

Lac Buoy Placement Project

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Progress Report # 1

For the period November 2008 – December 2009



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INTRODUCTION

This project was prompted in 2008 when STCB and ProES staff shared our mutual observations that the seagrasses at Lac's Sorobon peninsula were undergoing a significantly rapid decline in size and density. The ongoing damage was an apparent result of trampling by waders and windsurfers as recreational use of Lac began a steep increase (Appendix I). We agreed that the seagrasses could suffer little additional damage before reaching a point of no return.

The coral reef that fringes the inside of the lagoon also began to suffer increased damage from the escalating recreational use of Lac. Staff noted that more people were wading, snorkeling and windsurfing to the reef, resulting in significant trampling and collisions with live coral. Kayaks were paddled and dragged across the reef in an effort to reach the "White Hole" dive site.

Increasing numbers of windsurfers were sailing outside the bounds of the windsurf area to enter the White zone, an important seagrass and mangrove system which is designated an undisturbed wildlife area.

Although use zones (Appendix II) have been in place at Lac for years, demarcation buoys had gradually disappeared or been removed and use zone notification was not apparent on site. An earlier project using lines and buoys to protect the Sorobon peninsula seagrasses had also been established and abandoned. By 2008 when use really began to increase, users in large part were unaware of the use zones and protected areas.

Our goal was to stop the destruction of the seagrass beds and coral reef so that they would remain viable until Bonaire implements a permanent and comprehensive management program for the area. While our focus was on the peninsula seagrasses, we also deliberated about how to protect the wildlife (White) zone and Lac's coral ecosystem (Yellow) zone. We determined that it was within our combined capacity to re-establish seagrass protection and use zones by installing markers and informing stakeholders and users of the zones and regulations.

Our two organizations formed a partnership and secured the support and oversight of STINAPA. We also enlisted area businesses for funding support and cooperation.

Our efforts have yielded mixed results. While we see the value in maintaining the project and plan to continue our efforts, our experience also tells us that this project alone may slow but certainly will not stop the decline of these systems. Both immediate and long-term solutions need to be adopted by the managing and governing bodies of Bonaire. Without coordinated attention to the impacts of recreational use at Lac, the seagrass beds and the coral reef will sustain ongoing damage.

PROJECT SUMMARY

Project Goals:

- I. Protect the seagrass beds at the shoreline of the Blue Zone
- II. Increase windsurfer compliance to the White Zone no-go boundary
- III. Reduce recreational user damage to the coral reef

Activities:

1. Floating lines and small floats were installed to protect the seagrass beds in the heavily-used areas at the Sorobon peninsula.

2. Turnaround buoys were intended to be placed at the White Zone boundary. As the name implies, windsurfers must turn around at these markers. Commercial use is prohibited in the White Zone.
3. Six buoys were placed in the Yellow Zone beside the coral reef. Users are instructed to use caution in this area and reminded that the reef is a “no touch” zone. The buoys are also designated moorings for kayaks.
4. An information and awareness program informed users about the issue, the project and the related regulations.

The following chart summarizes the activities, results and next steps:

GOALS & ACTIVITIES	RESULTS
<p>Goal 1: Protect the seagrass beds at the shoreline of the Blue Zone</p> <p>Activity 1.1: Install anchors, floating lines and buoys</p>	<p>Technical: Initial system was high maintenance. An experiment in which we replaced nylon line with plastic tubing proved a huge improvement.</p> <p>Effectiveness: Non-compliance is an on-going problem (Appendix III). Some users walk or windsurf across lines and through the no entry area. Frequently, especially on crowded days, users attach equipment to the lines. The swim area created at the request of the on-site businesses caused confusion and misled users into walking through, rather than around, the no-entry zone. It also is not in keeping with the existing use of this (Blue) use zone.</p> <p>Next steps: Replace remaining nylon line with plastic tubing. Remove the swim area lines. Develop a sufficient and sustainable maintenance plan. STCB and ProES do not have the capacity (cost and personnel) to shoulder the maintenance burden for the long-term. Seek the means to station volunteer or paid personnel in the area to encourage compliance. This is especially necessary whenever cruise ships are in port. Extend protection to seagrass beds in front of Sorobon Beach Resort. Advocate for management and policy solutions (see Recommendations for Management and Government Policy, page 3).</p>
<p>Goal 2: Increase windsurfer compliance to restrict activity to the Blue Zone</p> <p>Activity 2.1: Install 5 turnaround buoys at the White Zone boundary</p>	<p>Technical: This activity has not been accomplished.</p> <p>Effectiveness: Windsurfer activity into the White Zone has increased dramatically since we began this project in 2008. Because windsurfing into the White Zone has become an effective norm, it will be difficult to convince windsurfers to return to a practice of remaining outside the White Zone.</p> <p>Next steps: Explore ways to expedite the installation of the turnaround buoys, and develop measures to re-establish the awareness of the limits of the windsurf zone. Advocate for management and policy solutions (see Recommendations for Management and Government Policy, page 3).</p>
<p>Goal 3: Reduce recreational user damage to the coral reef</p> <p>Activity 3.1: Install 6 mooring buoys beside the coral reef</p>	<p>Technical: Buoys were installed and require no regular maintenance.</p> <p>Effectiveness: We have not monitored the effectiveness of this activity. We do note that the buoys are hard to locate.</p> <p>Next steps: Review effectiveness of buoys. Monitor and quantify recreational use of coral reef. Maintain buoys. Advocate for management and policy solutions (see Recommendations for Management and Government Policy, page 3).</p>

