



Field trials run in river cleanup program

The Swan Canning Cleanup Program (SCCP) was established in 1994, following severe algal blooms in the Swan River and a toxic blue-green bloom in the Canning River. This five-year program set in train research and investigations to develop an action plan for reducing the level of these nuisance and hazardous algal blooms.

The SCCP program has entered the research and development phase in developing techniques to intervene in river processes and manipulate water conditions to reduce the release of nutrients from the sediments and the consequent growth of algae. Three techniques have been selected for field trials:

- Destratification
- Sediment remediation
- Oxygenation

1. Destratification

Destratification is designed to mix the heavier salty ocean tidal water which pushes up the river under the fresher river water in spring. The mixing breaks down the layering or stratification caused by the tide, allowing oxygen to penetrate more evenly from the surface to the deeper layer above the sediments. This changes the chemistry of the surface sediments reducing the release of nutrients. The destratification trial was conducted in mid-October and ran for four weeks. The trial involved placing a perforated pipe across the bottom of the river at Maylands and pumping air into it to create a curtain of bubbles. The bubble curtain was designed to mix the two layers.

Results are still being analysed and will be available early next year. Initial results show that mixed conditions extended for only 50m upstream with secondary effects up to 300m upstream. Geoff Totterdell, Chairman of the Swan River Trust said 'the destratification trial was very worthwhile in that the bubble curtain had the desired effect of mixing the salt and fresh water, however it did not hold it for sufficient distance for the method to be practical'.

2. Sediment remediation

The root of the algal bloom problem is often the supply of nutrients (e.g. phosphorus and nitrogen), dissolved in the river water and stored in the bottom river sediments. These nutrients come from rural, domestic and industrial land drainage to the waterways. Common sources are fertiliser run-off from agricultural areas and urban parks and gardens, seepage from septic tanks and effluent discharges from industries.

Nutrients stored in the bottom sediments of rivers, lakes and estuaries, and accumulated over decades, are a major cause of algal blooms.



*The destratification river trial at Maylands, October 1997.
Inset: Close up of the bubble curtain in operation.*

Hames defends river trial

Water Resources Minister Kim Hames has rejected recent criticism of the destratification trial run in the Swan River at Maylands.

Dr Hames said that the experiment had provided an extremely important opportunity to evaluate groundbreaking ideas for river cleanup.



Dr Kim Hames

"The trial was based on a design by the Centre for Water Research and was set up by reputable engineers," Dr Hames said.

"As it turns out destratification did not emerge as a likely technique for use in the Swan River, but it is so vitally important that we must push the boundaries of our knowledge in our search for new solutions.

"The destratification trial was an example of this and I think it is wrong to characterise such work as a failure.

"The focus of these experiments is to take academic science and turn it into practical management tools in the field."

Dr Hames stressed that the so-called in-river intervention techniques will only ever be a part of the solution — action in the catchments to stop nutrients entering the rivers would have broader, long term effects.

Continued over...

Southernwood Creek rehabilitation project

The Southernwood Creek is on its way to recovery since the Swan River Trust helped develop a rehabilitation plan and provided funding to implement this important rehabilitation project.

The creek is a tributary of the Southern River, joining the river near Shearwater Way in Gosnells, and has been used as a drain to direct water flow away from homes and roads. It has lost most of its native vegetation and has become infested with introduced grasses and weeds.

Southernwood Creek has been in desperate need of some tender loving care for some time now. A rehabilitation plan was required to control the spread of weeds and grasses, slow down the bank erosion and to try to encourage native fauna back into the area. As a result of Swan River Trust, community and Gosnells Council commitment a small committee has been working hard to design and work out the best way to rehabilitate the creek. The transformation of an open drain into a more natural living stream is now well on track.

Several working bees have been held at Southernwood Creek with great community support including help from the students at Gosnells Senior High School. Excavation of the creek banks has reduced the steepness of the slopes, erosion control matting has been laid along the creek to reduce water flow speed and erosion, and some native plants have been put in. It is coming along well, but there is still a lot more to be done!

For further information about the Southernwood Creek project please contact City of Gosnells, Horticultural Technical Officer, Grant Lowe on 9391 3277, during office hours. Come along and give a helping hand!



Southernwood Creek where it flows into the Southern River, Gosnells. Photo taken before work was carried out.



Clearing work after volunteers relocate rubble to reduce water flow at the Southernwood Creek site. Matting to reduce erosion and tree planting has since been undertaken.

Field trials

...continued from page one

The sediment remediation trials address the problem of phosphorus stored in sediments. Sediment remediation uses a modified clay added to the surface of the sediments on the river bottom. This binds the phosphorus reducing its release and availability for algal growth. The modification of various types of clay to create and/or increase their capacity for adsorbing or binding nutrients is the focus of this research.

