



Claisebrook's clucky clique



A new family has moved into the Claisebrook Inlet in East Perth. The fluffy mob includes mum, dad and four cygnets. Also seen - two pelicans, a heron and plenty of ducks. But will they survive the dogs and the builders? Most of the canal-side lots are sold awaiting new homes.

Community Forum explores catchment and estuary action

FOLLOWING the technical forum in April, interested members of the public gathered at the University of WA's Octagon Theatre on June 5 for talks on the health of the river and catchment management.

The World Environment Day forum focused firstly on the first two years' progress of the Swan Canning Cleanup Program.

During afternoon tea, displays and demonstrations on river issues kept the 150-strong crowd entertained. In

the second session, community group members from the Swan region's main integrated catchment management groups offered some words of experience on the best ways to form and implement catchment management.

During the opening address, Environment Minister Peter Foss launched the Rivercare Directory - a contact list of rivercare, catchment and support groups working in the Swan region. For copies of the A5 booklet please contact Tim on 278 0404. □

Ocean science enters estuary



The Water and Rivers Commission's Malcolm Robb (above, with the research barge in the background) recently led a project to catch nutrient and pollution data from the first flush of rain last month. See back page for full story.

Guardians of the Swan

Public pressure to improve the health of the Swan River is not new. Dr Sue Graham-Taylor looks at the history of river management and community involvement.

THE establishment of the Swan-Canning Cleanup Program and the Swan-Avon Integrated Catchment Management Program reflect community concern about the state of the Swan River. But this level of community concern is not something new. There have always been guardians of the river within the community and actions to preserve the health of the river have usually been a result of their concern.

The south west of Western Australia was inhabited by the Nyungah people for at least forty thousand years before the arrival of European settlers in 1829. They valued the temperate climate and the plentiful food and water supplies. The major river systems which rose in the Darling Ranges provided the coastal plain with abundant water supplies in lakes and swamps for both summer and winter sustenance.

Part of the land

The Nyungahs lived by hunting, gathering and fishing and moved seasonally within their tribal lands. This pattern of movement reflected changes in weather, ripeness of food, availability of edible roots, and the habits of fauna and marine life. Their view of the land was spiritual rather than economic, the Aboriginal people seeing themselves as part of the land with responsibilities for its protection and conservation. Their guardianship of the Warndoolier (Swan River), which combined downstream with the Dyarlgarro (Canning River), was an integral part of their spiritual beliefs.

It was Captain James Stirling's initial impression of the beauty of the Swan area which led him to press the British Government to establish a colony. While exploring the area in 1827, he had pitched his tent on high ground upstream overlooking the Swan River and commented:

the richness of the soil, the bright foliage of the shrubs, the majesty of the surrounding trees, the abrupt and red coloured banks of the river occasionally seen, and the view of the blue summits of the mountains from which we were not far distant, made the scenery and this spot as beautiful as any thing of the kind I had ever witnessed.

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The Swan River colony, settled in 1829 as a result of Stirling's enthusiastic descriptions and constant lobbying, was founded as an agricultural and commercial settlement. The river was to be vital for transport in the early days and industries were gradually built along its banks. It was the only place to dispose of liquid waste for many years. At the same time the river was the focus for much of Perth's recreation.

Lacking the same complex spiritual relationship with their environment that the Aboriginal people had, the European settlers exploited the river for economic gain and it was not many years before it was apparent that there was a need for some guardianship of the river. The first stirrings of dissatisfaction appeared in the local press - with no jetties on the river, goods and passengers had to be carried 30 or 40 yards ashore by long-suffering boatmen who reported falls in the mud and injury from broken glass.

In 1868, community pressure led to an Inspector of Nuisances being appointed to deal with the sanitation problems arising from increasing urbanisation. Besides being chosen for having a good nose, Police Sergeant Dale, Perth's first Inspector of Nuisances, was a hard worker and in his role became the river's first official guardian.