<p>Activity relevant to Goals 1, 2 and 3: Awareness program</p>	<p>Technical: During the project year the program delivered elements targeted to specific stakeholders. They included presentations, printed materials, on-site signs (billboard-style and in-water), press releases and on-site personnel several hours each week.</p> <p>Effectiveness: It is our observation that all elements played a useful role, however three conditions make compliance difficult to achieve: 1) enforcement of user regulations is next to non-existent, 2) some customary users continue to ignore the zoning and regulations, 3) the largest proportion of users are day-visitors to the island: few of these users read the on-site signs and once someone walks through the no-entry area, the masses tend to follow. Given these three conditions, it is clear from our experience (Appendix III) during the first project year that on-site presence, especially during heavy-use days, is critical to significant compliance.</p> <p>Next steps: Seek the means to station volunteer or paid personnel in the area to encourage compliance. This is especially necessary whenever cruise ships are in port. Advocate for policy and management solutions (see Recommendations for Management and Government Policy, page 3).</p>
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RECOMMENDATIONS FOR MANAGEMENT AND GOVERNMENT POLICY

Immediate action:

- Install turnaround buoys to mark the border of the White and Blue zones.
- Contribute funding for ongoing expenses of this project (see 2010 Budget page 5).
- Take measures to reduce the impact of users:
 - Correct the footprints of the existing businesses which have encroached beyond their permitted limits.
 - Place capacity limits on number of beach chairs, restaurant seating, and number of sailboards rented per day.
 - Restrict foot traffic to designated paths to reduce damage to dune vegetation.
 - Make funds and personnel available to enforce user regulations, most critically during the cruise ship season.
 - Do not grant additional business permits for this area until maximum capacity limits have been determined.
- Take measures to reduce vehicle impact to Sorobon peninsula:
 - Create a designated parking lot and restrict all public/taxi/tour parking to that lot. Designate narrow driving lanes to reduce the number of cars, compaction of the soil and damage to vegetation.

Other action:

- Enact policy, regulation and enforcement, and devote adequate funds to manage Lac for the long term.
- Fund and implement the *Lac Bay Management Plan* (Renken 2003). At the same time, undertake a careful revision of the plan to encompass current conditions and scientific knowledge.
- As part of the above:
 - Adopt all recommended Ramsar guidelines.
 - Establish and enforce caps on day use-entry to the area.
 - Establish and levy a reasonable use fee for businesses (excluding traditional fishing) that use Lac. Dedicate proceeds exclusively for the protection and management of the area.



This report does not describe the full range of use impacts at Lac. For example, this dive boat (middle background) lost control outside Lac's reef and ran aground on December 30, 2009. The boat was recovered by dragging it across the reef to the inside of the bay. This dive boat has lost control and run aground on the windward reef more than once.

