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STEP EVENTS

Talk on Hornsby Quarry: Violent Upheavals in Hornsby – Dinosaurs Startled!

Date: Tuesday 24 November

Time: 8 pm

Venue: St Andrews Uniting Church,
Chisholm Street, Turramurra

STEP Matters Issue 182 (p3) highlighted concerns held by geologists and STEP that the project to fill Hornsby Quarry with spoil from the North Connex tunnel and create public recreation spaces will ignore the unique geological feature, the volcanic diatreme.

In this talk Dr Ian Percival, who prepared the original geoheritage report on the Hornsby diatreme in 1979, will outline the geology of the feature, explain its origin, and will argue why it should be protected for future generations of geologists and the public.



Ian is Senior Principal Research Scientist (Paleontologist) at the Geological Survey of NSW.

Why the Diatreme is Special

The Sydney Basin is largely composed of sedimentary rocks of Permian and Triassic age, deposited approximately 300 to 240 million years ago, with some Early Permian volcanic rocks mainly in the Kiama region. All these rocks are well-exposed and widely known.

Outside the geological community, however, very few people are aware that there was a relatively brief interval in the Jurassic Period when volcanic eruptions again rocked the Sydney Basin, with nearly 100 separate sites recognised where maar volcanoes erupted as a result of explosive reaction between lava and groundwater. Immediately following the steam-generated eruption, a diatreme is generally formed as a collapse feature infilled by shattered country rock intermixed with volcanic ejecta. Maar volcanoes and resultant diatremes are fairly rare geological features.

Hornsby Quarry was excavated within the largest diatreme known in the Sydney Basin and provides the last remaining artificial section through a diatreme in NSW. It is regarded as the best example of this phenomenon in NSW, if not in Australia, and is a highly significant part of the state's geological heritage.

Unfortunately, all this was largely ignored in the recent environmental impact statement prepared by consultants for the Roads and Maritime Services for the proposed infilling of Hornsby Quarry using spoil generated by the NorthConnex tunnel project.

The Geological Heritage Subcommittee of the Geological Society of Australia (NSW Division) prepared a detailed submission pointing out the inadequacies of the proposed remediation of the quarry site as regards safeguarding the diatreme exposure.

While some of these points were partly addressed in the subsequent response by Roads and Maritime Services to submissions received during the statutory public exhibition period, there still appears to be little or no recognition of this unique scientific feature in our region.

STEP Inc

Community-based Environmental Conservation since 1978

End of Year Barbeque

Date: Sunday 13 December

Time: 4:30 pm till dark

Place: Kissing Point Village Green, corner
Kissing Point Road and Vernon Street

Come along any time from 4.30 pm to catch up with other STEP members. Bring your preferred food and drinks plus nibbles to share.

If the weather is bad we will meet elsewhere and details will be available on our website and Facebook by 3 pm on the day.

HIBBERTIA TURRAMURRA LISTED AS CRITICALLY ENDANGERED

About a year ago the discovery of a new species of *Hibbertia* in was announced. The species, with the scientific name *Hibbertia* sp *Turramurra* and common name of Julian's Hibbertia, was officially listed as critically endangered under the Threatened Species Act in September.

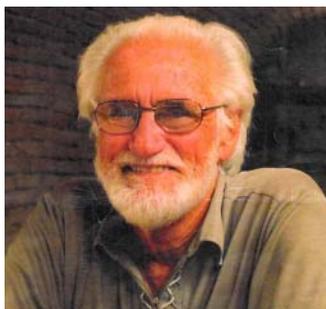
There are eleven known plants in South Turramurra, six in Cheltenham and one in Ryde. A management plan is in place to prevent disturbance and competition from weeds.

VALE GLENN JOHNSON

Sadly another STEP stalwart has died. Glenn Johnson was a member of the committee for nine years from 1984 to 1992.

His fellow committee members describe Glenn as a sensitive person who loved the natural environment and who was passionate about his family, garden and work with the Royal Botanic Garden Sydney. He was a born teacher and explainer.

Glenn's career commenced as a mathematics teacher then he transferred to the Macquarie University Department of Mathematics on its foundation in 1967 where he studied for a PhD. He ultimately became a professor and head of the School of Computing. His studies included computer modelling for environmental events such as wind flow during bushfires and severe storms.



YOUNG SCIENTIST AWARD

The Science Teachers' Association of NSW conducts a program to assist students and their teachers to carry out scientific investigations. Since 1992 an annual award program has provided prizes for the outstanding projects. STEP sponsors an award for a project relating to an environmental issue.

The Young Scientist Award ceremony held on 4 November saw a celebration of STEM education at the University of Wollongong as 79 students from 40 schools were recognised for their achievements.

STEP gave its annual award to Jade Moxey, a year 10 student at Sapphire Coast Anglican College, for her patient and professional study of the spread of weeds through cattle grazing on her family's cattle farm near Bega.

