

# Seagrass-Watch news



Issue 30 • September 2007

Seagrass-Watch has reached another milestone with the publication of its 30th newsletter issue. From a humble 2 page b/w 1<sup>st</sup> issue in October 1998, the newsletter is now 20 pages in full colour and includes contributions from around the globe.

In this issue you'll find articles on training workshops in Fiji, Whitsundays and the Kimberley region (Western Australia). Read about research and mapping projects in Queensland and India, and the expansion of monitoring to New Caledonia.

An important component of Seagrass-Watch is education, and you can read how students are participating in Singapore, Thailand and Australia. Maybe even learn about seahorses and other marine creatures which inhabit seagrass meadows.

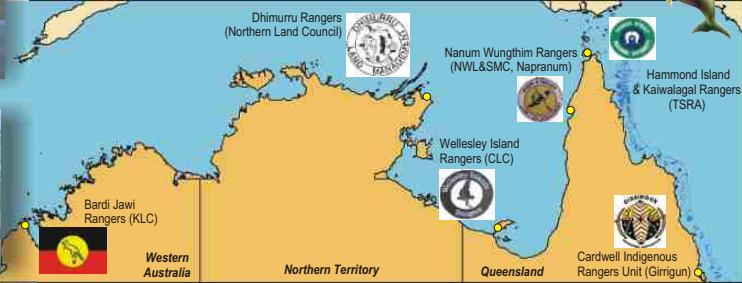
This issue also includes articles on how Seagrass-Watch is working with island and coastal indigenous communities to actively involve resource owners, who have the practical and spiritual connection to seagrasses, in the management of their sea country.

There are also articles about who participates in Seagrass-Watch, the reliability of the data and communication. Hopefully, there is something of interest for all readers. Please enjoy!



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Seagrass-Watch acknowledges the Traditional Owners on whose sea country we monitor



DISCLAIMER: while all efforts have been made to verify facts, the Queensland Department of Primary Industries & Fisheries takes no responsibility for the accuracy of information supplied in Seagrass-Watch News. The views expressed in this newsletter are those of the authors and not necessarily those of the Queensland Government.

For more information about the Reef and Rainforest Research Centre visit  
<http://www.rrrc.org.au>

ISSN 1441-4236

# Torres Strait



## Regional Roundup

Jane Mellors reports

Early morning starts were the order of the day for Seagrass-Watch in the Torres Strait during August. We kicked off the monitoring at Back Beach. What a great turn out that was with Year 11 Marine Studies students trying their hand at Seagrass-Watch. Regular Watchers Stacee and Caitlin led the monitoring assisting the newcomers in the art of estimating percent cover and identifying the different seagrass species. Next day we had another early start catching the ferry over to Horn Island to monitor our site at Wongai Beach. Here we were joined by Frank Loban (Dugong and Turtle Project Liaison Officer, Land and Sea Unit), and Elizah Wasaga (Kaiwalagal Ranger). Frank got to try out his new Seagrass-Watch skills, while Jake and Kanteesha our two newest recruits tried their hand at seed monitoring for the first time.

Kinam and Stacee completed the team and monitoring was finished in no time at all.

Sunday saw a more leisurely start to the day (06:30) not quite the crack of dawn. We were joined in our monitoring by Julia, Suzanne Frank and Moses Wailu (Dugong and Turtle Project Officer, Mer Island). Julia and Moses (first timers) soon caught on and monitoring proceeded once the tide had finally dropped. Our final day of monitoring was over at Hammond Island. Frank and Moses accompanied us over to Hammond to assist the Hammond Island Rangers with the monitoring at Corner Beach. Francis and Alice were there to meet the team at the Hammond Island Wharf in their new flash four wheel drive. They were very keen to get going so the minute we got off the boat we were on our way to the site. We were amazed by the number of dugong feeding trails that wound their way through the *Halodule* patch inshore from our monitoring site. The other stand-out feature of this monitoring session was the number of *Thalassia* flowers we saw at both Back Beach and Corner Beach and the number of *Thalassia* fruit at Front Beach. 🌿



Frank and Stacee monitoring Wongai Beach, Horn Is.



Above: *Thalassia* fruit  
Left: Dugong feeding trails  
Below: *Thalassia* flower



## Future Leaders

Andrew Denzin reports

Seagrass-Watch up here in the Torres Strait was a huge success again this term. Students, teachers and community volunteers banded together to complete surveys at our three locations. Early low tides mean pre-dawn starts for all involved, and what a turnout it was!



The Back Beach crew



Moses, Kinam, Jake and Frank at Front Beach



Jane and Jake on Transect 1, Horn Is

This term was particularly exciting to see some of our regular senior students taking on leadership roles within our team, great work Stacee, Jake and Caitlin. A huge thanks needs to go out to the Seagrass-Watch team, especially Jane Mellors for making this program such an important aspect of our school and community in the Torres Strait.

The sampling at our three locations is a fantastic experience for students and community alike, however the significance of Seagrass-Watch is really felt when Jane comes to educate and inform our students across all year levels the importance of this delicate resource. With all our year 11 Marine Studies students now completing their research assignments based on data collected this year it seems Seagrass-Watch will be an important feature within our school for weeks to come. Apologies here Jane if you are getting bombarded with

emails as our students have a lot of questions in regards to some of the Torres Strait variables.

We can't wait for Jane to return for the Term 4 monitoring as a trip to the outer islands maybe on the cards for some volunteers to spread the seed of Seagrass-Watch further in to the Torres Strait. 🌿



**More about education initiatives in the Torres Strait, page 18...**



# Far North

## Mornington Island mapping

Rob Coles, Helen Taylor and Mike Rasheed report



Rob Coles and Warren Lee Long sampling juvenile prawns in a seagrass meadow, Mornington Island 1983.



Above: The Helicopter used in the 2007 survey

Below: Dugong feeding trails in intertidal seagrass



heavy dugong feeding in most intertidal areas.

We expect to back to the island later this year to conduct training and we will be writing a report to describe our findings. We were looked after on the Island by Eddie, Curly, Roberta and Ray and the surveys would not have been possible without the technical assistance and the boat skills of Bradley, Carl, Dirk, and Kevin and we look forward to working with the Mornington team in the future. 

### Seagrass-Watch Training workshop

#### Mornington Island

**30-31 October 2007**

Sponsored by Carpentaria Land Council Aboriginal Corporation & Seagrass-Watch HQ

To register, contact Seagrass-Watch HQ,  
email: [hq@seagrasswatch.org](mailto:hq@seagrasswatch.org) or

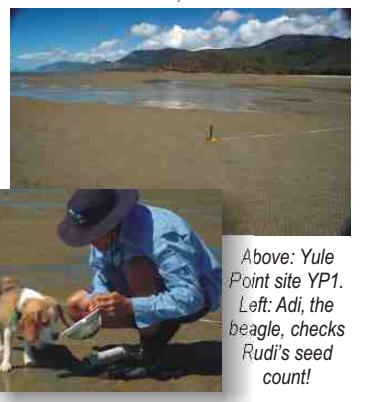
Kelly Gardner, email: [kgardner@clcac.com.au](mailto:kgardner@clcac.com.au)

## Monitoring in the Wet Tropics

July sampling in the far north kicked off with monitoring on Green Island on Thursday 26th. Len McKenzie and Rudi Yoshida (SW HQ) monitored the two sites (GI1 and GI2) with assistance from Cath Collier (JCU) and work experience student Storme Sankey-O'Keefe. Both sites remained underwater due to strong winds, which made photographing the quadrats a bit difficult. Green Island also lived up to its reputation - no seeds were found, although Cath did come across a *Thalassia* fruit.

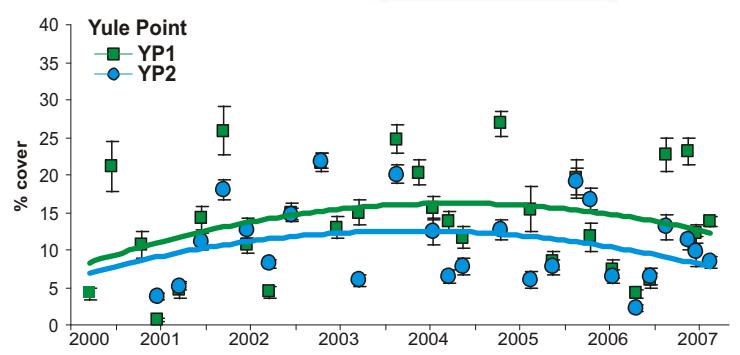


Above L-R: Cath, Len and Storme



Above: Yule Point site YP1.  
Left: Adi, the beagle, checks Rudi's seed count!

The following day, Len and Rudi monitored the two sites at Yule Point. Unlike Green Island the previous day, seeds were plentiful. Seagrass at these sites has also been relatively stable between years, with clear seasonal trends.



Syringodium mixed with Thalassia and Halophila on Dunk Island reef flat.

An early start on the Saturday, for the 2.5 hour drive to Mission Beach for sampling on Dunk Island. The weather was miserable with heavy rain and wind. The weather did eventually clear toward the end of the day, and the low tides (lowest for the month) allowed for some exploration

of the reef flat between Dunk Island and Kumboola Island (a small islet on the fringing reef flat). *Syringodium isoetifolium* was found in patches, mixed with *Halophila ovalis* and *Thalassia hemprichii*.

For the last day of sampling, the team travelled back down to Mission Beach to sample, Lugger Bay. Although the weather was perfect, the tide took a while to go out, requiring some quick manoeuvring between the two sites to complete sampling in time. Overall, eight sites completed in four days. 



