



BIDDIP makes new *Friends*

Welcome to Volume 3, Issue 1, of the Toodyay Friends of the River ***BIDDIP*** newsletter, an informative collection of articles gathered from our members. Although the newsletter has not been produced since 2003, the Friends have continued to work extremely hard on many projects for

both protection and beautification of the River and its environs for enjoyment by the community. The President's message demonstrates the important interaction between the community and its sponsors. This vital support from the Shire of Toodyay, Department of Water, Lotterywest, the

ABC, Toodyay Herald, Bendigo Bank, Vernice Pty Ltd, Ray White Avon Valley, Dilmah Tea, Landcare Australia and others, is invaluable for the continuation of the work accomplished by the Friends. New members are very welcome to join the Group in either an active or supportive capacity.

UWA Extension joins with Toodyay Friends of the River

The University of Western Australia joined the Friends of the River with an extremely successful one-day Extension Course entitled '*Living and Working with the Avon River*'. The course commenced with an overview by our Patron, Viv Read

(Consultant), who tracked the changes to the Avon River since the days of the first settlement. This was followed by a trip, by coach, downstream from Toodyay, through the Avon Valley National Park to conclude at Brigadoon on the Swan River. Longer-term issues related

to the health of the Avon River including the sedimentation of most of the river pools and the health of the River in general. Other speakers discussed a variety of topics during the day making it an interesting and informative excursion.

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Special points of interest:

- *An article from 1976 calls the Avon "a dying river"*
- *Do you have a cane toad, or is it a native frog? Check out the difference*

FROM THE PRESIDENT

Many and varied interests and projects are undertaken by the Toodyay Friends of the River. Working sessions are held on the third Sunday morning of each month, with Project Officers guiding an extensive annual programme of river rehabilitation projects.

Major works for 2005/06 include an environmental upgrade along the river between the two major town bridges. This has been a collaborative effort involving the assistance of Bendigo Bank, the works staff of the Shire of Toodyay, and the Australian Government Water Fund Community Water Grants. In addition, we are working with the Department of Water in developing a plan to manage storm water involving a constructed wetland.

The Shire, in collaboration with the Friends, has undertaken construction of parking areas at Weatherall Reserve and at the West Toodyay Bridge. Barriers have been erected to prevent vehicular access to the river and foreshore, especially during the Avon Descent.

Public education programmes in liaison with other environmental groups, and working with the media, have highlighted some of the longer-term issues related to the health of the Avon River. Promotion of public attention to the issue of sedimentation of river pools along the River, in the context of the health of the River, was highlighted with a major event held in July 2005 in conjunction with the University of Western Australia's Extension Program. The one-day course, devised and run by Toodyay Friends of the River, was entitled *'Living and Working with the Avon River'*.

The issue of sediment and the state of the Avon River generally had further media exposure on the front page of the *West Australian* and a segment on ABC Stateline on Friday May 5, 2006. On the next day a packed bus trip facilitated first hand observation of sedimentation along the Avon

River, between Toodyay and Brigadoon, with speakers addressing various aspects of river ecology and management.

Public education programs have also included the Project Officers taking politicians, Shire of Toodyay staff and others on river familiarization trips.

The Friends conduct survey work along the river providing data of changing river conditions and the habitat.

Toodyay Friends of the River play an active role in the Landcare and Conservation Tent at the annual Toodyay Agricultural Society Show. On display this year was a new secure trailer for equipment, obtained through a generous grant from Lotterywest; further sponsors are acknowledged on the trailer.

Toodyay Friends of the River actively collaborates with our local Shire, government departments, and other environmental groups. We are a positive and outward looking group and we encourage you to join us in an active and/or supportive capacity. And it isn't all work! We also enjoy social events such as excursions to places of interest, lunches and picnics on the River.

Richard Taylor, President



Toodyay Friends of the River's new work trailer, with (l. to r.) Greg and Vicky Warburton, and Bob Frayne, at the Toodyay Agricultural Show.

Some reflections from two people. One, who grew up on the River from a young child, and the other, someone who has owned a property near the River for the last 25 years. We share with you some of our memories.

There were times of the year when the river was a conduit to neighbourliness and also as barrier causing physical isolation.

Days before the telephone was in every household.

Leeches

Mussels

Clear pools

Sandy not silty bottoms

Teatrees in blossom

Outside on summer nights often sleeping on the veranda smelling perfume of the teatrees

Fun times on the rope swing splashing into the deep water

Crossing the River on a wire and plank bridge

Recreational pursuits

Our neighbour, riding her cart horse across the River to visit her brother.

