



STEP Matters

Number 156, August 2010

In this issue we:

- Update members on matters of interest.
- Read about our local bushland a century ago.
- Learn why biodiversity is important (and how one Council is actually doing something about it).
- Appreciate the menace of the Indian Myna.
- Study the eucalypts of the Lane Cove.
- Find out more about a Chenier plain.
- Try to understand the implications of a failed harvest in Russia.

Plus we provide details on upcoming walks, and other useful information.

STEP AGM – Tuesday 12 October 2010 – Call for Committee Nominations

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

The STEP Inc Annual General Meeting will be held at 7.45pm and will be completed prior to the talk by Barry O'Farrell (see below). Nominations for Office Bearer or Committee Member should be made in writing and received by the Secretary at least seven days prior to the meeting. Nomination forms are available from the Secretary (email: secretary@step.org.au).

STEP Talk – Barry O'Farrell, NSW Opposition Leader – Tuesday 12 October 2010

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

Topic: "The Politics of Population in Australia and its impact on meaningful Climate Change Action"

Last year, when STEP invited Lee Rhiannon to address our AGM on this same topic, it was one of the first occasions on which a spokesperson from a mainstream Australian political party publically addressed the nexus between the growth in both local and global population and its links to climate change. Since that time the population debate has become a key issue in Australian politics.

STEP has a world view in which we see population heading to exceed 9 billion, the majority of whom are rapidly climbing out of poverty and reaching for our level of consumption, meaning that finite resources are being used at ever increasing rates. As a result, huge natural areas are being alienated to accommodate these increased numbers, with a high level of probability that future generations face a future of famine and massive dislocation. Of course Australia has its own particular problems to confront.

STEP is therefore delighted that Barry O'Farrell, a STEP member and Leader of the Liberal Party in NSW, has accepted our invitation to talk to our members on this increasingly important topic.



STEP Inc

Community-based Environmental Conservation since 1978

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Key Issues and Updates

STEP AGM

The AGM (see page 1) is an opportunity for STEP members to consider joining the Committee. STEP is fortunate in having an active Committee which has been able to take effective action to protect local environmental interests, as well as to make a leadership contribution to broader national issues. All members are encouraged to consider nominating for the Committee, so that new ideas and talent can be fed into the way in which STEP operates. The Committee meets on average once month. For further information, please contact Barry Tomkinson on 0412 250 595.

The Federal Election

STEP is of course a non political community based environmental group, although our early stance on the need for real action to tackle the demands of climate change and population growth has no doubt seen us characterised by some as being unnecessarily alarmist. We have for a long time believed that we need to change the way we think about the relationship between the earth and the economy. The economy is hugely important but it is ultimately only a subset of the environment, not the other way around.

We believe that you cannot have a healthy economy in an unhealthy environment. We are therefore encouraged by the outcome of the August General Election, in anticipation that Federal Parliament will finally have the balance of representatives needed to establish an effective emissions trading scheme and to take the other measures needed to address the long term consequences of climate change.

Bushland Track and Trail Position Paper

STEP members will find included with this edition of STEP Matters a copy of our new *Position Paper on Bushland Tracks and Trails*. This Paper was launched at a public meeting on 10 August that included a "Q&A Forum" with a panel composed of both conservation and mountain bike representatives. The Panel was a continuation of our commitment to an open debate on both the pros and cons of building tracks and trails in urban bushland. Copies of the *Position Paper* have been widely circulated to local Councillors, local NSW MP's,

conservation groups and the State Government. It can also be down loaded from our web site.

Lane Cove National Park Budget Cuts?

The August issue of the local *2120 Monthly Chronicle* newspaper reports that the Lane Cove River Area budget for 2010/11 has been significantly cut, including all of its bush regeneration budget, its fire trail management budget and its budgets to run both Dalrymple Hay and Wallumatta Nature Reserves. In addition, most of its hazard reduction and walking track maintenance budget has been removed. STEP has not yet been able to confirm the veracity of these reports, but if they are accurate they represent an almost complete withdrawal of funding for conservation and maintenance related activities in the national park and will need to be strongly resisted.

Ku-ring-gai Council Draft Unstructured Recreation Strategy

At its meeting on 10 August, KMC agreed to place on public exhibition for 28 days a draft *Unstructured Recreation Strategy* for Council's bushland reserves, aimed at providing "greater policy structure" as to how it should manage these areas in the light of both environmental and social expectations. The paper included detailed codes of conduct.

STEP has responded to the draft strategy, and, while commending the Council for its initiative, has pointed out that it sees a number of issues arising, including an apparent lack of capacity to enforce the policy and the need to effectively publicise the proposed rules. STEP has asked Council to address these and a number of other issues, including reviewing the Strategy against our new *Position Paper on Bushland Tracks and Trails*.

The issue of enforcement is of particular importance to Sheldon Forest, which a STEP member has recently pointed out is well on its way to losing its conservation value and instead is becoming simply another open space for recreation. New illegal cycle tracks have recently appeared close to the Scout Hut; signage is old and no longer serves to properly educate users and dogs run freely off leash, chasing brush turkeys (the area was once regarded as a bird sanctuary!). Local bush care volunteers need more support but feel over whelmed by the forces of local development.

STEP members who would like to review and comment on the Strategy can find it at: <http://www.kmc.nsw.gov.au/resources/documents/rptomc10Aug2010GB.08.pdf>

St Ives Showground and Precinct Lands - Options

In the last issue of STEP Matters we brought members up to date on the latest developments in this issue. Since then, STEP Committee members have again conducted a site visit to the St Ives Precinct lands. This has underlined our concerns about the future level of protection being offered to the Duffys Forest vegetation community, as a result of the proposed location of road works and sealed trails through this sensitive area. STEP will be taking these concerns up with KMC.

Stop the Creeping Peril in NSW

Did you know that 80% of the NSW coastline has been invaded by the South African weed Bitou Bush? That weeds make up 25% of the total NSW flora? That there are nearly 160 native plants under threat? That there are over 26,000 exotic plant species in Australia, all of which can still be legally sold and planted in NSW? That the annual damage bill to Australian agriculture has been put at \$4billion?

