IUCN WORLD COMMISSION ON PROTECTED AREAS OCEANIA

NATURAL DISASTERS BULLETIN
February 2011

Dear colleagues,

I hope 2011 is a good year for all WCPA members both personally and professionally. Sadly as I was preparing this bulletin with the help of many members of WCPA we had more terrible news from New Zealand where the earthquake in Christchurch has caused huge damage, many injuries and deaths. The Parks Forum website is carrying bulletins from the Department of Conservation. Our hearts go out to all our New Zealand members and friends in this national tragedy.

The magnitude of the New Zealand disaster doesn't diminish the very difficult start to the year for many in Australia including quite a few of our colleagues who have faced the dramatic and large scale flooding events in Queensland and Victoria, the major impact of the Category 5 cyclone Yasi and the very serious fires in Western Australia. Two of Australia's World Heritage Areas – the Great Barrier Reef and the Wet Tropical Rainforests were both seriously impacted.

I have asked Australian WCPA members to give both personal stories and assessments of the impact on species and some of our most important natural areas. I'm sure all of us wish them well in their personal recovery from these events and in the huge efforts which will be required to repair the damage. In particular we wish our many colleagues who head up key natural resource and biodiversity agencies all the best for the demanding work ahead.

Penelope Figgis AO
IUCN WCPA, Vice Chair Oceania

FLOODING RAINS

Silverband Falls Walking Track Parks Victoria

Mt Victory Road Gampians National Park Parks Victoria

VICTORIA

From Parks Victoria

The exceptional weather since the start of September 2010 has produced a succession of severe storms and floods that have caused extensive damage to parks and reserves across Victoria. The most severely affected parks within the Parks Victoria estate are the Grampians, Mt Buffalo, and Alpine National Parks; parks in the central goldfields areas such as Creswick/Hepburn, Bendigo, Beechworth and the Upper Murray areas and many of the smaller parks on the outskirts of or within metropolitan Melbourne including the Dandenong Ranges National Park and You Yangs Regional Park. As a result a number of parks remain closed to the public due access issues and public safety risks. Recovery will be over several years.

Much of the damage is still to be assessed as access into these areas is compromised. However, the most significant class of damage has been to visitor facilities and amenities, roads, walking tracks, bridges and crossings. For example over 300km of walking tracks just in parks in the west of the state have been severely impacted. Unprecedented levels of erosion, land slips and soil destabilisation will be an enormous challenge as Parks Victoria plan and implement recovery programs. The Grampians landscape is changed forever. http://www.parkweb.vic.gov.au/1park_display.cfm?park=109 Over 190 debris flows have been identified in the park, totalling 750km in length. The longest identified slip is 2.5km long.

The impact of this damage reaches well beyond park boundaries. Many businesses have been forced to either temporarily cease trading or substantially reduce their business operations. This will have a significant and ongoing economic impact for many communities, particularly in regional Victoria.

While the damage has been extensive, you don't have to look far to see the value that good rain brings. Many waterfalls are flowing strongly for the first time in years and the state's wetlands and billabongs are again flourishing with plant and bird life. http://www.parkweb.vic.gov.au/1ministory.cfm?story=442
http://www.parkweb.vic.gov.au/1ministory.cfm?story=435

QUEENSLAND FLOODS

From Assoc. Professor Marc Hockings, IUCN-WCPA Vice-Chair for Science and Management.

After more than a decade of concern over looming shortages of water to supply the growing urban areas of southeast Queensland, residents in this corner of the state were ill prepared to face the prospects of floods. As little as three years ago Brisbane's main water storage was below 16% full (less than 8% if you account for the flood mitigation capacity built into the dam). As recently as early 2010, the Toowoomba area (where I then lived) had water storages below 10% and all water use outside the home was banned. The extended La Nina event in 2010/11 has changed all that and reminded us forcefully that we face

increasing climate variability in the future. Prolonged rain in late 2010 had soaked the catchment. So when intense rain (over 200mm in 24 hours in some places) fell in the catchment of Brisbane River in early January, it generated large volumes of run-off. People will have seen the astounding pictures of the intense run-off through Toowoomba and the Lockyer Valley that cost 30 people their lives.

