Local Eyes: Global Wise
1st International Seagrass-Watch Volunteers Forum

Volume 2

Proceedings of the 1st International Seagrass-Watch Volunteers Forum

Volume 2.

ISSN 0727-6273
QI02045

First Published 2002

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The correct citation of this document is:
McKenzie, L.J. and Campbell, S.J. (2002) Local Eyes: Global Wise, Proceedings of the 1st International Seagrass-Watch Volunteers Forum, Hervey Bay 12-15th October 2001 – Volume 2. (DPI, QFS, Cairns) 37pp.

Produced by the Marine Plant Ecology Group, DPI, Northern Fisheries Centre, Cairns, 2002.

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Preface

In October 2001, the 1st International Seagrass-Watch Volunteers Forum was held in Hervey Bay, Queensland. It was attended by 106 delegates from across Australia and 2 countires in the western Pacfic. Volume 1 of the forum proceedings (consisting of background information, case studies and scientific papers) was published to coincide with the opening of the forum.

The forum was an opportunity to share information among community groups involved in seagrass mapping, monitoring and research; to review the progress of the Seagrass-Watch program; and to consider ways of building and developing the existing program. Some of the key issues discussed included: Standardisation of methods, data quality, maintaining and building interest and learning from others including overseas experience.

13 presentations were given and discussed at the forum. The first part of this volume contains additional papers missed in volume 1 of the proceedings.

On the afternoon of Saturday 13th October, ISWVF-2001 delegates were asked to participate in focus group discussions on the Seagrass-Watch program, with the aim of contributing information and ideas on the Seagrass-Watch program and its future. Particpants were requested to focus on realistic and achievable outcomes. The second part of this volume contains the notes recorded during the focus group discusions that took place.

Since the forum, several of the volunteers' recommendations have been implemented, these include

- Establishment of a temporary website (www.seagrasswatch.com) by Paul Wenzler (a Whitsunday volunteer)
- Volunteers contribute articles to the quarterly Seagrass-Watch newsletter
- Calibration sheets have been refined in some localities
- Refresher workshops have been conducted
- Results have been presented in a report and pamphlets
- More indigenous groups have become involved, and
- Volunteers have been recognised for their contribution in a letter from the Minister for Primary Industries and Rural Communities, Hon. Henry Palaszczuk MLA.

We hope that this additional volume from the ISWVF-2001 will help stimulate further ideas on community involvement in marine resource monitoirng.

Len McKenzie
Stuart Campbell

Acknowledgements

Firstly, congratulations to Jerry Comans and the Hervey Bay Dugong & Seagrass Monitoring Program on receiving an Australia Day award in recognition of their involvement in the forum.

We thank all the sponsors: Natural Heritage Trust-Coasts and Clean Seas Program, CRC Reef Research for the Great Barrier Reef World Heritage Area, Queensland Parks and Wildlife Service (EPA), Hervey Bay City Council, University of Southern Queensland (Wide Bay Campus), Hervey Bay Regional Gallery, Con Souvlis Betta Electrical, Kondari Resort, Hervey Bay Boat Club, Channel 7 and the Queensland Department of Primary Industries. We would also like to thank the many other people and groups who informally sponsored the forum by giving their time and support.

We also thank

All the presenters and focus group facilitators for their enthusiasm and patience

Chantal Roder for all her tireless assistance with registration, organisation and assisting with the children's program at the Hervey Bay Seafood Festival

Rudi Yoshida for his assistance preparing registration materials

Malcolm Cooper (Principal, University of Southern Queensland, Wide Bay Campus) for providing the forum with such a fine venue

The staff of University of Southern Queensland for assisting with registration

Jane Mellors for assisting with registration and doing such a wonderful job with the children's program at the Hervey Bay Seafood Festival

Yarrilee State School and Fraser Coast Anglican College for demonstrating Seagrass-Watch monitoring methods on the Urangan mud flats at the Hervey Bay Seafood Festival

Urangan High School String Quartet for entertaining forum participants during the forum dinner and

The Pied Piper Players for their imaginative and unforgettable performance at the forum dinner (who could forget *"Da Dugong gone gone, Da Dugong gone*" to the music of "*Da Do Ron Ron*" by The Crystals).

Last but not least, we would like to thank all forum participants for their enthusiastic particpation, which contributed to the success of the forum and made it a special, entertaining, enlightling and memorable event. See you at the next one….

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LEARNING FROM US VOLUNTEER MONITORING PRACTICES AND PROTOCOLS
SYNOPSIS
Land and Water Australia Travelling Fellowship
May - August 2001

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I recently visited the US to learn about their volunteer monitoring practices and protocols. This report focuses on the issues and tensions arising in that country within the volunteer - agency relationship around issues of data - ownership, validity, reliability etc. The longer report is available from the author. This synopsis covers issues in the volunteer-agency science relationship which focus on quality assurance and quality control (QAQC).

Specifically, problems may develop

a) for the volunteers in terms of their: communication with scientists, promotion of credibility and data confidence guidelines, access to equipment, agreement on scale and scope of activity, translation into action and advocacy, etc.

b) for agencies and institutions in terms of their: duplication of monitoring systems, cost-effectiveness, parallel testing requirements, conduct of training and workshops for volunteers, observer bias, science - public policy discrepancies, etc

c) at the interface in terms of: the lack of incentive and opportunities for scientists and volunteers to work together.

Background

The number of volunteers monitoring Australian ecosystems has increased over the last ten years. Simultaneously, institutional monitoring programs have decreased as government funding for bio-assessment has waned. Both professional scientists and volunteers benefit from improved QAQC (quality assurance quality control). Volunteers' credibility is enhanced and data from voluntary programs are more frequently incorporated into agency based scientific agendas.

There are three basic goals for community-based volunteer monitoring. Using water quality monitoring as an example, monitors volunteer to:

1) find out, via characterization surveys "designed to establish baseline information on a river's physical, chemical, and/or biological characteristics"

2) evaluate, via an impact assessment survey "designed to measure the impact of human alteration (such as pollution discharge) on a river"

3) police, via a water quality standards survey "designed to determine whether the water body meets state and/or federal water quality standards for that water body's designated uses (such as swimming) and values (such as aquatic habitat or aesthetics)[Dates, 1992 #148:13].

Credibility of a specific monitoring project and its associated staff and/or volunteers will be increased or decreased according to its study design and data quality requirements. The QAQC (quality assurance quality control) aspects of a volunteer project are increasingly important both to volunteers wishing to improve their perceived credibility and to scientists who may wish to utilise their data. However, despite the apparent conversion of government scientists who work alongside volunteers, many agency scientists remain sceptical of the efficacy of using volunteers for 'real science'. Partially as a result of this scepticism and partially in an attempt to improve volunteers' data quality, many projects have engaged in parallel or 'side-by-side' testing. This is one aspect of quality control which introduces 'external measures' to a volunteer monitoring project. It is designed to compare volunteer's monitoring data with that of professionals usually via performance audits and the collection of QC samples. Examples of parallel testing may include an agency biologist accompanying a volunteer on a routine monitoring exercise and collecting a sample from the same point and at the same time as the volunteer. Usually designed to 'test' the quality control measures of the volunteer, this type of parallel testing can have the added benefit of volunteers scrutinising the agency scientist's practice in the field.

Aims

My aims were both pragmatic and academic. Toward the former I planned to document the diversity of US experience in volunteer monitoring such that Australians interested in similar issues within Environment Australia and on- ground environmental monitoring groups are better informed. Regarding my academic interests, I planned to problematise the volunteer-agency relationship and contribute toward the democratisation of science within the hitherto more theoretical field of science and technology studies.

Current issues, conflicts and points of difficulty

- Science communication models assume an uneducated public and a scientific elite who are well equipped to know what is in the public interest and make decisions on behalf of entire populations: the gold standards problem.

Scientists often assume that environmental degradation could be slowed or remedied by 'teaching the public science'. A lack of community awareness of ecological processes is seen to be all that is required in order to 'fix' the environment. However, Geoff Dates Director of the River Network, a US national non-government organisation believes that involving the public in science more carefully is superior to assuming ignorance and preaching down to volunteers and interested residents. He said: "people that do science for a living, with very few exceptions, tend to not be very good at communicating with people that are approaching the subject for the first time. I have been to a number of national conferences where people that do this all the time talk about educating the public and that, you know, I understand where they're coming from, but that's like, "No, that misses point." The public is educated. They just don't have the same information that you have and you are not explaining it very clearly. You are explaining it in very technical terms, that you've lived with for 20 or 30 years and you understand what they mean, but

most people in this country don't understand what a watershed is. So, that's the thing, that's the challenge we have. We are trying to get people to understand complex systems and we can't do that clearly. We dumb it down, I hate that. Some people say we have to dumb it down for the public. We don't have to; we just have to be clear. There's a difference between dumb and clear."

