

Queensland *news* Seagrass-Watch

ISSUE 15,
October 2002



Welcome to the Christmas edition of the newsletter. With so much happening in Seagrass-Watch over the past 3 months, a special *bumper* edition was required. Welcome to all the new volunteers with the expansion of Seagrass-Watch in Moreton Bay and around the Twin Cities of Townsville and Thuringowa. Remember, contributions to newsletter articles from volunteers are most welcome, so please keep them coming. We also wish everyone a very merry and safe festive season!!

Seagrass-Watch for everyone

Anne O'Dea reports

The students of Maryborough Special School have adopted a seagrass site at Poona in the Great Sandy Strait. With great enthusiasm they board the school bus every three months and make their way out onto the mudflat to monitor the site. The project gives the students the opportunity to learn new skills in a real life situation. A special beach-access wheelchair allows access for Justin, thanks to the generosity of Hervey Bay City Council and Torquay Beach Hire.



De pushing Justin, Brad with the sieve and Glen helping

This is what the students have to say about the project: "This year our class went Seagrass-Watching down at Poona. We went to Poona on the bus. At Poona we looked at seagrass and measured it. We counted seagrass because the wildlife people wanted to know how much seagrass the dugongs were eating, to see if they are extinct. We go every three months to Poona.

To measure the seagrass we used a ruler, pencil, paper, camera and photos for checking the quadrats. We saw snails, sea crabs, green worms, grubs, and looked for seeds. We had lunch and morning tea too.

When we went there some stayed on the beach the rest of us walked out to the mudflats and Justin used the beach wheelchair. Anne, De, Phil, Kathy, Camille and Robyn took us".

Searching for seeds in Dugong poo!

By Michelle Waycott



JCU scientists, with the assistance of Kathryn McMahon at the UQ, are searching for evidence that seagrass seeds can pass through the digestive tract of dugongs and remain viable. If the seagrass seeds survive their journey then the dugong would act as a long distance disperser of seagrass seeds. This would make the role of the dugong of vital importance in maintaining and re-establishing seagrass populations.

Thanks to the Seagrass-Watch team in the Whitsundays, a number of poos have been surveyed for the presence of seagrass seeds. Unfortunately, despite observing a number of species of seagrass in the poo (particularly *Zostera capricorni* and *Halodule uninervis*), no seeds have been found from Whitsunday dugong poo. Good news though, Kathryn McMahon, while screening poo from Moreton Bay found a single *Halophila* seed that appeared to be viable. We need more samples to confirm this observation!

We are very keen to get any dugong poo you come across. So just bag and freeze them until they can be passed onto someone coming to Townsville. Of particular interest is poo from areas where *Halodule uninervis* seeds are being detected in the Seagrass-Watch seed bank surveys. Contact Michelle Waycott, by email: michelle.waycott@jcu.edu.au if you have any poo you want to pass on or questions about this work!

Can you tell the difference between a sea cucumber and dugong poo?



Visit the Seagrass-Watch website at
www.seagrasswatch.com



In Florida, 80% of the above ground seagrass biomass is consumed by parrot fish.

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GSS & Hervey Bay Happenings!

Local Roundup

Ian McLaren from Toogoom reported large wracks of *Zostera* washed up on the beach in early September, possibly the result of fishing activities in the area and strong NE winds. The washed up leaves were broad and relatively long, compared to the short and narrow leaved plants on the intertidal sand banks.

Also from Toogoom, are recent reports of large algal blooms washed up on the tide. These blooms appear seasonal, but are generally reported in July/August. Large clumps of algae were reported floating across sites by Gordon, George and Gary from Tinnanbar in September. Disturbance from worm digging activities has been an issue in Hervey Bay and the Great Sandy Strait. Reports come from Boonooroo (BN1) by Hanna Larsen and from Urangan where one of the Queensland Transport monitoring sites was destroyed by a recreational worm digger (see page 7).

Wendy Jones reported high epiphyte cover on the grass at Burrum Heads (BH2). Part of the site has also been washed away due to the adjacent creek mouth being dug out.

