# Seagrass-Watch Moreton Bay

# Newsletter No37. October

## Welcome

Welcome everyone to another edition of Seagrass Watch Moreton Bay. All of our latest data is available on our development website under the survey sites link in the left hand column**.**

**http://sbaltais.com/seagrass/**

The November/December period is upon us and we hope you are all ready and willing to help us out once again. Please note the 'good tide times' on the back page and remember to book your kits well in advance.

### Important to Note

### Please read the following information carefully.

### Volunteer Information

At the moment we are looking to update all of our information on volunteers and those who receive our newsletters and reorganize the data base where this data is kept. On our development website there is a new option labeled "**Join Us**". It would be great if you could use this and enter your information again so that it is automatically included into the new database.

### Digital Cameras

Hopefully over the next little while we are going to acquire some more digital cameras for our kits. Using these will make the downloading process a whole lot easier and also enable you to review your photos and therefore help reduce the occurrence of obscured images. In the mean time if you have your own digital camera it would be great if you could use it instead of the disposable ones that we currently provide.

### Inventory System

We are in the process of implementing an inventory system whereby we have or will place yellow barcodes on each of our items so we know what we have and where it is etc. Please let us know if the stickers do not stand up to the salt water and mud.

Thank-you all and happy seagrass watching!

*Alix Baltais*

**Community Science Officer**

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**Queensland Parks and Wildlife Service**

## Marine Animal Strandings

**telephone hotline:**

**1300 ANIMAL**

**1300 264 625**

### Websites

www.seagrasswatch.org

http://www.facebook.com/groups/156251911095995/

http://sbaltais.com/seagrass

**Don't forget to send us your photographs of the good, the bad and the interesting…**

**as they say a picture can speak a thousand words**

# Climate Trends

The recent discovery (2008) of the tropical seagrass *Halophila minor* in Moreton Bay 300km south of it's southern extent (Connolly, 2009; QLD Museum, 2011) is reason to examine the impacts of climate change on seagrass.

Seagrasses require light, nutrients, carbon dioxide, substrate for anchoring and tolerable salinity, temperature and pH to survive; limitations to these basic requirements result in seagrass loss and lead to declines in ecosystem services (Waycott *et al*, 2007).

Seagrass productivity is often nutrient limited or co-limited. As a result, increases in nutrient availability may increase seagrass growth. Seagrass also has a generally high minimum light requirement compared to other marine primary producers, making them particularly sensitive to low light availability (Waycott *et al*, 2007). Local seagrass meadows are also influenced by disturbance. For example, disturbance of mud in Moreton Bay results in its re-suspension into the water column reducing light and impacting on seagrass meadow health and composition.

Typically, seagrasses grow best in salinities of 35 parts per thousand, although they have been observed in salinities from 4 to 65 parts per thousand. Some seagrasses like *Halophila ovalis*, a species common in Moreton Bay, are more tolerant of wide fluctuations in salinity. Temperature is likewise a critical factor in plant survival, and in the marine environment. Temperature controls the range of pH and dissolved carbon dioxide (CO2) concentrations in the water column. It is optimal temperature-pH-carbon concentration for seagrass species that help determine their current spatial distribution . Intertidal habitats will be the most severely impacted by increases in air temperature as exposure and desiccation are significant factors limiting the upper distributional limits of seagrass meadows. The cause of thermal stress at higher but moderate temperatures (38 to 42°C) is the disruption of electron transport activity via inactivation of the oxygen producing enzymes of photosystem II. Above these temperatures many proteins are simply destroyed in most plants. Experimental studies on tropical seagrasses (all found in Moreton Bay) demonstrated that the sensitivity of photosynthesis is species specific revealing *Halophila ovalis*, *Zostera muelleri* (syn. capricorni) and *Syringodium isoetifolium* were less tolerant to short term (1 to 4 hour) exposures of thermal stress (35 to 45°C) (Waycott *et al*, 2007). Source: http://eprints.jcu.edu.au/8566/1/8566_Waycott_et_al_2007.pdf

Based on various scenarios considered by researchers it is predicted that the greatest impact of climate change on seagrasses will be caused by increases in temperature, particularly in shallower habitats where seagrasses are present. In turn, sea level rise, disturbance regimes, flooding and the other changes will limit the survival capacity of seagrasses (Waycott *et al*, 2007). A lot more can be said so we will continue to follow the research and update you.

