



In this issue

This first issue for the year puts a focus on the continuing concerns STEP has for population growth and climate change. Thoughtful articles, by *Bob Carr* and *John Burke* respectively, highlight the risks we run in not taking early and effective action in these areas.

Also:

- Mountain bikes are here to stay and they want access to bushland areas, including nature reserves and National Parks. *Jane Judd* looks at the issues this presents to the environment.
- Urban planning is not a magic wand but its apparent absence can result in outcomes that are simply unacceptable. Hornsby, like Ku-ring-gai, is challenged by State imposed new dwelling quota's. *Gwen Martin* however believes that the Hornsby Council has done a particularly poor job of responding in the Thornleigh area.
- We live in the driest inhabited continent in the world yet many of us still try maintaining lush grass lawns using thirsty exotic grasses. *Ross Rapmund* looks at our native grasses and their importance for supporting local fauna.
- The preservation of our native fish species usually receives little attention. *John Martyn* looks at the fish in the Lane Cove River catchment and finds both cause for alarm and guarded optimism.
- The proposed Tillegra Dam across the Williams River will cause significant environmental damage should it proceed, with little apparent upside. *Margery Street* examines the environmental and political issues of the proposal.
- STEP Committee member *Robin Buchanan* is a pioneer of the bush regeneration movement and has recently written a new book on natural area restoration. *Bill and Noela Jones* review the new book for STEP.
- STEP has for over twenty years been highlighting the importance of improved public transport and reduced private car travel. We are delighted that that matter is now receiving greater media attention and we think that article by *Ross Gittins* summarises the issues particularly well.

Finally, our update section carries full details of current activities, planned walks and talks. Enjoy!

STEP Talk - Speaker: Janine Kitson – 30 March 2010

8.00pm – St. Andrews Church Hall, corner Chisholm and Vernon Streets, Turramurra.

Topic: Why Wirrimbirra Sanctuary is so significant to the history of the environment movement

Wirrimbirra Sanctuary, at Bargo, on the old Hume Highway between Picton and Mittagong is an iconic National Trust property that tells much about the history of the environment movement.

Wirrimbirra's founder, Thistle Harris [1902-1990] was a botanist, educator, environmental activist and author of the seminal book 'Wildflowers of Australia' (1938) that popularised the growing of Australian natives. Her partner and husband, David Stead [1877-1957] was a talented, enthusiastic, committed self educated marine biologist who laid much of the foundation for the environment.

Today Wirrimbirra Sanctuary is one of those long forgotten gems of time. In its heyday in the 1970s it had every well known conservationist championing for it – Vincent Serventy, Allen Strom, Ivor Wyatt and many more. That generation has now passed away and it is now timely to revisit their remarkable achievements.

Our speaker is Janine Kitson, BA, Dip Ed, M Ed, Dip TEFL, MA, M Ed (Hons), University of Sydney. Janine has worked as an educational consultant, as a Councillor on Ku-ring-gai Council and is currently President of the David G. Stead



Memorial Wildlife Research Foundation of Australia that manages the National Trust (NSW) property, Wirrimbirra Sanctuary, at Bargo.

Janine is a Board Director of the National Trust of Australia (NSW); NSW Teachers Federation representative for the NSW National Parks Association and Honorary Secretary of the St Ives Progress Association.

STEP Inc

Community-based Environmental Conservation since 1978
PO Box 697, Turramurra, NSW 2074

Perish the thought that we can handle a bigger population

Article by Bob Carr, premier of NSW from 1995 to 2005

In the sprawling Austrian classic *The Man Without Qualities* by Robert Musil, famed for its unreadability, the anti-hero, Ulrich, reads in a newspaper about "the racehorse of genius". That a "racehorse" can be a "genius" triggers a flash of alienation. From that moment Ulrich cannot trust the values of his society.

Some Australians must have felt similar estrangement when they read federal Finance Minister Lindsay Tanner's defence of Australia's runaway immigration targets, playfully comparing our population densities with those of Bangladesh.

That Tanner is one of the best minds in federal politics will only deepen the rift between 90 per cent of Australians and their political and business leadership over population policy, or rather the absence of any policy except "more". In March the Australian Bureau of Statistics projected that one scenario, with ramped-up immigration, could mean a population as high as 42.5 million by 2056. Its mid-range scenario comes in at 35.5 million.

I need only summarise the indictments of such high-end population growth. It assumes rainfall reliability not reflected in any known data. It ignores evidence that high immigration has only a marginal impact on age distribution over the long term. It glides over the proof marshalled by Ross Gittins that high immigration worsens, not relieves, skill shortages. It also spikes the cost of land and cruels housing affordability. It defies "carrying capacity" constraints. One windy day blows our onion paper-thin soil 1400 kilometres. Our rivers are mere creeks compared with those fed by the Alps, the Rockies or the Andes. Two capitals, Adelaide and Brisbane, have come perilously close to running out of water.

National security? Ramped-up immigration will never close the gap between us and the Indonesians. Leave these arguments for another day. In the meantime I would like Canberra and big business to level with us about the implications of soaring immigration.

Will they, for example, stand shoulder to shoulder with state planning ministers when prime farming land on the city fringe has to be ploughed up for housing and low-density suburbs rezoned for high-rise? Residents of Ku-ring-gai opposed to flats along their rail corridor should remember these rezonings were to help facilitate a Sydney population of 5 million. Now we are headed for 7 million. Their placards belong outside the Department of Immigration, not the Dept of Planning.

Don't believe that there is a magic potion called Good Planning that will settle every argument. The Metropolitan Strategy, gazetted in 2005, defines Sydney as a city of cities; not just one CBD but regional and sub-regional centres based on public transport hubs (Parramatta, North Sydney, Chatswood, Strathfield etc). Population growth will occur in these centres and along rail corridors, easing pressure on the fringe. The plan is based on an extra 1.1 million by 2031. The increased intake will add half a million to this.

The strategy is robust enough to cope - the fall in the size of households is now evening out - but

planning will always be a rolling argument. Differences about where the densities go and how you accommodate unavoidable growth on the fringe will always be with us.

It's the same with what you do with public resources that are always limited. Increasing numbers just makes these tensions more acute.

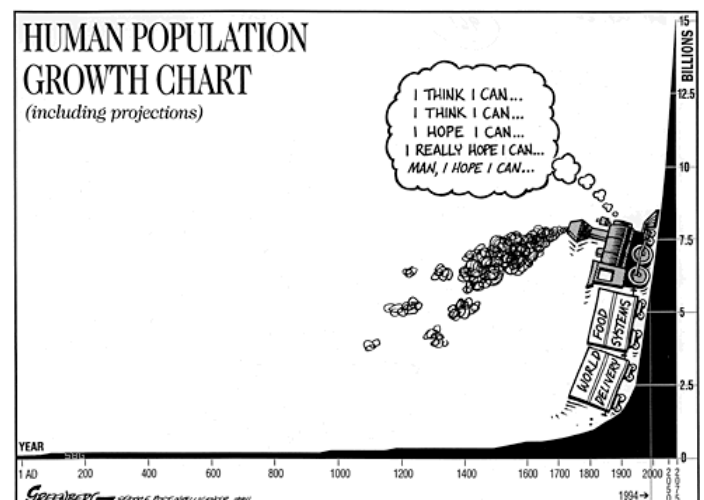
In fact capital city water is a bigger anxiety. Since 2006 every mainland state has thrown up a desalination plant; NSW as insurance against drought, the rest for everyday supply. Now Queensland will build two more. Ten desalination plants in three years. If this drought lengthens we will need them.

Yet none of the Canberra bureaucrats who ticked off high immigration were required to link rising population numbers to water. Not to the fragility of the Murray and Adelaide's reliance on it for 90 per cent of its drinking water; to the unpredictability of south-east Queensland's rainfall; or to the unknowns about Perth's Yarragadee aquifer. Melbourne is building Australia's biggest desalination plant and drought conditions have already mandated use of its full capacity.

A single dam, as Anna Bligh now knows, requires an environmental impact statement. But letting annual arrivals blow out to 500,000 a year required not even a one-page summary of environmental implications. And an EIS on migrant numbers would have had to discuss the base-load energy to power the soon-to-be numerous desalination plants.

We celebrate every advance for thermal and photovoltaic solar, clean coal, natural gas and energy efficiency. But there is a risk high population growth may mandate new coal-burning power plants, especially in Victoria. And they send any national greenhouse targets through the roof. Unless we go for nuclear, which surely joins the checklist of possibilities? If an environmental impact statement on our new population target canvassed that option, you could praise the high-growth advocates for their honesty.