Reef flat between Dunk Is and Kumboola Is, where the two Seagrass-Watch sites are located.

# Townsville

## Townsville-Thuringowa Roundup

Posa Skelton & Naomi Smith report

An incredible three months have slipped by and the Townsville-Thuringowa Seagrass-Watch group continues to actively participate and promote Seagrass-Watch. This great community initiative deserves to be promoted at all levels and geographic scales, thus with this excuse, I headed to the Laura Dance Festival from 22-24 June. The festival celebrating indigenous cultures provided a good opportunity to highlight and spread the great efforts by our Seagrass-Watchers in the Torres Straits. Our colleagues at the Indigenous Unit of the Great Barrier Reef Marine Park Authority provided the space for our poster that was donated by Jane Mellors (Seagrass-Watch HQ); our sincere thanks to you.

Townsville Seagrass-Watch was represented by Jane Mellors at the Coastal Community Group Forum held on June 24th at the North Queensland Museum. The forum discussed community participation in funding proposals. This led to our support to funding proposals by our partners, the Townsville City Council and Conservation Volunteers Australia.

Our quarterly surveys for this time of the year were carried out at Shelley Beach on 14 July (SB1) and 12 August (SB2). Bushland Beach surveys were undertaken on 28 July, which was well attended by our Northern Beaches Rotary members. Don Kinsey and colleagues at the University of the Third Age conducted the survey of Cockle Bay on 12 July.

Naomi Smith (Seagrass-Watch HQ) showcased her teaching skills by doing a series of Seagrass-Watch presentations at various



Bushland Beach July 07



Naomi (SW HQ) with Belgian Gardens students

local schools, including Hermit Park, Belgian Gardens and Magnetic Island State School. This led to Hermit Park State School joining the Seagrass-Watch fraternity and the establishment of our second seagrass monitoring site at Rowes Bay (RB2). Belgian Gardens have sampled their site (RB1) three times this term as

they have three Year 6 classes and everyone wanted to participate in the Seagrass-Watch experience. It was an enjoyable challenge to focus and re-focus the young minds from the distracting critters crawling outside of the quadrats. But the persistence of the minders Carmen Browne, Adam King, Posa Skelton, Rebecca Bowie and Naomi Smith and the teachers ensured the tasks were achieved.

One of the new initiatives touted in the last Seagrass-Watch Newsletter (Issue 29) was a call for ideas to find an identity for our group. We have had excellent responses from our Seagrass-Watch schools and we



Hermit Park students on site at Rowes Bay



are currently refining these ideas so that it has a local feel and appeal. Keep an eye out in the next issue of our Seagrass-Watch Newsletter for the winning entry. The prize for the winner is kindly provided by the International Ocean Institute's Women and Youth in the Sea Programme.

Seagrass-Watch is indeed a global programme, and we were happy to promote this and be part of the Townsville Cultural Fest,



Carmen Brown at the Cultural Festival stall

under the 'Save the World Day' campaign. Our motto: Local Eyes Global Eyes is a perfect contribution to such aspiration. I am extremely grateful to Carmen Browne, Sally Harman and Naomi Smith for assisting in the staffing of our stall.

Our membership base continues to increase, not only through our community awareness initiatives, but also through the word-of mouth by our members. We thank everyone who took part in Seagrass-Watch surveys and promotions thus far, and we look forward to another great quarter of working together. 

## Bushland Beach

Lux Foot reports



On Saturday 28th July, eleven of us ventured out to the seagrass meadow. The day was a beautiful winter day in the tropics with only a light breeze which made for a good day to monitor.

The blowouts (erosion gaps in the meadow) are getting larger, however the seagrass is returning in the older parts of the blowout. Seed counting was interesting with 484 whole and 82 half seeds counted.



Posa, Julie and Anto, monitor transect 2



Left: 484 seeds and counting...



# Townsville Region

## Shelly Beach

Sue Mulvany reports

Once again, the weather was perfect at SB1 for monitoring on 14th July. Thanks to our dedicated band, including Jade and Chris Taylor, and Rebecca Vallis who

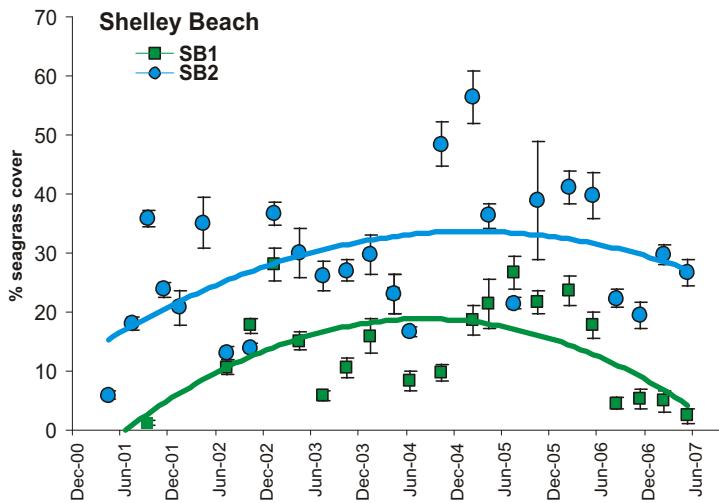


monitored for the first time. It's great to see people willing to give an afternoon to keep a track on our seagrass meadows, and enjoy the sunshine.

Sadly our site is having a rough time. One third of the transects are bare of seagrass, as was the case for the last sampling period,



and *Halodule uninervis* is practically the only species present, with a minuscule amount of *Halophila ovalis*. There were no dugong trails. We did find a fair few *Halodule uninervis* seeds however throughout the site. The biggest thrill for me was seeing the butterfly cod (*Pterois volitans*) [or lionfish] found by Adam, which was hiding inside the end of an old piece of pipe with just enough water to make a cosy pozzie at low tide. Thanks to all our helpers and see you in October (Saturday 6th).



Naomi Smith reports

Regular DPI&F Seagrass "Watchers", Carla, Iony and myself were joined by Adam King and a group of nine Green Corps participants to monitor the beautiful SB2



site on August 13th.

As the Green Corps group had not heard about Seagrass-Watch, Adam did a quick introduction into the methods and what it would be like out in the meadow. We then began our trek over to the site. The sediment was hard under foot with only a few little patches of mud. Once out at the site, we broke into groups with one of the experienced "Seagrass-Watchers" on each transect. A Green Corps person from each transect was nominated to take the quadrat photographs. We then recruited helpers from each transect for the seed sampling.

The SB2 meadow was dominated by *Halodule uninervis* and



*Halophila ovalis*, but there were patches of *Zostera capricorni* which kept the groups on their toes with the species identification, as *Zostera capricorni* looked very similar to *Halodule uninervis*. For the first time at this site *Halophila spinulosa* was observed along a transect, normally this species is found in troughs just outside our monitoring area.

It was a great learning experience for the Green Corps group and it was nice for us to have more hands to help with the afternoon. Thank you to Carla, Iony and Adam for taking the students from Green Corps under your wings for the monitoring day.

## Cockle Bay, Magnetic Island

Don Kinsey reports

The July monitoring by our U3A Earth and Sea class was carried out on Friday 13<sup>th</sup>. The weather leading up to this July monitoring were distinctly unusual: May was the hottest on record; June was the coldest and wettest (approx.

110mm on MI) on record. The period immediately preceding the monitoring had winds dominating from S/SW. This means that the normally sheltered leeward MI2 Cockle Bay site was subject to atypical wave action at high tides. One result of this was that the higher ground from the inner ends of the transects to the mangroves had developed a considerably undulating profile. There was very limited seagrass cover on this high ground on this occasion, with some stunted *Halophila ovalis* and very limited patches of *Zostera capricorni*.

The transect's generally exhibited more evidence than usual of disturbance by large animals. This did not look like dugong activity so I would assume it was mostly rays and possibly some crabs. During our monitoring exercise, there was a substantial flock of about 70 Sacred Ibis feeding over the adjacent area. Perhaps these cause some of the surface disturbance noted?

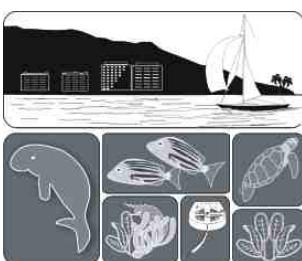
*Cymodocea serrulata* was dominant on the transects but shorter and with reduced cover relative to April. This pattern was, however, similar to July 2006 notwithstanding the considerable differences in the preceding weather. One notable difference from July 2006 was the complete absence of *Halophila ovalis* (present in reasonable amounts on transects 2 and 3 in 2006). *Halodule uninervis* was present in minor amounts along transects 1 and 3 but less evident on transect 2. We found no *Thalassia hemprichii*.

Algal cover was low in the majority of quadrats. As usual, Transect 3 with its sparser seagrass cover, exhibited more algal cover. Most of this algal cover was *Halimeda* sp with some occurrence of foliose reds. It should be noted, however, that the epi cover on the seagrasses which was high in all three transects, was almost entirely filamentous algae. Thus, overall algal cover along the transects was high. Diatomaceous mud epi cover was very low.

As usual, seed occurrence was very low - three half seeds being found in the total monitoring exercise.

# Whitsundays

## **Regional Roundup**



Seagrass-Watch HQ visited the Whitsunday region to catch up with local Seagrass-Watch groups, conduct a workshop and to farewell Margaret Parr.