EXPENSES AND REVENUES FOR PROJECT REPORTING PERIOD

Project Expenses	
Nov. 2008 - Dec. 2009	Amount (ANG)
LINES AND BUOYS	
Lines & floats	4732.30
Marker Buoys	711.73
Anchors	4,964.41
Tools and supplies	980.19
Stringing floats on lines	250.00
SIGNS AND PRINT MATERIALS	
Print information	399.00
On-site signs inc. installation	782.79
MEETING & VOLUNTEER EXPENSES	242.00
SHIPPING/CUSTOMS FEES	2422.04
Total Expenses	15484.46
Project Revenues	
Nov. 2008 - Dec. 2009	
Jibe City	3560.00
Bonaire Windsurf Place	3560.00
ProES	1457.05
STINAPA	4964.41
STCB	1943.00
Total Revenues	15484.46

Expenses Note:

No personnel costs were included in this report. Hundreds of hours were contributed by STCB and ProES personnel in planning and execution. STINAPA personnel aided in planning, provided project approval and participated in line and buoy installation. As well, maintenance of the nylon line and floats required many more hours than estimated. In 2010 all nylon lines will be replaced with a plastic tubing system we devised in 2009. This system requires less maintenance.

The 2010 Project budget does include personnel costs for maintenance of lines and equipment (see next page).

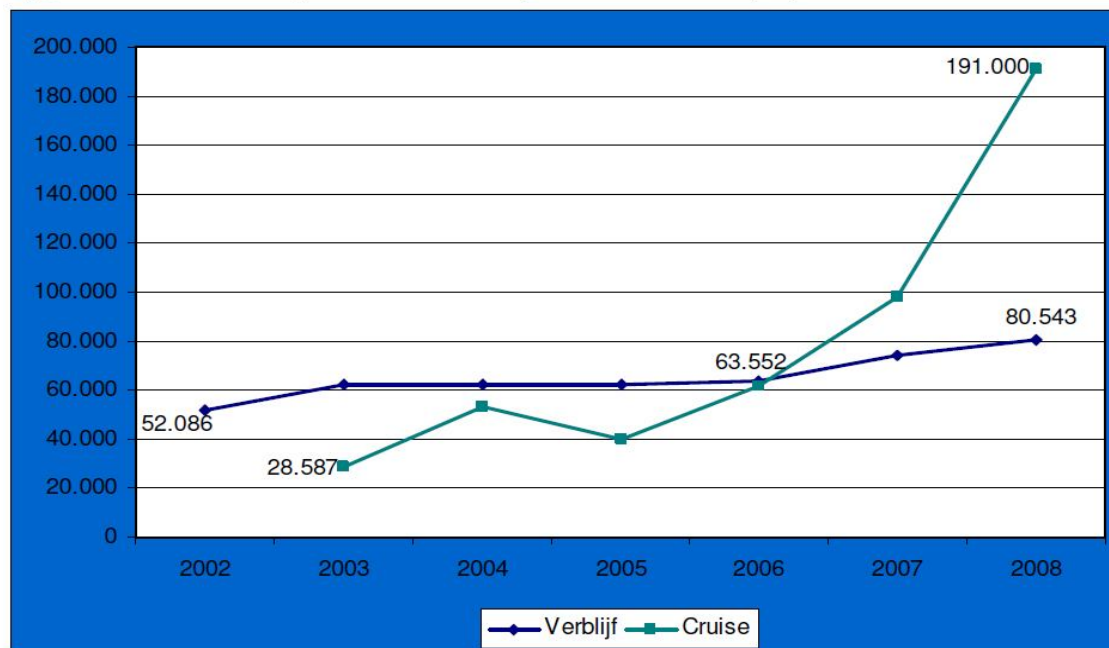
BUDGETED EXPENSES AND REVENUES FOR PROJECT YEAR 2010

Project Budget	
Jan. 2010 - Dec. 2010	Amount (ANG)
Project Expenses	
LINES AND BUOYS	
Plastic hose, 1700 metres	1500.00
Turnaround Buoys	500.00
Anchors	1140.00
Tools and supplies	700.00
Floats	350.00
SIGNS AND PRINT MATERIALS	
Print information	650.00
On-site signs inc. installation	1610.00
MAINTENANCE / MONITORING	
Staff expense	5900.00
Transport expense (gasoline)	1500.00
Total Budgeted Expenses	13850.00

APPENDIX I - INCREASE IN RECREATIONAL USE OF LAC

Use of Lac has increased exponentially in the last few years. While windsurf tourism is up considerably, cruise ship passenger visits account for most of the increase (see chart below). Two factors make this use a particular challenge for Lac; 1) the dozens of vehicles and hundreds of users at the site on a given day are far more than ever anticipated in past management assessments, and this traffic remains largely unregulated and unmanaged; 2) the crowds of day-users are ill-prepared to understand, let alone comply with, user limits.

