WILDLIFE DIARY

Great Finds April 2009 Did You Know ?

A **Blue-lined octopus**, *Hapalochlaena fasciata*, has been found along Macleay Island foreshore. It's one of the blue-ringed octopuses; it has an extremely powerful venom that is used to kill their prey of crabs and small fishes. They are very shy and non-aggressive creatures that prefer to hide under ledges and in crevices.

Bag-shelter Moth, *Ochrogaster lunifer*, found in gardens.

POPULATION MATTERS

No goal is more crucial to healing the global environment than stabilizing population.

Al Gore

Processionary caterpillars

Ever seen caterpillars following each other head-to-tail and form long chains in late summer and autumn? These are known as 'itchy grubs', more appropriately, caterpillars of the Bag-shelter Moth, *Ochrogaster lunifer*. Leave these critters alone because contact with their long hairs causes an intensely itchy dermatitis and can result in severe allergic reactions in some people.

Large numbers of the caterpillars rest together in a silken bag, leaving it to forage for leaves. In coastal areas, the bag is located on the ground at the base of the trunk of the food tree; while in inland areas the bag is located up in the canopy. Both probably belong to two different species.

In October/November each female moth lays a single batch of 150–500 eggs at the base of a wattle tree. She then covers them with a thick coating of scales from the large tuft at the tip of her abdomen. The result is a conspicuous white egg mass about 2 – 3 cm in diameter. Often other females will lay eggs at the base of the same tree.

The eggs hatch into tiny caterpillars that stay within the egg mass and do not feed. These shed their old skins and emerge as second stage caterpillars which feed on leaves. They go through a series of eight moults. During the day, the second and third stage caterpillars travel up into the canopy where they feed together on the wattle leaves and return to the base of the tree at night. Older caterpillars travel up into the leaves to eat at night returning to the base of the tree before morning.

As the summer progresses the nest grows and is filled with the droppings of the caterpillars and their cast skins. Fully grown in May they leave the wattle tree crawling away in a long procession in groups of ten or less. Some travel up to 150 metres from the tree before they burrow into the ground to form a cocoon in a chamber emerging as adult moths in late October.

Did you know given the risk of high rates of sea-level rise, a prudent adaptive strategy is to adopt strict zoning laws that prevent construction of infrastructure too near to sea-level? Further discussion is required on precisely what that level might be (and it depends somewhat on the expected lifetime of the infrastructure), but a value around 5 m above current sea-level would be conservatively prudent for long-lived infrastructure. Prof. Will Steffen. 30/5/08.

Did you know hill-topping in butterflies is a very complex behaviour that often facilitates meeting of the sexes. Many butterfly species, especially in the families Hesperiidae, Papilionidae and Lycaenidae appear to be obligatory hill-toppers and tend to congregate on hill or ridge tops that are usually higher than the surrounding countryside. The nature of the sites varies and a site may be as small as a few square metres or may cover several hectares, or display minor or very marked topographic relief. The same sites are used year after year, whilst apparently similar nearby sites may not be used. Sites do not necessarily provide nectar food sources for the butterflies nor food plants for the next generation of caterpillars. Hill-top aggregations are essential for continuity of the reproductive cycle of some butterfly species, and hill-top sites may constitute vital focal points for such aggregations.

Marine scientists have found that Australia's east coast climate zones have moved south by 200 kilometres over the past 60 years.

Great Walks

A great walk once existed from Gramzow Road Mt Cotton to the ridge line overlooking Mt Cotton. Residents are now seeking to see this great walk re-opened after being damaged by quarrying activities. With spectacular views and wildlife, we look forward to walking this wonderful trail once again.