## *Len running through monitoring protocols at Midge Point*



## *Setting up at Hydeaway Bay*



*Dell (foreground), with Lani, John and Kim (background), PI1*



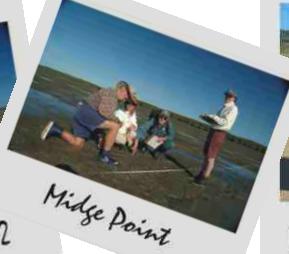
Maren, Robina and Dell ID seagrass



## *Jane runs through Seagrass ID*



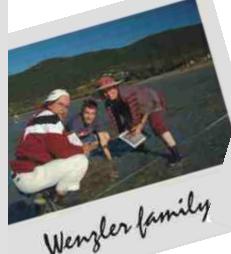
Margaret and Maren, HB2



Midge Point



Pioneer Bay July '07



Wenzler family



### *Field component of the workshop*



component of the workshop moved to Pioneer Bay, where sites PI3 and PI4 were monitored. The day was wrapped up with a special presentation to Margaret Parr (Seagrass-Watch's longest-serving volunteer and local coordinator), who was farewelled in style at a special ceremony at Cannonvale. Margaret's retirement from Seagrass-Watch has been brought about by a move to the cooler climes of Canberra with her husband Bruce. To commemorate her nine years of dedicated Seagrass-Watching, Member for Whitsundays and Primary Industries and Fisheries parliamentary secretary Jan Jarratt MP,



*Field component of the workshop*



presented Margaret with a special gift and certificate. Margaret first joined Seagrass-Watch to assist her daughter Amanda, who had volunteered to coordinate a Pioneer Bay group. After a few months, Amanda left the district, but Margaret had been well and truly bitten by the Seagrass-Watch bug!

Margaret believes there are four main reasons why Seagrass-Watch became an important part of her life. "Firstly, being involved in a worthwhile project where data collected is valued and used, number two is learning so much and hopefully contributing in managing our local environment," she said. "Then there is working with wonderful folks like the local mob, Jane Mellors and her various helpers always having a few laughs and usually a cuppa and a chat, and finally there is getting out on to different sites; with perhaps the exception of negotiating the mud in Pioneer Bay; they are all beautiful meadows in beautiful surroundings."



Jan Jarratt paid tribute to Margaret's dedication and her commitment to this programme, especially hearing how Margaret travels from Midgeton to Hydeaway Bay, often taking time away from her business and trudging through calf deep mud at some sites to ensure the data is collected on time. 



# Great Sandy Strait



## Regional Roundup

Gordon F Cottle reports

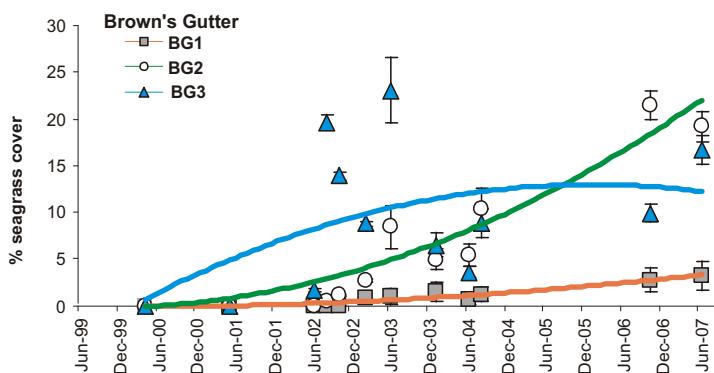
Fine, sunny and calm conditions on 11<sup>th</sup>



June with a midday low-tide gave Robyn,

Paul, Sarah and Matthew the opportunity to monitor all three sites at Brown's Gutter. At BG1, transect 1 showed a trace of *Zostera*, but little sign of animal activity. The patch of *Zostera* at transect 2 over the first 20 metres has increased again, up to 40% cover with longer leaves. Transect 3 remains barren.

BG2 maintained its overall higher seagrass cover of *Zostera* between 20 and 30%. Again the leaf heights were twice that recorded in August 2006. Five quadrats on transect 2 had *Halodule uninervis* present.



BG3 continued a similar trend to BG2, with coverage considerably greater than in August 2006. *Zostera* is still the predominant species, however *Halodule uninervis* and *Halophila ovalis* are evident throughout the site, which is covered in dugong feeding trails. An interesting discovery, a purple/black "thing" with lots of hairy legs - identified as a feather star or crinoid.



Dugong feeding trails at Browns Gutter

On 14th July, Robyn, Hanne, Pat and Gordon visited Tinnanbar having to access the sites from the southern end of the beach, as the Caravan Park and beach access closed awaiting foreshore development. One wonders what effect this will have on the area??

TN3 transects I & 2 were very similar to March 2007, with *Halodule uninervis* predominant, but a noticeable absence of *Halophila ovalis*. Seagrass cover on transect 3 was down by about 50%, the missing species being *Halophila ovalis*.

It was difficult to assess TN2 with cover very patchy ranging from 2 to 25%; again the loser was *Halophila ovalis*. Fresh dugong feeding trails were clearly evident, with three in quadrats. This site is directly in front of the old caravan park so there is currently no boat or foot traffic.

The following day, Robyn and family ventured to Kauri Creek in idyllic conditions, for the first time since December 2006, and sat for a long while watching a pod of Indo - pacific dolphins at play. Healthy *Zostera capricorni* cover to 30%,and canopy heights to 8cm over the whole area; a considerable increase overall.

Another boat trip on the 29th July took us to BN3 which we

usual all three seagrass species were present but the overall percentage cover was down on January, 2007.

The return trip by a different route to the Tuan channel saw us with time to stop off at BN2, always very sparse, with the odd patch of *Zostera capricorni* and some *Halophila ovalis*. This is a popular yabby pumping area.



Dolphins spotted on the way to Kauri Creek

On the 30th July Gordon & Pat met up with Dorothy Pashniack and Norma Sanderson from Cooloola Coastcare to drive to Inskip Point to monitor PB1. An intriguing find was a carpet anemone.

It was very noticeable that, apart from transect 1, the seagrass was very clean and cover well up from March 07. The *Zostera* in particular had a burnt appearance, possibly a result of exposure and high light. Where the cover was 10-12%, the rhizomes extended well away from the quadrat.

Robyn and Hanne visited Poona on the 11<sup>th</sup> August. PN1 seagrass covers on all transects were very similar to May 2007, averaging 5 - 7% with *Halodule uninervis* and *Halophila ovalis*. Extensive feeding trails were found throughout the area. The small patch of the macro-algae *Caulerpa* adjacent to transect 3, first seen in May, showed fresh clean growth.

PN2 has lost most of the regrowth of seagrass recorded in May. The site has an extensive cover of unidentified algae, probably the result of nutrient run off from nearby coastal developments.

Unfortunately our planned visit to Tin Can Bay and Tinnanbar on 27/28th August with a perfect low tide (0.20m) in the afternoon had to be cancelled. The region received 30 inches (760 mm ) of rain in the preceding week, causing the Mary River to peak at midnight on Sunday and Tinana Creek on Monday, both of which affect the access roads. Incidentally, this is the highest rainfall recorded since the cyclonic floods in 1992 which led to the founding of Seagrass-Watch.



### Sea Anemones

Sea anemones are solitary polyp cnidarians (order Actiniaria) closely related to corals and jellyfish. They are named after the anemone, a terrestrial flower. Carpet anemones (*Stichodactyla* spp.) like the one pictured, are sometimes common in sandy areas within or adjacent to seagrass meadows. Carpet anemones are amongst the largest of the sea anemones. They are predatory, and have stinging cells in their tentacles to entangle and paralyse animals that stumble into them. Carpet anemones usually stay in one place, but they can uproot themselves and move, possibly to avoid burial and find more suitable habitat.



### Crinoids

Crinoids, also known as "sea lilies" or "feather-stars", are marine animals that make up the class Crinoidea of the echinoderms (phylum Echinodermata). They live both in shallow water and in depths as great as 6000m. Crinoids are characterized by a mouth on the top surface that is surrounded by feeding arms. They have a U-shaped gut, and their anus is located next to the mouth. Although the basic echinoderm pattern of five-fold symmetry can be recognized, most crinoids have many more than five arms. Crinoids usually have a stem used to attach themselves to a substrate, but many live attached only as juveniles and become free-swimming as adults. There are only a few hundred known modern forms, but crinoids were much more numerous both in species and numbers in the past. Some thick limestone beds dating to the mid-to late-Paleozoic are entirely made up of disarticulated crinoid fragments.

# Qld and NSW

## Moreton Bay, SE Qld

Keira Price reports

The mid year monitoring round went well with the general health of seagrass at the sites monitored looking stable.

Although the data from this round has yet to be analysed, it appears that normal seasonal variations in seagrass cover were observed, with the usual winter drop off in growth and smaller, finer leaf blades. The week of gale force winds in late August left large amounts of *Zostera* washed up along the foreshore at many sites.



Zostera wrack on beach

A number of the temperature data loggers that we have deployed at various sites were retrieved during this monitoring round to be downloaded. It will be interesting to see if there is any correlation between temperatures recorded and seagrass growth. New data loggers were reinstalled at the sites and three other sites have had data loggers installed during this period.

In July we conducted an enjoyable trip out to Moreton Banks on the QPWS barge to run a training day for some new and interested volunteers and to do some advanced training with a group of our veteran Seagrass-Watch volunteers

who regularly monitor the site.

Another training day was also held in July at our Fisherman Islands site for more new volunteers. It's good to see that there's still plenty of interest in the community!

