WETLANDS AND WATERBIRDS PROGRAM

PROGRAM LEADER

J Lane

CURRENT RESOURCES (1990/91)

This program comprises 3.6 persons (1.9 Professional + 1.7 Technical). Its estimated CRF budget is $199 624 (including $155 824 salaries and $43 800 operating costs).

RESOURCES IN PREVIOUS YEAR

This program comprised 3.20 persons (1.50 Professional + 1.70 Technical). Its budget was $185 247 ($126 307 salaries + $58 940 operating costs).

BACKGROUND

Western Australia has a great diversity of wetland types - greater than that of any other Australian State - ranging from the extensive mangals, tidal mudflats, tropical lakes, rivers and floodplains of the Kimberley region, through the many extensive, occasionally inundated shallow "pans" of the arid north-west and interior, to the highly seasonal, winter-filled lakes and streams of the temperate south-west.

These wetlands support an enormous abundance and substantial diversity of plant and animal life. Many sites are of international significance. Lakes Argyle, Gregory and Roebuck Bay and Eighty Mile Beach each support more than 250 000 waterbirds of 50 or more species, many of them transequatorial migrants. The seasonal swamps of Ellen Brook and Twin Swamps near Bullsbrook contain the only known populations of the endangered Western Swamp Tortoise (*Pseudemydura umbrina*), one of the rarest animals on earth.

The Wetlands and Waterbirds Program aims to ensure the conservation of these wetlands and their flora and fauna. Central to the program approach is the dual theme of conserving representative samples of wetland types and conserving the systems or networks of wetlands, many of which are seasonal, which are necessary to maintain present numbers of migratory fauna, principally waterbirds.

ACHIEVEMENTS

Significant accomplishments were:

Nomination of nine Western Australian wetlands as Wetlands of International Importance (Ramsar).

Initiation of a major new project on waterbird usage of wetlands of the Swan Coastal Plain ("Scopewest").

Publication of a major review paper on breeding seasons of waterbirds in south-western Australia.

Further advances in methodology of monitoring and controlling populations of nuisance midges (chironomids) on Perth's wetlands.

Preparation of draft State Wetland Conservation Policy for Western Australia.

AIM

To provide scientific information to ensure effective conservation and management of Western Australia's wetland ecosystems, including the maintenance of waterbird populations.

PRIMARY OBJECTIVES

Wetland Values

To identify conservation values of the wetlands and wetland systems of Western Australia, particularly with respect to reservation of a representative sample of wetland types, maintenance of species (flora and fauna) diversity and provision of habitat necessary for the maintenance of the State's waterbird populations.

Status of Waterbird Populations

To monitor and manage the State's 130 species of waterbirds, particularly those species of ducks which are harvested.

Wetland Ecosystem Dynamics

To develop an increased understanding of the functioning of wetland ecosystems, identify major degrading influences and provide management solutions.

Public Involvement

To foster a sympathetic public attitude to the conservation of waterbird populations and wetlands through direct involvement of the public in appropriate research projects and through open communication of research findings.

Communication

To communicate research results in the form of technical and scientific publications, educational literature, committee representation, and to provide advice and liaison with other CALM staff, other Departments, and the community at large by way of training courses and seminars.

20 YEAR GOALS (based on current resources and in priority order)

1. Establish an inventory of wetlands of the State and a reservation system that represents all types of wetlands, with emphasis on improved representation in areas outside the south west and along streams, rivers and tidal zones.***

2. Study factors affecting population dynamics, distribution and occurrence of waterbirds, especially game species of duck and migratory waders.**

3. Determine conservation status of wetland and stream invertebrates and native fish and examine factors affecting their occurrence.**

4. Examine the effects of environmental changes on the biota of wetlands and ways of ameliorating the effects of changes including salinization, Greenhouse effect and eutrophication.**

5. Document habitat quality of wetlands, including rivers and streams, with emphasis on riparian vegetation and water quality.*

6. Study issues related to pest management, artificial creation of wetlands and other management matters to ensure that the actions undertaken are biologically sound.*

5 YEAR GOALS

1. Establish and maintain a volunteer-based program (500+ observers) for annual assessment of the abundance of waterfowl (particularly game species of ducks) and for identification of important waterbird sites in southwestern Australia.

2. Determine waterbird usage of wetlands on the Swan Coastal Plain and identify wetland attributes that influence usage.

3. Determine the conservation value (principally the level of usage by waterbirds) of remote wetlands (Lakes Gregory, McLeod etc.) of probable international importance.

4 Assess seasonal usage by waterbirds of a number of important, poorly known, wetland sites in south-western Australia.

5. Monitor annually water levels and water quality of a sample of south-west wetlands. Use these data to assist in determining duck shooting seasons and in monitoring the condition of wetlands.

6. Analyse results of 1981-1985 RAOU Waterbird Survey project as first step in identifying the general environmental parameters within a wetland that affect its usage by waterbirds.

7. Assess the conservation status of the lentic invertebrate fauna in the south-west through wetland surveys and examine how various

environmental parameters (eg. salinity, nutrients) affect the distribution of species.

8. Assess the conservation values of different habitats in Leschenault Inlet and the effect of mosquito control on those values for waterbirds and invertebrates.

9. Study the effect of salinity on usage of wetlands by ducks for both breeding and as drought-refuges as an indication of the impact of increased salinization in the south-west on waterbirds.

10. Examine food selection in waterbirds in relation to the invertebrate prey available to gain some understanding of how changes in invertebrate species composition that result from salinization affect waterbird distribution.

