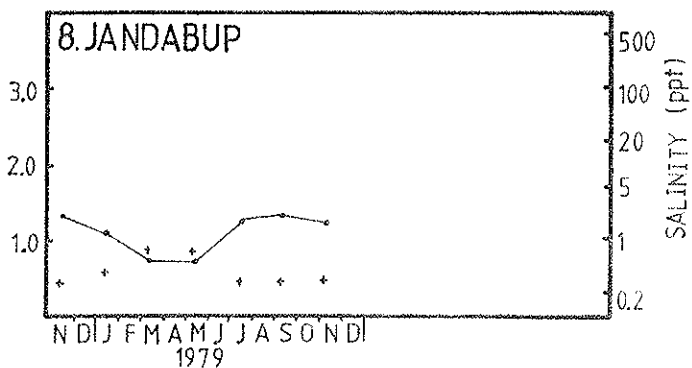
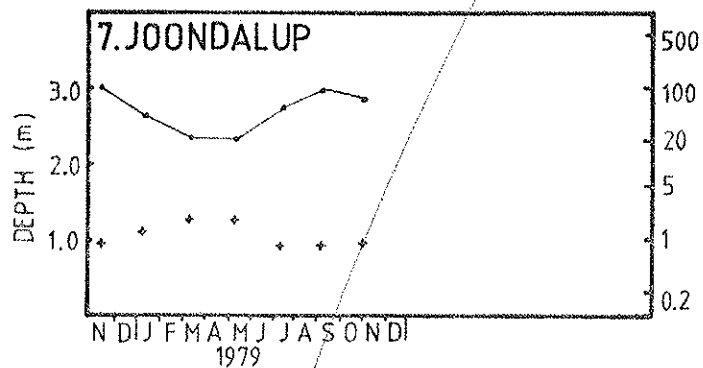
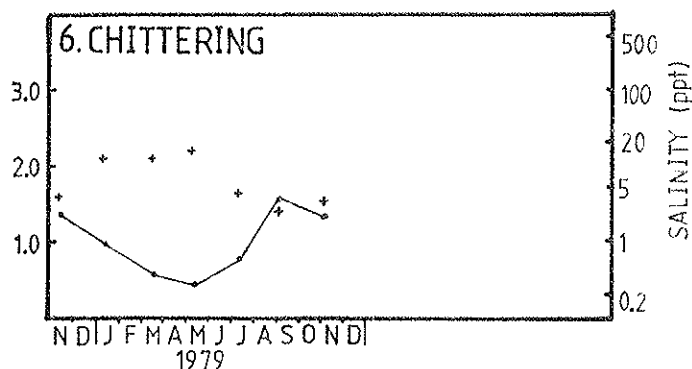
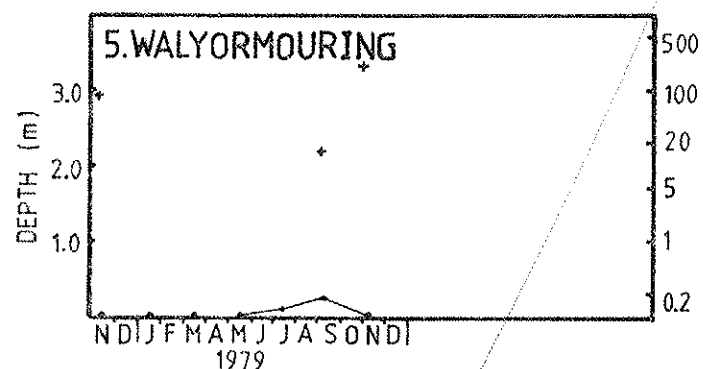
