

Seagrass-Watch

news

Issue 26 • July 2006

It was 7 years ago to the month, that Seagrass-Watch monitoring was initiated. Since then, we have seen the program expand from 2 to 14 regions in Queensland, to other Australian states, and to 14 countries globally. Currently 165 sites are monitored throughout the program.

The program still continues its success and this issue includes reports from many of the regions & countries currently participating in the program. Read about Noosa, the new monitoring region in Queensland, and the effects of Cyclone Larry on the seagrasses of Mission Beach. You can also read about the South China Seas project, the Hepu Demonstration site, and how Seagrass-Watch is working with Hideaway Resort on their environment program in Fiji. Catch up on what's happening at Roxas in Palawan, and Minicoy Lagoon, India.

The biggest news to the program recently is that CRC Reef (the programs longest supporter) will wind up in Sept 30 and a new Centre has been formed - Reef and Rainforest Research Centre implementing the Marine and Tropical Science Facility in North Queensland on behalf of the Australian Government. The first set of projects (*which include Seagrass-Watch*) was announced on 20 July 2006 by Minister for the Environment and Heritage, Senator the Hon Ian Campbell.

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Noosa River Seagrass- Watch

Tara Kingsbury Reports

Noosa River is located on the Sunshine Coast on the east coast of Australia, approximately 160km north of Brisbane, Queensland. The Noosa River system is highly sensitive to change, and is increasingly under threat with population growth, tourism, boating and other human activities. As seagrass abundance, health and distribution buffers and reacts to change, it is a powerful bio- indicator of river health. The Noosa Integrated Catchment Association (NICA) with funding from Noosa Council recognized the importance of the Seagrass- Watch program as a fundamental management tool, and has worked towards and supported the implementation of seagrass mapping and monitoring in the river. And so Noosa River Seagrass-Watch (NRSWG) was born.

Noosa River's outstanding natural attributes include high water quality, rich diversity of in-stream habitats and high levels of production of fish species. Large areas of land adjoining the headwaters of the river are protected in an undisturbed condition as national park, a key factor in maintaining the river's high natural values, it is also one of the few Queensland rivers which enjoys a year-round freshwater inflow. The Noosa River has been awarded an overall A- rating based on comparison with other river systems. Seagrass abundance and distribution is a key factor indicating a healthy river system (EHMP 2005).

An NRSWG Field Day was held on Sunday 26th March that attracted more than 50 community members and stakeholders, with 32 of these volunteering to monitor 10 selected sites. A total of 13 sites have been identified as desirable for monitoring. 2 of these with pedestrian access and in a central location have been selected for educational purposes, to be monitored by school and community groups. The potential for monitoring seagrass further upstream will be explored, as we have

received reports of seagrass meadows as far upstream as Lake Cootharaba.

Seagrass distribution throughout the Noosa River was found to have changed a lot since last mapped in 2002 (EPA 2005). The most notable change was found in Lake Doonella where the once dense seagrass meadows have disappeared. This is most likely due to a huge influx of Black Swans (*Cygnus atratus*) in 2003 when drought conditions elsewhere in the

region caused the locally migrating birds to descend on Noosa River, with the population on Lake Doonella swelling from 80 to 480 (MacNamara Pers. Comm. 2006). This also impacted on overall species diversity in the river as Lake Doonella's seagrass meadows were largely *Halophila ovalis*, a species

Continued over.....



Seagrass helping to stabilise the Noosa River bank for mangroves to establish



Our team of volunteers from Davo's Bait and Tackle Noosa, the bathyscope they lent us proved an important tool!



Noosa River Catchment - note lake system and protected area upstream that contributes to outstanding river health (EHMP 2006)



Queensland



Zostera capricorni is the dominant species in Noosa River. *Halophila ovalis* has been found in low density at one site so far.

that is now extremely rare in the river today with *Zostera capricorni* dominating.

The most popular Seagrass-Watch monitoring method (running three 50m transects-25m apart) was not possible in Noosa River, as meadows are often narrow patches running adjacent to the shore. So we used

two approaches recommended by Len McKenzie (Seagrass-Watch Program Leader) and Paul Finn (Local Coordinator SGW Moreton Bay). We use five 25m transects (perpendicular to shore), or where the meadows are very narrow, two points (A and B) were marked out defining a 50m transect with quadrats placed every 5m.

We faced several other issues during the first round of monitoring. Low visibility due to depth and turbidity of water (these parameters have been added to NRSGW datasheets) at the sites made estimates difficult, and photos near impossible, particularly during a very dark cloudy sand-fly ridden day. The depth of quicksand like sediment was also a problem, sucking volunteer's thigh high into the mud and increasing turbidity making it was impossible to see anything in the surrounding waters.

The use of kayaks and a bathyscope was awkward but more feasible than tramping through the meadows on foot. A catamaran sans sail brought along by a volunteer turned out to be

Right: Kayaks decrease disturbance to both seagrass and volunteers



Below: Setting up the transect can be a little hard in the Weyba Creek area off Noosa River



a user- friendly platform for seagrass watching.

NRSGW future adventures include; possibly acquiring and

fitting out a catamaran for minimum disturbance, volunteer friendly seagrass monitoring. Monthly Waterwatch monitoring of representative seagrass sites to start in July 2006 (by Noosa and District Waterwatch and NICA's Volunteer River Rangers), as well as placing temperature loggers (to be supplied by SGW Moreton Bay). This additional monitoring may give valuable data concerning water quality issues around our sites. We look forward to the next round of monitoring in September/October.

Thanks go to our volunteers: Simon Baltais and Paul Finn from SGW Moreton Bay; Noosa Integrated Catchment Association, (NICA); NICA Volunteer River Rangers; Micheal McNamara (Noosa Council River Ranger); Len McKenzie; Davo's Bait and Tackle; O-Boats; and Mandy Maggs (Noosa and District Waterwatch)

For further information please contact; Kristopher Boody (Program Coordinator) or Tara Kingsbury (Program Officer) at seagrass@noosariver.com.au or NICA office (07) 54 499 650. ♡

References:
EHMP (2005) Map of Noosa Catchment http://www.ehmp.org/ehmp/results_noosa.html
EPA Environmental Sciences Division (2005) Noosa Council (2004) The Noosa River Plan Noosa Council Strategic Planning Section. * All photographs taken and supplied by Tara Kingsbury

Aussie Kids Turning The Tide

Lauren Kirk reports



Hello we are a group of 15 year olds who have begun a project monitoring the seagrass off Quoin Island in the Gladstone Harbour.

Aussie Kids Turning The Tide is a way for kids of all ages to share their creative ideas about the environment and to learn about animals, plants, ecology, Native Wisdom and more.

Gladstone is a large industrial city on the central east coast of Australia. For many years now I have been interested in the environment and who and what we do in our homes ultimately effects the health of our waterways and the ocean.

In 2002 I traveled to Canada to participate in the United Nations International Children's Conference on the Environment. In 2004 I was invited to participate in this conference again but this time as a member of the Junior Board.

It is with this interest that I have managed my web log (blog) on encouraging children to make changes in what they do in their homes and to become active in the community with environmental projects.

Our environmental group meets monthly to discuss what we need to do next and different events that we participate in. Bonnie, Kate, Kevin, Tom and I are the core group.

Tom's family has a home on Quoin Island and recently he began talking about the death of two dugongs on Witt Island. As we needed a new project, it made sense to investigate the history of this island and the seagrass meadows that lie to the east and west of the island.

After contacting Len McKenzie he encouraged us to make contact with Dr Peter Stratford, the local Seagrass-Watch Coordinator for the Gladstone region, who helped us set up our first site.

The day began as a beautiful sunny day but ended cold, bleak and windy. On Sunday the 28th May we had a very low tide of 0.78 at 3.45 PM so we needed to work quickly to beat the tide and the setting sun.

We were excited to find seagrass and to our delight two turtles lying on the muddy flats. After having a wonderful day we started asking questions of the locals about what the island was like before the dredging of the harbour began. To our horror we were lent a photo of the seagrass meadow in the 1980's and our excitement at finding seagrass diminished quickly. We realize now that what we found is sparse compared to what it had been in the past.

So we will continue to monitor this site and hopefully our knowledge and understanding of the different surrounding habitats will grow enabling us to do more about the disappearance of our valuable marine resources.

If you would like to know more about our group, please visit our website www.aussiekidsturningthetide.com. ♡



Lauren & Tom with a juvenile Green Turtle



Peter Stratford trains Lauren in Seagrass-Watch methods

Queensland

Lugger Bay

In the last edition of the newsletter, it was mentioned that the monitoring sites at Lugger Bay (Mission Beach) had recently been exposed to a tropical cyclone, although the extent of any impact was unknown.



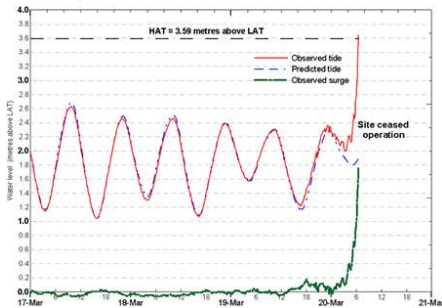
Severe Tropical Cyclone Larry crossed the tropical north Queensland coast near Innisfail (50km north of Mission Beach) during the morning of 20 March, 2006. TC Larry was the first severe tropical cyclone to cross the Queensland east coast since Rona in 1999.



