

# Bellairs Recycling Program Final Report



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With much gratitude,

Jill Parlee  
Project Leader

## Acronyms

Bellairs – Bellairs Research Institute of McGill University  
BFSS – Barbados Field Study Semester  
BITS – Barbados Interdisciplinary Tropical Studies  
B’s – B’s Bottling Depot  
FCT – Future Centre Trust  
SBRC – Sustainable Barbados Recycling Centre  
SPF – Sustainability Projects Fund of McGill University

## Executive Summary

Bellairs Research Institute of McGill University, located on the island of Barbados in the Caribbean, enables researchers and students from around the world to undertake tropical studies and activities in a variety of fields. The Bellairs Recycling Program builds a culture of sustainability, and identifies Bellairs as a sustainability campus of McGill. This program contributes to a larger “4Rs – Rethink, Reduce, Reuse, and Recycle System” at the Institute.

In 2004, students from the Barbados Field Studies Semester Program (BFSSP) of McGill University began by conducting research on potential sustainability initiatives at the Institute. Thus, the idea of starting a recycling program at Bellairs was born.

From 2005 to 2009, small steps were taken by the staff and students to transform the recycling program into more than just an idea. At first, only plastic and glass bottles were recycled. Then, in 2010, another team of BFSSP students undertook a waste audit at Bellairs and began recycling more categories of items. Now, more than ten categories including cardboard and metals are recycled. The Bellairs’ staff, students and professors work side-by-side to help the program blossom.

With the support of the Sustainability Projects Fund (SPF) of McGill University from 2011 to 2012, the program has quickly been improved and made more efficient. Partnerships with the SPF and supporting organizations in Barbados energize the Bellairs Recycling Program. Teamwork is the most important element, and successful communication is critical to encourage the culture of sustainability. This program provides the chance to enrich the McGill community while reaching out to the Barbados community. We thank the Sustainability Projects Fund for recognizing the unique conditions in Barbados and supporting us to recycle at Bellairs.

## Introduction

Bellairs Research Institute of McGill University is a research station of McGill located on the island of Barbados. Researchers come from McGill, Barbados and around the world to undertake research in a variety of fields. The achievements of Bellairs directly contribute to the overall achievements of McGill. The Bellairs Recycling Program is an action towards building a culture of sustainability at Bellairs. It is highlighted as an element of a larger “**4Rs – rethink, reduce, reuse, recycle**” campaign. Partnerships with visitors to Bellairs and with supporting organizations in Barbados will be important for energizing this larger campaign.

The impulse for the Bellairs Recycling Program began long before 2011. Since 2004, McGill students partaking in the Barbados Field Studies Semester (BFSS) Program have been conducting sustainability assessments and implementing sustainability initiatives at Bellairs. Up until 2010, the staff and student effort had developed into collection of plastic and glass bottles from Bellairs as well as composting of kitchen food scraps. Please refer to Working Update, Prior-to-2010. These efforts were instrumental in equipping the Bellairs staff and visitors with the knowledge and means to collectively recycle bottles and compost food waste.

This recycling system was further developed with three McGill students in the 2011 BFSS program. Their focus was to expand the plastic and glass bottle recycling system into an integrated solid waste management effort. This team confirmed that the issue of solid waste management in Barbados is a difficult problem to tackle. There is no formal, curbside collection in Barbados, yet recycling is very important as Barbados is a small island. There is little land available for landfill development and the existing Mangrove Pond Landfill is reaching capacity. Therefore, it is crucial for organizations to practice an integrated waste management program where the 4Rs are addressed.

Throughout the execution of the Bellairs Recycling Program two more McGill field study groups, many alumni, Barbadian organizations and other individual supporters have assisted in taking this project further than expressed in our original proposal to SPF. Please refer to all those people acknowledged on pages 1 & 2 of this report. Furthermore, the Bellairs staff have reviewed and implemented each project measure, integrating the project into the daily operations and management of Bellairs. Teamwork has been the most important element of the project and successful communication is critical to encouraging the culture of sustainability.

## Vision

The vision of this project is to contribute to a culture of sustainability at Bellairs, including sustainable waste management. A new recycling system will increase the amount of waste diverted from the Mangrove Pond Landfill as well

as encourage users to rethink, reduce and reuse, as well as recycle. The cultural vision includes everyone working together to improve the sustainability of Bellairs where all visitors and staff are conscious of the objectives of this effort. We anticipate that all users will understand the vision and communicate it to others.