But that wasn't the whole story: Jade also won first prize in her year group in the Earth and Biological Sciences category. Then to cap it all she was nominated as Young Scientist of the Year with a \$1000 prize and a trip to Phoenix to represent Australia at the International Science and Engineering Fair next May

John Martyn who judged the award made these comments on Jade's project:

This project shows excellent observation of, and interest in, the student's own home farm environment, patience in data gathering and **attenance** to details such as ethical issues and guarding against potential sample contamination.

Pasture weeds and their spread is a major problem in the grazing industry, but also many of the plants, like African Lovegrass and Fireweed, are bushland weeds in the Sydney area too. Her explanation for the non-appearance of Lovegrass in the timeframe of her study was also well researched and thought out.



Jade receiving her STEP award
from John Martyn

HEAVEN FOR NATIVE ORCHIDS IN WAHROONGA ESTATE

Frances O'Brien, Group Administrator,
Wahroonga Waterways Landcare

Wander through the bushland of Wahroonga Estate and you will see the delicate heads of native orchids peeping out from between Sarsparilla (*Smilax glycyphylla*) and Old Man's Beard (*Clematis aristata*). The first indications that orchid flowers are about to emerge are the tiny leaves – heart-shaped, ovular, arrow-headed – solitary leaves of a variety of shapes that carpet the ground.



Dainty Bird Orchid



Spotted Sun Orchid

Early to mid-spring is the time for Blunt Greenhoods (*Pterostylis curta*), Rock Tongue (*Dockrillia linguiformis*), White (*Caladenia catenata*) and Pink Five Fingers (*Caladenia carnea*) and Dainty Bird (*Chiloglottis trapeziformis*) orchids. If you're lucky, you may catch some late Tall Greenhoods (*Pterostylis longifolia*), Red Beard (*Calochilus paludosus*), Early Bonnet (*Cryptostylis erecta*) or Hyacinth (*Dipodium roseum* and *D. variegatum*) orchids.

At other times, the estate is overrun by Greenhoods: Snake (*Pterostylis ophioglossa*), Cobra (*Pterostylis grandiflora*) and Nodding (*Pterostylis nutans*). Translucent Pixie Orchids (*Acianthus fornicatus*) pepper the undergrowth alongside tiny Spurred Helmet Orchids (*Corybas aconitiflorus*).

Small patches of Large Tongue Orchids (*Cryptostylis subulata*) appear. Occasionally, an elusive Mayfly Orchid (*Acianthus caudatus*) may be seen. And every few years, a Plain Sun Orchid (*Thelymitra nuda*) or Spotted Sun Orchid (*Thelymitra ixiodes*) is found.

New varieties are being found continuously, so native plant enthusiasts are strongly encouraged to come and take a close look at our little orchids. Remember to tread lightly and take nothing with you but photos and litter!

MORE ORCHIDS

This spring has been a great one for orchid displays as John Martyn discovered on the Blue Gum walk in Hornsby.



Dendrobium linguiforme
(also known as *Dockrillia linguiformis*)

ROGAINING IN LANE COVE VALLEY

Following the success of last year's six hour metogaine, LaneCoveRivergaine2, will be held on 27 February 2016.

Start and finish is at Haynes Flat off Lady Game Drive. The event covers the Lane Cove River Valley from de Burghs Bridge to Stringybark Creek and surrounding suburbs.

For more information go to

<http://nswrogaining.org/AboutEvents/Events/16MG/16MG.htm>.

Rogaining involves teams of two to five persons navigating to checkpoints marked on a map.

The event is open to everyone. Over 500 entrants of all ages (6 to 80+) and abilities are expected – from elite athletes to walkers and families, some with very young children. You get to choose your own route and level of difficulty and how long you take, within the six hour time limit.

Our own John Martyn has modified the Lane Cove Valley map for use in the event picking out the highlights of the area in the possible routes.

EVER-CHANGING BIRDS OF NORTHERN SYDNEY

After STEP's AGM in October, Ross Rapmund gave a fascinating talk on the changing birds in northern Sydney.

He started with a slide which compared the ten most common birds before 1900 with recent data. A hundred years ago the most common species were small birds with an average weight of 18 g (e.g. Superb Fairy Wren, New Holland Honeyeater, Golden Whistler and Willie Wagtail). Now the most common birds are much bigger with an average weight of 180 g (e.g. Common Myna, Noisy Miner, Magpie, Currawong and Rainbow Lorikeet).

The type of birds has also changed from predominately insectivores to honeyeaters and exotics that are mostly omnivores or nectivores. These changes have been brought about by factors such as:

- habitat fragmentation through removal of tree canopy for urban development and 10/50 tree removal
- decline in trees as they age with lack of replacement, particularly street trees deemed to be dangerous
- weakened tree preservation policies
- lack of political will to support new reserves and provide funding for the conservation of nature
- inappropriate fire regimes with too much fire (hazard reduction) or too little fire (over-mature bushland losing biodiversity)
- weed competition
- pest and disease
- chemicals such as outside insect bombs

Small birds play an important role in controlling insect pests that affect the health of trees. Bushland with a strong tree canopy in turn supports small birds. The continuing decline in bushland from development, exacerbated by climate change, creates a viscous circle of decline.