Tanner suggested people in high-density countries would consider strange our reservations about high



immigration. The implication is that every last place on this battered planet should cheerfully sign on for the population explosion.

I think other countries can understand that Australia has a narrow fertile coastal strip and the rest is arid and semi-arid. We resemble North Africa more than North America. Curious as we are, I think Australians don't want to be packed tight, and remain attached to space, air, the natural world. And instead of more

coastal suburbs they may even prefer the glimpse of waves breaking on golden sand through the branches of a eucalypt. Funny that.

Acknowledgements to the Sydney Morning Herald, where this article first appeared. This story was found at <http://www.smh.com.au/opinion/politics/perish-the-thought-that-we-can-handle-a-bigger-population-2009-1118-imfv.html>

Where to after Copenhagen?

Article by STEP Vice President John Burke.

The hype and expectations that preceded the Copenhagen climate change conference in December now seem a distant memory. The conference failed to deliver substantial results and the world, and Australia in particular, have moved on. You can read in the newspapers what is happening this week but most of us are confused and have lost the trail so here we try and summarise so as to bring a little clarity to the chain of events.

So what did Copenhagen achieve?

There was an accord that was agreed after tense all-night negotiations. The Economist on-line of 19 December says it well, *'The accord offers to enhance long-term co-operative action against climate change, and recognises the need to provide help to poor countries for adaptation. It provides a way to bring together the offers of emission reductions made by various countries before the conference began—and, should they so wish, to raise them—as long as they are confirmed in the next few months, and gives a special status to the idea of holding global warming to no more than 2°C. It finds words that provide a way forward on the vexed issue of monitoring reductions undertaken by developing countries off their own bat, which is important not least because it is something the American Senate wants reassurance on with respect to China. It offers short-term funding for projects in developing country of \$30 billion, and aspires to a long-term system that would, in principle, provide \$100 billion a year for mitigation and adaptation from 2020 onwards. And, perhaps the component of clearest value from outside the world of climate politics, it moves forward on REDD, the plan for reducing deforestation.'*

So that's what was achieved. What was not achieved was an agreement on targets for emissions and it failed to rectify the flaw in the negotiating medium, the Kyoto protocol, which is not binding on those countries that have not ratified it - including China and the USA and all developing nations. Very few countries have come forward with meaningful emission reduction targets. At Copenhagen, however, progress was made in that developing as well as developed countries signed the accord and agreed to international monitoring of any cuts that they committed themselves to. There is also the possibility that new political structures will evolve out of the accord that will be more effective in promoting agreement between countries to more effectively deal with specific issues such as deforestation.

Disappointing but not a complete failure.

What has happened since?

The deniers and sceptics have wreaked havoc with populist, trite arguments that hang by very thin threads.

This has made many people who aren't too engaged in the issue doubt whether the science behind global warming predictions really is reliable. These people have been given renewed energy by errors found in a few of the papers endorsed by the International Panel on Climate Change (IPCC). But in all cases their statements can be shown to be absurd, just false or, in the case of saner scientific efforts, just hopelessly outnumbered and contradicted by the weight of the science produced by those who have contributed thousands of papers to the IPCC over 20 years.

A group of Australians have paid for Lord Monckton to come to Australia on a lecture tour. This man has claimed to be a member of the House of Lords when he isn't and to be a Nobel Prize winner when he isn't but the crowning absurdity amongst many is that global warming, following the fall of the Berlin Wall, is part of a plot to bring about a world communist takeover - see *The Age*, 'Mad Monk' meets Monckton, Feb 4. So this is the quality of many of the deniers. The real question is why so many people flock to the lunatics.

Of course there will be errors or disputable results in the huge output of the IPCC. These, however, have occurred in a tiny percentage of papers and have not dented the basic science. For instance there was one paragraph in a 938 page report that had a poorly substantiated estimate of the rate of retreat of Himalayan glaciers. This did not damage the science underpinning the paper but of course the deniers treated it as if it destroyed the integrity of most of the world's scientists in that field. You can go to <http://www.ipcc.ch/pdf/presentations/himalaya-statement-20january2010.pdf> for the IPCC statement on that issue.

In Australia, the ETS (Emissions Trading Scheme) has been reintroduced into the parliament. It is known as the Carbon Pollution Reduction Schemes Bills 2010. The Greens are this time in close negotiations with the Government to obtain changes to embrace Professor Garnaut's suggestion of a two year interim scheme with a fixed carbon price, no trading and no offsets. This may be a good idea but it is really essential that the Greens don't again block the adoption of some scheme. There is always the opportunity to improve it in the future once the population has got used to the idea. Malcolm Turnbull made an excellent speech on 8 February which you can access at <http://www.malcolmturnbull.com.au>. Unfortunately it is too long to reprint here but it is worth quoting the second paragraph of the speech.

'Climate change is a global problem. The planet is warming because of the growing level of greenhouse gas emissions from human activity. If this trend continues then truly catastrophic consequences will ensue, from rising sea levels to reduced water

availability to more heat waves and fires. In December, just a few weeks ago, we had confirmation from three leading scientific organisations—the UK Met Office and, in the United States, NASA and the National Oceanic and Atmospheric Administration—that the past decade, the years from 2000 to 2009, was the hottest since

record-keeping began, even hotter than the decade before which was the second hottest decade on record and the decade before that which was the third hottest on record.’

Precisely!

Mountain Biking: Balancing Conservation and Recreation Objectives

Article by Jane Judd, Chair NSW National Parks and Wildlife Advisory Council. Jane presented to a workshop on cycling and mountain biking in National Parks at the Royal Botanic Gardens in Sydney in December 2009.

I want to start by saying that I ride a mountain bike around our farm and an old road bike, both for pleasure and fitness. The things I say are my own opinions. I may represent the NCC on the Advisory Council but on this I am speaking for no particular constituency. I will try to walk the middle road.

Historically, National Parks were established on land that no-one else wanted. It was rough, hilly and covered with trees and no good for farming or townships. These areas have now become desirable for other reasons and they are gradually being nibbled away for one use or another, often for recreation. This is especially true in places of high population density or very close to towns.

The first responsibility of the national park reserve system is conservation, not just of individual species but of entire ecosystems into the future. Any recreational use must therefore be compatible with conservation. It is my contention that many forms of mountain biking are incompatible with conservation of the environment and no amount of special management will make them compatible.

As I understand it there are a variety of different activities under the banner of mountain biking. Firstly there are families going on shortish rides together into nice places. The bikes are fairly cheap and the riders want nice places to ride to and through. A national park is not essential for this though it is a bonus.

Secondly there are groups or individuals using fire trails and national park management trails outside wilderness on longer rides – interesting rides through interesting country. The ride may be easy as in the Werekata reserve in the Hunter near Cessnock or challenging. Nice scenery is a benefit.

These are both fairly low-key examples of mountain biking, nearly the equivalent of bushwalking. I have few arguments with these two groups. These sorts of recreational activities have their place in national parks and require little specific development to satisfy their requirements. Their impacts can be managed under normal maintenance programs.

The third category is an entirely different kettle of fish. My research indicates that this group is mainly composed of young men (though others are also involved). They are competitive and risk-takers as is only right and natural. They race along tracks or fly downhill as an extreme sport. Their intention is to maximise the thrill. To quote one website, this type of mountain biking is seeking “that most intangible quality

of mountain-biking – flow.” It is best provided on single track and has little interest in scenery or endangered species except as potential hazards. It is a rapidly growing adventure sport. As indicated by the videos on the internet, it can be dangerous. Participants wear full-face helmets and body armour and ride expensive, specially constructed bikes – a total investment of around \$10,000. It is highly competitive and at Thredbo for example can cost up to \$300 per day.

These sports have a place. But that place is **not** in national parks. They are intrinsically incompatible with the nature and purpose of national parks. A downhill racing bike does as much damage as an equivalent motorbike. It is not the responsibility of national parks to be all things to all people recreationally. They can be better catered for on land of other tenures – state forests, private land, and state conservation areas of the sort which will never become national parks because they are already too degraded. Providing more tracks for this market segment will not increase general or family access.

