

AN OVERVIEW OF WETLAND CONSERVATION POLICIES AND PROGRAMS IN WESTERN AUSTRALIA

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Introduction

Wetland conservation and management in Western Australia necessarily involves a number of State Government Departments and instrumentalities. Principal among these are the Department of Conservation and Land Management (CALM), Environmental Protection Authority, the Department of Planning and Urban Development, WA Water Authority, Waterways Commission and the Integrated Catchment Management Coordinating Group.

In this presentation I will briefly describe a number of recent and interesting initiatives of these State agencies concerning wetland conservation policy and program development.

Routine wetland management activities performed by agencies such as CALM and the Waterways Commission, though important, are not presented. Information on such activities may be obtained from Departmental annual reports or from the agencies themselves.

Many current research activities are also considered to be outside the scope of this paper. An updated bibliography of publications on wetland research in Western Australia is being compiled by the Aquatic Ecosystems Subcommittee of the WA Steering Committee for Research on Land Use and Water Supply (Arrowsmith 1989) and queries may be directed to that group.

International Agreements

Australia is a Contracting Party to the Ramsar "Convention on Wetlands of International Importance Especially as Waterfowl Habitat". In Australia, responsibility for implementation of the Convention has been delegated to the individual State and Territory governments.

In February 1990, the Government of Western Australia nominated (CALM 1990) nine Wetlands of International Importance under the Ramsar Convention bringing the total number nominated in Australia at that time to thirty-nine.

The nine Western Australian sites range in size from <500 - 150 000 hectares and include wetlands of many types, from tidal mudflats, mangroves and estuaries to fresh, brackish and saline swamps and lakes. In accordance with Article 2.2 of the Convention, most sites have been nominated on the basis of their importance to waterbirds. Roebuck Bay and Eighty Mile Beach, for example, together support more than 0.5 million migratory shorebirds. Lake Argyle also supports more

than 100 000 waterbirds, as does the Peel-Harvey estuarine system in the State's south-west.

Other conservation values have not been overlooked. The mangroves of the Ord River floodplain are among the best in the Kimberley in terms of their species diversity, structural complexity and the massiveness of the stands. Lake Argyle has probably the largest population of freshwater crocodiles (Crocodylus johnstoni) of any wetland in the world, more than 25 000 animals. Lake Clifton, in the Peel-Yalgorup system, is one of only two sites in the world where "stromatolite-like" structures occur in hyposaline water.

Nomination of these nine sites represents the culmination of nearly ten years of studies involving the Department of CALM, its predecessor the Department of Fisheries and Wildlife, the Royal Australasian Ornithologists Union and various tertiary institutes.

Several other Western Australian wetlands which satisfy criteria for listing as Wetlands of International Importance have yet to be nominated. Notable among these are Lake Gregory (Jaensch and Vervest 1990a, Halse 1990), Lake MacLeod (Jaensch and Vervest 1990b), and Lake Guraga (Jaensch et al 1988, p260).

* State Wetland Conservation Policy

The Western Australian Government will soon release a draft State Wetland Conservation Policy for public discussion.

The policy will formalise the Government's commitment to identifying, maintaining and enhancing the State's wetland resource, including the full range of wetland values, for the long term benefit of the people of Western Australia. The policy proposes a number of principal objectives with respect to conservation of the resource. These include the prevention of further, avoidable loss or degradation of wetlands; the establishment of a network of wetland conservation reserves; the maintenance of genetic diversity; the maintenance of abundance of waterbird populations, and an increase in public awareness and appreciation of wetlands. The draft policy also proposes a definition of wetlands which is similar in scope to that of the Ramsar Convention, though essentially marine areas such as coral reefs are excluded.

Environmental Protection Policies

Environmental Protection Policies (EPPs) are legal documents which set the rules for protecting special features of the Western Australian environment. They are declared under provisions of the Environmental Protection Act 1986.

Before an EPP may become law, a draft policy must be prepared and circulated for public discussion. The Environmental Protection Authority (EPA) must consider all submissions and may revise the draft

policy accordingly. The draft policy and submissions are then forwarded to the Minister for the Environment, who must also consult affected parties before deciding whether to approve or reject the policy. When EPPs have been approved by the Minister they become law. Severe penalties (up to \$2 000 per day for continuing offences by companies) can be imposed upon people and companies found guilty of breaking these laws.