August saw the first monitoring round for the new Gold Coast Seagrass-Watch program. It all went very well with the first group of trained volunteers getting stuck in and having fun as well as doing a good job. There is so much interest in the Gold Coast program that we held another training day in conjunction with the monitoring so there will be a few more groups ready to get out there in November/December! 🌿



Monitoring on the Gold Coast

## Seagrass-Watch Training workshop Moreton Bay

**24-25 November 2007**

Sponsored by SEQ Catchments, QPWS (EPA), QCC & Seagrass-Watch HQ

To register, contact Seagrass-Watch HQ,  
email: [hq@seagrasswatch.org](mailto:hq@seagrasswatch.org) or

Keira Price, email: [Keira.Price@epa.qld.gov.au](mailto:Keira.Price@epa.qld.gov.au)

## Monitoring Status in NSW

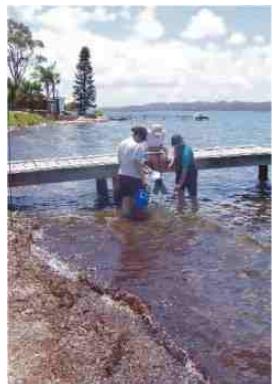
Carla Sbrocchi reports

The NSW Community Seagrass Monitoring Program is up and running again! Although we experienced an unfortunate hiatus, we are again supporting and forming groups across NSW to monitor seagrass in local areas.

Fourteen groups along the NSW coast were previously trained in seagrass monitoring methods. These groups have been making big efforts to continue monitoring events amongst illnesses, maternity leaves, changing site conditions and other challenges.

We are encouraging existing groups to

recruit new members to assist with their monitoring events and find new sites that might be more suitable for consistent monitoring. We are working on forming partnerships with groups that currently conduct other types of monitoring efforts in order to achieve a concerted, ecosystem-based effort that will heighten conservation actions throughout local areas. 🌿



The map below shows locations where groups are taking an active part in seagrass monitoring and education:



## HAVE YOU REGISTERED WITH HQ??

To receive regular updates on the program and be a recognised member of the Seagrass-Watch community go to

[www.seagrasswatch.org/register.html](http://www.seagrasswatch.org/register.html)



## New Caledonia



second-largest coral reef in the world, reaching a length of 1,500 kilometres. The Caledonian reef system has great species diversity, and is home to endangered dugongs (*Dugong dugon*), and is an important nesting site for the Green Sea Turtle (*Chelonia mydas*).



resort, Anse Vata (Noumea). The site was dominated by *Halodule uninervis* and *Cymodocea serrulata* (minor patches of *Thalassia hemprichii* and *Halophila ovalis*). Epiphyte cover was very high (>80%), and holothurians were abundant. The reef-flat was also a popular location for fishing and gleaning. It is hoped that local citizens who have expressed an interest in Seagrass-Watch will adopt the site in the near future and continue monitoring.



In early May, Len McKenzie (Seagrass-Watch HQ) took leave and visited New Caledonia to attend the GeoHab2007 conference and explore the potential for expanding Seagrass-Watch into the French territory.

New Caledonia's Barrier Reef, which surrounds Grande Terre and the Isle of Pines (Île des Pins), is the

Eleven species of seagrass are present in New Caledonia. They are found in estuaries, on intertidal sandflats, and subtidally to depths of approximately 60m inside the barrier reef waters. Seagrasses are a significantly component in the marine ecosystems of New Caledonia and their contribution to the total primary carbon production is critical to regionally important dugong and turtle populations.

The great majority of seagrass and reefs here are reported to be in good health, with the exception of eastern reefs that are harmed by coastal runoff of sediments and nutrients. Nickel mining and brush fires are reported to intensify erosion during cyclone flood surges, and coastal development poses an additional threat. Extensive aquaculture in the region is also reported to add nutrients to the water, which results in a rapid growth of harmful algae.

A possible long-term monitoring site was examined on the intertidal reef-flat east of the Le Meridien

## Motupore Island, PNG

Jane Wia reports



The third of this year's four long term monitoring surveys was completed in mid-August with the discovery that there were two distinct growth forms of the species *Halodule uninervis*: (1) a narrow and (2) a wide, leaved form. This distinction in growth form has been noted in previous studies conducted within Bootless Bay, but up until now we haven't been able to confirm this for ourselves. We've only noted the narrow leaf form as this was more common in our survey area which is mostly within the intertidal zone.

The narrow form of the species which measured up to 1mm in width appears to be more common in the intertidal zone and can form monospecific strands in areas that would be prone to exposure during extended periods of low tide. Also, these areas are in close proximity to mangroves and are heavily laden with silt. Any seagrasses found there are usually smothered.

The wide leaved form measured close to 3 mm in width and no monospecific strands could be found within our monitoring site, but its occurrence was found to be associated with the narrow leaf form as well as *Cymodocea rotundata*, *Thalassia hemprichii* and *Syringodium isoetifolium*. Previous studies have stated that both forms can be found within the littoral belt but only the wide leaved form can be found beyond the sublittoral down to about 10 m.

This distinction in growth form for *Halodule uninervis* was only observed in site BT1 which is flatter than BT2 where a noticeable slope is present. This difference in topography means that the intertidal zone is more extended in BT1 and much more area is exposed during low tide periods.

We hope to be able to provide more data on the distribution and abundance of these two forms of *Halodule uninervis* within our survey sites in the future.

We have also received confirmation from a local community representative to go ahead with the establishment of an additional monitoring site within Bootless Bay. This should be established by November 2007.



Eddison Silas at BT1



Jane Wia estimating % cover



## Viti Levu to Ovalau

Fiji



In June Len McKenzie and Rudi Yoshida (Seagrass-Watch HQ) volunteered their time and travelled to Fiji at their own expense, to conduct a Seagrass-Watch workshop (the 5th in a long line of workshops for 2007).

They also caught up with local Seagrass-Watch groups, monitored sites on the islands of Ovalau and Viti Levu, and established two new sites in the island nation.

The workshop on Saturday 16th June, at Corpus Christi Teachers College, Laucala Bay included lessons on seagrass identification, herbarium pressing, background on seagrass ecology and importance, and monitoring seagrasses using the Seagrass-Watch protocols. Workshop participants were from local schools, USP (University of the South Pacific), NGOs (non government organisations) and the local community. It was also an opportunity for current "Seagrass-Watchers" to see the trends in their data and that of other Seagrass-Watch sites from around the globe. The local media also made an appearance to conduct interviews.



Seagrass-Watch has two sites (SV1, SV2) established on the intertidal banks at Nasese. The meadow is comprised of *Halodule uninervis*, *Halodule pinifolia* and *Halophila ovalis* ssp *bullosa*. Of concern, are the high amounts of epiphytic algae covering the leaves and macroalgae, which formed a thick mat over the grass.

After a short lunch break, it was into the field to monitor SV1, which luckily for everyone was just

across the "rara" (oval) from the college. Here participants were able to put into practise what they had learnt in theory. Workshop participants were also enthralled with the seed monitoring (which was introduced to Fiji for the first time at the field session), and were amazed at the fact that seagrasses did produce seeds. Karen Vidler, the inaugural Seagrass-Watch coordinator, who was

passing through Fiji on her way back to Tonga (where she is now based) also attended the field session. The day was wrapped up with a presentation of certificates, and prizes.

Troy, Amy, Merewalesi and Charlene discussing species composition



Collecting seeds in Fiji for the first time

On Monday 18th, a special training session was conducted at the International Secondary School, Suva. The 20 students who attended were given a theory and field session. The one hour theory session involved seagrass identification, seagrass ecology and importance and Seagrass-Watch



Workshop participants wrap up with a group photo



Mihle, Natasha, Dora, Anne Marie and Janelle monitor transect 3



Karen, Pip and Evan on site SV1



monitoring protocols. It was then down to Nasese for the field session where under the guidance of teachers, Amy Lee and Troy Hayduk, the students established and monitored a new site (SV2), as part of their environmental initiative.

Local villagers were out in numbers gleening on the intertidal flats and others were also taking advantage of the extreme low tide to ride horses over the vast flats in front of Suva city.

Next on the monitoring list was Tagaqe on the Coral Coast (20th June), where a Seagrass-Watch



Above:  
International  
Students learn  
the importance of  
seagrass



Above: Len and Amy run through setting up a site at SV2. Amy demonstrates the hand signals.  
Left: Len discusses percent covers



Above: Searching for more seeds!





site (TQ1) is established in the 1.6 hectare *Halodule pinifolia* dominated meadow. The site is on the intertidal reef-flat in front of



Above: Villagers gleaning the flats of Nasese. Horse riders on an afternoon trot.



Hideaway Resort, and is monitored by Seagrass-Watch HQ. The site is also immediately adjacent to a "tabu" area declared by Tagaqe village. Just over 20% of the seagrass meadow is within the designated tabu area. Four seagrass species are found in the meadow: *Halodule uninervis*, *Halodule pinifolia*, *Halophila ovalis* ssp. *bullosa* and *Syringodium isoetifolium*. The most noticeable feature of the meadow condition is the high amount of epiphyte cover on the leaves, possibly a consequence of elevated water column nutrients. After an hour and half drive from Suva, HQ with help from local Seagrass-Watchers, Nicky and Yogi (with grand daughter Aiko) monitored the site at TQ1.

Cawaci Sites on Ovalau Island, in the Lomaiviti Group, were to follow. But first the team had to get over to the island, which involved over 5 hours of travelling, by road and sea.