I’d like to give you an example of how private land can cater for adventure sports. Motorbikes are beloved sporting machines in our area, the Northern Plains. They are used illegally in many of our reserves. Over the last couple of years a private individual has developed an area of around 5000 acres near Coonabarabran. He calls it Goanna Tracks and provides courses for a number of different types of motorbike riding – enduro, motorcross, flat track, freestyle. Competitive events and training schools are now being held here regularly. Riders come from hundreds of kilometres away. They camp or stay in town. They contribute to the local economy.

A different example of dealing with cycling. Lord Howe Island is an example of effective management of cyclists. Cycling is the main method of transport in the developed area but bikes are not allowed in the conservation areas. The only public access is on foot and bike racks are provided at track heads to facilitate appropriate usage.

So what are the impacts of mountain biking?

Firstly environmental:

- In steep areas with shallow soils, favoured by downhill riders, erosion is an important consideration. The more popular tracks become deeply cut, allowing the rain to run off along the track, creating gullies and threatening water quality further down the catchment.
- Tracks widen around puddles and erosion, and cut more deeply into the hillside on curves, further increasing environmental impact.

- Mountain bikes have knobby tyres. These pick up and transport mud. They also carry weed seeds. Even the most careful riding won't prevent this from happening. My own experience with catheads and American burr grass is a case in point. Some seeds fell by the wayside, spreading infestations to other areas. Others I picked out of the tyres when I got home. I put them in the bin. Not everyone does.
- Pathogens are also spread by this means without the strictest bike hygiene and post-ride washing.
- And both legal and illegal riders are never satisfied. Once a track is established they demand more single track and more technical rides. They cut corners, see a better line elsewhere, explore the bush on their bikes and before you know it there is a proliferation of tracks. Dirtworld.com describes the popular mountain-biking area near Oxford Falls as being "littered with trails from the easy to the insane" – "fully sik aye".

Social impacts occur with multiple user types on the same track, even with the first two groups of recreational riders. There is the potential for injury, litigation and increased hostility. A walker will interpret a cycle bell ringing insistently as the cyclist comes up from behind as "get out of my way, I'm coming through." Bird watching and cycling can't help but come into conflict.

From an Advisory Council point of view there is heavy use, both legal and illegal, at Yellomundee Regional Park, Illawarra Escarpment State Conservation Area and Glenrock State Conservation Area among others. Users push new off-track diversions and once one track is established, increased usage leads to increased pressure to provide more. I heard of a group of three

young men in the Manly Dam area who spent several years building and developing their illegal tracks. They were eventually caught. It took a contractor several days to return it to a more natural landscape shape and even longer before the bush regenerated. Several trees had to be removed because the boys had undermined them in their track work.

The problems are worse with increasing population pressure. There are considerable commercial interests involved for clothing, bikes and other equipment, magazines etc. Specially developed, well-designed tracks are not cheap. National Parks and Wildlife should not be financing these trails with money that would be better spent satisfying its conservation responsibilities. These are commercial ventures which should be on private land or non-sensitive public land of tenure and financed privately. And let's not forget that there are fashions in recreation, money can be spent then the interest wanes.

The development of "sacrifice areas" puts other users at risk and may be the equivalent of setting aside parts of national parks for the exclusive use of so-called conservation hunting. Consultation is essential before any decisions are made but good planning on a regional scale is the key.



Where's the Planning? Short termism still rules in Hornsby.

A plea from a local Thornleigh resident, Gwen Martin

Last year Hornsby Council, in response to a State Government directive, released its 2009 Housing Strategy. One of the designated areas straddles Pennant Hills Road at Thornleigh. The proposal is for a 10-storey building on the land between the Wells Street railway bridge and Bellevue Street, and for 5 storey units directly opposite this site on the land from Bellevue Street south to Thornleigh Street bordered by Wood Street.

A major concern for Hornsby Council is that if it does not produce a sufficient volume of high rise new dwellings, it will find itself in the same position as Ku-ring-gai Council, which is stripped of its planning powers. The formula for this housing strategy seems to consist of finding a railway station and changing the land usage category so that multiple storeys accommodate as many dwellings as possible. Lack of facilities such as kindergartens, schools and green space is not to be taken into account. No other tools for increasing housing are proposed. In other words townhouses or similar multi dwellings still with some garden attached are not to be considered.

Once the land category is changed, rates on those properties affected, will rise accordingly. The landowner can opt to have the increase in rates attached to the property so that these are not collected by Council until the property is sold. For retirees and young families in particular, this practice would be an incentive to accept the developer's offer and leave. Certainly most of us would agree that that is the correct course to take. However the residential blocks targeted in most of these houses have been owned for decades. For those of us who have lived in our own homes for a similar time, leaving under such circumstances would be distressing.

So there is a human cost to this that is not reflected amongst those making the decisions. It does not help for a Councillor to make such comments as "Pennant Hills Road isn't busy in the middle of the day". Relative to peak hour that is maybe correct. However if it was in his neighbourhood he might be somewhat more thoughtful about his comments. But there is more: "parents should be responsible for their own children's road safety." That was in response to parents concerns about crossing Bellevue Street to go to the shops. Two local boys aged 18 and 19 have died crossing Pennant Hills Road! For a Councillor, living elsewhere but who represents this area, to use flippant comments does nothing to help the process.

In its submission to Council the Thornleigh Normanhurst Residents Group argued that traffic issues coupled with a lack of facilities in this area would at least warrant some amendments to such a large increase in population. The Council's decision late last year was that the proposal would stand unamended.

In addition to this housing strategy, there are two other developments likely to have a severe impact on the area. The business area between Station Street and Bellevue Street fronting Pennant Hills Road has been approved by Council as a new Aldi store. In spite of the fact that Bellevue Street retains its narrow width from the days when Thornleigh was a small and quiet village, it will soon have the traffic associated with both Woolworths and Aldi. Several years ago a developer, in consultation with the TNRG and neighbours of his land, proposed an office block for this site. To make it viable he needed it to be three storeys. His neighbours approved, it would have had a low level of traffic activity, but Council rejected his request because of the height. We will now have Aldi instead - a business generating large volumes of traffic on one of Australia's busiest highways. Several years on and Council is now prepared to have 10 storeys opposite this site and 5 storeys neighbouring it.

The other development which will impact on this area is the SAN "Wahroonga Estate Redevelopment" (WER) proposal to double the number of hospital beds, increase residences by another 500 and add retail and commercial development to their site. It may sound fine but how does the inadequate road system (Comenarra Parkway and Fox Valley Road in particular) cope with that sort of increase in traffic? We haven't seen anything to convince us that this aspect has been seriously considered. In fact, the most recent WER project plan suggests that the intersection of Comenarra and Pennant Hills Road is not a WER concern. One point suggested in the WER traffic consultant's report was to remove the right turn off Pennant Hills Road into Park Street for traffic from the north. They should have been aware that there is no right turn off Pennant Hills Road onto Bellevue Street, which would leave all the businesses on the west side i.e. the RTA, McDonalds, Bunning's and about 30 small concerns on that side with one only entry point at Phyllis Avenue for customers coming from the north. This absurd proposal will not address the real problem which is traffic exiting the Comenarra Parkway and especially for traffic turning right on to Pennant Hills Road.

Local councils will always work with developers while paying little attention to the future needs of an area. In January 1987 Hornsby Council rezoned the triangle of land north of Thornleigh School. The Council's reason for the change from residential to commercial usage was that it was untenable for people to live between Pennant Hills Road and the railway line. But when developers wanted to build housing units at the other end of Thornleigh - the same situation between the road and the railway line but with a narrower site meaning dwellings are much closer to traffic - then that was fine.

The following year the developers were looking at Thornleigh Primary School. We pleaded for Thornleigh School to be retained. We asked that future demographics be considered and that the value of the green open space be valued. Our forecast for an increase in children has been proved to be correct. However those children now have to travel to five different primary state schools. The green area is gone forever. The site realised nearly \$10 million. What would it be worth today to have the children from the proposed housing strategy area walking into that school complete with its spacious grounds? The nearest green space for children from the proposed units will be the post stamp sized small park beside the Thornleigh railway station, bordered by the busy Esplanade and the railway line. What a wonderful facility for kids!

The Thornleigh Normanhurst Residents Group (TNRG) has long been active in trying to protect the interests of Thornleigh residents. TNRG has not suggested that it does not want any development, just that 10 storeys on the western side is a precedent that will be regretted, and that 5 storey unit blocks on the other side is an over-development of a fragile area already overworked with traffic volumes.