The 1890s saw an unsuccessful attempt to legislate against the pollution of rivers in Western Australia, and the first arrest for pollution of the Swan River. Although the prosecution was unsuccessful, it served to highlight the problem of river management. Police Constable Walker reported:

... at 2.15 am, I saw the person at the corner of Lord Street and Saint George's Terrace. He was in charge of a horse and cart, which was backed up to a channel pit or sewer, a quantity of urine was flowing from the cart ... through a length of canvas hose into the channel pit and from which a most abominable effluvia arose.

The accused argued that this practice was common all over Perth and the 300-400 gallons in his cart would quickly flow to the river. The case however, was dismissed, because health legislation only prescribed that 'solid' matter must not be deposited in this way.

The focus of much public opposition and outcry were the filterbeds located on Burswood Island, constructed in 1912 to filter sewerage waste siphoned under the river from septic tanks at Claisebrook.

Burswood sewerage filter beds

These filterbeds were widely blamed for the polluted and weed infested condition of the Swan River for many years and suggested solutions were numerous. A report on the problem of algal pollution of the river in 1913 recommended discharging the filter beds effluent further out into the river where the water was flowing and treating the expanse of water in the vicinity of the effluent with copper sulphate or bluestone. It was suggested that on a suitable warm day, the required weight of copper sulphate be placed in a coarse 'gunny sack', then attached to the stern of a rowing boat near the surface of the water. The boat would then be rowed backwards and forwards over the stretch of water.

In 1922, widespread concern for the state of the river led 34 local authorities, aquatic clubs, schools, engineers and scientists, to attend a river pollution conference. The conference was told that the growing algal problems were the result of actions being taken in agricultural areas, street sweepings and washings from urban areas, waste from the two breweries, large quantities of salt from cultivated land brought down by both the Swan and the Canning Rivers, as well as waste from the Burswood filter beds.

Despite advice on possible solutions to the problem, and the preparation of extensive scientific reports, no action was taken until 1936, when sewerage waste was discharged to the sea. The public however, continued writing and complaining about the state of the river - which became increasingly used for the discharge of industrial waste - and the loss of the river's fringing wetlands to waste disposal sites.

In 1943 the Government formed the Swan River Reference Committee to advise the Minister for Works on matters relating to seaplane bases, buildings, land reclamation and wartime emergency

measures. The Committee comprised representatives of various Government Departments, local authorities, the CSIRO and sporting bodies. The Committee was honorary and was handicapped by its lack of legislative authority.

Inaction leads to public meeting

In frustration at the worsening state of the river and lack of action by the Swan River Reference Committee, a well attended public meeting was held in November 1948. As a result of this meeting, the Swan River Pollution Committee (later re-named the Swan River Conservation Committee, the name being considered a misnomer as it was in reality an anti-pollution Committee) was formed with the aims of conserving and maintaining the Swan estuary free from

pollution, drawing the attention of appropriate authorities to actions by industry or private individuals which could pollute the river and encouraging public information on the results of pollution. This Committee represented a wide cross-section of society, comprising members of the State government, local authorities, colleges, aquatic bodies, interested members of the public, the press and radio.

Media coverage has always played an important role in publicising pollution in the river. In 1951 for instance, the *Daily News* accompanied the Committee on a trip to Mounts Bay Road where the reporter noted a brown frothy scum up to six inches thick and oil, bottles, rubbish and driftwood around the edge of the river at the foot of Mt Eliza. Near the Swan Brewery the writer reported 'pollution at its worst', with rats playing in the rocks of the retaining wall. In the following year the media reported 'blood, refuse and filth' flowing into the river and described 'man-made swamps of blood-polluted water' flowing into the Helena River from the Midland Abattoir.

The Swan River Conservation Committee's role of guardian was very effective and led to many changes in river conservation practices, includ-

ing: the installation of septic tank systems on the wharves at Fremantle; the diversion of a sewerage effluent at North Fremantle and trade effluent from factories in Perth into the main sewers instead of the stormwater drains; the East Perth Power station was forced to stop putting ashes and other waste into the river; and the Midland Abattoir installed a waste recovery plant.