Seagrass-Watch has two sites on Ovalau (CW1, CW2), on the large intertidal meadows (*Halodule uninervis*, *Halodule pinifolia*, *Syringodium isoetifolium* and *Halophila ovalis* ssp. *bullosa*), located opposite St John's College. The sites are monitored by Masao & Nicolette Yoshida, Shaun Ashley, Charlene Ashley and Seagrass-Watch HQ. In recent years the reef has experienced blooms of green algae and physical disturbance from extraction activities. The fringing reef is popular at low tide with villagers fishing and gleaning. On Monday, 25th, the team arrived at Cawaci to monitor both sites. It was noted that the seagrass meadow at CW2 had increased quite dramatically since the site was last monitored in January. The



Above: Sampling at Taqage

sediment composition for the site had also changed from Gravel/Sand to more Mud/Sand. HQ also trialed seed monitoring for the first time at Cawaci - 51 whole seeds were found.

Seagrass-Watch HQ was back on the main island of Viti Levu on the 26th to monitor a site at Nadroga Navosa, in Cuvu Bay. There are large seagrass meadows, but they are threatened by



Nadroga Navosa seagrass

turbid flood waters from the Voua river. Meadows are dominated by *Halophila ovalis* ssp. *bullosa*, *Halodule uninervis* with some *Halodule pinifolia*. *H. uninervis* is much denser in the channels or intertidal pools. A Seagrass-Watch site is located on intertidal banks separating Cuvu village and

Shangri-la Fijian Resort. It was a race against the incoming tide and strong currents at Nadroga, which had completely covered the site to knee depth by the time monitoring was completed.

Monitoring moved to Natadola on the 28th where small patches of *H. uninervis* and *H. pinifolia* can be found on the fringing reefs of Natadola Beach. The seagrass has very little epiphyte cover and the environment excellent water clarity. Although relatively pristine, the meadows are threatened by adjacent coastal development. Natadola beach is now under major redevelopment, with a number of international hotel chains currently under construction directly behind the Seagrass-Watch site.



Above: Monitoring Natadola Beach

A new Seagrass-Watch site was established (30 June) on the intertidal flats of Denarau island, Nadi. The island is 684 acres and is located west of Nadi. Denarau is a reclaimed mangrove island and is connected to Viti Levu via a small causeway. Species composition at the Seagrass-Watch site (DN1) was comprised of *Halodule pinifolia*, *Halophila ovalis* and *Syringodium isoetifolium*.

Monitoring seagrass meadows at Denarau Island.



Ferry to Ovalau



Ferry to Ovalau



Monitoring Cawaci sites



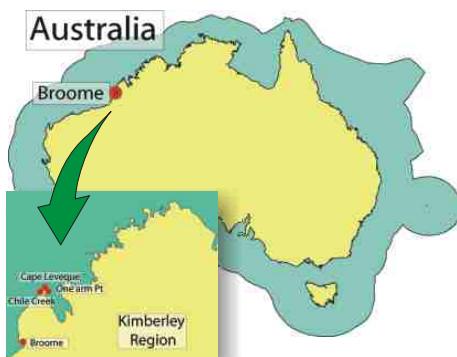
*Halophila ovalis* ssp. *bullosa*





# Western Australia

## Kimberley Region



The Kimberley region of Western Australia extends from the border with the Northern Territory in the north to Sandy Point (Roebuck Bay) in the south. Seagrasses are a significant component in the southern coastal

marine ecosystems and they are critical to regionally important dugong and turtle populations

The Kimberley displays wide variation with embayments and sounds with wide sandy beaches which give way to mudflats. Mangrove inlets and tidal creeks are interspersed with coastal cliffs. There are numerous offshore islands and much of the coast remains uninhabited. The coast is prone to large tidal variation from <1 to 11m and these strong tidal flows dramatically influence the coastal environment.



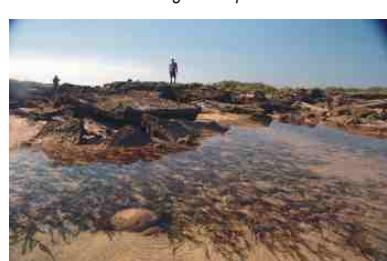
Bardi Jawi Land and Sea Rangers at Chile Creek



Above and below: *Enhalus acoroides*, Chile Creek



Below: Looking for a possible site



From 30 August to 3 September 2007, Len McKenzie (Seagrass-Watch HQ) visited the Kimberley region in Western Australia with the assistance of Kimberley Land Council - Land & Sea Unit and Environs Kimberley. The trip was to conduct a training workshop in Broome and to scope potential monitoring sites on the Dampier Peninsula.

On 31 August, Len visited Chile Creek, as a guest of the Bardi Jawi Land & Sea Rangers (Daniel, Shawn, Mark and Trevor). Chile Creek is one of the locations recommended for future monitoring. Located south of Cape Leveque (northern Dampier Peninsula), the creek seascape is significantly influenced by the high tidal range (9.6m). Patches of *Enhalus acoroides* with *Halophila ovalis* and *Halodule uninervis* are found scattered amongst the large tidal pools. Dugongs have been reported to visit these meadows.

The following day, with the Bardi Jawi Land and Sea Rangers (Daniel, Shawn and Trevor), Len visited One Arm Creek, another of the locations recommended for future monitoring. Seagrass meadows are located in the shallow waters of the perched fringing coral-reefs. The tidal range is extreme in this location (11m), and during low tides, water is trapped (ponded) on fringing reef flats, while water is several metres below the reef crest on the seaward side. The majority of the meadows are low-moderate in abundance, and are dominated by *Thalassia hemprichii* with *Halophila ovalis*, *Halodule uninervis* and *Enhalus acoroides*. Dugongs and turtles are often reported feeding on these meadows.

*Continued over....*



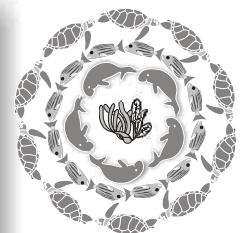
*Thalassia hemprichii* and *Enhalus acoroides*, One Arm Point



*Thalassia hemprichii* meadow, One Arm Point



One Arm Point



*Thalassia hemprichii* meadow in pooled water at low tide on perched reef, One Arm Point

## HAVE YOU REGISTERED WITH HQ??

To receive regular updates on the program and be a recognised member of the Seagrass-Watch community go to [www.seagrasswatch.org/register.html](http://www.seagrasswatch.org/register.html)

# Western Australia



Town Beach, Broome

It was then back to Broome, over the weekend of Shinju Matsuri (Japanese for "Festival of the pearl") and "stairway to the moon", where Len conducted a Seagrass-Watch training workshop jointly hosted by Environs Kimberley and the Department of Environment and Conservation. Local coordination was by



Danielle Bain. On the Saturday afternoon, 14 participants learnt seagrass biology, ecology, identification, and Seagrass-Watch monitoring. Early on the Sunday morning, participants ventured onto the sand flats of Roebuck Bay to put their newly learnt skills into practice, by monitoring a site (RO1). The morning was finished with a morning tea and vanilla slices. 🍫

## Broome Workshop

Danielle Bain reports



The Seagrass-Watch group in Broome was delighted to have Len McKenzie (Seagrass-Watch program leader) visit the Kimberley recently. After spending a couple of days on the Dampier Peninsula with the Bardi Jawi Rangers, Len delivered a training workshop for our volunteers here in Broome.



We spent Saturday afternoon learning about the biology and ecology of seagrass including a practical session on identification and specimen pressing. Then we completed a field monitoring session at RO1 (Town Beach) early on Sunday morning followed by a morning tea in the park.



Even though the majority of participants had been monitoring in Roebuck Bay for a few months already, everybody learnt a lot about seagrass and its role as an indicator of ecological health. But most importantly, the volunteers came away with a great sense of being a part of something much larger. Many did not realise how many other Seagrass-Watchers are out there doing the same thing as us. It is very reassuring to know that the data we are collecting can be useful and can influence decision makers.



After the training workshop, Len was able to visit RO2 and RO3 and could affirm that our sites had been well selected and our methods were sound. He pointed out many dugong feeding trails and indicated that the seagrass meadows were looking healthy.

Thank you for teaching us so much Len! We hope you found your trip to be as valuable as we did. 🌿



## Roebuck Bay

Roebuck Bay is a tropical marine embayment with extensive, highly biologically diverse, intertidal mudflats. The Bay is bounded to the north-west by the township of Broome and extends to Sandy Point in the south.

Declared a Ramsar site, it is internationally important for at least 20 species of migratory shorebirds and one of the most important sites for shorebird conservation in the East Asian-Australasian Flyway in Australia and globally. Dugongs (*Dugong dugon*) and Green turtles (*Chelonia mydas*) regularly use the bay as a feeding area and as a transit area on migration. The Bay is also a major nursery area for marine fishes and crustaceans, and supports an exceptionally high biomass and diversity of benthic invertebrates (estimated to be between 300 – 500 species), placing it amongst the most diverse mudflats known in the world.

Roebuck Bay has a very large tidal range which exposes around 160 sq km of mudflat, approximately 45% of the total bay area, with tides travelling at up to 20cm/sec mid cycle. Most of the mudflat area is inundated by each high tide and at times, spring tides and/or cyclones may cause the adjoining coastal flats to become inundated. The tidal system is semi-diurnal with an average tidal amplitude of 5.7m. Tidal range varies from c. 1 m on neap tides to 10.5 m on the highest spring tides. These factors dominate the intertidal ecology.