Dismounting on a gate strainer, being assisted down from the strainer to visit my mother and father and our family then going through the process in reverse to get back on her horse for the return journey.

Another sister of our neighbour, who always wore stockings and shoes sitting on a particular rock to remove stockings then to repeat the process at the other side as it wasn't done to be seen without stockings and good shoes.

River in flood, threatening homes close to the edge.

Friend's father, diving in tipsy and coming out sober, with a bloody gash on his forehead, during a friendly picnic along the River. We seemed to pack up quickly after that.

Yelling out to our neighbour, during flooding, to see if he was ok.

Neighbour, firing his .303 to alert others, that he needed supplies or a message

taken to town.

Fresh water springs in the River where watercress used to grow.

Watercress sandwiches in school lunches.

Valuable water supply for stock in summer.

Avon Descent brought an increase in traffic, which led in some cases to invasion of paddocks and crops, fences being cut and gates left open in their goal to reach the water

In other cases more people were able to admire and share in the beauty of the valley. The River was a living thing, bird, aquatic and plant life abounded in a much more complex ecosystem than it is today.

Hearing father speak, of when he was a teenager going on a kangaroo hunt with numerous cousins around the same age with his grandfather who was still a good horseman, camping out at night. Borrowing a horse that had an accident and had to be destroyed and on return the owner of the horse being only concerned with the safety of the rider

When the railway came through in the early 60's. "The peace of the valley was shattered", Mr Albert Markey, owner of Avon Location 392 at the time, remarked. When the **big** fire went through in the 60's, how the River was a possible place of refuge for the family who lived nearby. Everyone had a job, mustering stock on foot through the hills and packing supplies to take down to the River, should the house be threatened.

A peaceful and quiet place to study

Fishing for cobbler many nights, sitting in quiet waiting for a bite.

Walking across the River to watch TV at neighbours

Hearing many tales of old about the families that lived along the River, Donegans, Sewells, Chittys, Markeys and Roachs – the camaraderie that isolation brought to 'The River People'.

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Hearing about the flood, that took out the planking and one of the top wires of the bridge across the River, and how the old neighbour would walk across using a top and bottom wire.

Being shown places of interest along the River.

Swimming in clear and deep pools

Not being able to bottom the pool at Long Pool

Kayaking across in winter to visit neighbours with assorted supplies

Getting swamped and nearly drowning and walking home across the River in knee high water

Not swimming once the water stopped flowing.

Mosquito infestations

Watching the flooded River rise and losing many full wool sheep stranded on what we called 'The Island'.

Crossing deep water, with my neighbour, as a passenger in a tray back 4WD vehicle, to assist a sick cow. The River was high as we went across but my neighbour was on the upstream side when we crossed back, and the River had risen further! It was lapping under the tray!

Before we had a telephone, wading thigh deep across the River with a very sick pet kangaroo for help

Finding a large piece of wood in the River crossing that had some carving and holes in that turned out to be a boat that a neighbour's children had played with in

the Jimperding Brook many years previously and had taken some time to travel down the River.

In 1984 the phone line being placed in a galvanised water pipe and laid across the bed of the River and being held down with very large rocks. In the following years watching the sand build up behind the rocks until one year it reached three meters high and had to be removed so that a neighbour could bring his hay mowing and bailing equipment across.

Also, watching the galvanised pipe corroding with the saltiness of the River until it had completely gone.

A once rock crossing, now covered in deep sand

Watching, year after year, the sand moving further along the pool.

Seeing how much sand could be moved by a big digger in an attempt to reduce the amount of sand filling Long Pool.

Feeling thoroughly helpless as yet another survey is organised!

There, where once was a very deep pool, one kilometre in length, is now almost filled with sand.

We called this collection of memories, "Reflections" for not only are we remembering the River in its heyday, but, when there is five centimetres, or less, of water in the pool, it gives a reflection and onlookers think that the water is deep and everything is fine.

Trust us – it is not!

*Dixie MacKenzie
Deepdale Catchment Group*



Gaven Donegan



Long Pool sediment removal



Long Pool sediments

The Power of Nature - Cyclone Clare January 2006

by Val and Neville Tanner, Toodyay

When we first purchased this property our aim was to try to stop the erosion and stabilize the banks of the Toodyay Brook at the confluence of the Avon River.