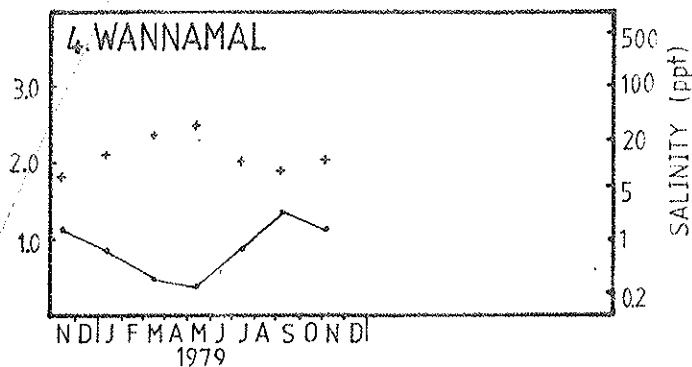
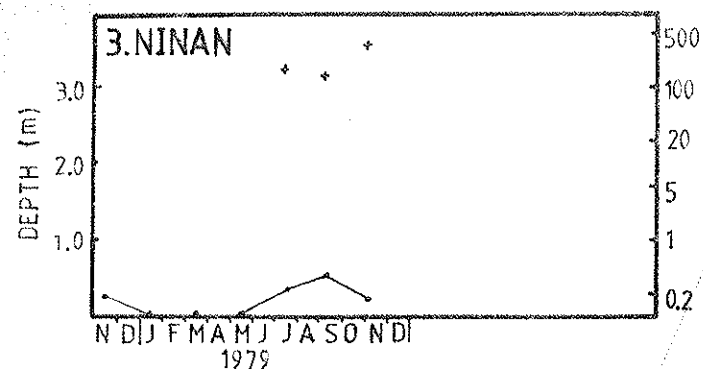
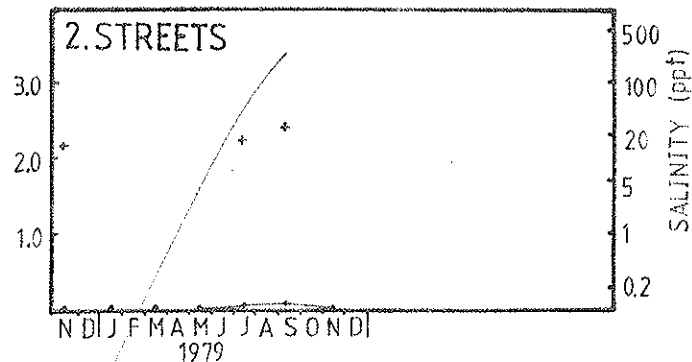
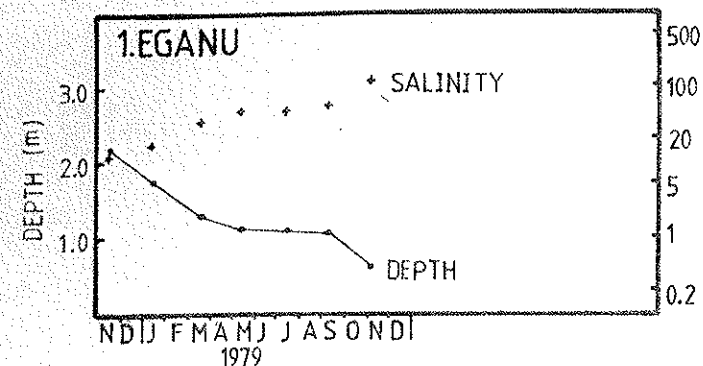
Conclusions.