The planned statutory review of the NSW Noxious Weeds Act in the second half of 2010 has triggered the Invasive Species Council (ISC) to prepare a community call to action on weeds to outline reforms needed in NSW. Entitled "*Stopping NSW's Creeping Peril*", it outlines ten recommendations that will, if adopted and implemented, act to reduce the damage that weeds do to our bushland, woodland and wetlands.

Your STEP Committee has endorsed the ISC initiative and has supported it with a financial grant. (See also: <http://www.invasives.org.au/> for more information on our destructive weeds.)

B2 Lands South Turrumurra

STEP members with long memories will recall the epic battles of years gone by to prevent the bushland of Lane Cove being destroyed by the building of freeways down the Valley. While that resulted in a successful outcome, it left as

undecided the status of the road corridor land set aside for the freeway. In 2003 STEP made a detailed submission to KMC for the rezoning of part of the B2 road corridor in South Turrumurra, seeking to preserve as much of the bushland as possible.

However, in 2007 KMC entered into a Memorandum of Understanding (MoU) with the Office of Strategic Lands on this matter, which subsequently lapsed. KMC is now proposing to enter into a new MoU with the Department of Planning and to execute a Project Delivery Agreement that will be a legally binding agreement to develop the land for release and subdivision. In March a Gateway Determination was made by the NSW Department of Planning for the proposal to proceed, subject to several conditions including the holding of a public hearing. The MoU would include the transfer of 4,420 square metres of land adjacent Sir David Martin Reserve to Council.

The matter would seem to be pretty much a done deal. STEP has approached KMC asking for a wildlife corridor to be created to protect both fauna and flora, and for the upholding of tree preservation standards. KMC has advised that detailed site planning will take into account the Ku-ring-gai Planning Scheme, and a series of Development Control Plans and Policies that apply to the site. These include Tree Preservation Orders and environmental planning policies including policies on urban bushland and planning for bushfire protection. Council has undertaken to advise STEP when public hearings on the reclassification of Council owned land take place.

Change of Banking Arrangements

STEP has been undertaking a rationalisation of its banking arrangements, which will in future all be with the Turrumurra Community Bank (Bendigo Bank). As a result, STEP will no longer be able to accept payments made through the Westpac account. Electronic payments to STEP via Bendigo can be made to: BSB 633-000 account number 13868-7991.

Quiz

Which bird beat the cane toad and the feral cat to win the Pest of the Year award?

See the article on page 8 for the answer.

August in the Sydney Bushland - 100 Years Ago

Marita Macrae, President of the Pittwater Natural Heritage Association (PNHA) “, has sent STEP a 1911 print of this iconic book by Amy E Mack. “A Bush Calendar” was first published in 1909. It is an exquisite literary account of the Australian bush of 100 years ago. Each month Amy Mack sets out on a bush walk around Sydney, NSW, seeing what she can discover. Her particular interest is the birds and flowers that she finds. Her enthusiasm is infectious.

The excerpt below is from the chapter entitled “August”. Given current population pressures, planning laws and property developer pressures in the Sydney region, it is perhaps a moot point as to whether a similar account of the bush will be able to be written in 2110.

“According to the official calendar it is still winter, but out in the bush all the world knows it is spring. Although the week’s heavy rain has drenched and spoiled the laden branches of the cultivated wattles – the golden-hued Cootamundra and the Queensland – their paler sisters in the neighbouring bush have survived the downpour, and are shedding their nutty sweetness through a damp world, and the air is fragrant with early spring scents.

This afternoon there was actually a break in the grey sky, and a wind that seemed as if it might blow the rain away. The house grows un-supportable after a whole seven days of rain, and I felt I must go out into the freshness and green. So with old hat, short skirt and strong high boots I started off along the muddy road to

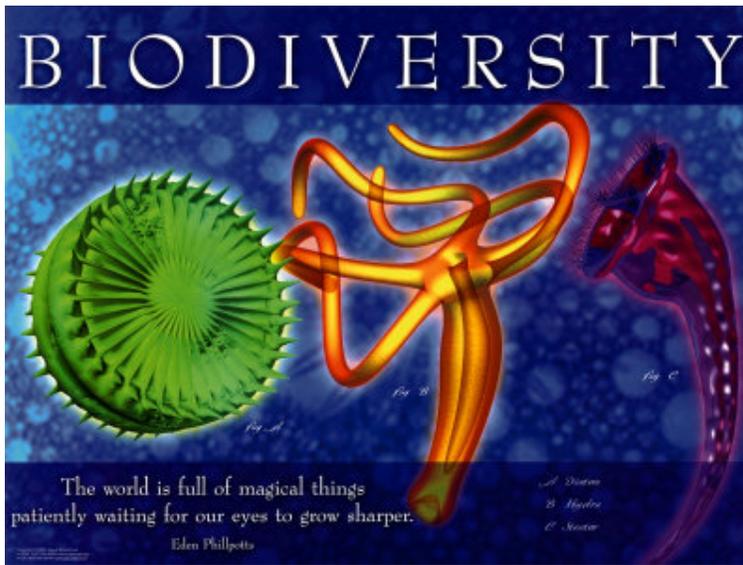
see what the week’s rain had brought forth. On the upper part of the ridge the soil is shale, and here grow tall blue gums and iron barks, with grassy spreads beneath them. In the autumn this grass is a green hunting ground for mushrooms, but now as I trudged across the sappy sods there was nothing but green on every side. All green it was, but not all grass; for at the edge of the little creek, which was rushing along in muddy haste, I found a group of green orchids – those quaint delicate things with much-curved petals that look so like a strange bird’s head. There were two sorts; one with a single flower on the end of a tall stalk, the other with several similar though much smaller blossoms on the slender stem. Close by, the faint pink of a different orchid glowed softly, all three together making a dainty bunch.”



*The bushland path that through the gully strays,
And leads the wanderer into wonderland*

From “A Bush Calendar” by Amy E Mack (left), with original illustration (right).