Following promising results from a small trial using modified clay in the Swan River last summer, a large-scale six month trial using 5m diameter enclosures is being planned in Lake Monger starting in December 1997/January 1998. Lake Monger has been chosen because water conditions are more stable than in the river. A smaller trial will also be conducted in the Canning River to calibrate techniques for this method. If the results are satisfactory the treatment of a 6km length of the Canning River is planned for the summer of 1998/99.

3. Oxygenation

A third technique called oxygenation is being evaluated and a method suitable for use in the river is being developed for testing.

This method targets the same process as destratification by directly injecting oxygen-enriched water into the bottom more salty water in the Swan River. It can also inject oxygen-rich water into the colder deeper water in the Canning River. This is done by pumping water from the bottom of the river, injecting liquid oxygen into it and returning it to the bottom of the river. Again, this changes the chemistry of the surface sediments in the bottom of the river, reducing the release of nutrients.

This method is likely to be very suitable for the Canning River. It also has great promise for the Swan River and it can be more portable providing greater flexibility for management. The oxygenation technique will be ready for testing in a field trial in the Canning River starting in December.

Successful techniques from these experiments and trials will form a "tool box" of river intervention techniques that can be used in the short term to manipulate river water conditions to reduce the nuisance and detrimental ecological effects of algal blooms. Long-term changes and improvements in the catchment over the next 5 to 20 years will provide further and more lasting improvements to the health of the river.

Look what's been happening in the Bennett Brook Catchment

The Bennett Brook Catchment Group has been very busy over the last few months. Here are their latest projects.

Fire management plan for Bennett Brook

THE threat of wildfire in remnant vegetation near Bennett Brook has led to a fire management plan being drawn up for the area.

According to Bennett Brook Catchment Group Coordinator Linda Taman, most wildfires in the area were caused by people, either deliberately or accidentally.

Ms Taman said fires damaged both plants and animals in the area and, although native vegetation was adapted to fire, it could be devastated if they were too frequent. Native plants need time before reseeding and before the next fire to mature and be able to set new seed to ensure regeneration of the species.

Fauna are also affected by fire as food sources and protective habitat are destroyed. Lack of cover allows native animals to become easy targets for predators such as feral cats.

The group held a workshop earlier this year to discuss the issue with representatives of the community, the Fire and Rescue Service of WA, the Ministry for Planning, Whiteman Park and Shire of Swan.

Speakers at the workshop included Aboriginal Elder Robert Bropho who gave the Aboriginal perspective on fire, John Dell of the WA Museum who spoke about fauna and Bronwen Keighery of the Department of Environmental Protection who outlined the response of flora to fire.

The fire management plan will be given to all who are involved in fire protection and prevention in the Bennett Brook area.

Restoring Clarrie Small Park

A large-scale native revegetation program is being undertaken by the Bennett Brook Catchment Group to restore Clarrie Small Park to its original condition.

The park is between Bennett Brook and Valley Brook Estate in Caversham just south of Benara Road.

The group arranged a spraying program to control a heavy infestation of weeds including kikuyu, watsonia, poplar trees and arum lilies. A low-toxicity herbicide considered safe to use near waterways was used. A replanting program will be carried out in January and June 1998, to prevent the weeds growing back.

Local wildflowers will be planted along the top of the banks and should provide a riot of colour in spring.

Replanting the native vegetation will help improve water quality by filtering nutrients out of the water and anchoring sediments to reduce erosion, and will create a food source and habitat for local fauna.

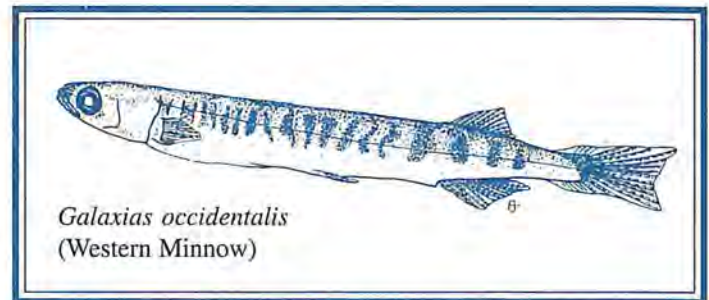
Help is needed to plant the 8000 seedlings and anyone who would like to help in the project would be welcome. For more information telephone Bennett Brook Catchment Group Coordinator Linda Taman on 9271 6901.

Native fish surveyed

'Are there any native fish still surviving in Bennett Brook?' That is one of the questions raised by the Bennett Brook Catchment Group.

Murdoch University researchers Mike Bamford and Howard Gill are conducting a survey of native fish in Bennett Brook.