Extensive seagrass meadows occur in the northern regions of Roebuck Bay, particularly in the Town Beach area, and are dominated by *Halophila ovalis* and *Halodule uninervis*. The most vigorous stands of seagrass grow in areas that are exposed for less than two hours at low tide. A "wrinkly" leaf form of *Halophila* occurs sparsely by itself, often in pools which remain in the high intertidal during low tides, or with some *H. uninervis*. *Halodule pinifolia* has also been reported from northern Roebuck Bay, but mixed with other species.

## HAVE YOU SENT YOUR DATA TO HQ??

If not, your data cannot be used for regional and global assessments





## Seasonal and spatial variations in seagrass biomass and shoot density at Minicoy Atoll, Lakshadweep

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

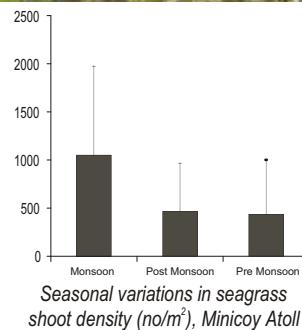
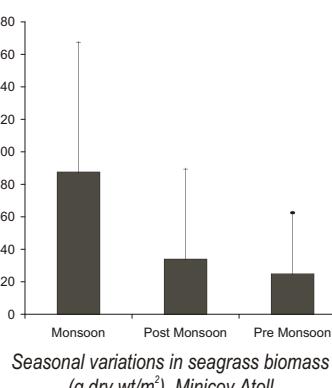


Seagrass ecosystems form one of the important coastal ecosystems of tropical regions. This ecosystem is conspicuous and often dominants habitats in shallow water coastal areas. These systems are becoming well known for their high primary and secondary productivity, ability to stabilize sediments, production of vast quantities

of detritus and support of diverse faunal and floral communities.

The seas around Lakshadweep and the reef lagoons are of great ecological significance as they influence the fauna and flora associated with the coral reefs and seagrass meadows, to a great extent. The lagoons and reefs provide suitable coral habitat, for innumerable varieties of animals and plants. 112.4 hectares of seagrass area has been identified in the lagoons of Lakshadweep, which covers an area of about 4200km<sup>2</sup>. Minicoy, the southern most island of Lakshadweep Archipelago has the largest lagoon among the group and has a rich vegetation of seagrasses in the inter tidal zone of the lagoon. Minicoy lagoon, the study area, has abundant growth of seagrasses. Studies on seagrass meadow in this region are very few and there is no comprehensive study on different aspects of the ecosystem. The present study was carried out during two consecutive years (2000, 2002). The study aspects include seasonal and spatial variations in seagrass biomass and shoot density both in temporal and spatial scales.

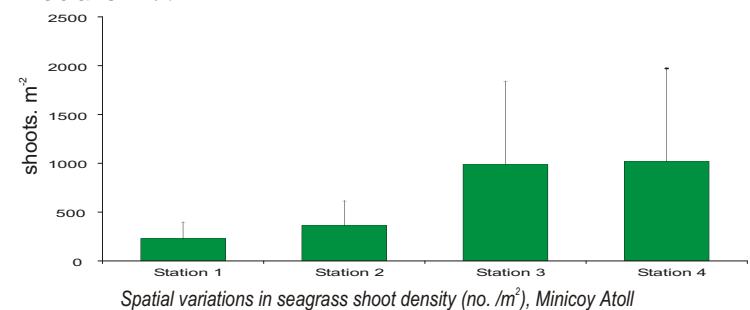
Quadrat method was used for the sampling of seagrasses, during low tide. The sampling was done on monthly basis and the values were made into averages. The shoot density ( $\text{no}/\text{m}^2$ ) and biomass ( $\text{g dry wt}/\text{m}^2$ ) of each species found out separately and pooled together for graphical representation. Seasonally, highest seagrass biomass and shoot density was observed



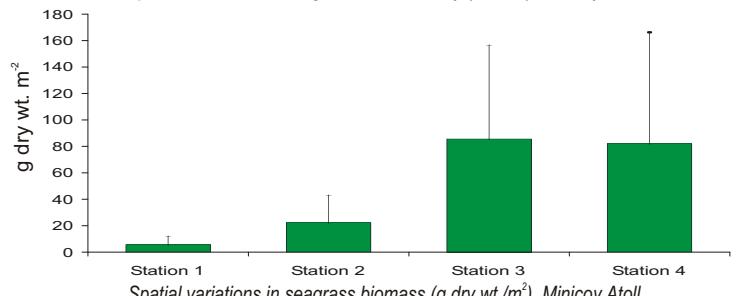
during monsoon (June to September) and lowest during pre monsoon (February to May).

Spatially, highest mean shoot density was observed in the station 3, which was contributed by *Syringodium isoetifolium*, followed the station 4 *Syringodium isoetifolium* and *Cymodocea serrulata* formed the members of seagrass meadow in this station.

Lowest mean density was recorded in the station 1, where *Halophila ovalis* was the sole member of seagrass community. Highest mean biomass was recorded in the station 4 and lowest in the station 1.



Spatial variations in seagrass shoot density ( $\text{no.}/\text{m}^2$ ), Minicoy Atoll



Spatial variations in seagrass biomass ( $\text{g dry wt.}/\text{m}^2$ ), Minicoy Atoll



### The Lakshadweep Islands

Lakshadweep is the smallest union territory of India. The group is located 200 to 300 km off the coast of Kerala in the Arabian Sea. The total land area of the territory is 32 km<sup>2</sup>. Eleven of the islands are inhabited. Lakshadweep officially consists of 12 atolls, 3 reefs and 5 submerged banks, with a total of about 36 islands and islets. The reefs are in fact also atolls, although mostly submerged, with only small unvegetated sand cays above the high watermark. The submerged banks are sunken atolls.

The people of all the northern islands speak a dialect of Malayalam. According to local folk beliefs, they descended from traders who were washed up on the islands during a particularly heavy storm. However, the people of Minicoy, the southernmost atoll, speak Mahl, which is another word for Divehi, the language of the Maldives.

The islanders are ethnically similar to coastal Kerala's Malayali people, and were influenced by Arab traders. Inhabitants of Minicoy, the southernmost and largest island, closely resemble Maldivians.

Due to its isolation and scenic appeal, Lakshadweep is emerging as a major tourist attraction for Indians. This brings in significant revenue, which is likely to increase. Since such a small region cannot support industries, the government is actively promoting tourism as a means of income.

Source: <http://en.wikipedia.org/wiki/Lakshadweep>, Image courtesy of : Lenish Namath

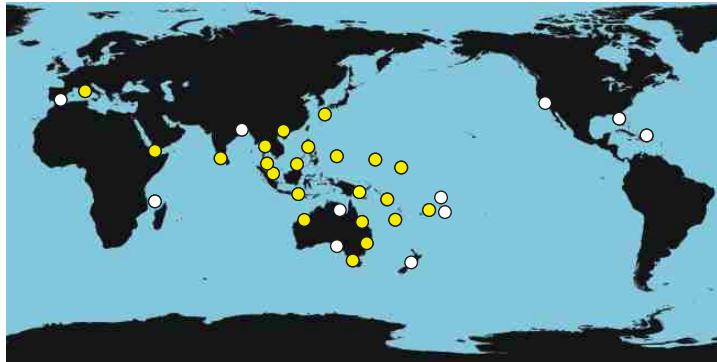




# Local Eyes, Global Wise

## Who participates in Seagrass-Watch?

Anyone can participate in Seagrass-Watch, as it responds to local needs. Since Seagrass-Watch began in May 1998, it has expanded from 2 locations in Queensland (Australia), to 16 regions in Queensland, 4 states in Australia, and more than 17 countries globally. Monitoring is currently occurring at over 205 sites and growing.



● **Current participants:** Australia (Queensland, NSW, Victoria, Western Australia), Fiji, New Caledonia, Papua New Guinea, Solomon Islands, Federated States of Micronesia, Philippines, Japan, China, Thailand, Malaysia, Singapore, Indonesia, India, Eritrea, France, Viet Nam.

○ **Future participants (expressed interest & currently building capacity):** Bangladesh, Comoros Islands, Spain, Caribbean, USA (Florida, California), Tonga, Samoa, New Zealand, Australia (Northern Territory, South Australia)

Seagrass-Watch's vision is to educate and build the capacity of local stakeholders to monitor the condition and support conservation measures which ensure the long-term resilience of seagrass ecosystem

Seagrass-Watch is a multi faceted program. One component of the program is focused on education, awareness and capacity building. Other components focus on community participation/ownership and Governments, NGO's working with stakeholders. The program has become a collective network of participants ultimately interested in seagrass conservation

The largest component is long term monitoring of seagrass resources. Although some new locations are still at the resource assessment stage (determining what seagrass species are present and their distribution), other sites have just over 8 years of monitoring data. These sites are coastal sentinels, providing an early warning of ecological decline.

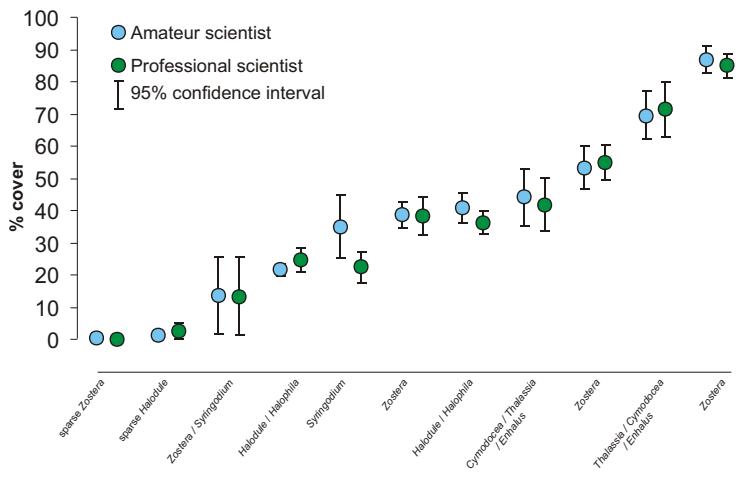
## How does Seagrass-Watch ensure data quality?