He added "I've heard scientists sort of demean the capabilities of ordinary people to do the good science that they need - there is a fine line between, you know, involving the public in somebody else's program and having the public own it. And I tend to want the public to own it, to have a stake and grow in its design as well as its results. Because if you do that, then my contention is, people appreciate the limitations of science and we really, really need to appreciate the wonders of what science can tell us, because over and over again it really - there is information out there, but you can

give it to five different people and you are going to come up with five different sets of conclusions based on the same information. It's just not a mythical thing, it's just the process".

Jerry Schoen of the Massachusetts Water Watch Partnership complicates this issue when he throws in the problem of inter-departmental rivalry often encountered across state - federal bureaucracies. He said: "I think there is a general distrust or scepticism by professionals of volunteer work, there is also an agency chauvinism that can be just as strong between different agencies. If you get the USGS strutting its stuff compared to what the EPA does or DEP, etc" I find that they tend to do that. They don't have the same trust of other agencies activities and data as they do of their own. I think behind that there may be the time element, if you produce a data set according to your own procedures, you've done all the work in terms of, assuming someone in the agency has written the quality assurance plan, and done the SOPs and doing the stuff, so then when you get the data it's ready to use and manipulate for interpretation. If you get a data set from anyone else, once you get the data that's just the beginning. Then you've gotta go through and make sure that it has attained the data quality requirements that you set upon it. And the reason why is that there is no standardisation and part of what we are trying to do here is to be able to validate data according to some standard whereby you look at the data set and it has some documentation that you accept which declares how valid it is or for what purpose the data is useful",

- Level of identification,

Do volunteers identify to family, genus or species level? Illinios experience dictates that it has to be broad. To expect a volunteer to identify to species level is unrealistic given the amount of training they receive prior to field work. In Illinios' EcoWatch program, this amounts to 8 hours or one full day of training. With increased training, the accuracy and scale of identification improves, However, to increase the number of hours of training volunteers receive before field monitoring is to incur a different kind of risk. That is, if you expect too much in terms of time invested in training, you may inadvertently decrease the total number of volunteers.

- Program goals vary across States and political intentions.

For example in River Watch (one of the Illinios EcoWatch programs), there were no targets set regarding the total number of volunteers, program administrators wanted to attract. Their main goal was just to get people involved. On the other hand, in 1993 Texas Watch had a goal of attracting 20,000 volunteers to their program by 2000. It was visionary according to Steven Hubbell who worked with Texas Watch at the time. In both cases, the programs were designed to attract people to become involved in a democratic monitoring program and raise public awareness about environmental problems. Neither were designed to replace or duplicate government control and regulation of environmental conditions.

Additionally, political motivations for monitoring activity varies. For example, on the one hand there are people whose primary aim is looking after, ie stewardship, monitoring to maintain what's there, to understand how it works and to assess baseline condition of a particular ecosystem. On the other hand there are those who want to monitor for advocacy, eg watchdog roles regarding pollution outbreaks or toxic bacterial outbreaks in shellfish for example. Just knowing that there are different types of monitoring rationale is not enough. Having to elaborate on the motivation behind monitoring a particular environmental phenomenon is very important because it will affect the method, protocols and quality assurance / quality control (QAQC) plans set up for monitoring. These subtle differences are critically important and often neglected.

A fundamentally important point in all interviews that I conducted was the recognition that monitoring programs need to collect data which is appropriate for their specific goals and scale of decision making. Geoff Dates has the final word on this issue "we are in the game of targeted information to the decision and the action we are going to take. That process is a difficult one. In that it's far easier to just say 'look, everybody should be monitoring the water quality for bacteria, nutrients, minerals et cetera, et cetera', and be prescriptive, than it is to actually allow and encourage diversity among monitoring groups so that they basically use the information themselves for their own purposes. So, my bias is towards solving problems, protecting waters and enabling people, these organisations, to

own the data, to own the information and to use it themselves at the local level to make things happen".

- Scientist's disagreement with each other over protocols and techniques with volunteers having to bear the brunt of the conflict.

This is an ongoing issue, but one with particularly vivid consequences in Forest Watch. There, a group of ecologists wanted to monitor edge effects of remnant vegetation with a view to assessing biodiversity. However, the following year that group was replaced by another technical advisory group who asserted that an evaluation of the middle of the forest was the more technically correct way to assess natural resource condition. Volunteers who had spent considerable time and effort putting in 6 by 100 meter transects to measure biodiversity on the edge of the forest were disappointed to have to redo their efforts in the middle, even though they only had to replace them with 3 by 100m transects. According to Pete Jackson, it contributed to serious confusion and mistrust of the scientific goals in the minds of the volunteers.

- Appearance of Credible Data Laws in some US States.

Credible Data Laws have been passed in several States attempting to limit the capacity of citizens and volunteers to collect and contribute scientific data. Alice Mayio of the US EPA said: "They're designed to exclude lots of information. There's about 4 or 5 states where these are happening. And it's hard to know whether these are insidious, or whether they have some goal, or if it's an attempt to make sure that all the data that is used is good data which is a laudable goal". In other words, for some States, the appearance of volunteer monitoring programs with volunteers identifying potential environmental water quality problems is not welcome. "I think there is some pressure in some states to not identify problems, because once you identify them, of course you do get money to deal with them, but you also have to deal with them. So, you don't really want educated citizens out there furrowing around finding things out, especially if that means that you may get sort of regulated". See Appendix C: Wyoming's Credible Data Statute prepared by Jack Smith, of the Wyoming Department of Environmental Quality and the table on credible data prepared by the US EPA and forwarded by Alice Mayio.

- Difficulty developing and maintaining accurate websites and data systems.

A big problem for volunteers is the need to comply with national data storage and retrieval programs. If they want their data used by outsiders, (ie those outside their immediate program), data needs to be entered carefully, methodically and regularly. This is difficult for local programs whose needs may be limited geographically or by program goals. Or if volunteer programs are reliant on national directories to update their information, without sufficient funding and careful management of such Directories, the information in them can go out of date very quickly. Additional problems are encountered at the national level with interactive databases, (where volunteers can submit their data and also allow it to be queried and searched). These may encounter serious security problems as did the US EPA's computer system.

- The costs of a volunteer

In the US, the reactions of government funded facilitators to the value of volunteer monitoring fall generally into two categories. Either they are considered a 'goldmine' in which they can be used or plundered ("sometimes people think that there's these huge populations out there that can be instantly and extremely cheaply, set loose on the environment and they're going to fix everything or monitor everything"). Or their efforts are discounted because it still costs government agencies time and effort to effectively train volunteer monitors. Pete Jackson of Forest Watch in Illinios estimated that it costs $500 per volunteer to train a person to the level necessary to efficiently and effectively collect environmental data. Steven Hubbell has estimated that volunteers in his Network contribute $13,500 per year in in-kind resources which the State uses as 'matching funds' to elicit dollars from the federal government. The extent to which a volunteer ever finds out about these statistics is even more problematic. At what point do volunteers become aware that they're not just providing an intrinsic service to a state or non- government agency about important indicators of environmental quality? Do they ever feel 'used'?

- Labour relations

With decreasing money available for routine environmental monitoring functions and less agency staff employed, more and more volunteers are becoming involved, especially in biomonitoring programs. Anna Hicks, an aquatic biologist with many years running volunteer programs suggested that environmental agency staff are increasingly reliant on volunteers. She said "they could set their goals, do their work more effectively and more efficiently by using volunteers. Because they have been cutting back expenses on environmental conservation, but they want more work actually done. And how are you going to have that? You can only do that under a volunteer program. They rely enormously upon volunteers". Jerry Schoen added, "the budget certainly reflects that. They have less people doing monitoring now than they did 10 or 20 years ago. They just have not given the financial support to do the monitoring that needs to be done. And that comes at an inopportune time because, you can argue that there is an increased need for monitoring". This is widely known information. What is less well known in the US (and one can surmise that it may be occurring in Australia too), is that state agency personnel are contributing their time and energy as volunteers outside working hours more frequently than ever.

- Volunteer monitoring, environmental justice and lack of a profile.