Nature's Insurance Policy



Article written by STEP member Jill Green. Jill is a qualified actuary who also has a Masters of Environmental Studies and is a member of the Institute of Actuaries Climate Change Committee.

She is also involved in the Institute's education process which includes an environment stream. Her other interests include bushwalking and road cycling.

One of the concerns about climate change is the prospect of a major extinction of species. More obvious is the loss of species already occurring through deforestation in the tropics and land clearing for agriculture and urban development. The underlying reason for concern is described as the loss of "biodiversity".

This article provides an outline of the reasons why biodiversity is important.

What is biodiversity? The 1992 United Nations Earth Summit in Rio de Janeiro defined biodiversity as "the variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems".

Biodiversity is generally classified into three levels:

Genetic diversity – the total number of genetic characteristics expressed or recessed in all the individuals that comprise a particular species.

Species diversity – the number of different species living in an area. A species is a group of plants or animals that are similar and able to breed and produce viable offspring under natural conditions.

Community diversity – the variation of habitats present in a given area. An ecosystem consists of all living and non-living things in a given area that interact with one another.

The loss of biodiversity is assessed in terms of the reduction in the number of species and also the reduction in the population within each species as their available habitat is altered.

Why is biodiversity important? Remember those school biology classes about natural selection, how the dark coloured moths survived the industrial revolution because they were camouflaged against predators when the trees became covered in soot? The light coloured moths had to move elsewhere if they were to survive. But elsewhere they would have to compete with other species of light coloured moths. So both dark and the fittest light coloured moths survived but only because there was a diversity of types of moths and still a habitat for the light coloured ones.

Biodiversity is not only about the variety of species which creates the opportunity for one species to take over where another has been unable to adapt to changes in their environment, it is also about diversity within species. Human beings have been able to survive major epidemics because there have been individuals with resistance to diseases like influenza and the Black Death.

In 1970 the Grassy Stunt virus devastated rice crops in India and Indonesia. Severe famine was averted by the development of a resistant strain. After testing 6,273 varieties, the resistant gene was found in only one relatively feeble variety discovered in 1966.

As well as providing resilience for existing populations, biodiversity provides a gene pool for future evolution. From the human point of view, it provides opportunities to improve crop varieties and find new medicines. So biodiversity provides an insurance policy for nature in general and for human beings, in particular.

How are decisions made about conserving biodiversity? Australia has international obligations under the UN biodiversity convention to restrict the loss of biodiversity. When decisions are being made on whether land can be developed, Federal legislation requires that threats to endangered species or ecological communities be a critical factor in the decision.

In practice the application of this legislation can be problematic. The assessment of a threat depends on having sufficient knowledge of the interrelationships within an ecosystem,

In considering a threat at a species level we need to know enough to be able to identify the species that are important. Currently it seems that the focus is on iconic species that are easy to identify. Is this the right way to go about conserving biodiversity? In my view this is the best we can do because our knowledge of total biodiversity is so limited. The threat to endangered animals is a surrogate measure of the threat to an ecosystem and all the biodiversity it contains.

When it comes to assessing a whole area of land that represents an ecological community a cost benefit valuation approach is often used. The effectiveness of this approach depends on the significant costs and benefits being included in the valuation. But it is very difficult to quantify many of these costs and benefits. Some

examples of the benefits provided by species contained in an ecosystem that may need to be valued are:

- The value of the products obtained from the species. In addition to potential medicinal values, many species have great potential as agricultural and livestock that offer benefits of greater efficiency and less destruction of the environment.
- The present and future value of the genetic material held in the species. There are many examples like the rice disease mentioned above where the benefits of a single gene only recently discovered has had incalculable benefits.
- Stability of the ecosystem. Diversity gives the natural system the ability to resist and adapt to disease, severe weather, and climactic change.
- Maximizing the efficiency of the ecosystem. Many studies have shown that a diversity of species is better able to utilize the inputs of water, sun and nutrients than a single or small number of species. This leads to greater biomass and less soil erosion and nutrient loss. This is especially true of rainforests, but also applies to temperate forests and grasslands.

The points above consider biodiversity from a very materialistic point of view. There are other attributes such as aesthetic and existence based values that should not be ignored. However their assessment often boils down to the public's willingness to protest against the development of an area of land.

STEP Committee 2010

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

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

Biodiversity Insurance - One Tree Reach Wetland

Hornsby Shire Council has purchased a superb wetland near Laughtondale which features five endangered ecological communities and provides habitat for 11 threatened species of fauna, including three species of bats. The 8.8 hectare wetland was purchased using grant funding from the NSW Government.

“The purchase of this site is a great achievement for Council,” said Council’s Manager of Bushland and Biodiversity, Diane Campbell. “One of the key objectives of our *Biodiversity Conservation Strategy* is to purchase environmentally-sensitive areas such as this wetland.”

The site has a spectacular large open water body which provides habitat for several migratory birds including the rose robin, a winter migrant from northern Australia. Several mammals have been recorded on the site such as the long-nosed bandicoot, swamp wallaby, and seven species of bat, including the

threatened large-footed myotis, large-eared pied bat and grey-headed flying fox.

The wetland also provides breeding habitat for aquatic invertebrates and fish, as well as helping improve the water quality of the Hawkesbury River by filtering water and runoff. The adjoining section of the Hawkesbury River is known to be highly productive for the seafood industry. The land, which is located between Spencer and Wisemans Ferry, was purchased from a private landowner and will be consolidated with adjoining Crown Land areas, which are currently managed by Council, to create a 13 hectare public reserve.

“Our priority now is to restore the threatened swamp mahogany community on the site,” said Diane. “We’ll examine how the site could be used for low-impact activities such as environmental study. We’ll also look at maybe constructing a boardwalk or viewing platform in the future.”



Left: One Tree Reach Wetland, Hornsby.

Nuisance birds in our suburbs – the Indian Myna

Article by STEP Committee member Tim Gastineau-Hills.