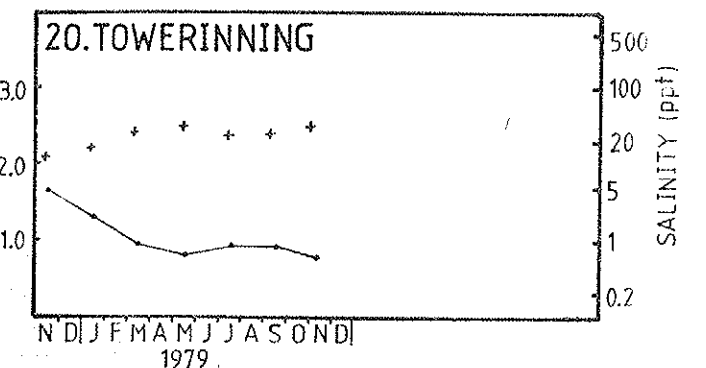
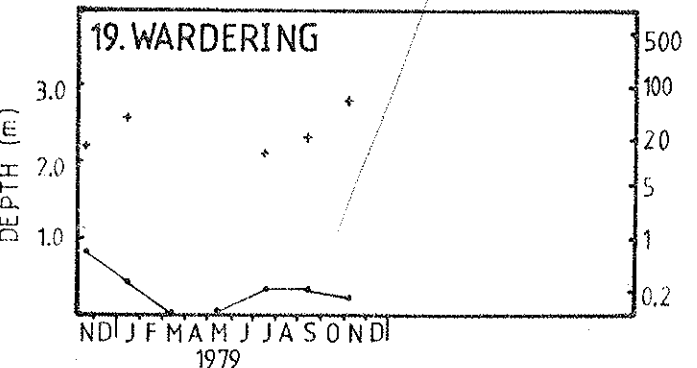
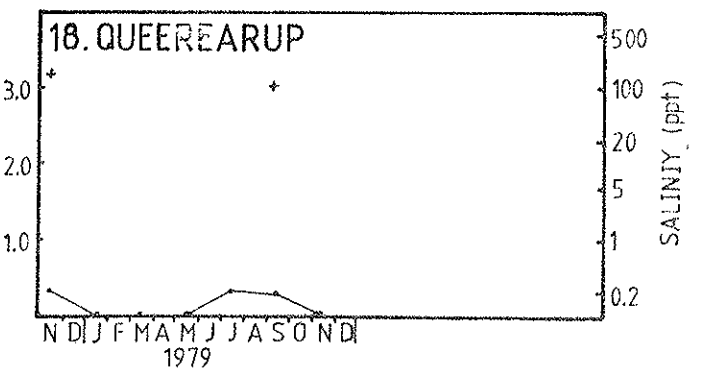
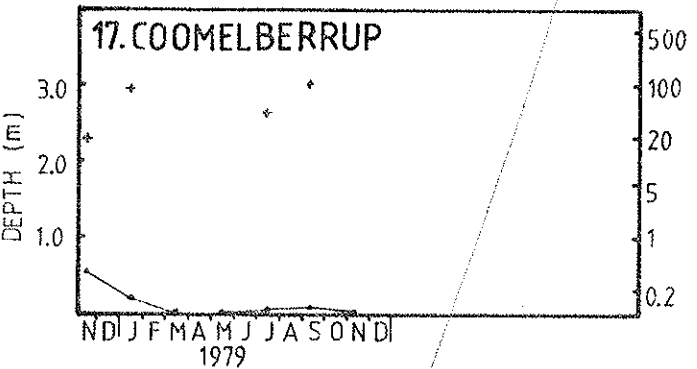
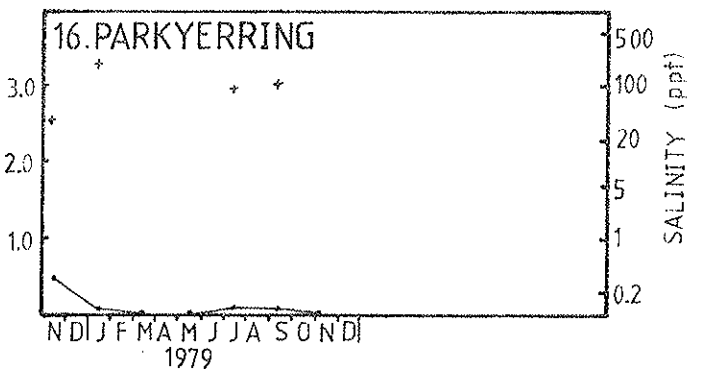
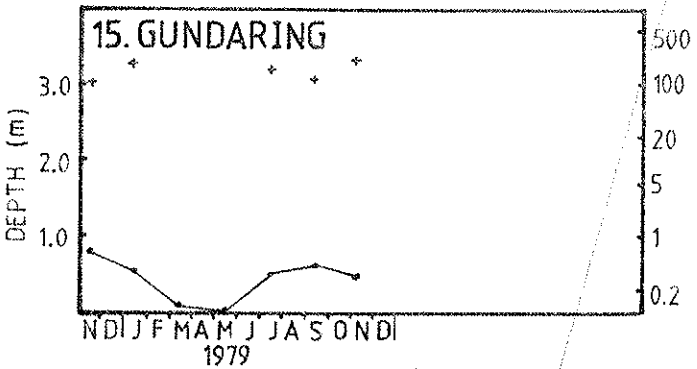
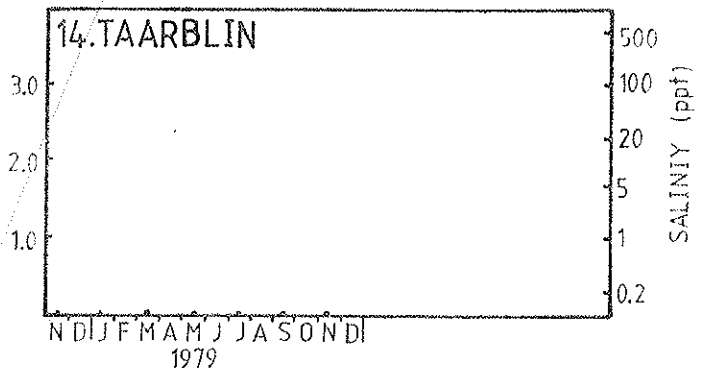
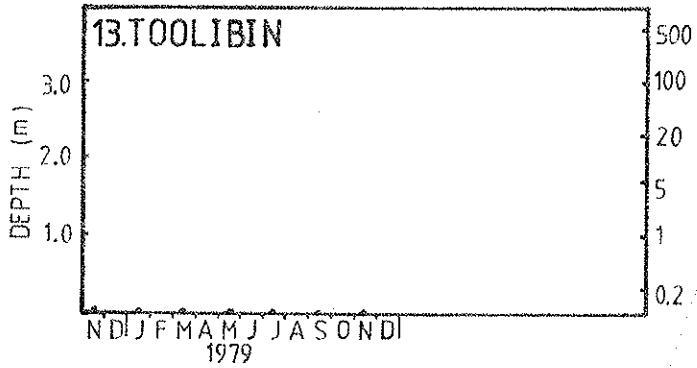
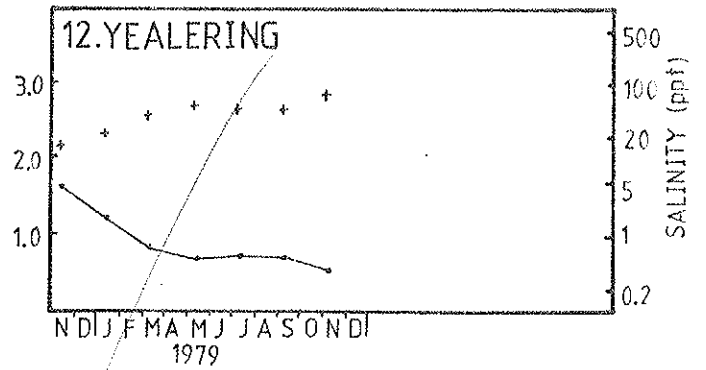
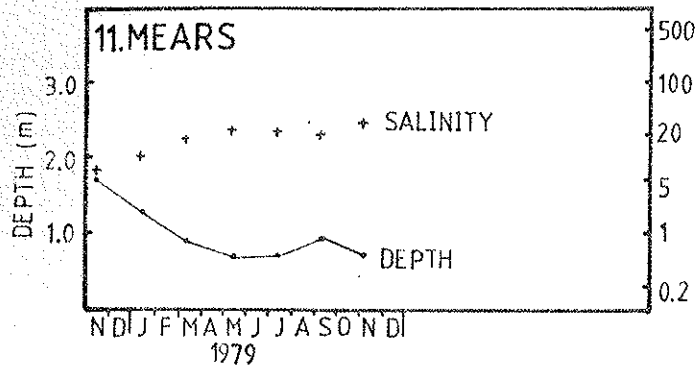
In conjunction with rainfall statistics, results obtained <sup>from</sup> two-monthly monitoring of WNRs provide a sound basis for season-to-season comparisons of conditions for waterfowl breeding, and for prediction of conditions likely to prevail during impending duck-shooting seasons. In past years the WAFGA has frequently disputed the Department's subjective assessment of wetland conditions. WAFGA has welcomed the Departments recent efforts to assess conditions more objectively, and in 1979 the Department's assessment was not disputed, despite the recommendation for a "No Season".