Eastern Rosella now rarely seen in northern Sydney

Ross provided many insights into bird characteristics and behaviour from his wealth of information of birdlife.

First launched in 2003, Eremaea Birds rapidly became the site of choice for recording bird sightings in Australia. In 2014, Eremaea Birds merged with eBird, allowing members to be part of a larger global birding community. Contribute to science and conservation by recording your own data and observations on <http://ebird.org/content/australia>.

CONCERN ABOUT CHANGES TO BIODIVERSITY LAWS

The NSW Government is currently considering legislation to implement the recommendations of the Independent Biodiversity Legislation Review Panel contained in their report released in December 2014.

The report highlights the decline in biodiversity, e.g. 59% of all native mammals in NSW are now listed as threatened with extinction, along with 34% of amphibians, 30% of birds and 14% of native plants. Further species losses are also expected because of an 'extinction debt', the time lag between habitat loss and species extinction and the threats from invasive species. At the same time the report points out:

Growing pressures from increased population and increasing levels of economic activity will continue to drive demand on our landscapes for food, fibre, minerals, energy, residential development, recreation; as well as for conservation of aesthetic, cultural and biodiversity values.

Currently biodiversity is protected under four specific pieces of legislation:

- Native Vegetation Act 2003
- Threatened Species Conservation Act 1995
- Nature Conservation Trust Act 2001
- parts of the National Parks and Wildlife Act 1974 relating to private land conservation and native animal and plant management

To address these challenges, the report states that reform of the existing legislative system and associated implementation mechanisms is required to stabilise the loss of biodiversity, while at the same time facilitating sustainable development. In brief the report recommends:

- Repealing the three acts referred to above and parts of the National Parks Act and reconstituting them in a new Biodiversity Conservation Act.
- Focusing on conserving biodiversity at a bioregional or state scale.
- Creating landscape scale conservation and productivity through a connected network of public and private land.

- Management of native vegetation on existing agricultural land be assisted and supervised by local land services, while new agricultural developments which would impact on native vegetation would require consent from the appropriate authorities (often local government) as occurs for any other change in land use.
- Identifying areas of high-conservation value outside of the public reserve system and promoting private land conservation by providing funding for their long-term on-going management.
- Encouraging the broader and deeper application of offsetting, as approved in the NSW Biodiversity Offsetting Policy for Major Projects and through mechanisms such as biodiversity certification and BioBanking.

One of the major drivers of the review was frustration felt by agricultural land managers about the complexity and delays involved in the current land clearing laws and inequities where other land users such as mines could clear land with a lot less regulation. The review recommends that the basic standard of the Native Vegetation Act that the landowner 'maintains or improves' vegetation be abolished.

The panel proposes that some agricultural land management should be supervised regionally by the local land services as exempt or code-based activities. This could apply to areas that are currently protected.

Land clearing will require development consent under the planning act. This will apply to all areas, including coastal and urban areas and all types of development. This will increase the role of local councils in assessing and clearing applications.

The report acknowledges that the changes could lead to a loss of native vegetation but hopes that the government can make up for this by encouraging private biodiversity conservation with public investment support. This would:

- include, where feasible, restoration and rehabilitation activities in areas of the state that are extensively cleared or degraded
- facilitate off-site biodiversity offsetting
- support the development and management of a comprehensive network of biodiversity corridors
- ensure the Saving our Species program is adequately resourced

To quote from the report:

If this is done properly, including programs to harness community goodwill and effort, the government can achieve a goal of conserving biodiversity at a bioregional and state scale while at the same time facilitating sustainable development.

All this is a big ask.

Will future governments maintain the funding commitment required to achieve the conservation goals while being constantly under pressure to fund new infrastructure for our expanding population? The use of offsetting is questionable as explained in *STEP Matters* Issue 181 (p6).

Other issues are the resourcing of local land services personnel and availability of adequate data on a bioregional scale. What ability will local services have to assess cumulative impacts? There is mention of the use of third-party certification but will their qualifications be tested adequately?

The release of the draft legislation has been postponed. In the meantime several conservation organisations are monitoring progress.

The Nature Conservation Council has released a *New Deal for Nature* document to define the principles that should be in the legislation. This can be used as a guide for submissions (see www.nature.org.au/campaigns/nature-laws).

PROPOSED BUSHLAND DESTRUCTION IN FRENCHS FOREST

This article by Connie Harris was originally published in the October edition of Native Plants for NSW. It concerns the massive expansion of roads proposed in the vicinity of the Northern Beaches Hospital development. See more detail at <http://www.rms.nsw.gov.au/projects/sydney-north/northern-beaches-hospital/index.html>. It is of great concern to us all that these new roads will greatly encourage car dependence and inevitable congestion, at great cost to wildlife habitat.

Sydney's Northern Beaches have often been labelled as a hidden gem. Anyone who loves the bush and beaches would agree. Beautiful bushland within national parks and crown land intermingles with residential areas. Locals are often surprised by Swamp Wallabies on roads and in their gardens. The occasional snake, usually a Diamond Python, and birds like Black Cockatoos and Black Swans with their cygnets are the happy nature stories talked about. People feel blessed to be here.

