

enter city sanctuary

FORRESTDALE LAKE

by Rod Giblett

Until recently, Forrestdale Lake was just far enough away from population centres to help ensure its value, as an important waterbird habitat. However, Perth's urban sprawl is slowly enveloping it. Local resident and naturalist Rod Giblett examines the Lake's past, present and future.

Forrestdale Lake is one of the most important conservation reserves in Western Australia. It is especially significant as a wetland habitat, regularly supporting more than 10 000 waterbirds. Located on the southern fringes of Perth's metropolitan area, and with the fast-growing City of Armadale to the east, the Reserve will come under further urban pressures over the next few decades. It is a valuable, yet vulnerable, outer city wildlife sanctuary which needs to be carefully managed.

The Forrestdale Lake Nature Reserve covers an area of 245 hectares comprising the near-circular Lake, its narrow belt of fringing vegetation and some surrounding land. At 192 hectares the shallow and semi-permanent Lake is among the larger lakes in the southern metropolitan area. It is largely an expression of groundwater with no natural drainage flowing into it, although two artificial drains enter on the western side. The water quality varies annually as well as seasonally - from very fresh at the end of winter to brackish, if not dry, in summer.

In geological terms, Forrestdale Lake is a basin consisting of clay in the centre, sand on the eastern side and marl (clay mixed with carbonate of lime) on the western side. The geomorphology of the Lake indicates that it began to develop 5 000 to 6 000 years ago, and it is thought to have been part of an ancient river system.

Forrestdale Lake was formerly known as Jandakot Lake. Jandakot means place of the whistling kite (*Haliastur sphenurus*) in the Aboriginal language of the area.

According to tradition the Lake is home to a powerful Waugal (rainbow serpent). Aboriginal tradition warns against disturbance of the native reeds (*Baumea articulata*) around the Lake's edge, as this could unleash the Waugal's destructive power. This indigenous tradition needs to be treated with respect - which can best be given by ensuring the Lake's conservation, and by making visitors aware of its Aboriginal significance to Aborigines.

The Nyungar people used the area as a summering place for thousands of years. The availability of water, the variety and quantity of food, and the open banksia woodlands all provided a comfortable



resting place for the semi-nomadic kinship groups as they moved seasonally between the Darling Range and the coast.

In recognition of its rich heritage value, Forrestdale Lake has been registered as an Aboriginal site of significance by the Western Australian Museum and so comes under the protection of the Western Australian Aboriginal Heritage Act (1972-80). This Act protects all Aboriginal sites and objects from disturbance. Actions which disturb or degrade an Aboriginal wetland site could be regarded as an offence under the Act, and may be followed by prosecution.

THE COMING OF EUROPEANS

Europeans first settled the area in 1885 when William and Alfred Skeet were granted a 'Special Occupation' licence for 100 acres (about 40 hectares) in the vicinity of the Lake. At that time the Lake was fringed by huge paperbarks, some as big as 10 metres in height and with trunks one metre in diameter. Other families, including the Dumsdays, moved into the area in 1892. The James family have been living on the west side of the Lake since the 1940s, with some family members still actively involved in its conservation.

In 1915, the name of the area was changed to Forrestdale at the request of local residents, to honour the then Premier of Western Australia, Sir John Forrest. Many years later, in 1974, the name of the Lake was also changed from Jandakot Lake to its current name.

During the 1940s the west side of the Lake was heavily grazed by sheep and

cattle, particularly during the drier summers, when land owners used the fringing vegetation to supplement feed from their paddocks. As a result, the west side of the Lake is devoid of most natural understorey species and is infested with weeds and other exotic plants, particularly arum lilies.

LOCAL AND INTERNATIONAL RECOGNITION

The nature conservation values of the Lake and its immediate surrounds were first recognised in 1957 when it was gazetted as an A-Class Nature Reserve for the conservation of flora and fauna. In recognition of its natural heritage values for the whole of Australia, it was placed on the initial Register of the National Estate in 1978. It was only one of three areas in the City of Armadale to receive such listing.

The regional importance of the Lake to the Swan Coastal Plain was acknowledged in 1983 when it was recommended that it be incorporated into a Regional Park. Some steps have been taken in this direction with the acquisition of land to the south-west of the Nature Reserve by the Department of Planning and Urban Development (DPUD). Once the acquisition program has been completed, this land will become a part of the Nature Reserve.

There is also reserve land to the east of the Lake which is currently vested in the City of Armadale. This reserve is an important heathland with rare flora, including Purdie's donkey orchid (*Diuris purdiei*) and warty hammer orchid (*Drakea elastica*), and threatened fauna.

It is the birdlife that makes

Forrestdale Lake especially noteworthy, both for numbers and for variety of species. More than 17 000 birds were counted there in January 1983.

