

WESTERN AUSTRALIAN WILDLIFE RESEARCH CENTRE

WILDLIFE RESEARCH AND MANAGEMENT SEMINAR

9 May 1983

J.A.K. Lane

1. WETLAND NATURE RESERVES (WNRs) : MONITORING OF WATER DEPTH AND QUALITY

1.1. Objectives

Routine monitoring of water depth and water quality of selected WNRs in the south-west of the State assists in:

- i) annual evaluation of conditions for waterfowl breeding
- ii) prediction of summer conditions for waterfowl
- iii) determination of seasonal, annual and longer-term variations in water depth and quality - important aspects of the condition of WNRs.
- iv) management of particular WNRs e.g. Lakes Chittering, Nonalling, Byenup, Tordit Garrup, Poorginup and Chandala.

1.2. Procedures

- i) Gauge Installation : 11 depth gauges (staffs) were installed during 1982/83 - 9 on previously un-gauged wetlands and 2 on gauged wetlands. (Some wetlands require more than one gauge due to the gently sloping nature of their shores). The total number of gauged wetlands is now 119. 100 of these are WNRs vested in W.A.W.A. This completes the gauge - installation programme.
- ii) Monitoring : Depth and salinity have been monitored by Research Staff at two-monthly intervals since November 1978. Regular monitoring of pH commenced January 1982. West Australian Field and Game Association members have assisted in monitoring since January 1980.

1.3. Results

All data are now on computer and available on request in either tabular or graphical form.

1.4. Conclusions

In conjunction with rainfall statistics, results obtained from the monitoring programme 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. (See Research

Project 3.10).

The data gathered have also assisted in studies of the distribution and occurrence of aquatic macrophytes (including important bird-food plants such as Ruppia and Chara) in relation to salinity and permanence of habitats. (See Research Project 3.5).

Monitoring of wetland condition during the "Waterbird Usage" project (Research Project 2) is also provided for by the present programme.

1.5. Proposals for 1983/84

Two-monthly monitoring of water depth by Research Staff and W.A.F.G.A. members will continue through 1983/84. Salinity and pH will also be monitored. Monitoring frequency will be reduced to 3 per year (July, Sept. and Nov.) from July 1985 onwards.

1.6. Publications 1982/83

Lane, J.A.K. and Munro, D.R. (1982). 1981 Review of Rainfall and Wetlands in the South-West of Western Australia. Dept. Fish. Wildl. Rept. No. 56 : 1-38.

Lane, J.A.K. and Munro, D.R. (1983). 1982 Review of Rainfall and Wetlands in the South-West of Western Australia. Dept. Fish. Wildl. Rept. No. 58 : 1-41.

1.7. Publications 1983/84

The 1983 Review of Rainfall and Wetlands will be published early 1984.

2. WETLAND NATURE RESERVES : SURVEY OF WATERBIRD USAGE

2.1. Objectives

- i) to provide information on waterbird usage to assist in the management of WNRs and in the resolution of conflicts between different uses.
- ii) to assess the role and importance of the WNR system in the conservation of waterbird populations
- iii) to provide appropriate experience for future monitoring of waterbird abundance.

2.2. Procedures

The Royal Australasian Ornithologists Union has been commissioned to undertake this 4 year study which began in April 1981. Total funding for the project is \$93 000; \$42 800 from the Wildlife Conservation Trust Fund (duck-shooters' licence fees) and \$50 200 from Consolidated Revenue. The RAOU has appointed a full-time Project Coordinator, Mr Roger Jaensch, who has two main roles; to recruit, train and coordinate a team of amateur observers, and to design, test and report on census techniques. A more complete account of procedures is contained in the April 1981 Research Seminar paper.

2.3. Results

The Project Coordinator's activities during the past 12 months have included:

Production of 4 editions of the quarterly project newsletter W.A. Bird Notes

Participation in a 3-day workshop on waterbird counting techniques at Rotamah Island Bird Observatory, Victoria in May 1982. This workshop closely examined and expressed strong support for the way in which the Waterbird Usage project was being conducted. J. Lane also participated in the workshop.