However the NSW Government with its restricted vision on accelerating development is likely to change this blissful picture. With the help of precisely crafted rules for state significant sites and state significant infrastructure, environmental protection legislation is swept aside and a remnant hilltop forest is deemed to be annihilated for a monstrous road development to accommodate the new central hospital under construction: stage 2 of the Northern Beaches Hospital Road Connectivity and Network Enhancement Project.

Stage 1 of the road works was approved before community feedback was evaluated. It includes widening Frenchs Forest Road, which runs parallel to Warringah Road, with a distance between these roads of 250 m. Frenchs Forest Road is to be extended from three to ten lanes at its intersection with the Wakehurst Parkway.

A total of 25 lanes, separated only by the 250 m wide hospital block, are deemed the ideal transport solution, whilst better public transport had been dismissed. Roads and Maritime Services claims people prefer using their cars. However public meetings within the community clearly indicated the monster roads were of such a threat, that people are selling their homes to leave the area. Everybody had eagerly anticipated improved public transport not monstrous roads.

Now I would like to take you to the remnant hilltop forest. After climbing up the last hill heading west from Dee Why, with sweeping views back over the hills to the ocean, we reach an area with tall trees. We are in the suburb Frenchs Forest named after Mr French, who owned large parcels of land and sold timber cut from his forest. Scientifically though, this forest is described as Duffys Forest Ecological Community (DFEC) named after the suburb Duffys Forest about 15 km away, where its special nature was first recognised. DFEC is now listed as endangered under NSW legislation.

DFEC is an ecological community that has always been restricted to local hilltops covered with a richer type of soil containing ironstones. Only about 15% of DFEC is left and that is it for our planet or perhaps our universe. It only occurs in isolated patches and these patches are within a radius of about 20 km.

DFEC is characterised by its high biodiversity with a high percentage of members from the Proteaceae family. No specific plant is needed to make DFEC. It is the combination of a large number of species matching the characteristic assembly. It may host threatened species, but it is not required to do so.

My own 'DFEC nose' is a combination of early timber-getters observations and scientific research: a surprisingly tall forest, in hilltop location with characteristic eucalypts like *E. sieberi*, *E. capitellata*, *E. umbra* and *E. pilularis*. *Angophora costata* is also often about, but not for example *E. haemastoma*, a more Sydney sandstone vegetation species.

The location of the forest planned for destruction is another crucial factor that should have stopped this development. The forest is the only bridge between two large bushland areas. It is a wildlife corridor of regional significance and connects the bushland of Narrabeen Lagoon Catchment or Garigal National Park East with the bushland of Manly

Dam. Without this narrow forest corridor, terrestrial fauna cannot cross between these areas. Despite it currently being cut by six-lane Warringah Road, roadkill data confirm its regular use by Swamp Wallabies and genetic studies even demonstrate that Long-nosed Bandicoots cross over the road.

As with other development proposals, an environmental impact statement (EIS) was prepared. The EIS is daunting being over 2500 pages in size, but selected sections make an interesting read. For example five threatened fauna species are recorded: Red-crowned Toadlet, Powerful Owl, Grey-headed Flying Fox, Swift Parrot and the White-bellied Sea Eagle.

The Swift Parrot has just been declared critically endangered by UNESCO. The Swift Parrot migrates between its breeding grounds in Tasmania and mainland Australia's east coast. The Swift Parrot can claim two parrot records: it is the fastest and it travels the longest distance - up to 5000 km!

The recently rediscovered Spotted-tailed Quoll in the Narrabeen Lagoon Catchment was discounted in the EIS as having enough other habitat, even though large tree stumps are its favourite habitat and it is known to travel large distances around its core habitat.

Somewhat surprising is the inconsistent count of trees and hollows deemed for destruction. 65 trees with 103 hollows becomes 85 trees with 129 hollows a few pages later. It is acknowledged that the area is likely habitat for 17 threatened flora and 35 threatened fauna species. However as no threatened terrestrial fauna was encountered on the sites during the survey, it is not regarded as necessary to keep this habitat corridor. The EIS ignores the simple and undeniable conclusion that the loss of the corridor is likely to lead to fauna species becoming locally threatened and extinct within the Manly Dam Catchment.

Regarding the patches of forest doomed for clearing, in total 6.1 ha is declared as DFEC and the government's ecological consultants predict it will over time drive the whole local stand at Frenchs Forest into extinction. Frenchs Motorway has been suggested as a new name for the suburb.

A mention should also go to all the other eco-services provided by the forest to us humans and in particular the local community. The forest filters the air from pollutants and produces oxygen. During storms it acts as a windbreak and as a sponge decreasing the chance of flooding of local creeks including the runoff that frequently floods the Wakehurst Parkway. Like all forests it retains moisture and cools the area during heat and drought. And the direct action of the forest on us? It relaxes our mind and lifts our spirits. This aspect seems desirable in the surrounds of a hospital.