## Goal

The goal of this project is to build a recycling system that organizes recyclable materials at Bellairs and communicates the message of sustainability to staff and visitors.

## Objectives

The project has four main objectives:

- Install recycling receptacles around the grounds of Bellairs for guests and staff to use;
- Construct a recycling shed to house the recyclables until collection;
- Create signage and other resources to disseminate information about recycling at Bellairs, and;
- Create and administer monitoring and evaluation techniques to acquire feedback.

## Stakeholders

There are three main stakeholders involved in this project: Bellairs Research Institute of McGill University, Barbadian environmental organizations and Barbadian recycling companies.

Bellairs Research Institute is the managing organization in charge of maintaining an efficient recycling program. This requires operational commitment from staff to keep the system in working order and to record the redeemed recyclables. Beyond this, Bellairs will need continued support from visitors to separate the recyclables and take them to the recycling shed, as well as to assist with feedback in the creation and revision of educational materials pertaining to recycling at Bellairs. The main source of financial revenue for this program will be obtained through the redemption of the recyclables, and this will be supported through the operational budget of Bellairs where necessary. A letter of support from Bellairs Research Institute is included in Appendix D.

Barbadian environmental organizations, mainly The Future Centre Trust, have been pivotal in guiding student help and providing local knowledge. The Future Centre Trust also greatly assists with the educational promotion of this initiative. A letter of support from the Future Centre Trust is included in Appendix E; several press releases are included in Appendix F.

B's Bottling Depot (B's) and the Sustainable Barbados Recycling Centre (SBRC) are the two main recycling companies on the island. Recyclables are brought to B's and are paid for by B's. The SBRC is a private-public enterprise



and receives recyclables, including green waste, but does not offer compensation. These recyclers assist with this project in the capacity of business associates and mentors to Bellairs' students.

### Evaluation of waste management service providers

As part of the BFSSP 2010 internship, the students gained insight into the capacities of the different waste management service providers:

B's Bottling Depot (B's) is a private recycling enterprise. As a private company, details of its operations are unavailable to external parties, however B's is friendly to educational initiatives and will allow site visits and provide tips for setting up recycling collection areas.

The Sustainable Barbados Recycling Centre (SBRC) is the newly developed transfer station located at the primary landfill in Barbados (Mangrove Pond Landfill). The facility was opened in late 2009. The purpose of this facility is to separate garbage into waste and recyclables as it comes in from private and government hauling vehicles. At present the facility can only recover clean, recyclable materials which are uncontaminated by food and other wastes. Currently this percentage of incoming materials is very low.

The Sanitation Services Authority is the government agency that collects garbage from households and small businesses. All waste is combined in garbage compactor vehicles and brought to the SBRC. With this method of collection the SBRC is unable to separate waste from recyclables.

Skip companies and trucking companies are the private waste haulers. Waste is transported to the SBRC in large skips/dumpsters or in the back of open-bed trucks. At the moment this is the collection link between large businesses and the SBRC. With this method of waste collection separation of waste and recyclables is possible.

### Approach

The Bellairs Recycling Program project was originally planned to extend from the BFSS 2010 student internship through guidance by the Future Centre Trust. However, it was found that working directly with the Bellairs staff on design and implementation was more easily coordinated. The Future Centre Trust did continue its education support role and produced several informative press releases related to the project (Appendix F).

Therefore, decision-making was kept internal to Bellairs. Discussion sessions were included in weekly staff meetings to determine innovative implementation methods. Ideas were formulated between staff members about where to hunt for recycled and reusable materials for construction. Teamwork contributed to building a culture of sustainability and broadened the original scope of the project. Long-term sustainability exists because all staff members have been included in the process from the beginning.



Many visitors to Bellairs have also contributed to the implementation of the Bellairs Recycling Program, chiefly two McGill field study groups, several alumni and other individual supporters. Collaboration and communication has both enhanced the learning process of the project and enriched the visitor experience. The Project Leader role has been critical towards successful coordination between staff and visitors.