From its inception, the Committee had called for the establishment of a Swan River Conservancy Board to be modelled on the lines of the Thames Conservancy Board in London. Mr Max Kott, lawyer, Claremont Councillor and a member of the Swan River Conservation Committee drafted a suitable Bill which was presented to the Government and various politicians. The eventual Swan River Conservation Act of 1958, was framed around Kott's original draft.

The Swan River Conservation Committee disbanded in 1961 as the Government's new Swan River Conservation Board appeared to be adequately carrying on the Conservation Committee's ideals. However the river was still under threat and the community's role as guardian was definitely not over. In 1964, the Citizens Committee for the Preservation of Kings Park, formed by the Women's Service Guilds of WA ten years earlier, added the Swan River to its brief, in an attempt to prevent the reclamation of Perth Water for the Narrows Interchange and for car parks. This Committee worked to persuade the Government not to provide easy access for the car to the city, but to maintain free access for the public to the river and its foreshores. Although the campaigns at that time were unsuccessful, who can forget the famous photo of Mrs Bessie Rischbieth at the age of 89, wading barefoot into the river in front of construction machinery?

In 1977 the Waterways Conservation Act led to the creation of the Swan River Management Authority within the newly formed Waterways Commission. In 1988, the Swan River Trust Act further strengthened planning controls and management functions in and adjoining the Swan and Canning Rivers. Today the eight member Trust is made up of representatives from business, the community, and local and State government agencies. And there are now about 40 community catchment and conservation groups dedicated to preserving and improving the health of our waterways - and as many independent and Government groups offering support. □



Pioneer feminist and environmental activist Bessie Rischbieth, then aged 90, opposing land reclamation for Mounts Bay Road in April 1964. Picture: *The West Australian*. Thanks also to the Conservation Council.

The Swan River Trust has a small field crew helping to keep about 300 km of river foreshore maintained and safe for the community. As well as cleaning beaches and removing obstacles to river traffic, the field crew is on hand to help community groups, local councils, the Water and Rivers Commission and other Trust staff do their work more successfully.

a busy month for the field crew

Clockwise from top left

June 11: The field crew are hard at work in Blackwall Reach Parade in Bicton replanting a 70-year-old palm. The palm had fallen over onto the beach and was moved into its new position by crane.

June 13: Field crew manager David Fardig skippered the "Jack Mattinson" as it ferried people and supplies to and from the "Seagull" barge during four days of intensive in-river research (see back page for details). Here a Channel 10 film crew is put close to the action for a news story shown the next evening.

May 13: Vaughan Smith rolls a limestone road built quickly to beat the rain so a flow gauging station can be installed on the eastern bank of the Canning River upstream of the Kent Street Weir.

June 13: A 45 tonne crane was hired to lift 8 tonnes of research equipment from land to the "Seagull" barge during a recent estuary research project (see back page for details). Because the research equipment was too tall to fit under the low clearance of the Garratt Road Bridge, the equipment had to be put onto the back of a truck at Maylands boat ramp and driven to Hinds Park where it was loaded onto the barge.

May 22: Roger Blakeway prepares the site for another Water and Rivers Commission flow gauging station downstream of the Kent Street Weir.

May 16: Trust field crew members Vaughan Smith, Ivan Stork, Barry Boydel and Roger Blakeway remove the boards from the Kent Street Weir to reduce the risk of flooding from increased water flow.



EQUIPMENT originally designed to search for oil reserves off the northwest shelf has been adapted to enhance our knowledge of the Swan River system. The Swan River Trust and the Water and Rivers Commission recently joined forces with the Australian Geological Survey Organisation (AGSO) and the Victorian Fisheries Research Institute (VFRI) to investigate the river's nutrient and pollution loads immediately following a rain event.

A number of studies are being conducted on the Swan-Canning River system as part of the Swan Canning Cleanup Program. The Water & Rivers Commission (WRC), in conjunction with the Swan River Trust, runs several monitoring programs and commissions scientific studies from other organisations.

WRC's senior research officer, Malcolm Robb, said that one component missing from the studies so far has been a budget of the total amount of nutrients and pollution entering and leaving the estuary.