The EPA will soon release a draft EPP for the protection of 3 200 wetlands on the Swan Coastal Plain, an area 350 km north-south by 30 km east-west, roughly centred on Perth (EPA 1991). 1 500 of these wetlands are on private land. The intention of the EPP is that .. "no more filling in, mining, excavation, pollution, or changes in drainage capable of reducing or destroying the values of wetlands on the Swan Coastal Plain will take place than is absolutely necessary". It has been estimated that "about 80% of the wetlands of the Swan Coastal Plain have been irreversibly damaged since European settlement" (EPA op cit).

EPPs are also being prepared for the protection of the Ghangara (Kite 1989) and Jandakot Mounds near Perth. These two Mounds are unconfined aquifers which supply much of Perth's water needs and support many important wetlands as well as substantial areas of native vegetation. Special protective measures are needed to maintain these values (WAWRC 1989a, 1989b).

Research projects aimed at developing robust environmental criteria for the protection of remnant vegetation and wetlands on the Jandakot Mound include the following: the effects of altered water level regimes on wetland plants; life history strategies of aquatic fauna in relation to nutrient enrichment and water level fluctuations; interaction between wetlands and aquifers; wetland classification on the basis of water quality and invertebrate communities, and the value of different types of wetlands for waterbirds using the Swan Coastal Plain (Luketina 1989; Lavery and Kite 1991). Total funding for these five projects is \$1.2 million over five years.

The Peel-Harvey estuarine system near Mandurah is threatened by excessive nutrient discharge from its catchment (Humphries and Croft 1984; Hodgkin et al 1985). Major algal blooms have occurred during the past two decades, causing weed accumulation on beaches, offensive odours and fish deaths. An EPP for the Peel-Harvey catchment will aim to reduce nutrient discharge from diffuse sources such as broad-acre farming and urban development. It is intended that point sources such as piggeries (Humphries and Bott 1988) will be controlled by other EPA mechanisms.

Integrated Catchment Management

In November 1987 the State Government adopted a policy of "Integrated Catchment Management" (ICM) for Western Australia. The intention of this policy is to provide .. "a means of coordinating land-use planning, water resource planning and conservation at a regional

(catchment) level which is based on the natural links between the land and water resources" (WA Government 1989b).

In 1988 a policy group (ICMPG) was established to put ICM into action. ICMPG has representation from all the major authorities concerned with land and water management in WA and initially reported direct to Premier and Cabinet. During the past three years ICMPG has formed a number of community-based Catchment Coordinating Groups and Government Officers Technical Advisory Groups to develop management plans for specific catchments, initially concentrating on those of nutrient-enriched estuaries of the south-west (Hodgkin 1990). ICMPG has also had an important role, together with the Department of CALM, in the development of the draft State Wetland Conservation Policy referred to earlier.

In its early days ICMPG faced some hostility to its activities from various vested interest groups (Synnot 1991). In 1990 the group's name was changed to the ICM Coordinating Group in order to clarify its role as a coordinator of government actions, rather than as a developer of policy (Robinson 1991). The Office of Catchment Management - essentially the Secretariat of ICMCG - was also established. ICMCG now reports to the Minister for Environment rather than to Premier and Cabinet.

- * Ways in which barriers to the implementation of integrated catchment management in Western Australia might be overcome are to be the subject of a special, four month study by a visiting expert in 1991 (Hollick 1991).

Wetland Classification, Mapping, Inventory, and Evaluation

The WA Water Authority has taken a leading role in classifying, mapping and evaluating wetlands in Western Australia in recent years (see Johnstone 1990).

A classification system for the wetlands of the Swan Coastal Plain has been developed (Semeniuk 1987, 1988; LeProvost et al 1987; Semeniuk et al 1990) and wetlands of the northern Plain (Lancelin - Mandurah) have been mapped. A preliminary listing of significant wetlands of the region has been made (LeProvost et al 1987) and wetlands in a number of Shires close to Perth have been evaluated (Murdoch University 1989, 1990) using a process developed by the EPA (EPA 1990). Further mapping and evaluation is proceeding. The classification system is also being tested on wetlands of the south coast in the Scott River area.