It is hard to believe that the government, with the premier Mike Baird living adjacent to Manly Dam, could be supportive of the destruction of the iconic ecology in his backyard. But apparently widening Warringah Road up to 15 lanes for a short distance of 1 km is worth sacrificing all this.

Roads and Maritime Services predict it will shorten travel times during the evening peak period in 2028 by almost 50%. Doing the calculation this will be saving motorists just over 1 min compared to the predicted worsening travel times in the do nothing scenario.

In comparison to motor vehicle travel speeds from 2012 the afternoon peak will be slower even with all the extra lanes and during the morning peak it will only save a few seconds.

Stage 2 is not yet finalised. Your help to stop the unnecessary destruction of DFEC and the regional significant wildlife corridor would be greatly appreciated.

Please contact your local member, the Minister for Planning, the Premier and the media and ask for effective public transport improvements as the initial step, followed by a comprehensive traffic study. And please request that planned stage 2 road works are fully reviewed.

View a video of the roads and intersections at www.media-server.com/m/go/Roads_and_Maritime_Services_NBH/ftag/hq1.

UNITED NATION'S POPULATION PROJECTIONS

STEP member, Jim Wells, has provided this article on the outlook for future world population numbers.

Silly me; I thought world population now around 7 billion was going to stabilise at around 9 billion by 2050.

Not so according to the latest medium-variant projection by the United Nations [1]. What they predict is that Africa's population will continue to grow so that by century end the population will be nearly four times what it is now.

Well might you say that that would be impossible, the continent struggles to feed itself now. How could it possibly accommodate so many people? [2]

[1] *World Population Prospects: Key Findings and Advance Tables* (2015 revision) Working Paper ESA/P/WP.241, United Nations, Department of Economic and Social Affairs, Population Division

[2] *Why has Africa become a Net Food Importer?*
www.fao.org/fileadmin/templates/est/PUBLICATIONS/Books/AFRICA_STUDY_BO OK_REVISED_low_res.pdf

Population (in millions) according to the medium-variant projection

	2015	2050	2100
Africa	1,186	2,478	4,387
Asia	4,393	5,267	4,889
Europe	738	707	646
Lt Am and Carrib.	634	784	721
Nthn Amer.	358	433	500
Oceania	39	57	71
World	7,349	9,725	11,213

A famous population pessimist writing around 1800 was the Reverend Thomas Malthus. He got it wrong because he didn't foresee the opening up of the New World and the dramatic reduction in transportation costs among other things. Nevertheless his basic thesis was right; population tends to grow faster than food production.

Of interest is that the population of Europe is expected to fall by 2050, continuing on to 2100. Asia falls after 2050.

It's important that we look at this in terms of annual percentage changes. The table below is based on the above but with the first column showing the rate of change since 2000.

	00-15	15-50	50-00
Africa	2.5	2.1	1.1
Asia	1.1	0.5	(0.1)
Europe	0.1	(0.1)	(0.2)
Lt Am and Carrib.	1.2	0.6	(0.2)
Nthn Amer.	0.9	0.5	0.3
Oceania	1.6	1.1	0.4
World	1.2	0.8	0.3

These numbers might look low but please remember that 2% pa means near 25% overall over 10 years. The African 1.1% over 50 years means a growth of 77%.

The countries with the highest rates of growth from 2000 to 2015 are (% pa):

Qatar	9.2
United Arab Emirates	7.6
Bahrain	5.0
Kuwait	4.8
Oman	4.7
South Sudan	4.2
Lebanon	4.0
Niger	3.9
Chad	3.5
Angola	3.4
Burundi	3.4
Afghanistan	3.4
French Guiana	3.4
Uganda	3.4
Gambia	3.3
Congo (DR of)	3.2
Mayotte	3.2

And those with the lowest are:

Hungary	(0.2)
Croatia	(0.3)
Belarus	(0.3)
Estonia	(0.4)
Serbia	(0.4)
Albania	(0.5)
Ukraine	(0.6)
Bulgaria	(0.7)
Romania	(0.8)
Georgia	(1.1)
Latvia	(1.2)
Lithuania	(1.3)

Australia's was 1.5% pa. This has been the subject of much debate. Do you remember Kevin Rudd's famous Big Australia statement?

STEP has contributed to the debate and has published a position paper on this subject. See step.org.au/populationdebate.php.

The countries with populations of at least 100 million in 2015 are:

China	1,376.0
India	1,311.1
United States of Am	321.8
Indonesia	257.6
Brazil	207.8
Pakistan	188.9
Nigeria	182.2
Bangladesh	161.0
Russian Federation	143.5
Mexico	127.0
Japan	126.6
Philippines	100.7

Some near 100 million with high growth rates are Ethiopia (99.4 million), Egypt (91.5 million) and Vietnam (93.4 million). Joining all of these by 2100 will be (current population shown):

Congo (DR of)	77.3
Kenya	46.1
Sudan	40.2
Uganda	39.0
Iraq	36.4
Mozambique	28.0
Angola	25.0
Madagascar	24.2
Côte d'Ivoire	22.7
Niger	19.9
Zambia	16.2

All these are in Africa except Iraq. Please don't ask what the populations are likely to be in 2100, it's too depressing, but to give you a teaser, Congo will be 389 million and Zambia 105 million.