Volunteer monitoring is not always representative of a specific population, especially where that population is housed in a low-income socio-economic area. It has largely appealed to people who have sufficient time and resources on their hands to express an interest in matters outside their home and family. Alice Mayio said "the issue of environmental justice is important to the EPA, but I would say that volunteer monitoring hasn't really [been relevant]. Except in a few cases, it tends to appeal to retired white people who go to the lake and are worried about their lake when they go there in the summer time and not folks that are living on the banks of the XX river and go there to fish, because that's how they complement their diet. It's very difficult to engage folks who have lots of different things on their mind, in environmental issues. And it's something that I think we need to do more of. And you talk about it a lot. And you look at our conferences and see all the same faces, it's hard. Some of the programs that are in the schools are managing to get folks of all levels involved. And often they have a more sort of advocacy focus, or getting kids involved in the process. But to get adults monitoring is difficult".

Additionally, there is a related problem of insufficient data being known about the monitors themselves, who they are, why they do it, when they do it, what they would do instead if they had more time etc.. .Amy Picotte of the Vermont Lay Monitoring Program told me that in her state there is a very diverse range of monitors. One family lives in India and returns every summer to Silver Lake ("just like a migratory species"). They have been monitoring for 30 years. Some monitors are families with young children, other folk are in their 80s. She doesn't really have a sense of how diverse the age range of volunteers actually is, but estimates that around 25-30% of her volunteers live year round on the lake they monitor. She further surmises that volunteers are doing it for their lake... not to receive recognition in award ceremonies... more data would be useful here. Since states like Vermont are increasingly reliant on volunteers to help submit data on the state of the lake water quality via the 305(b) report, it would help to know more about water quality monitors and volunteers themselves. Some agency scientists have a very unrealistic idea about who their volunteers are and what they can do. Their primary concern is the data themselves. Anna Hicks explained "if they are using data, they really want to be assured that it is of extremely sound nature. And I think that's legitimate. I think there is a much more patronising attitude that they see volunteers as retiring little old ladies, high school students, people who somehow are not capable of being scientists. If you sort of generalise it and are not taking a very critical profile of the modern day volunteer with all their expertise, training, professionalism, that many of them carry with them. Sometimes they've jumped right out of agencies, laboratories themselves... the volunteers, yes. So I think that there has to be an educating of agency staff about the nature of the volunteers that are producing data".

- Data interpretation, volunteers and agency scientists.

Although many agency scientists that I spoke to expressed an initial concern about the ability and experience of volunteers to accurately interpret the data they've been collecting, many also admitted

that it is more to do with individual experience. Jerry Schoen was in that category. "To me the biggest area of danger that they haven't been talking about is the issue of data interpretation. I think it is much easier for a volunteer to do the procedures correctly because they have to simply follow a set of procedures, than it is for them to actually interpret the data correctly, because that involves so much more professional judgement. Theirs was a knowledge of all the factors that contribute to a knowledge of values or situations or circumstances, that really comes into play there. Although I also know that it's not strictly a volunteer/professional line, because many professionals have very specific areas of expertise. I have seen, for instance, chemists who review data which have some biological attributes who know nothing about it... one of the things that is particularly valuable is the resource that volunteers can provide in that situation. Data interpretation is the experimental knowledge of the resource. Often times they will know, for instance, of an old dump that used to be there, or because they are local and they know things that sometimes provide clues that an expert [would not have access to]".

Whilst both Anna Hicks and Jerry Schoen agreed that interpretation of data was largely a matter of experience whether the interpreter was local to the area or not, Anna Hicks suggested that somehow she felt protective of 'her' volunteers in this volatile scene. In ecology for example, the choice of which metrics or indices to use in assessing which type of biomonitoring situation is crucial. As Anna said "some volunteers have backgrounds that could possibly tackle that, but when I see scientists' mistakes, I'm a little hesitant to release them into that arena. Only because I've listened to scientists from across the nation saying 'you've got it wrong' against each other".

- Monitoring as a means of changing attitudes and behaviours

Using volunteers' expertise in data collection is often cited as an indirect means of changing their behaviours around environmental issues. For example, getting the public to re-assess their behaviours around car washing, or use of phosphorus detergents etc.. near lakes and waterways is seen to be an important offshoot to their actual collection of data. As Anna Hicks stated "the data to me is less valuable than the idea that you're encouraging, you're recruiting, and working with people who are going out there and solving problems. The data is just one of the benefits of volunteers, and the communication of the findings that they get, so that they're working often with the local conservation group or land owner or developer or whoever it is who will actually then go out and fix it. So their job is not done when they have collected the data". However, it is definitely not a one way street when it comes to awareness and involvement leading to land-use changes. Jeff Schloss spoke about getting one government department involved in monitoring nutrient enrichment of a lake. In the process of conducting the monitoring, they recognised that their own department was partially to blame for contributing to lake sedimentation as a result of erosion from a roadside clearing. Whilst they did not accept full blame for their practices, nevertheless, that department restored the eroded site and in the process acted upon the data collected during the monitoring exercise.

- Volunteers' attitudes and reactions to QAQC in the field.

Amy Picotte from the Vermont Lay Monitoring Program told me that one of her oldest monitors, a person who had been monitoring the same lake for more than 20 years, had recently parted company with the volunteer monitoring program. This was partially because of his intense dislike of being 'checked up on' once a year- he interpreted Amy's annual QAQC visit as an invasion. It was also in part a reaction to the state government who had done something else to upset him on a personal basis regarding tax assessments. The result was that Amy was telephoned and told that she could find all her monitoring equipment at a certain dumpsite, a ways out of town! She went on to say "volunteers' reactions vary to the Quality Assurance visit. For some, who have been doing it every year for years and years, (maybe 15% of total), it's a nuisance pinning them down to a specific time and date...1 think it is getting harder to pin down volunteers".

Steven Hubbell of the Lower Colorado River Authority's Colorado River Watch Network supplied a third perspective on QAQC plans and provisions. In 1994 the Colorado River Watch produced its first EPA-approved quality assurance project plans. As Steve Hubbell told me during a telephone interview "our data had to be of the highest possible standard, and the sticking point was that every monitor had to have 4 QAQC sessions per year". It wasn't long before he realised that that level of scrutiny would

never work. With only 2.5 staff supporting 50 monitoring locations, only 25 sites were completed. When Texas Watch and Colorado River Watch became partners, that figure was revised downwards such that only 2 site visits were required per monitor per year... one in the lab and one in the field or the lab. Not surprisingly, volunteers didn't show up to their QAQC appointments at the lab given the long distances to travel (Houston Watch estimated that only 10% of volunteers actually showed up at the lab). It was later decided that the only way to implement QAQC for monitors was on a once/year basis in the field. That currently seems to be the accepted basis for QAQC plans in many other states.

Anna Hicks and Jerry Schoen in Amherst, Massachusetts talked of several other issues for volunteers involved with the QAQC process. "The first issue is the amount of work that it takes to write the quality assurance project plan, and if it's actually preventing people from doing monitoring programs because they think the task itself is too difficult. And there's the other issue of following the quality assurance project plan, in other words doing what the quality assurance, quality control exercises [dictate]".

After all this work, Anna Hicks raises another kind of problem encountered by volunteers... "even though they have passed all of the rigorous standards set down by the states agencies, the state agencies do not have to accept that data... I think that the volunteer groups and organisations are asked to jump through enormous hoops, seemingly insurmountable, and I think they were almost set down to be insurmountable. They've come to the party, they've done magnificent work, and are not given the recognition that they are maintaining the standards as good as professionals".

- Perceptions of difference: volunteers and agency scientists' approaches to monitoring.

The President of the Vermont Lakes Association and a volunteer for many years, Jackie Sprague, told me of her beliefs about the differences between volunteers and agency scientists. I took these notes during her interview. "Volunteers do it because they want to, and stay in it because they like to do it in the proper way. Volunteer monitors have taken it into their heart... they want to know why, so they're learning that information for themselves and passing it on, asking 'why is this eutrophication happening?' The scientific viewpoint is that they must get the outcome that they're looking for. Not like volunteers who are more curiosity driven and gathering new knowledge like 'has this been the same for 20 years? What has happened in the last few summers?'... .So many people do it from the heart, their passion should be recognised. Some scientists don't want to use volunteer data..[1 think it is] more about their arrogance. I usually say something like 'this is important work, if you don't feel this is worthwhile, then don't bother the volunteers'".

- Problems of scale, diversity and uniformity of methods and questions.