Against that loss my family was indeed very lucky. It will nevertheless take us a few more months yet to recover from the effects of having 3 metres of flood waters through the ground floor of our new Brisbane home (we moved in three weeks before the floods). Thankfully, the water stopped rising a centimetre or two below the upper storey. Before rebuilding the lower level we are waiting for the timber and concrete to dry out which can take up to 3-4 months. Many around us are less fortunate with some losing all their possessions. About half of the houses between us and the river some 200m away are still uninhabited more than six weeks after the flood.

The environmental effects are still being documented. One of my colleagues at the University has been monitoring sediment flows into Moreton Bay throughout this period and will be preparing a report on this shortly. We know that the flood waters will be high in both nutrients and toxicants having passed through intensively farmed agricultural areas as well as extensive industrial areas within Brisbane. The impacts of these pollutants on the environment may take longer to determine.

From Andrea Leverington, Assistant Director General, Queensland Parks and Wildlife Service, IUCN WCPA Member

The floods and cyclones of January and February have impacted on a wide range of ecological values across Queensland's terrestrial and marine environments. Current assessments indicate that in excess of 2,720,000 ha (1.6% of Queensland) was affected by flooding during January 2011. This assessment indicates that the Channel Country (2.9 %), Brigalow Belt (2.6% of area) and Gulf Plains (2.1% of area) bioregions have the largest extent of flooding.

Approximately 70,000 ha were inundated across 80 National Parks, 55 Conservation Parks and 44 Nature Refuges. The full impacts of the flooding events on the environmental systems of these areas are still being assessed, but it is known that approximately 10% of Rare and Threatened species have been impacted by the flooding events. Impacts may be both positive and negative. The main negative impacts will be due to increased pest populations and increased exposure to inappropriate fire.

Mapping indicates an area of approximately 28,000 sq. km the marine environment was impacted by flood plumes from the Fitzroy, Mary and Brisbane River systems. The main impacts from the plumes appear to be the sedimentation of seagrass beds with associated longer term impacts on dugong and sea turtle populations. These populations are currently being monitored.

Mapping for Cyclone Yasi indicates an area in excess of 34 million ha of the terrestrial environment of Queensland have been impacted to some extent. Approximately 1.4 million ha of significant terrestrial biodiversity values have been affected by the 'Very Destructive Winds' of Cyclone Yasi.Of particular concern are the impacts on the areas mapped as Essential Habitat for both the Cassowary (Casuarius casuarius johnsonii) and Mahogany glider (Petaurus gracilis). All areas mapped as Essential Habitat for these species were affected by the winds with an estimated 360,000 hectares (48%) of the habitat for Cassowary and 85,000hectares (80%) of Mahogany glider habitat experiencing 'Very Destructive Winds'. Activities such as food drops for cassowaries have been part of the response.

Within the marine environment approximately 88,000 sq. km of the Great Barrier Reef Marine Park was impacted by Cyclone Yasi. This area included approximately 70 islands. In excess of 700 sites have been inspected within the Great Barrier Reef Marine Park. Areas of highest impact indicate that live coral cover may be as low as 2%. Damage to individual reefs appears to be dependent on the cyclone intensity, water depth and aspect of the reef. Damaged reefs are currently covered by filamentous algae in response to nutrient releases. This may lead to increased grazing by marine herbivores with increased populations.

In addition, access to national parks and walking tracks has been severely impacted from both the floods and cyclones. Critical fire trails require significant work to be repaired, while walking tracks such as the Thorsbourne trail on Hinchinbrook Island will take some time to repair… A "walk" from the beach at Zoe Bay 500m to the falls swimming area took Rangers 1.5 hrs. QPWS is prioritising recovery for popular sites to ensure Easter opening.