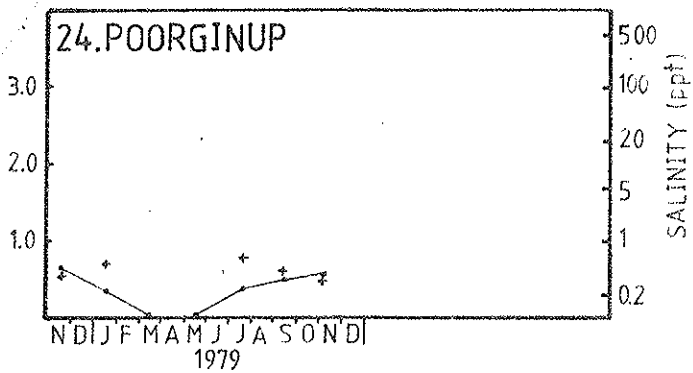
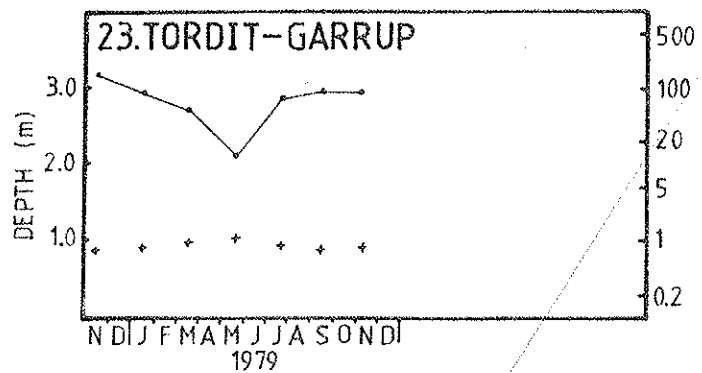
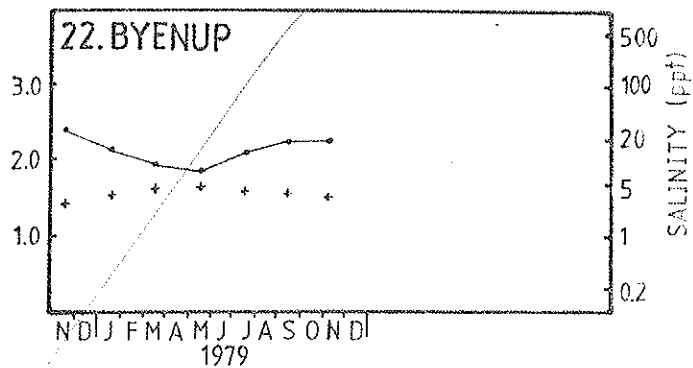
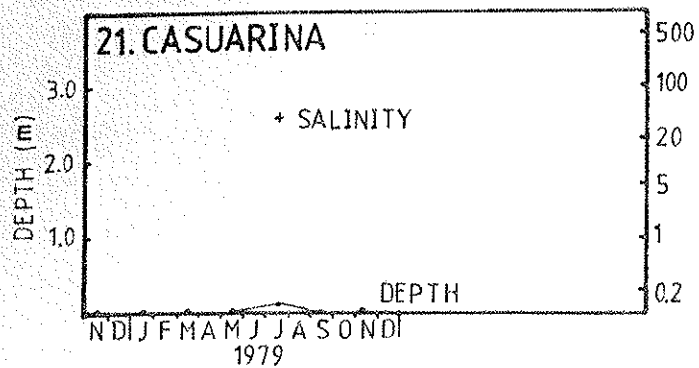
The data gathered will also provide a sound basis for the development of a meaningful salinity classification for WNRs, and for other wetlands of the south-west (See Research Project 2.)