The Arnold family have continued monitoring Dundowran (DD1), but still much of the site is bare and typified by mobile sands (lots of ripples). Dave and Rhonda Kohler at DD3 are seeing some minor recovery, although much of the site is similarly bare. They noted several patches of *H. ovalis* nearby. Their site is also typified by highly mobile sand, so recovery may be slow.

Gary and Gordon have continued monitoring Browns Gutter sites in the Great Sandy Strait. Out of 66 quadrats they examined, only 2 had seagrass (both less than 1% cover) which they managed to monitor in record time..

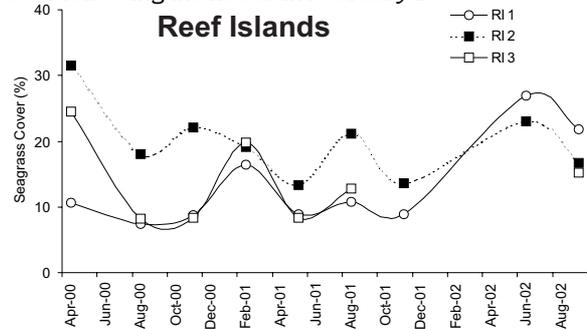
Mike and Bill (the QPWS team) report good cover of seagrass at Wanggoolba and Bennetts Creeks sites. They also reported that the meadows west of WC2 had excellent cover (75-90%) and that 8 black swans have been recorded at this site in September.

Recent monitoring at PN1, PN2 and BN1 is showing strong recovery of seagrass meadows after the floods in February 1999. The sites are also starting to show signs of seasonal patterns. Recovery at Boonooroo (eg. BN2) is also occurring.

Gordon, Mike, Hanna and Steve have all reported a noticeable absence of crustaceans/invertebrates throughout their Reef Island sites in September. Definitely something to keep an eye on. Anne, Steve and Hanna also noted lots of bird prints at the Poona site PN3, which they

accessed by surf skis! At PN2, Anne and the Maryborough Special School students reported extensive dugong feeding trails.

At Reef Islands the seagrass meadows have remained relatively high in cover (10-30%). It is possible that their offshore location protects these meadows from flooding events, as there was no evidence of reduced seagrass cover following the floods in February 1999.



HBDSMP News

Jerry Comans reports



The invertebrate study is just about complete where specimens have been photographed, catalogued and identified. Field charts have been prepared. The only sad thing is that there were very few samples detected despite a comprehensive coverage of Hervey Bay and the Sandy Strait. The massive decline in invertebrates is a worry. We are hoping that Kathryn McMahon's study on the ecological health of the region may shed some light. I don't know whether Moreton Bay or any other regions have had the same experience - let us know if you have.

Our group donated \$500 dollars to the Poona group to assist them with boat expenses as well as procuring 8 new monitoring kits.

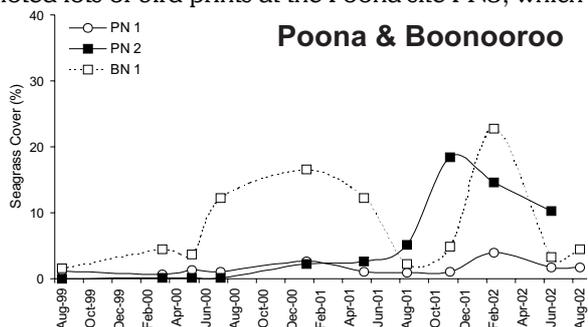
Nichole Murphy and Julia Phillips from CSIRO will be in Hervey Bay on the 27th November to study the green algae *Caulerpa taxifolia*. Our group has organised boats to help the researchers get out to sites in the bay, and Karen Kirk will be assisting them in their research.

We also had trouble monitoring some sites this month because of strong winds holding back tides. We were unable to get to Urangan sites as they did not expose. We also noticed on the way out to UG2 there was a big difference in the substrate. Where it was muddy but fairly firm, it is now sandy /gravelly but very soft (*I guess a bit like quicksand*).