## Milestones and Performance Indicators

The projected timeline of the project was marked by milestones. For each milestone an expected performance indicator (PI) was outlined. In the following table the actual performance indicator (PI) is identified. Where the actual PI varies from the expected PI an explanation is given. Every milestone was achieved.

<b>1</b>	<b>Milestone</b>	<b>Recycling receptacles are designed in collaboration with staff.</b>
	Expected PI	Six sets of practical recycling receptacles are designed for the five kitchens and one office at Bellairs: main kitchen, student kitchen, Seabourne upstairs & downstairs kitchens, Brace upstairs kitchen & downstairs office.
	Actual PI	Completed as expected.
<b>2</b>	<b>Milestone</b>	<b>Recycling receptacles are built.</b>
	Expected PI	Recycling receptacles are; a. installed near to each of the five kitchens and one office at Bellairs b. used by staff and visitors to separate garbage into various categories of recyclable and non-recyclable materials
	Actual PI	Completed as expected although two different designs were used. Wire framed structures and buckets were used in the student kitchen and main kitchen. Wooden frame (or no frame) structures and reusable bags were used in the remaining kitchens and office.
<b>3</b>	<b>Milestone</b>	<b>Materials are chosen and sourced to construct the recycling shed.</b>
	Expected PI	The recycling shed is constructed according to a design that is customised for keeping and disposing of recyclable waste at Bellairs according to the principals of sustainable living in Barbados.
	Actual PI	Completed as expected. Reused or recycled material were used wherever possible.
<b>4</b>	<b>Milestone</b>	<b>The recycling shed is designed and constructed.</b>
	Expected PI	The recycling shed is designed and constructed based on models from the community-based CoRe Recycling Project implemented by the FCT.

	Actual PI	The recycling shed was not designed and constructed based on FCT models. Instead the design and construction was completed in-house with Bellairs staff and management. The signage has required continual updating and has been changed several times based on reallocation of space and new waste and recyclable streams.
<b>5</b>	<b>Milestone</b>	<b>Attractive vegetation is grown around the recycling shed.</b>
	Expected PI	The recycling shed is made attractive through beautification in keeping with the rest of the architecture and landscaping of Bellairs.
	Actual PI	Completed as expected with the addition of a rainwater catchment system.

<b>6</b>	<b>Milestone</b>	<b>Signs are posted.</b>
	Expected PI	A survey instrument administered during the Bellairs Research Festival demonstrates that staff and visitors have noted the information posted on signs about recycling around the Bellairs campus.
	Actual PI	A formal survey was not conducted at the Bellairs Forward Festival as anticipated. The Project Leader did not have the available time to complete this task. Instead Colleen Gosse assisted with signage and presented on the newly completed recycling system during the Bellairs Forward Festival. Through informal interviews with attendees, Colleen acquired a small amount of feedback that was discussed with staff.
<b>7</b>	<b>Milestone</b>	<b>The first trucking of recyclable materials, away from Bellairs to recycling facilities, is celebrated.</b>
	Expected PI	Staff and others involved in the design and implementation of the recycling program celebrate the first trucking of recyclable materials, away from Bellairs to recycling facilities, at a special staff meeting.
	Actual PI	Completed as expected on May 17, 2011.
<b>8</b>	<b>Milestone</b>	<b>There is a schedule of monthly reporting on the kinds and amounts of materials that are recycled at Bellairs.</b>
	Expected PI	A log-book is used to record the kinds, amounts, and cash deposits returned when materials are recycled at Bellairs.
	Actual PI	Completed as expected and improved upon in December 2011. Prior to December receipts and cash were kept in a designated folder and cash was recorded in a log book. In December the Project Leader created an excel file to record redeemed items and tabulate item percentages.
<b>9</b>	<b>Milestone</b>	<b>Planning, implementation and results of the recycling project are showcased during the Bellairs Research Festival held May 23 - 29, 2011.</b>
	Expected PI	The Bellairs Research Festival includes a poster and/or presentation that explain the research, planning, implementation and results of the Bellairs Recycling Program. Please refer to Working Update, May 2011, in next section of this report.
	Actual PI	Completed as expected.

## Working Updates

This section includes updates and photos to illustrate the milestone timeline and progress throughout the project.

