Thomsons Lake Nature Reserve

More than 1000 Nature Reserves have been gazetted in Western Australia to perpetuate representative areas of the state's natural and semi-natural vegetation and wildlife. Despite the number of reserves in existence, there are still many types of wildlife habitats which are poorly represented, particularly in the metropolitan area. Among these areas are wetland systems which are so important as breeding and feeding areas for waterfowl.

Many otherwise suitable lakes have been spoilt for waterfowl by surrounding development, filling or rubbish disposal, pollution or by being used for active recreation such as waterskiing. In some instances, attempts to beautify lakes by clearing and grassing foreshore areas and deepening the lakes have ruined them for waterfowl. Most waterfowl feed in the more productive lake shallows and nest in the protection of dense vegetation which often characterises "untouched" lakes.

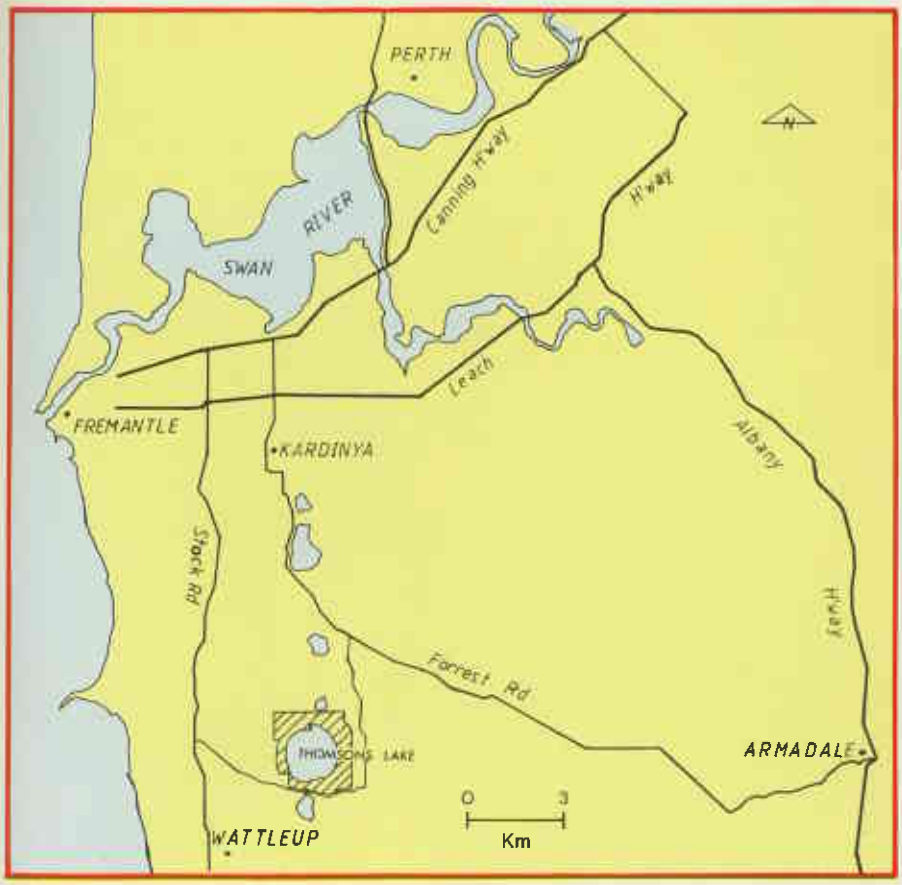
Those lakes retaining their natural form are also highly prized by people who enjoy their scenic qualities and natural bushland and deprive pleasure from quietly observing the rich wildlife such lakes support.

One such lake which still boasts a diverse variety of vegetation and wildlife and yet is within reach of the Perth and Fremantle metropolitan areas is Thomsons Lake, the largest and one of the less developed of a chain of freshwater wetlands in the City of Cockburn.

Thomsons Lake is a gazetted Nature Reserve situated about 34 kilometres south-west of Perth and 19 kilometres south of Fremantle and lies between the smaller Kogolup and Bananup Lakes. The Reserve is bounded to the east and west by rural small holdings, to the south by Russell Road and the University of Western Australia's Marsupial Breeding Station and to the north by uncleared bushland zoned rural and owned by the State Housing Commission.