There has never been a planning study undertaken for the Thornleigh area. Those of us who live here see it as being regarded as a low priority area for Hornsby Council, especially compared to the attention received by some of the residential areas further along the train line. With the newly proposed level of high level housing development one would think that trying to protect and even improve the amenity of this area would be high on town planners' agendas. However what is likely to occur is that this part of Thornleigh will once again come off poorly in the planning stakes. Even our overhead bridge has been used to fund other bridges throughout the state. The initial agreement for its advertising to pay for its cost was quickly forgotten when the RTA saw the 10 year period coming to an end. It is a tangible example of the treatment of this area.



Left: Pennant Hills Road and Comenarra Parkway intersection. The new Aldi store will be located on the East side of Pennant Hills Road, next to the existing Thornleigh Market shopping centre.

Editors Note: STEP Inc will forward this article to the three Councillors in Hornsby Councils C Ward for their comments

Native Grasses

Article by STEP member Ross Rapmund. Ross is the Community Nursery Co-ordinator for the Hornsby Shire Council.

From closed forests to open arid areas native grasses are present in nearly every environment across Australia. Within the local government areas of Hornsby and Ku-ring-gai we have in excess of 100 native species with probably equal numbers of exotic species.

Many of the grasses are difficult to identify down to a genus level let alone to a species level. Generally a seed head is paramount for identification but, being seasonally available, this can lead to further frustration when working out if you have a native grass or weed. Fortunately there are some fantastic resources available for grass identification. The Hornsby Online Herbarium (<http://www.photosau.com/hornsbyherbarium/scripts/home.asp>) is a great starting point since many of the specimens are naturally portrayed fresh rather than having to look at "browned off" dried pressed specimens (even Ehrharta's on there, like everywhere else...). Other useful resources include Van Klaphake's "Key to the Grasses of Sydney" which is quite comprehensive with excellent line drawings.

Nearly all of our local native grasses are long lived perennial types, the exceptions being the "Blown Grass" group which are predominantly annual species but sometimes perennial. Conversely many of our weed grasses are annuals. For indigenous species being a long lived perennial grass gives an edge in tough conditions, for example- my observations of *Poa affinis* is that it may retreat to dormant shoot/root bases in dry conditions and not flower and set seed for that season, returning in more favourable weather conditions the following season. Other species flourish when conditions are too difficult for other grass species to cope, an example being *Austrodanthonia racemosa* (syn. *Danthonia racemosa*) which is a local Wallaby Grass. This species adapts well in a dry warm spring and early summer often dominating as a ground cover in our local parks where there is still an overstorey of either Blue Gum High Forest or Turpentine Ironbark Forest canopy trees (even under a long mowing regime, for example, visit Kenley Park, Normanhurst to see this in an extended dry period). After rain other species compete with the Wallaby Grass, to its disadvantage.

So how is it that grasses grow so successfully at different times of the year? Put simply it depends on whether the grass is a summer active growing species and winter dormant or the reverse of this. This relates directly to how they perform their carbon dioxide capture and subsequent photosynthesis i.e. a C3 plant or a C4 plant.

C3 plants are adapted to cool season establishment and growth in either wet or dry environments and produce a 3-carbon compound during the first stage of photosynthesis. C3 plants flourish in cool, wet, and cloudy climates, where light levels may be lower, because the metabolic pathway is more energy efficient in these conditions, and if water is plentiful, the stomata can stay open and let in more carbon dioxide. Local examples include Weeping Grass (*Microlaena stipoides*) or *Poa affinis*.

Wallaby Grass propagated in the HSC Community Nursery



C4 plants are more adapted to warm or hot seasonal conditions under moist or dry environments and firstly produce a 4-carbon compound during photosynthesis. Put simply this allows C4 plants to have very high water-use efficiency, so that there can be up to twice as much photosynthesis per gram of water in leaf tissue as in C3 plants. Less than 1% of earth's plant species can be classified as C4. Local examples include Kangaroo Grass (*Themeda australis*), Wire Grasses (*Aristida* spp.) and classified as C4. Local examples include Kangaroo Grass Red Leg Grass (*Bothriochloa macra*). (Adapted from <http://www.answers.com/topic/c3-and-c4-plants> accessed 19/01/2010). An interesting article on the hypothesis of the evolution of C4 grasses and modern human evolution can be found at- http://www.lifescientist.com.au/article/195111/combo_special_c4_plants_evolutionary_explosion

Just think of the different growth patterns of corn in summer compared to weedy winter grass in a cold shady lawn during the cooler months. Perhaps C4 grasses will have a higher importance in the future with a changing climate in relation to food production both from grain production and as forage for stock. It also has a strong bearing on success of establishment rates when undertaking revegetation with native grasses, clearly a C3 or C4 grass has optimum times of year for planting at the site being restored. This is also reflected in propagation timeframes for nursery plant production with importance on sowing times for particular species of native grass.

Grasses play a huge role in supporting our local fauna, many examples can be found locally from tiny invertebrates to larger macropods. Many butterflies in the family Nymphalidae (Browns) and the Hesperidae (Skippers) feed on grasses both local and exotic during the larval stage. Many of our local native bees utilise the flowering stems of native grasses to sleep on (particularly *Echinopogon* spp.); take a look in the cool of the early morning for bees still asleep on the stems as they grasp on by their jaws, bodies dangling below - quite impressive.

Most of the local grasshoppers feed on grasses in turn providing a valuable food item for many species of birds. Grass seed is a valuable food supply for many birds, Crimson Rosellas relish Right Angle Grass (*Entolasia marginata*) and Red browed Firetails feed on a range of native and exotic grasses with small seeds as well as constructing their nests and night time roosts out of woven grass foliage (the male uses a long piece of grass stem in his courtship dance to display to his partner).

Long-nosed Bandicoots make grass-lined nests to rest in during the day with a closed door emerging at night to feed, whilst Swamp Wallabies will feed on native grasses preferring to browse on ferns and native shrubs. It is not a one way street, grasses rely on many of these larger creatures to spread their seed across the landscape, just think of the last time you had a pesky prickly in your socks - it was more than likely a native grass seed.

The Lane Cove River system and Australian Bass

Article by STEP Committee member and author, Dr John Martyn.

While the health of our bushland is managed and monitored on an active basis, our streams and rivers suffer only local or intermittent attention at best, and are vulnerable to catastrophic events such as pollution, flooding and desiccation. These events usually pass by unnoticed. Around the greater metropolitan area we have large tracts of good quality bushland in near-natural condition, but almost no freshwater rivers and streams in anywhere near a natural state: including the rivers and streams of the Lane Cove River catchment.

State of the Lane Cove River catchment

The overall health of freshwater in this catchment is not good. Native fish other than eels are now absent virtually everywhere except in the 5 km reach of calm water upstream from the weir near Fullers Bridge (eels of course come and go in migration, and travel throughout the catchment). This was not always the case, and up until the 1990s you could find Cox's gudgeon, common galaxias and Australian smelt in almost every stream. Clearly there has been deterioration, caused one can only assume, by various forms of human impact.

Alive with fish above the weir

In contrast to the bulk of the catchment, the broadwater stretch between the weir and De Burghs Bridge is a haven for aquatic life, both native and exotic, and contains a wide range of fish species. If you doubt this, walk the banks wearing a pair of Polaroid sunglasses on a still, sunny day. Most obviously you will see large feral carp, and in the evenings, goldfish, cruising or basking almost anywhere. These are unwelcome of course, but realistically they are here to stay! But persevere, there is much more.

Soon you will see schools of mullet; estuarine native fish that travel up and down via the fish-pass or during floods. Mullet swim near the surface, often in large numbers, and sometimes leap clear of the water. If you stand on the weir itself and look into the shallow water of the sloping sill upstream you may see, apart from a carp or two, juvenile Cox's gudgeon and dwarfgobies (pandaka gudgeon). Both are small, mottled fish with prominent pectoral fins. You will occasionally see a long-finned eel, probably a large one (short-finned are in there too). You may also glimpse in the murky depths schools of native fish that elude identification. You will probably not sight a bass in your travels unless you have taken to the water in a kayak with a fishing rod and get lucky, but they are in the river too. And if you then direct your gaze downstream from the weir into the salt water reaches you cannot avoid seeing fish breaking surface all over the place. The reaches above

and below the weir are actually alive with fish and badly in need of a thorough species survey.

One tributary, Porters Creek, 1.5 km downstream from de Burghs Bridge, also contains a good population of native fish (gudgeon, smelt and eels) despite it having flowed beneath the Ryde Waste Management Centre. Clearly these fish interchange with and are supported by populations in the main river.

Demolish the weir?