### Prior-to-2010

Since 2004, McGill students partaking in the Barbados Field Studies Semester (BFSS) Program, assisted with implementing a plastic and glass bottle collection system at Bellairs. Over the years the staff and students constructed several wooden and wire mesh recycling cages from salvaged materials at Bellairs for the collection and sorting of plastic and glass bottles. They also sourced a 55-gallon plastic barrel from B's Bottling Depot to serve as a bottle receptacle in the student kitchen area. This recycling system, used prior to the implementation of the Bellairs Recycling Program, was not a user-friendly system. It did not have proper signage or shelter (below left - dumpster and cages), neither were the receptacles attractive, properly-sized or well placed (below right).



In 2008, students assisted again with helping to improve awareness about recycling bottles at Bellairs. Some signs were made out of recyclable materials to relay the message about rinsing bottles before recycling (right). This sign was photographed, reprinted and posted by every sink in each kitchen at Bellairs.

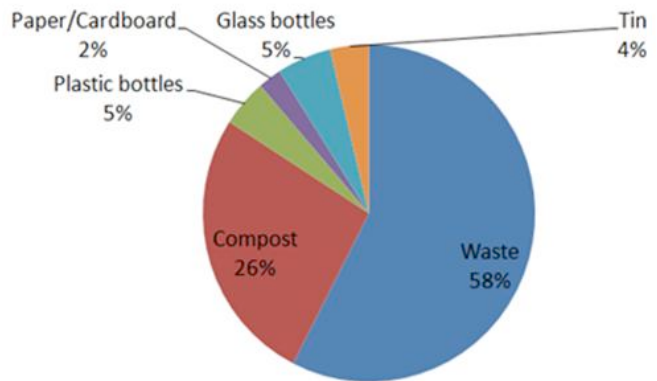


## December 2010

In December 2010 the Streamlining Hotel Waste Management Project was concluded by the BFSS 2010 internship group (below left). A waste audit conducted at Bellairs showed that over 40% of the waste is recyclable (this number is even larger when measured by volume). The audit also showed that there is a fairly equal mix of glass, plastic, tin and cardboard (below right).



## Waste Composition by Weight



## January 2011

At the beginning of 2011 the Bellairs Recycling Program project proposal was submitted to the Sustainability Projects Fund (SPF). In beginning talks with SPF officials it was important to educate about Bellairs Research Institute. Not many are aware of this research station of McGill University located in Barbados in the Caribbean (below left & right)





## February 2011

Upon further communication between then project members Jill Parlee, Nicole Garofano & Susan Mahon and Lilith Wyatt of the SPF, the Bellairs Recycling Program was approved. Planning commenced with the Bellairs staff (below left). Also, a Bellairs visitor, Greg Thompson, offered his insight into the system design (below right).



## April 2011

With staff input everyone sought out sustainable ways to build the receptacles and shed. From a local business, 'Fencing Supplies' we got the idea to use discarded buckets in a wire stand as the receptacles. Old bed frames from scrap at Bellairs were refurbished into the metal frames for the receptacles. We went to restaurants in the area to ask for bucket donations. All of the frames were built at Bellairs by Mr. Small (below left & centre). This design was used for the recycling receptacles in the student kitchen and the main kitchen (below left - being shown by Norine).





For the construction of the shed we found that a local lumber company had 'damaged' lumber for sale. This is lumber that has knots or other cosmetic defects in it which does not affect the integrity of the wood but would otherwise make it unsellable. At a reduced price we salvaged this wood. Mr. Rowe built the shed in the place of the recycling cages implemented before 2010 (below left & right). These cages were also salvaged and we intend to use them for composting bins.



### May 2011

For more recycled materials we found we could get reused 55-gallon plastic barrels from Harris Paints (below left). These were initially used for sorting the different recycling streams and for storage inside the shed (below right). The first deposit to B's was made on May 17, 2011 and celebrated at a staff meeting.



From May 26–29, 2011, the shed was on display (below left) for the Bellairs Research Festival (Forward Festival). Colleen Gosse prepared a poster (below right) and presented on the development of the Bellairs Recycling Program based on lessons learned from a student internship into a successfully implemented recycling system. Hoteliers from the area were encouraged to attend Colleen’s presentation to hear more about how they could do the same at their establishments.