Star of the Seas students & teachers at Urangan

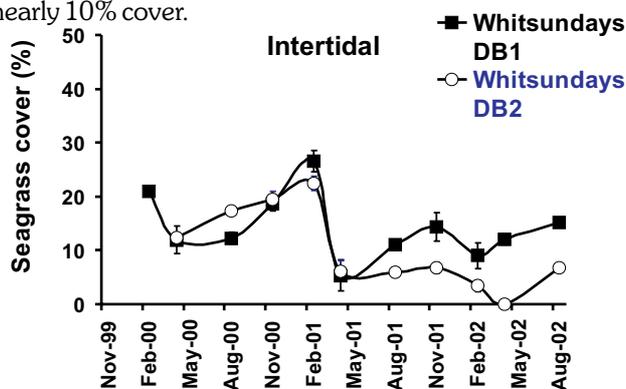
Karen and I were constantly bogged. Whether the new rock wall has changed the flow of water and the structure of the sediment we don't know. When we monitored in August it was easy walking on firm sediment to the site.



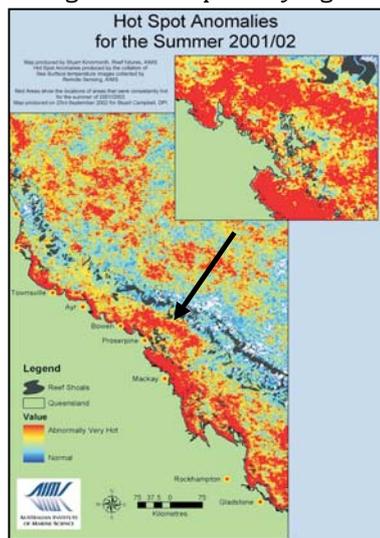
Whitsunday Wanderings!

Monitoring News

Thanks to the dedication of the Whitsunday Volunteers and OUCH, all sites were monitored in the Whitsundays from July to September. Intertidal sites monitored at Hydeaway Bay had fairly good coverage, although the overall trend shows that the spring (November) cover reached in 2001 was lower than in 2000. This trend was even more evident at Dingo Beach where a combination of disturbance (eg. sand movement) and high water temperatures may explain the low spring seagrass cover in 2001. Monitoring at Dingo Beach by Joyce Pitello in September showed a recovery in the growth of *Halophila ovalis* and *Halodule uninervis*, especially at DB2 where seagrass cover has bounced back from zero in April to nearly 10% cover.

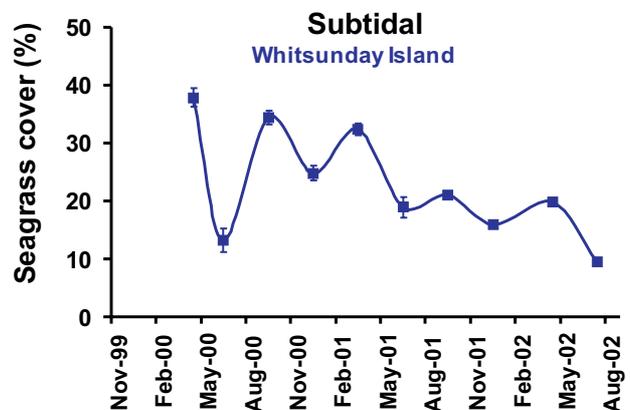


The trends are important to our understanding of the effects of climate on seagrass growth and the natural seasonal patterns provide an excellent baseline against which impacts from development may be detected. It appears that a combination of sand movement due to strong winds and possibly high water temperatures may be causing the low coverage found at some sites. The low seagrass cover in 2001-02 coincided with high seawater temperatures and coral bleaching. High temperatures can stress seagrass by decreasing photosynthesis but also by increasing microbial activity and depleting oxygen in the sediments, thereby causing stress to rhizomes.



Other sites at Laguna Quays and Midge Point are showing reasonably good coverage of seagrass. At Pioneer Bay the Whitsundays volunteers have reported that the sites are showing seasonal trends although the seagrass cover at sites PI3 and PI4 remain about 50-60% lower than PI1 and PI2.

