

Diversity: Images of Nature

Liz Tasker Andrew Netherwood Sharon Robinson Julie Wright

17th February- 6th of March 2009

The Reading Lounge University of Wollongong Library.

Andrew Netherwood.

Andrew Netherwood is an exhibiting artist, photographer and award winning multimedia designer. He has contributed his web and graphic expertise to the ICB for many years and has been closely involved in the ICB Photographic Competitions as printer, graphic designer and judge. He will be helping to produce the ICB Photo competition Exhibition in August of this year at the Wollongong City Gallery.

1) Oxygreenstone

Taken at Angourie Beach in northern NSW. Like some of Sharon's moss close-ups this shows oxygen production by photosynthesizing plants, without which all higher life on this planet would not exist. In this instance the oxygen is being produced by an algal mat in an intertidal rock pool.

2) WebDrops

A rather magical spiders web at Chuson-ji temple, Hiraizumi in Iwate prefecture, Northern Honshu, Japan. The epitome of fragility, strength, beauty & connectedness. (Forgive the quality – it was overcast, windy, raining and no tripod or IS. Did the best handheld I could)

3) Sacred Beauty

Nelumbo nucifera, The Sacred Lotus is a truly astonishing plant on all levels from its material properties to its spiritual symbolism in certain cultures. Sharon Robinson is researching the remarkable physiological property of the flower head to heat itself and maintain a temperature of 32C during its flowering phase, a property known as thermogenesis.

4) Queen of the Night

Epiphyllum oxypetalum is a fast growing epiphyte that is now commercially available and easily cultivated. Large specimens can often have 10 or more of these fabulous blooms at one time. They open at dusk and have an indescribable narcotic scent, but last only one night.

5) **Shade of Grey**

In the Adelaide Hills we stopped by chance to read the map. Next to the road on this moody and overcast day, was this imposing dead tree which shows evidence of considerable parasitism from a Mistletoe. The Mistletoe may not have killed this tree, but the biology and ecology of the Mistletoe is very interesting and currently its compounds are being researched as a promising treatment for tumors.

6) **'Flaking Paint' Palm**

This is the trunk of a magnificent palm from Madagascar - *Bismarckia Nobilis* . I found the various textures fascinating. The "flaking paint" is actually a waxy coating secreted by the plant which can be seen fresh at the top of the image. There is a lot of research into why plants produce these coatings. Some waxy coatings are certainly to protect the plant from damage due to excess light. They may also reduce the amount of water loss from the plant and deter predators.

34) **Holier Than Thou**

A very selective feast by an unknown predator on these leaves in the Lost Gardens of Heligan on the south coast of Cornwall in England. Red colouration in leaves, caused by plant pigments called anthocyanins, may deter predators. The green leaf here certainly looks to have been the more tasty of the two.

36) **Regrowth**

Fire Ecology has been a research focus within the ICB for many years and currently this is spearheaded by the Centre for Environmental Risk Management of Bushfires. Bushfires are important in shaping Australian ecosystems and this image which was taken in the Jervis Bay National Park in 2005, shows the vigour of new growth and renewal after the fire's devastation has passed.

37) **Eye of the Fly**

2 flies (*Chrysomya varipes*) caught in a water droplet on a Lotus Leaf. The common name is the 'small hairy maggot blowfly' and these flies are among an assortment of common blowfly species that breed in carrion (dead animal tissue) in eastern Australia. Their reproductive habits mean that they frequently occur in the bodies of victims of murder and suspicious death. Dr James Wallman of the ICB is a forensic entomologist whose research includes flies like these.

Liz Tasker

Liz Tasker is a research scientist in the Fire Ecology Unit of the NSW Department of Environment and Climate Change, and a visiting fellow associated with the ICBL and Centre for Environmental Risk of Bush Fires at UoW. While her professional research interests revolve around understanding the impacts of bushfires on native animals and plants, in her spare time she likes to travel to wet places that rarely burn! The photographs in this exhibition feature animals from recent trips to the national parks of Malaysia, Japan, China and the USA.