**Update**

CLIMATE change is turning the environment upside-down, with Queensland groper, tiger sharks and even warm-water fish like coral trout being found in Tasmania. While north Queensland barramundi and threadfin salmon are being caught in Moreton Bay Source: http://www.news.com.au/features/environment/queensland-fish-species-migrating-south-due-to-climate-change/story-e6frflp0-1225907524941

Seagrass-Watch Moreton Bay

# Seagrass in the News

## Boaties asked to save the seabed

**JUDITH KERR**
10 Oct, 2011 04:28 PM

BOATIES are being urged to swap conventional moorings for environmentally friendly alternatives to protect Moreton Bay's seagrass beds.

Three types of environmentally friendly mooring designs, tested over a two-year period, were promoted at a forum in Manly last week.

The three styles investigated – Newcastle's Seagrass Friendly Mooring, Sweden's Seaflex, and

Western Australia's Ezyrider – were found to reduce damage to seagrass beds in Moreton Bay.

The moorings, which cost upwardly from $3000, come with shock absorbers and include stretchy elastic-type ropes to stop the mooring ripping up the seabed.

SEQ Catchments coastal and aquatic systems manager Sean Galvin said conventional boat moorings caused extensive damage to marine habitats of species such as turtles and dugongs.

He said the cost of the environmentally friendly moorings was identified as a key issue in their widespread uptake.

"Conventional moorings rip out seagrass as the chain drags on the sea floor, creating a classic halo shape," Mr Galvin said.

"This can cause thousands of square metres in damage and seagrass is such a vital habitat for fish as well as other local species such as turtles and dugongs.

"We had great community interest to participate in the trial, which shows this has been on people's minds for some time. "We have streamlined the approvals process to make them as cost effective as possible,'' Mr Galvin said.

ENVIRONMENTALLY friendly moorings may help stop damage to Moreton Bay seagrass beds.

The mooring trial was funded by the federal government's Caring for our Country initiative, SEQ Catchments, Fisheries Queensland, Maritime Safety Queensland, University of Queensland, Seagrass Watch, Tangalooma Resort, Moreton Bay Seafood Association and local mooring owners.

Moreton Bay Seagrass Watch's Simon Baltais said in 2001 his organisation had noticed odd, pale-coloured circles and arcs around vessels moored at Redland Bay.

His organisation examined aerial photographs to identify spots where seagrass had degenerated.

On closer inspection he found "bare seafloor, the result of anchor chains on vessels removing seagrass as the vessels moved with the wind and tides".

In 2009, the seagrass watchdog set up six sub-tidal sites, two close to moorings, to monitor the seabed before the new environmentally friendly moorings were in place.

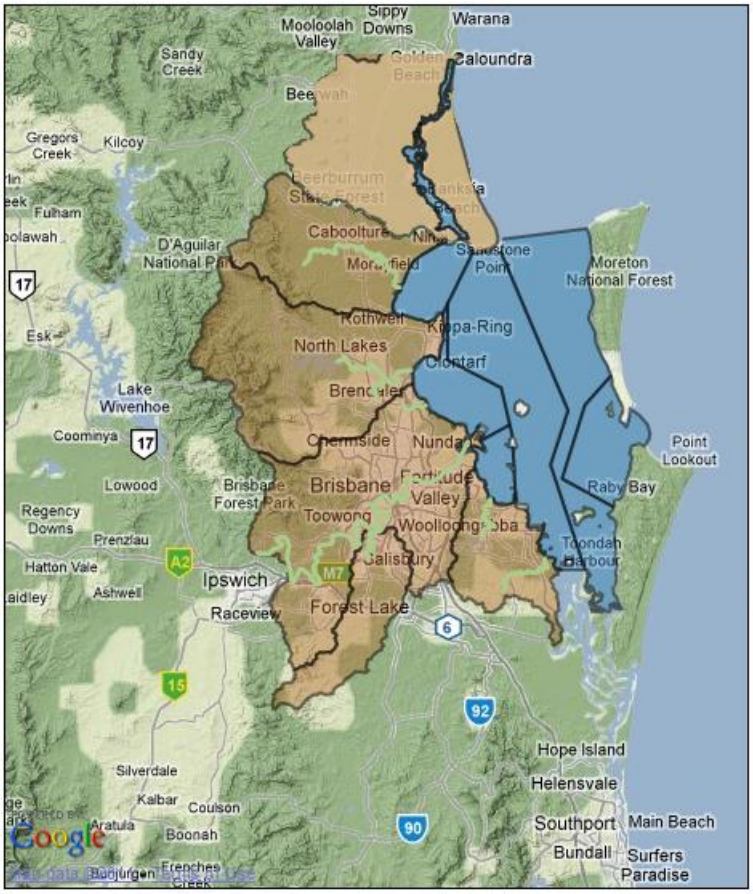
Monitoring at all six sites was completed by mid December 2009.