Training of observers through field excursions and campouts.

Experimentation with various techniques for locating and identifying more-secretive waterbirds (crakes, rails and bitterns).

Inspection and survey of some Nature Reserves not yet covered by amateur observers.

Vetting of survey forms submitted by observers.

Development of programmes (with the aid of a contract programmer from UWARCC) to collate and analyse survey data

Correspondence with observers.

Vital statistics for the project are (10th March '83):

73 active participants (have contributed data) of which 42 (58%) are in country districts (9 at Rockingham).

50 contacts (no data contributed yet, or had

left the project).

75 reserves allocated to observers for regular (monthly or two-monthly) survey.

Data received and processed for 82 reserves.

13 reserves judged likely to be important for waterbirds have not yet been allocated to observers.

13 project participants assist with office work, 5 regularly.

878 completed survey sheets have been received. A high standard of data has been maintained and few requests for verification have been necessary. The level of effort has been high and many additional comments have been added to data sheets.

Data from 626 sheets have been incorporated in the data bank at UWARCC. Trial printouts have been circulated to critics and some minor changes to programmes have resulted. A printout of all data to 31 Dec. '82 is due in April 1983. A summary of this and later data will be presented for the April 1984 Research Review seminar.

2.4. Conclusions

The project is running on schedule and within budget.

Regular coverage of 75 of the 88 reserves believed to be of importance to waterbirds has been achieved.

The 73 active participants are contributing high quality data.

2.5. Proposals for 1983/84

Recruiting and training of additional observers will be given high priority in the forthcoming year, as will data analysis and interpretation.

3. WETLANDS : OTHER STUDIES AND MANAGEMENT PROJECTS

Waterbird Research Staff were involved in a number of other research and management projects during 1982/83.

3.1. History of Regulations Governing Duck-Hunting in Western Australia since First Settlement

An extensive search of relevant literature

including more than 60 archived departmental files; Game, Fauna and Wildlife Conservation Acts, and the W.A. Government Gazette from 1873 to 1982 was made during 1982. A first draft has been completed and the final document will be published in the Departmental Report series in 1983/84.

3.2. Lake Chittering

The "check structure" (adjustable-height weir) on the outlet from Lake Chittering continues to require frequent checking and adjustment (by Technical Officer Don Munro) during winter and spring each year in order to fill the lake without flooding the adjoining landholders' properties. Since the check structure was installed in April 1977 it has been possible to hold water right through summer, despite the low rainfalls of recent years. Lake Chittering is therefore a most valuable breeding and summer refuge area for waterbirds.

3.3. Lakes Byenup, Poorginup, Tordit-Garrup (Lake Muir Wetland Nature Reserve).

Mines Department require regular monitoring of water depth, salinity and pH of the above lakes prior to mining for peat. This monitoring has been carried out by D. Munro since April 1977 and is now being performed as part of the wetland monitoring programme (Research Project 1).

3.4. Farm Dams for Waterfowl

A pamphlet describing methods for increasing the suitability of farm dams for breeding waterbirds, particularly game-species of ducks is being printed for distribution to students of Agricultural High Schools and other interested persons, and for publication in S.W.A.N.S. Members of the W.A. Field and Game Association continue their experimentation with various designs of nest-boxes for ducks.