From time to time you will hear this suggestion. It may be well-intentioned in seeking to restore the waterway to a "natural" condition. But it is, I believe, misguided! The weir preserves the only native-fish-friendly stretch of freshwater in the entire catchment (despite the carp). It does not suffer from flood scouring and never dries out. This sluggish reach is a potential reservoir and source for upstream recolonisation and should be left alone. Draining it would in any case leave behind slimy, sloping banks that would be smothered in unmanageable weeds in no time.

Bass and the fish-pass

Australian Bass (*Macquaria novaemaculeata*) are almost a cult fish among anglers, providing sport comparable to, or better than the much-exalted but introduced trout. You can legally fish for them from kayak or rowboat upstream from the boatshed, and from the banks upstream from Fidden's Wharf (though most of these are overgrown and inaccessible). Rules are fly or lure only and "catch and release" only. From anglers' websites and blogs it appears bass of good size are present in the river but there is a lot of water between the fish.



Above: John Martyn with his Australian Bass

In December I caught three juvenile bass while trying to establish which species of gudgeon are present in the river, using a tiny, barbless hook and compost worms. The bass were returned to the water, of course, but they demonstrated that there is a breeding population in the river, and that the fish-pass is functioning at least some of the time. Bass do the opposite of salmon and travel downstream to saltwater (in late winter) to breed, and from the size of the ones I caught (10-15 cms) I suspect there was a migration during the wet winter of 2007, the young ones hatching in the estuary and subsequently making their way back upstream in later wet spells. There is abundant food for these ambush-predators, in the form of feral mosquito fish, juveniles of

mullet and other fish (including carp), and a variety of insect life.

The fish-pass at the weir was built specifically to help Australian Bass complete their breeding cycle, and has recently been refurbished. Freshwater was flowing down it following the recent Christmas-New Year rains, but I also visited during one of the December king tides and the rising tide of saltwater downstream did not overtop its uppermost step. Unfortunately the weir itself is fractured near its northern end and it leaks, diverting much of the dry-weather freshwater flow away from the pass.

Update on Key Issues

Wahroonga Estate Redevelopment (WER) Concept Plan (SAN site).

Our October update noted that the proponent, Johnson Property Group (JPG), had responded to some of the issues raised by the community and the Department of Planning (DoP) by increasing the amount of land designated for Environmental Protection from 18 ha to 24 ha. This includes most of the high quality land located on the eastern side of Fox Valley Road. Beyond that however, JPG proposed to actually increase the number of new dwellings and to not substantially further improve the road infrastructure.

STEP remains of the view that the road infrastructure is insufficient to support such a sizeable set of new developments and has written to the Sydney Regional Development Advisory Committee to provide them with our own detailed analysis of the issues, endorsed by a local traffic consultant. STEP has received an acknowledgement but nothing else appears to have changed.

On 18 December 2009 the WER rezoning was approved and gazetted with the approval requiring a reduction in the number of additional dwellings by about 190 dwellings (from 690 to 500). This approval set the zones for the land but a new Concept Plan is yet to be approved. The (final?) Preferred Project Report was sent by JPG to the DoP last month. No decision on it has as yet been made.

STEP is aware that negotiations with Ku-ring-gai Council and the Department of the Environment, Climate Change and Water (DECC) are currently underway with regard to the long term legal ownership of lands designated for Environmental Protection. STEP is strongly supportive of these lands coming under DECC ownership.

St Ives Precinct Options

The August 2009 edition of STEP Matters (available online at www.step.org.au) covered this issue in some detail. Ku-ring-gai Council has now placed a draft options paper for St Ives Showground and precinct on public exhibition until 1 March 2010. (See: <http://www.kmc.nsw.gov.au/www/html/3559-draft-options-for-st-ives-showground-and-precinct.asp>). The STEP Committee met with Peter Davies, KMC Manager Corporate Planning, in early February to discuss the draft options paper. STEP will be formally submitting its views on the latest draft to the Council.

Mountain Bikes in Bushland

Mountain bike users are mounting a strong campaign with local Councils to access local bushland for the construction of mountain bike trail routes. STEP has met with both Hornsby Council and NSW Parks to attempt to have adopted a sensible policy that will protect all remaining high value core bushland, while allowing for the development of well planned bike trails in areas of lesser value (so called degraded areas). This is a debate that has some way to run; your views are welcome!

Hornsby Housing Strategy

The article in this edition of STEP Matters by Gwen Martin of Thornleigh is an indication that poor planning is not the sole preserve of State Governments. In this context, the current attempt by Hornsby Council to develop a longer term Community Strategic Plan is to be welcomed and STEP will be making inputs to that Plan.

STEP awarded community grant

STEP was recently pleased to receive a grant of \$5000 from the Bendigo Bank Community Enterprise Foundation, together with the Turrumurra Community Bank, to assist with the publication of a new edition of its iconic publication, "Field Guide to the Lane Cove Valley Bushland". The grant will partially assist in the funding of a revised and updated edition of the Field Guide, which consists of a 200 page full colour guide to the bushland of the entire Lane Cove River catchment.

The Turrumurra Community Bank® is a local business owned by locals and was formed by a group of Turrumurra volunteers who took up a franchise from Bendigo Bank with the aim of creating a bank that not only served the Turrumurra area but would be able to put money back into the community. Since its inception, the Turrumurra Community Bank® has contributed over \$200,000 in sponsorships or other financial support to numerous local clubs and community organisations.



Turrumurra Community Bank Loans Assistant Jodie Chilvers (right) presents the cheque to STEP members Isolde and John Martyn, and Penny and Barry Tomkinson.

STEP Activities and Dates for Diary

Clean Up Australia Day - 7 March 2010: Thornleigh Oval and Park Precincts

STEP will run its usual community clean up from a base at Thornleigh Oval (end of Handley Avenue). From here we target the western entrances into Lane Cove National Park, and the surrounding bushland and residential precincts. The site will be open from 9.00am to 1.00pm. ALL volunteers are welcome and should report at the registration table beside the oval. Please bring some good walking shoes, hat, garden gloves, water and sunscreen. Special collecting bags for the rubbish will be provided.

Contact: Barry Tomkinson on 9484 9934.

Sunday 28 February: Wirrimbirra's Reptile Day

Reptile Day at Wirrimbirra Sanctuary, 3105 Remembrance Drive, Bargo. Experience crocodile encounters, regular talks, community stalls, children's activities, sausage sizzle. Contact 46 84 1112 for details.

STEP Walks Programme 2010

STEP continues to offer a wide variety of walks for both experienced and casual ("recreational") walkers. We start the programme in February with a recreational walk and intend to alternate on a monthly basis. The STEP safe walking guidelines apply to both series of walks and all require some reasonable level of fitness. Due to sometimes rough terrain, none are suitable for young children or those with walking difficulties.

The walks are aimed at both existing STEP members and any others who simply want to get out into the wonderful local Australian bushland. Normal bush walking standards apply, that is bring your own supply of drinking water, something to nibble for energy, suitable shoes, hat, sun screen, insect repellent and weather protection if required

Sunday 21 February: Dog Pound Creek, Westleigh

A short but interesting walk through Dog Pound Creek which is considered to be possibly the most complete and intact natural blue gum diatreme forest preserved anywhere in the Sydney basin. This Blue Gum High Forest is on diatreme soil – which is very rich and different to sandstone soil in that diatreme is much more easily erodible than sandstone soils. This is a 16 hectare area which is currently under threat because of the establishment of mountain bike trails through this extremely fragile and endangered ecological community. There are steep ascents and descents along the walk and we will be walking on some quiet suburban roads as well.

Meet: Corner Quarter Sessions Road and Warrigal Drive, Westleigh. (Gregory's Map 220 H5, Sydway Greater Sydney Map 214 F9). Warrigal Drive is a crescent and we will meet at the northern end. Please park in Quarter Sessions Road so as to leave Warrigal Drive free for RFS access). Meet at 9.45am.

Length : 2 -3 km

Estimated duration: 1 -2 hours

Difficulty: Medium

Contact: Robert Bracht if you are coming on the walk. Robert's details are Robert.bracht@hotmail.com or 0422 088 305. (At the end of the walk you may join us for coffee at Westleigh Shopping Centre).

Sunday 14 March: Long Reef Walk

Long Reef is one of the most important scientific sites on the NSW coast. As well as having a marine reserve, Long Reef is a major resting and feeding ground for seabirds. It features sites of great geological interest and remnants of coastal clay-type vegetation, and is a wonderful place to look at the life of tidal rock pools. Times are restricted by tide - so we visit at low tide when one is able to walk across the rock platform.