In addition to the centrally placed lake (about 172 hectares), the Reserve also includes some 300 hectares of mainly woodland and open forest in a buffer 100-400m wide around the lake. The reserve's vegetation had developed on two dune systems of Pleistocene age and is characteristic of the diverse range of vegetation and flora found on the dune systems of the Swan Coastal Plain. It includes a variety of plant associations dominated by Flooded Gum *(Eucalyptus rudis)*, Jarrah *(E.*

The reed beds around the fringes of Thomsons Lake provide excellent cover for waterbirds. — Photo C. Young



▲ Location of Thomsons Lake Nature Reserve.

▼ *Banksia menziesii* is one of several Banksia species present in the woodlands surrounding the lake. — Photo I. Crook.

marginata), Pricklybark *(E. todtiana)*, Swamp Paperbark *(Melaleuca preissiana)* and various *Banksia* species.

History of the Reserve

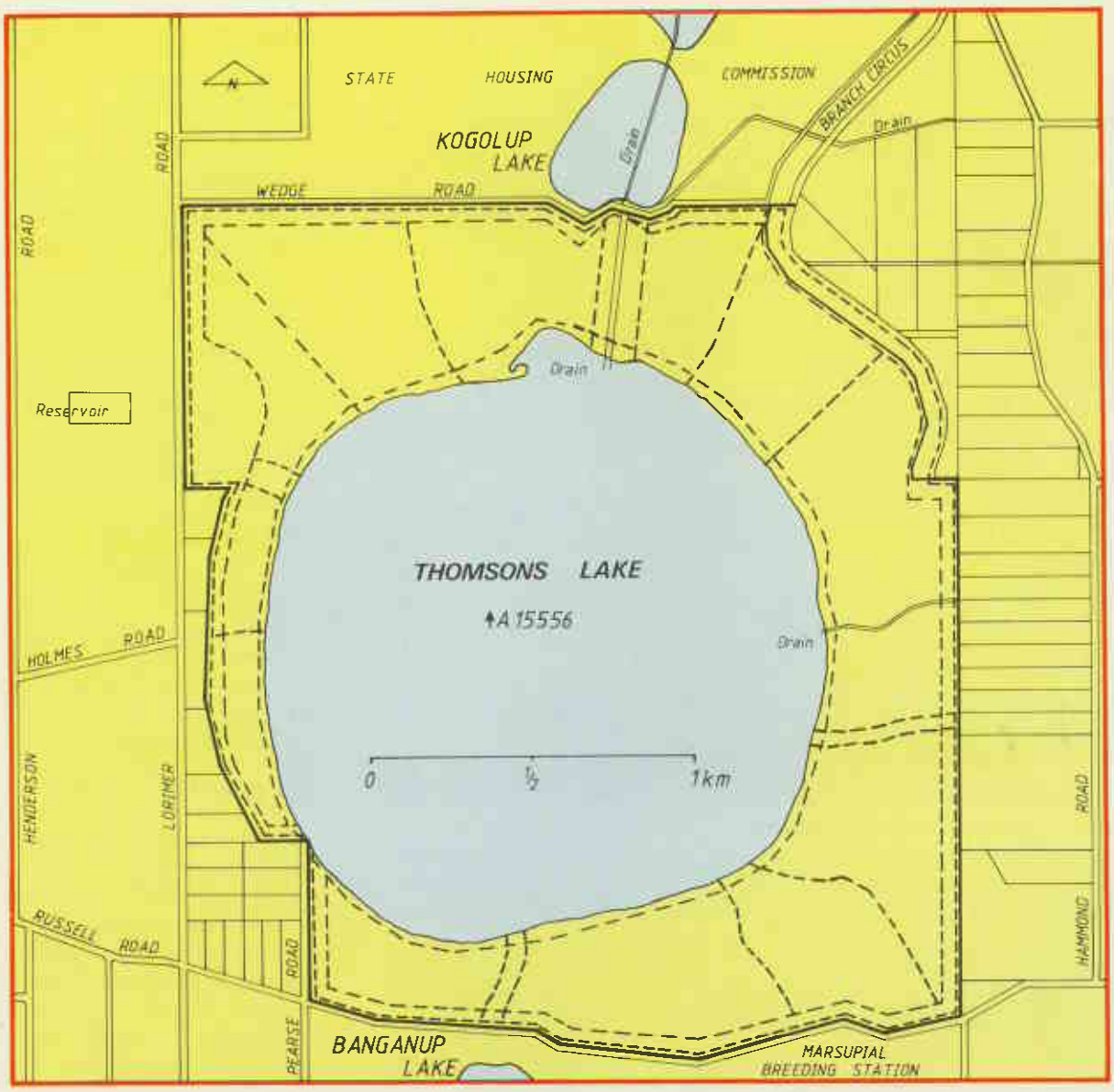
The value of Thomsons Lake as a potential reserve was first formally brought to the attention of the Department of Fisheries and Wildlife in 1954 by Mr. Waverney Ford of Hamilton Hill who prepared the first recorded fauna list for the area. At that time the Reserve included areas north and south of Russell Road and was set aside for the purpose of drainage.