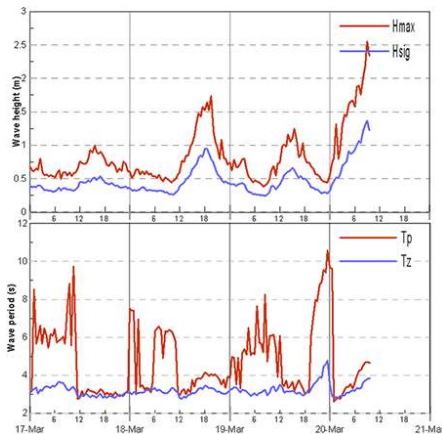
Image from MTSAT-1R satellite received and processed by Bureau of Meteorology courtesy of Japan Meteorological Agency.

Although TC Larry was quite small in size, it caused major damage to homes and other buildings, as well as extensive damage to local crops between Cairns in the north and Cardwell in the south. TC Larry crossed the coast on a neap tide, so the significant storm surge and effects of the waves only caused the sea level to exceed highest astronomical tide in a few locations. One of which was Mission Beach, with sea levels exceeding the predicted tide by 1.75m (at which point the instrument stopped recording prior to landfall).

One of which was Mission Beach, with sea levels exceeding the predicted tide by 1.75m (at which point the instrument stopped recording prior to landfall).



Plot of Clump Point actual tides against predicted

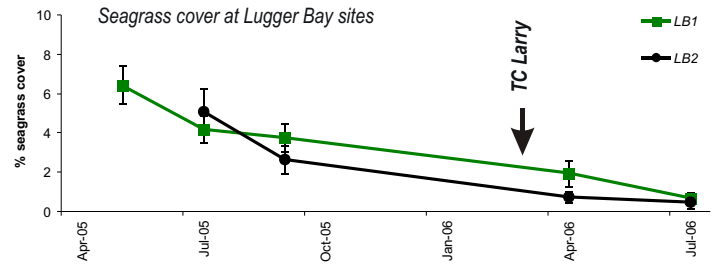


Waves heights for Cairns
(Hmax=maximum wave height,
Hsig=significant wave height (average height of waves which comprise 33% of waves in a given sample period)
Tp=peak period, Tz=zero-down crossing period)



The intertidal Seagrass-Watch sites at Lugger Bay have been examined on 2 occasions since the cyclone, and it appears that they were significantly impacted. Immediately following the cyclone in late April, the abundance and distribution of the meadow was significantly lower than previous. In July, although the tides were not the greatest for monitoring, the meadow shows no signs of recovery and abundance appears even lower.

However, the sites are on a naturally dynamic intertidal sand



bank, which is often exposed to regular periods of disturbance from wave action and consequent sediment movement.

It is difficult to say if the overall distribution has further decreased since April, because the sites were still partially covered with water in July. In fact, in July the last 10m of each transect were still covered with water, to a depth of 15cm in places. Observations relied on the tactile senses, as the water turbidity was more comparable to brown soup, with zero visibility.

It is unknown how long it may take the meadow to recover, as there is no seed bank (no seeds have ever been found on the site) and recovery will only be by vegetative reproduction. The next monitoring is in early September.

Napranum

Ron Baker (DPI&F) Reports

Three Rangers from the Nanum Wunghim Land and Sea Centre at Napranum joined DPI&F officers Louise Johns and Ron Baker in June 2006 to survey the Seagrass-Watch site at Munding on the shores of the Embley estuary. The Rangers, Anthony, Lionel and Morris, were very enthusiastic, so despite Ron's mix up with the tide times we were able to complete a full survey including seedbank sampling before the rising tide dampened our spirits. Epiphyte cover appeared to be quite high, and the patch of *Thalassia* which was previously outside the site had expanded and is now encroaching into the site from the south. There were quite a few dugong feeding trails between the shore and the site, which were not observed a month earlier. Although there wasn't much in the transects, the *Enhalus* in the site showed a lot of signs of burning.

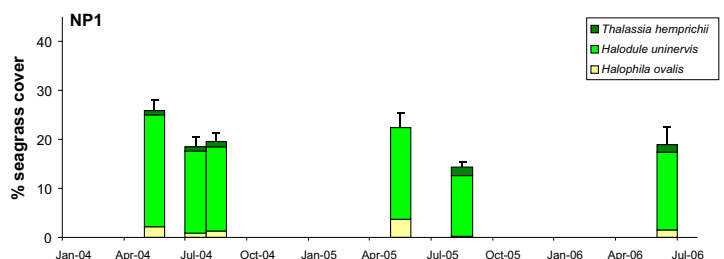
The DPI&F officers were visiting the Napranum and Weipa as part of an assessment of the fisheries resources of Albatross Bay which has been nominated as a potential Fish Habitat Area.



Ron and Anthony sampling the seed bank



The crew: Ron, Anthony, Lionel and Morris (Louise took the pic)



Townsville Region - Queensland

Shelley Beach

Shenade Muller reports

On Tuesday the 25th of April, I was lucky enough to again participate in Seagrass-Watch this time at a site at Shelley Beach (SB1). I expected a long walk to the sight but was very pleased when I found the walk was not half the length that I expected. At first because of the tide it was difficult to actually find pegs that marked the sight we were monitoring. But as the tide went out the pegs were eventually found. While most others in our group of Seagrass-Watchers were doing Seagrass-Watch, Catherine Walsh and I were collecting the reproductive samples, which we have been working with in the lab for the Reef Water Quality project. Once completed I helped with counting the seeds along each transect which was a fairly new thing for me as I had only once before counted seeds while doing Seagrass-Watch, which was few days previous at Bushland Beach.

After working for much of my Easter and Christmas holidays with DPI&F, I was surprised to find how much more interesting Seagrass-Watch was. Having worked with both the reproductive samples and nutrient samples in the lab, I found myself being able to easily identify not only the different species, but also identify the flowers and seeds of *Halodule uninervis*. For a job I once was not too keen on, I can now say that I find Seagrass-Watch much more interesting and appreciate what is being done much more thanks to my work with DPI&F. ♡

Naomi Smith (DPI&F) reports

SB2 was monitored on a sunny Friday afternoon in May 2006. The participants were a team from DPI&F, Jane Mellors, Ronald Baker, Posa Skelton, Iony Woolaghan, Sue Mulvany, Naomi Smith and new recruits Tav Bates and Flora Akwilapo. Flora is a senior Government official from Tanzania, who is currently in Townsville for six months under a United Nations fellowship program. Interestingly, Flora had already participated in Seagrass-Watch in her home country. It was great to hear that Seagrass-Watch is carried out in Tanzania and had a good support group there. We all made the long muddy trek out to the site and found that the meadow was made up of three dominant species *Halodule uninervis*, *Zostera capricorni* and *Halophila ovalis*. It was a great afternoon with all participants working efficiently, so that we were not racing the tide back in! ♡

Sue Mulvany (TTSW Local Coordinator) reports

It is the middle of Winter in Australia but conditions in Townsville for our July Seagrass-Watch at Shelley Beach were just superb. It was a great place to be on a Sunday afternoon, poking around a seagrass meadow with a balmy Southeast breeze, plenty of sunshine, and our brilliant views of the island and beaches of the Cape.

The team consisted of Jason, Michelle, Andrew, Barry, Linda, Lisa and Ken, Marilyn, Posa, Naomi, and moi. Shelley Beach has a good band of Seagrass-Watchers so that even with some stalwart members committed to the Riverfest and elsewhere we had a



comfortable number of experienced members to complete the survey. There is always a lot of coming and going however, so we need to continually add to our list of willing watchers.

Our first Seagrass-Watch without our mentor Jane Mellors, none-the-less there was plenty of experience within the group to ensure no hitches with data collection. Also, (don't tell Jane!!) we were able to do a little sneaky animal watching quite fearlessly. We did have some moments of excitement in Transect 3 with a pipe fish and a juvenile emperor (Jason's guess) in the one quadrat! A baby-crayfish in one of transect 2's quadrats caused much interest before being enthusiastically and skillfully shot with our digital camera. Not that seagrass isn't

exciting because our other huge excitement was a record-breaking, expletive making (to quote Posa) 82 HU seeds in one sample. Now that is amazing!!

Speaking of seagrass, only HU was observed except for one quadrat with 1 per cent HO. Percent cover was low across all transects, and no dugong trails were observed.

Next Seagrass-Watch for Shelley Beach is Saturday 7th October with low tide mid-afternoon so it should be another lovely day. Because people are always coming and going we can never have too many people in our bank of Seagrass-Watchers, so if you know someone who might be interested in coming along please encourage them. It is great always of course to have international visitors. (Hi to Lisa and Ken Clifton, and to Flora). ♡

Below: A tripod fish. Right: A baby lobster.



Larnie Linton (DPI&F Tropical Rock Lobster project) examined the photo and confirmed it is a very early juvenile lobster. It is just past puerulus stage as it has started to colour up (the puerulus stage is when they settle and they are usually clear with clubbed antenna- if you look closely at the end of his right antenna you can see it is clubbed, unfortunately the other is broken off). Although Larnie is not sure what species this one is, it is most likely *Panulirus ornatus*, but could also be *Panulirus homarus*. It probably only settled out in the last month.