OUCH has been busy monitoring sites north of Cid Harbour and Whitehaven Beach. At Cid Harbour the cover of seagrass has remained low from May 2001 to the recent monitoring in July 2002. It is possible that high seawater temperatures over spring-summer 2001 inhibited growth so it will be very important to monitor Cid Harbour in spring-summer this year to understand the continuing response of the meadows to these "hot water events". At Whitehaven Beach the impact of boat anchors on the meadow continues with a 50% reduction in seagrass cover recorded at the high impact site WB 3 compared to the low impact site. The cover of seagrass at both sites was consistent with trends in 2000 and 2001, and it will be interesting to see whether a spring-summer peak in seagrass cover is reached this year, similar to previous years.



Whitsundays Seagrass Report Published

Stuart and Chantal (Marine Plant Ecology Group, DPI) presented the baseline report of the seagrass resources in the Whitsundays at a public meeting held at Airlie Beach on 5th September. The report documents the distribution of more than 5000 hectares of seagrass meadows, and also reveals that many of the seagrass species present in the Whitsundays were those preferred by grazing dugongs. Ten seagrass species were recorded in the region, which represents a high diversity of seagrasses for a Queensland locality.

The report is a snapshot of seagrass distribution between Cape Gloucester and Midgeton and east to Whitsunday Island. Intertidal areas were mapped with assistance from local volunteers, while DPI divers on QPWS boats mapped subtidal seagrass meadows from more than 500 free dives to the sea bottom during January 1999 and 2000.

The information in the report will be used to manage human and boating activities in the marine environment. Eight Seagrass-Watch sites have been established within the Whitsundays region since 1998 to monitor the health of the coastal marine environment.

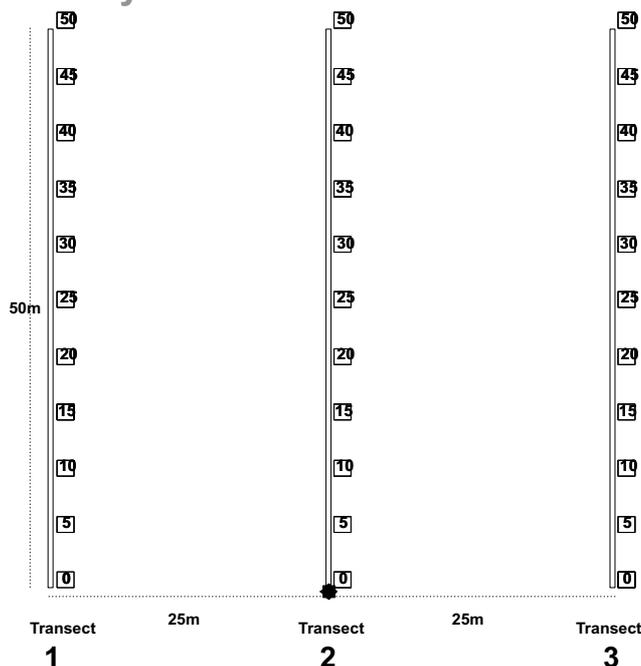
If you would like to find out more information on the distribution of the seagrasses, contact Stuart Campbell 07 4035 0113 or stuart.campbell@dpi.qld.gov.au



Seagrass-Watch Monitoring Methods: Summary

Extract from: McKenzie, L.J., Campbell, S.J. & Roder, C.A. (2001) *Seagrass-Watch: Manual for Mapping & Monitoring Seagrass Resources by Community (citizen) volunteers.* (QFS, NFC, Cairns) 94pp

Site layout



Quadrat code = site + transect+quadrat
e.g., PN1225 = Poona site 1, transect 2, 25m quadrat

Pre-monitoring preparation

Make a Timetable

Create a timetable of times of departure and arrival back, and what the objective of the day is and what is to be achieved on the day. Give a copy of this to all volunteers involved in advance so they can make their arrangements to get to the site on time. List on this timetable what the volunteers need to bring.

