

# Sea Turtles

## Green turtles - seagrass grazers at risk

Julia Hazel (James Cook University)

The plight of sea turtles has drawn increasing conservation attention in recent decades, with growing recognition of diminished populations and the worldwide array of detrimental human impacts they face. Coastal development compromises some important turtle nesting beaches while introduced predators decimate eggs and hatchlings in other places. Many turtles and turtle eggs are harvested for food or trade, more are killed unintentionally in fisheries, and turtles that evade these major threats must contend with ever-increasing human activity in their vital foraging grounds.

My PhD research addresses just one aspect of this complex problem, vessel strike. Boat operators sometimes unknowingly run over turtles (and less frequently dugongs) and the number of animals killed and maimed this way in Queensland is not trivial. Moreton Bay has recorded the highest death toll, followed by Cleveland Bay and Hervey Bay. Green turtles (*Chelonia mydas*) are the most frequent victims, possibly because they rely on seagrass as a major food resource. This leads them to spend much their lives in relatively shallow coastal waters where seagrass is abundant, and where vessel traffic is sometimes intense.

I began with a study of green turtles' responses to a vessel approaching while they were foraging on seagrass beds in clear water. Results confirmed that speed matters and it matters a lot. The majority of turtles could detect and evade a vessel approaching at 2 knots, but at 6 knots more than half did not react in time. At 10 knots, the fastest experimental speed I used, almost all turtles (95%) directly in the path of the vessel failed to respond.

Implications of this finding are daunting, considering that many recreational and commercial vessels in Queensland routinely exceed 10 knots, and the prospect of limiting waterborne traffic to 2 knots (slow idling speed) would be unacceptable on a broad scale.



This green turtle was about to return to its seagrass foraging area in Moreton Bay after I attached a tracking tag to the rear of its carapace. At the right hand edge of the picture you can just see the tag, a small red float that carries an ultrasonic transmitter and miniature depth recorder.

My next objective is to investigate whether there are patterns in green turtle behaviour that could allow us to differentiate accurately between situations of low and high risk for vessel strike. If that turns out to be feasible, then it might be possible to determine where changes to vessel speed or routes could offer the greatest increase in turtle safety, with least inconvenience to boat operators.

I have started tracking the fine-scale movements and diving patterns of individual green turtles and am currently striving to improve my methods for this very challenging task. I hope to

include an evaluation of the study turtles' food resources after I have identified sites they regularly favour, and I'm looking forward to meeting more seagrass watchers, especially those familiar with the shores of south-western Moreton Bay where I'm conducting this study. ♡

## IOSEA Year of the Turtle 2006

The Indian Ocean - South-East Asia (IOSEA) 'Year of the Turtle 2006' was officially launched on 1 March 2006, and will run through to the end of 2006. The YoT campaign aims to unite nations and communities to celebrate marine turtles and to support their conservation. While increasing public awareness and understanding of the threats faced by marine turtles, the campaign will also highlight the work of dedicated organisations that are striving to conserve these ancient creatures and the habitats on which they depend.



The IOSEA Memorandum of Understanding (MoU) puts in place a framework through which States of the Indian Ocean and South-East Asian region, as well as other concerned States, can work together to conserve and replenish depleted marine turtle populations for which they share responsibility. The species of marine turtles covered by the MoU are: the Loggerhead *Caretta caretta*, Olive Ridley *Lepidochelys olivacea*, Green *Chelonia mydas*, Hawksbill *Eretmochelys imbricata*, Leatherback *Dermochelys coriacea*, and Flatback *Natator depressus*. The IOSEA Marine Turtle MoU Secretariat is co-located with the UNEP Regional Office for Asia and the Pacific (UNEP/ROAP), in Bangkok, Thailand

The Year of the Turtle is being organised around a number of core themes: celebrating marine turtles, taking measures to ensure their long-term survival, conserving marine turtle habitats, reducing accidental capture in fishing operations, and encouraging applied research. These objectives are meant to guide the campaign activities at national and local levels throughout the year.

Everyone can be involved: you can search the online YoT Event Calendar to find out about interesting activities and events, develop a new initiative, or associate an ongoing activity with the YoT campaign, using the official YoT logo.

It is hoped the campaign will be a milestone in the conservation of marine turtles and their habitats of this vast region.