*Assessment accepted  
by WAFGA.*

*(recommendation might  
not be, of course)*







1.5. Proposals for 1980/81

During 1980 it is proposed to install depth gauges on a further 20-25 WAWA-vested WNRs in the south-west of the state. This will complete the gauge-installation programme. Two-monthly monitoring of water and salinity levels by Research Staff and WAFGA members will continue until November 1980. Monitoring frequency will then be reduced to bi-annual checks (September and November) of all gauge<sup>d</sup>-wetlands by Research Staff, plus two-monthly checks on depth of selected wetlands (approximately 15-20) by DWOs and RMOs (pending CWO approval), and additional, opportunistic data-gathering by DWOs, RMOs, Research Staff and WAFGA members.

1.6. Publications 1979/80 Nil1.7. Publications for 1980/81 Two short papers concerning annual assessment of wetland condition will be published.

Past 2 years [1. Card Index  
2. Photo Coverage]

## Wetland Nature Reserves:

PREAMBLE: 3. Map . 250 WNR, 150 WAWA, 100 replicable.

2.1. Objectives.

Continuing studies on WNRs of the south-west of the state have the following principal objectives.

Immediate Objectives (i-iii)

4.

- i) To determine the <sup>①</sup>total area of wetland reserved under the WNR system. (Each WNR may include both wetland and "dryland". Although the total area of each WNR is known, the proportion which is wetland is not known)
- ii) To develop a <sup>②</sup>salinity and water-permanence classification system for WNRs and to classify each WNR accordingly; <sup>③</sup>State crudely the area of freshwater <sup>habitat</sup> reserved for cons. brackish, salt etc.
- iii) To determine (albeit imprecisely) the "representativeness" of the WNR system as a matter of some urgency.

eg Complex Eleven.

Obvious gaps in representation can thus be identified and priorities for acquisition can be established.

COME BACK TO

Long Term Objectives

- iv) To assess waterbird usage of WNRs and, as far as practicable, to determine the role of the WNR system in the maintenance of waterbird populations of the south-west. This project might well be undertaken as part of the proposed RAOU National Waterbird Survey.

## 2.2.

### Procedures.

- i) The boundaries of wetlands contained within each WNR are being determined from 1:40,000 B & W aerial photography, with field inspections (ground or aerial) where necessary. A digitising computer will be used to calculate the area of wetland reserved.

To determine Area of Wetland Reserved.

In my view:

2 Aspects to Wetland/Waterbird Conservation

1. reservation (conservation) of representative wetland types
2. maintenance of waterbird populations.

i. ~~What~~ Can be achieved through reserves, 2. can not be. — <sup>good</sup> to show earth creek Lynnes that this is the case. Will then be able to justify keen and active interest in mgmt. of ~~the~~ reserved areas. — RAOU survey? — or Me, more crudely.



- ii) Salinity and water-permanence data are obtained through the WNR monitoring programme (Project 1) and during brief inspections of non-gauged WNRs.

- iii) a) Waterbird species, breeding-species and abundance are also determined during brief inspections, and  
 b) dominant plant species are recorded. This information, together with salinity and water-permanence data, from the basis for assessing the "representativeness" of the WNR system.

For Salinity &  
Water Permanence  
Classification

Representativeness  
of WNR System.

### 2.3.

#### Results.

- i) Determination of the area of wetland included in WNRs has recently commenced. No data are available.
- ii) The WNR monitoring programme (Project 1) has provided salinity and water permanence data on 63 of the c 250 WNRs of the south-west. (see 1.3). Brief inspections have provided limited data on a further 57 WNRs.
- iii) Waterbird usage data have been obtained (either by brief inspection, or by detailed survey) from approximately 90 WNRs. Usage of Lake Forrestdale and Lake Jandabup has been assessed at two-monthly intervals since August 1979.

*An aside: - Great Person  
2 per Year  
small report*

*Wetlands close to Perth  
Problem Wetlands - say this*

### 2.5.

#### Proposals for 1980/81

- i) The total area of wetland reserved under the WNR system will be determined during 1980/81.
- ii) A salinity and water-permanence classification system will be produced during 1980/81 and each WNR will be classified accordingly.