Seagrass-Watch is a supervised monitoring program with participants from communities and scientific institutions/agencies (including academic, government and non-government). The collection of data by a diversity of participants necessitates a high level of training to ensure that the data is of a standard that can be used by management agencies. Technical issues concerning quality control of data are important especially when the collection of data is by people not previously educated in scientific methodologies.

Seagrass-Watch has an accepted Quality Assurance-Quality Control program in place to ensure that the program is producing data of high quality, and that time and resources are not wasted. The program implements QAQC during all phases of monitoring (before, during and after field collections) (see issue 23, page 20).

Independent evaluation by statisticians from the Australian Institute of Marine Science in 2004, concluded that the data produced by the program was of good spread (spatial and

temporal) and quality. Many of the sites monitored achieve <20% min detectable difference, with 80% power. Experiments have also been conducted to see if a difference exists between the percentage cover estimates of experienced professional scientists and trained community volunteers (amateur scientists). A variety of seagrass communities over a wide range of covers were tested and no significant difference was found between observer groups.



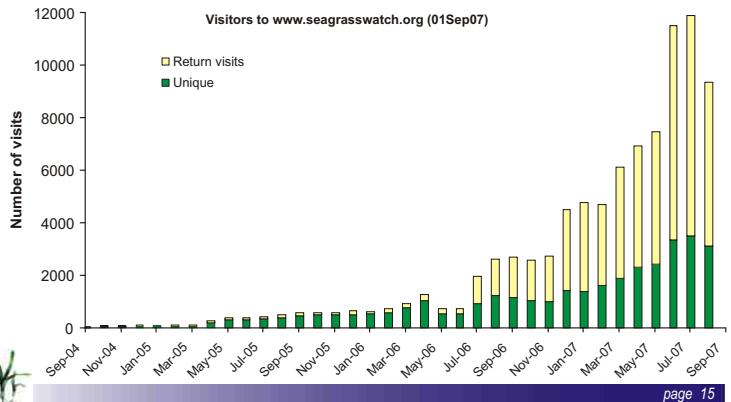
## How does Seagrass-Watch communicate feedback to participants?

Seagrass-Watch's communication strategy works on several levels and uses a number of communication tools. The newsletter is only one of the tools. Not only can participants read about program developments, they also read about what's happening outside their region or country. The newsletter shows participants they are part of a global program and that their local efforts can make a difference.

Where possible, the Seagrass-Watch uses workshops/presentations/festivals to spread the word. Field interactions and workshops are an important component. These workshops may be focused on training or providing a forum for participants to share their experiences (such as the International forum in 2001).

Seagrass-Watch HQ is currently working on an educational activity kit for schools, and in the past has assisted with developing seagrass modules for school curriculum. Other promotion materials are also produced and available to participants, including brochures, stickers and bookmarks.

One of the most popular ways to provide feedback has been via the program's website. The number of unique hits per month has increased dramatically over the past 3 years, and the introduction of E-bulletins has also proved popular.



# From the schools

## Raffles Girls School, Singapore

Jocelyne, Sihui and Siling report



While their schoolmates are sleeping in on weekends, three young ladies from Raffles Girls School (who have recently been dubbed the "Labrador Seagrass Angels" for their enthusiasm for all things seagrass) are

traipsing the shores of Labrador Nature Reserve. What are they up to? Jocelyne, Sihui and Siling report on their activities so far:

We had to take up a project to fulfill our science requirements for school, and we initially wanted to study mangroves. However, our teacher, Mr. Lim, told us about seagrasses (which we had never heard of before) and TeamSeagrass, a group of volunteers monitoring seagrass beds in Singapore. TeamSeagrass was looking for student volunteers to undertake monitoring activities of the seagrass meadow at Labrador Nature Reserve. We felt it was a good opportunity to learn something new and undertake a rather unusual school project, and the rest, as they say, is history!

When Seagrass-Watch held a workshop for TeamSeagrass in March 2007, we were lucky to meet with Len McKenzie (SW HQ) who gave us several ideas for experiments on seagrasses, many of which have not been carried out in Singapore. We finally settled on an experiment measuring the leaf growth in *Thalassia hemprichii*. We had our first run in June and the preliminary results look interesting, so watch this space for more news from us! We're also currently doing a profile of Labrador Beach to determine if there's a correlation between seagrass growth with respect to the beach profile.

Then of course, there's the monitoring aspect of our project as part of Seagrass-Watch, but our methods differ slightly from the usual 50m x 50m transect lines. This is because the patch of seagrass at Labrador Beach is too small so we've adopted a GPS



The Labrador site



tracking method. Using a GPS, we walk around the edge of the plot of *Thalassia hemprichii*, and by comparing the coordinates of different monitoring sessions, we are able to see if the plot has grown, shrunk, or moved. We focused on *Thalassia hemprichii* although there was also *Halophila ovalis* and *Enhalus acoroides* as the *Thalassia hemprichii* patch was the main component of this seagrass meadow and the other two species were found mostly in the periphery. In addition to the mapping, we also take the usual measurements as all other seagrass-watchers out there, such as percent cover, species composition, canopy height and the rest.



The girls monitor the meadow at Labrador with Siti



Running out a transect

We all love going down to Labrador Beach, and we've had our fair share of adventure like the time we had to wade around in thigh-deep water because Mr. Lim

thought that the tides were low enough, climbing and crab walking along the edge of the railing to get into the Beach because the entrance was locked and monitoring seagrass in the rain. And we will leave you now, with some wise words Ms Siti had imparted to us during a TeamSeagrass presentation she gave at our school "Hug A Seagrass Today!"



### Labrador Nature Reserve

Labrador Nature Reserve, also known as Labrador Park is located in the southern part of the main island of Singapore. It contains the only rocky sea-cliff on the mainland that is accessible to the public for recreation, education and scientific research. Since 2002, 10 hectares of coastal secondary vegetation and its rocky shore have been gazetted as a Nature Reserve.

Labrador Nature Reserve has a rich variety of flora and fauna. More than 50 species of birds and more than 11 species of butterfly have been recorded. In addition, the rocky shore contains a multitude of corals and crabs, seagrasses (*Halophila ovalis*, *Thalassia hemprichii*, and *Enhalus acoroides*), sandworms and horseshoe crabs. The Common Hairy Crab (*Pilumnus vespertilio*) is often spotted in the area.

The entire nature reserve, together with the current park, used to be called Pasir Panjang Beach, or Long Beach. The area used to be a long strip of coastal land at high tide, and a rocky beach at low tide, before land reclamation took place and formed the seawalls and grassy park seen today.

Besides its rich biodiversity, this headland played a significant role in the history of Singapore during World War II. Remnants of the past include war relics, tunnels and a fort.



# From the schools



## Thongniankanaphibal School, Thailand

**Asst Prof Dr Anchana Prathee reports**

A capacity building camp on marine resources was organized by BRT and Asst. Prof. Dr. Anchana Prathee of *The Seaweed and Seagrass marine unit, Faculty of Science, Prince of Songkla University* for marine national staff from July 6th – 8th, 2007 at Thongniankanaphibal School and Koh Tharai, Kanom District, Nakhon Si Thammarat. The training was done using Seagrass-Watch protocols with funding by BRT and TOTAL E&P Thailand and TOTAL Foundation of France.

This was to train a teacher and five students from Thongniankanaphibal School, how to monitor seagrass using the Seagrass-Watch monitoring methods and the importance of seagrasses.

In this camp, the students have learnt about seagrass ecology and Seagrass-Watch protocols, for

example, the seagrass identification, and the specimen collection method. In addition, they have monitored the seagrass meadows using Seagrass-Watch protocol at Koh Tharai. Moreover, the students also have learnt to identify marine animals and marine plants life using the Seashore Detective manual. This is very much useful for those students to know more about their home resources and get them involved in conservation programs while they are still very young. The first collection also was done



Students learning to identify marine animals and plants using the Seashore Detective manual



Estimating seagrass abundance using Seagrass-Watch protocols



Learning to analyse data collected



Learning to prepare a herbarium press

during this camp and will be continued throughout the year.

This camp was the first step to build up capacity on marine ecosystem and conservation for the community. We hope that this program can lead the students to continue their projects on seagrass monitoring program by themselves, supervision by Jittima JaiJang, their teacher. Also, the students get to know and love the marine ecosystem and the sea of their home.



Students and a teacher of Thongniankanaphibal School in the field



### Nakhon Si Thammarat Province

Nakhon Si Thammarat (often in short Nakhon) is one of the southern provinces of Thailand, on the eastern shore of the Gulf of Thailand. Khanom is a district located in the north of the Nakhon province. Most of the coast line of district will be protected as part of the Hat Khanom - Mu Ko Thale Tai National Park, which is currently in process of creation. The coast of the district consists of a series of beaches nestled among the limestone and shale mountains of northern Nakhon Si Thammarat mountain range.

The provincial seal shows the Phra Baromathat Chedi of the Wat Phra Mahathat Voramahavihan, one of the most important historical sites in southern Thailand. According to the city chronicle it was already built in 311, but archaeology dates it to the 13th century. The chedi is surrounded by the animals of the Chinese zodiac in theseal.