From Di Tarte, Director, Marine Ecosystem Policy Advisors P/L, IUCN WCPA member

Image: Flood plume near the western side of Moreton Island.

Impacts on waterway health of Moreton Bay

Until monitoring data can be analysed, it is difficult to determine the exact extent of the impact that the flooding will have on the health of our waterways and Moreton Bay. However, we do know that: There are likely to be human health implications regarding recreational use of waterways and fishing.

Flood waters will increase the turbidity (or the amount of sediment/soil) in our waterways and Moreton Bay. Large plumes of soil will move into mangrove areas and Moreton Bay. In time, these soil deposits will settle and may smother seagrass and corals. Dugongs, turtles, birds and other marine life dependant on seagrass as a food source could be at risk.

The elevated nutrient levels carried in flood waters could lead to outbreaks of algae after the waters clear of suspended sediments. Slumps in dissolved oxygen levels, as a result of increased organic matter that decomposes, could result in localised fish kills.

Benefits to waterway health

Increased water levels in local creeks will nourish habitat for aquatic wildlife and the additional water will be beneficial for subsequent plant growth along the riverbanks.

Underground water storage reserves (or aquifers) in the region will be refilled, providing major benefits in future dry periods.

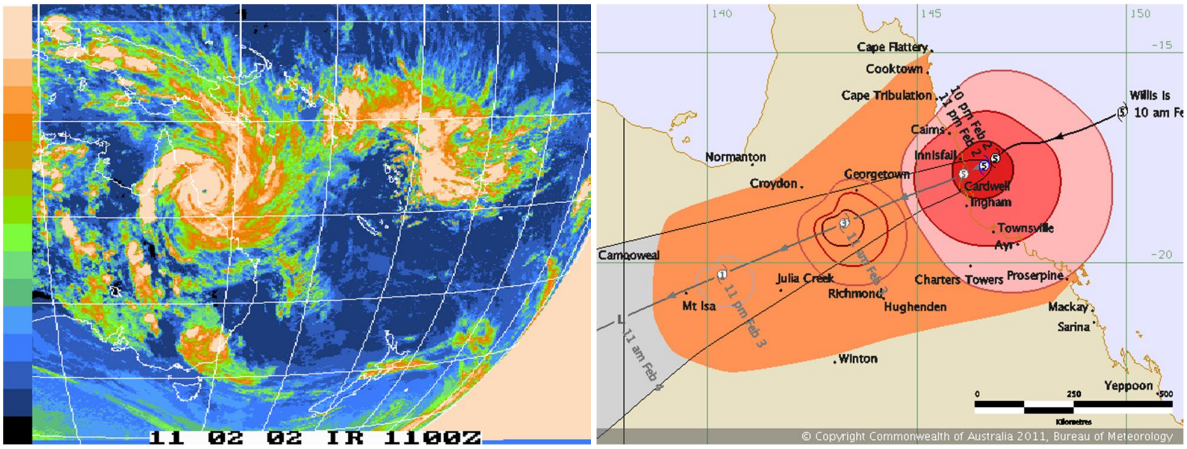
http://www.healthywaterways.org/news.aspx?newsID=69&gclid=COuf0eLKoqcCFQL5bgod_1nVBQ

From Prof. Peter Valentine, Chairman, Wet Tropics Management Authority, IUCN WCPA Vice Chair for Communication (Sent immediately after Yasi)

Dear Friends and colleagues,

I know that Severe Tropical Cyclone Yasi (category 5) has made headlines worldwide and I wanted to be sure to get a message out to everyone that we have survived the terrors of Yasi with only material damage. It was a horrible experience but the house held firm (minor damage) and we were OK. Have now been without power for three days but I have a little generator that is keeping food fresh and recharging laptop.