*Thus be able to make crude statement  
on area of freshwater habitat reserved  
brackish  
salt*

iii) Further familiarization surveys of WNRs vested in WAWA will continue. Data obtained during these surveys will be used in the classification referred to above, and in the compilation of preliminary waterbird species and breeding-species lists.

Back to  
(iv) on page 4

iv) Further discussions will be held with the RAOU concerning that organisation's possible role in assessing waterbird usage of WNR's and monitoring waterbird populations of the south-west (particularly ducks).

#### 2.6. Publications 1979/80

No publication. A map of WNRs of the south-west of the state has been produced.

#### 2.7. Publication for 1980/81

### 3. Feral Duck and Goose Control

#### 3.1. Objectives

- i) To monitor the numbers of feral ducks and geese on lakes and rivers of the south-west of W.A.
- ii) To control these populations at as low a level as possible, as efficiently as possible.

#### 3.2. Procedures

- i) Perth Metropolitan Area: Feral duck and goose populations on 71 wetlands from Yanchep to Rockingham have been surveyed during February or March each year since 1978. Attempts have been made to reduce these populations by trapping and shooting.
- ii) Remainder of the South-West. During 1979, District Wildlife Officers were asked to advise on numbers of feral ducks and geese in their districts.

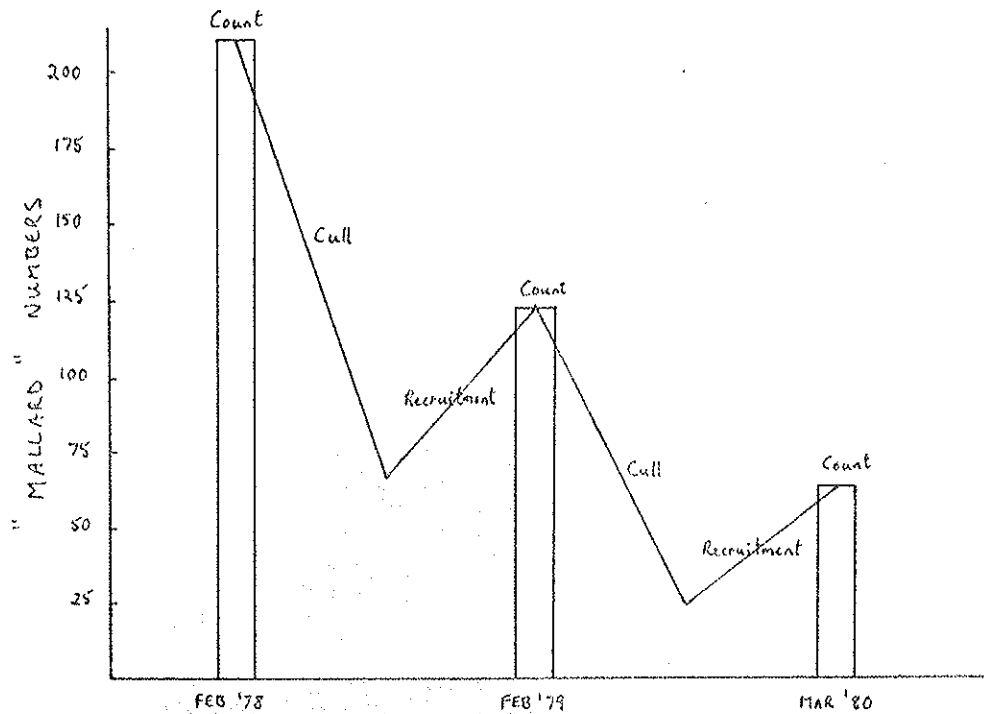
## 3.3.

Results

## i) Perth Metro Area:

Since February 1978, feral "mallard" numbers have been reduced from 209 to 63.

Muscovy from 16 to 7, and Geese from 25 to 18.



- ii) Remainder of South-West; During 1979, District Wildlife Officers reported a total of 31 "mallards" in country areas. Removal of these birds is under way.

## 3.4.

Conclusions.

## i) Perth Metro Area:

Following culling, the metro area "mallard" population increased by 83% in 1978 and 162% in 1979. Recruitment is due to breeding activity and to dumping of additional birds on the wetlands. Continual culling will therefore be necessary to maintain the population at an "acceptable" level.