The twelve animals represent the twelve Nakat cities or city-states which were tributary to the Nakhon Si Thammarat kingdom: the mouse of Saiburi; the ox of Pattani; the tiger of Kelantan; the rabbit of Pahang (actually a city in Pahang which is said to be submerged by a lake now); a large snake of Kedah; a small snake of Phatthalung; a horse of Trang; a goat of Chumphon; a monkey of Bantaysamer (might be Chaiya, or a town in Krabi Province); a cock of Sa-ulau (unidentified city, might be Songkhla, Kanchanadit or Pla Tha); a dog of Takua Pa and a pig of Kraburi.

Source: [http://en.wikipedia.org/wiki/Nakhon\\_Si\\_Thammarat\\_Province](http://en.wikipedia.org/wiki/Nakhon_Si_Thammarat_Province), [http://en.wikipedia.org/wiki/Amphoe\\_Khanom](http://en.wikipedia.org/wiki/Amphoe_Khanom)

# From the schools



## Thursday Island High School (Torres Strait)

Stacee and Kantesha report



Stacee and Kantesha, Front Beach, TI



Early morning monitoring at Back Beach, TI

On the 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> and 13<sup>th</sup> of August Seagrass-Watch was up and running here in the Torres Strait once again. With a group of keen Seagrass-Watchers, expert Jane Mellors conducted another successful series of Seagrass-Watching on sites located on Thursday Island, Horn Island and Hammond Island.

The keen Seagrass-Watchers woke up really early ensuring that they made it to each site on time and ready for work. We enjoyed ourselves and learnt a lot thanks to Jane. Local workers also joined our team at Horn Island, Hammond Island and Thursday Island sites. It was a big effort for everyone to keep enthusiastic and willing to get up early throughout the three massive mornings.

A lot of important seagrass

information was found and learnt over the days and another Seagrass-Watch will happen in November. So if there are willing volunteers, they are most welcomed to join and have a good time. The experience is very valuable.



Kinam and Frank, Wongai Beach, Horn Is.



Horn Is Team



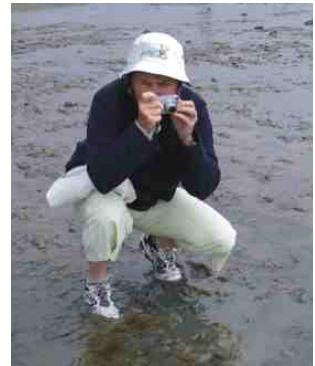
Back Beach Aug '07

Torres Strait Snap shots:August monitoring at Front Beach, Back Beach and Horn Island

## Belgian Gardens State School (Townsville)

Gayle Joyce (Head of Curriculum/ Year 6 Teacher.) reports

On August 9<sup>th</sup>, eighteen students from Class 6 J and their Teacher, Mrs. Gayle Joyce assisted Naomi Smith and Adam King in monitoring the seagrass meadows at Rowes Bay (Townsville) on an overcast and cool day , with the odd sprinkling of rain thrown into the bargain! But who cared? It was certainly a better way to practise percentages (of seagrass, algae and epiphyte cover) than doing percentages on the blackboard in the classroom.



Gayle with her camera

This was the first time at monitoring for most of the students however after an informative session with Naomi in the classroom the preceding week and with many practices at calculating the percentage-cover, the students were confident in doing the monitoring efficiently.

The first thing that struck all of us, was the amount of "silty" substance (mud) covering the site. The students were initially disappointed at the apparent lack of seagrass, though I think they had imagined fields of billowing "wet" grass.

For me, having monitored the site on many occasions, it was quite a shock to see the seagrass covered in many places with a thick layer of mud. Had there been rough seas and strong currents recently? Had there been an amount of dredging in the shipping channel recently? Was there any building or reclaiming of land in the port area recently? Was this a Natural phenomena? The appearance of the large amounts of silt posed many questions to which the students are trying to find answers.

*Continued over....*



Coring for seeds - found one yet?

A day out on the seagrass flats of Rowes Bay!





# From the schools

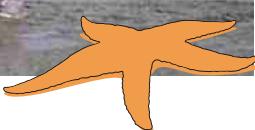


Monitoring went efficiently with students finding majority of the seagrass being *Halodule uninervis* and quite a lot of seeds being found in the sampling done. I was surprised at the lack of *Halophila ovalis* species of Seagrass as there are usually patches of this type in the vicinity of our site.



Notable findings were many and varied jelly-like egg sacs, some being identified as sea-mullet eggs and others as snail eggs although many of the jelly-sacs were unidentified. Also the students monitoring Transect 1 came across a multitude of Sea Hares and were fascinated to see so many in a relatively small area. Many small crabs were found and assorted hermit crabs and snails with one

lovely "olive" shell with the mollusc intact.



The students finished the monitoring in record time and were very appreciative at being able to participate in such an important Real life monitoring project. Many thanks to our parents for their assistance and to Naomi and Adam for their expert guidance. 🌿



## Hermit Park State School (Townsville)

Nakia Hill and Rachel Monaghan report (Grade 7)

On Tuesday the 12th of June, Hermit Park State School students helped four dedicated Seagrass Watch volunteers, Posa, Naomi, Carmen and Adam collect scientific data on seagrass (dugong food). They arrived at Rowes Bay and split up into four groups. Near the site, the mud started to become soft and sloppy and the children sank to their ankles. One of the groups took photographs of the quadrants. The other group was looking for seagrass seeds and the rest were looking for marine life and measuring seagrass percentages and heights in the quadrants. After the days work had been completed, they were all awarded with a chocolate frog and a friendly game of cricket.



Posa Skelton, above, and Naomi Smith, right, teach Hermit Park students Seagrass-Watch monitoring techniques



"I think the Seagrass-Watch activities are a great idea for kids to learn whilst having fun," remarked William Webster, one of the students.

The children want to thank the Seagrass-Watch volunteers for helping them to learn these skills. 🌿



# Animal facts

## Seahorses and seagrass pastures



Hippocampus sp.

Image courtesy of Mr. Mohammed Al Momany, Aqaba, Jordan

As unusual as it sounds, there exists a fish with a head like a horse, a tail like a monkey, where the male becomes pregnant and some believe has magical medicinal powers? That fish is of course, the seahorse.

Naturalists in olden times were uncertain whether to class seahorses amongst fishes or insects. Unlike their other bony fish relatives, seahorses share a characteristic elongated semi-flexible stiff body, covered with bony plates and rings for protection instead of scales. They have a dorsal fin located on the lower body and

pectoral fins located on the head near their gills. They have specialised tubular snouts with a small mouth at the tip, they lack teeth and can move their eyes independently. But in spite of their unusual looks, seahorses are true fish, with backbones, gills and fins.

Together with pipefish, and sea-dragons, the seahorses comprise the family Syngnathidae. Seahorses are grouped within the genus *Hippocampus*: a name derived from the Greek words for *hippos* (horse) and *kampos* (monster) or *kampe* (curvature). These bizarre and wonderful creatures are found principally in seagrasses, coral reefs and mangrove habitats in tropical, subtropical and warm temperate habitats where they feed largely on small crustaceans.

Unlike other fish, though, seahorses have a tail that is prehensile (able to grasp). It can wrap around seagrass and other stationary



A spotted seahorse (*Hippocampus kuda*) clinging onto a blade of *Enhalus acoroides* at Sg Pulai estuary, Johor, Malaysia.

Image courtesy of Choo Chee Kuang (SOS Malaysia)



Potbelly Seahorses at Tennessee Aquarium, Chattanooga, TN, USA.

Image courtesy of Joanne Merriam

objects on the ocean floor. This anchors these weak swimmers, which otherwise are at the mercy of currents. Hanging onto a blade of seagrass also helps the seahorse hide. Seahorses grow skin flaps and change colours to blend in with their surroundings. Colour changing is also an important part of mating.

Seahorses are generally monogamous. The male and female will greet one another with courtship displays in the morning and sometimes in the evening to reinforce their pair bond. They spend the rest of the day separate from each other hunting for food. Sometimes during courtship displays, the pair link their tails, and the female deposits her eggs into the male's belly pouch, which he fertilizes. After 10 to 21 days, the male gives birth to up to 150 young. These miniature seahorses rise immediately to the surface to take a gulp of air, which helps them stay upright. Hatched offspring are then independent of their parents.

The world's oceans host about 33 seahorse species. Because of the fishes' colour and skin changes, this number is debatable. The 2003 World Conservation Union (IUCN) Red list of Threatened Species lists 9 of the 33 seahorse species worldwide as



*Hippocampus kuda*, Papua New Guinea.

Image courtesy of Jane Wia, MIRC

vulnerable, and one as endangered. The other 23 are listed as data deficient, demonstrating the lack of knowledge of seahorse biology, and the urgent need for more research.

Habitat destruction, pollution and collecting for aquariums threaten seahorse survival. The largest threat however is overfishing. More than 25 million dead and live seahorses are traded globally on an annual basis with around 95% of these being used in traditional medicines; aquarium and souvenir trade make up the rest. In the 1990s, some seahorse populations were observed to shrink between 25 to 50 percent over five years. Traditional Chinese, Japanese and Korean medicine practitioners use dried seahorses to treat asthma, atherosclerosis, thyroid disorders, skin diseases, heart disease, sexual dysfunction, lethargy and pain.

Several Seagrass-Watch participants are investigating the relationship between seagrass and seahorses. Their research will provide valuable knowledge on these unique and iconic creatures.



**Do you want to get Involved?  
Register with Seagrass-Watch HQ  
[www.seagrasswatch.org](http://www.seagrasswatch.org)**



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