Have a Contact Person

Arrange to have a reliable contact person to raise the alert if you and the team are not back at a specified or reasonable time.

Safety

- Assess the risks before monitoring - check weather, tides, time of day, etc.
- Use your instincts - if you do not feel safe then abandon sampling.
- Do not put yourself or others at risk.
- Wear appropriate clothing and footwear.
- Be sun-smart.
- Adult supervision is required if children are involved
- Be aware of dangerous marine animals.
- Have a first aid kit on site or nearby
- Take a mobile phone or marine radio
- Keep your site clean, remove any rubbish

Necessary equipment and materials

- 3x 50metre fibreglass measuring tapes
- 6x 50cm plastic tent pegs
- compass
- 1x standard (50cm x 50cm) quadrat
- Magnifying glass
- 3x Monitoring datasheets
- Clipboard, pencils & 30 cm ruler
- Camera & film
- Quadrat photo labeller
- Percent cover standard sheet
- Seagrass identification sheets

Quarterly sampling

Within the 50m by 50m site, lay out the three 50m transects parallel to each other, 25m apart and perpendicular to shore (see site layout). Within each of the quadrats placed for sampling, complete the following steps:

Step 1. Take a Photograph of the quadrat

Photographs are taken at the 5m, 25m and 45m quadrats along each transect, and in quadrats of particular interest. First place the photo quadrat labeller beside the quadrat with the correct code.

Take the photograph from an angle as **vertical** as possible, which includes the entire quadrat frame, quadrat label and tape measure. Try to avoid having any shadows or patches of reflection off any water in the field of view. Tick the photo taken box on the datasheet for that quadrat.

Step 2. Describe sediment composition

To assess the sediment, dig your fingers into the top centimetre of the substrate and feel the texture. Describe the sediment, by noting the grain size in order of dominance (e.g., Sand, Fine sand, Fine sand/Mud).

Step 3. Estimate seagrass percent cover

Estimate the total % cover of seagrass within the quadrat use the percent cover photo standards as a guide.

Step 4. Estimate seagrass species composition

Identify the species of seagrass within the quadrat and determine the percent contribution of each species to the cover (must total 100%). Use seagrass species identification keys provided.

Step 5. Measure canopy height

Measure canopy height of the seagrass ignoring the tallest 20% of leaves. Measure from the sediment to the leaf tip of at least 5 shoots.

Step 7. Estimate algae percent cover

Estimate % cover of algae in the quadrat. Algae are seaweeds that may cover or overlie the seagrass blades. Use "Algal percentage cover photo guide".

Step 8. Estimate epiphyte percent cover

Epiphytes are algae attached to seagrass blades and often give the blade a furry appearance. First estimate how much of the blade surface is covered, and then how many of the blades in the quadrat are covered (e.g., if 20% of the blades are each 50% covered by epiphytes, then quadrat epiphyte cover is 10%).

Step 9. Describe other features and ID/count of macrofauna

Note and count any other features which may be of interest (eg. number of shellfish, sea cucumbers, sea urchins, evidence of turtle feeding).

Step 10. Take a voucher seagrass specimen if seagrass ID uncertain

Seagrass samples should be placed inside a labelled plastic bag with seawater and a waterproof label. Select a representative specimen of the species and ensure that you have all the plant part including the rhizomes and roots. Collect plants with fruits and flowers structures if possible.

At completion of monitoring

Step 1. Check data sheets are completely filled in.

Ensure that your name, the date and site/quadrat details are clearly recorded on the datasheet. Also record the number of other observers assisting and your start and finish times.

Step 2. Remove equipment from site

Remove all tent pegs and roll up the tape measures. If the tape measures are covered in sand or mud, roll them back up in water.

Step 3. Wash & pack gear

Rinse all tapes, pegs and quadrats with freshwater and let them dry.

Review supplies for next quarterly sampling and request new materials

Store gear for next quarterly sampling

Step 4. Press any voucher seagrass specimens if collected

The voucher specimen should be pressed as soon as possible after collection. Do not refrigerate longer than 2 days, press the sample as soon as possible.