Today we finished chain sawing our way to the front gate of our property and have physical connection to the rest of the world. Sadly our five acre property is smashed with lots of old trees blown down and many we have planted over the past 20 years also flattened. But some survive. Water remains available (we had a day without treatment but that has now been fixed) and we have plenty of food. I have never previously experienced a category 5 cyclone (same as Katrina in the USA with 1800 people dead) and we are so lucky the centre did not pass through either Cairns or Townsville but rather through a less densely settled part of the coast. Even so the system had destructive winds over a distance of 300 km and it remained a cyclone 750 km inland causing havoc everywhere it went. We were well south of the centre so I can only imagine the horrific winds at Cardwell.



Bureau of Meteorology

Two reflections: how fortunate to be in a developed country with very well organised communications, monitoring and disaster response systems in place, and thousands of volunteers. Two young neighbours came over to see if the "old people" had survived. In poorer countries without proper warning and recovery systems hundreds may have died (we had five days' notice after Cyclone 'Anthony' passed through just south of us until 'Yasi' arrived, we knew it was going to be big so everyone was prepared).

My post-Yasi concern is for the Wet Tropics World Heritage Area which will be devastated from Paluma in the south (near where I live in Townsville) to Kuranda in the north (near Cairns). In the middle is Mission Beach where the cyclone crossed the coast and where we have a fragile Cassowary population that suffered from Cyclone Winifred (about 15 years ago), Cyclone 'Larry' (5 years ago) and now Yasi. Many other species will have been adversely affected of course. Unfortunately the Cassowary habitat is now fragmented by cane farms, banana farms and urban development so their capacity to relocate is very limited now. The Wet Tropics Management Authority and Queensland Parks will be preparing an action plan for post-Yasi recovery.

Some very good news - Margaret Thorsborne (who received an Order of Australia in the New Year's Honours for her work for Conservation) who lives in Cardwell near the worst of the cyclonic winds (up to 300 km per hour) has survived and is well. She is in her eighties and still works hard for conservation.

Post script from Peter It is clear that a lot of wildlife has suffered from Yasi. The area south from Innisfail to Townsville in particular is very badly damaged. Yasi delivered a raft of Great Barrier Reef sea birds to the mainland including Sooty Terns that came ashore in Townsville at numerous locations. One Sooty Tern even got taken all the way to Alice Springs where it was found and is being revived by wildlife carers before being returned to the GBR. As was the case with Larry five years ago, birds have been fleeing the rainforest for adjacent areas. In Townsville numerous fruit-eating pigeons and others have arrived in numbers including the Wompoo Fruit Dove, Superb Fruit Dove, Brown Cuckoo Dove and Yellow Oriole. Even a Red-necked Crake (a bird confined to deep rainforest) turned up in a suburb. Many other strange incidences have been reported. Unfortunately, as Townsville was badly affected there is little fruit available here.

On a more positive note, I drove through the Wet Tropics today and was delighted to see that the rainforest inland and north of Innisfail is in excellent shape. This area, ravaged by Larry, has been relatively spared this time. There remains so much to do however and it will be a long slow recovery.

From Andrew Maclean, Executive Director, Wet Tropics Management Authority, IUCN WCPA member

Cyclone Yasi and the Wet Tropics World Heritage Area

Cyclone Yasi crossed the Queensland Coast near Mission Beach overnight on 2 February 2011. Yasi was a category 5 cyclone with wind gusts near the eye wall estimated to be approaching 300km/hr. Not only was it an intense system, it was large with impacts of varying intensity extending 400 km along the coast between Cairns and Townsville.

Extensive defoliation on the Cardwell Range Andrew Maclean

An initial assessment of the impacts on the Wet Tropics World Heritage Area is that an area in excess of 100,000 hectares has been almost totally defoliated. Close to the passage of the eye, extensive areas of forest have been smashed, with widespread tree fall and breakage of branches. Rainforest, coastal woodlands and wetlands have all been affected, although mangroves seem to be comparatively resilient.