Seventy-two species of waterbird have been recorded at the Lake, including the rare long-toed stint (*Calidris subminuta*), which migrates from Siberia. Nineteen species of waterbird have been recorded breeding on the Lake. As well as waterbirds, 74 species of bush bird have been sighted in its fringing vegetation, including the splendid fairy wren (*Malurus splendens*). Twenty-three of the bird species found on the Lake are protected under the Japan-Australia and China-Australia Migratory Bird Agreements.

In 1990, in recognition of its value as a waterbird habitat, Forrestdale Lake was jointly nominated with nearby Thomsons Lake for inclusion on the Ramsar Convention on Wetlands of International Importance. It is one of only nine such wetlands to be nominated in Western Australia. By regularly supporting more than 10 000 waterbirds and more than one per cent of the known Australian population of the long-toed stint (*Calidris subminuta*) - 80 have been counted at one time on the Lake - it satisfied two criteria for nomination. It fulfilled a third criterion because it is a particularly good example of the few surviving wetlands of its type.

As the Lake starts to dry up, usually in late summer, thousands of wading birds descend to feast on the abundant



TOO MUCH OF A GOOD THING

Over recent decades the quantity of nutrients entering Forrestdale Lake has dramatically increased, causing it to become over-enriched (eutrophic). The source of these nutrients may include septic tank leachates from nearby houses, and fertilisers from surrounding paddocks and lawns. The high nutrient levels are responsible for a number of management problems, including algal blooms and nuisance midge swarms, which impact on the well-being of residents in the nearby Forrestdale urban area.

To try to resolve this complex issue, an extensive monitoring program is being undertaken by Jim Goodsell and other CALM staff, with assistance from the WA Water Authority and the Friends of Forrestdale conservation group. This program will enable a better understanding of the sources and destinations of nutrients, and will identify strategies to reduce the quantity of nutrients in the lake system.

The program will involve measuring all exchanges of water between the lake and its surrounds, e.g. groundwater, rainfall and evaporation, as well as surface flows via the artificial drains. Chemical analysis of the water flows will determine the quantity of nutrients in each category.



Previous page
Sunset over Forrestdale Lake
Photo - Jiri Lochman

Top left: Firewood banksia (*Banksia menziesii*)
Photo - Jiri Lochman

Left: Western Australia's bird emblem
- the black swan (*Cygnus atratus*)
Photo - Jiri Lochman

Above: Stands of bulrush (*Typha orientalis*) at Forrestdale Lake
Photo - Jiri Lochman

food found in its shallow waters, thus making it more attractive than the deeper lakes in the metropolitan area. At this time it also becomes a refuge - and an ornithologist's delight - as other, more ephemeral or seasonal wetlands dry up.

FLORA AND FAUNA

Forrestdale Lake Nature Reserve is noted for other fauna besides its birdlife. The most numerous mammal present is the quenda, or southern brown bandicoot. A survey conducted in July 1992 by officers from the Department of Conservation and Land Management (CALM) and the Friends of Forrestdale found these threatened Western Australian animals plentiful in dense heath, rush and exotic grass species such as Kikuyu grass (*Pennisetum clandestinum*).

Quenda can be difficult to observe as they are generally nocturnal creatures and live under dense vegetation. The best time is at dusk as they move about near open tracks in the Reserve. A good sign of their presence are the small, conical holes they dig in damp soil while searching for insect life.

The Reserve is also home to seven species of frog and fifteen species of reptile, including the long-necked tortoise (*Chelodina oblonga*).

Forrestdale Lake Nature Reserve has a varied flora. Banksia woodland, acacia thickets, low paperbark forest, sedgeland and a small area of clay flats in the eastern section are all representative of the region. Species of banksia include firewood banksia (*Banksia menziesii*) and swamp banksia (*B. littoralis*); tree smokebush (*Conospermum triplinervium*) which is locally uncommon; swamp sheoak (*Casuarina obesa*); several species of melaleuca; globe heath (*Brachyloma preissi*); orchids and fringed lilies are among nearly 160 species of native plant recorded in recent years. Thickets of the swamp regelia (*Regelia ciliata*) are important habitat for the quenda.