The assumption of 'we know better than you' is responsible for many widespread monitoring programs with centralised goals which are designed to gather data from all over the nation to answer the same question/so Geoff Dates suggests that some US monitoring programs are "nothing more than a scientist running a monitoring program with the help of volunteers". In other words, a centralised program designed to answer specific questions in diverse locations using a standard method. This is not to say that we don't need scientists running monitoring programs with the help of volunteers, rather that the centralised ("cookie- cutter") models of water quality monitoring are necessary but insufficient programs for environmental sustainability. Indeed, many such uniform programs are inferior to local programs designed to answer local questions about water quality monitoring. The premise of the diversified approach is that local people are in the best position to look after local places and have the motivation and passion to look after them in ways that centralised programs often do not. He says we should first ask questions like "'what are we trying to accomplish for our waters?' In a State like Vermont, streams are all different... [therefore] information collected needs to be appropriate for the scale of decision making. To try to make everyone conform to the same level of decision making is like the 1960s and 1970s attempts at communism and socialism". Jeff Schloss concurs. He said, "the thing that we stress all the time is that the volunteers probably know a lot more about their lake or river system, or stream or coast area that they're monitoring than even the expert would because they knew the history and they know the changes they've seen. So it's really trying to get them to let you know what they knew so its actually trying to devise a better sampling program and sample at the right points and deal with their concerns".

Steven Hubbell of the River Watch Network in Texas suggests that unless a monitoring program can operate at a human scale, it is not possible to sustain meaningful public involvement. In other words, he maintains that it is imperative to have a personal relationship with every monitor and every site in his program. As he suggests, "the smaller the watershed, the better job I can do with it. I sometimes think I will never be satisfied unless I leave the river and go to a creek based monitoring program"!

Where to next?

So much for water quality monitoring, but how does all of this relate to seagrass watch? When you've had a chance to read and digest this abundance of information, let me know what you think!."

SEAGRASS WATCH – RESULTS & OUTCOMES TO 2001 SYNOPSIS

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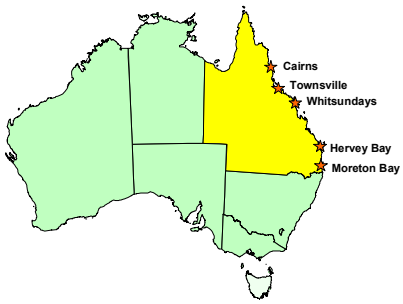
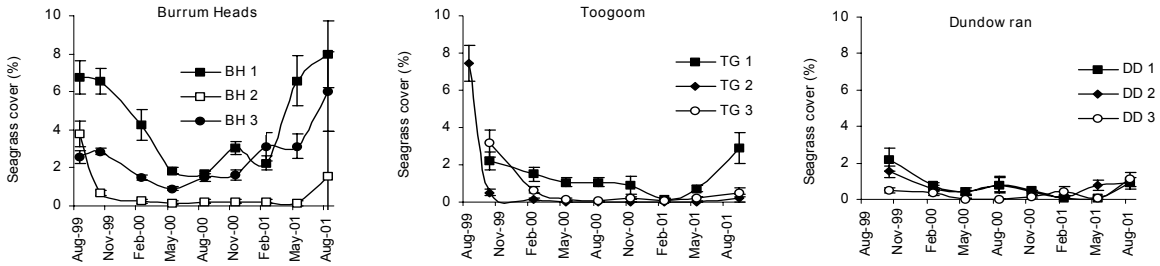
The Seagrass-Watch program is a community-based monitoring program developed by the Marine Plant Ecology Group (MPEG) at Queensland's Department of Primary Industries (QDPI) in conjunction with the CRC Reef, Queensland Parks and Wildlife Service and community groups. Seagrass-Watch assesses the health of nearshore seagrasses throughout Queensland and provides an early warning of major changes in seagrass abundance, distribution and species composition. The program provides information on seagrass resources to stakeholders and management agencies so that management actions can be taken and developed to maintain and improve these important ecosystems. Seagrass-Watch programs have been established in Hervey Bay, the Great Sandy Strait, Whitsundays, Townsville, Cairns and Moreton Bay involving more than 300 volunteers.



The Natural Heritage Trust Coast Clean Seas program, provided funding (1998-2001) to assist with the development and implementation of sampling protocols for Seagrass-Watch. Ongoing long-term monitoring of seagrass meadows is being supported by the Department of Primary Industries, CRC Reef, Queensland Parks and Wildlife Service, CoastCare and community groups. This newsletter provides a summary of the monitoring program over the past 3 years.

Hervey Bay

Seagrass cover declined from August 1999 to May 2000 at most intertidal sites in Hervey Bay due to burial by sediment associated with strong wave action. Seagrass cover increased from May 2000 at Burrum Heads sites. Over the same period canopy height increased from a mean of 2cm to greater than 3cm. At Toogoom and Dundowran sites, however, seagrass cover remains very low although some increase occurred throughout 2001. The seagrass cover is generally consistent with previous surveys in November 1988, ranging from 0.1 to 10%.



Regional assessment

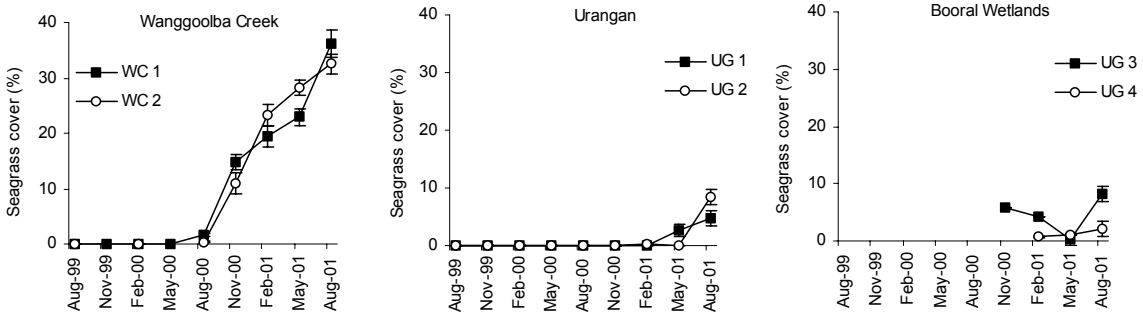
Seagrass abundance: - regionally low but increasing - **Fair**
Epiphytes and algae: – algal and epiphyte abundance is generally low - **Good**
Dugong feeding: - dugong feed at 1 of 9 sites - **Fair**
Invertebrate fauna: - invertebrate fauna low - **Fair**
Physical disturbance: – high disturbance from sediment movement - **Fair**
Threats: - Nutrient inputs from sewage/septic and proposed developments
Overall rating - Fair

Management applications

Maps of seagrass distribution (1998) and preliminary results of Seagrass-Watch monitoring at all three Burrum Heads sites have been provided to stakeholders and government agencies to assist with the assessment of dredging and development proposals in the Burrum River. Seagrass-Watch monitoring data provides a post-flood assessment of the status of intertidal seagrass meadows in Hervey Bay. The data is also being compared with EPA water quality data to assess the influence of water quality on seagrass abundance.

Great Sandy Strait

Seagrass loss occurred at all sites in the northern Sandy Strait following the Mary River flood in February 1999. Re-colonisation of *Zostera capricorni* and *Halophila ovalis* occurred in May 2000, eighteen months after the flood. Seagrass at Wanggoolba Creek, Urangan and Booral recovered to pre-flood levels by August 2001.



Seagrass cover exhibited seasonal trends over the monitoring period in the southern Sandy Strait at sites distant from freshwater inputs (Reef Islands, Boonooroo 1 and 3). The trends reached maxima in summer-autumn (February-May) and minima in winter (August). Seagrass abundance was generally low at sites close to rivers and creeks (Poona, Pelican Bay, Boonooroo 2), suggesting that freshwater/catchment inputs are negatively impacting seagrass meadows in the Great Sandy Strait.