An immediate concern is that the cyclone has damaged extensive areas of habitat for the endangered southern cassowary. All canopy fruit resources will now be on the ground which will cause a severe food shortage for the cassowary population in coming weeks. The Queensland Parks and Wildlife Service has done a great job in promptly establishing an artificial feeding program to sustain this iconic species. The Wet Tropics Management Authority (WTMA) has assisted.

The regional tourism industry relies heavily on the natural assets of the Wet Tropics World Heritage Area. WTMA is working with the tourism industry to identify and implement recovery strategies for this very important regional industry. Over the next weeks, WTMA will be working with its partners and communities to establish a comprehensive regionally-led recovery program for the World Heritage Area and the wider bioregion. A key to success will be effective engagement of the regional community in planning and implementation. WTMA will seek to capitalise on its existing networks to achieve this.

Photos courtesy Wet Tropics Authority

THE GREAT BARRIER REEF

From Dr. Russell Reichelt, Chairman and Chief Executive of the Great Barrier Reef Marine Park Authority, IUCN WCPA Member

Queensland Parks and Wildlife and GBRMPA have some teams out looking at reefs and islands this week and we are expecting some areas of severe patchy impact as with TC 'Larry', but also a broader area of moderate impact owing to the large physical extent of TC Yasi.

In the Townsville region the winds were in the vicinity of 150kph even though we are several hundred kms south of the eye of the storm. I'm told there were 9m waves on the AIMS beach. The effects on the city were mainly evident as uprooted trees and flying vegetation. Many power lines down but thankfully relatively few places had severe structural damage. About 80% of the town was without power for several days and in some areas there was no water supply. In some places the failure of sewage pumps led to leaks of sewage. Most areas had power and water restored within 5 days. The effects to the north of Townsville were much more severe – particularly in the area of Cardwell, Mission Beach and Tully. The GBRMPA offices were only slightly affected, mainly by water leaking in through the roof.

Dunk Island Resort was heavily impacted
Commonwealth of Australia (GBRMPA)

Flood plume Johnstone River
Commonwealth of Australia (GBRMPA)

From Jon Day, Director, Ecosystem Conservation and Sustainable Use, GBRMPA, IUCN-WCPA Marine Regional Coordinator for Australia/New Zealand

Over the past two months the Great Barrier Reef World Heritage Area has been affected by two extreme weather events: the extensive flooding from the Fitzroy, Burnett and Mary Rivers during January, and Severe Tropical Cyclone Yasi at the beginning of February.

Two other tropical cyclones (TC Tasha - category 1 in late December, and TC Anthony – category 2 in late January) have also crossed the Queensland coast in the past few months triggering significant rainfall events. While less extreme, these two cyclones have also added to the cumulative impacts affecting the Great Barrier Reef and adjacent communities. All these weather events are natural occurrences that have occurred many times in the past and hence most species are adapted to cope with such events. However the Great Barrier Reef Marine Park Authority (GBRMPA) is concerned about the cumulative impacts of these weather events on the Great Barrier Reef and the businesses that rely on it.

Severe Tropical Cyclone Yasi crossed the Queensland coast near Mission Beach as a category 5 cyclone early on 3 February with a destructive core of winds estimated up to 290 km/h; it is estimated that around thirteen per cent of the WH property was exposed to Yasi's destructive winds. TC Yasi was one of the most powerful cyclones to have affected Queensland since records commenced. Previous cyclones of

a comparable intensity include the 1899 cyclone Mahina in Princess Charlotte Bay, and two cyclones in 1918 at Mackay (January) and Innisfail (March).

TC Yasi has caused destruction of corals, as well as impacts on islands, coral cays, seagrass beds, mangrove forests and other coastal ecosystems that were in the immediate path of the cyclone or within the destructive wind zone to the north and south. Seabird nesting is likely to have been impacted and loss of seagrasses may affect the food available for dugongs and green turtles.