Meet: 1 pm at the end of Anzac Avenue, Collaroy (near the Long Reef Golf Club). Parking is metered along the beach front but street parking (at own risk) is usually available near Anzac Ave.

Estimated duration: 2 hours **Difficulty:** Easy

Bring: Beach wear, non-slip shoes that can get wet and salty, and especially camera, binoculars, and any identification books on birds and seashore life if you have them.

Conditions: No charges. The group size will be limited to 15, so **booking is essential** –Contact John Martyn 9449 7962, 0425 830 260. johnmartyn@optusnet.com.au. (Complimentary afternoon tea follows the walk.)

Saturday April 18: Callicoma Walk, Cherrybrook

Walk will commence from The Lakes of Cherrybrook Reserve, corner Shepherds & Macquarie Drives, Cherrybrook and follow the circular track. Areas of interest will include dry cave structure and dry sandstone ridges as well as the Callicoma & Coachwood temperate rainforest.

Meet: Observation Platform, The Lakes of Cherrybrook Reserve at corner of Shepherds & Macquarie Drives, Greenway Estate, Cherrybrook (Sydney Greater Sydney Map 213 M13). Meet @ 9.45.

Length: 5km

Estimated duration: 2 – 3 hours

Difficulty: Moderate

Contact: Robert Bracht (See above). At the end of the walk you may join us for coffee at Cherrybrook Shopping Centre

Vale Hilary Davidson, 1925-2009

Hilary Davidson was an early and enthusiastic part of the Lane Cove National Park (LCNP) Bushcare programme. She concentrated her activities in the Thornleigh area, initially in what was then called Thornleigh Park, Hornsby. This area was in 2000 incorporated, with Pennant Hills Park, into LCNP. Hilary was a long standing committee member of the Thornleigh Area Bushcare Society (TABS) and for many years worked with a few dedicated volunteers to maintain the Ferguson Street site. Hilary was a lady of immense energy, with a deep knowledge and interest in the natural world. She will be greatly missed

STEP Committee 2010

Barry Tomkinson – President;
Jim Wells – Financial Officer
John Martyn;
Don Davidson;
Andrew Little

John Burke – Vice President;
Helen Wortham – Secretary;
Tim Gastineau-Hills;
Robin Buchanan;

Tillegra: a Planning Disaster

Article by STEP member Margery Street. Margery was Planning and Special Services (Library) Coordinator with Warringah Council until 2004, then completed a Master's degree in Environmental Studies at Macquarie University. Since then she has done editorial work on a joint climate-adaptation project with Macquarie and Bond Universities and Ku-ring-gai Council

The New South Wales government is planning to build a 76 metre by 800 metre dam across the Williams River, a tributary of the Hunter, at a tiny hamlet called Tillegra, 20 minutes north of Dungog. It will inundate 2100 hectares of the Upper Williams River valley and 21 kilometres of ecologically intact river. The dam will hold 450 GL of water which is roughly equivalent to the volume of Sydney Harbour. It would be the first large on-river dam built in NSW since the Copeton and Tallowa dams were completed in 1976. It is also unnecessary, deemed the second-worst option for water supply in the Hunter Valley, desalination being the worst.

The Williams, Allyn and Paterson Rivers flow south from Barrington Tops towards the Hunter and form the Southern Barrington streams which are hydrologically stable with high annual runoff and low flood variability [Jones & Byrne 2009]. The proposed Tillegra dam is so large that the existing dam on its major tributary to the northeast, the Chichester River, is barely visible on the map below. Source:

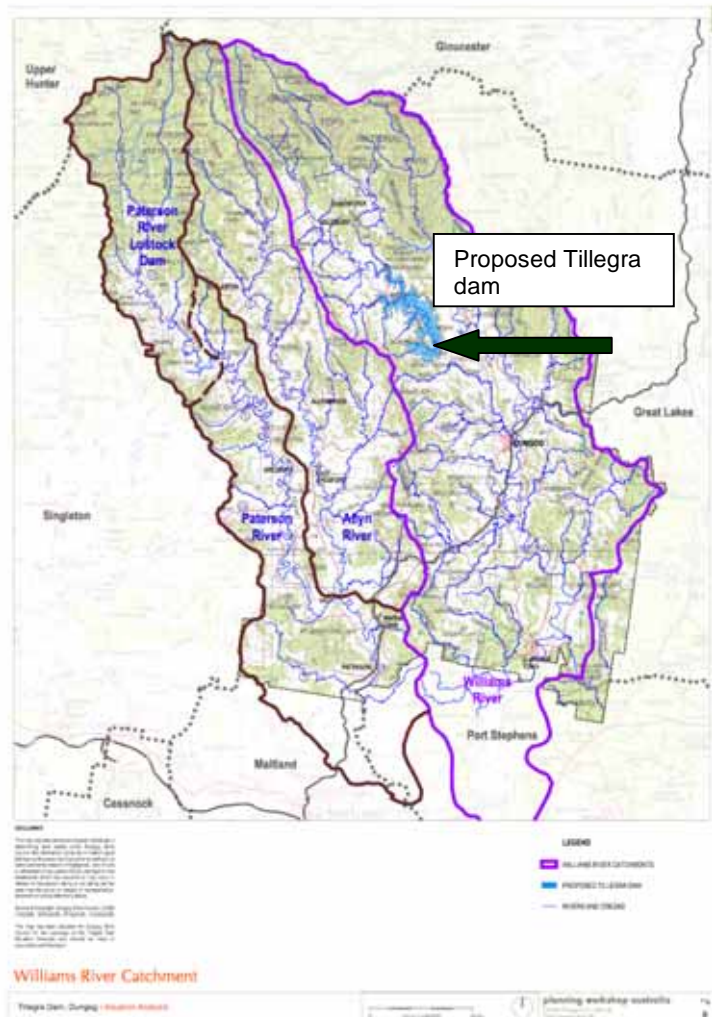
<http://www.dungog.nsw.gov.au/files/5014/File/Figure8WilliamsRiverCatchment.pdf>

Such a proposal has been simmering since 1945 but was repeatedly dismissed, even as recently as 2003 and October 2006 as unnecessary for at least 20 years, given other means of supply and demand management. However, on 13 November 2006, then Premier Morris Iemma announced the \$342m dam at the last sitting of Parliament before the March election. The previous week Milton Orkopoulos, Labor MP for Swansea, south of Newcastle, had been in the headlines for child prostitution offences. (Labor subsequently held the seat by a reduced majority).

On the 9th of January 2009 the Planning Minister, Kristina Keneally, declared the project "critical infrastructure" under the amended Part 3a of the Environmental Planning and Assessment Act, giving her discretionary power to approve the project. However, later that January the Commonwealth declared it a "controlled action" under the Environment Protection and Biodiversity Conservation Act 1999, such that the Federal Environment Minister must consider effects of the project on areas of national importance like Ramsar wetlands and Commonwealth listed threatened species.

Why do we care?

For a start, it is a really pretty valley. Then we could look at its considerable conservation value. Despite documented flaws [ISF 2009] in the methodology and results of an Environmental Assessment Report [Ecotone 2008], it reminds us that the Barrington Tops



National Park supports Gondwana Rainforests of World and National Heritage status, and that the Hunter Estuary Wetlands downstream of the dam, including Kooragang Nature Reserve, Shortland Wetlands and Hexham Swamp, are Ramsar sites. See the Appendix for 32 Commonwealth listed species.

The Williams River supports a population of wild bass as well as healthy platypus, the largest pool being just behind the dam wall. The Stuttering Frog *Mixophyes balbus*¹ lives there, but was not mentioned in the consultants' report.

Recent research into fresh water mussels [Jones & Byrne 2009] describes four species that thrive only in the previously mentioned rivers draining the southern slopes of Barrington Tops. Among them, the Williams River supports the most abundant and secure mussel populations because it provides the least disturbed habitat. The cucumber mussel *Cucumerunia novaehollandiae*, at its southern limit, was found below the site of the proposed Tillegra dam. In fact, the mussels identified in the Jones and Byrne study [2009] as having the highest conservation value were all found below the site of the proposed dam. This is particularly worrying as their conservation status is not yet determined.