PROTECTING THE RESERVE

Vested in the National Parks and Nature Conservation Authority (NPNC), Forrestdale Lake Nature Reserve is managed by CALM. To preserve its nature conservation and natural heritage values, a formal management plan was

THE RAMSAR CONVENTION

Convention on Wetlands of International Importance especially as Waterfowl Habitat

This Convention was adopted on 2 February 1971 in Ramsar, Iran. In May 1974, Australia was the first nation to accede to the Convention, which took effect from December 1975. The first nomination of a wetland to the Convention was also from Australia: the Coburg Peninsula in the Northern Territory. Since this initial listing a further 39 areas in Australia have been nominated. These add up to nearly 4.5 million hectares, making Australia second only to Canada in the total area listed, and third to Italy and the United Kingdom in the number of sites listed. Under Article 3, the Convention binds the signatory nations to promote the conservation of the wetlands nominated and the "wise use" of all other wetlands.

completed in 1987. It addresses the management issues facing the Reserve, such as controlling access by horses and vehicles, stemming the spread of the introduced bulrush (*Typha orientalis*), and managing midge population explosions. In addition an analysis of the Lake's nutrient cycles is being completed to determine, and then treat, the causes and not the symptoms of the midge problem (see 'Managing the Midge', *LANDSCOPE*, Winter 1992).

The Forrestdale area is popular for horse riding and agistment, and historically owners have had unfettered access to the Reserve. However, the fragile ecosystem of the Reserve is easily damaged by horses (or vehicles) and these needs should be managed in a balanced, environmentally sensitive way. The construction of a fence and bridle trail around the outside of the Reserve is provided for in the management plan. This would regulate access while still providing walkers and riders with a means of enjoying the Lake. A group known as the Forrestdale Reserve Access Group, made up of representatives from the Forrestdale horse-riding community, CALM, the City of Armadale, the Friends of Forrestdale and DPUD, is currently developing a strategy to resolve this sensitive issue.

The management plan also recommended a Friends of Forrestdale volunteer group to liaise with CALM. Such a group was launched in April 1990. The Friends' main aim is to act as informal guardians or honorary wardens.

The Friends meet monthly and are open to anyone with an interest in the conservation of the Lake or its surrounds.

The gatherings alternate between hands-on activities (such as bush regeneration), and the formulation of submissions and policy on management issues.

Fringing vegetation of swamp paperbark (*Melaleuca rhaphiophylla*)
Photo - Jiri Lochman



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LANDSCOPE

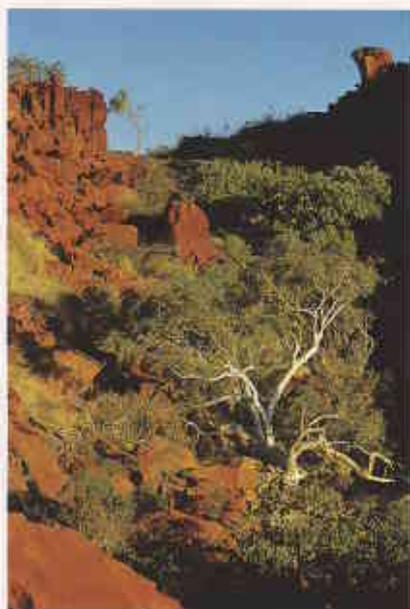
VOLUME EIGHT NO. 4 WINTER ISSUE 1993

FEATURES

- OUR NATURAL ADVANTAGE**
SYD SHEA & JIM SHARP 10
- FROGS IN THE GARDEN**
GRANT WARDELL-JOHNSON 16
- SEAGRASS SURF AND SEA LIONS**
CAROLYN THOMSON & GREG POBAR 21
- WILLIAM DAMPIER**
SUZANNE CURRY 28
- OUTER CITY SANCTUARY**
ROD GIBLETT 35
- FALSE FLOWERS**
NEVILLE MARCHANT 39
- FOOTPRINTS ON THE SANDS OF TIME**
KEN McNAMARA & NIGEL TREWIN 44
- OIL IN THE LEAVES**
LIZ BARBOUR & JOHN BARTLE 49

REGULARS

- IN PERSPECTIVE** 4
- BUSH TELEGRAPH** 6
- ENDANGERED THE SWAMP FLOWER** 27
- URBAN ANTICS** 54



Nature-based tourism is a rapidly-growing industry and WA is poised to take a slice of that growth. See 'Our Natural Advantage' on page 10.



'Seagrass, Surf and Sea Lions' (page 21) are just some of the features of a string of islands that dot the WA coastline north of Lancelin.



Forrestdale Lake is an 'Outer City Sanctuary' for thousands of visiting and resident waterbirds. See page 35.



Frogs can be an interesting addition to any suburban native garden. Grant Wardell-Johnson describes how to attract them to your garden on page 16.



When is a flower not a flower? Neville Marchant, from CALM's WA Herbarium unravels the intricacies of the State's many 'False Flowers' on page 39.

COVER

The bull frog (*Litoria moorei*) is very large and has a voracious appetite. It is a frequent visitor to gardens and may be found particularly in greenhouses, ferneries and wet areas such as streams and ponds.

The illustration is by Philippa Nikulinsky, inspired by a Peter Marsack photograph, courtesy of Lochman Transparencies.



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