Experience from previous cyclones indicate significant impacts on commercial fisheries with reef fish going 'off the bite' for up to several months and habitat damage potentially affecting other species. Tourism resorts and tourism sites within the path of TC Yasi have been severely affected, including significant damage to resorts on Dunk, Hinchinbrook and Bedarra islands. The tourism industry has also been affected by negative media relating to these events.

Flooding in the Fitzroy, Burnett and Mary rivers peaked in mid-January, but ongoing rain has maintained elevated flows. The flood plume has now eased, but the full extent of the damage on the affected area will not be known for some time. Freshwater influxes can be harmful to corals, seagrasses and some other marine habitats, however some fish species thrive in the current flood plume conditions which can enhance productivity for some popular inshore species.

Monitoring these extreme events

The GBRMPA is working with the Queensland Government, scientific organisations, tourism and fishing industries, local councils and community groups to assess the impacts in the World Heritage Area. Three teams are currently in the field undertaking rapid response surveys and initial assessments in the areas impacted by TC Yasi. Preliminary assessments will be available over coming weeks. The full extent of damage and the implications for future management of the Marine Park are unlikely to be known for several months.

Initial flood water quality and sea grass surveys have also been undertaken to collect and test water quality samples from the flood plume area in the southern GBR. Some commercial fishers and tourist operators have also assisted by collecting GPS data and other information on the plume.

As part of the Australian Government's AUD$10.5 million Reef Rescue Marine Monitoring Program for water quality assessment, GBRMPA have been working with a various agencies and organisations such as the Australian Institute of Marine Science (AIMS) and universities. AIMS are re-assessing their long-term monitoring sites in the southern GBR and have plans to undertake similar surveys over the next few months in the areas affected by the recent cyclones.

Implications

Experience from previous such events have shown that marine ecosystems can recover from flood-related or cyclonic damage although this can take years (refer to the monitoring reports below). It is still too early to determine the full extent of the impacts of these events. However, it is likely that inshore areas off the Capricorn Coast and the reefs of the Keppel Islands near Rockhampton will be affected by the floods, and the reefs and islands off Innisfail and Cardwell are known to have been impacted by TC Yasi. Early reports indicate the damage to coral reefs and islands is patchy, ranging from little damage in some locations to significant damage in others.

Understanding how species and habitats react to such events is important as climate change is likely to mean that such weather events are more severe and frequent. For example, between 1970 and 2004 there were 116 cyclones occurring on the Great Barrier Reef, none of which reached category five. Since 2006, there have been three Severe Tropical Cyclones producing very destructive winds and waves during their time within the World Heritage Area (Larry in March 2006, Hamish in March 2009 and Yasi).

This reinforces more than ever the importance of the Australian Government's efforts to improve the resilience of the Great Barrier Reef and to develop and implement strategies to adapt to the impacts of a

changing climate. Such strategies/actions include the 2004 Zoning Plan and the positive benefits now arising from it, the Reef Water Quality Protection Plan, the Climate Change Action Plan, the way the fishing industry is working to minimize their impacts, etc.

For more information www.gbrmpa.gov.au/

From Helene Marsh, School of Earth and Environmental Sciences JCU
Predictions about response of dugongs to the extreme weather events in 2011

The loss of coastal seagrass associated with exceptionally high rainfall and other extreme weather events has a negative impact on dugong life history. Of major concern in 2011, is the widespread nature of the impact of extreme weather events on the urban coast of Queensland and the fact that 2011 follows high rainfall years and the seagrass beds in some areas e.g. Cleveland Bay were already depleted (Rob Coles pers. comm.).