In March this year, Hornsby Council held an information session to gauge and attract community interest to facilitate the formation of an Indian Myna Action Group for Hornsby Shire. An unexpectedly large crowd of 84 people attended, a very positive response considering the modest advertising for the event (via the Advocate, posters and e-mail). Council has since launched a bushland and biodiversity web page on Indian Myna's that contains fact sheets on monitoring and trapping. (See: <http://www.hornsby.nsw.gov.au/environment/index.cfm?NavigationID=2532>)

Below: Indian Myna



The Indian Myna, also known as the Common Myna, is one of the world's 100 most invasive species. A native of India, with a natural range from the Middle East to Malaysia, it has been introduced all over the world, rapidly adapting to new environments. Introduced into Australia in the late 1860s to combat insects in market gardens, it has since thrived and become a huge threat to biodiversity in both urban and rural areas. It is rated an Extreme Threat in Australia and in 2005 it won a Pest of the Year award, beating the cane toad and feral cat. (At times the Common Myna has been referred to as the 'flying cane toad'.)

We know them as noisy, fiercely territorial and unafraid of humans, often congregating in groups of 5 to 20. They are also very

long-lived, and incredibly prolific – they can raise two broods of 4 to 5 chicks a year.

Their superior numbers are seriously bad news for our native wildlife. During the breeding season they harass and evict native birds and small animals (such as possums and sugar gliders) from tree hollows. They build and defend several nests during the breeding season, although only utilise one, then leave sites mite-ridden and unusable by other wildlife. They kill the young and destroy the eggs of native birds.

Indian Mynas are opportunistic and eat almost anything. In urban areas we see them congregate around food (scrap) centres – schools, shops and sports fields – and also target pet food, fruit trees and bird seed offerings in residential areas. In rural areas they scavenge stock food, grain, pellets, fruit and compost. They pose potential health risks around our outdoor eateries, as well as dairies and stables.

The Indian or Common Myna – *Acridotheres tristis* – is predominantly brown with a black head, with white feathers under each wing. It has a yellow beak and rear-pointing yellow patch around each eye.

It should not to be confused with the:

- native, nectar-feeding Noisy Miner – *Manorina melanocephala* – predominantly grey, with a patchy/blotchy pale breast, similar yellow beak but black patching around the eyes and on the top of the head;
- Common Blackbird – *Turdus merula*
- Common Starling – *Sturnus vulgaris*

Both starlings and blackbirds are also non-native introduced birds and regarded as pests. Indian Myna Action Groups often also target these birds.

Action Groups are emerging at all levels – local council-initiated groups such as Hornsby's, citywide such as Canberra (<http://www.indianmynaaction.org.au>), and regional such as the mid North Coast (<http://www.indianmyna.org>). Indian Myna Action Groups aim to:

- Provide public education – i.e. correct identification plus the understanding of behaviours, habits and habitats.

- Support trapping programs in local communities – i.e. assist with provision, purchasing and set-up of recognised residential traps or larger holding cages. Typical traps for the backyard are one-way walk-in tunnels, or vertical tunnels, made with wire mesh. Successful trapping relies on location, use of specific bait (to avoid attracting native birds), vigilant monitoring and efficient low-stress handling (for bird & handler).
- Ensure safe, proper and humane handling of captured birds, particularly with euthanasia of non-natives.

Naturally these programs must address the issue of humane handling and euthanasia of trapped birds – a difficult issue, certainly confronting and uncomfortable for many of us. Without going into much detail, the common euthanasia methods for birds are cervical dislocation (euphemistically neck-breaking), inhalation of carbon dioxide and injection of a barbiturate. Indeed, Hornsby Council's web page rather avoids the issue, redirecting people to a document on animal welfare protocols. And it is not surprising that RSPCA Australia only supports government-controlled humane control programs, and also goes on to state, "Trapping carried out on an ad-hoc basis is not supported by the RSPCA, as it is ineffective in reducing and maintaining the adverse impacts of Myna's in the long-term, and does not usually allow for monitoring and assessment of the success of the control program.

"(http://kb.rspca.org.au/what-is-the-most-humane-way-of-controlling-indianmynahs_140.html)

Which begs the question, or at least it follows that, if our local and state governments are facilitating and supporting Indian Myna Action Groups, perhaps they are assisting with euthanizing pest birds? Well, it appears not.

Maybe there's an unwanted association here with recent government-run kangaroo and brumby culling? Or is it the euthanasia debate? Anyway, the general message across government is clear – and clearly adopted by Indian Myna Action Groups – that euthanasia is the responsibility of the trap operator and, officially, should be carried out as per the Industry and Investment NSW's standard operating procedures – BIR002 Trapping of Pest Birds and GEN001 Methods of Euthanasia.



Image: <http://www.indianmynaaction.org.au>

Phew! If that is all too much, how can we help apart from joining our local Action Group? Well, thankfully these groups provide us with these freely-available tips:

- resist the urge to put out bread or seeds for native birds or ducks, as they attract pest birds and encourages local nesting;
- feed pets inside, or if not possible, in an enclosed area, and bring pet food inside during the day;
- cover or shut away garden fertilisers such as chicken and horse manure – it can be a 'favourite food' for Mynas;
- remove and block nesting locations – e.g. block holes in roofs and eaves, trim palm tree fronds and other exotic trees;
- plant more shrubs in our gardens to reduce the open space that Mynas prefer and avoid planting tall thin trees with dense foliage [potential roosting trees].

A trapping program for Indian Mynas is an essential part of any strategy to control these pests. It has been particularly successful in Canberra with individuals trapping 665 in a backyard over 6 months, and 40 Indian Mynas and 37 Common Starlings in 1 week.

(<http://www.indianmynaaction.org.au>).

Of course, we can not hope to totally rid our suburbs of Indian Mynas. But we must control their numbers or risk losing many of our native birds and animals. We can at least give our native birds and animals a better chance by controlling their numbers and the vast range they inhabit.

Eucalypts of the Lane Cove Catchment – Part 1

Article by STEP Committee member Dr John Martyn. This is the first part of a series. (John has recently completed an extensive revision of his "Field Guide to the Bushland of the Upper Lane Cove Valley", first published by STEP in 1994. The revised edition, running to 256 pages, will again be published by STEP and will be available in November 2010).