Bonaire stay-over (verblijf) and cruise ship passenger arrivals per year (2005 – 2009)



Bron: DEZA/TCB

APPENDIX II - LAC USE ZONES

White zone:

Undisturbed natural and wildlife area.
No commercial activity

Blue zone:

Windsurfing / kayaking

Yellow zone:

Snorkeling / kayaking

Green zone:

Guided kayaking

Orange zone:

Guided snorkeling

Red zone:

Swimming, snorkeling and general beach recreation



APPENDIX III – USER COMPLIANCE SURVEY

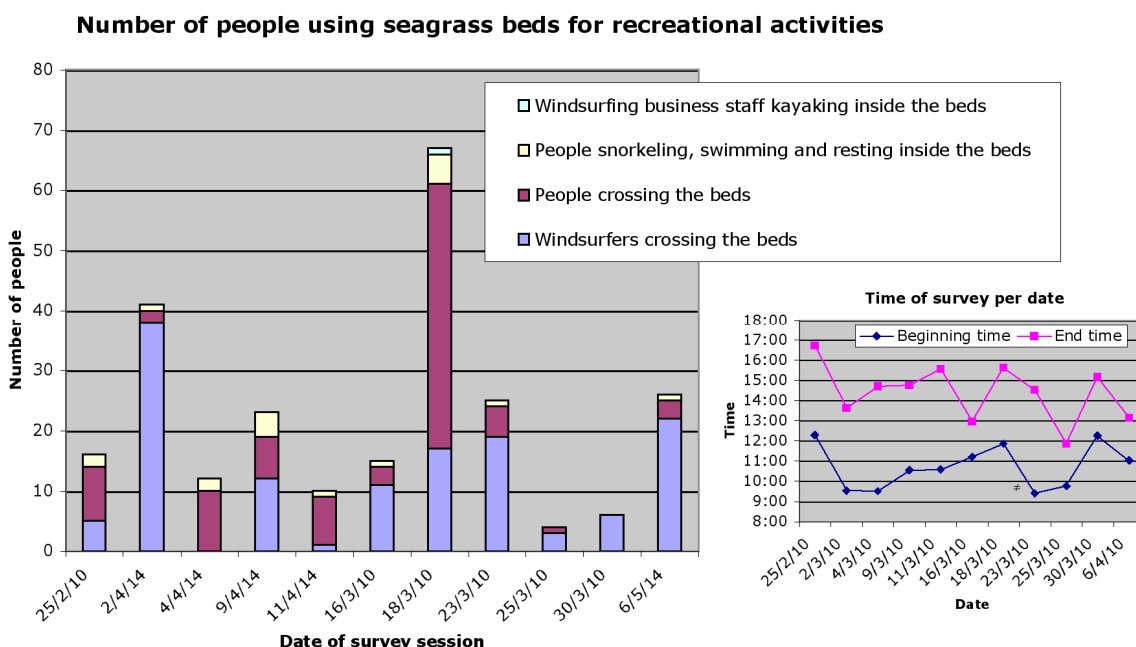
The results of this survey illustrate the limitations of relying on voluntary compliance in the Sorobon seagrass protection program. Two distinct categories of user continue to enter the protected beds, despite the fact that the beds are clearly marked with continuous floating line and “No Entry” signs: 1) a regular users subset who consciously ignore the zoning and regulations, and 2) day-visitors to the island who, beguiled by the complex surroundings, crowds, choices of activity and surprising beauty of Lac, have little capacity to assess their surroundings, read signs and comply with written regulations.

Methodology:

For 11 days an observer walked on Sorobon’s beach to make a census of the number of people crossing the floating line barriers to enter the protected seagrass beds. We classified the users in four categories: windsurfers crossing the seagrass beds, waders crossing them, people snorkeling, walking or resting inside the beds and windsurfing business staff kayaking inside the beds. Times at which surveys were conducted were chosen randomly. This shows lack of compliance at different times during the day.

Results:

This graph shows the number of people using the seagrass beds for recreational activities per day of survey. During 40 hours and 39 minutes of survey, we observed 134 windsurfers going inside the seagrass beds, 92 people crossing them, 18 people swimming snorkeling or resting inside the beds and even one member of the windsurfing business staff kayaking inside the seagrass beds.



See next page for images showing users in the protected seagrass beds.



Recreational users entering seagrass beds that are marked with floating line. Note the photo middle, right: the sign in front of the kayaker reads "No Entry."