- 7)** The “snow monkey” or **Japanese macaque** (*Macaca fuscata*) is famous for its habit of sitting in hot springs in the high, snow-covered Japanese Alps of Honshu (the main island). This behaviour evolved quite recently, after one particular monkey living near the village of Jikogudani observed humans enjoying a hot soak in the outdoor hot bath of a local guesthouse, and jumped in with them. Finding it most enjoyable, the behaviour has since been learnt by others in the troop, and the local community (of people) have since built the monkeys their own onsen.
- 8)** **Snow leopards** (*Panthera uncia*) live in the high mountains of Central Asia from Afghanistan to China, and from Russia to Bhutan, and it is thought that between 3,500 – 7,000 remain in the wild. More precise estimates are difficult with such a cryptic animal. They are well adapted to their harsh environment with thick fur, small ears, big furry feet for walking on snow, and a very long tail used for balance and like a blanket.
- 9)** **Whooper swans** (*Cygnus cygnus*) migrate many hundreds of miles each year from their summer habitat to wintering sites in northern Europe and eastern Asia. Lake Kussharo in Hokkaido is a particularly popular over wintering site, as the natural hot thermal springs along the eastern shore prevent the water completely freezing over even in the middle of bitterly cold winters. Whooper swans pair for life, and their grey-coloured offspring stay with them as a family throughout the winter.
- 10)** **Steller’s sea eagles** (*Haliaeetus pelagicus*) are one of the largest birds of prey in the world, weighing an average of 6.8 – 9 kg and with a wingspan of up to 2.4 m! These magnificent birds spend summer in the Siberian Arctic, breeding on the Kamchatka Peninsula, but in winter most migrate south to Hokkaido in Japan and the neighbouring Kurile Islands, following the advancing ice as the northern seas freeze over.
- 11)** **Whooper swan** (see description for Image 9)

12) The coyote (*Canis latrans*) is found in central and north America, from Panama to Alaska. Although heavily persecuted in the past by hunting and still unpopular with farmers, the coyote is an enterprising, adaptable and intelligent animal. From a distance the more heavily furred mountain subspecies are often mistaken for wolves, but can be distinguished by their lighter build and more delicate, pointed face.

27) Bell's angle headed dragons (*Gonocephalus bellii*) are usually well camouflaged, but when disturbed will often raise their spectacular rainbow-coloured dewlap in defence. They live in the rainforests of Thailand, peninsular Malaysia and Borneo. This one was photographed in Taman Negara, the largest and oldest national park in Malaysia.

28) The Green Crested Lizard (*Bronchocoela cristatella*) is a handsome dragon of the tropics. Up to 58cm in length, it lives in the rainforests of Thailand, Malaysia, Singapore and Borneo. Despite its bright colour and beady eyes it is easily overlooked as it sits motionless high in the trees.

35) This spectacular caterpillar is of the **Emperor Gum Moth** (*Opodiphthera eucalypti*) and lives in the eucalypt forests and woodlands of eastern Australia, including those around Wollongong and Sydney. The adult moth is of a similarly solid build but is a soft, camouflaged pink-fawn colour with brush-like antennae.

Sharon Robinson.

Sharon Robinson is an Associate Professor at the University of Wollongong and researches the effect of climate change on Antarctic Plant communities. She has led five research trips to Continental Antarctica between 1996-2008 and one to Macquarie Island in 2003. Sharon's photographs in this exhibition are from these trips to Antarctica and feature her research sites and the mosses and lichens that she works on as well as the stunning but harsh environment that they grow in.

MICROSCAPES

In **(13) Invasion, green on green**, *Bryum pseudotriquetrum* (the light green moss) is invading over the top of the endemic species *Schistidium antarctici* (olive green). The beige stuff on the right is dead moss on the edge of the station's melt water pond, possibly caused by an accidental discharge of hot water.

(14) Moss, blowing bubbles show how when moss photosynthesises under water, bubbles of oxygen accumulate on the moss surface. We have dated turfs like these that are up to 6 cm deep and over a hundred years old. Life is tough and moss growth is very slow (0.3-3.00 mm a year) in Antarctica, but these mosses were blowing bubbles before Amundsen reached the South Pole.

In **(15) Invasion, green on red**, *Bryum* is again invading over the top of *Schistidium*. A third species *Ceratodon purpureus* can be seen on the tops of the mounds (red brown). The moss in these drier sites is present as undulating turfs formed as the turf freezes and heaves upwards in the winter months.

LANDSCAPES

We have established permanent transects so we can monitor how climate change is impacting the moss communities in Antarctica. We work at two main sites. The first, Robinson Ridge, is about 10 km from Casey Station and has a field hut where we can stay while we are working.

Robinson Ridge is our favourite field site, **(16) The best field site in the world**, The hut has views over the Vanderford glacier and a penguin colony on a nearby island. On a calm, sunny day the sea almost looks good enough for a dip and sometimes there are whales frolicking in the water.

(17) Moss along an ice stream was taken as we started work early one morning and the ice was still frozen along the melt stream at the field site. Antarctic mosses have to be able to survive frequent freeze-thaw events even in midsummer.