Townsville Region - Queensland

Rowes Bay

Naomi Smith (DPI&F) reports

The week before the students from Belgian Gardens State School went out into the field to monitor Rowes Bay, Jane Mellors and Naomi Smith visited the Grade 6 class. Jane worked through the Seagrass-Watch procedures and informed the students on why we monitor the seagrass and the importance of seagrass meadows to the environment.



While at the school, the students showed Jane and Naomi their classroom fish aquarium which was absolutely fascinating. Out in the field the students led by class teacher, Mr Brett Murphy, were very well behaved and were confident in their seagrass species identification and percentages. The students were filled with enthusiasm and even a very muddy walk back to the beach couldn't dampen their spirits (if anything it added to their adventure).

Bushland Beach


Lux Foot reports

In April, fifteen keen "seagrassers" turned up for this month's outing. Because of a tropical low out to sea, the tide was higher than usual with some water over the meadow which gave some trouble because of the muddy water from the wet season.

July 22nd: Nine seagrassers turned up for the July monitoring. We also had Jane Mellors with 4 girls who were sampling seagrass seeds. They later joined up.

It was a very windy day which played havoc with the tapes, however we soon overcame that and were able to do the job. The wind did not alter the water level, which was good.

The blowouts are a lot larger this time no doubt caused by the strong winds of late. *Halodule uninervis* and *Halophila ovalis* are still the main grasses. There are patches of *Zostera capricorni*, some quite large in the area. It is interesting to see the site after 4 years. The site BB1 was placed on the edge of the banks, but now one walks through fields of grass to get to the site.

We ended the day with a BBQ, which will be a norm from now on.



brochures and colour-in handouts for the kids. Our display attracted the attention of the local radio station 4TTT which offered Seagrass-Watch the opportunity to go on air during their fishing segment to publicise the important work we

do for the conservation of the environment, in particular, the seagrass meadows and to advertise the next monitoring dates.

The stall was manned by Posa Skelton and Naomi Smith. A special thanks to Sue Mulvany for volunteering on Mother's Day to come in and promote Seagrass-Watch and for nagging (*oops nabbing*) quite a few volunteers.

North Queensland Field Days 17th & 18th May 2006

The Seagrass-Watch display was located in the Department of Primary Industries & Fisheries marquee. It was estimated that up to 8000 people visited the site over the two days. There was plenty of public interest, especially from school teachers, which allowed us to sign up several new volunteers.

The display was manned by Naomi Smith, Catherine Walsh and Carla Wegscheidl. Our display was also visited by the Minister for Primary Industries & Fisheries, Mr. Tim Mulherin.

Tile Making Workshop 23rd May 2006


As Seagrass-Watch is a regular participant at the Townsville EcoFiesta, it was approached by Fiona Banner from the North Queensland Potters Association Inc. to be part of a mosaic that will be showcased on a permanent building in Anderson Park at a later date. The centre design was based around the Seagrass-Watch logo with smaller tiles surrounding the centrepiece depicting different species of seagrass as well as marine animals.



Catherine Walsh, Iony Woolaghan, Posa Skelton and Naomi Smith had a fun afternoon making the tiles. Many thanks to Fiona for her patience and guidance with our novice attempts at tile decorating.

Eco Fiesta 4th June 2006

Seagrass-Watch had another successful public outing in Queens Gardens attracting attention from both the general public and the local daily newspaper the Townsville Bulletin. Our popular children's activities included badge making, colouring-in and building a meadow with cut-out seagrass shapes on which were written conservation messages. This outing attracted another handful of new volunteers eager to sign up.

Iony Woolaghan, Naomi Smith, Sue Mulvany, Posa Skelton and Catherine Walsh all worked on the stall at various times during the day. With positive public exposure and over twenty new volunteers showing interest in becoming Seagrass-Watchers the seagrass meadows in the Townsville region are swaying with delight.



National Volunteer Week Expo 14th May 2006

This was the first of Seagrass-Watch's exposure to the Townsville public for 2006. It was estimated that 300 people visited our display stall on Victoria Bridge. Our display included live seagrass plants, posters, seagrass and dugong information

Seagrass Ecosystem of Minicoy Lagoon, Lakshadweep

Prabhakaran M.P. (School of Marine Sciences, CUSAT) reports

Seagrass meadows are of considerable ecological importance in coastal and marine ecosystems where they play a significant role in the processes and resources of near shore coastal ecosystems. They are the most productive and dynamic elements of an aquatic ecosystem.

In the lagoons of Lakshadweep atolls, seven species of seagrasses were present. They include *Thalassia hemprichii*, *Syringodium isoetifolium*, *Cymodocea serrulata*, *Cymodocea rotundata*, *Halodule uninervis*, *Halophila ovalis* and *Enhalus acoroides*. This article provides basic information about the seagrass ecosystem of Minicoy lagoon.

Minicoy, the southern most island (8°17'N & 74°04'E) in the group, is located 215 n.miles southwest of Kochi, in the Arabian Sea. It has large lagoon with an area of 25 sq.km and an average depth of 4m. The seagrass vegetation in this lagoon is very rich and extends to an area of 2.2 sq.km.along the intertidal zone. The abundant species are *Thalassia hemprichii*, *Syringodium isoetifolium* and *Cymodocea serrulata* forming mats while *Halophila ovalis* and *Halodule uninervis* are present in small patches.

Based on the field survey, it was found that seagrasses are distributed along the length of the island in the intertidal zone of the lagoon, excluding the southern and northern ends and village area, which is at the middle part. There exists stratification in the distribution of seagrasses in the tidal zone. *Halodule* generally extends from the upper intertidal zone to the lower intertidal zone. Both *Thalassia* and *Cymodocea* are distributed through out the lower intertidal to the upper sub-tidal zones. *Syringodium* is restricted to the sub-tidal habitats. *Halophila* is present only in some areas of the lagoon in small patches.

The seagrass meadow of Minicoy lagoon has a rich and diverse association of flora and fauna. Floral component include seaweeds of Rhodphyceae, Phaeophyceae and Chlorophyceae. The abundant species are *Gracilaria edulis*, *Gelidiella acerosa*, *Acanthophora spicifera*, *Laurencia papillosa*, *L.obtusata*, *Janea capillaceae*, *Hypnea musciformis*, *H.valentiae*, *Turbianria ornata*, *Caulerpa peltata*, *C. racemosa*, *Halimeda gracilis*, *Enteromorpha compressa*, *Chaetomorpha linoides* and *C. area*. Other minor species present are *Cladophora* sp., *Cladophoropsis* sp., *Ulva lactuca* and *Boergersinia forbesii*.

The distribution and abundance of macro fauna are related to the density and biomass of *Thalassia hemprichii*. Sessile and creeping epifauna which live on the leaves of the seagrasses are mainly gastropods, which include, *Cypraea monita*, *C. tigris*, *Strombus* sp., *Melo* sp., *Drupa* sp., *Neriata* sp., *Pyrene* sp. and *Lambis*. Fauna attached to

the stems and rhizomes comprise sponges and coelenterates. Mobile faunal group mainly include crabs such as *Calappa* sp. and *Thalamita* sp. and fishes such as *Lethrinus mahsena*, *Gerres oblongus*, *Caranx sexfasciatus*, *Sphyrnaenia barracuda*, *Lutjanus kasmira*, *Upeneus* sp., *Albula vulpes* and *Spratelloides delicatulus*. Predatory fishes like sharks and rays are occasionally seen during high tides.

As a result of their shallow sub-tidal and intertidal existence seagrasses are subjected to many of the stresses imposed by man's use of coastal environment. Such activities include dumping of sewage, fishing activities and dredging and filling operations. Although not on a large scale, these human interferences are noticed on seagrass meadows of Minicoy lagoon. ♡

Gulf of Mannar Marine Biosphere Reserve

J.K. Patterson Edward (Suganthi Devadason Marine Research Institute) reports

We have started the seagrass assessment in Gulf of Mannar very recently and now we finished assessment a very small area in the Tuticorin coast (Southern part of Gulf of Mannar Reef Area).

In Gulf of Mannar, vast seagrass meadows are seen between Islands and mainland; patch meadows between islands; and vast meadows towards seaward side from the islands, but in depths over 6 m.

We do not have any specific programme/budget to assess the seagrass meadows, however I am doing the present assessment out of my interest using our very limited institute funds. Therefore, I have restricted the area of assessment as "3 km radius from the island"

We are following Saito and Atobe (1970) to estimate the percentage cover of the seagrass (Species/population) by using quadrats (50cm×50cm) divided into 25 squares (10 cm × 10 cm).