For more information about the YoT, visit <http://www.ioseaturtles.org/> ♡



A Green Turtle feeds on *Cymodocea rotundata* at Green Island; a popular feeding ground and location of 2 Seagrass-Watch long-term monitoring sites.



# Western Australia

## Protecting Roebuck Bay

Danielle Bain (RBWG) reports

Seagrass-Watch is pleased to announce its partnership with Environs Kimberley and the Roebuck Bay Working Group (RBWG), to establish seagrass monitoring at Roebuck Bay, Western Australia.



Community groups, government and industry have initiated a community based planning process for Roebuck Bay. The group, called the Roebuck Bay Working Group (RBWG), aims to progress management planning for the protection of Roebuck Bay's values through community based management planning. The RBWG is a collaboration of Traditional Owners and representatives, government agencies, industry, community and local government, with Secretariat support provided by the Kimberley Land Council.



Located on the coast adjacent to Broome, Roebuck Bay holds a great diversity of cultural and natural heritage values for all peoples. Covering an area of approximately 66,000ha, much is intertidal mudflats with a rich diversity of marine life. The mudflats, together with big tides, mangroves, red cliffs and aqua blue water, makes Roebuck Bay a natural and visual wonder. The intertidal mudflats of Roebuck Bay have been identified as one of the world's richest habitats for feeding wading birds and is Ramsar-listed for its global significance.

Although tropical mudflats are renowned for being important wader stop-over sites for feeding, very little is known about them. Roebuck Bay has only received attention in the last ten years. Two large expeditions (1997 and 2002) discovered hundreds of species living in the soft bottom sediments. However, there is little information available on seagrasses in Roebuck Bay and the Broome regions. The seagrasses have not even been mapped.

Interconnected with the rich biodiversity of Roebuck Bay is the powerful spiritual attachment to this coastal country by Aboriginal people for millennia. The Bay plays a significant part in the daily life of local Aboriginal people, not only by providing food but also in maintaining customary practices and linkages and in the maintenance of their culture. One way which has been suggested to ensure protection of Dugongs would be a Dugong sanctuary under joint management by CALM and local Aboriginal communities.

Through activities such as tourism, commercial fishing, aquaculture and the port, the Bay also contributes significantly to the commercial viability of Broome. Together with important recreational values, these uses have a strong reliance on the health (and biodiversity) of Roebuck Bay.



However, with a rapidly growing and mobile population and the increase in tourism activity, pressures on the area are rapidly increasing.

With these increasing and often competing pressures comes a



Roebuck Bay as seen from the International Space Station

photo by NASA



need for well-planned and coordinated management of the whole area - the Bay and its surrounding ecosystem. It is because of this need that people from different interests and backgrounds, have come together to form the Roebuck Bay Working Group (RBWG) which is ultimately working towards the development of a Management Plan for the bay.

For further information, contact Emily Burke (RBWG Secretariat), by email at [minyirrparkbroome2@klc.org.au](mailto:minyirrparkbroome2@klc.org.au) or phone: 08 9194-0150

## Environs Kimberley



Environs Kimberley (EK) is a locally based, independent environment group working in the northwest of Western Australia. Based in Broome in the West Kimberley, EK was initially formed to campaign against a proposal to dam the Fitzroy River for an irrigated cotton plantation. It has remained an effective and tenacious advocate for the environment and people of the Kimberley ever since. Its vision is "to preserve and respect the intrinsic values and qualities of the Kimberley region."

EK currently has a shorebird monitoring project in Roebuck Bay. The project aims to quantify the disturbance to migratory waders (e.g. raptors, people, dogs, cars, and helicopters) to determine which kinds of disturbance pose the greatest threat. Volunteers go out a few times each month to sit and watch the birds for four hours at a time and record what disturbs them. At the same time, people around the bay are interviewed to find out what they use the bay for, and to ask about their own personal experiences with the waders.