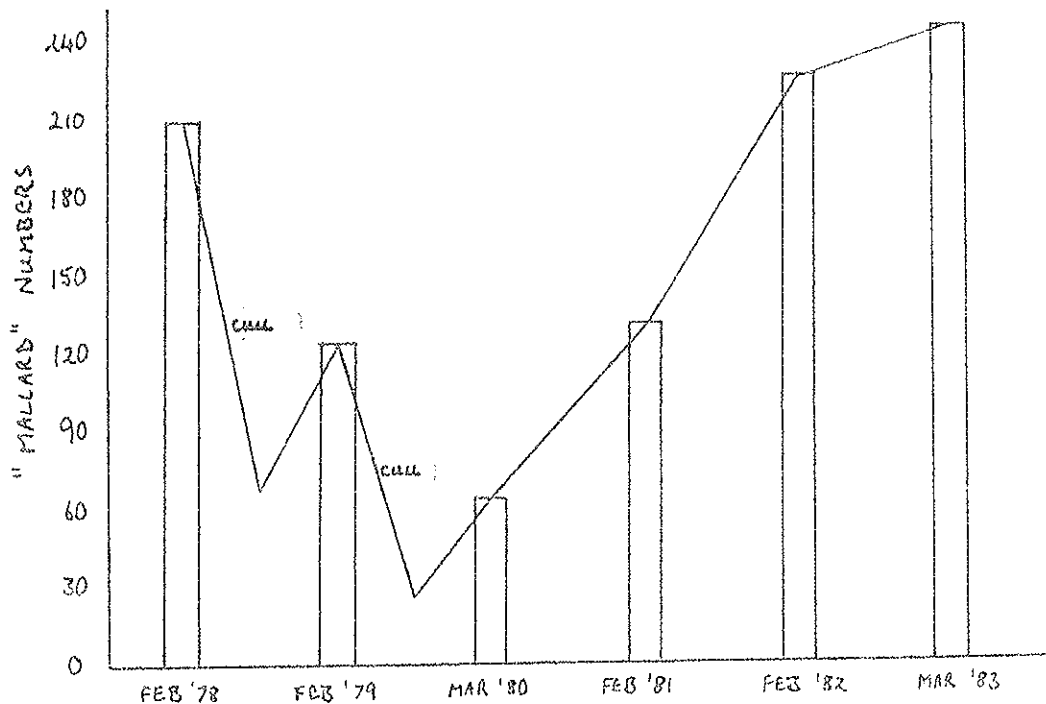
3.5. Aquatic Flora

Dr M. Brock's studies (Murdoch University) of the ecology of hydrophytes (angiosperms and the larger algae) in salt lakes of W.A. continued during 1982/83. Research Staff assisted with collection of plant material from selected WNRs. Early results of this work were presented to the 2nd International Symposium on Saline Lakes in Canada, June 1982 (Margaret A. Brock and J.A.K. Lane. "The aquatic flora of a wide range of saline wetlands in relation to salinity, depth and permanence." Hydrobiologia in press.)

3.6. Feral Ducks and Geese

The last cull of feral ducks and geese on metropolitan lakes by Departmental staff (D. Munro) was in 1979. From February 1982 to February 1983 feral "mallard" (i.e. Anas platyrhynchos - derived domestic ducks) numbers rose from 223 to 252, muscovy fell from 27 to 17 and geese from 29 to 27. The rate of increase in "mallard" numbers observed in recent years has declined; probably due to the efforts of private citizens who have been encouraged, and in two cases authorized, to remove these birds.

An assessment of the risk in terms of gene flow which the feral "mallard" population poses to native Black Duck (A. superciliosa) populations was suggested to the University of W.A. Zoology Department as an Honours project. It has since been taken up by Ms M. Silberstein and is due for completion by November 1983. D. Munro and members of the W.A. Field and Game Association are assisting with the collection of specimens.



3.7. Australian Wader Studies

Technical Officer Grant Pearson assisted members of the Australian Wader Study Group in planning, equipping and running the spring '83 expedition to the north-west. More than 300 000 waders were counted and 4 100 of these were banded and

colour-dyed. (See S.W.A.N.S. 12(2) : 16-20 for report on previous season's activities). In February 1983 Pearson and Lane undertook an aerial survey of the north-west coast as part of a national wader count. 480 000 birds were counted; 310 000 of these were on 80 Mile Beach making this the largest known concentration of migratory wading birds in Australia.

In October 1982, G. Pearson led a one-week course on wader identification, trapping and banding at Eyre Bird Observatory. (Pearson, G.B. 1983. Mobile cannon netting for waders at Eyre Bird Observatory. S.W.A.N.S. 12(3) : 27-30). A similar course will be run by Pearson and Lane in October 1983.