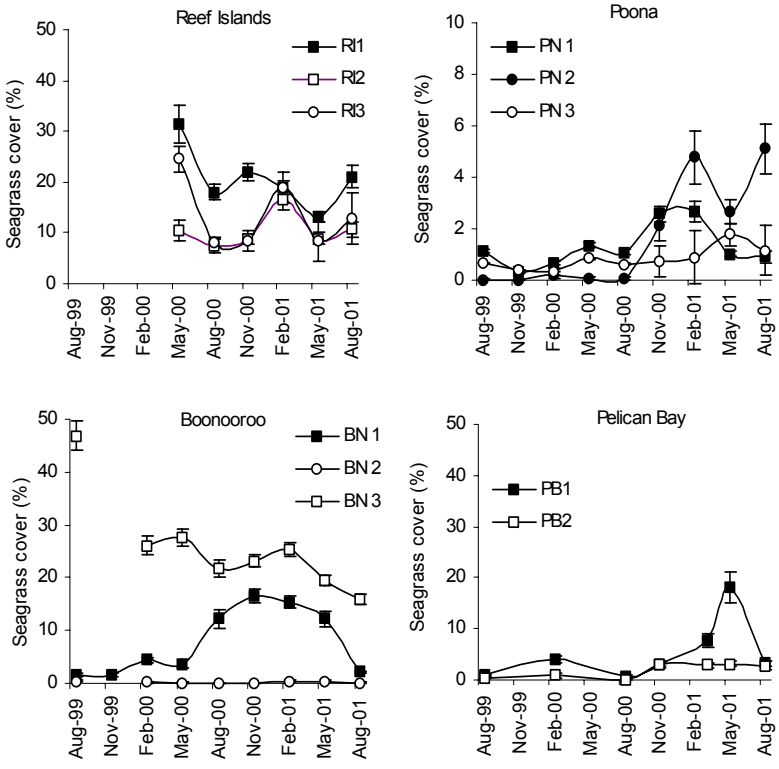
Regional assessment

Seagrass abundance: regionally low but increasing - **Fair**

Epiphytes and algae: – algal and epiphyte abundance low - **Good**

Dugong feeding: - dugong feed at all sites - **Good**

Invertebrate fauna: - invertebrate fauna abundant - **Good**



Physical disturbance: – high disturbance from catchment - **Poor**

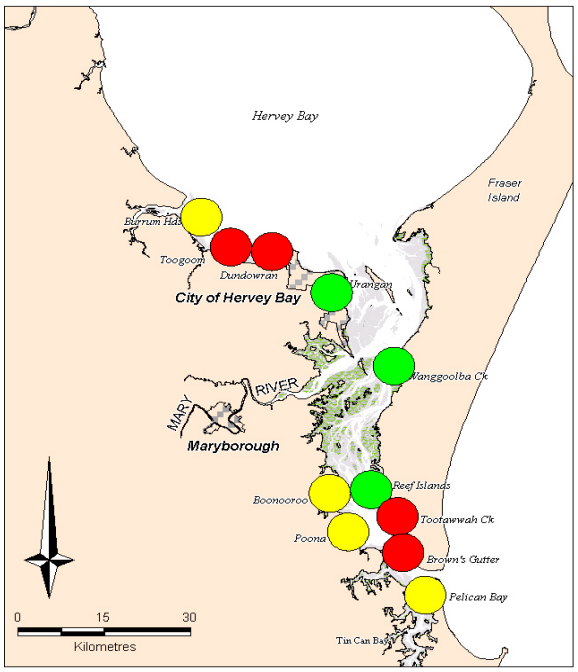
Threats: - Nutrient and sediments from catchment

Overall rating – Fair

Management applications

Maps of seagrass distribution (1998/99) and results of Seagrass-Watch monitoring at Poona and Urangan sites have assisted with the assessment of a dredging application for the Poona boat ramp and the design of monitoring protocols for the exapnsion of the Urangan marina. Seagrass-Watch information is contributing to the Wide Bay coastal management plan to protect important marine habitats in the Great Sandy Strait. The data is also being compared with EPA water quality data to assess the influence of water quality on seagrass abundance in the region.

Health of monitoring sites



Assessment based on seagrass abundance, epiphytes and algae, dugong feeding, invertebrate fauna, physical disturbance and threats.

Poor Fair Good

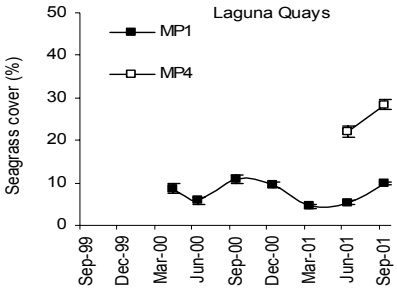
Urangan Boat Harbour & seagrass meadows

Seagrass recovery in Hervey Bay with dugong feeding trails

Flood plume near River Heads

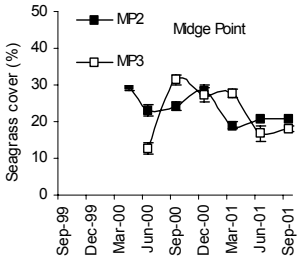
Whitsundays: intertidal meadows

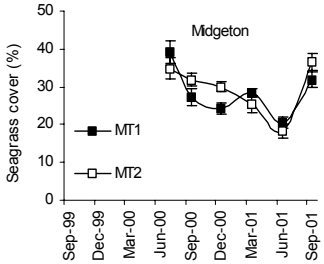
Seagrass abundance in the southern (Laguna Quays, Midge Point, Midgeton) and northern regions (Hydeaway Bay, Dingo Beach) of the Whitsundays exhibited seasonal patterns, with maximum cover (>20% cover) in summer/autumn (December–April) and minimum cover (<20% cover) in winter (June-July). The data suggests that the changes measured in seagrass meadows at these sites are primarily influenced by climatic factors (eg temperature, light, wave action). Nutrient and sediment inputs from catchment areas and coastal developments (eg airports, marinas) pose greatest threat to seagrass ecosystems in the southern Whitsundays region.

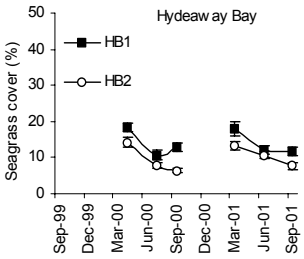


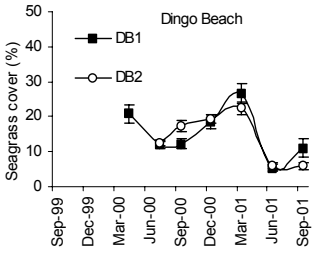
Laguna Quays marina

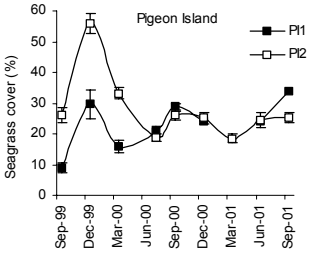
Seasonal patterns in seagrass cover also occurred in the urbanised central region of the Whitsundays (Pigeon Island), but at two sites (PI3 and PI4) seagrass cover remained low (<15%). Excessive algal growth due to high nutrient concentrations (sewage outfalls, marinas and urban runoff) appear to be the cause of low seagrass cover.

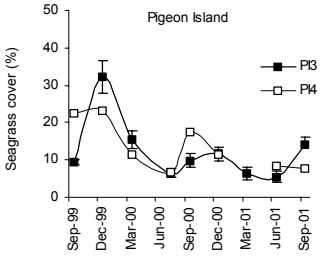












Dugong feeding trails

Regional assessment

Seagrass abundance: - low at urban sites - **Fair**, high at rural sites - **Good**

Epiphytes and algae: **-** high at urban sites - **Poor**, low at rural sites - **Good**

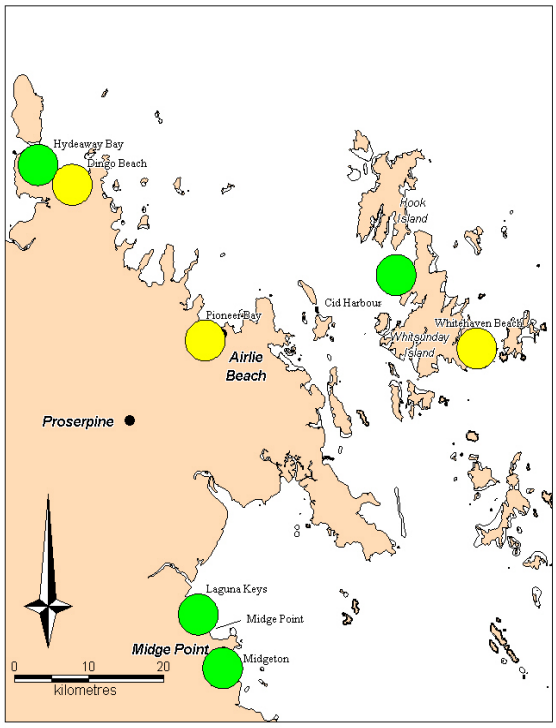
Dugong feeding: - dugong feeding at most sites - **Good**