We planted hundreds of trees, sedges and riparian vegetation plus we utilised rocks and logs; two riffles [engineering structures] were put in by the Department of Waters and Rivers, with the help of some overseas students, and finished off by our friends and ourselves.



For about three years we kept on with our plantings and things were looking great with the plants growing well; we even had a few Long-necked Turtles in the Brook.

We thought, 'this is the way to go' but Nature, being fickle and unpredictable, had other ideas!



In January 2006, Cyclone Clare came down the Western Australian coast and dropped a whole lot of rain that flooded rivers and properties. This water found its way into the Toodyay Brook.

We were sitting having breakfast looking at the river and thinking, 'what is different'? Then it dawned on us – we could see the Brook from our house! We dropped everything and ran down to see how high the water had risen but what astounded us was the velocity of the water! It was coming down so fast that, where it met the Avon River, there were waves a metre high – it was a fantastic sight!!! Logs, branches and rubbish were being swept into the Avon River that luckily, did not peak until the next day otherwise we may have had a few problems!

When the water level dropped we could see the damage that was done to the Brook. The sides had been scoured out and made steeper and the soil dumped further downstream, most of the logs and rocks we had used to stabilize the sides had been completely washed away [down the River] and most of our plants had been buried or ripped out; it was really disappointing to think of all our work gone. The only good to come out of this was that we have lots of Long-necked Turtles in the Brook now. We have seen up to sixteen in one spot, all sizes from really small to very large, then you walk up to another spot and see a lot more.

The thing we have to decide now is what do we do next – keep doing what we

In late December 2005 I met with Bernie Kelly, [Senior Natural Resource Management Officer] of the Department of Environment (formerly the Waters and Rivers Commission), to assess Long Pool and the sand movement. The River had run at a higher level than normal during the previous winter/spring flow resulting in a greater movement of sand. Long Pool is 1.2 kilometres in length – the sand had encroached 400 metres of that length!

With the Avon River sedimentation moving to fill the River pools in the Shire of Toodyay, I have successfully encouraged both parliamentarians and Shire staff and Councillors to explore the River. Trips have been taken from Toodyay, through the Avon Valley National Park, to the confluence of the Avon and Wooroloo Brook and ultimately, to the upper reaches of the Swan River. It is difficult to describe the degradation of this important waterway without observing the problems first hand; this observation will give an idea of the devastation that will ultimately reach the Swan River resulting in untold repercussions on the beauty and the community lifestyle it has given in the past.

In the latter part of 2005 Member for Moore, Mr Garry Snook, MLA, Peter Robinson, Toodyay Herald, and myself followed the River from Toodyay to Guildford.

January 2006 saw the route taken again in the company of Garry Snook, MLA, the Shire President of the Toodyay Shire, Charles Wroth, Shadow Minister for the Environment and Member for Carine, Katie Hodson-Thomas, Peter Robinson, the Toodyay Herald, and myself to once again follow the River from Toodyay to Guildford.

A further excursion, in mid-February, saw the Chief Executive Officer of the Shire of Toodyay, Graham Merrick, Shire President, Charles Wroth, Shire Councillor, Sue Eldridge, Manager of Works and

Services, Ashley Grundy, Director of Corporate Services, Andries Gertenbach and Director of Development, Royce Parker, review the trouble spots from Toodyay to Guildford. Assessments were made at Roaches Brook, noting the movement of sand, Wetherall Reserve, Jimperding confluence, Strahan's Crossing in the vicinity of the Seventh Day Adventist Cemetery, Long Pool, Cobbler's Pool, the Avon Pool Crossing in the Avon Valley National Park, Middle Station, Moondyne Pool and the confluence of Wooroloo Brook/Avon River that then becomes the Upper Swan River reaches.

The most recent trek was held in March making our way from Toodyay township to Long Pool, approximately fourteen kilometres downstream. The group comprised of representation from the following organisations: Agriculture Department, Mrs Cec McConnell and Ms Juana Roe, Department of Conservation and Land Management, Alan Kietzmann, Avon Catchment Council Chairperson, Wayne Clarke, ACC Chief Executive Officer, Peter Sullivan, ACC Council Member, Brian Whittington, the Department of Environment, Martin Revell, Swan River Trust personnel Chairperson, Charlie Welker, SRT General Manager, Rod Hughes, SRT Environmental Programmes Manager, Anthony Sutton, and myself representing the Toodyay Friends of the River. At Long Pool the group was met by nearby landowner, Kirk McKenzie. Kirk and his wife, Dixie, have observed the sedimentation encroachment over the years. He was able to give an on-going history of his observations.