At the time of Mr. Ford's report there was a proposal to lease the southern part of the Reserve for the grazing of sheep and cattle. However, on the basis of the report and general knowledge of the area the Department objected successfully against the proposal.

In July, 1955 the purpose of the Reserve was changed to Drainage and Conservation of Fauna and the value of the Reserve to wildlife was further confirmed by Fauna Warden G. C. Jeffrey in May, 1956: "... Mr. Ford certainly put us on to a good area for a sanctuary. The birdlife there at the moment is marvellous ... I have never observed birds so tame. The blue wrens and thornbills came within ten feet of me as did the robins and grey fantails."

The Conservator of Forests was equally impressed with the area: "... this reserve contains, for a single compact area, probably the greatest number of native plant species once common to the metropolitan area and coastal plain. This years spring flowering, particularly in the area of Russell Road, is reported to have been simply breath-taking ..." *(Conservator of Forests, in litt. to the Under-Secretary for Lands, November, 1960).*

However, at this time (during the late 1950's and early 1960's), the Reserve was being ill-used by nearby landowners for grazing their cattle. Wood was being cut illegally and wildfires were causing some damage to the vegetation.



▲ Thomsons Lake Nature Reserve showing present network of firebreaks (dashed lines).

Being an unvested reserve, the Department was powerless to control trespass by cattle or prevent such things as timber-poaching. A Vesting Order for the Reserve was therefore sought in favour of the Fauna Protection Advisory Committee, the forerunner to the Western Australian Wildlife Authority and the vesting authority for most of the Nature Reserves now managed by the Department of Fisheries and Wildlife. This was granted and in January, 1969 the role of the Reserve for nature conservation was further strengthened by a change of purpose to "Fauna Conservation, Research and Drainage" and in August, 1970 elevated to Class A under the Land Act.

Physical Features

The Thomson Lake Nature Reserve occupies a depression between two series of sand dunes, the junction between the dune systems being marked by a chain of wetlands between Kardinya in the north and Wattleup in the south.

Thomson Lake is the largest of these wetlands but varies between being dry to 3.3m in depth, depending on season and rainfall. A field study conducted at the lake in 1976 recorded the lake's diameter as 1700m and its average depth as one metre. Aerial photography in subsequent years (1977 and 1978) showed the winter diameter of the lake as 2000m and 1700m respectively. The amount of water in the lake varies widely however. Metropolitan Water Board data show the lake to have dried in the summer of 1961, '62 and '63, and to have reached its greatest recorded depth of 3.6m above the lake bed in October, 1968. The lake bed itself is 11.79m above sea level and the surrounding dunes rise to approximately 45m above sea level.

Drainage

At present, drainage water flows into the lake from the north, from Lake Kogolup, and from agricultural land to the east. This has led to occasional blooms of the blue-green alga *Microsystus aeruginosa* indicating that significant amounts

▲ The bright flowers of *Hardenbergia comptoniana* and a *Hibbertia* species are among many which brighten the bush through spring. — Photo I. Crook

▼ Good winter rains this year have filled the lake to its outer fringes for the first time in many years. — Photo C. Young

▲ Sunlight filters through the vegetation around the lake. — Photo C. Young

of mineral nutrients, nitrogen and phosporus, may be entering the lake system. This brings with it the possibility of algal poisoning among waterfowl and eutrophication and deoxygenation, firstly of the bottom sediments (leading to the possibility of increased occurrence of botulism in water birds) and finally of the whole lake.

Because of this threat, consideration will be given to establishing a programme to monitor phosphorus and nitrogen levels of the lake water and drainage water as part of an overall management plan by the Department of Fisheries and Wildlife.

Vegetation

A field study of the reserve in 1976 by Mrs. P. Clay positively identified more than 200 plant species and pointed out that the area supports 13 of the 23 tree species known from the Swan Coastal Plain as a whole.

A more recent study by Dr. Barbara Rye has shown that the Reserve also supports a population of about 80 plants of *Dodonea hackettiana*, a species declared rare under the flora provisions of the Wildlife Conservation Act.