Invertebrate fauna: - invertebrate fauna abundant - **Good**

Physical disturbance: - high disturbance from catchment inputs - **Poor**

Threats: - Nutrients and sediments from catchment

Overall rating – Fair

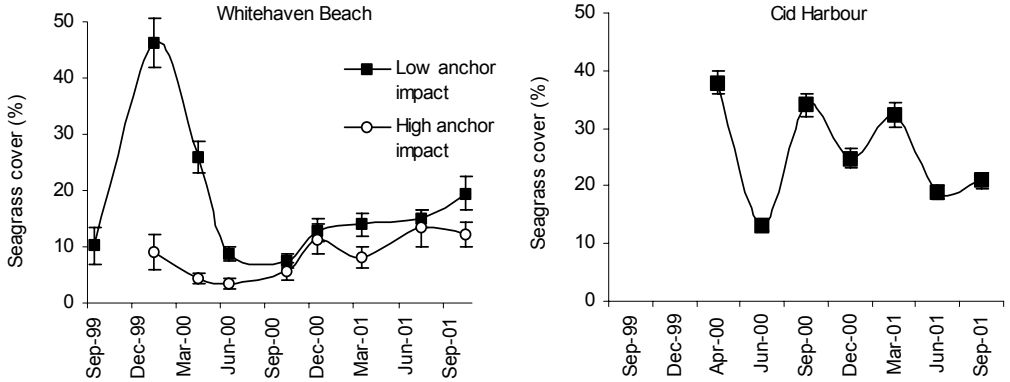


Management applications

Coastal managers used the maps of seagrass distribution (1999) in Shute Harbour to minimise dredging and spoil dumping impacts. The maps were also used to assess a development application for the construction of a boat ramp in the eastern side of Pioneer Bay and for a proposed marina in Muddy Bay. Data from Seagrass-Watch complements Whitsunday Shire Council environmental monitoring data to implement nutrient reduction management strategies of sewage treatment plants. Data on seagrass abundance throughout the region provides a baseline against which the impacts of future developments can be assessed.

Whitsundays: subtidal meadows

Seagrass abundance was seasonal in Whitsundays subtidal meadows with maximum cover (15-60%) in spring/summer (September – December) and minimum cover (<15%) in winter (June-July). Seagrass cover was significantly higher at low anchor use sites (WB2) compared with high anchor use sites (WB3) at Whitehaven Beach. The data strongly indicates that seagrass abundance and associated epi-faunal abundance are impacted by boat chains and anchors. Seagrass meadows north of Cid Harbour are in good condition and subject to few disturbances compared with sites situated near tourism "hot spots". Algal overgrowth is a cause of concern in both areas and requires further investigation.



Regional Assessment (subtidal meadows)

Seagrass abundance: - low at high boat anchor sites - **Poor**, high at low anchor sites - **Good**

Epiphytes and algae: - seasonally high - **Fair**

Dugong feeding: - dugong feeding at some sites - **Fair**

Invertebrate fauna: - invertebrate fauna low at high boat anchor sites - **Poor**, high at low anchor sites - **Good**

Physical disturbance: - high disturbance from boat anchors - **Fair**

Threats: - boat anchors, algal blooms

Overall rating – Fair

Management applications

Threats to the health of seagrass meadows in the Whitsunday Islands arise from high boat visitation which reduce "eco-tourism" values of the area. QPWS is using information from seagrass surveys to assess the magnitude of anchor damage and examine alternatives. Monitoring has also detected blooms of the blue-green alga *Lyngbya majuscula*. The data is being used by the government co-ordinated *Lyngbya* Taskforce to investigate the issue and determine the cause. These investigations aim to assess the influence and contribution of localised sources of nutrients and other potential factors to *Lyngbya* growth in the Whitsundays. Seagrass-Watch data also provides a baseline for interpreting seagrass seasonal dynamics in non-impacted areas. GBRMPA water quality and climatic data is being compared with Seagrass-Watch seagrass abundance data to determine if there is a relationship.

Tourist vessel anchored at Whitehaven Beach

Seagrass collected from 5m

Divers ready to estimate seagrass cover





Queensland's Fish Habitat Areas



International Seagrass-Watch Volunteers Forum
Hervey Bay 12-15th October 2001





MERVEY BAY ORGANIC &
SEAGRASS
















Ecosystem Health
MONITORING PROGRAM
cosystem
ealth
Monitoring
Program
Angela Grice, Ivan Holland, Ben Longstaff, Dan Wruck,
Francis Pantus, Andrew Moss & Bill Dennison


Part 2

FOCUS GROUPS

Aim: To contribute information/ideas with realistic and achievable outcomes on the Seagrass-Watch program and its future

Saturday afternoon was set aside for delegates to participate in discussions on the Seagrass-Watch program.
A list of five focus groups topics were given to delegates at registration. If delegates had a topic they particularly wanted to discuss which was not included in the list, then they were asked to choose a focus group that most closely aligns with their topic. The groups were designed to enable delegates to raise topics of their own choice.
Focus groups ran for 30 minutes. Within each group delegates discussed suggestions for modifying and improving Seagrass-Watch and new developments for the program. Each timeslot had a maximum of 15 people.

Focus Group 1.

Data Quality Assurance & quality control

Faciltator: Prof Di Walker
Seagrass-Watch Scientific support: Len McKenzie
Location: Science lab (USQ)
Time: Saturday 13th October 1:30-4:00 pm
Attendees:

2:00 – 2:30	*Wayne Key, Sid Boshammer, Paul Sysum, Anna Carr, Margaret Parr, Geaff Bunn, Valerie Bunn*
2:30 – 3:00	*Jean Wells, Joyce Patullo, Heather Hyde, Graham Hyde, Lawrie Wilson, Dell Williams, Coral Salmon, Robin Salmon, Megan Talarico, Artie Jacobson, Larry Arnold, Steve Winderlich, Simon Baltais, Liz Tanner, Sue Sargent, Brad Zeller, Liz Wilson*
3:30 – 4:00	*Paul Wenzler, Jennifer Wenzler, Tara Wenzler, Andrew Wendler, Carolyn Willaims, Kathryn McMahon, Moyra McRae*

Issue	***Comment/Solution***
Web-data entry	faster feedback preferred may need to wait a while before committing to a web database.
Local coordinators	fine in some areas, but not in others
Digital vs standard cameras	apply to gaming fund in each region to buy camera
Calibration sheets	needs finer resolution Groups establish their own standard sheets and validate with scientists
Establish “pristine” site	may not be possible
Long-tern monitoring	we only now have established baseline, so results can be built on from here on.
Refresher workshops	highly supported once a year or possibly every 2 years better to train the trainer opportunity to present results for previous year.
Interaction between groups	may be through local coordinator to give contacts

	email discussion groups
Feedback of results	establish a website
Data quality/assurance	is data devalued because it is collected by a volunteer?

Summary & recommendations

1.1 Web-based data entry

would be advantage for faster feedback, but due to funding constraints perhaps consider selected individuals who enter data onto pc database and send in files

Design database that can be downloaded from web to pc
Identify individuals in each region/locality for data entry

1.2 Digital camera vs standard/disposable

will enable observers to email images and reduce processing costs.

Approach gaming fund.

1.3 Calibration sheets

should be refined to local area as image library improves. Images selected to better represent ranges of cover. Sheets include images dry and with water cover. Perhaps groups create their own which are validated by SW Coordinator.

1.4 Refresher workshops

should be continued as vital. Perhaps only necessary once a year - aim more toward "*Train the Trainer*"

1.5 Standardisation between SW groups

could be improved by greater interaction. Could be organised through Local Coordinators or notification in Newsletter/web discussion lists.

1.6 Results/data feedback

As data is long-term, not necessary to feedback every site after every visit. Perhaps feedback done once a year at refresher workshops. Important to know if and how the data is being used for coastal management.

1.7 Local-Coordinator meetings

Bring local coordinators together annually to discuss SW program issues & possible improvements

Focus Group 2.