3.8 Wetland Nature Reserves : Card Index and Photographic Library

The card index of administrative information concerning the 250 -odd Wetland Nature Reserves in the southern half of W.A. was up-dated during 1982/83, as was the aerial photographic library (Lands and Surveys Dept. 9" x 9" prints - 1 : 40 000). These continue to be useful in dealing with the many queries which arise each year concerning WNRs and their management.

No further progress has been made towards computerising a salinity-permanence classification of the reserve system. (See Research Project 2 of 1981/82)

3.9. Duck-Shooting Seasons : Opening Day Bag-check Data

Bag-check data for all shooting seasons since 1972 are currently being re-worked for publication during 1983/84.

3.10 Determination of Annual Duck-Shooting Seasons

Decisions concerning duck seasons in the south-west of the State (i.e. the South West and Eucla Land Divisions) are based on annual assessments of conditions for waterfowl breeding. These assessments are based on rainfall data, and on water-depth data derived from the WNR monitoring programme.

Due to poorer than average conditions in 1982 a restricted shooting season was declared for the summer of 1982/83. See Lane and Munro, 1983 (Research Project 1) for a more-detailed explanation of this decision.

3.11 Wetland Creation

No further progress was made during 1982/83 with the proposal to create new wetlands by damming old drainage lines (salt lake chains) of the wheatbelt. A start on this project is now awaiting an assessment of waterbird usage of the Beverley Lakes WNR, as part of the larger assessment of usage of all WAWA-vested WNRs (Research Project 2).

3.12 Benger Swamp

Since 1972 the Department has purchased approx. 85% of Benger Swamp (Harvey). Benger used to be the State's main potato-growing area however rising costs during the 1960's made this an unprofitable activity. Typha orientalis is rapidly invading those areas which are no longer cultivated. This and other problems have necessitated the appointment of a consultant, Mr D. Watkins, 6 months per year for the next three years to study the present situation, liaise with landholders and advise the Department on management. Mr Watkins began his appointment in December 1982 and is supervised by J. Lane.

3.13 Buccaneer Archipelago and Lacepede Islands

J. Lane participated in a 3 week biological survey of the Buccaneer Archipelago in June 1982 (see N. McKenzie's review) and 5 days on the Lacepede Islands in July with Technical Officer P. Fuller.

ADVICE AND COMMITTEE WORK

During 1982/83 approximately 20% of the Waterbird Research group's time was spent on advice, committee and liaison work.

COMMITTEES

I am a member of the following committees:

1. Bird Committee of W.A.W.A.
2. Standing Working Group on Birds of the Council of Nature Conservation Ministers. (Corresponding member only).
3. Wetland Advisory Committee of the Environmental Protection Authority. (Didn't meet during 1982/83).
4. Field Investigation Committee of the Royal Australasian Ornithologists Union.

I was on Annual Leave for 6 weeks during 1982/83. Five weeks of this time and one week of Departmental time were

spent in South Africa presenting a paper at the "Birds and Man" Symposium and visiting National Parks, Game Reserves and other areas of wildlife interest. The paper was titled "Important Aspects of Duck-Hunting in Australia".

WESTERN AUSTRALIAN WILDLIFE RESEARCH CENTRE
SUMMARY OF RESEARCH TOPICS AND AREAS OF INTEREST

MARCH 1983

WILDLIFE RESEARCH SECTION

Andrew Burbidge B.Sc. (Hons.), Ph.D. - Chief Research Officer

RESEARCH TOPICS

Population study and conservation of the Short-necked Tortoise.
Conservation of rare species of vertebrates.
Barrow Island - comparison of animal numbers within and outside oilfield.
Re-introduction of Banded Hare-wallaby to Dirk Hartog Island.
Biological Survey.
Reserve Management techniques.
The Conservation Reserves System in Western Australia.
Marine Turtle nesting sites.