11. In collaboration with other State and Local Government authorities, develop more effective and environmentally acceptable methods of midge (chironomid) nuisance control.

12. Examine pesticide levels in Herdsman Lake and animals therein in relation to both spraying for Argentine ants and other uses of insecticide within the catchment.

13. Gain a preliminary indication of the level of threat to native avifauna and wetland ecosystems posed by continued use of lead shot for waterfowl hunting in the south-west of W.A.

14 Investigate potential for lowering of salt loads of the Yenyenning Lakes system through experimental manipulation of Qualandary Crossing outflows (Yenyenning Lakes Interdepartmental Working Group.

15 Preparation of waterbird habitat protection guidelines for Vasse and Wonnerup Estuaries (CALM Vasse-Wonnerup Working Group).

16 Analyse and publish results of Australian Pelican banding and wing-tagging program.

PROJECTS TO BE COMPLETED FROM JULY 1989 TO JUNE 1994
(numbers refer to the Table following)

1-4,7,8,9,11-16,18,19,20,21

PROPOSED NEW PROJECTS - with additional resources (in priority order)

1. State of the Wetlands. Develop procedures for periodic assessment of the rate of loss (or gain) of wetland types. This information would be used to counteract the current piecemeal loss of wetland resources and to enable policy development, protective legislation, acquisition, management etc. to be targetted on areas of greatest need.

PUBLICATIONS* AND REPORTS 1989/90

Anon (1989). Progress in midge research. Midge Notes No. 3. Published by the Midge Research Steering Committee, Perth. (Prepared by J. Lane).

*Anon (1990). Wetlands nominated by the Government of Western Australia for inclusion on the List of Wetlands of International Importance. Department of Conservation and Land Management, Perth. (Prepared by S.A. Halse).

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Primary Objectives	5 Year Goals		Projects (RPP No.)	Tasks completed 1989-90	Targets 1990-91
Wetland Values	Remote wetlands	1	Kimberley surveys (RAOU, J Lane)	Final draft prepared	Publish (RAOU)
		2	Lake Gregory	Organised workshop on Lake Gregory, proceedings prepared for publication. Undertook preliminary studies at lake on waterbirds and invertebrates (with W.D. Williams)	Organise funding for further work, publish invertebrate results (W.D. Williams Adelaide Uni).
	Seasonal usage	3	South west surveys (RAOU, J Lane)	Article published concerning Vasse-Wonnerup waterbird populations (J. Lane)	Publish (RAOU)
		4	Waterbird use of wetlands of Swan Coastal Plain (S Halse, A. Storey, RAOU)	Wetlands selected, observers recruited and bird surveys undertaken. Project Biologist appointed and environmental data collected for wetlands.	Continue data collection, preliminary analysis.
	Invertebrate conservation status	5	Ostracod taxonomy (S Halse)	None	Publish prepared species descriptions (P. DeDeckkes,ANU), continue surveys and describe new species as found.
		6	South-west surveys (S Halse, A. Storey)	Sampled 40 lakes with UWA Honours students, continued analysis of earlier surveys.	Publish results from UWA work, continue to analyse and publish earlier work.
Status of waterbird Populations	Annual abundance	7	November & March counts (S Halse, RAOU)	Completed 1989/90 counts. Submitted 1988/89 work for publication.	Publish 1989/90 work and undertake 1990/91 counts.
	Duck banding	8	Analysis of historical data (S Halse)	Submitted paper on annual survival rates. Decided to delay preparation of duck movement paper because currently collecting more data.	None (project finished)
	Egret Colonies	9	Location, size and numbers (RAOU, J Lane)	Report Published (RAOU)	-
	Pelicans	10	Analysis of banding and tagging program.	None	Analyse results and prepare for publication
Wetland Ecosystem Dynamics	Wetland monitoring	11	Sept & Nov surveys (J Lane)	Sept & Nov 1989 surveys undertaken	Do Sept & Nov 1990 surveys

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	Environmental parameters	12 RAOU waterbird survey analysis (S Halse, M Williams)	Continuing to prepare paper on waterbird habitat preferences	Publish
	Impact of Mosquito Control	13 Leschenault Inlet (S Halse)	Preparing paper for publication	Publish
	Ducks and salinity	14 Breeding success in south-western Australia (S Halse)	Continued work on techniques as part of Swan Coastal Plain Project.	Continue development of techniques
	Food selection	15 Diet in fresh water (S Halse)	None	Continue on ad-hoc basis
	Midge nuisance control	16 Midge Research Steering Committee (J Lane)	Control methods tested. Monitoring procedures developed.	Field testing of growth regulators.
	Herdsman pesticides	17 Organochlorines in swamphens (S Halse)	None	Publish (J.Davis, Murdoch Uni)
	Wetland vegetation	18 Longterm monitoring (S Halse)	None	Publish
	Lead shot	19 Gizzard contents analysis (J Lane)	Additional wing and gizzard samples taken from selected species.	Chemical analysis. Report preparation.
	Yenyenning Lakes	20 Experimental flow control (J Lane)	Salinities, depths and flows monitored.	Preparation of final report.
	Vasse-Wonnerup Estuaries	21 Habitat protection guideline (J Lane)	Consideration of management issues.	Preparation of draft guidelines.
		22 Saltwater crocodile populations (RS12-13) (J Lane)	Advice given concerning requirements for monitoring of populations.	Contribute to preparation of crocodile management plan.

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RESEARCH

PLAN

1990-1991

DEPARTMENT OF CONSERVATION
AND LAND MANAGEMENT