Maintaining and building interest

Faciltator: Prof Mike Fortes
Seagrass-Watch Scientific support: Rob Coles
Location: Tutorial Room 4 (USQ)
Time: Saturday 13th October 1:30-4:00 pm
Attendees:

2:00 – 2:30	*Amanda Parr, Dell Williams, Robin Salmon, Coral Salmon, Sunnee Goudy, Helen Debnam, Sandra Hardy, Artie Jacobson, Gordon Cottle, Sonia Edwards, Andrew Collins, Sue Olsson Jacquie Sheils*
2:30 – 3:00	*Gary Neilson, Desley Neilson, Trent Bowtell, Paul Greenham, Heather Hyde, Graham Hyde, Carolyn Williams, David Kohler, Rhonda Kohler, Moyra McRae, Lawrie Wilson*
3:30 – 4:00	*Liz Wison, Anna Carr, Dez Wells, Trichelle Lowry, Jason Walker, Megan Talazico, Tom Collis, Appie Stephen, LeeAnne Page,*
4:00 – 4:30	*Karen Kirk, Lech Artczak, Steve Winderlich, John Roberts, Liz Tanner, , Anne O'Dea*

Issue	***Comment/Solution***
Recruitment	Sustaining support, coordination*** Enhance public education (formal & non-formal; 'get involved' w/ science-based programs)*** Networking (local, regional, state-wide)** Building credibility & confidence** Integrating/linking with other groups, activities** Doing promotions/advertising* Activities well-timed, with high impact** Having identity (uniforms, badges, etc)* Involving the local gov't** Motivating people (see below)

Motivation	Seeing the results/contributions used in policy-decisions, improvement of environment** Having sense of ownership of data** Diversification of regular activities** Awareness of history of the place, traditional use of seagrass** Believing 'that we can make a difference'** Having follow-up activities** Giving actual support to volunteers from other sources** Alerting water users of the link b/w seagrass & fish, dugongs, & pollution**
Recognition of volunteers	Recognising not only what they do, but what they are** Having feedback, meetings** Putting signs at places**
Social activities	Consider work as a social event** Tie up with other social events e.g. Green Corps, Greening Australia** Meet more informally but regularly**
Indigenous groups	Informing them about SW** Involving them early in the activities** Inviting them as resource persons**
New topics for discussion	Should we recruit more? Into what should SW evolve? Integrating/linking SW w/ other non-seagrass grps from other places As hard cash, how much did the volunteer work cost/save for the govt?

Summary & recommendations

2.1 Recruitment

Sustaining support and coordination was raised as a major concern, particularly in some regions. It was generally acknowledges that there is a natural immigration/emigration of volunteers, so ongoing recruitment is important. Also, when recruiting, issues of confidence and creditability were a concern.

Enhance public education (formal & non-formal; 'get involved' w/ science-based programs)
Networking (local, regional, state-wide)
Integrating/linking with other groups, activities
Doing promotions/advertising
Activities well-timed, with high impact
Having identity (uniforms, badges, etc)
Involving the local gov't

2.2 Motivation

For volunteers to remain motivated, they need to see the program results/contributions used in policy-decisions, improvement of environment. A sense of ownership of data and follow up activities.

Enhance public education (formal & non-formal; 'get involved' w/
Diversification of regular activities

2.3 Recognition of volunteers

Recognising not only what volunteers do, but what they are was seen as important to maintaining interest and motivation in the program.

Create signs for volunteers to use at places when monitoring
Estimate how much volunteer work cost/saved for the Govt

2.4 Social activities

Social activities associated with monitoring makes the program less like work and easier to sustain motivation.

Meet more informally but regularly
Tie up with other social events e.g. Green Corps, Greening Australia

2.5 Indigenous groups

Agreed that indigenous groups are not heavily involved in the program in some regions, but they should be encouraged.

Informing them about SW
Involve them early in the activities
Inviting them as resource persons

Focus Group 3.

Coordination of on-ground participation

Faciltator: Dr Tim Carruthers
Seagrass-Watch Scientific support: Stuart Cambell
Location: Teaching Room 4 (USQ)
Time: Saturday 13th October 1:30-4:00 pm
Attendees:

2:00 – 2:30	*Gary Neilsen, Desley Neilsen, Megan Talarigo, Carolyn Williams, Steve Winderlich, Sue Sargent, Liz Tanner, Tom Collis, Appie Stephen, LeeAnne Page, Brad Zeller,Moyra McRae, Lawrie Wilson*
2:30 – 3:00	*Paul Sysum, Anna Carr, Jean Wells, Joyce Patullo, Dez Wells, Trichelle Lowry, Jason Walker, Sonia Edwards, Andrew Collins*
3:30 – 4:00	*Karen Kirk, Amanda Parr, Margaret Parr, Geoff Bunn, Valerie Bunn, Robin Salmon, Coral Salmon, Sandra Hardy, Helen Debman, Lech Artczak, Artie Jacobson, Greg Lynch, Sue Olsson*
4:00 – 4:30	*Paul Wenzler, Jennifer Wenzler, Tara Wenzler, Andrew Wenzler*

Issue	***Comment/Solution***
Local coordinators	role validates Seagrass-Watch program essential in quality control Essential for centralisation of data Important of data analysis dissemination Funding necessary to ensure continuation Approach QPWS to see if prepared to increase role Concerned about possible loss in some regions Not all site groups associate with Local Coordinator (e.g., Dingo Beach). Should be communication between Local Coordinators within and between regions. Local Coordinators should have a limited number of site groups to coordinate - so they do not become overworked and burnout. Should be permitted to sample in Marine Parks in absence of DPI staff.

	Skill sharing (e.g., funding acquisition successes of Hervey Bay). Link skills through local coordiantors Coordinate SW functions & communication with other functions (e.g., QPWS volunteers)
Science coordination	data entry/analysis needs regional coordinator
	Disseminate management goals down to SW volunteers (gives greater value to involved individuals and increases chances of continued participation).
	Develop booklet of summary seagrass information (ecology, life cycles, different algae, threats to seagrass, when flowering occurs and when to expect seeds)
	Information induction brochure with basic seagrass info & SW info (e.g., newsletter format)
	Specify questions and goals for data in terms of economic/cultural goals - broaden SW from purely conservation goals.
	Investigate loss of seagrass around footsteps and stake holes.
New topics for discussion	Recognise that different regions have equally effective but different solutions to local funding and resources (this diversity is strength of SW)
	Involve Coast Guard for support rather than have to pay vessel hire costs

Summary & recommendations

3.1 Local coordinators

Play essential role in validating the Seagrass-Watch program and disseminating analysed data and should be maintained.

All site groups should report and liase with Local Coordinator
Limit 5-8 site groups to each Local Coodinator
Local Coordinators should summarise and disseminate data for local area and other Local Coordinators
Groups should apply for own permits were necessary and not rely on DPI permit

3.2 Knowledge

Is a need to disseminate summary background information on seagrass ecosystems and management goals as this gives greater value to involved individuals and increases chances of continued participation.

Prepare booklet on background seagrass info (incl. ecology, macro algae and threats)
Develop induction sheet & Seagrass-Watch information

When feeding back information, consider broader questions in economic/cultural context (WHAT, HOW, WHY, SOLUTION)
Investigate loss of seagrass around footsteps and stake holes.

3.3 Coordination between regions

It was agreed that it would be advantage for groups within regions to communicate more. This has advantage of sharing skills and making other groups aware of possible funding opportunities (incl. When applications due)

Apply for funding to enable skill sharing (travel, etc)
Develop User Group on WebSite to post questions and answers (both a Global Seagrass-Watch user group and local coordinators user group)
On website include 3 monthly summary of Q/A

3.4 Accessing support

A disadvantage for some groups (particularly those conducting sub-tidal monitoring) has been obtaining access to vessels and other local support due to limited funds.

Approach local Coast Guards if for support (use of vessels for transport, etc)

Focus Group 4

Communication

Faciltator: Prof Bill Dennison
Seagrass-Watch Scientific support: Chantal Roder
Location: Language room (USQ)
Time: Saturday 13th October 1:30-4:00 pm
Attendees:

2:00 – 2:30	*Britta Phelps, Susie Rae, Camille Mullins, Wendy Jones, Liz Wilson, Vanessa Jamieson, Kristine Kopelke, Brett Hackett, James Holland, Mary Clarke, Sue Arnold, Simon Baltais, Jennifer Moss*
2:30 – 3:00	*Wayne Key, Amanda Parr, Margaret Parr, Valerie Bunn, Karen Kirk, Geaff Bunn, Paul Wenzler, Jennifer Wenzler, Tara Wenzler, Andrew Wenzler, Vanessa Jamieson, Lech Artczak, Greg Lynch*
3:30 – 4:00	*Sid Boshammer, Paul Sysum, Dell Williams, Sunnee Goudy, Maren Mathews, Kim McKenzie, Anne O'Dea*
4:00 – 4:30	*Anna Carr, Robin Salmon, Dez Wells, Heather Hyde, Graham Hyde, Jason Walker, Tom Collis, Appie Stephen, LeeAnne Page, Sue Sargent, Sonia Edwards, Andrew Collins, Brad Zeller, Sue Olsson*

Issue	***Comment/Solution***
Seagrass-Watch website	Priority to develop simple system include dugong and turtle info Develop web based discussion list (valuable for timeliness of results)
Newsletters	make as part of website Can be emailed on subscription rather than posted Include contributions from groups Include annual report with data analysis
Forum frequency	interannual 2-3 years
Communication between	groups and different levels of government make newsletter wider distribution