- ii) Remainder of S.W.

Feral duck and goose numbers in the remainder of the south-west are apparently quite low. These birds can be removed with little difficulty by DWO's. No special eradication programme is required.

### 3.5. Proposals for 1980/81

- i) Perth Metro Area: Further trapping and shooting will be undertaken during 1980. A follow-up census will be made in February 1981.
- ii) Remainder of South-West:
- Further surveys of feral ducks and geese in country areas are not proposed. District Wildlife Officers will be requested to remove feral birds wherever and whenever they are encountered.

### ADVICE AND COMMITTEE WORK

During 1979/80 approximately 40% of my time was spent on advice and committee work.

I am a member or deputy of the following committees:

1. Bird Committee of the Western Australian Wildlife Authority.
2. Standing Working Group on Birds of the Council of Nature Conservation Ministers. (Doesn't meet)
3. Peel Inlet Management Authority (Deputy).
4. Planning Committee of the Peel Inlet Management Authority (Deputy).
5. Wetlands Advisory Committee of the Environmental Protection Authority.
6. Lake Joondalup Regional Open Space Technical Advisory Committee.

List of Other Activities

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/  
/  
/  
/

# OTHER ACTIVITIES 1979/80

1. Check Structure - Chittling -
2. Monitoring Lakes near Lake Muir - Cost Mining Leases.
3. Reserve Acquisition
  - S. side Peel Inlet
  - Enna Lakes - Cowley
  - Cogswell - E. side
  - Mott's Swamp
  - Kingsbury - E. of Keston.
  - Marley & Uller Lakes - Gough.
  - White Lake - N. side of River - Albany.
  - also Middle Lagoon & Big Lake - for DEC, & Breeding Swamp (Dumfries)
4. Archival Islands - Cogswell & Little White Lake.
5. Wildlife Trust - Mike Lobbie - Pinkies, Muck & Blackbill.
6. Studies & advice on Bunsellon Wetlands.
7. Dredgers - Stormwater discharge into Forthside & Torndelup.
8. TPD - Lake Loring.
9. Sunny Hook - PWD proposal divert Kent & Tane R.
10. PWD - springy Grassmere (Lake Puck).
11. Silver Gulls - Street to Wattle.
12. Lease - ~~Lyons~~ Beverly
  - Torndelup.
  - Mangrove
  - Bayswater & Eden Dye (Agrie Dismal)
  - ~~some~~ ducks from dams.
13. Lease - Shiner & Public - Botulin & Rhyol Paving etc.
14. Lease - Field & Lane Area
  - Setting of Seams
  - Monitoring conditions
  - Wetlands of concern.

Re. New System

TRANS 1

Standardized Season Specimens

②) Choice of Seasons - average, better than average etc.

iii) System will provide adequate protection from shockers

— provide no substantial increase in numbers of shooters

Walsworth What we have no effective means of applying species

However: we believe ~~there~~ we should monitor abundance of young species.

Only has insufficient resources

Should be another forest

Midford Trust - Above Conservancy - 15.1 ha

TRANS 8 + 9

In WA - RAON - finished by ~~RAON~~ - 11/11/2008

~~Handwritten signature and text, mostly illegible due to blurring.~~

B. 7. LAST Years Decision

1) Real

Canoe, Indian Bay, Marmadocoy  
canyon, Wolf Rock, Colliie

lowest ever recorded snowfall: Jan-Oct.

15 km off north / ocean view

TRANS 3

TRANS 4

11) Wetlands

TRANS 5, 6 + 7

2008

Beverly

7-10-5

Vallenberg

Handing

Observing

Nov 78	10 ppt
	57 ppt
	7 ppt
	16 ppt
	17 ppt
	14 ppt
Nov 79	104 ppt
	215 ppt
	28 ppt
	77 ppt
	72 ppt
	33 ppt

Conclusions :

i) poor breadth conditions

!!) Mumukshu Bhawan our last 5 years of struggle

Wendy be confirmed to cost over summer  
- intend day.