Allow to dry in a dry/warm/dark place for a minimum of two weeks. For best results, replace the newspaper after 2-3 days. Send dry specimens to Seagrass-Watch Coordinator.

Step 5. Submit all original datasheets to Seagrass-Watch Coordinator

Twin City Tidings

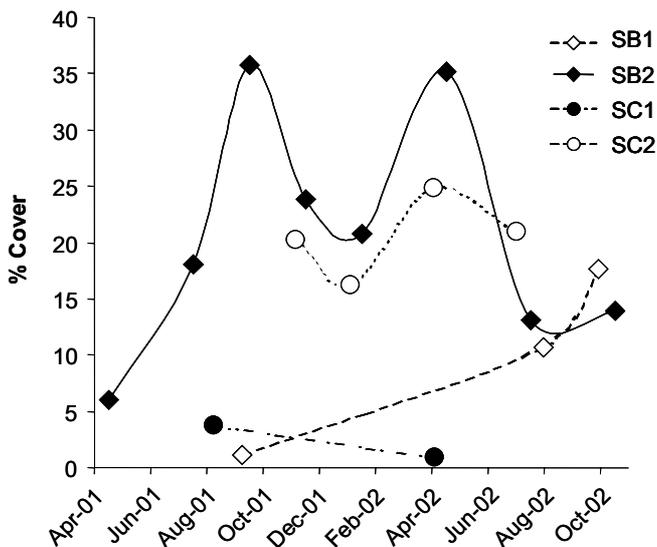
Shelly Beach

The Shelly Beach team (minus Jane Mellors who was away at the International Seagrass Biology Workshop) monitored SB1 and SB2 in October. A team of four managed to monitor the sites in the one afternoon. Percent cover at SB2 hovered between 5 and 22%, while SB1 showed higher percent covers. This is pretty amazing as this was the site that at the beginning of monitoring in 2000 was recording 0% - less than 1% cover for every quadrat.



Lyn McAndrew monitoring SB1

Even though SB1 shows great recovery in seagrass cover, seed counts remain low with only 3 seeds counted in the site. In contrast seed counts at SB2 remain high with seeds or half seeds recovered in ever core. Lots of fruits were also observed on *Halophila ovalis* while flowering of *H uninervis* was evident.



Rotary adopts Bushland Seagrass-Watch

The Rotary Club of Thuringowa Northern Beaches has adopted Bushland Beach for Seagrass-Watch monitoring. On Saturday the 2nd November, the group underwent a training session by Jane Mellors (MPEG) that included an informal presentation at Peter and Vicki Taylor's house and then a hands-on monitoring session. Even though the wind was strong the tide went out far enough to give the group of 12 volunteers plenty of intertidal flat to select the sites for monitoring. Two sites will be eventually set up for this location.

The seagrass species encountered at this site included *Halophila ovalis*, *Halodule uninervis* (narrow) and some *Zostera capricorni*. The predominant species was

Halodule uninervis with percent covers ranging from less than 1% to 80%. Fruits were observed on the few *Halophila ovalis* plants we saw, while *Halodule uninervis* was in flower. Dugong feeding trails were everywhere. The group settled into the task at hand very quickly and jobs were divided up into observers, scribes, photographer and seed collector. Well done Northern Beaches Rotarians and welcome aboard Seagrass-Watch.



Bushland Beach Seagrass Watchers L-R: Rose Zahra, Lux Foot, Vicki Taylor, Peter Taylor, Sandra Quitemeyer, Belinda Davison, Chris Davison, Sharon Taylor and Gary Stein

Good-bye and Good luck Dez

It is with much sadness that we farewell Dez Wells, the Townsville local Seagrass-Watch Co-ordinator. At the end of the school term Dez and his family are moving south. Over the past two years Dez's passion and enthusiasm has helped shape the Townsville Seagrass Volunteers from a group of haphazard watchers into a co-ordinated team of seagrass monitors. Dez represented our group at the 1st International Seagrass-Watch Volunteers Forum in Hervey Bay and more recently has been the representative



on the Local Marine Advisory Committee. Besides volunteering his time on monitoring trips, Dez volunteered his boat to take the group to one of our remote sites, he has given talks to community groups about the value of seagrass and the importance of the Seagrass-Watch program and has become an expert in badge making!!! DPI's Seagrass-Watch Group and Townsville Seagrass Volunteers, would like to thank Dez for his time and efforts and to wish him the best for the future.