Near the field site an interesting rock was left behind as the icesheet retreated thousands of years ago. **(18) Disappearing glaciers 2** reminds us that these processes are occurring with increasing frequency due to climate change. In the background of this picture are ice cliffs and the ice sheet. The moraine line is visible on the left of the picture.

MICROSCAPES 2

Climate change is making it too dry and the mosses are showing signs of stress, evident from the intense red colour that shows the moss is producing sunscreen pigments. If these sites keep drying out, lichens will overrun the moss as in **(19) Invasion, grey on green**.

(20) Moss, oxygen and ice see **(14)** for description

ICE SCAPES

(21) Spaberg @ Midnight 2 were taken just off the coast of Mawson. The spa berg has rolled over so many times that a pool has formed in the centre.

In February 2005 we were trying to get to Mawson by ship but the sea ice was too thick so the ship had to turn around and go back to Hobart. We waited for a few days hoping the wind would blow the ice out but as you can see in these pictures the sea was as calm as a millpond. **(22) Iceberg Alley Mawson**

Wilkins Aerodrome is just graded ice on top of about half a kilometre of ice.

(23) Approaching the blue ice runway was taken as we were coming into land, you can see the blue ice underneath a thin coating of fresh snow. (January 2008)

SKYSCAPES

The Australian Antarctic Division commenced regular summer flights to Antarctica in January 2008 and we were on the second passenger flight. Rather than spending 7-10 days on the ship we flew from Hobart to Wilkins Aerodrome near Casey Station in just 4 hours in an Airbus 319. I left Adelaide at +40°C and 6 h later touched down on the ice at -40°C Quite a difference! Four of the photographs are through the jet's windows - looking down onto the sea ice and then blue ice before we landed.

(24) Antarctic sea ice from the air 1 shows thin ice cover and the midnight sunset/sunrise on the horizon. **(25) Antarctic sea ice from the air 2** was taken as we started to fly over the edge of thicker sea ice with fragments of frazzle ice off to the left.

Julie Wright

Julie Wright has a background in science, fine arts and photography. As the ICBs Research Officer she provides support for the wide range of research that the Institute members and students undertake. Julie has been one of the organisers of the ICB photo competition and exhibitions. Her photos are from her travels in New Zealand and Australia.

26) Foliose Lichen. New Zealand.

This foliose (leafy) lichen is found on the South Island of New Zealand. Lichen is algae and fungus living together in a symbiotic relationship (one that is mutually beneficial). Lichens need to be exposed to sunlight to photosynthesize. The brown 'cups' or apothecia are the fruiting bodies of the lichen. Lichens are often a sign of a clean environment.

29) Milford Sound. New Zealand

The weather in Milford Sound is often inclement with around 7m of rain falling each year. This is one of the highest yearly rainfall amounts in the world. Dense rainforest covers the rock walls which rise steeply over 1200 metres out of the water. This photo was taken late afternoon at one of the drier times.

30) Huntsman Spider. New South Wales.

There are many species of huntsman spiders in Australia. They belong to the Family Sparassidae. Some species can reach over 160mm in leg span. The female can lay up to two hundred eggs which she guards for around three weeks. We found this spider perched on a fence post at Kioloa on the South Coast as we headed for a field site. Huntsmans feed on insects and other small invertebrates.

31) Tree Ferns. New Zealand

The west coast of the South Island of New Zealand experiences high amounts of rainfall (on average 3m per year). This has led to an abundance of tree ferns which grow in the lush native forests. The trunk of a tree fern is not really a true trunk as it is in other trees. It is made up of a collection of rhizomes or roots all packed together into a rigid supporting structure. Water and nutrients are carried to the fronds from the soil through these.

32) Giant Maori Wrasse. Queensland.

There was a large dark shape lurking beneath the boat as we ascended from our dive at Thetford Reef off Cairns. This beautifully marked Giant Maori wrasse (*Cheilinus undulates*) swam over and circled us. He was around 1.2m in length but they can grow to over 2m. As they grow slowly and mature late they are vulnerable to fishing. Thankfully, though they are protected on the Great Barrier Reef.

33) Ormiston Gorge. Northern Territory

Ormiston Gorge west of Alice Springs is part of the West Macdonnell National Park. The Park is home to 40 rare and relict species including two fern species. The gorge has a complex geological history which is reflected in the wide variety of colours and rock formations in the gorge. From the angular 'fiery orange' towering rock to the smoothly weathered pinkish stones on the ground, the pale green gums add a cooling touch to this stunning but harsh environment.

Exhibition Prints Available.

Large	\$150
Medium	\$120
Small	\$90

For more information about the exhibition or about ICB:

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