The proposed assessment of seagrass is being carried out around the 21 islands of Gulf of Mannar, at present about 3 km radius from the island. 100m transects is laid on the seagrass meadows and transects are separated from each other by a reasonable distance (50-100 m), and are parallel to each other and perpendicular to the shore. Samples are also taken at regular intervals (5m) along the transect. At least 4 replicate quadrats are laid at each sampling location. Seagrass biomass is being estimated using the method of Mellors (1991). ♡



Seagrass meadows at Krusadai Island (above) and Shingle Island (below)



Philippines

Roxas (Palawan)

Hildie Nacordam (Marine Science Institute, UP) reports

This year's phase of the Participatory Coastal Resource Assessment (PCRA) and Monitoring Training for seagrass, kicked off in late April. It was the second Seagrass-Watch monitoring event in Barangay Tinitian; one of seven seagrass core zone areas identified by WWF-Philippines in the municipality of Roxas

After trialing the Seagrass-Watch methodologies with the local participants last year, the group elected to slightly modify the standard methodologies, and replace visual estimates of species cover with shoots counts. The monitoring also includes mapping the perimeter of the meadow.

The training at Caramay Barangay Hall (Roxas) on April 24-26 included presentations (including a brief review of seagrass background knowledge), conducting monitoring and guiding the participants on the analysis, interpretation and presentation of field data.

On the first day, the lecture was spiced with a round-song titled Lusayán (tune: Three Blind Mice), which reminded the participants of the different seagrass genera found in the country:

Ang baryaw, ang baryaw
Lusayan, lusayan
May EnHALus, ThaLAssia, HaLOphila
HaloDUle, SyRINGodium, RUppia
CymoDOcea AT ThalaSSO-dendron
Sa lusayan...

After a short refresher quiz on seagrasses (taxonomy, world and local distribution, importance, sources of stress) and the Seagrass Watch program, participants were given presentations of the fieldwork in Tinitian last December 2005. By the afternoon, the participants regrouped, prepared all materials and practised the field methods.

On day two, the site was submerged in almost 1m of water on arrival in Tinitian and water movement was minimal. This differed from last year's exposure given the same time of day.

Volunteers located the site and proceeded with data gathering. Shoots of all species present were counted, i.e., in all 25 squares of the quadrat for *Enhalus acoroides* and *Halophila ovalis* and in 9 squares (30 x 30 cm) for the rest. Each subgroup also collected (at random) complete shoots of *T. hemprichii* for a demonstration of the age reconstruction technique (*sensu* Duarte *et al.*, 1994 - this is where the age of complete *T. hemprichii* modules is estimated by counting the nodes and the number of extant leaves).

The perimeter of the meadow was also mapped and a patch of *Thalassodendron ciliatum* was located just past the sandy edge of the meadow. This sighting represented the municipality's first record of *T. ciliatum*.

On the last day of the training, participants entered the data, computed the means of the variables (seagrass cover, canopy heights, densities) and presented their findings back to the group.



Top left: RArcaño, Kap JA Abonales and J Roa.
Left: Measuring the canopy height of *T. hemprichii*.
Above: Transect 3 finishes first!

The core group, in recognizing their continued participation in the Seagrass-Watch program, appears enthused by future seagrass-related activities of WWF-Philippines. Some have already begun to participate as volunteers during WWF's monitoring of the seven seagrass core zones in Green Island Bay. Overall, the trainer remains positive of the group's capability and agrees that other citizens may be locally trained for monitoring support.

Summary of field observations

Seagrass cover ranged from 40-95% (mean $78 \pm 3\%$) and cover for associated seaweeds was up to 5% (mean $2 \pm 0.4\%$). Epiphyte cover ranged from <5-40% (mean $20 \pm 2\%$). Overall, the seagrass cover was slightly higher than recorded in December 2005. Leaf blades also appeared moderately loaded with epiphytes compared with negligible values observed last year. This may be attributed to the accumulation of silt from rivers during the episodic heavy downpour in December 2005, immediately after the first Training Workshop.

The group identified five seagrass species within the quadrats: *E. acoroides*, *T. hemprichii*, *H. ovalis*, *C. rotundata*, and *H. uninervis* (including *H. pinifolia*). *S. isoetifolium* and *C. serrulata* were found in patches outside the quadrats. Mixes of 4 to 5 seagrass species were typical and these were dominated by *T. hemprichii*. The canopy of *T. hemprichii* was taller by ~ 2 cm than in December 2005, and reached an average height of 10 cm (± 0.3). Associated seaweeds, often recorded in Transect 3, were represented by the green algae *Halimeda* and *Acetabularia*, red algae *Laurencia*, and by brown counterparts *Padina*, *Gracilaria*, *Sargassum* and *Turbinaria*.

The present meadow boundary indicates a slight decrease in the size of the meadow relative to the area mapped by WWF-Philippines in 2005. From the reconstruction age of *T. hemprichii* exercise, shoots were mostly recent (mean 12 months ± 1 ; modal age 12 months) and the oldest shoots were only about 40 months years old. ♡



J. Amer Abonales practices framing the quadrat in the viewfinder while B. Baddari looks on



Examining the *Thalassodendron ciliatum* patch



Members of the Seagrass Watch RX core group: front row, seated, L-R: B. Sheila Albasin (WWF-Philippines PHE Project Leader), Marco Dimanalata (Tinitian), Kag. Dindo Remoto (Brgy. 1), Rodolfo 'Pong' Cayaon Jr (WWF-Philippines); middle row, standing, L-R: Kagawad Alfredo Cacatian (Caramay) (with red cap), Juliet Roa (MENRO-Roxas), Rodel Arcaño (Brgy 2), Miguel Heredero (MPDO-Roxas), Danilo Namuco (Jolo), Hildie Maria Nacorda (Trainer, UPMSI); back row, standing, LR: Kag. Sany Gabua (San Miguel), Kap. J.Amer Abonales (Brgy. 6), Barahim Baddari (Brgy 6), Albert Ladica (MAORoxas) (with grey cap).



Hepu & the South China Sea Project

Prof Xiaoping Huang (South China Sea Institute of Oceanology) reports

Seagrass-Watch China and sampling of the UNEP/GEF project "Reversing environmental degradation trends in the South China Sea and Gulf of Thailand" was officially launched at the Hepu Seagrass Demonstration Site on 15-18, June 2006. This was the third Seagrass-Watch survey since the establishment of Hepu Seagrass Demonstration Site in April 2005.

Operational since January 21st 2002, the South China Sea (SCS) Project aims:



- to create an environment at the regional level, in which collaboration and partnership in addressing environmental problems of the South China Sea, between all stakeholders, and at all levels is fostered and encouraged; and
- to enhance the capacity of the participating governments to integrate environmental considerations into national development planning.

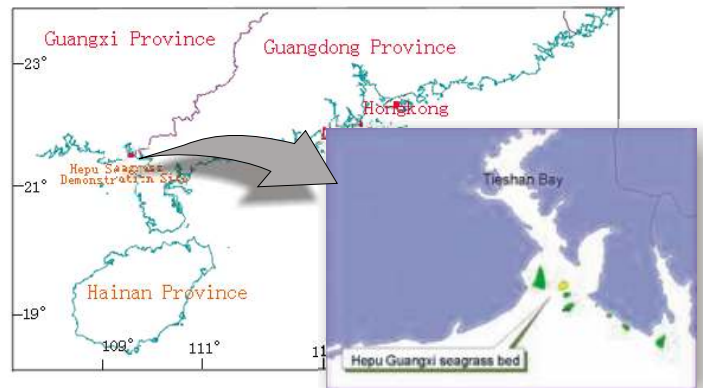
The South China Sea Project is funded by the Global Environment Facility (GEF) and implemented by the United Nations Environment Programme (UNEP) in partnership with seven riparian states bordering the South China Sea (Cambodia, China, Indonesia, Malaysia, Philippines, Thailand, and Vietnam). For more information on the project, visit <http://www.unepscs.org/>.

The Hepu Seagrass Demonstration Site was developed as part of the protective measures component of the project. Hepu was the first formally agreed seagrass demonstration site, and other similar sites have since been established in Bolinao (Philippines), East Bintan (Indonesia) and Kampot (Cambodia).

The Hepu Seagrass Demonstration Area is located at Hepu County of Beihai City, Guangxi Province. It is easterly from Yingluo gulf to westerly sea area of Yingpan town, and across Shatian town. The goal of the project is to establish a Demonstration Site of community based management, and thus to maintain the existing biodiversity and current environment and utilize seagrass resource in a sustainable way. Experiences of the relevant research, protection and utilization for seagrasses in the Demonstration Site will be useful for other seagrass meadows in China and the all over the world.

In June, participants set up three sampling sites (50m x 50m) on nine locations in Shabei seagrass meadow at Hepu and made detailed observations. They recorded coverage, species and canopy height of seagrass, algae coverage, sediment features, animal quantity and so on.

The field survey and sample



collections were conducted not only on the original fixed sites established in December 2005 (Xialongwei, Shabei, Beimu, Yingluo Port and Ronggen hill), but also at an additional three sites (Jiuhejingdi, Caowu and Dasha). In this survey, area of each seagrass meadow, biomass and shoot density of seagrass and benthos were surveyed and inhabited environments of the seagrass meadows were photographed in videos.

In addition, the working team made a detailed survey and analysis on the damage suffered by the inhabited environment of Hepu seagrass meadow.

It is hoped that the outcomes the project will:

- Promote the local residents, governments and relative authorizations to take part in the actions of seagrass protection;
- Raise the awareness of the government and local people on protection and sustainable use of seagrasses;
- Improve the environment of seagrass meadows;
- Bring protection of seagrass meadows into local socio-economic development plans
- Recover biodiversity of seagrasses;
- Promote international exchanges of experiences and achievements on seagrass researches; and
- Train related personnel.