AREAS OF INTEREST AND ADVICE

Mammals in general, especially conservation.
Australian Tortoises and Turtles.
Crocodile conservation.
Sea birds and protection of breeding sites.
Island biogeography and ecology.
Desert reptiles.
Rare and endangered species of fauna.
SWANS - Editorial advice.
General Editor - Wildlife Research Bulletin and Reports.

COMMITTEES

Bush Fires Board.
National Parks Authority (Deputy to Mr Bowen).
Conservation and Environment Council (Deputy to Mr Bowen).
W.A.W.A. Reserves Committee.
W.A.W.A. Rare and endangered fauna committee.
CONCOM Working Group on endangered fauna.
CONCOM Working Group on Crocodiles.
CONCOM Working Group on the Management of Endangered Vertebrates.
Lake Joondalup Management Committee.
Biological Surveys Committee (Chairman).

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Ecology of exotic predators with reference to their impact
on native animals.
Control of exotic predators.
Nutritional niche studies on island Macropodids.
Nutritional competition between feral goats and macropodids.

AREAS OF INTEREST AND ADVICE

Nutritional Biology and Ecology with special reference to
Herbivorous Mammals.
Marsupial Biology.
Microbiology of the Macropodid stomach.

COMMITTEES

Feral Cats - Biological Committee.
Feral Pig Control Committee.

Norman McKenzie B.Sc. (Hons.), M.Sc. - Research Officer

RESEARCH TOPICS

Biological survey of existing and proposed reserves
- CTCRC System 11 (Goldfields).
- proposed reserves in the desert.
- existing and proposed reserves in the West Kimberley.
Taxonomy of bats in the genus Tadarida, sub-genus
Mormopterus.
Ecology of Bats using Mangrove communities.

AREAS OF INTEREST AND ADVICE

Mammals in general - distribution, taxonomy, conservation
status.
Acquisition of Nature Reserves.
Biology and taxonomy of bats.
Animal behaviour - especially bandicoots.
Mangrove communities in Western Australia.
Western Australian Editor for Bat Research News.

COMMITTEES

Biological Surveys Committee.
DCE Working Group on the Bungle Bungle area.

Jim Lane B.Sc. - Research Officer

RESEARCH TOPICS

Management of waterfowl populations and wetland habitat.
Monitoring of wetland condition.
Design and management of farm dams for waterfowl.

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AREAS OF INTEREST AND ADVICE

Waterbirds : biology, habitat preservation, survey and management.
RAOU Wetland Nature Reserve Survey.

COMMITTEES

W.A.W.A. Bird Committee.
CONCOM Working Group on Birds.
Wetlands Advisory Committee of the Environmental Protection Authority.
Lake Joondalup Regional Open Space Technical Advisory Committee.

Angas Hopkins B.Sc. (Hons.) - Research Officer

RESEARCH TOPICS

Management of natural ecosystems - especially in relation to the use and effects of fire in Nature Reserves.
Development of techniques for the rehabilitation of disturbed areas.
General ecological field studies - Eneabba, Tutanning, Boyagin, Two Peoples Bay, Lake King and Esperance.
Rehabilitation of mined areas - Eneabba, Barrow Island, Woodvale, Mandurah.
Development of computer systems for integrating resource data on individual reserves together with fire behaviour tables to permit long term effects of management decision to be predicted.
Study of Middle Island (Esperance) following a fire.
Revegetation of previously farmed land at Tutanning.
Species richness (especially in W.A. heathlands) and biogeographic implications.
Design of Nature Reserves in relation to degrading influences.
Effects of drought stress on native plant species.

AREA OF INTEREST AND ADVICE

Mangroves, especially Anglesea Island (Bunbury).
Effects of Honey Bees on native plants.
Management of Nature Reserves.
Management of forests.

COMMITTEES

W.A.W.A. Flora Committee.
CONCOM Working Group on endangered flora.
Mineral Sands Agreement : Rehabilitation Co-ordinating Committee.
Technical Committee on Environmental Problems associated with Underground Water Extraction.