CRADLE OF EUCALYPT DIVERSITY: The Sydney region has long been acknowledged as the eucalypt "heartland" of Australia, with 149 species recorded (Source: *Eucalypts of the Sydney Region* by Van Klaphake). This diversity of course was pivotal in the nomination of the Blue Mountains World Heritage Area. Even the small area of the Lane Cove catchment bushland has around 20 species, excluding ornamental ones from outside the area that have "jumped the fence", and depending on how you pigeonhole the local scribbly gums and stringybarks.

Because of the diversity of soil types these span almost all the eucalypt genera and sub-genera, which are: -

Angophora ("apples")

Corymbia (bloodwoods)

Eucalyptus (blackbutt, peppermint, scribbly gums, stringybarks, ashes, mallee-ashes and white mahoganies),

Symphomyrtus (blue gums, grey gum, ironbarks, red mahoganies, scaly bark).

(The other sub-genus **Nothocalyptus** has just one species, **tallowwood** (*E. microcorys*) from further north in NSW, which is widely planted in the catchment as an ornamental.)

LANE COVE CATCHMENT EUCALYPTS: In compiling the new *Field Guide to the Lane Cove Valley* I encountered numerous pitfalls and problems of identification, and have been on three separate eucalypt identification short courses over recent years to try to get my head around the systematics, and improve my observational and keying abilities. The most recent has been the one by Van Klaphake (recently put on by Lane Cove Council). I'm still daunted by the amount I don't know, and so present this article with a degree of reticence, highlighting the grey areas and also homing in on particular aspects that relate to geology and geomorphology which I do know something about.

1. *Angophora* and *Corymbia*

Smooth-barked apple (*A. costata*) is a grow-anywhere species, with a tolerance that is amazing, as also is **red bloodwood** (*C. gummifera*), however other tall-growing species of the two genera are absent, or rare in the catchment. This would not be worthy of comment were it not for the fact that **yellow**

bloodwood (*C. eximia*) and **rough-barked apple** (*A. floribunda*) are both found growing happily on Hawkesbury Sandstone deep in the valley of tidal Berowra Creek. So, for that matter, are **grey gum** (*E. punctata*) and **grey ironbark** (*E. paniculata*). Berowra Creek is a deep valley valley and spans almost the full thickness of the Hawkesbury Sandstone, not quite down to the Narrabeen Group. The trees also often grow near the water where there are introduced nutrients, but the latter influence are present in the Lane Cove Valley also and so I suspect that the Hawkesbury Sandstone is not uniformly of low fertility as is sometimes assumed, and its lower horizons retain some of the character of the more fertile, underlying Narrabeen Group sandstones. By contrast, the Lane Cove River does not erode down further than halfway down through the 250 m thick Hawkesbury Sandstone and does not reach down to anywhere near the erosion level of Berowra Valley.

2. *The enigmatic scribbly gums*

These have been, and still are, frustrating! Traditionally, there have been five species of scribbly gum recognised in NSW - *haemastoma*, *racemosa*, *sclerophylla*, *rossii* and *signata*. However a 2004 statistical analysis of multiple characters by Pfeil and Henwood (Telopea 10-3, 2004) recommended reducing this to three - *E. haemastoma* (large-fruited, >7mm dia.) and *E. racemosa* (small-fruited <7mm dia.) and *E. racemosa* subsp. *rossii* (small-fruited inland species). This simplifies things in theory, but in the field locally the reality is still confusing, as there are clearly more contrasts between populations in different parts of the catchment than can be rationalised by fruit size variability alone. And some trees have fruit sizes that are borderline. Leaf size and shape is sometimes used as a guide, but very often, the taller the scribbly gum the smaller and narrower the leaves of the upper branches, and many sizes and shapes can be present on a single tree or across a group of neighbouring trees. Incidentally the Pfeil and Henwood scheme is not (yet?) incorporated into the Herbarium's plantNET database.

The scribbly gums next to the Horse Paddock near Auluba Reserve, South Turramurra have fruit of 7-8mm (*E. haemastoma*), whereas those of the upper STEP Track, only a hop, step and

jump away have much smaller fruit, around 4-5 mm (*E. racemosa*) but otherwise seem identical in form. The abundant, low, leaning, winter-grey-barked scribbly gums on the Pennant Hills ridgetop have fruit consistently around 7-8 mm diameter and so fit into *E. haemastoma*. But then the taller, straighter small-fruited (5-6mm) trees that often form near-pure, white-trunked stands on the Ryde side of the catchment, such as at Tunks Park and around Macquarie University, are different in character again. They do not look much like the Pennant Hills ridgetop ones at all, apart from the scribbles on their trunks, and differ in form and habit from most of the small-fruited ones of the STEP Track and other "small-fruit" localities on the Turramurra side such as Twin Creeks Reserve.

Reassuringly, Van Klaphake in his eucalypt course presents a practical, field-oriented solution to part of the i.d. problem. He postulates that the tall-growing trees on the Ryde side are indistinguishable from **northern scribbly gum** (*E. signata*). Inconveniently, this species is shown on the PlantNET distribution map as cutting out south of Morriset, so his differs from the orthodox Herbarium view. His own distribution map depicts *E. signata* populations in the south-west Lane Cove catchment as well as the Windsor-Penrith area, and also south of the Georges River. This provides a neat means of separating off the distinctive-looking Ryde trees as *E. signata*, but for the rest of the valley the confusion remains.

Some enlightenment emerges from an appraisal of habitat. Scribbly gums grow mainly on flat or undulating ridgetop terrain, in soils that are not heavily jumbled with jutting sandstone boulders and steps, and which tend to carry lateritic fragments plus hard, gritty clay subsoil pockets and domains. You can walk around and not see any sandstone outcrops at all in some places. Even before urbanisation, these spurs and sloping benches were always geologically and geomorphologically isolated from one another by the shale caps of the adjacent main watersheds and their quite different forest floras. They were also separated from each other by the tumbling, bouldery slopes, cliffs and valleys where scribbly gums do not establish easily. One ridgetop,

Thornleigh, never seemed to get scribbly gums at all despite it appearing perfectly suited. The trees seem to have had no natural means of spreading from ridgetop to ridgetop. So it may be that each locale has a distinct population of *E. haemastoma*, and/or *E. racemosa* (or intergrades between them) that does not interact with those of neighbouring ridges. Possibly each ridgetop may support its own distinct race, but that suggestion is stepping way outside my field and I've stepped far enough already.