With the possible exception of Shoalwater Bay, the extreme events have impacted all the major dugong habitats on the urban coasts of Queensland (Moreton Bay, Hervey Bay, Cleveland Bay and Hinchinbrook). Thus the dugongs are likely to have limited options to find food south of Cape York. Satellite tracking indicates that dugongs can move from the Hinchinbrook area to Princess Charlotte Bay (Sheppard et al. 2006) but the frequency with which this is likely to occur is not known. Matrilineally transmitted learned behaviour, commonly known as tradition, seems to play a large role in determining use of space and migratory habits of Florida manatees (Hartman 1979; Bengtson 1981; Deutsch et al. 2003) and possibly dugongs (Anderson 1981a; Sheppard et al. 2006).

Thus we can expect:

1. Seagrass dieback, especially of sub-tidal seagrasses; information indicates that this occurred already in some areas in 2010 (Johannes and MacFarlane 1991; Preen and Marsh 1995; Preen et al. 1995; Poiner and Peterken 1996; Marsh and Kwan 2008)
2. Increased movement of dugongs in search of food including movement from 'no-take' areas to other areas (Preen and Marsh 1995; Gales et al. 2004; Marsh et al. 2006) with consequential increased risk in incidental drowning in commercial gill nets and shark nets set for bather protection. The catches of dugongs in shark nets set off Townsville increased from an average of 12.7 per year before Cyclone Althea to 41 in 1972 (Heinsohn and Spain 1974). The increase manifested from February 1972.
3. Change of diet to include less nutritionally desirable species; more fibrous seagrasses not often eaten and more algae (Spain and Heinsohn 1973; Marsh et al. 1982)
4. Increased dugong mortality manifested in increased dugong strandings (Heinsohn and Spain 1974) following loss of weight and fat stores (Nietschmann and Nietschmann 1981; Nietschmann 1984; Johannes and MacFarlane 1991; Preen and Marsh 1995)
5. Delayed reproduction (increased age at first reproduction, reduced pregnancy rate, decline in calf counts 2 years post event; Marsh 1995; Marsh and Corkeron 1997; Marsh and Kwan 2008).

Information post cyclone Althea (which occurred in late December 1971; Heinsohn and Spain 1973), the Hervey Bay floods and cyclone in 1992 (which occurred in early 1992; Preen and Marsh 1995) and the Queensland Strandnet Data base suggest that the stranding events will peak in the second half of the year (with most animals dying 6-8 months after the floods and cyclone but may occur from April) and that the increased mortality will continue in 2012.

The impact of the extreme weather events on the costal dolphins and turtles is harder to predict. Green turtles are less likely to move their feeding grounds but are capable of using a wider range of dietary items. The chief impact of the coastal dolphins will depend on the effect of the extreme weather events on inshore fish and squid stocks. Below for discussion please find a list of suggested potential actions, which could be incorporated into an Action Plan which would have relevance not only to 2011 but for the

future given that the predicted increase in the incidence of extreme weather events as a result of climate change. Some of these actions could benefit coastal dolphins and turtles as well as dugongs.

The challenge will be to find the most cost-effective combination of research and action. Research i(e.g. Field et al. 2004) indicates that the appropriate trade off between monitoring and action, depends on the uncertainty about a likely population decline. I think that it is very likely that dugongs on the urban coast will decline this year and suggest that resources should be spent on conservation action (education and enforcement) as well as monitoring and research.

From Mike Berwick AM,**, Chairman of Terrain Natural Resource Management Group** former Mayor of Douglas Shire for 17 years, Queensland's representative on the National NRM Working Group,

By way of background NRM regional bodies are playing a key role in disaster response. Our particular interest is in landscape, community and economic resilience. For the short term recovery, we are able to mobilise quickly, we have built a trusting relationship with landowners, industry, conservation, local government, traditional owners. There is no other agency, industry or NGO that has a whole of landscape perspective, skills, workforce and trust

After Cyclone 'Larry' we produced a document *Lessons from 'Larry'* in collaboration with the science community. We learned from that exercise that our natural landscapes, farming systems, economies and communities are not resilient to natural disasters, which all evidence tells us are on the rise from climate change. It certainly feels like that in the Wet Tropics where we've had 2 category five cyclones, record rainfall events and unprecedented storm surge in 5 years. What we have learnt:

Our natural landscape, communities and economies are far from resilient. The natural landscape is really devastated and will not recover easily. We lost around half the cassowary population in 'Larry', Yasi could bring the population below critical levels. Unlike pre European landscapes they can't move before or after an event because they are hemmed in by cleared landscapes, urban development roads etc. The same situation applies with many other species, particularly the biodiversity isolates who suffer badly from wind damage and edge effects. The smaller isolates like narrow riparian zones are invaded by weeds at the expense of endemic regrowth.