The aim of these excursions has been to familiarise decision makers with the River conditions and the damage that had been done, and continues to do, with sand movement and the filling of the last remaining pools in the Shire of Toodyay. This movement has progressed 15 kilometres into

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the Avon Valley National Park!!!

The unseasonable summer rains, resulting in heavy falls around the Avon Catchment, have seen the Avon River running up to two metres in depth. Recordings of 300mls at Bolgart, 40 kilometres north of Toodyay, 250 mls at Quairading and 300mls at Lake Grace, over a two-month period, have resulted in major movement of sediment down the River. With these heavy rains the Toodyay Friends of the River have been unable to survey the movement of silt.

The River and its environs is an important wildlife corridor and I have had the pleasure of meeting with the Manager of the South Western Region of the Australian Conservancy, Ms Alison Dugand, who

is based at Peruna Wildlife Sanctuary. Peruna links the Avon Valley National Park and the Walyunga National Park providing a valuable corridor for wildlife. Alison is also a member of the Avon Waterways Committee.

In summary, those who have travelled along the reaches of the Avon River will gain knowledge of the waterway and its pools and the problems that are imminent. This knowledge will, hopefully, contribute to its ultimate management as it travels from the Catchment, through the Avon Valley National Park, to the upper Swan reaches and ultimately, to the large body of Perth waters.

Gaven Donegan

Project Officer

Toodyay Friends of the River

COMMUNITY WATER GRANT FUNDING

The Toodyay Friends of the River have received \$7,000 from the Australian Governments *Community Water Grants* in 2006 to assist with works along the river foreshore in Toodyay. It is anticipated that works will include improving access for fire and weed control, and for walking in the area by leveling some of the spoil heaps that were left after the River Training Scheme. This work will allow areas to be revegetated. Further work is to include the main storm water drain from town, to collect the water into a detention pond and prevent storm water directly entering the river. This area will be planted with sedges to absorb some pollutants and nutrients.

Creation of a riffle crossing on Boyagerring Brook will reduce sediments entering the Avon in this area. It is also intended to stencil around the storm water collection inlets

in town to remind people what they put down the drain can end up in the river. Bendigo Bank has indicated their interest in assisting us with this project. The Friends of the River look forward to working with the bank and the Shire on this project. The Toodyay Seed Group is a sub group of the Toodyay Friends of the River, and will donate all plants needed for this project. Toodyay Friends of the River also applied for and were lucky to receive a water quality monitoring kit, valued at \$1200, from Dilmah tea and Landcare Australia. The kit will be used to monitor water quality on the Avon and its tributaries. One group from each of the 56 Natural Resource Management (NRM) regions around Australia was selected to receive the kit, and the Friends were the successful group in the Avon NRM region.

LLOYD RESERVE

Lloyd reserve is adjacent to the Avon River and is a remnant of what once was native grassland. If you haven't visited Lloyd reserve, then have a look. You will find it just out of town on the Perth road before James Cottage. Guides are available at the gate or from the tourist centre. With the help of funding from Envirofund, The Toodyay Seed Orchard Group (sub group of the Toodyay Friends of the River) has undertaken weed control, revegetation, and established a seed orchard site at Lloyd Reserve; this will enable us to collect seeds without the need to use existing areas of riparian remnant vegetation. We collected our first harvest of seeds

by Bethan Lloyd

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The Avon: Faunal and other notes on a dying river in South-Western Western Australia

By George W. Kendrick

Part Two of a Series

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James quoted a local resident who had known Burlong Pool for 41 years, i.e. since 1852, asserting that it had never been dry in that time "and with ordinary rain it was perfectly fresh, pur water as it receives rain from Spencer's Brook (six miles distant) and four other large tributaries, which make the Avon River drinkable at all seasons" (*ibid.*).

Reports on the working of the Western Australian Government Railways for the years 1892-1902 show clearly the reliance of the Department during those years on water from the Avon River for steam locomotives operating out of Northam. The railway reached Northam in October 1886; initial sources of water are not specified but during the period 1892-1895, the water service at the West Northam locomotive depot was connected by pipe with Burlong Pool, situated about 2 miles (3.2km) upstream (Report for 1892-1895, pp. 9, 10).