Freshwater mussels are important to river ecosystems because of their filter-feeding habits and their

contribution to lowland river biomass. In Australia freshwater mussels are in decline because of land use changes in the catchments as well as river engineering (dams) seriously impacting river hydrology and geomorphology. The research shows that mussel presence declines sharply as channel alteration increases. Healthy mussel populations indicate healthy fish communities.

The Environmental Report mentions environmental flows to protect endangered species, but the fate of "environmental flows" currently below Australia's major dam sites does not instill confidence.

Fragmentation of populations, when combined with other stressors such as large floods, sedimentation, invasive species, drought or climate change, may result in population collapse.

Aside from conservation values, there are political issues not dealt with here:

- There is no need for the Tillegra Dam. Official predictions are that the Hunter will receive more, not less, rainfall in the coming decades.
- Why was the Independent Pricing and Regulatory Tribunal (IPART) not allowed to investigate whether this construction was necessary? Its terms of reference disallowed such an investigation in its setting of water prices.
- Exactly what decision-making processes are followed by Hunter Water and the State Government? John Kaye, MP, had to persist with Freedom of Information requests to reveal internal government advice against the dam.
- What measures have been taken and what is the cost of ensuring the geomorphological stability of the Williams Valley wall above the proposed water storage?
- Is the worldwide tragedy of social disruption caused by dams to be experienced by New South Wales residents and landowners?

Appendix: Commonwealth listed species likely to be affected by the proposed dam

Source: Ecotone 2008

Critically endangered community

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Vulnerable flora that may occur (the consultants were desk-topping):

Leafless tongue-orchid *Cryptostylis hunteriana*

Vulnerable flora species likely to occur

Slaty red gum *Eucalyptus glauca*

New England bush-pea *Pultenaea campbellii*

Magenta lilly pilli *Syzygium paniculatum*

Austral toadflax *Thesium australe*

Endangered flora species likely to occur

White-flowered wax plant *Cynanchum elegans*

Tylophora woolsii

Vulnerable terrestrial fauna species that may occur

Australian painted snipe *Rostratula australis*

Brush-tailed rock-wallaby *Petrogale penicillata*

Green and golden bell frog *Litoria aurea*

Large-eared pied bat *Chalinolobus dwyeri*

Long-nosed potoroo *Potorous tridactylus tridactylus*

Endangered terrestrial fauna species that may occur

Booroolong frog *Litoria booroolongensis*

Regent honeyeater *Xanthomyza phrygia*

Spotted-tail quoll *Dasyurus maculatus maculatus* [SE

mainland

population]

Hastings River mouse *Pseudomys oralis* (habitat likely)

Southern (giant) barred frog *Mixophyes iterates* (habitat likely)

Swift parrot (*Lathamus discolor*) (marine species)

Vulnerable species known to roost within the area

Grey-headed flying-fox *Pteropus poliocephalus*

- Is it good planning to alienate productive agricultural land, an effective carbon sink, to be replaced by a greenhouse gas emitter?

Dams emit greenhouse gases (GHG). As organic material is flooded and decomposes, CO₂ and methane rise to the surface. Although vegetation is normally cleared before inundation, the Williams Valley above Tillegra is currently pasture, and rich organic matter will remain to decompose under water. Dam surface emissions, in contrast to desalination plants or other water supply methods, are produced irrespective of whether the dam is actually used and are in addition to GHG from the construction of materials (for the proposed Tillegra dam, 10,800 tonnes of cement and 3,630 tonnes of steel). St Louis *et al* [2000] report that worldwide, dams may cause up to 7% of anthropogenic GHG and even after eight decades of flooding, continue to emit more GHG than natural lakes. The Institute for Sustainable Futures [ISF 2009] conservatively estimated the proposed Tillegra dam's emissions over 20 years at 327,421 tonnes of CO₂ equivalent, including electricity used. Actual emissions could be as high as 1.0 million tonnes CO₂-equivalent.

The dam is not yet built. If the proposal disturbs you, please write to Premier Kristina Keneally at ThePremier@www.nsw.gov.au or at GPO Box 5341, Sydney 2001, with your concerns. For more information visit the No Tillegra Dam Group website below.

¹ "The Stuttering Barred Frog is relatively large and muscular, growing to about 8 cm in length. It has large, black eyes and vertical pupils, webbed feet, barred hind legs and a black line from the snout, through the eye and above the 'ear'. The body colour is brown to olive-green and may be broken into irregular blotches. The underside is creamy-white." Source: NTDG website.

The following migratory species may be or are likely to occur

White-bellied sea eagle *Haliaeetus leucogaster*

White-throated needletail *Hirundapus caudacutus*

Rainbow bee-eater *Merops ornatus*

Regent honeyeater *Xanthomyza phrygia*

Black-faced monarch *Monarcha melanopsis* (breeding)

Rufous fantail *Rhipidura rufifrons* (breeding)

Spectacled monarch *Monarcha trivirgatus* (breeding)

Satin flycatcher *Myiagra cyanoleuca* (breeding)

Wetland and Marine Species

Latham's snipe *Gallinago hardwickii*

Cattle egret *Ardea ibis*

Great egret *Ardea alba*

Painted snipe *Rostratula benghalensis s. lat.*

Fork-tailed swift *Apus pacificus*

References

- Ecotone Ecological Consultants 2008 Specialist Terrestrial Ecology Report Tillegra Dam Proposal west of Dungog NSW *Final report* 26 September, Prepared for Hunter Water.
- Institute for Sustainable Futures, (ISF) 2009, *An assessment of greenhouse gas emissions from the proposed Tillegra dam* Prepared for The Wilderness Society Newcastle Inc. by the Institute for Sustainable Futures, University of Technology, Sydney.
- Jones H A and Byrne M 2009 The impact of catastrophic channel change on freshwater mussels in the Hunter River system, Australia: a conservation assessment *Aquatic conservation: marine and freshwater ecosystems* Published online in Wiley InterScience. www.interscience.wiley.com.

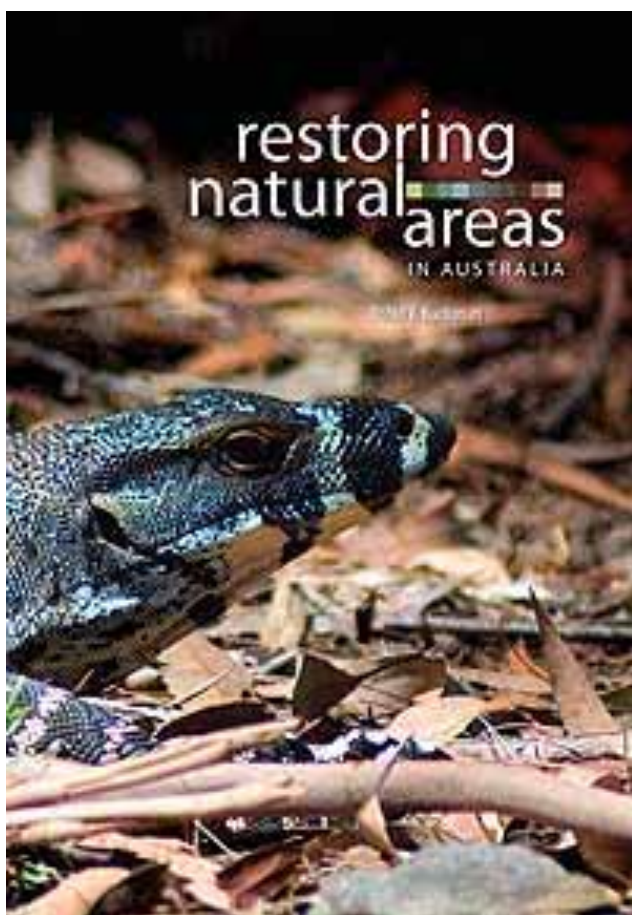
- Lyons M 2009 Barry the rare frog found on Tillegra dam site *The Herald* 16 November <http://www.theherald.com.au/news/local/news/general/rare-amphibian-on-tillegra-dam-site/1677968.aspx> accessed January 2010.
- No Tillegra Dam Group (NTDG) <http://www.notillegradam.com>
- St Louis V L, Kelly C A, Duchemin E, Rudd J W, Rosenberg D M 2000 Reservoir surfaces as sources of greenhouse gases to the atmosphere: a global estimate *BioScience* 50:9 766–775. http://www.biology.ualberta.ca/faculty/vincent_stlouis/uploads/pdfs/BioScience%20paper.pdf Accessed January 2010

The Williams Valley right Tillegra Bridge. All to be flooded.
Photo: M Street



Book Review: Restoring Natural Areas in Australia

A review of STEP Committee member Robin Buchanan's recently published new book, by STEP members Noela and Bill Jones



This book follows from Robin's classic text *Bush Regeneration. Recovering Australian Landscapes*. 1989. A further 20 years of research has resulted in much new information.