Environment is often pushed aside in the short term interest of repairing and rebuilding essential infrastructure. We learned from 'Larry' that our challenge was to build resilient systems. The state and Australian government's response is inevitably short term and that is really important at the moment but we equally need to start making environment, communities and economies more resilient so next time it's not so bad.

From Dr. Lea Scherl
Vice Chair for Oceania , IUCN CEESP
IUCN WCPA Member
Magnetic Island Townsville

Cyclone Yasi left its mark on Magnetic Island (part of the Great Barrier Reef World Heritage area). It suffered tremendously with beach erosion, vegetation has also been impacted (although it is still looking very nice), the historical jetty suffered a lot of damage and birdlife and fauna seems to be slowly getting back to be part of our lives here. Some photos of the cyclone reaching our shores are attached and also below an interesting (and painful) facet of the outdoors clean—up experience.

Storm Surge Alma Bay Magnetic Island Lea Scherl

An edited extract from 'The green ant "moment" by Helen Foulkes, Photo: George Hirst
Cyclone Yasi made many impacts on natural systems and species. The following, from Magnetic Islander Helen Foulkes, focuses on a small but very significant aspect of life in the tropics around the time of cyclones.

As you probably know green ants are the ones that make those amazing bulb like nests by sticking leaves together – very resilient nests too given the number that you can see still stuck together long after they have been abandoned. Green ants are highly territorial and colonies can have up to 100,000 over a dozen trees. They defend their territories very aggressively with some ants' only job being to protect against intruders. They defend their territories by biting invaders, not stinging, biting. And then to make it really hurt they spray formic acid directly at the bite wound.

Cyclone Yasi headed for North Queensland on February 2nd this year. The green ants knowing this, banded together to survive. We had plenty of warning of Yasi and time to prepare especially given that it was preceded by cyclone Anthony. When Anthony was approaching the green ants didn't have to go to the Meteorology web site, they just knew.

I had a column of ants at my house move home on the Sunday afternoon before Anthony. Tens of hundreds of them moved out of my 1950s kitchen; marched up the door jam, over the power line that joins my house to my rustic outdoor bathroom, down the bathroom wall, along the concrete floor carrying what they could under the brick into the backyard.

Cyclone Anthony came and went here on Magnetic Island without so much as a whisper but the ants knew that something else was coming. No news bulletin needed to let them know. The cries of the broadcasting ants got louder and more persistent announcing the imminent disaster. As the day progressed the ants all headed to safe ground, made sure their neighbouring ants were okay and just waited. And waited. By 10pm on Magnetic Island as the winds of Yasi reached record levels and the roofs of the ants nests flipped off and the trees bent down and the nests were all but destroyed. The ants were scared and now the ant network was not working and everyone was on their own.

When daylight appeared the humans started to move. They hugged each other and thanked their gods for having made it through. They slowly took count and made sure that everyone they loved and everything they cherished was still in one piece. They counted their blessings for all that they were given.

But the ants whose homes had been destroyed did'nt know where to go so they bit. They jumped onto anything that moved. They searched out any crevice available especially if it was a human's warm place between their toes or knees or neck. Because the humans were trying to walk around to access the damage to their homes and gardens and pools the relentless green ants bit on. They bit us every chance that they got, sweeping the paths and driveways, picking up the branches and piling them on the street, you only had to stop for a moment and the green ants found you.

More information www.magnetictimes.com