	More general public displays (schools, murals, and festivals) Develop contingency planning (e.g., flood, *Lyngbya*) Distribute training video & updates Reach other environment groups (e.g., fishing groups) Regular tele-conferencing/video-conferencing Annual local workshops Training workshops for trainers Seagrass-Watch mobile phone Generic email address
Involving schools	can be difficult Make information teacher friendly Regular QPWS visits Involve Marine Studies and Double Helix
Advertising	use regional papers and include generic stories & photos Provide regular updates Postcards Community column in paper Develop photo catalogue Pamphlets in QPWS officers Laminated reports on community information boards Catchment group style signs
New topics for discussion	identify local hero Involve local council coordinator Communication between like minded groups Involved Green Corps Initiate frequent social activities to keep people in touch

Summary & recommendations

4.1 Seagrass-Watch website

Has been raise as a priority for the program. The site should be simple but informative and include a discussion list

Develop temporary website ASAP (possibly by community)
Initiate web based discussion list
Scientists to use the website to notify groups when in area & available

4.2 Seagrass-Watch newsletters

Newsletters where agreed to be necessary for dissemination of general Seagrass-Watch information. Volunteers should also contribute to writing newsletters so to reduce workload of SW Coordinator. To assist with cutting costs, the newsletter could be posted via email.

Incorporate newsletter in website
Give people on distribution list choice of receiving newsletter via posted or emailed
Distribute more widely
Volunteers to contribute to content of newsletters
Produce Special Edition of Newsletter every year with data analysis

4.3 Seagrass-Watch forum

General consensus that Seagrass-Watch forums were an important part of the program for disseminating information and motivation of volunteers.

Forums to be held every 2-3 years

4.4 Communication between SW groups

Agreed as an important in maintenance and consistency across the program.

Regular tele-conferencing/video-conferencing
Annual local workshops
Distribute training video & updates
Training workshops for trainers

4.5 Communication between SW groups & government

Agreed as an important in continuation of the program. Governments are the end users of the data and should plan role.

Develop contingency planning (e.g., flood, Lyngbya)
Generic email address

4.6 Public awareness

General consensus that future of Seagrass-Watch depends highly on support from the general public and developing links with other environment groups.

More general public displays (schools, murals, and festivals)
Use regional papers and include generic stories & photos
Create laminated reports for community information boards
Develop photo catalogue
Create catchment group style signs
Pamphlets in QPWS officers
Contribute to community column in paper
Develop postcards
Identify local hero & promote

4.7 Involving schools

Involving schools is a very important component of the Seagrass-Watch program. Schools can contribute significantly if program adopted as part of curriculum. Although considered by some as difficult, the main problem has been providing information in a structure teachers can readily use as a teaching tool.

Make information teacher friendly
Regular QPWS visits
Involve Marine Studies and Double Helix
Initiate frequent social activities to keep people in touch

Focus Group 5.

Program future and funding

Faciltator: Dr Michelle Waycott
Location: Main theatre (USQ)
Time: Saturday 13th October 1:30-4:00 pm
Attendees:

2:00 – 2:30	*Karen Kirk, Dez Wells, Paul Wenzler, Jennifer Wenzler, Tara Wenzler, Andrew Wenzler, Trichelle Lowry, Jason Walker, Lech Artczak, Greg Lynch, Pauline Fowlie*
2:30 – 3:00	*Sid Boshammer, Wendy Jones, Britta Phelps, Susie Rae, Camille Mullins, Vanessa Jamieson, Maren Mathews, Sunnee Goudy, Tom Collis, Appie Stephen, LeeAnne Page, Sue Olsson, Jacquie Sheils*
3:30 – 4:00	*Wayne Key, Jean Wells, Joyce Patullo, Heather Hyde, Graham Hyde, Steve Winderlich, Simon Baltais, Sonia Edwards, Sue Sargent, Liz Tanner, Andrew Collins, Brad Zeller*
4:00 – 4:30	*Paul Sysum, Margaret Parr, Amanda Parr, Dell Williams, Coral Salmon, Carolyn Williams, Artie Jacobson, Moyra McRae, Lawrie Wilson*

Issue	***Comment/Solution***
Future funding	no quick fix for cash Link to other agencies/monitoring Proposal to feed funding through central $ source to local groups (Gov's funding role) Increase local coordinators role with funding Funding opportunities need to be accessed through better information sharing, joint applications, training in grant preparation Support of a grants officer or access local government Develop grant writing skills for community grants Catalogue of successful grants

	networking the nation to assist WWW base development
Collaboration with other scientists'	Develop on-line or easy access scientific advisers accessed for specific questions
Alternative to full time seagrass-Watch coordinator	
	Train local Coast Care coordinators to basic levels (e.g., seagrass spp ID, info source, etc)
Future directions	improve links/interaction with other community groups (eg Water Watch, Reef Watch) Improve data access Add catchment focus - obvious link of seagrass as downstream receivers of "impacts" [events] Investigate physical environment (sediments) Develop network Data validation and training that is ongoing develop strategic plan of action Source inventory over seagrass meadows Include sediment samples - other impacts on environment Develop new branch of program - sediments. Train up QPWS rangers Develop links to LMAC, Port Authorities Greater recognition of volunteers Ensure long-term monitoring links to coastal management plans
Other	access to vessels (e.g., for OUCH) and insurance implications

Summary & recommendations

5.1 Future of Seagrass-Watch Coordinator

The role of the Seagrass-Watch Coordinator is essential to the maintenance and ongoing development of the program. Is a general concern about possibility of loosing Seagrass-Watch Coordinator and the future of the program.

Role may need to be changed so regions have more autonomy

5.2 Future of Seagrass-Watch program

Need to develop greater links with other seagrass groups & coastal catchment management groups nationally. Also to link with other coastal habitats (e.g., mangoves, macroalgae) and sediments so to get to the source of the problems

Local Coordinators to contact and work with other environment groups

Improve data output process - faster, better and more interpretation

5.3 Scientific networks

Essential to maintain scientific credibility of Seagrass-Watch, as community data cannot be "trivialised" so easily when adequate data validation, training & data processing. Model on existing networks e.g., Healthy Waterways in Moreton Bay

Develop greater scientific network

5.4 Awareness of funding opportunities

Improve awareness of grant options that local communities can apply for and promote training for people to apply for funds

Coordinate grants with scientific, community and agency stakeholders

Establish links to other programs such as State Of Environment reports, Reef Watch, Water Watch

5.5 Funding opportunities

It is essential to improve the corporate profile of the Seagrass-Watch program as this improves funding opportunties. Funding could be raise through recreational fishing licences, gaming funds, port authorities, private companies, but need a way to coordinate getting funds.

Create a Grants officer

Develop regional/national corporate funding coordinator

5.6 Responding to major/episodic events

A process needs to be established to cope with major/episodic events, e.g., floods. This may include training on what to do and a set of key measure to be taken.

Develop action plan

Out of session Group.

Indigenous involvement

Location: Hervey Bay Seafood Festival
Time: Sunday 14th October 11:00-12:00 pm
Attendees:

Tom Collis, Appie Stephen, LeeAnne Page, Stuart Campbell, Steve Winderlich, Artie Jacobson,

Issue	***Comment/Solution***
Information sharing	Exchange of ideas between Seagrass-Watch and indigenous groups is very important Identified need to draw significance between habitat/fauna and indigenous culture Efforts will be made to further contact indigenous groups and keep informed of Seagrass-Watch activities and results Connections between science and culture important Seagrass-Watch has a contribution to make to indigenous education (eg resource management) Joint management of natural resources will make community programs relevant to government agencies
Involvement	Opportunities can be created by exchange of ideas/information Workshops where appropriate can inform groups of training opportunities Involvement practical only if benefits are clear Training/workshops can provide educational opportunities Benefits flow both ways and can improve understanding of seagrass ecosystems

Summary & recommendations

6.1 Exchange of ideas

Information flow between Seagrass-Watch and local indigenous workers/communities requires ongoing commitment and communication

Local Coordinators to maintain contact with indigenous groups via phone calls, newsletters, workshops

6.2 Education activities

The development of further links with local indigenous groups and the provision of workshop/training where appropriate are required to expand the commitment of the program to indigenous culture

Workshops and training opportunities to be developed and targeted to indigenous groups

6.3 Practical involvement

Practical involvement in monitoring activities will be dependent on a number of factors including individual groups requirements, resource management issues and site accessibility.

Promote indigenous participation in and resource management by highlighting the current successful involvement with indigenous students. Establish monitoring sites with groups where appropriate

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