To reflect on the issue of Africa, Rwanda's population in 2100 is expected to be 25.7 million or 975 people per sq km. This is a country that has a very high proportion of the population dependent on subsistence agriculture. Ku-ring-gai's density is not much above this at 1,278 people per sq km.

Japan will drop off the list.

One wonders just how accurate current counts are. Advanced countries use censuses where each household must complete a form every five or ten years.

What happens in third world countries with many villages often difficult to access and with literacy issues; think New Guinea? Presumably there is a lot of estimation.

The table on page 9 provides much available detail for selected countries. The first one is Australia. We should be familiar with our own country.

The next two are our near neighbours to the north. Neither has been a source of migration pressure on Australia. Indonesia has an enormous population; Papua New Guinea's has grown rapidly.

China is extremely important. On 29 October China announced a further relaxation of its one child policy, it will now be a two child policy. China has been a major source of migrants to Australia and that is likely to continue.

Uganda is included as a representative African country. One was tempted to say typical but there is enormous variation across the continent. Russia is interesting because of projected population falls.

The first observation is to reflect on just how small Australia's population is compared to the other countries. As of 2015 it is less than 10% of Indonesia's and less than 2% of China's.

The next part of the table shows annual percentage change, firstly for 2000–15, and then for the remainder of the century. The latter is very much an average so also shown is the end position, i.e. the change in the last year of the century.

Australia grew at 1.5% to 2015 but by 2099–2100 this will be down to 0.3%. Is this believable?

All the other countries in the list will also have much lower rates of population growth by then, except Russia which is already in decline. This is caused by birth rates being less than death rates and net migration.

To maintain population, births per woman, needs to be above two. It's not now in Australia which is what gave rise to Peter Costello's baby bonus.

UN MEDIUM POPULATION ESTIMATES

	Australia	Indonesia	Papua-New Guinea	China	Uganda	Russia	
Population ('000s)							
2000	19,107	211,540	5,374	1,269,975	23,758	146,401	
2015	23,969	257,564	7,619	1,376,049	39,032	143,457	
2100	42,389	313,648	17,951	1,004,392	202,868	117,445	
Pa Ch %							
2000 to 15	1.5%	1.3%	2.4%	0.5%	3.4%	-0.1%	
15 to 2100	0.7%	0.2%	1.0%	-0.4%	2.0%	-0.2%	
99/2100	0.3%	-0.2%	0.2%	-0.5%	0.7%	-0.1%	
Total fertility per woman							
10/15	1.92	2.50	3.84	1.55	5.91	1.66	
45/50	1.78	1.91	2.63	1.74	3.37	1.87	
95/00	1.82	1.84	1.98	1.81	2.12	1.91	
Life Expectancy at birth (yrs)							
2015	82.1	68.6	62.3	75.4	57.2	69.8	
2100	93.1	81.2	75.0	89.9	77.0	80.3	
Age Distribution (%)							
2015	0-14	18.7	27.7	37.1	17.2	48.1	16.8
	15-24	13.2	17.1	19.8	13.4	20.3	10.6
	25-59	47.7	47.0	38.0	54.1	27.8	52.6
	60-79	16.5	7.6	4.7	13.6	3.4	17.0
	80+	3.9	0.7	0.3	1.6	0.4	3.1
2100	0-14	15.3	16.4	19.5	13.4	22.3	17.0
	15-24	10.7	11.5	13.5	9.7	14.8	12.1
	25-59	39.3	43.1	46.4	37.3	45.1	43.3
	60-79	21.0	22.6	17.3	23.1	14.9	20.0
	80+	13.8	6.4	3.3	16.5	2.9	7.5

Look at the frightening figure for Uganda for 2010–15 – nearly six. The rate for China is expected to increase.

Life expectancy is high for Australia and is expected to increase, as will be the case for all the other countries shown. The Russian figures are low for what is essentially a European country.

This increase will be accompanied by significant increases in the aged population; in Australia's case the 80+ rises from 4% of the total now to 14% in 2100. Hopefully there will be improvements in medicine, in particular a treatment for dementia, so that people in this age bracket will have some quality of life.

RAPID POPULATION GROWTH – WITCHES HATS CLAIM ANOTHER CASUALTY

*Media Release 17 September 2015
The Hon Kelvin Thomson, Federal Member for Wills*

In 2005 John Howard had been prime minister for nearly a decade and didn't look particularly vulnerable. But then he decided to ramp up Australia's migration intake. Net overseas migration jumped from the 100,000 it had been in 2004 to over 200,000 in just a couple of years.

In 2005 migration overtook natural increase as the dominant driver of population growth, and we entered an era of rapid population growth, which we are still in. Our population now increases by a million people every three years.