Mrs. Clay recognised 15 vegetation "zones" on the Reserve during her study and, in addition, noted the distribution of Tuarts *(E. gomphocephala)*. These were mainly found on the higher ridges scattered through the Jarrah and Banksia open forest and woodland areas.

In the same year as the field study was carried out, the root-rot fungus *(Phytophthera cinnamomi)* was isolated from an area of small Banksias close to the southern boundary of the Reserve. There is no evidence of the *(phytophthora* having spread at this time.

Wildlife

Small marsupials and native rodents were not recorded during the 1976 field study of the reserve and the marsupial fauna was restricted to the Western Grey Kangaroo *(Macropus fuliginosus)*, Brush Wallaby *(Macropus irma)*, Brush-tailed Possum *(Trichosurus vulpecula)* and the Short-nosed Bandicoot *(Isoodon obesulus)*. Although the mammal fauna is not of great significance, the Reserve is rich in other wildlife. Seven species of Amphibia, 12 reptiles (three snakes and nine lizards), and a total of 136 bird species have been recorded from Thomson Lake and the surrounding bush at the time of publication.

The lists show that Thomson Lake continues to support a remarkably diverse bird fauna in particular, there being few indications of species having being lost from the Reserve since observations began. However, considerable variation in numbers and types of birds on the Reserve were evident during the six months of the 1976 study. Mrs. Clay made observations on several lakes in the Cockburn area and these suggest that, as a group, the Cockburn wetlands provide a more complete range of habitats for waterbirds than Thomson Lake or any other single lake in the chain.

For example, Red-necked Avocets *(Recurvirostra novaehollandiae)* occured in far greater numbers in the shallow waters of Bibra Lake than elsewhere, whereas White-faced

Herons *(Ardea novaehollandiae)*, White Egrets *(Egretta alba)*, and Yellow-billed Spoonbills *(Platalea flavipes)* preferred the sheltered waters of Thomsons and Kogolup Lakes with their natural bush surrounds. Several small waders such as Greenshanks *(Tringa nebularia)* and Red-necked Stints *(Calidris ruficollis)* also showed a preference for the shelter provided by reeds around the Thomsons Lake shore, whereas Pink-eared Ducks *(Malacorhynchus membranaceus)*, which feed almost entirely on aquatic invertebrates occur in greatest numbers on the productive Yangebup Lake during periods of falling water levels.

In addition to the decided preferences of waterbirds for one place or another, these very mobile birds also come and go, from lake to lake, in response to interference and changes in things like food supply, lake water levels and their own biological requirements for places to feed, breed and moult.

Thomsons Lake should therefore be seen as part of a system of waterbird habitats. It has the added value, attributable to its size, variation in depth from shore to centre, and the shelter offered by reed banks on its shoreline, of supporting the most diverse fauna in the chain and of being a major breeding site for a number of species. Monitoring of water levels and changes in levels and water quality are therefore, a most important facet of management of the Reserve.

▲ The sheltered waters of Thomsons Lake provide a favourable habitiat for large water bird species. — Photo C. Young.

Management

The value of Thomsons Lake Nature Reserve is not limited by its ecological features and wildlife. Being situated less than 35 kilometres from Perth and 20 kilometres from Fremantle it is easily accessible to the public. It consists of a most attractive balance fo wetland, lake foreshore and bush environments which present the best potential for development for public use of all the metropolitan wetland Nature Reserves.

Consequently, any management plan prepared for the Reserve has to not only protect the environment but cater for members of the public interested in visiting the Reserve.

A Management Plan prepared by the Department of Fisheries and Wildlife therefore includes provision for information facilities on the reserve's features to be available to the public in addition to signposting walking tracks and the provision of adequate carparks on the fringes of the Reserve.

Other management objectives related to the Reserve include fire protection, monitoring water quality and levels, rehabilitating damaged vegetation, and preventing mis-use of the reserve such as rubbish-dumping and the use of off-road vehicles.

It is important that a Nature Reserve such as Thomsons Lake should be used, particularly by those who wish to observe the riches of the wildlife it supports. Equally important, all use must safeguard its natural values.

These dual objectives of perpetuation and use can only be achieved by good management, however, the Management Plan also has a wider purpose. Together with others of the series it begins to draw the Metropolitan Nature Reserves together: a system within a system which provides a patchwork of dedicated wildlife habitats close to the city, and opportunities for many people to study, learn about or just contemplate the intricate patterns of nature.

Adapted for SWANS by Clifford Young from Management Plan No. 2 by I. G. Crook and T. Evans