Above: Scribbly gum bark pattern

Environments of the Past – the Princess Charlotte Bay Chenier plain

Article by Dylan Horne. Dylan grew up in Turrumurra and earned a Bachelor of Environmental Science from UNSW. His honours project involved reconstructing the fire regime of the last ~2500 years on Broughton Island, near Port Stephens. Dylan is currently at ANU in the final year of a PhD in coastal geomorphology, examining the development of the Princess Charlotte Bay Chenier plain.

Throughout my undergraduate degree in environmental science I became fascinated by what we can learn from studying our environment. My particular passion is the study of 'palaeoenvironments', or environments of the past. Palaeoenvironmental reconstruction is a field within environmental science that uses things that can be found in the present to reconstruct changes to environments of the past. I never cease to be amazed at that information that exists in places you'd never think of... The concentration of charcoal fragments in mud can tell you about past bushfire regimes. Preserved pollen can tell you about vegetation and climatic conditions. Changes in the growth position of shellfish on rock walls near the coast can reveal how sea levels have changed. Much of the evidence that has been used as the basis for global warming theory and contemporary climate change comes from the study of oxygen bubbles preserved in ice sheets.

Perhaps even more compelling are the timescales that are considered by some studies. My PhD research considers processes that occurred a few thousand years ago, but in the grand scheme of things this is at the short end of the scale. Some of the ice core studies of long term climate changes have yielded records of climate change that go back half a million years. (As an aside, to me this is a major flaw with the common mantra of climate change sceptics that 'global warming is simply a natural process'. True, but a record that goes back hundreds of thousands of years will have already comprehensively captured the full spectrum of 'natural' climate changes. If the scientist studying this record concludes that current climate changes are different to anything that has happened in the past, then it is probably true).

My PhD is in the field of coastal geomorphology: The study of how coastal landforms develop and change through time. The landforms I have devoted my attention to are called 'chenier plains'. The chenier plain I studied is located in Princess Charlotte Bay, on the east coast of far north Queensland (Figure 1). A chenier (pronounced shen-ee-er) plain is basically a muddy coastal plain that contains one or more sandy ridges, called 'chenier ridges' (Figure 2). On flat coastal plains that stretch for tens of kilometres, such ridges are very distinct features. They run parallel to the shoreline for

long distances, rise up to several metres above the surrounding plain, and are commonly between 10 and 100m in width.

As far as muddy coastal plains go, chenier plains are surprisingly interesting places. Like many coastal plains, over time they tend to build outward as rivers continually deliver sand and mud to the coastline. This process is called 'progradation'. The existence of an isolated, narrow sandy ridge sitting on top of a wide flat area of mud therefore represents a distinct change in the way that this process has occurred. Because it is possible to determine the time that each ridge was formed, this also means that chenier plains contain a record of how coastal processes have changed through time. This is the reason that people study them, and how they fit into the wider realm of palaeoscience. In describing any scientific study there are obviously many technicalities that can be agonised over at length, and to be honest, most are relatively uninteresting. For this reason I have chosen to stick to the broader context of 'palaeoscience' and simply use my work as an example of what can be learned from particular settings, and how this is done.

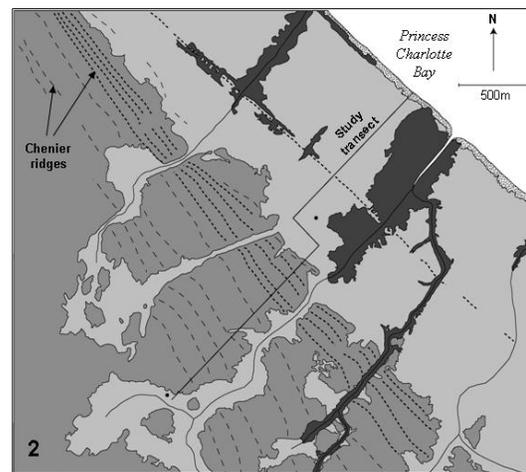
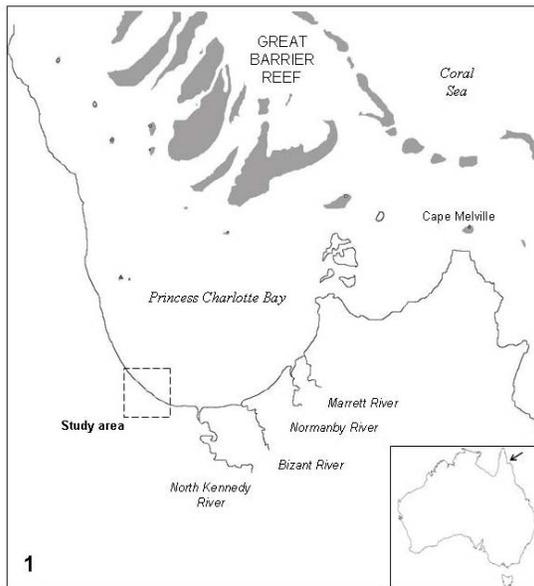
There are four rivers that empty into Princess Charlotte Bay, and for hundreds of thousands of years these have been carrying mud and sand to the coastline. This has resulted in a massive coastal plain being built. If you start at the coastline and walk landward, you can walk for up to 20km before you reach land that has *not* been built by the rivers. As I have focussed on events that have occurred over only the last few thousand years, I examined the youngest part of the plain, which stretches from the current shoreline (i.e. the part being formed now) to around 1km inland (which was laid down around 5000 years ago). Central to my entire thesis was determining when each of the chenier ridges in this area formed. The main part of the field work was therefore devoted to taking samples from each of these ridges.