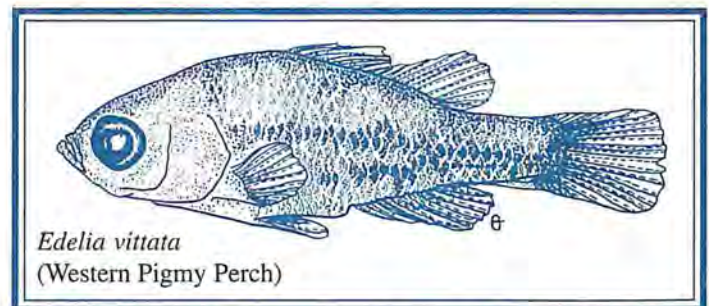
The brook still contains many species of native fish including the western minnow, nightfish, western pygmy perch, Swan River goby and bigmouth goby.



The Bennett Brook Catchment Group has received a grant to study the fish, which are still able to live and breed in the brook because the waters have not become too polluted.

Initial findings of the survey were presented at a recent public seminar in Bassendean where the researchers spoke about the breeding cycles of native fish, their habitat requirements and the threats to their existence.

For further information telephone Bennett Brook Catchment Coordinator Linda Taman on 9271 6901.



Illustrations courtesy Murdoch University.

Nyungah art for road bridges

PAINTINGS by Aboriginal artists are to be incorporated into two of the Reid Highway bridges in Caversham.

The Reid Highway passes through an area that is significant to the Nyungah people.

One bridge is over the Bennett Brook and the other is near an ancient well which was used by the Nyungah people for many generations.

Nyungah artist Yaluritja (Clarrie Isaacs) has been asked to coordinate the activities with Aboriginal Elder Robert Bropho as the cultural and spiritual adviser.

Other members of the Nyungah community have been invited to be involved in the project.

Chittering Landcare Group plant 11,000 trees along Ellen Brook

On Saturday 26 July 1997, the Chittering Landcare Group, helped by North Swan Landcare Group and Agriculture WA officers, planted 11 000 trees on land next to Ellen Brook at West Muchea.

About 35 people participated in planting a selection of local species on land owned by Inghams Enterprises Pty Ltd and Bergalla Pastoral Company.

This was a great effort especially considering the cold and wet weather.

The support of the following who supplied the tree seedlings is gratefully acknowledged: Alcoa of Australia Ltd, Swan River Trust, Muchea Tree Farm, Ecosystem Management Services, Wooroloo Brook Landcare Group.

Chittering Landcare also acknowledges the expert support from Mr Joe McGree from Smorgon Cyclone Rural.



Members of the Chittering Landcare Group prepare tree seedlings for planting at West Muchea.

Progress towards a Cleanup Action Plan

A progress report on the Government and community program to clean up the Swan Canning River system is due for release this month.

The document, "Progress Towards A Cleanup Action Plan", outlines the Cleanup Program's current activities and progress towards developing a Cleanup Action Plan, which will provide a blueprint for future sound management of the waterways and the catchment.

The Swan Canning Cleanup Program is a five-year program to reverse the deterioration of the river system.

Current projects include in-river remediation trials, trials of new management techniques, water quality monitoring, catchment management and raising community awareness, all aimed at reducing the high level of nutrient, sediment and chemical runoff to waterways and wetlands.

Increased understanding of river processes and the practicality of management techniques will be the basis for a Cleanup Action Plan for the river.

The Action Plan is being compiled by a task force that includes representatives from the Swan-Avon Integrated Catchment Management Coordinating Group, Water and Rivers Commission, Agriculture WA, Department of Environmental Protection, Water Corporation, Swan River Trust, CSIRO, Ministry for Planning, WA Estuarine Research Foundation, local government and the community.

The plan will not rest idle in bookshelves and libraries, but be a living document, changing as our understanding of the river system, community expectations and management options improve. The draft Action Plan will be open for public discussion next year.

For further information or for a copy of the "Progress Towards A Cleanup Action Plan" document, please contact the Swan River Trust on 9278 0400.

Groups unite to care for Bannister Creek

ENVIRONMENTAL groups have united to ensure Bannister Creek will be managed in a manner sympathetic to the needs of the community and the environment.

The groups agreed to work together at a recent forum organised by the Bannister Creek Catchment Group. Students of Parkwood Primary School suggested ways in which they would like to become involved in caring for the area.

Water and Rivers Commission principal environmental officer Verity Klemm addressed the forum on the ecology of Bannister Creek and its shores.

Those who attended the forum included representatives of the local community, City of Canning, Water Corporation, Department of Conservation and Land Management, the Fire and Rescue Service of WA, Agriculture WA, Heritage Minister Graham Kierath's office, the Water and Rivers Commission, Swan Catchment Centre, Canning River Regional Park Volunteers and the Australian Trust for Conservation Volunteers.

Forum participants will meet again in a few weeks to walk the length of the creek to make a comprehensive study of the area.



**SWAN RIVER
TRUST**

**Level 3, Hyatt Centre
87 Adelaide Terrace
East Perth 6004**

Phone: (08) 9278 0400

Fax: (08) 9278 0401

website: <http://www.wrc.wa.gov.au/srt>

Protecting the Swan-Canning River system for the future