The era of rapid population growth has also been one of great political instability. John Howard lost the 2007 election and indeed lost his own seat. His successor, Kevin Rudd, maintained and even increased net migration. When he was questioned about rapid population growth in 2009 he declared he was in favour of a Big Australia. His personal approval ratings had been high until that time, but then they started to fall. He was replaced by Julia Gillard in 2010.

Julia Gillard was aware of the damage that Big Australia had done to Kevin Rudd, and said she was not in favour of Big Australia. But she did not change the migration intake much and the problems of rapid population growth persisted. She was replaced by Kevin Rudd in 2013, and he in turn lost the 2013 election and the Liberal Party came to power with Tony Abbott as Prime Minister. Tony Abbott maintained Australia's net migration intake at over 200,000 per annum, and rapid population growth continued.

Now just two years later Tony Abbott has been replaced by Malcolm Turnbull. Australia has been described as the democratic coup capital of the world, and our political instability has been the subject of international comment. Now of course there are many factors at work in every political setting. I acknowledge the role of WorkChoices in the demise of John Howard. I acknowledge the role of internal undermining and the difficulties of managing the hung parliament in the demise of Julia Gillard. I think that Tony Abbott made a Faustian deal with the devil by promising that there would be no cuts to health, education or pensions when he was opposition leader, only to renege on these promises in the 2014 Budget.

But those factors are insufficient to explain the political instability of the past decade, especially when you see it going on at a state level too. In Victoria and Queensland we have seen right wing governments elected then defeated after just one term, with the elected Victorian premier toppled in his first term by his own party, just as happened to Kevin Rudd and as has just happened to Tony Abbott.

In 2011 I gave a speech which I called the Witches' Hats Theory of Government. Having studied a lot of countries around the world, I had come to the conclusion that countries with large and rapidly growing populations had more political instability than countries with small and relatively stable populations. I compared governing a country, with various public policy problems you have to solve, to an advanced driving course where you have to navigate a road without knocking over strategically placed orange traffic cones known as witches hats. Each public policy failure – education, unemployment, aged care, planning, represents a witches hat knocked over.

If you knock over too many witches hats, you fail the test, that is to say the electorate, or your party, votes you out. I noted back in 2011 that if a country was stable or only growing slowly its leaders seemed to have fewer problems, and more time to solve the problems, a more content population, and much better political longevity.

But if a country was growing rapidly, problems such as traffic congestion, housing affordability, planning disputes and infrastructure shortfalls generated political instability. It is like driving the car at great speed. Inevitably you are going to hit more hats. Infrastructure is a particular difficulty. A country or community growing at 2% has double the infrastructure task of a stable community, which is why pensioners and retirees feel particularly under the pump from utility charges in a rapidly growing population.

The Abbott Government had little support from young people, who are the victims of job insecurity, housing unaffordability and rising

student debt. All of these things were made worse by rapid population growth. When the jobs at 7-Eleven and numerous other retail outlets are all going to easily exploit temporary migrant workers, how are young Australians supposed to become financially independent and get entry level work experience?

The Abbott Government also lost the support of older people with its broken promises over cuts to education, health and pensions. It was looking to find money to deliver on Mr Abbott's promise to be the infrastructure prime minister, and avoid a witches hat which would not have been there if our population growth had not been so rapid.

So the witches hats have claimed another victim. I offer the same advice to Prime Minister Turnbull and his incoming government as I have freely offered to his predecessors. If you want to last, stop driving so fast!

ANNUAL REPORT FOR THE YEAR TO OCTOBER 2015

Sydney is being transformed by the relentless increase in population and the need for land for housing, infrastructure, sporting fields, recreational parks, etc. The future for our magnificent bushland is unknown.

You will see from this report that we have had a very busy year, not only on the advocacy front but also in developing new approaches to management of our activities.

Committee

The skills of committee members have been put to good use this year. Research for our submission on the draft Plan of Management for Berowra Valley National Park revealed shortcomings in the vegetation definitions and recognition of threatened species.

Last month the NSW Government released a draft plan for filling Hornsby Quarry with spoil from the NorthConnex tunnel. The plan demonstrated scant regard for the special geological feature, the volcanic diatreme, which has been exposed by the quarrying. Our submission called for care to ensure that the exposed face is not damaged and for future access opportunities for researchers and the public.

As always the committee members have done a great job in steering the organisation. It seems that the 2015–16 committee membership will be unchanged. However we urge members to consider nominating for the committee.

Also we are always on the lookout for people who can help with our work, information technology or a particular project or issue. Suggestions for projects and alerts of actions affecting natural bushland are always welcome.

Publications

Sales of books have slowed this year consistent with the experience of other book publishers. Map sales are still solid being less affected by navigation using hand held devices than many would assume. Our maps are more detailed than generally available on-line and there is no better way to plan a walk than poring over a full size paper map.

The Lane Cove map is currently being revised with the help of a team of volunteers and will cover a significantly larger area than the previous edition. We plan to release the new map during the coming year. We are reviewing publishing options, including use of a more durable plasticised paper copy.