Robin's new book looks at the "big picture". It has been much awaited and highly needed as her original book has been out of print for some years. There are 264 beautifully illustrated colour pages providing a complete account of every aspect of managing natural area restoration projects. Sections include resilience,

monitoring, mapping, planting, fire and water, soil and weed management. One of the book's great attributes is that it is very practical and will inspire anyone with an interest in our natural environment. It provides a step by step methodical account for a beginner to understand their site, its importance, accessing information about it and, most importantly, restoring it. Managers of bushland with no prior knowledge or experience will also benefit from its wealth of information.

Robin writes infectiously. Her style is entertaining and reveals a love and passion for her subject. The importance of habitat is stressed and the environmental consequences that must be considered when using different weed control techniques. It is gratifying to note the emphasis given to site assessment and that a whole Chapter has been devoted to Resilience. All too often has an area's gene pool been compromised by rushing to plant.

While there is no Index, the Resources at the end of each Section are excellent, particularly the inclusion of websites. The pro forma sheets in the Appendices are also very useful.

Whilst it is a small criticism, some aspects of the design and layout of the book detract from its ease of use. For example, because the margins are so narrow it is difficult to read without holding it open. Also, the font of the text associated with the photos, particularly in the text boxes, is small and faint, making it difficult to read. The positioning of the text boxes in the photos is often too formalised.

This book is a must for anybody involved with natural area restoration, whether as a student completing a formal course or as a member of a Bushcare or Landcare program.

We have incorporated comments by other practitioners, particularly Neroli Lock, for which we are grateful. Copies can be obtained from Tocal, see next page.



Robin A. Buchanan copies of her book can be obtained from
Total College ISBN: 978 0 7313 0621 3
RRP \$44.00.
Phone at 02 4939 8888 or on line at:
<http://www.dpi.nsw.gov.au/aboutus/resources/bookshop/restoring-natural-areas>

Help Wanted

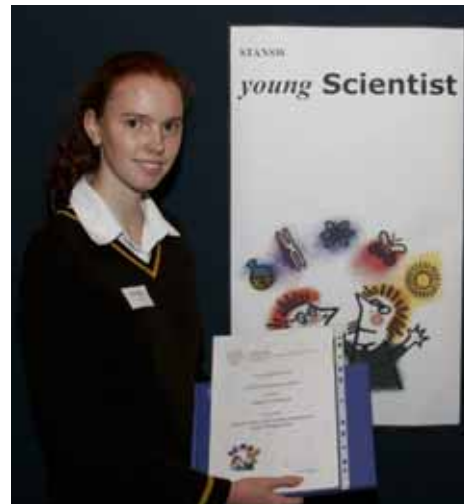
Are you a registered company auditor? If so could you help STEP by performing the annual audit so relieving us of the expense. Please contact Jim Wells (wellsjc@ozemail.com.au or 9416 1606).

STEP Supports Young Scientists

Since 2001 STEP has sponsored an award for the best environmental entry in Young Scientist, a competition organised by the Science Teachers Association of NSW to encourage school students to conduct original scientific investigations.

STEP judges, Syd Smith and Michelle Leishman nominated Rebecca Dawkins from Sydney Girls High School as the winner of the STEP Environment Award for her project entitled Effect of Colour and Different Roofing Materials on the Temperature Inside a House, a topic which has great relevance to energy use and climate change.

Helen Wortham presented the award to Rebecca at a ceremony held at the University of Western Sydney in October last year. Approximately 6000 students participated in the competition and 50 finalists were recognised at the awards ceremony



Above: Rebecca Dawkins with her STEP Award

The city is choking thanks to our idea of transport nirvana

Article by Ross Gittins, who is the *Sydney Morning Herald's* economics editor. This story was found at:
<http://www.smh.com.au/opinion/politics/the-city-is-choking-thanks-to-our-idea-of-transport-nirvana-20100216-o8rn.html>

At our behest, successive state governments have been pursuing a magnificent dream, to make Sydney a place fit for cars to be driven on all occasions. Now the *Herald*-commissioned independent inquiry headed by Ron Christie has exposed that dream for what it is: the wrong tram (forgive me). It's not just a dream incapable of being realised, it's one that's made our present transport problems worse rather than better and offers no answer to the looming worsening of those problems.

You and I, our parents and our children, are the car-driving generations. Young people long to get a driver's licence (and a car) at the earliest possible moment; elderly people fight hard to keep their licences. As our affluence has grown we've got closer to our nirvana: one car per adult. We'd like to drive our cars everywhere we go - even to work. This preference is

constrained only by the time it takes (the congestion we encounter) and the difficulties we face finding or affording a place to park - although there was a surge in the use of public transport the last time petrol prices shot up.

For years we've pressured our politicians to reduce travel times and congestion by building more and wider expressways. And for years they've obliged without it doing any lasting good. Why not? Because of our insatiable preference to drive. As soon as the new highway has cut the time it takes to get from A to B, more people decide to drive rather than use public transport, thus forcing travel times back up. Studies suggest that motorists keep piling in until travel times are pretty much back to where they were.

But the inquiry's report advises that our pursuit of a world fit for universal motoring is unattainable for another reason: a big city's sheer lack of space in the main places we want to drive to. The streets of the denser centres of Sydney simply don't have room for everyone to claim 12 to 15 square metres of road space so they can travel in a separate vehicle, nor the same amount of space so they can park their vehicle at their destination.

"The sheer limits of urban space - quite apart from other cost and sustainability issues - mean that urban centres *must* rely on a suite of transport options in which the private car will play a diminishing role as densities rise," the Christie report says.

There's more. Successive governments' pursuit of road-based solutions to Sydney's growing mobility problems has come at the expense of the expansion, improvement and even adequate maintenance of public transport systems, which has worsened the problems. Building roads and neglecting public transport turns population increase into urban sprawl, with widely dispersed residences and jobs. This encourages more car use and, indeed, locks many parts of Sydney into dependence on cars.

Neglect of public transport causes a movement away from it, which is then reinforced by deteriorating service frequencies, service quality, travel times and even the cancellation of off-peak services. So we've had both pull factors (we prefer our cars) and push factors (reduced quality and availability) worsening public transport and compounding our problems. The report says that "even if it were assumed that private vehicle travel will continue to be as viable and affordable as today ... adding to or extending Sydney's radial freeway and toll-road system would be an expensive way of providing *at best* very short-term and geographically limited improvements".

And, of course, we *can't* assume car travel will stay viable and affordable. Our heavy dependence on car travel is unsustainable. Curbs on greenhouse gas emissions will force up its price, as will the growing shortage of world oil reserves.

Add the projected growth in Sydney's population - a 40 per cent increase to 6 million in the next 30 years - much of which will be accommodated by higher-density living, add the much higher proportion of elderly people, and you see why we need to switch to a different tram, as other big cities that have pursued road-based solutions are doing.

That still leaves a role for cars, of course. As the report says, not all of Sydney is dense, nor should it be. "In lower-density suburbs, for trips not going into urban centres, the private car is likely to remain a dominant mode of travel," it says. The challenges we face in getting our transport arrangements back on track are considerable and costly. We need catch-up measures to correct the under-investment in public transport infrastructure for the present population, as well as measures to accommodate future population growth..

We need extensions of the public transport system into outer areas as well as significant enhancement of the system in inner areas. This will leave little room for the building of further freeways or tollways.

We need more investment in all modes of public transport - rail, light rail, buses, ferries and even, well down the track, metros - but according to a carefully considered, long-term plan establishing a clear order of priority. We need less rivalry and more co-operation and co-ordination between the modes so that an ill-fitting collection of systems becomes a single, seamless one. It's not possible for all journeys to be completed without the need to change within a mode or between modes. This requires integrated timetables, accurate and timely provision of information about disruptions and, above all, an integrated fare and ticketing system.

All of this will cost and there's no one to pay for it but us. There'll be carrots (more and better quality train and bus travel) and sticks (rising levels of road congestion for those who persist with cars). But here's the good news: both the public's submissions to the inquiry and the inquiry's opinion polling show most Sydneysiders have got the message. Now all that remains is for light to dawn in the minds of our politicians

If undelivered return to STEP Inc; PO Bo x 697
Turramurra NSW 2074