During 1896-1897, the Burlong Railway Dam was constructed on a minor tributary of the Avon, a little west of Burlong Pool and from then until the arrival of the Goldfields Water Scheme at Northam in April 1902, the railway drew on both the dam and pool for boiler water. For periods during the summers of 1896-1897 and 1897-1898, when dams dried up along the Eastern Goldfields line, Burlong Pool appears to have been the principal source of boiler water for locomotives operating east from Northam.

No chemical data from analysis of Burlong Pool water over this period seem to have been preserved but railway boiler water was preferred to carry not more than 430 parts per million (30 grains per gallon) [less than 1000uS/cm] sodium chloride according to Simpson (1928), and could be accepted at no higher than 500p.p.m. (35g./g.) [still less than 1000uS/cm] if necessary (Mr. H. Groom, personal communication, May 1973). This may indicate an approximate upper level to salt concentration in Burlong Pool water during the 1890's. For domestic and stock purposes, such water would be regarded as fresh.

In August 1894, at a time of acute pressure on the government to provide a reliable water supply to the Eastern Goldfields, a Mr. John Maher applied to the Minister for Mines for rights to impound and pipe water from the tributaries of the Avon near Northam to Coolgardie. Maher's letter appeared a month later in *The West Australian* of 17th September. An editorial on the following day, predictably cool toward the Maher scheme, referred to the Avon as "the source from which we shall draw the means of providing the many towns along its banks with water for general use. The municipalities have a lien on the waters of the Swan for their municipal wants. Moreover the owners of the fertile lands lying along the banks cherish expectations that by means of its pools irrigation will be made a cheap and simple matter for them". A letter from a Maher supporter published on 29th September advocated a system of dams and weirs on the Avon.

The *Southern Cross Herald* of 21st September 1894, supporting the Maher scheme, contended that "if the Avon near Burrellong (presumably Burlong) Pool, Northam, is dammed up, an inexhaustible supply of the precious fluid would be procurable". On 28th September, this newspaper published an interview with Maher concerning his "Avon-Coolgardie Water Scheme". Proposals in 1894 to dam the Avon near Toodyay and Northam are discussed by Erickson (1974: 317).

The government adopted a proposal made by C.Y. O'Connor to dam the Helena River to supply the Goldfields and Maher did not proceed with his scheme. However these contemporary records show that towards the turn of the century, the Avon and its western tributaries, especially near Northam, were regarded as acceptable sources of domestic, agricultural and industrial water. In the absence of positive mollusc records from this period, it is safe to assume that the fauna of the Avon was the same as that found by Preiss and Gilbert a half century earlier. *Westralunio carteri* and *Plotiopsis australis* were undoubtedly present in this fauna and probably *Potamopyrgus* sp., *Physastra* sp.

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The Avon: Faunal and other notes on a dying river in South-Western Western Australia By George W. Kendrick (*cont*)

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and *Ferrissia (Pettancylus) petterdi* were likewise; at this time, *Anticorbula amara* may have been confined to estuarine waters.

(b) *The Avon turns salt*

By the turn of the century, signs of deterioration in the condition of the Avon were appearing. Wood (1924) recalled that “about 1897, in the Northam-Toodyay district, I heard it suggested that destruction of the native vegetation turned the water in the creeks salt; and about 1904 I thought that I could see evidence of increase in salinity in the Goomalling Agricultural Area”. The connection between the clearing of catchments and salinity increase was also noted by E.S. Hume, Chief Mechanical Engineer, in the *Report on the working of the Government Railways for the year 1908-9*.

From about 1893 to 1910, a steam-powered flour mill operated at Beverley, using boiler water from the Avon. The late Mr. A. Oliver of Beverley, whose father was manager, informed me (personal communication, June 1973) that “salinity was an increasing problem from about 1907 and ... every few months there would be a shut down of the mill whilst my father and others removed salt incrustations from the boiler”.