These outcomes will also support China's Action Plan for Protection of Seagrass Resources and ensure sustainable use of seagrass resources in order to bring benefits to the mankind and even the future generations.

If you would like more information on the project or to participate, visit <http://seagrass.scsio.ac.cn> or contact Prof Xiaoping Huang at Email: xphuag@scsio.ac.cn, xphuag2004@yahoo.com.cn.



China's first website on seagrass (<http://seagrass.scsio.ac.cn>) was opened recently. The website, as a part of the working contents of Guangxi Hepu Seagrass Demonstration Site funded by UNEP/GEF, will play an important role in the universalization and education of the protection and sustainable use of seagrass resources. In addition, it offers reports on fresh research progresses in the field at home and abroad. It serves as a new channel for information exchanges for the researchers, organizations and personnel engaging in the field of environmental protection.



Installation of warning boards for the Hepu Seagrass Demonstration Site

Ten warning boards were recently installed at the main road crossings and harbours of Shitoubu of Xinggang town, Yong'an and Wuni of Shankou town, and Shatian town. The boards were instigated by the management office of the Hepu National Reserves for *Dugong dugon*, a local coordinated unit of Hepu Seagrass Demonstration Site, and supported by the local governments and active coordination of the relevant departments. The boards promote the importance of the Hepu Seagrass Demonstration Site and notify people take care on the site; not to harm the seagrass or the fauna they support. ♡



Distribution of Seagrass in South China

The Indo-west Pacific has long been recognised as the global centre of shallow water marine biological diversity and the South China Sea, which is located at the center of this marine biogeographic realm, therefore represents an area of globally significant marine biodiversity.

Seagrass meadows in China's waters of the South China Sea are mainly distributed in Guangdong Province, Guangxi Province, Hainan Province and Hong Kong.

In Guangdong Province, seagrasses are located at Liusha Bay of Leizhou Peninsula, Donghai Island of Zhanjiang and Hailing Island of Yangjiang. The seagrass meadows of Liusha Bay distribute along the coast. The dominant species *Halophila ovalis* covers more than 98% of the seagrass area.

In Guangxi, 540ha of seagrass are mainly located at Hepu in eight locations, namely Dianzhousha, Xialongwei, Beimu Salt-Field, Yingluo Bay, Danshuikou at Shatian, Shanliaojiuhejingdi, Gaoshatou and the foot of Ronggen Hill. The area of each seagrass meadow ranges from 20ha to 250ha. The dominant species in the Hepu seagrass meadow is *Halophila ovalis*. The area of seagrass bed in Pearl Bay of Guangxi is about 150ha with the dominant species of *Zostera japonica*.

In Hainan Province, seagrasses are mainly located at Li'an Bay, Xincun Bay, Long Bay and Sanya Bay. Seagrasses in Li'an Bay are distributed around the lagoon, *Enhalus acoroides* is the dominant species, whilst the total area of *Halophila ovalis* and *Halodule uninervis* is less than 10%. In Xincun Bay, 200ha of seagrasses distribute at the south of the lagoon, the dominant species is *Enhalus acoroides*, and the total area of *Halodule uninervis* is less than 8%. In Long Bay, seagrasses are located at the inner side of the coral reef in belt pattern. The area of seagrass at Shanya Bay is less than 1ha, *Thalassia hemprichii* is its dominant species.

In Hong Kong, a small area of seagrass occurs at Shenzhen and Dapeng Bays. ♡



Threats to Seagrass in South China

Seagrass meadows in South China Sea are facing serious threats, a consequence of poor public awareness of the importance of seagrasses. Threats include:

Construction of shrimp ponds

Shrimp culture is blooming and large areas of intertidal seagrass have been replaced with shrimp ponds. This is prevalent at Liusha Bay and Hailing Island in Guangdong Province, Pearl Bay in Guangxi and Li'an Bay in Hainan Province.



Aquaculture

Seagrass habitats are being replaced with seashell (eg oysters, pearl, etc.) and algal culture farms. About 100ha of seagrass was destroyed at Dianzhou in Hepu (Guangxi) to make way for seashell culture, with broken pegs and waste seashells found throughout the area. Also large areas of the Liusha Bay meadow are used to cultivated shellfish. Similarly, large areas of seagrass in Li'an and Xincun Bays (Hainan Province) are used for algal culture.

Net fishing

Local people set fishing nets on the meadows. Activities, such as piling and trampling on seagrasses during fishing, can damage the seagrasses. Also, the large and long nets accidentally trap dugongs. For example, a dugong was caught when feeding on the Hepu seagrass meadow in Guangxi, and was safely released back to sea by the fishermen.

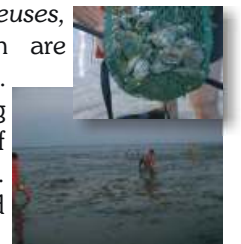


Poisoning, blasting and electron capturing

After ebb tide, numbers of fishermen catch fish by poisoning, blasting or electro fishing. These activities are universal on seagrass meadows along the coastal area of South China, especially at Liu'sha Bay in Guangdong province. Blast fishing is quite prominent, and can be very damaging to seagrass.

Shellfish digging

Digging *Sipunculus nudus*, *Linnaeus*, *Phascolosoma esculentaes* and shellfish are universal on most seagrass meadows. Hundreds of people, including children, dig for shellfish in the seagrass meadows of Hepu (Guangxi) and Liusha (Guangdong). Shellfish are an important source of food and income for the local people.



Trawling

There are more than 400 trawlers working in the shallow (<10m) sea areas of Hepu. Intensive bottom trawling can be physically destructive. A component of the SCS project is encouraging operations of deeper water trawling.

Other impacts, include:

Pollution from both land and sea (e.g. wastes from restaurants and visitors are discharged into the sea near the seagrass meadow of Xincun Bay, reducing water quality).

Port and shipping channel maintenance dredging which occurs quite universally at Hepu seagrass meadow in Guangxi.

Natural impacts, including Typhoons (e.g. a typhoon in Sep 2002 destroyed the seagrass meadows at Hepu of Guangxi, and recovery took many months). ♡



Fiji Hideaway



The Coral Coast stretches along an 80 km length of coast on the southern side of Fiji's main island, Viti Levu. A popular tourist destination, the Coral Coast is also home to some of Fiji's more established resorts. The Coral Coast embraces Natadola Beach in the west, to Pacific Harbour further to the east.

In the heart of the Coral Coast is Tagaqe village and the Hideaway Resort, who are working together to preserve and regenerate the local coral reefs.

Tagaqe village has designated part of the reef in front of Hideaway Resort as "tabu" protected. This is a Marine Protected Area (MPA) to provide a safe environment for the coral and marine life to grow and flourish.

Recently, Tagaqe's chief Ratu Timoci Batireregu initiated a program working with the resorts along the 6 km of fringing reef in the Tagaqe area, to secure the protection of tribal reefs by the installation of effective sewage/water treatment plants, coral regeneration and cultivated rock ventures.

To help assess the condition of the reef ecosystem, Seagrass-Watch was granted permission to map the extent of seagrass resources within and adjacent to the tabu area in front of Hideaway Resort, and to establish a monitoring site.

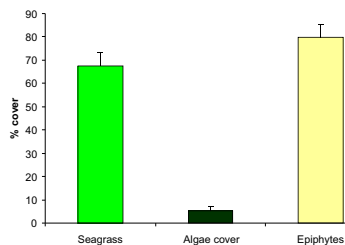
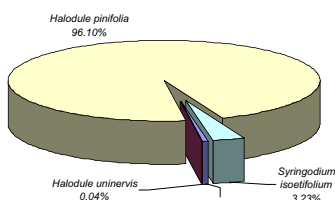
In early May 2006, Seagrass-Watch HQ scientists Len McKenzie and Rudi Yoshida mapped 1.6 hectares of predominately *Halodule pinifolia* meadows in front of the resort and conducted the first monitoring of the site. Just over 20% of the meadows were within the designated tabu area.



Map of seagrass meadows on reef-flat in front of resort (green circles=TQ1, red flags=tabu area)



Four seagrass species are found in the Seagrass-Watch monitoring site. Until recently, these were all the species found in Fijian waters (*Halophila decipiens* was recently identified from the Great Sea Reef, on the northern side of Vanua Levu). The most noticeable feature of the seagrass condition within the site was the high amount of epiphyte cover on the leaves. High epiphyte can be a natural occurrence, however at some locations it can be an indicator of elevated water column nutrients.



Above left: *Halophila ovalis* ssp. *bullosa*



Above right: A patch of *Halodule uninervis* within the dense meadow of *Halodule pinifolia*.

Continued monitoring of the site will determine if this phenomenon is natural or human induced. ♡

Coral regeneration and the live rock trade

In the mouth of the channel to the Tagaqe tabu area, the villagers and the resort have established a coral farm, where fragments of coral are grown on racks before transplanted onto the reef. With the assistance of Walt Smith International and Pacific Aqaufarms, resort visitors can sponsor a piece of coral, where the grown fragment is glued directly onto the reef using epoxy in a sheltered location of the tabu area.

