WILDLIFE DIARY

October 2012

Great Finds

The storm birds have returned. They can be heard day and night. **Common Koel**, *Eudynamys scolopacea*, (eu, Gk, well,good; dynamis, Gk, power; orientalis, Latin, eastern) and the **Channel Billed Cuckoo**, *Scythrops novaehollandiae*. (Scythros, Gk, sullen faced).

Australian King Parrot, *Alisterus scapularis* are taking advantage of suburban gardens in Alexandra Hills and **Bush Curlews**, *Burhinus grallarius* are in nearby parks.

POPULATION MATTERS

Human activities are reducing genetic, species and ecosystem biodiversity in Australia and population growth is a major driver

http://population.org.au/articles/2012-08-31/mr-population-growth-drives-biodiversity-loss

Habitat Connectivity

Research undertaken in Moreton Bay showed habitat connectivity can promote reserve performance, with connectivity between reefs and mangroves improving the performance of a reserve in promoting the abundance of harvested species. This research strongly supports recommendations for including habitat connectivity in reserve design (Olds *et al*, 2012).

Climate Change and plants

The available evidence implies that plants will not die directly from rising temperatures projected to occur by 2070. But high temperatures will increase water stress during drought, resulting in more drought deaths; competitive relationships will change; and fire risk will often increase. In habitats where water is limiting increased water stress could prove very significant, and in wet habitats, altered competition cause significant shifts in species composition, especially in habitats where plants with mainly tropical distributions overlap with temperate species, as occurs in Southeast Queensland (Low, 2011).

Mount Cotton listed plant under threat

Macadamia integrifolia (**Macadamia Nut**) listed under the *EPBC Act* is under threat from land clearing and habitat fragmentation. Consequences are change in community composition, habitat degradation due to edge effects, weed invasion, reduction in connectivity among populations, and potentially reduced gene flow through changes in pollination and dispersal vectors. Adjacent land uses such as grazing, urban/extractive development and changed hydrology) can adversely affect remnant patches of rainforest vegetation where M. integrifolia are found. The proposed **Supper Quarry** at Mt Cotton represents a real threat to our remaining few specimens of this naturally occurring listed species.

Did You Know!

Did you know Mangroves live in a dynamic environment? They exist in a landscape that alternates between a saline watery world to one where they are exposed like any other terrestrial plant to the radiant sun and whims of the weather. Like terrestrial plants their roots need oxygen to allow them to undertake respiration but how can they when submerged in water and/or mud, devoid of oxygen? How do they cope?

Mangroves all appear to have extensive amounts of aerenchyma, a tissue in which significant quantities of oxygen is stored. Even though mangrove roots can be submerged beneath water they store sufficient oxygen in the gas spaces to maintain aerobic conditions within the root, irrespective of the status of the tide. Grey Mangroves, Avicennia marina, use their pneumatophores, those peg- like roots that arise from the aerobic mud to provide root ventilation. However, in Grey Mangroves pneumatophores rarely develop before the mangrove is one year old. So how does a young seedling survive?

For a seedling not only does the developing root system lack the direct access to the atmosphere provided by pneumatophores but may be totally submerged for periods of time during a day preventing gas exchange. No problem, as the seedling grows there is extensive development of *aerenchyma* which can be shown to form a continuum of gas spaces throughout the plant from the spongy mesophyll of the leaf, through the petiole, stem, hypocotyl and into the root. While the plant is small, this continuum provides the possibility of transfer of photosynthetic oxygen from leaves to roots and of respiratory carbon dioxide to the leaves when the plant is isolated from the air by the rising tide. The early development of large adventitious roots containing gas spaces which occupy up to 70% of their volume permit storage of oxygen. When the plant is exposed all of these gas spaces communicate with the air through lenticels (an airy aggregation of cells within the bark of the stems and roots) developed on the stem and hypocotyl (Sydney University, 2010).

Great Walks

If you want to see a Glossy Black Cockatoo, *Calyptorhynchus lathami* then I recommend you visit Macleay Island, Russell Island, North Stradbroke Island, West Mt Cotton or the bushland between Cleveland and Alexandra Hills. The Glider Reserve is also worth a visit.

WWW

Curlew Watch
http://curlewwatch.azurewebsites.net/

Community Science

Wildlife Queensland Bayside as do Wildlife Queensland Head Office and many other community groups undertake many and varied community science projects. A number of these are run purely by Wildlife Queensland many others are collaborative arrangements. The question is, do they produce meaningful results?

Ecological surveys are important. When done in a rigorous and systematic manner they can inform us about a species' population size and trends, habitat preferences and changes in distribution. They can tell us what to manage, when, if our management is working and alert us to the need for policy reform. But systematic surveys over large areas by professionals are usually expensive. Volunteer surveys, on the other hand, are relatively cheap; and they are also often the only source of available information. The important question then is: How reliable is this volunteer-collected information? (Szabo & Possingham, 2012).
Source: http://www.decision-point.com.au/images/DPoint_files/DPoint_64/dp64%20p8%20Szabo%20citizen%20science.pdf

Published research by Paul Finn, former Moreton Bay Seagrass Watch, and others revealed that community science can produce good scientific results.

The seagrass cover data collected by volunteers through Moreton Bay Seagrass Watch was generally of high quality. Taking volunteer data and assessing it using trained scientist chiefly ended up with the same results. For the majority of cases, the visual estimates of per cent seagrass cover made by volunteers and scientists at the site level over time were closely correlated and accurate. This is encouraging, particularly as sources of error were potentially numerous. Although photographs were scored consistently by one of the same three coordinating scientists, they were supplied by up to 72 different volunteers. If a sample had been incorrectly labelled in the field, the photo would not have matched the sample scored by the scientist in the office. Also, if the image quality had been poor (for example out of focus, underexposed or underwater) or there had been large amounts of macroalgae covering the sample, then misrepresentation of the actual amount of seagrass would have been likely. The 10 cases where inaccuracies were identified came from six different sites. One site returned inaccuracies five times out of 13 monitoring sessions, however the other five sites returned inaccuracies only once each (Finn *et al*, 2010).

Other researchers found similar outcomes this time involving bird counts. They compared data from the Mount Lofty Ranges from this national volunteer-based bird atlas program with data from the NCSSA/UQ survey. The Birds Australia (BA) survey was more extensive in that it collected data from a much larger portion of the ranges. The NCSSA/UQ survey, however, was more systematic; it collected data using a robust stratified sampling design. Both datasets have several thousand observations over nine years, collected using the same method – the standard 2-ha/20-minute survey technique used by Birdlife Australia (i.e. observers have two minutes to list all species detected in an area of two hectares). The site selection protocol is the only major difference between the two datasets: BA volunteers were free to choose their sites and the time of their visit, while those surveying under the NCCSA/UQ protocol were instructed to go to particular sites at particular times. (Szabo & Possingham, 2012).

These two datasets offered a good opportunity to test 'professionals' against 'citizens', and they expected their analysis to find significant differences. To their surprise, however, the results were surprisingly close – and the small differences that were detected are readily explained (Szabo & Possingham, 2012).

The good news is quality Community Science can produce good science. What is important to recognise and its suggested by Finn *et al* (2010) data quality control involves volunteers receiving appropriate training to maintain this quality.

Never doubt that a small, group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has. Margaret Mead.

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