From Bayside Bulletin/Redland Times online
http://www.baysidebulletin.com.au/news/local/news/general/boaties-asked-to-save-the-seabed/2318903.aspx

# HEALTHY WATERWAYS REPORT CARD

EcosystemHealth Monitoring Program

(Healthy Waterways, 2011)




**Catchments**

| | |
|---|---|
| Caboolture | B |
| Lower Brisbane | F |
| Oxley | F |
| Pine | B- |
| Redland | F |

**Bay Areas**

| | |
|---|---|
| Bramble Bay | D- |
| Central Bay | D+ |
| Deception Bay | D+ |
| Eastern Banks | A- |
| Eastern Bay | B- |
| Waterloo Bay | B+ |
| Pumicestone Passage | C+ |

**Estuaries**

| | |
|---|---|
| Brisbane River | D |
| Cabbage Tree Creek | D+ |
| Caboolture River | C- |
| Eprapah Creek | C |
| Oxley Creek | F |
| Pine Rivers | C |
| Tingalpa Creek | C |

**(Adapted from Healthy Waterways, 2011)**

**Moreton Bay's overall score was a C to C- thus meaning that this is the third year in a row that scores have been below a B**. This years low score can be attributed to the flooding events in the Brisbane River and tributaries, widespread runoff entrained high levels of sediments and nutrients which have ended up in our Bay. Healthy Waterways (2011) highlights that catchments need to prepare for higher rainfall by managing erosion, rehabilitating riparian zones, stabilizing creek channels, improving agricultural practices and managing urban water sustainably.

**You may be interested to know how the health of Moreton Bay is measured.**

Ecological Health is deemed from a number of indicators. Levels of algae (phytoplankton), *Lyngbya,* water clarity (secchi depth), total phosphorus, total nitrogen, sewage nitrogen signal, turbidity and dissolved oxygen. Biological Health is assessed by measuring levels and health of coral, nutrient processing , sewage nitrogen signal , riparian condition and of course **SEAGRASS**.

**For more information check out our blog** http://seagrassmb.wordpress.com/2011/10/19/healthy-waterways-report-we-need-to-invest-in-our-waterways-to-fix-our-bay/ **or the Healthy Waterways website for the full report** http://www.healthywaterways.org/inner.aspx?pageid=145

# Mudflat spotlighting

We conduct mudflat spotlighting trips on an opportunistic basis, so we invite you to let us know if you would like to do one of these trips at your own site. This is a great way to see the hordes of fantastic creatures that utilise your site at night. Please contact Alix to arrange one of these evening events.

# Seagrass surveys

Seagrass-Watch surveys are undertaken three times a year (March-April, July-August and November-December). The **November/December** monitoring period is nearing and there is a limited number of good tide times – see tide times opposite (Brisbane Bar). Those who have been trained and set up at sites should select a suitable day and contact Alix to book the equipment. Ph. 0447 839 723, Email: **seagrassmb@gmail.com**

**Please give plenty of notice when making a booking.**

| Month | Day | Time/height in metres |
|---|---|---|
| Nov 11 | Tue 01 | 0651 0.49m |
| | Wed 02 | 0749 0.63m |
| | Sun 06 | 1231 0.68m |
| | Mon 07 | 1322 0.62m |
| | Tue 08 | 1407 0.57 |
| | Wed 09 | 1448 0.54m |
| | Thu 10 | 1528 0.52m |
| | Wed 16 | 0607 0.49m |
| | Thu 17 | 0657 0.57m |
| | Fri 18 | 0800 0.64m |
| | Sat 19 | 0915 0.67m |
| | Sun 20 | 1033 0.65m |
| | Mon 21 | 1148 0.59m |
| | Tue 22 | 1258 0.51m |
| | Wed 23 | 1403 0.43m |
| | Thu 24 | 1502 0.38m |
| | Fri 25 | 1558 0.34m |
| | Sat 26 | 1651 0.35m |
| | Mon 28 | 0501 0.25m |
| | Tue 29 | 0544 0.36m |
| | Wed 30 | 0629 0.5m |
| Dec 11 | Thu 01 | 0718 0.64m |
| | Wed 07 | 1342 0.69m |
| | Thu 08 | 1428 0.63m |
| | Fri 09 | 1511 0.59 |
| | Sat 10 | 1551 0.56m |
| | Sun 11 | 1630 0.55m |
| | Fri 16 | 0646 0.52m |
| | Sat 17 | 0743 0.61m |