Adjacent to the tabu area, Tagaqe village is working with the Georgia Institute of Technology and the University of the South Pacific (supported by Fogarty International Centre of the United States National Institute of Health) to farm live rock for the tropical aquarium trade.

Live rock is coral reef rock covered by particular algae species, which tropical aquarium hobbyists put in their seawater aquariums to keep the water clean. You need about 1kg of live rock per 4 litres of seawater. With direct flights and markets to the US, the live rock trade has become a major income for many Fijian coastal villagers. For the last 10-15 years, the trade has relied on harvest of the reefs. It was estimated that 800,000 kg of live rock was harvested and exported in 2001, for approximately F\$1.20 per kg. After years of harvesting, villagers noticed the consequences of the live rock trade, such as destruction of marine habitats, the undermining of the reef structure and erosion. However, instead of breaking off pieces of coral rock for sale, Tagaqe village has begun planting pumice pellets as a substitute for reef rock. Pumice pellets are hung on wire on the reef flat adjacent to the tabu area. After about eight months the pellets become naturally covered by the desirable species of algae, and these are marketed as environmentally-friendly live rock to aquariums around the world. Revenue from the cultivated rock venture will flow to the village's development and education projects.

For more information on Hideaway Resort and its environment program, please visit www.hideawayfiji.com ♡

Right: Live rock farm - pumice pellets strung on wire

Below: Coral farm - coral fragments grown on racks before transplanting





Seagrass-Watch in Suva

Suva is the capital of Fiji and is located on the southeast coast of the island of Viti Levu. It became the capital in 1877 when the geography of the former capital at Levuka on the island of Ovalau proved too restrictive.



Ovalau proved too restrictive.

Suva has a population of 167,975 (1996 census). Rapid population growth and urbanisation of the city and corridors has put increasing environmental pressure on the region. Environmental degradation is largely due to domestic waste and sewage disposal dumped in mangrove

habitat and water ways. Industry in the area discharge their waste directly into rivers and coastal waters, which significantly reduces water quality in the near-shore waters around Suva. Often little or no regard is paid to the importance of mangroves and seagrasses in the marine food chain or the problem of leaching of pollutants during periods of high rainfall.

High concentrations of nutrients (sewage) also cause algal blooms that are destructive to the ecology of the harbour waters. A recent study undertaken by the University of the South Pacific indicated that the general water quality of Suva harbour gave cause for concern.

Water pollution around Suva is dire and very worrying in terms of health for the local population and the environment. Pollution is obviously effecting the biology in the area, as fish caught off Suva harbour sometimes have an oily, kerosene flavour, while marine life in the harbour has been degraded. Shellfish feed by filtering the water they live in. Those found in coastal areas of Suva absorb sewerage waste and the population of Suva has been advised not to eat the local shellfish because of the danger of hepatitis. Despite that problem, Suva harbour and Laucala Bay remain a major source of food for low-income residents (source www.unescap.org & www.sprep.org.ws).



In May 2006, a Seagrass-Watch site was established at Suva Point (Nasese) by Len McKenzie and Rudi Yoshida, to help assess the condition of Suva's marine habitats.

Located on large mud flats in front of an education precinct, the site is easily accessed by foot. The meadow is comprised of *Halodule uninervis*, *Halodule pinifolia* and *Halophila ovalis ssp bullosa*. Of concern, was the high amounts



of epiphytic algae covering the leaves and macroalgae, which formed a thick mat over the grass. Also of note were significant clumps of drift algae washed up along the foreshore.

It will be interesting to compare this site in the new capital with Cawaci, near the old capital Levuka. ♡



Left: Epiphytic algae covering seagrass
Below: Drift algae along Suva shoreline



Cawaci, Ovalau

Shaun Ashley reports



On May 7th 2006, we were fortunate to be accompanied by Seagrass-Watch program leader Len McKenzie and Rudolf Yoshida. The group of five left for Cawaci at 8.00am Sunday morning, with transport supplied by the Royal

Hotel, to brave the hot sun and carry out the sampling. While recording of the data at the two sites, CW1 and CW2, it was observed that the amount of macro algae in some areas has increased significantly with more epiphyte seen growing on the seagrass. The major observation made at the time of sampling

was that, recent excavations by Department of Roads at site CW2 has permanently filled with water which has contributed to new patches of *S. isoetifolium* growing in the area with *H. uninervis* growing closer in shore in the pools. Upon carrying out our July



2006 sampling at Cawaci, changes were noticed at both CW1 and CW2. The main observation was that there has been a significant decrease in algae present on both sites as compared to past observation. Secondly seagrass has decreased especially *S. isoetifolium* which has eventually decreased in the area being monitored. Also major digging was evident between the two sites which we feel could be a likely contributor to the changes. ♡



PNG & Malaysia

Seagrass-Watch & Motupore Island



Jane Wia (Research and Training Officer,
Motupore Island Marine Biodiversity Unit)

Seagrass-Watch on Motupore Island has taken off successfully with the first of its quarterly monitoring surveys conducted in April of this year and the next one scheduled for the end of July. An additional monitoring site (BT2) has been established as a replicate to the initial BT1. We also hope to be able to set up further monitoring sites in the near future with assistance and collaboration from local communities within Bootless Bay, Central Province. The Motupore Island Research Centre (MIRC), in collaboration with Project Seahorse, has recently received funding from the Australia and Pacific Science Foundation to conduct a study into the diversity, distribution and trade of seahorses in Papua New Guinea. As some of the survey sites for this project overlap with those for Seagrass Watch, we hope to conduct surveys for seahorses during the sampling times in order to offer some insight into the presence of these wonderful animals in seagrass habitat. ♡



Above: Seine netting for *Hippocampus kuda* (right) in the seagrasses around Motupore Island.



For the love of the seahorse (Malaysia)

By Hilary Chiew (The Star Tuesday June 20, 2006)

"You have 40 minutes, so get moving," instructs seahorse researcher Choo Chee Kuang. Divided into three groups, the nine volunteers quickly take up position and set about laying transect lines.

It is nearly 7am and the rays from the rising sun illuminate the dark patches of the muddy ground, bringing to life the green pastures at the Sungai Pulai estuary in Johor, Malaysia.

Otherwise submerged, the seagrass meadow is gradually exposed as the tide ebbs, together with invertebrates like the starfish, sea anemone and sea cucumber. The verdant carpet in the sea could very well be a submerged vegetation "bridge" connecting southwest Johor to Tuas in Singapore, given its sheer size of 38ha.

Since August, volunteers of the Save Our Seahorses (SOS) have descended upon the largest seagrass meadow in the peninsula once a month. SOS was set up last year by a group of enthusiastic members of the public in Johor after they learnt of the dire state of seahorses in Sungai Pulai. To date, 72 volunteers have lent a hand to Choo in his effort to save the spotted seahorse (*Hippocampus kuda*).

Briefed on the tasks and supervised by Choo, they assist in collecting data on the diversity, distribution and abundance of seagrass community on the intertidal meadow. Apart from

identifying the various seagrass species, they also record species of algae and invertebrates.

When the tide returns and covers the meadow, the survey team switches to seahorse surveys, using a drag net to comb the seagrass meadow. But the elusive fish disappoints them. They only net three of its closest relative, the crocodile pipefish (*Syngnathus biaculeatus*).

Locally referred to as the Merambong seagrass meadow, the meadow is under threat from the expansion plan of the Port of Tanjung Pelepas (PTP). "If nothing is done to check the development project between Tanjung Kupang and Pendas, the seagrass meadow is doomed and so is the seahorse," Choo says, in reference to the impending port expansion programme that will reclaim a further 8km of shoreline.

Although the expansion plan does not reclaim the seagrass meadow, Choo says it would have an adverse impact on the fragile ecosystem. High sedimentation would lead to algae blooms that will further impede photosynthetic activities. Choo suggests that PTP constructs its warehouse complex further inland instead of removing riverine mangrove that can act as a buffer against sedimentation.

The lecturer at the University College of Science and Technology Malaysia, Terengganu, says ignorance and indifference have led to the disappearance of a huge tract of seagrass meadow at Tanjung Adang following reclamation by PTP in 2003. "Now, further development of the port is closing in on the last remaining seagrass meadow in the confluence of the Straits of Malacca and Johor Straits." Choo says the Second Link project has likely destroyed seagrass meadow that were never documented.

Adverse impact from the on-going development is already being felt by fisher folk like Hanuar Isa, vice-chairman of the Kampung Ladang Fishermen Club that represents 50 families in Tanjung Kupang.

"Our fishing ground has shrunk substantially. We gave up a big area in the river for PTP, which designated it as a shipping channel. Deepening of the channel also altered the current flow and extensive reclamation for the port project has polluted the river. We still spend the same amount of time at sea but the returns have dropped," he says.

He says fishermen who ventured into cage culture face a bleak future as the water quality has deteriorated. Hanuar says employment promises were largely unfulfilled because of a mismatch of skills and jobs offered by PTP. It now hires 10% of the locals, mostly as cleaners and garbage collectors.