In July 2002, Environs Kimberley ran an event called 'Celebrate the Bay Day,' which emphasised how local actions can have global significance. This day-long event highlighted the importance of Roebuck Bay and involved participants from state and local government, researchers from around the world and community groups. The event had been organised by EK not to ward off urgent threats to the area, but to inform members, researchers and the broader community of its significance and fragility, and invite all participants to work toward partnerships in the preservation and respectful use of the Bay. In June 2006, there will be another Celebrate the Bay Day which will aim to educate key stakeholders and the wider community about research taking place in the bay. It will also provide the opportunity for the community to participate in the planning process which is currently being undertaken by the Roebuck Bay Working Group.



photo by jampert

# New South Wales & Victoria



## The Community Seagrass Project NSW



Rebecca Small (Seagrass Project Officer, Community Environment Network (CEN))

Much has been done in NSW over the past few months to strengthen the program in New South Wales. Our friends in the South of NSW have been generating interest furthering the workshops conducted in 2005. Many groups have started planning and further training of local residents in an effort to maximise the program.

Planning is underway for workshops along the North Coast of NSW with an overwhelming interest from Local Councils and community groups! Workshops are tentatively planned for May / June 2006 for most areas.

Workshops in the Sydney / Metropolitan area are set with a huge thankyou to Charlie Hewitt from CoastCare for his co-ordination and planning, as well as many local and government representatives.

Monitoring sessions in Lake Macquarie at Coal Point have started with much interest in the program! The enthusiastic group have also agreed to expand to another two monitoring sites within Lake Macquarie.

Monitoring sessions at The Entrance on the Central Coast have been conducted twice, with this site set up as a training with early findings showing changes in seagrass density over the holiday period. This area is a popular tourist destination and fishing spot and is an important Whiting breeding ground. ♡



### UPCOMING EVENTS-

Community Seagrass Monitoring Workshops  
Sunday 2nd April 2006; St George Sailing Club, Riverside Drive, Sandringham

Saturday 8th April 2006; Manly Library, Manly Market Place.

Ongoing; The Entrance, Central Coast

Contact: Rebecca Small on 02 434843207 or Email [seagrass@ccen.org.au](mailto:seagrass@ccen.org.au)

Central Coast  
Community  
Environment  
NETWORK



## Launch of the Sea Search Seagrass Community Monitoring Program at Corner Inlet Marine National Park.

Rebecca Koss, Sea Search Project Officer

On Monday 12th of December 2005, the Sea Search Corner Inlet Community Seagrass Monitoring Program was launched at the Old Ferry Terminal, Port Welshpool. The Sea Search program was established by the People & Parks Foundation, in conjunction with Parks Victoria, with sponsorship from ExxonMobil. There are three main Sea Search monitoring programs undertaken by community groups in Victoria's Marine National Parks and Marine Sanctuaries. The three programs include monitoring of intertidal rocky shores, subtidal rocky reefs and seagrass meadows.

At Corner Inlet Marine National Park the local community group, Friends of Corner Inlet, currently undertake monitoring of *Posidonia australis* seagrass meadows. This monitoring was initiated in 2004 (please see previous articles in Seagrass-Watch News) with the local Parks Victoria Ranger, Jonathon Stevenson. This ongoing monitoring will now expand to include a number of additional sites throughout Corner Inlet. This will allow a comparison of seagrass meadow health in protected and non-protected areas. The launch of the Sea Search program builds on strong existing links between the local community, The People & Parks Foundation, and Parks Victoria, allowing the local community to be involved with the management of their local Marine National Park.



Ongoing seagrass monitoring in Corner Inlet Marine National Park will occur seasonally through the year by S.E.A.L. Diving Services, The People & Parks Foundation Sea Search Project Officer and the local Parks Victoria Ranger. Future Sea Search seagrass monitoring programs will be initiated in Westernport Bay.

For information on Sea Search, visit the website: [www.seasearch.org.au](http://www.seasearch.org.au) or contact the Sea Search Project Officer by email: [rkoss@parks.vic.gov.au](mailto:rkoss@parks.vic.gov.au) For information on the People and Parks Foundation, visit the website: [www.peopleandparks.org](http://www.peopleandparks.org) ♡

Sea Search

Community-based monitoring of  
Victoria's Marine National Parks & Marine Sanctuaries



# Torres Strait - Queensland



## Torres Strait Update

Beccie Bowie and Ina Mills were selected from their student body to represent Torres Strait Islander youth at the NAILSMA (North Australia Indigenous Land and Sea Management Alliance) Youth Forum held recently in Darwin. These students had no hesitation in saying that they felt that they were awarded this opportunity because of their involvement in Seagrass-Watch.