| Month | Day | Time/height in metres |
|---|---|---|
| Dec 11 | Sun 18 | 0851 0.68m |
| | Wed 21 | 1247 0.63m |
| | Thu 22 | 1356 0.55m |
| | Fri 23 | 1457 0.47m |
| | Sat 24 | 1552 0.41m |
| | Thu 29 | 0607 0.48m |
| | Fri 30 | 0647 0.62m |
| Jan 12 | Sat 07 | 1452 0.64m |
| | Sun 08 | 1534 0.58m |
| | Sat 14 | 0638 0.48m |
| | Sun 15 | 0730 0.60m |
| | Fri 20 | 1353 0.61m |
| | Sat 21 | 1450 0.51m |
| | Sun 22 | 1539 0.45m |
| | Mon 23 | 1621 0.43m |

**Compiled by:** Alix Baltais
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Seagrass-Watch Moreton Bay

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SEQ Catchments Healthy land – healthy water

TANGALOOMA Wild Dolphin Resort

EcosystemHealth Monitoring Program

Queensland Conservation

Queensland Government

PORT of BRISBANE Here for the future

# Quick Seagrass-Watch Reference Guide to Monitoring Techniques:

**Sediment description:** 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, mud/sand, mud/coral rubble). It will reduce confusion if we record the sediment in this way, taking care to list the sediment types in order from most to least dominant sediment type. For example, if the sediment is more muddy than sandy, then it is recorded as mud/sand.

**Other organisms:** If possible, be more specific about the number and type of other organisms present within quadrats. For example, information about the distributions of predatory versus algal-grazing gastropods is potentially important. Identification of other organisms should only be taken to the individuals' skill level, i.e. if you know what it is then write it down.

**Water depth:** We would like to start recording the depth of water present in each quadrat. Please measure the depth of water (in centimetres) in each quadrat and record it in the comments (if there is no water, please also make a note of this).

**Photographs:** These are to be taken at 5, 25 and 45 meters along each transect instead of 10, 25 and 40 meters. Please take the photo from as vertical as possible and make sure to include the three items: the tape, quadrat and quadrat identifier.

**Estimating percentage seagrass cover:** Always use the percentage cover photo guide to narrow down seagrass cover estimates. Also, please be more specific with estimates, especially if the cover is less than 50% (i.e. do not simply round off to the nearest 5%). Never use greater- or less-than symbols (i.e. '<' or '>').

**Seagrass canopy height:** When measuring the seagrass canopy height, please take care to select seagrass blades randomly and not to focus on the three longest blades. Seagrass-Watch HQ in Cairns advise ignoring the top 20% but if you have some other sort of system that works for you (e.g. always taking samples from roughly the same three points within the quadrat) then continue.

**Seagrass species composition:** Estimate the least dominant species first, up to 100%. This is useful for quality assurance/quality control (QAQC) procedure as some people have trouble adding up. If we have this system of writing down the least dominant species first then we can generally work backwards to get the percentage composition. Try and use several diagnostic characteristics for species identification (e.g. blade shape, leaf veination and rhizome structure/colour), not only one.

**Macroalgae:** Please record anything that is not attached to the seagrass and keep separate from seagrass cover, i.e. it is possible to get 100% cover for both seagrass and macroalgae if drift algae is covering the entire quadrat. In this case one must lift up and remove the drift algae in order to measure the seagrass.

**Epibionts (epiphytes versus epizoans):** Epiphytes are algae attached to seagrass blades and often give the blade a furry appearance. Epizoans are sessile animals attached to seagrass blades (e.g. ascidians or anemones growing on seagrass blades). Please do not include epizoans in with the estimation of epiphytes. Record the presence of epizoans in the comments or an unused/blank column. Also, we need to measure epiphytes more accurately, as a percentage cover, and not just within the three categories: low, medium and high. There is a new protocol for this, for example: if 20% of the seagrass blades are each 50% covered by epiphytes, then quadrat epiphyte cover is [(20x50)/100] 10% (there is a matrix to help with this process, available to download at http://www.seagrasswatch.org/monitoring.html, under Quarterly Monitoring, Step 8. estimate epiphyte % cover). The values of percentage epiphyte cover may be lumped prior to data analyses but when and how to do this is for a statistician to decide.

**Seagrass resilience (seed bank) sampling:** For those who are keen we can provide training in assessing the *Halodule* seed bank reserve and thus the resilience of this species. Thirty core samples are taken within each site and training will be provided if you would like to give this a go.

Seagrass-Watch
Moreton Bay