Data compiled from the surveys will be valuable towards developing a management and conservation plan which SOS hopes to complete by next year. With the report, it hopes to convince the authorities to turn the estuary into a marine protected area. "We hope that one day, the local community will be empowered to monitor their own fish stocks, seagrass health and water quality."

Early this year, SOS joined the Australia-initiated Seagrass-Watch which aims to raise awareness on the condition of near-shore seagrass ecosystems and provide early warning of coastal environment changes. Set up in 1998, Seagrass-Watch is currently monitoring 150 sites in Asia Pacific. For more details, visit <http://www.sosmalaysia.org> and www.seagrasswatch.org ♡



Choo Chee Kuang

New South Wales & Victoria



NSW Community Seagrass Monitoring

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



Well it has certainly turned chilly for the Community Seagrass Monitoring Project in NSW!!! Never the less the cold weather has not halted the interest or enthusiasm of anyone!

Workshops have recently been conducted along the NSW north coast at Urunga in the Bellinger Local Government area, Port Macquarie in the Hastings Local Government area, Old Bar/ Saltwater Lagoon in the Greater Taree Local Government area and Green Point in the Great Lakes Local Government area.

So it's that time again time to get more funding! At the moment works are underway to gather vital resources and funding to extend the project and expand it further into NSW. Long term goals for further funding is to further strengthen the comprehensive national near shore community seagrass monitoring effort in Australia.

Over the last 12 months the program has been very successful involvement from over 150 leaders from government and non-government groups, and over 300 local community volunteers! A huge thankyou from myself to everyone this financial year who have lended their support and passion to the project. ♡



Left top: Participants at Green Point learn monitoring techniques



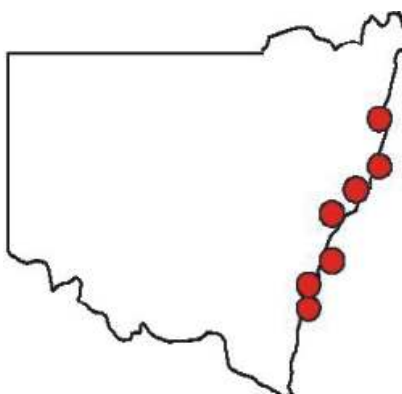
Above: Learning about seagrasses at Green Point



Left bottom: Practicing methods at Urunga



Map shows NSW coastline and the sites where The Community Seagrass Monitoring workshops have been undertaken by Rebecca Small, Seagrass Project Officer.



- Bellingen - Urunga
- Port Macquarie
- Taree - Old Bar
- Great Lakes - Green Point
- Lake Macquarie - Coal Point
- Central Coast - The Entrance
- Central Coast - Long Jetty
- Pittwater - Careal Bay
- Manly
- Rockdale / Randwick / Botany
- Lake Illawarra
- Shoal Haven - Gerroa
- Eurobadalla - Congo
- Narooma - Wagonga Inlet

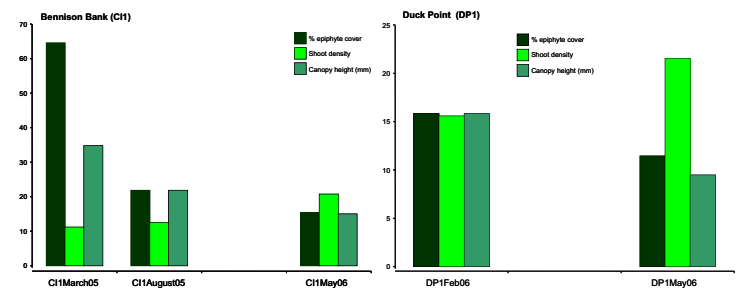
Posidonia australis monitoring in Corner Inlet Marine National Park, Victoria

Rebecca Koss, Sea Search Project Officer

During 2005 and 2006, two sites were monitored, Benison Bank, within Corner Inlet's Marine National Park (MNP), and Duck Point, an adjacent seagrass bed within Corner Inlet Marine and Coastal Park. Duck Point was a comparison site where impact to the seagrass beds may occur due to the presence of a boat ramp, accessibility to this area from the road, and the lack of restrictions, such as fishing.

Three monitoring surveys were done at Benison Bank and two at Duck Point. The variability in the number of monitoring surveys was due to inclement weather. As the monitoring requires the use of SCUBA, conditions need to be safe for volunteers to enter the water. Monitoring results were collected by S.E.A.L. Diving Services, the local SCUBA volunteer group, and compiled by Jonathan Stevenson, Parks Victoria Marine Ranger for Corner Inlet Marine National Park.

Monitoring results from Benison Point show a large difference in epiphyte cover between March 2005 to August 2005 and May 2006. During the summer and early autumn, epiphytial cover builds up over the *P. australis* frond. This is due to an increase in light, water temperature and the type of nutrients available in the water column. The build up on some fronds can be quite dense where it has the ability to smother the top 50-75% of the leaf. This in turn decreases the ability for the leaf to photosynthesise, as it is unable to have access to light, causing it to die. *P. australis* displays this behaviour by leaves breaking at the point where the epiphytial growth starts. Leaf die back is indicated by the corresponding decrease in leaf length. Results show that shoot density has increased over time, however, an assessment of shoot density counts *in situ* has indicated that previous monitoring surveys underscored shoot density. This will be corrected by fine tuning our monitoring techniques.



Monitoring results for Duck Point has similar trends to Benison Bank. Epiphyte cover and shoot length decrease from summer to autumn. Shoot density has increased, however this is also due to the fine tuning of survey technique. Overall, it appears that shoot length is greater at Benison Bank then Duck Point, but this needs to be furthered analysed. At this stage, the collected monitoring data has only been analysed at the basic level. As more monitoring data is collected, further analysis will be done to better assess the differences between Benison Bank and Duck Point. These results will also hopefully indicate the fine tuning of monitoring techniques. It is hoped data collected from our 2006 autumn and winter season will indicate these improvements.

For information on Sea Search, visit the website: www.seasearch.org.au or contact the Sea Search Project Officer by email: rkoss@people&parcs.org ♡



Torres Strait - Queensland



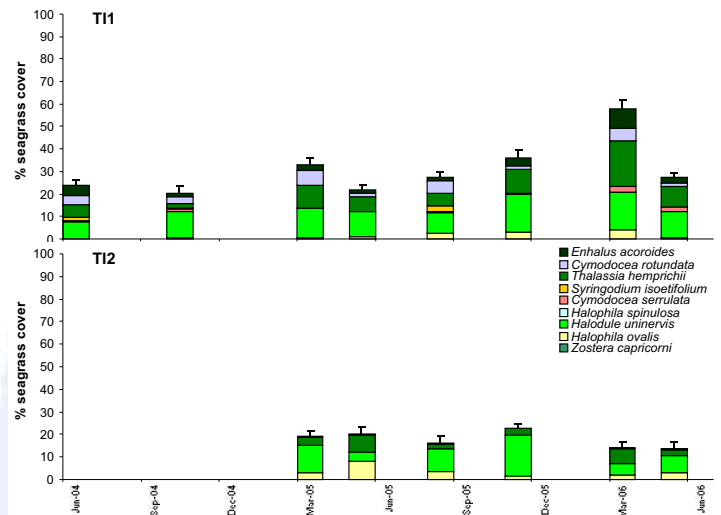
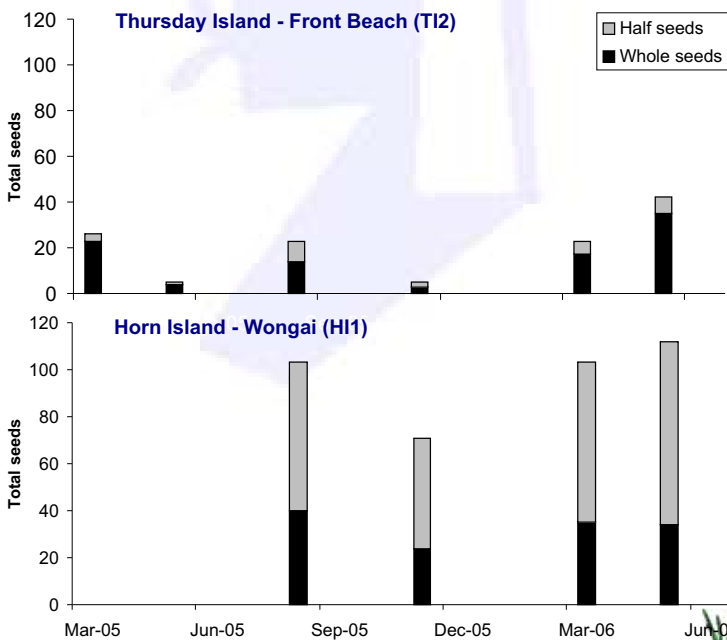
Torres Strait Update

All three sites were monitored in late May despite school camps and the dreaded flu that was doing the rounds. Another impressive turnout for Back Beach (TI1), with Belle (Tess's puppy) joining us for the first time. Lucky she was on a lead as we may have lost her amongst the *Enhalus*. Percent covers were down compared to March sampling with no evidence of the jellyfish that were everywhere at Back Beach in March. Top marks to Ina who came straight from school camp to Seagrass-Watch regardless of her sleep deprivation.