I took samples from each of the five youngest chenier ridges in Princess Charlotte Bay and determined their age using a method called 'luminescence dating'. Using this method, it is possible to determine the time that has passed since a grain of sand was last exposed to light. It is a suitable method for dating chenier ridges because they are made of sand layers heaped up on top of each other. Determining how much time has passed since a particular layer was

buried therefore gives a reasonable estimate of when a ridge formed. The results I obtained suggested that the five ridges had formed between 2200 and 800 years ago. This enabled me to reconstruct how the coastal outbuilding process in Princess Charlotte Bay had changed between around 190 BC and the present time: Before 190 BC, a mudflat was being built. At around 190 BC, this suddenly changed and a large sandy ridge was built up along the shoreline. Sometime after this, the system switched back and a mudflat was again laid down in front (i.e. on the seaward side) of the sandy ridge. This switching back and forth continued until the present. Generally, mudflats were being laid down, but sandy ridges were again built at around 40 BC, 650 AD, 670 AD and 1190 AD.

With the timings of formation established comes the big question – what caused the ridges to form? There are several contenders: Sea level

changes, climate changes and phases of tropical cyclones being the most likely. Like I mentioned at the beginning, reconstructions of how each of these forces have changed through time have been developed by other palaeoscientists (e.g. past climates from pollen, and past sea level from shellfish positions). By comparing the records of climate, sea level change and storminess (many of which extend several thousand years in the past) to the timings of chenier ridge formation, I hope to arrive at an answer. People have previously suggested that climate changes were responsible, but the data does not support this conclusion. At this stage it looks more likely that minor sea level changes (in the order of 30 – 50cm) have played a significant role, but I am still working on this. A definitive answer will be difficult to establish, but I am enjoying the challenge of piecing together the puzzle in this very interesting corner of palaeoscience.



Environmental News : From the National Parks Association (NPA): Marine Parks under Siege!

NSW's marine life is facing new threats. The NSW Government is proposing to put a freeze on marine parks and sanctuaries in NSW, whilst anti-marine park lobbyists are gathering support to unwind protection proposed for two of our outstanding marine parks – the Solitary Islands and Jervis Bay Marine Parks. Both of these moves go against the overwhelming scientific and community support for sanctuary protection for our turtles, dolphins, seahorses and hundreds of other marine plants and animals. NPA urge you to urgently take the following steps:

1. Sign their online form to state you strongly disagree with the proposed freeze on new marine parks and sanctuaries in NSW. Visit www.marineaction.org.au to have your say.
2. Fill out their online submission forms supporting our proposed sanctuary zonings for both the Solitary Islands Marine Park and also Jervis Bay Marine Park. Both marine park forms can be signed at: <http://www.marine.org.au/marineaction.htm> .

STEP Walks

STEP offers a variety of walks for both experienced and casual (“recreational”) walkers. We started the programme in February with a recreational walk and intend to alternate on a monthly basis. STEP has adopted safe walking guidelines to 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 5 September 2010 – “Dastardly deeds... and a walk in Fairyland”

Description: Explore the surprising Lower Land Cove River Circuit and its many attractions, including varied bushland, river views, Fairyland Picnic Area, one of Sydney’s largest footbridges and the site of a long ago famous murder.

Meet: Casuarina Flat, southern end of River Avenue, North Ryde – turn off at Fullers Bridge to the South (not into Lane Cove National Park).

Estimated duration: 2 – 3 hours **Grade/difficulty:** Medium

Contact: Jim Wells – wellsjc@ozemail.com.au or phone to 9416-1606. Numbers may be limited, so bookings are essential (but not after 8 pm please).

Sunday October 17 Lover’s Jump Creek, Turramurra

Lover’s Jump Creek has its origins near Turramurra station and plunges over a waterfall near Burns Road into a valley that is one of the finest in Ku-Ring-Gai. Our walk will take us along the creek and some of the upper reaches of the valley. We will see the remains of the Nicholson’s quarry which was worked during the late 1920s. We will climb up the side of the valley and exit near Samuel King Park. We will enjoy coffee at North Turramurra shops before returning to our cars along Bobbin Head Road.

Meet: McRae Place. Suggest park cars at top of McRae Place where it joins Burns Road and walk down McRae Place to end where we will meet. This will be easier to return to our cars after the walk.

Length: 3km

Estimated duration: 1-2 hours

Difficulty: Moderate

Contact: Robert Bracht if you are coming on the walk. Robert’s details are Robert.bracht@hotmail.com or 0422 088 305.

November Walk: Details TBA

A Failed Harvest in Russia – rising temperatures raise world food prices

Article by Lester R. Brown of the Earth Policy Institute in Washington. August 2010

The rule of thumb used by crop ecologists is that for each 1 degree Celsius rise in temperature above the optimum we can expect a reduction in grain yields of 10 percent. With global temperature projected to rise by up to 6 degrees Celsius (11 degrees Fahrenheit) during this century, this effect on yields is an obvious matter of concern.

Around midnight on Wednesday, August 11th, a group of commodity analysts gather at a meeting site in the massive South Building of the U.S. Department of Agriculture (USDA) in Washington, D.C.

USDA produces an estimate of world grain production, consumption, and trade by the 12th of each month. The gathered analysts consult reports from a worldwide network of agricultural

attachés, satellite images of crop vegetation, and the latest weather reports. The widely respected World Agricultural Outlook Board’s report, though little known to the public, is of incalculable value to commodity traders, agribusinesses, and farmers—some of whom stand to gain or lose fortunes on the data it contains.

All eyes will be on USDA's new grain numbers. When the last report was released on July 9th, it showed that the previously estimated 2.2 billion ton world grain harvest had dropped by 18 million tons—a fall of nearly one percent. This month's report will incorporate the effects of a continuing record heat wave and drought on the grain harvests of Russia, Kazakhstan, and Ukraine, countries that account for one fourth of world wheat exports. The crop losses from the searing temperatures prompted Vladimir Putin's early August announcement that Russia would ban grain exports at least through December, further raising concerns about the adequacy of this year's global harvest.