As part of the forum the girls presented a short talk entitled TI High Natural Resource Management Experiences and Opportunities. They talked about the scientific skills they had learnt from participating in Seagrass-Watch, and how their participation in this program had led to other opportunities such as traveling to the Whitsunday and Sarina areas to meet other seagrass-watch volunteers and to observe other seagrass meadows outside of the Torres Straits. They felt that their participation in Seagrass-Watch had shown their teachers their commitment to learning about marine resources which had led them to being chosen to participate in turtle tagging on Millman Island (a QPWS and Earthwatch initiative) and the Youth Forum. 🌱



Beccie and Ina preparing their talk while Christie watches on



Beccie and Ina practice their talk at Horn Island Primary School

## Horn Island



Wongai Beach (HI1)

After a quick refresher on Seagrass-Watch protocols and seagrass identification for "Torres" Class, students joined the Thursday Island High School students to monitor the Seagrass-Watch site at Horn Island. This was the first time this site has been monitored this early in the year. There were two features that stood out during this sampling period. Firstly the large amount of algae covering the seagrass and the large number of small sea hares that were found amongst the seagrass. These animals also called sea slugs were difficult to spot at first as they are well camouflaged. However, the tell-tale purple dye they released when trodden on gave their presence away. They have a soft body, a small internal shell and large tentacles which are thought to resemble the large ears of a hare hence their common name 'sea hare'. 🌱



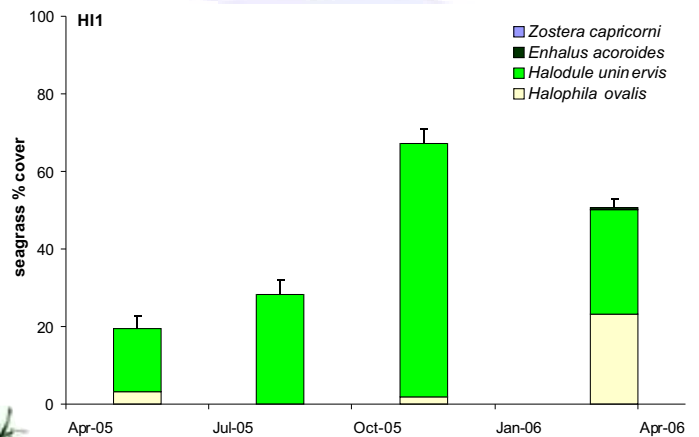
Above: Beccie, Ina and Christie  
Above left: Apres School monitoring at Wongai Beach



Left: Beccie estimates species composition at HI1



Below left: Careful!!  
Below: Horn Island Primary School seagrass identification refresher.



# Torres Strait - Queensland

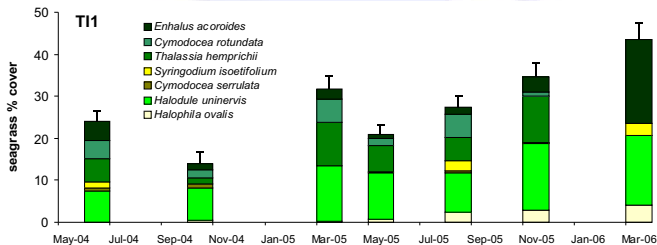
## Thursday Island

### Front Beach (TI2)

The most noticeable thing about sampling at Front beach this month was the amount of sediment that had been moved around. In places where there had previously been hard sand there was rubble and in other areas the sediment had built up to the point that we were lucky to find the site marker (see photo). Other notable features occurring within the meadow were the flowering of *Enhalus*, the large number of sand dollars and the presence of a large sea hare. Whilst these features did not occur within any of our quadrats we note the presence of an anchor chain through one of our quadrats!!!!!! Luckily it wasn't the boat as that would have been interesting obstacle to overcome. 🌱



Above: Only the yellow site marker is visible, as the peg is covered by sediment.  
Left: storm waters from a heavy downpour flood over the site



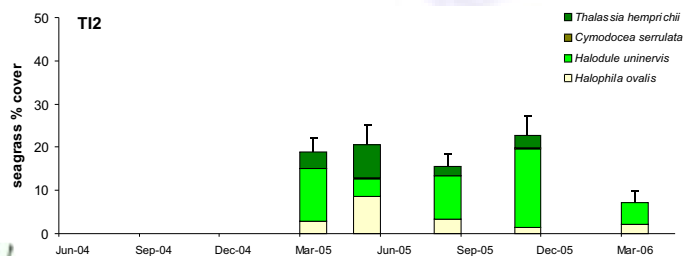
Top right: What a whopper!!! A giant sea hare and a sand dollar  
Above right: Do we estimate percent cover of the anchor chain???  
Above left: Carla and Kristie doing their thing at TI2  
Top left: Kara and Shakira monitoring Front Beach