Upstream from Toodyay, the drainage basin of the Avon has been very extensively cleared for agriculture, probably to a greater extent and for a longer time than any other in Western Australia. Destruction of the original deep-rooted *Eucalyptus-Acacia* woodland and its replacement with shallow-rooted seasonal crops and pastures has raised the water table and greatly increased the salinity of stream discharge, here as elsewhere in south-western Australia (Mulcahy, 1973; Peck and Hurle, 1973). Na⁺ and Cl⁻ are the predominant ions in the groundwater throughout the region. They are believed to have been derived largely from the rain as “cyclic salt” (Weller, 1928; Williams, 1967). Many Avon tributaries, especially the smaller ones, have been entirely cleared of standing vegetation; others have been devegetated through salting following the clearing of the surrounding land. The

extension of agriculture eastward from the Meckering Line [major fault line] has increased the frequency of saline lake discharge into rivers including the Avon, thus further raising their salinity load (Mulcahy, 1973). I have not attempted to establish the proportion of the Avon catchment that has been cleared but present data on some agricultural shires, being representative “Avon country”, to indicate the approximate degree to which this has proceeded. Rural land utilisation statistics issued by the Bureau of Statistics show that by 1971-72 in the wholly agricultural shires of Goomalling, Cunderdin, Brookton and Quairading (taken together) about 85% of farming land has been cleared. Most of the remainder seems to have been used for stock grazing and very little of the original woodland would now remain in an unmodified condition. The shires of Toodyay, Northam, York and Beverley retain forested water catchment areas in their western parts and, statistically, have higher proportions of uncleared land than the foregoing. However their agricultural eastern parts appear to have been cleared to a similar extent.

Masters and Milhinch (1974) estimate that less than 5% of the area of the Northam Shire remains in virgin condition.

This article will be continued in the next edition of 'Biddip'. There are some very interesting facts about our river to follow, including "Livestock Pollution", "A River of Sand", and "Wanted: A new approach". One of the contributors to the article was the late Jim Masters, a foundation member of the 'Friends'.

The original WA Naturalist Journal with this article is still available from the WA Naturalists Club. Email address for the Club is: wanats@iinet.net.au

Lloyd Reserve (cont)

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in the summer of 2005/06. This seed have been used to grow plants for the Native Tree and Understorey Scheme and replant back into the reserve.

Many native grass species such as *Themedia*, *Austrodanthonia*, *Neurachne*, *Cymbopogon* and *Austrostipa*'s are still to be found in the reserve, but they are mixed in with a variety of weeds such as Cape Tulip and Soursob. Our aim is to slowly remove the

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LEARN THE DIFFERENCE BURROWING FROG OR CANE TOAD

With the extension of the range across northern Australia of the introduced Cane or Marine Toad, there is a worry that our Burrowing Frogs of the southwest portion of Western Australia may be the introduced pest. However, there are significant differences between the feral Toad and the beautiful Burrowing Frogs.

The Cane or Marine Toad, a species of South and Central America, was introduced to northern Queensland in 1935 to control insect pests plaguing the cane fields. Insecticides were not available at that time. Since that introduction, the Toad has infiltrated the northern rivers of NSW, extended into the Northern Territory in Kakadu National Park and has now be found in northern Western Australia.

This extremely large animal lays eggs in either temporary, or permanent, still or slow moving waters. The eggs form into tadpoles and eventually become the adult Toad. At all stages the creatures are highly poisonous causing death when 'mouthed' by a dog or cat investigating it, or if eaten. It has been found that the Northern Quoll is under threat from eating this extremely poisonous creature. The adult Toad has large glands on its shoulders and, if provoked, poison from these glands can be ejected up to one metre.

The Cane or Marine Toad has a horizontal pupil in its eye, and, as already mentioned, this is an important identifying factor as the Burrowing Frogs have a noticeable vertical pupil.

Colouring of the Toad can be grey, brown, olive brown or reddish brown above with a whitish or yellowish belly. The skin has a leathery texture and is extremely warty with a dark brown top to each wart. There is a pair of high bony ridges that extend forward to meet on the snout between the nostrils. The front limbs have fingers that are separate whereas the back legs have webs between the toes.

The Toad lives on the ground foraging in a great variety of habitat including rainforest, woodlands, grasslands, beach dunes, roadways and suburban gardens. It is an insect-eating creature.



The Cane or Marine Toad has a SVL (snout vent length) of 150mm (6 inches) but the largest creature found was measured at SVL 240mm (9½ inches) and weighed 1.36kg (3 lb). A captive animal has been recorded as having lived for 16 years.

The call of the Toad is a 'purring' sound, similar to that of a telephone dialling tone.

Information and the photograph of the Cane or Marine Toad has been kindly provided by Steve Parish Publishing Pty Ltd from the Steve Parish production, 'Amazing Facts about Australian Frogs and Reptiles'

BURROWING FROGS all have vertical pupils!!!!