Top left: The Back Beach team with mascot.
Above: Belle amongst the seagrass.
Left: Checking out the seagrass on Transect 3

Front Beach (TI2) was monitored on Sunday afternoon May 21. All up monitoring took about three quarters of an hour. It's amazing how quickly it can be done when you are not sinking to your knees in mud!!!!!! *Enhalus* flowers and fruits abounded at the deeper edge of our meadow but unfortunately not within our site. However, *Halodule uninervis* seeds were the highest they have been for this site, with the number of whole seeds outweighing the number of half seeds. The opposite was true for Wongai Beach (HI1), where lots of germinated seeds were counted. Unlike TI2, seeds were counted in all thirty cores.



Ina, Stacey and Sinitta (from TI High) were on hand to assist Jane and Ron (DPI&F) and students from Torres Class. When we first arrived on site, we thought we were going to have to count the careened boat in Transect 1 - close but not close enough. Algae cover was down this month while epi-cover was up.

Thanks to the support of the high school Jane Mellors will be able to continue assisting with Seagrass-Watch on Thursday island until the end of the year. Next monitoring for Torres Strait is early August: Back Beach (TI1), August 8; Front Beach (TI2) August 9; and Wongai Beach (HI1) August 10. The low tides are early morning so set your alarms and see you out on the seagrass flats!!



Top left: Ron takes down temp logger details
Above: The Seagrass-Watchers of Wongai Beach



Left: *Enhalus* flowers and fruits (TI2)



Left: Ship ahoy!!



Bottom left: Stacey takes the lead on Transect 2



Below: Ina and Anita looking for seeds

Queensland

Moreton Bay Community Seagrass-Watch

Paul Finn (QPWS) reports

The Moreton Bay Community Seagrass-Watch Program is currently supported by the Wildlife Preservation Society of Queensland's Bayside Branch, Queensland Conservation, Queensland Parks and Wildlife Service, Port of Brisbane and Tangalooma Wild Dolphin Resort. However, the majority of our funding is provided by SEQ Catchments.

We currently have 241 volunteers on the database, with 204 trained in the methods of Seagrass-Watch. Twenty-three of these volunteers are new, signing up since February 2006. There are 57 sites set up within Moreton Bay, with 49 of these currently adopted by trained volunteers. Collectively, volunteers across all sites have surveyed 2567 m² since May 2001. During the March-April 2006 monitoring period only, volunteers surveyed 314 m² across all sites.

The March-April monitoring period saw a record 38 sites monitored. In addition, the Noosa Seagrass-Watch team got underway with their first monitoring period (see article in this newsletter). We were nominated for a Healthy Waterways Award again this year, this time in the research category, and although we didn't win, it is encouraging to know that our volunteer's efforts are appreciated. Two long-term volunteers attended the awards night on April 5th. We have started to deploy our recently acquired temperature data loggers, so we should be able to report on some temperature data and how it relates to seagrass health in the near future. Recently, preliminary meetings with community groups on the Gold Coast have started the process of organising a Seagrass-Watch program down there. ♡



Great Sandy Strait Fauna and Flora Watch

Gordon F Cottle reports



After an enforced six month lay-off it was good to be back on deck again and with Robyn Bailey attempted Poona PN1 on 22/4, but were thwarted by an unpredictable tide, resulting from recent cyclonic activity, leaving 0.5m of water over the site at the supposed "low".

We proceeded to Poona PN2 which regrettably is in very poor condition, as is the whole foreshore, probably the legacy of the Easter Fishing Comp. with increased boat and people traffic (yabby pumping). Grass cover was down from 5 - 15% in May 05, to 0 - 5% with an absence of *Zostera* (ZC).

The next day at Tinnanbar TN1, 1 % coverage was well down on the previous recordings in Sept 05.

The following weekend Robyn recruited her husband and daughter Sarah (10 yrs), who did an excellent job recording, and surveyed Poona PN1, the results indicating a drastic reduction from April 05 with up to 12 - 20% cover, down to 3% maximum.



On May 27/28th we were joined by my wife Pat and successfully surveyed Tinnanbar TN3, the grass cover average being 5% with 10 & 17%, well down on the 7 - 25% in July, 05.

At TN2 surprisingly the *Zostera* (ZC) had recovered from summer "burn off" up to 15 - 20%, whilst *Halophila ovalis* (HO) had gone in some areas but showed healthy new leaf in others. There were extensive feeding trails throughout the area as reported by local observers. As at Poona the foreshore is in bad shape with vast areas of mud where previously there has been good cover.



Perfect low tides and fine weather over the weekend 24/25th June saw us using Bailey's boat (courtesy of Paul) and getting to Boonooroo BN3 for the first time in two years. Good percentage cover of 25 - 30% with a variety of grasses over all transects, having

recovered well from July 04.

On the Sunday Robyn, Pat and I walked to Boonooroo BN1 which appeared a lot healthier than last September, with a highest cover of 5%. Marine life was extensive with all grasses HU, HO and ZC in evidence, coverage up to 20 - 28%, and feeding trails throughout.



An observation on this area is that the 100mm of silt seen before has completely washed away leaving the shell grit and small rocks totally exposed, as is the grass. Good booties are the order of the day.

An exciting two months, with the next trips planned for 9/10th July, boat trips to Reef Islands (weather permitting). ♡



Above left: Training day at Deception Bay 23 April 2006

Above right: Volunteers monitoring at Moreton Island Site 2 supported by the Tangalooma Research vessel



Dugong feeding trails at Ormiston (left) and Soldier crabs on the march (right)



Seagrass-Watch HQ

Whitsundays Seagrass-Watch July 2006

Margaret Parr (QPWS Volunteers) reports

Pioneer Bay

The Pioneer Bay seagrass team had their first outing for the year at the end of April.

Our first day saw Helen, Robina, Sandra, Eileen, Bruce and I monitoring sites PI3 and PI4. The seagrass was dying back after summer, so was short and looking rather sparse. We saw little



algae and epiphytes and no dugong feeding trails. Conditions were good for snails as there were many in our quadrats. Bruce showed the girls how to use a compass. They all mastered the skill and were able to practice when we marked out our sites.

On our second day, we were joined by Jane Mellors, Catherine, Naomi and Andrew from DPI&F Townsville. It was interesting to hear of their different involvement with seagrass.

Jane gave an informal talk on seagrass plants, their seeds and flowers. We examined different species of plants and seeds along with photographs which have been donated and very gratefully received by the team.

Out on the mud flats Helen conducted a mini workshop on seed collecting. There was a lot of looking but they only found one seed and another sprouting. PI2 was about as muddy as last year, but PI1 was significantly muddier with large patches of silty mud over the site. The seagrass coverage appears to be much less that last year.

Dingo Beach

Dingo Beach is always an enjoyable and simple site to monitor. Sandra, Eileen, Wendy and I completed monitoring, but daylight faded before we could complete seed monitoring (*it's not easy to spot those little black shiny seeds when the sun isn't shining*). We observed healthy amounts of seagrass, but again quite small lengths.♥

Be sunsmart

The new Seagrass-Watch long-sleeve SunShirts have arrived. The sky blue Raptor fishing shirts by Kokoda Clothing feature:

- Soft feel fabric with excellent wicking properties
- Vented back for added ventilation
- Quick release logo snaps
- Handy parallel front pockets designed for mobile phone/ sunglasses
- Generous body sizing
- Mesh lined pockets
- Sleeve fastener
- Good UPF rating
- Embroided Seagrass-Watch logo.

If you would like to purchase a shirt, visit our Seagrass-Watch shop at <http://www.seagrasswatch.org/shop.html>. Shirts cost AUD\$38.50 (incl GST).♥

Seagrass Biology

Seagrass-Watch HQ has several copies of "SEAGRASS BIOLOGY: Proceedings of an International Workshop Rottneest Island, Western Australia 25-29 January 1996" to give away. The 2 volume hardcover sets, originally AUS\$80, have been kindly donated by Dr John Kuo.

The proceedings contain 49 peer reviewed scientific papers and 9 abstracts in the areas of Reflections; Diversity; Molecular Genetics; Hydrodynamics; Production and Nutrient Dynamics; Animal Interactions; Decline and Recovery; Monitoring and Management; and 8 colour plates.

If you would like a copy, send your request (*including mailing details*) to hq@seagrasswatch.org. Hurry stocks are limited!!♥



Website

Over the past couple of months, Seagrass-Watch HQ has been working hard to improve accessibility and information updates on the website. To increase site access and speed, the site was moved to a new host. We apologize for any problems you may have experienced during this period viewing pages on the site. Nevertheless, the site is now easier to access, and is now top of the seagrass search lists on the most popular web search engines (e.g. Google & Yahoo).

Between 100-130 unique web users visit the site every day. So be assured, the information you collect and articles/images you contribute to the program will reach a wide global audience. Some of the most popular pages include the gallery and latest news.♥



Do you want to get involved?
Contact a local Seagrass-Watch representative in your location - visit www.seagrasswatch.org



Text: Len McKenzie, Jane Mellors & Rudi Yoshida
Layout & graphic design: Len McKenzie & Rudi Yoshida

Any comments or suggestions about Seagrass-Watch or contributions to newsletters would be greatly appreciated.

NEXT ISSUE OUT NOVEMBER 2006

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