The WA Department of Land Administration has been an active participant in the wetland mapping program and has produced overlay maps of the wetlands at 1:25 000 scale.

Wetlands and Local Government Planning

The EPA is endeavouring to increase Local Government awareness of the

conservation values and management needs of wetlands. The need to modify procedures for land use planning to take into account wetland values and processes is being emphasised. The EPA has recently published a bulletin which provides Local Authorities with guidance in determining management objectives for particular wetlands (EPA 1990). Local Authorities are also being encouraged to assist in funding wetland evaluation and water quality monitoring projects, and to develop formal policies for wetland conservation and management.

Wetlands and Horticulture

A serious threat to the water quality of many wetlands on the Swan Coastal Plain is nutrient loss from conventional horticulture (Humphries et al 1989). Due to the poor nutrient status of the soils, large quantities of fertilizer are frequently applied in order to maximise production. In soils with low retention capacities much of the applied phosphorus may be leached and transported downstream to wetlands (Yeates 1988).

The EPA, in consultation with the Department of Planning and Urban Development, is developing a non-statutory, horticultural zoning policy to prevent future horticultural projects from impacting upon wetlands. The proposed approach is to restrict new projects to soils with high phosphorus retention indices, and to locate them downstream from important wetlands.

Wetland Management and Midge Control

Non-biting midges (Chironomidae) are, at times, a source of considerable annoyance to people living adjacent to several of Perth's urban wetlands.

During the 1970s and 1980s the larvicide Abate (temephos) was used by Local Authorities to reduce midge numbers. In the mid 1980s concern was raised about the potential of temephos to kill waterbirds. There was also some evidence that midges were developing resistance to temephos.

In 1987 a Midge Research Steering Committee was formed by local and State Government. During the past four years this Committee has funded intensive research into more effective and more environmentally-acceptable methods of dealing with the midge nuisance problem. Annual reports (see Davis et al 1990) have been published by the Murdoch University midge research team.

An insect growth regulator is currently being tested against midges and non-target organisms. The relationship between nutrient levels, algal blooms and midge production is also being studied. The study team's final report and management recommendations will be published in 1991.

Estuaries and Mosquito Control

Mosquitoes pose health as well as nuisance problems for nearby residents of at least two south-western Australian estuaries, the Peel and Leschenault Inlets.

In the summer of 1988-89 several hundred cases of polyarthrititis were reported among residents of Bunbury, Mandurah and Perth. This minor epidemic was caused by a virus (Ross River) transmitted by saltmarsh mosquitoes. An interim strategy for control of these mosquito populations was rapidly developed and implemented, using a special grant of \$500 000 (WA Government 1989a).

In June 1990 the interim control strategy expired. Replacement strategies have been drafted (Chester and Klemm 1990a, 1990b) and public comment is being sought prior to adoption by Government. The common aim of the two new strategies is .. "To establish a programme for the control of health threatening mosquitoes that is cost efficient, effective by health standards and sustainable, whilst maintaining the integrity of wetland ecosystems". The major components of the strategies are research, land use planning, education/information, physical modification of mosquito breeding grounds and use of larvicides.

"Ribbons of Blue" - A Catchment Monitoring Project

Ribbons of Blue is a community-based initiative of the Office of Catchment Management aimed at involving local communities in caring for their waterways and monitoring their condition (Suppar 1990).

Ribbons of Blue began in 1990 as a pilot project on the catchment of the Swan and Avon Rivers, an area of 123 000 square kilometres. Students and teachers from 57 schools and representatives of 30 Shire councils collected water samples from local watercourses and analysed these for 10 water quality parameters including salinity, pH, and turbidity. Samples were also sent to Perth for testing the levels of chlorophyll, suspended solids, phosphorus and nitrogen. All data have been entered into a central computer, allowing an overall picture of the health of the waterways to be developed and individual "hotspots" to be identified. This information has been passed back to participants to assist them in planning monitoring and rehabilitation activities for 1991.

The project has aroused considerable community interest, both in the Swan-Avon and in other catchments, and is likely to be expanded in future years.

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