### Back Beach (TI1)

There was a huge turn out for Seagrass-Watch this month, thanks to some very enthusiastic Marine Studies students, and they weren't disappointed. There were lots of *Enhalus* flowers and fruits to observe, a single plant of *Halophila spinulosa* was found (a first for this site) and heaps of *Cassiopea* the upside down jellyfish present. These invertebrates get their name because they spend most of their lives laying upside down on shallow sandy bottoms exposed to sunlight. Among the frilly tentacle structures are rounded, bladder-like structures, which contain photosynthetic algae (zoothaxellae) that help the jellyfish produce its own food. Whilst these jellyfish do produce their own food they will opportunistically eat any small animals that pass over them by paralyzing them with their nematocysts (specialized stinging cells). Most of the Seagrass-Watchers can attest to these jellyfish having stinging cells as they were continually being stung as they walked along their transects. Whilst, it was a mild sting it was still annoying. 🌱



Top L: Back Beach Seagrass-Watch all systems go!!  
Top R: Kristie, Caitlin, Stacey and Susan  
Centre L: Kinam, Sinita and Shakira  
Centre R: The boys seem to have the hang of it, Tess, Jade and Lisa not so sure!!!  
L: Our youngest recruit??  
R: Cassiopea at Back Beach





# Queensland

## Cooktown

Christina Howley reports

Greetings from Cooktown! Our local Seagrass-Watch group is in its third year of monitoring seagrass meadows at Walsh Bay just south of Archer's Point in the Cooktown region. Monitoring near Archer's Point began in October 2003 with myself, Sam DiBella (then the local QPWS/Marine Parks ranger), and teachers and students from the Cooktown State School biology class. Unfortunately the Cooktown area no longer has a local Marine Parks ranger (!), but we have had a number of new volunteers join the Seagrass-Watch group, including enthusiastic residents from the Archer's Point catchment area. In addition to the on-going transect monitoring, for the past year local biologist Jason Carroll and I have collected sediment & seagrass samples for nutrients, herbicides & reproductive health as part of the Reef Water Quality Protection Plan.

The Archer's Point catchment area is primarily National Park. Anthropogenic impacts are minimal with only a few scattered residents, low-density cattle grazing and occasional burning of National Park lands. The meadows we monitor are dominated by *Halodule uninervis* and *Halophila ovalis*, with *Cymodocea serrulata* and *Cymodocea rotundata* occurring in some places. Within the larger Walsh Bay area we have also identified *Zostera capricorni*, *Enhalus acoroides*, *Syringodium isoetifolium* and *Thalassia hemprichii*. Seagrass coverage usually averages between around 15-35%, with coverage at some quadrats as high as 80%, or reduced to 0% due to bare patches left behind by sting rays. We often come across dugong trails and many other organisms including the unusual mantis prawn. We are looking forward to heading back out to the beautiful Walsh Bay in April with the High School biology class. 🌱



Christina Howley (right) oversees the monitoring

Walsh Bay - location of Seagrass-Watch monitoring sites AP1 and AP2



The last quadrat!!!

## Hervey Bay

Trischelle Lowry Report



Our small, but enthusiastic band of volunteers undertook monitoring in February of the 13 sites across our region. Abundance of seagrass has declined across the board with a significant drop in percentages at the Urangan (UG) sites.

UG3 was extremely sparse, which is a substantial difference to August 2005 monitoring when percentages were the highest recorded since the establishment of this site in late 2001. Examination of the UG2 site revealed similar scenes. This site has gone from supporting *Zostera* of 30cm in length (Oct 2005) to the only seagrass now present being small isolated patches of exposed rhizomes.

Monitoring of UG2 usually entails frequently sinking to the knees in mud, however the site now seems to be covered with a layer of sand, meaning that transversing the area only resulted in occasionally sinking to the ankles!! Other volunteers also noted similar deposits of sand across monitoring sites at Burrum Heads and Dundowran. This sand movement and subsequent burial of seagrass, along with recent high temperatures, possible factors for the decline across the region. 🌱