In particular, the budget for nutrients from the Swan into the nearshore coastal zone was identified as a critical need by researchers at a recent CSIRO workshop and by the Department of Environmental Protection.

The aim of such a budget would also be to identify and quantify any nutrient or pollution sources that might have been overlooked during previous sampling.

A research program was developed over the past year in collaboration with the AGSO and the VFRI to fill these gaps in our knowledge of the river system.

"The purpose was to gain an understanding of nutrient and contaminant fluxes into the Swan-Canning estuary by examining in-flows and outflows over a short period of time after a flow event," Malcolm said.

Recent rain coincided with the arrival of the interstate research teams and a planning meeting at the Trust's depot in Ellam Street, Victoria Park nailed down some of the logistical details.

About eight tonnes of equipment were regularly lifted on and off the Trust's "Seagull" barge during the upstream and downstream runs along the Canning and Swan Rivers. Since the equipment, once on the barge, was too tall to go under the Causeway and the Garratt Road bridge, the Trust's field crew organised a 45 tonne crane to load the equipment onto the back of a truck to meet with the barge on the other side of the bridges.

The field crew were also on hand in the "Jack Mattinson" to ferry

Ocean science for the Swan

staff, media and equipment from shore to ship and back again throughout the four-day project (see pictures page one and three).

Two series of river samplings are planned – one during a low river flow period and a second after an appreciable amount of flow has occurred. The first series has just been completed and the second will be scheduled for later in the winter.

In conjunction with the continuous sampling on the river, the Swan River Trust sampled all major drains and creeks flowing into the river, analysing for the same suite of parameters as covered by the river sampling.

The main objectives of the project were to:

- * Identify key sources of nutrients and estimate fluxes into the river
- * Identify key sources of extractable hydrocarbons such as toluene and benzene.
- * Develop a one dimensional steady state model of nutrient behaviour, showing movement of nutrients within the water column and sediment, and
- * Calculate nutrient exports from the estuary to the coastal zone.

"By running transects up the river we can gain a snapshot of nutrient fluxes from which a simple one dimensional flux model can be developed," Malcolm said. "This model can then be used with our routine monitoring data to do a nutrient budget on a regular basis."

In addition to nutrients, organic compounds were surveyed, including volatile organic hydrocarbons (BTEX) and, on an experimental basis, pesticides.

The results will complement studies conducted by the WA Estuarine Research Foundation as part of the ecological model.

The study uses techniques developed by the two interstate organisations for continuous geochemical tracing (CGT) whereby a ship borne laboratory samples continuously and analyses are conducted immediately. The CGT technique has been used in studies of pollutant loadings and sources in the nearshore environment of Sydney and Port Phillip Bay conducted with CSIRO. □



ABOVE A recent bus tour of the Canning catchment brought together Gosnells Mayor, Norm Smith, councillor Mike Devereux and Armadale councillor Frank Green. They are pictured above with Nicole Slemon and Wes Horwood (second from right), catchment officers with the Swan River Trust.

Recent Publications

Available from the Swan River Trust unless otherwise stated.

Booklets

- * Rivercare Directory, 1996. Rivercare, catchment and support groups of the Swan-Canning region.
- * Bush Plants for Perth Gardens, Greening Western Australia, ph.481 2144.

Reports

- * Swan-Canning Cleanup Program and the WA Estuarine Research Foundation forum on the Health of the Swan Estuary, 12 April 1996, CSIRO auditorium, Floreat, Perth, WA; forum proceedings.
- * Waterways Commission Annual Report, 1995, Final Report July-December, ph. 278 0353.

Posters

- * Clean Water: I Can Do That, World Environment Day, Water & Rivers Commission, ph. 278 0353.
 - * Controlling weeds in waterways and wetlands, with the Department of Environmental Protection, 1995.
- ### Videos
- * Living on Groundwater: Part 1: Country WA; Part 2: Urban WA. Water & Rivers Commission, from the Gould League, ph: 387 6079.



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RIVER
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Protecting the Swan-Canning River system for the future