Accounts

Our finances remain sound with a small deficit from activities this year. We have maintained the Environment Protection Fund which provides deductible gift recipient status for donations supporting STEP's environmental objectives. This fund also comes under the requirements of the Australian Charities and Not-for-profits Commission. We received a total of \$336 in donations in the past financial year.

Electronic Media

Our website is currently being upgraded and rebranded and it will go live this financial year. New features include a secure shopping cart where you will be able to order and pay for publications and membership on-line.

Our website is an important source of information about our activities and contains copies of our submissions to local and state governments on current issues and development proposals.

Trish Lynch continues to do a great job with our Facebook page with an attractive selection of photographs and alerts of current events and issues.

John Burke provides incisive comments on Twitter. The number of followers is increasing with currently over 100. Twitter provides links to many like-minded organisations.

Education

We support the Young Scientist Awards run by the Science Teachers' Association NSW with a prize in the environmental sustainability category. The six projects selected for this category in 2015 showed a keen awareness of environmental problems and the role of science in finding solutions.

The Environment Protection Fund can be applied to educational and research projects. Ideas and proposals are welcome.

Talks

We organised public talks this year on the management of wetlands and coal seam gas. We also organised an informative tour of the Sydney Institute of Marine Science.

In October last year Professor Emma Johnson gave the STEP Lecture with a detailed rundown of the outstanding biodiversity and ecological features of Sydney Harbour and the threats posed by human actions and climate change.

Walks

STEP organises a walk every month or two (seven since our last AGM) in both our local area and elsewhere in the Sydney Basin. These are designed to highlight the features of Sydney's unique and diverse bushland environments. The walks aim to be educational and to encourage new walkers so most walks are not physically challenging. We thank Andrew Little and John Martyn for organising and leading walks this past year. If you have a request for a walk please let us know.

Newsletter

Our newsletter, STEP Matters, is our main means of communicating events, our activities and issues with our members. We also include other articles with an environmental angle that will be of interest to members. The newsletter is also sent to local councillors and politicians. We welcome alerts from our members of local events and developments for inclusion in future editions and, of course, feedback on articles is always welcome. In the coming year we will be providing the option of emailing newsletters to members.

All past editions are available on our website going back to scans of the typewritten versions from 1978.

Environmental Issues

After a strong campaign by local groups, including STEP, the 10/50 vegetation clearing legislation has been modified to remove some of the most obvious shortcomings but the basic problem remains that landowners can self-assess whether tress and other vegetation should be cleared (ostensibly) for bushfire protection. The previous system that required expert advice is still our preferred option.

The other main local issue has been the draft Plan of Management for Berowra Valley National Park that allows for the possibility of sporting fields on the old pony club site and construction of a mountain bike track. STEP's submission opposed these plans for many reasons and can be accessed on our website.

While the NSW Government has recognised the risks to water quality and supply from some of the proposed coal seam gas projects in urban and agricultural areas there are still doubts that the risks are being properly

recognised in the decision process. Coal mines are still being approved by both the state and federal governments despite the climate change impact of this coal. The world is increasingly recognising that coal-fired power does not have a long term future but our governments are still listening to the coal lobby.

Outlook for 2016

The great unknown for 2016 is whether the NSW Government will force local council amalgamations to occur despite opposition from most councils. The concern is that the community will lose opportunities to have a say in development that will affect the local environment.

The NSW Government has produced some glossy reports on strategic planning for Sydney's future development and it is currently amending the biodiversity legislation framework. There is considerable concern that the current laws will be weakened and the loss of further valuable bushland will be justified by use of offsets that cannot replace what has been or will be lost.

CHRISTMAS SPECIAL: MAPS AND BOOKS

Maps of walking tracks:

- Lane Cove Valley \$5
- Middle Harbour North \$10
- Middle Harbour South \$10

Books:

- Understanding the Weather \$15
- Field Guide to the Bushland of the Lane Cove Valley \$20
- Sydney's Natural World \$20

To place an order, call Helen Wortham (9144 2703) or download an order form www.step.org.au/orderform.doc.

STEP INFORMATION

STEP Matters

The editor of *STEP Matters* for this edition is Jill Green, who is responsible for all information and articles unless otherwise specifically credited. The STEP committee may not necessarily agree with all opinions carried in this newsletter, but we do welcome feedback and comments from our readers, be they STEP members or not.

All issues (from when we began in 1978) can be viewed online, usually in full-colour.

Feedback

Send complaints, praise, comments or letters to secretary@step.org.au. Please feel free to share your copy of the newsletter with friends, neighbours and business colleagues.

New Members

New members are always welcome to join STEP and to make themselves available for the committee should they wish to do so. The effectiveness of STEP is a factor of the numbers of members we have, so please encourage your like-minded friends and neighbours to join.

STEP Committee

Jill Green – President
Robin Buchanan – Vice-president
Frank Budai – Treasurer
Helen Wortham – Secretary
Anita Andrew
Don Davidson
Andrew Little
John Martyn



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