During the two month span between June 9th and August 9th, the world price of wheat jumped by 66 percent. The USDA's August estimate will show the world harvest shrinking further. But by how much? And how will it affect world grain prices?

Russia's grain harvest, which was 94 million tons last year, could drop to 65 million tons or even less. West of the Ural Mountains, where most of its grain is grown, Russia is parched beyond belief. An estimated one fifth of its grain land is not worth harvesting. In addition, Ukraine's harvest could be down 20 percent from last year. And Kazakhstan anticipates a harvest 34 percent below that of 2009. (See data at www.earthpolicy.org.)

This seven-week crop-withering heat wave is unprecedented for western Russia. July in Moscow was the hottest month in 130 years of recordkeeping. Wildfires are consuming hundreds of thousands of acres of forest, grassland, and ripe wheat fields that have been dried to a crisp in the relentless heat. By early August, hundreds of new fires were breaking out each day. The army was mobilized to assist local fire control units in trying to quell more than 550 fires raging across more than 430,000 acres.

The heat and drought that are shrinking the grain harvest are also reducing grass and hay growth. With less grass for grazing and less hay to carry Russia's 21 million cattle through the long winter, farmers will have to feed more grain. In late July, Moscow released 3 million tons of grain from government stocks for use by livestock producers and millers. Supplementing hay with grain in cattle rations is costly, but the alternative is to reduce herd size by slaughtering livestock. This would, however, lead to higher milk and meat prices.

Russia and Ukraine together account for nearly half of world exports of barley, a widely used feed grain in Europe and the Middle East. This year importers will have to look elsewhere. Russia itself could become a grain importer. Indeed, it is hoping to get exportable supplies from Kazakhstan and Belarus, fellow members of a new customs union.

The Russian ban on grain exports and possible restrictions on exports from Ukraine and Kazakhstan could cause panic in food-importing countries, leading to a run on exportable grain supplies. Beyond this year, there could be some drought spill over into next year if there is not enough soil moisture by late August to plant Russia's new winter wheat crop.

Even as the grain export supply is shrinking, China—essentially self-sufficient in grain for several years—has in recent months turned quietly to Canada and Australia for over half a million tons of wheat from each and to the United States for a million tons of corn. A Chinese consulting firm projects China's corn imports climbing to 15 million tons in 2015. China's potential role as an importer could put additional pressure on exportable supplies of grain.

The bottom line indicator of food security is the amount of grain in the bin when the new harvest begins. When world carryover stocks of grain dropped to 62 days of consumption in 2006 and 64 days in 2007, it set the stage for the 2007-08 price run-up. World grain carryover stocks at the end of the current crop year have been estimated at 76 days of consumption, somewhat above the widely recommended 70-day minimum. But how much will carryover stocks drop in the new USDA crop estimate? No one knows how far grain prices will rise in the months ahead. What we do know, however, is that the prices of wheat, corn, and soybeans are actually somewhat higher in early August 2010 than they were in early August 2007, when the record-breaking 2007-08 run-up in grain prices began. Whether prices will reach the 2008 peak again remains to be seen.

Are this record heat wave and the associated crop shortfall the result of climate change? Not necessarily. No single heat wave, however extreme, can be attributed to global warming. What we can say is that heat and drought similar to that experienced in Russia are projected to occur more frequently as the earth's temperature continues to rise in the decades ahead. This Russian heat wave lets us see just how brutal future climate change can be.

That intense heat waves shrink harvests is not surprising. The rule of thumb used by crop ecologists is that for each 1 degree Celsius rise in temperature above the optimum we can expect a reduction in grain yields of 10 percent. With global temperature projected to rise by up to 6 degrees Celsius (11 degrees Fahrenheit) during this century, this effect on yields is an obvious matter of concern.

Each year the world demand for grain climbs. Each year the world's farmers must feed 80 million more people. In addition, some 3 billion

people are trying to move up the food chain and consume more grain-intensive livestock products. And this year some 120 million tons of the 415-million-ton U.S. grain harvest will go to ethanol distilleries to produce fuel for cars. Surging annual growth in grain demand at a time when the earth is heating up, when climate events are becoming more extreme, and when water shortages are spreading makes it difficult for the world's farmers to keep up. This situation underlines the urgency of cutting carbon emissions quickly—before climate change spins out of control.

STEP Membership – get fit and get a friend to join!

Our natural and built environment is under constant threat from many quarters. While STEP is the largest community-based environmental group on the upper North Shore, we are always looking to increase our membership. A big membership base is enormously helpful in us being able to gain attention from local councils, politicians and land managers when important issues need to be addressed.

STEP has produced a new leaflet which members who like to walk can use to letter drop locally, or beyond. We have found that this is a very effective way of both staying healthy and getting new members to join STEP. Volunteers who would like to help should give Barry Tomkinson a call on 0412 250 595 or email him at Barryt@bigpond.net.au

Membership*		Unit price	Quantity	Cost
Single	1 year	\$20		
	3 years — saving of \$8	\$52		
Family	1 year	\$25		
	3 years — saving of \$12	\$62		
Life		\$250		
Sydney's Natural World (cost to non members is \$47.50)		\$40		
A Field Guide to the Bushland of the Upper Lane Cove Valley		\$30		
Maps of Walking Tracks (cost to non-members is \$20)				
Lane Cove Valley		\$15		
Middle Harbour Valley. Sheets 1 and 2 Bungaroo and Roseville Bridge		\$15		
Middle Harbour Valley. Sheets 3 and 4 Northbridge and North Harbour		\$15		
Donation (donations of \$2 or more are tax deductible)				
Total cost including packaging and postage				

Payment: By either cheque (send completed form and cheque made payable to "Step Inc" to the address below or by electronic banking (transfer payment to Bendigo: BSB 633-000 account number 13868-7991).

Contact: Email: secretary@step.org.au Post: PO Box 697 Turramurra NSW 2074
Web: www.step.org.au

***Subscription renewals:** All members will be advised when their renewals fall due.