The Moaning Frog (*Heleioporus eyrie*) is usually found on sandy soils near swamps and streams on the Swan Coastal Plain and Rottnest. Eggs are laid in an oblique burrow excavated on flat land. This Frog is coloured brown above, has a white belly with a little brown colouring on the throat. It may have some white, grey or yellow irregular marbling on the back and sides of the body with the flanks peppered with white spots. Snout-Vent Length (SVL) is approximately 66mm for the male and 63mm for the female. The Moaning Frog will puff itself up if it is frightened. Its call is a long, low moan slowly repeated.



The Chocolate Burrowing Frog (*Heleioporus inornatus*) breeds in poorly drained wet areas and swamps laying its pale yellow eggs in a burrow dug into sloping or vertical banks. It is only found in the Darling Range.

As the name depicts, this frog is a coppery brown in colour and it may, or may not, have a mottling of white, yellow or grey; it has a white belly. SVL is opposite to the Moaning Frog with the female being the larger of the species at 73mm and the male 64mm. The Chocolate Burrowing Frog will puff itself up if touched or frightened. The Chocolate Burrowing Frog call is a frequently repeated 'woop woop'.



The Yellow-flanked Burrowing Frog (*Heleioporus barycragus*) lives in clay or granite areas preferably near moving waters with its eggs laid in a vertical burrow excavated by the male animal. It is found in the Darling Range.

Colouring is brown or dark grey with tiny, bright yellow-capped warts on its sides and a white belly.

SVL of the male is 83mm and the female 86mm. The female frog is, again, slightly larger than the male. The Yellow-flanked Burrowing Frog will puff itself up if frightened.

The Yellow-flanked Burrowing Frog call is a slowly repeated 'owl-like hoot'



The Spotted Burrowing Frog (*Heleioporus albopunctatus*) is found in the Darling Range and close to the coast from the Murchison River to Hopetown. It burrows beneath rocks, in the beds of shallow watercourses, swamp areas or in the sides of claypans with its eggs laid in a foam nest in the burrow. It is frequently found in the Shire of Toodyay

and I have seen this beautiful creature in a tiny volcano-like mound of sand, its sand-covered head in the depression at the top of the mound, and its large liquid brown eyes looking at me; I have only observed it at night.

The Spotted Burrowing Frog is purplish-brown to chocolate-brown in colour with numerous, evenly-spaced, pale spots on its back, sides and limbs.

SVL of the male is 77mm and the female is 85mm. It will puff itself up if frightened.

The Spotted Burrowing Frog has a short high-pitched 'coo' repeated at more than one per second.

Above photos of the Burrowing Frogs are with kind permission from "A Guide to the Reptiles and Frogs of the Perth Region" by Brian Bush, et al.



Photo of Spotted Burrowing Frog by Wayne Clarke

Article by Desraé Clarke

Lloyd Reserve (cont).

weeds and replace with native species. In 2005 we had a large area under flooded gums spayed with a combination of *Roundup Biactive* and *Ally*. Both of the above weeds are known not to be controlled by glyphosate that is the active ingredient in roundup. We wait to see what crop of weeds will grow this season.

Already on the seed orchard site native plants are forming a canopy that is excluding light and reducing the amount of weeds that can grow. Many native grasses are summer active and perennial and it is possible to spray areas in winter where they are mixed in with winter active weeds and they will survive well. The summer of 2006 saw good rainfall figures that have helped the native grasses out compete the annual weeds. Weed control with replanting will continue in the reserve in future seasons.

The Toodyay Seed Orchard Group meets on the second and fourth Wednesday of the month at the community shadehouse. Volunteers are welcome to attend. All volunteers need to be members of The Toodyay Friends of the River for insurance purposes. Please contact Bethan Lloyd on 9574 2452 or Val Tanner on 9574 2905 for more details.

Newsletter of the Toodyay
Friends of the River

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*"Make Friends with
our Avon River"*



Toodyay Friends of the River

The objects of the Toodyay Friends of the River are to work towards the conservation and rehabilitation of the Avon River and its environs. In the bigger picture of natural resource management, we are committed to implementing the Avon River Management Program and its associated River Recovery Plans for each of the four sections of river that pass through Toodyay.



THE YENYENNING LAKES



JIMPERDING POOL SEDIMENTS



THE FRIENDS ON LONG POOL

Snappshots



LONG POOL SHOWING SEDIMENT