Next Surveys in the Twin Cities

The next monitoring of long term sites will be between mid January and early February 2003. Best tides are in the evening!!
Townsville: Lowest tides on Saturday 18th January at 2:32am (0.59m) and Saturday 1st February at 2:41am (0.44m)



WJK

Queensland Seagrass-Watch *news* continued ..

Postcard from Ensenada

Jane Mellors reports

Whilst attending the International Seagrass Biology Workshop in Ensenada (Mexico), I went on a field trip to Raul's, located on the northwest coast of Baja California. This site is characterized by 15m high cliffs which we had to scramble down to access a wide and almost flat intertidal zone of sedimentary rock. At low tide a great number of tide pools and channels emerged that allows the development of numerous species of marine algae and a species of seagrass, that from my tropical Australian perspective seems very out of place. This seagrass *Phyllospadix torreyi* or surfgrass as it is commonly called, is only found on wave swept rocky coastlines ranging from subtidal to intertidal zones within these high-energy habitats.



To recruit to these high-energy areas it often requires the presence of certain algae as the occurrence of these algae enables root establishment of this seagrass. In contrast, coralline algae and surf grass seedlings compete for space. If the coralline algae is well established it inhibits surfgrass seedlings from establishing. However, once the surfgrass is securely attached on the underlying rock, the surfgrass rhizomes slowly grow outward, replacing the coralline algae.

Surfgrass is extremely difficult to regrow if it has been disturbed wether anthropogenically or naturally, consequently restoration of lost habitat is generally considered untenable.

Surfgrass beds are rich, productive, and diverse systems. The twisted rhizomes and long leaves provide shelter and habitat for many animals, as does the thick layer of sand trapped by the rhizomes. Storm-detached leaves become litter that is scattered across the ocean floor and down into deeper water, providing resources for numerous detritivores and their predators far beyond the intertidal zone.



Juanita Bité (left) and myself at Raul's (Baja California, Mexico).

Monitoring continues at Urangan Harbour, despite bait worming destruction.

Peter Wood (Queensland Transport) reports

Monitoring has continued at the 6 seagrass transects set up to monitor the impact of construction of a retaining wall at Urangan Harbour on nearby seagrass meadows. The transects were surveyed by volunteers from the Butchulla Aboriginal Community (the traditional owners of the Hervey Bay area) and volunteer Marine Science Students from Urangan High School. Independent evaluation and reporting is by FRC Environmental.

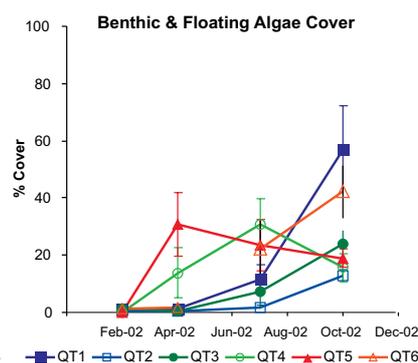
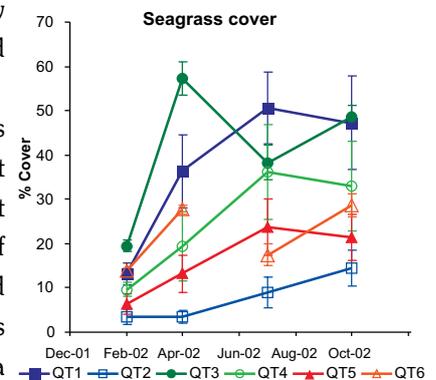
During the July survey, transect QT6 could not be found, as the stakes marking the site were within an extensive area being dug for bait worms. As the seagrass was very disturbed by the digging a new transect was established close to the original site.