WWW

Population matters
www.population.org.au

Prof Will Steffen - facts
http://www.aph.gov.au/house/committee/ccwea/coastalzone/subs/sub045.pdf

Australian flora
http://www.anbg.gov.au/flora/index.html

Fungi

The Kingdom Fungi includes some of the most important organisms, both in terms of their ecological and economic roles. By breaking down dead organic material, they continue the cycle of nutrients through ecosystems. In addition, most vascular plants could not grow without the symbiotic fungi, or **mycorrhizae**, that inhabit their roots and supply essential nutrients. Other fungi provide numerous drugs (such as penicillin and other antibiotics), foods like mushrooms, truffles and morels, and the bubbles in bread, champagne, and beer.

Fungi also cause a number of plant and animal diseases: in humans, ringworm, athlete's foot, and several more serious diseases are caused by fungi. Fungi are more chemically and genetically similar to animals than other organisms, which makes fungal diseases very difficult to treat. Plant diseases caused by fungi include rusts, smuts, and leaf, root, and stem rots, and may cause severe damage to crops. However, a number of fungi, in particular the yeasts, are important "model organisms" for studying problems in genetics and molecular biology.

While fungi are not uncommon fossils, their fossils tend to be microscopic. Fungal filaments have been found in Cretaceous amber from northern France.

As part of their life cycle, fungi produce spores and from these haploid **hyphae** grow and ramify, and may give rise to asexual sporangia, special hyphae which produce spores without meiosis. The sexual phase is begun when haploid hyphae from two different fungal organisms meet and fuse. When this occurs, the cytoplasm from the two cells fuses, but the nuclei remain separate and distinct. The single hypha produced by fusion typically has two nuclei per "cell", and is known as a **dikaryon**, meaning "two nuclei". The dikaryon may live and grow for years, and some are thought to be many centuries old. Eventually, the dikaryon forms sexual sporangia in which the nuclei fuse into one, which then undergoes meiosis to form haploid spores, and the cycle is repeated.

Fungi are not able to ingest their food like animals do, nor can they manufacture their own food the way plants do. Instead, fungi feed by absorption of nutrients from the environment around them. They accomplish this by growing through and within the substrate on which they are feeding. Numerous hyphae network through the wood, cheese, soil, or flesh from which they are growing. The hyphae secrete digestive enzymes which break down the substrate, making it easier for the fungus to absorb the nutrients which the substrate contains.

This filamentous growth means that the fungus is in intimate contact with its surroundings; it has a very large surface area compared to its volume. While this makes diffusion of nutrients into the hyphae easier, it also makes the fungus susceptible to dessication and ion imbalance. But usually this is not a problem, since the fungus is growing within a moist substrate. Most fungi are saprophytes, feeding on dead or decaying material. Fungi is one of the few organisms that can breakdown lignin in wood to its basic carbon form. This helps to remove leaf litter and other debris that would otherwise accumulate on the ground. Nutrients absorbed by the fungus then become available for other organisms which may eat fungi. Very few fungi actively capture prey, one being *Arthrobotrys* which snares nematodes on which it feeds. Many fungi are parastitic, feeding on living organisms without killing them. Ergot, corn smut, Dutch elm disease, and ringworm are all diseases caused by parasitic fungi.

Most plants rely on a symbiotic fungus to aid them in acquiring water and nutrients from the soil. The specialized roots which the plants grow and the fungus which inhabits them are together known as **mycorrhizae**, or "fungal roots". The fungus, with its large surface area, is able to soak up water and nutrients over a large area and provide them to the plant. In return, the plant provides energy-rich sugars manufactured through photosynthesis. Examples of mycorrhizal fungi include truffles and *Auricularia*, the mushroom which flavours sweet-and-sour soup.

In some cases, such as orchids, the young plant cannot establish itself at all without the aid of its fungal partner. In liverworts, mosses, lycophytes, ferns, conifers, and flowering plants, fungi form a symbiotic relationship with the plant. Because mycorrhizal associations are found in so many plants, it is thought that they may have been an essential element in the transition of plants onto the land. Source: http://www.ucmp.berkeley.edu/fungi/fungi.html

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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