The most recent monitoring occurred on the 21st of October 2002. Each of the six transects were dominated by *Zostera capricorni*, no *Halophila ovalis* was recorded. The *Zostera capricorni* (narrow morphology) had a mean canopy height slightly longer than in the previous survey. The seagrass was in flower. The percent cover of seagrass

has remained fairly similar or increased along all transects. Epiphyte cover was similar to the last monitoring event however much of the seagrass and sediment was covered with a filamentous algae.

The cover of this algae, which lay over the top of both sediment and seagrass, was highest and had increased substantially at QT1, near the retaining wall. Whilst the high algal cover is of concern, seagrass beneath the algae was green and appeared to be healthy.

Sediments were still predominantly muddy sands and sandy mud.



Queensland Seagrass-Watch *news* continued ..

Moreton Bay Seagrass-Watch

- Welcome Paul Finn & Kathryn Crouch

Nicola Udy reports

Thanks to a CoastCare grant submitted by the Wildlife Preservation Society of Queensland, Moreton Bay Seagrass-Watch has recently received a big boost through the appointment of Paul Finn as the coordinator for Moreton Bay. Paul has spent many years trudging through mud watching shorebirds eat gooey critters lurking in the seagrass mud, so will be able to contribute much knowledge to the Seagrass-Watch program.

CoastCare funds have also been allocated to the Quandamooka Aboriginal Land and Sea Management Agency to appoint an indigenous ranger, Kathryn Crouch, who will develop a strong indigenous involvement in Seagrass-Watch in Moreton Bay.

The 6 sites currently monitored in Moreton Bay will be progressively expanded to cover all the major seagrass habitats in the Bay. One of the main areas to be monitored will be the seagrass meadows of the Eastern Banks which forms the prime feeding habitat for dugongs and green turtles. Recently, the area has been affected by blooms of the toxic cyanobacteria *Lyngbya*. Seagrass-Watch will be able to monitor its effects on the seagrass and provide an early warning system of bloom outbreaks.

International Seagrass Biology

Workshop No. 5 - Ensenada, Mexico

Members of the Marine Plant Ecology Group have just returned from the Fifth International Seagrass Biology workshop (ISBW5) held in Ensenada Mexico, 7 - 11th October 2002. Seagrass-Watch results were presented to the international audience of seagrass scientists and coastal managers. Preliminary analysis of Seagrass-Watch results indicates an affect of climatic patterns on seagrass meadows. A conclusion supported by other scientists around the world. It was gratifying to see how well the data collected by the Seagrass-Watch volunteers was received. The general consensus was that monitoring needs to continue to determine the true effects of local impacts and climate change on seagrass meadows. The MPEG group even gave a demonstration of seagrass monitoring techniques.



Demonstrating seagrass monitoring techniques at ISBW5

Tide Pool Search



When the tide goes out, little pools of water are often left behind. Sometimes, small plants and animals get left behind too. How many dugongs can you find hidden in this picture?

Do you want to get Involved?

Contact your local Seagrass-Watch representatives:

Hervey Bay:

Jerry Comans (Hervey Bay Dugong and Seagrass Monitoring Program) Ph. (07) 4124 2393

Great Sandy Strait:

Gary Nielsen (The Great Sandy Strait Fauna & Flora Watch) Ph. (07) 4129 8117

Steve Winderlich (QPWS Maryborough) Ph. (07) 4121 1933

Whitsundays:

Margaret Parr (Whitsunday Volunteers Association) Airlie Beach Ph. (07) 4946 4996

Tony Fontes (O.U.C.H) Airlie Beach Ph. (07) 4946 7435

Townsville:

Jane Mellors (for Townsville Seagrass & Mangrove Volunteers) Ph. (07) 4722 2655

Moreton Bay:

Nicola Udy (QPWS Cleveland) Ph. (07) 3821 9024



Answer to Tide Pool Search: 18



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

NEXT ISSUE OUT FEBRUARY 2003

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