**Streamlining Hotel Waste Management**  
 Alicia Drey, Genevieve Pappas, Colleen Gosse  
 Members: Jill Parker

Recycling is very important for Barbados as it is a small island. There is very little room available for landfill development and the current landfill is facing many issues such as leachate contamination, pollution, odours and fires. The Mangrove Pond Landfill is currently operating unsustainably and is nearing its lifespan.

Currently, any recyclable material is left unrecycled at the SBCC transfer station by hand. This is very inefficient, time-consuming and the high volume of waste also means that the amount of recyclables recovered is very low.

The hotel industry was targeted because of the large amount of waste produced by the industry and because many hotel guests are already accustomed to recycling in their home countries. The high number of visitors to Barbados each year provides the potential to have a tremendous impact. The high volume of guests who produce waste poses this small country's waste management facilities.

The primary goal of this project was to reduce the amount of waste entering the Mangrove Pond landfill. Working with the Future Centre Trust and the Sustainable Barbados Recycling Centre (SBRC), this project established a pilot recycling program for hotels on the island of Barbados.

Using the information gathered from the waste audits, recycling guidelines and suggestions were created for each hotel. The hotels were also invited to participate at the SBCC about the project and were given a tour of the facilities.

A full implementation plan was developed for Rosemead hotel and Bellairs Research Institute and recycling is currently taking place.

In addition to implementation, the data gathered from the waste audits was also useful in showing the future potential for recycling on the island.

The project was completed as part of the Barbados 2010 Study Semester between September and December 2010. It was a collaboration between Bellairs Institute, the Sustainable Barbados Recycling Centre and the Future Centre Trust.

The audit was conducted by performing waste audits. A list would be compiled and a meeting with the manager or environmental officer would be arranged. The meeting an initial interview was conducted and observations about the current waste management system was obtained.

Following the interview a waste audit was arranged and performed. The waste audit was conducted by going through a hotel's solid waste and sorting it into categories of recyclable and non-recyclable. In the background, the waste was sorted into cardboard, glass, plastic, paper, oil and tires and another job was for non-recyclable waste.

The results from each waste audit were then used to create a report.

The project is currently slated to expand from the hotels to include provided by the Travel Foundation—a sustainable tourism organization based in the UK. This new recycling program will target Barbados hotels and will be run by the Future Centre Trust.

In help with the development of this program, further data was collected from hotels about waste storage and collection.

In addition to the development of the new recycling program, their improvements were made to the Bellairs Recycling Centre. Issues were also raised by the Bellairs Research Institute to see the Bellairs Recycling Centre as an example of how recycling could work in a hotel.

**Bellairs Research Festival 2011**

## June–August 2011

Although the technical details of the recycling system were completed in May 2011, there were still many details to review and finalize. Lindsay Vyvey and Lara Steinhouse were two exceptional individuals who assisted with these adjustments. Lindsay Vyvey helped to make signs and set-up receptacles in the remaining kitchen areas. In these areas the buckets were impractical due to size, so reusable bags were installed instead (below left – being shown by Esther and Lindsay). Lara Steinhouse and Alicia Shepard helped to make the second deposit to B’s on June 28, 2011 (below right).





Also, through her BITS 2011 project Lara assisted with building a garden and rain water catchment system around the exterior of the recycling shed (below left). In fact all of the students of the BITS 2011 program were helpful to the Bellairs Recycling Program as they were the first users. They embraced the concepts of reduce and reuse as well as recycle, and reclaimed recycled water bottles for a class experiment (below right).



In addition to the initial project, the staff at Bellairs also constructed a shed extension to enclose the non-recyclable waste area. The enclosure screens the unsightly skips (below). An area to the left side of this enclosure is designated as the compost site. A design for the compost site remains to be realized. Compost is currently deposited in a very simple enclosure.



During the Bellairs Recycling Program project, we determined that a large amount of the waste that was going to the landfill was green waste (landscaping waste such as branches and grasses). This can be received by the SBRC and turned into mulch if delivered uncontaminated. One large dumpster was used previously for both green waste and garbage. A second, small dumpster was purchased to collect the bagged garbage from the kitchens and rooms. It is intended that the bagged garbage will be placed in the small, enclosed dumpster and the large, open dumpster will be used for green waste only. This small dumpster was placed next to the large dumpster within the shed extension area (below right). The garbage will be delivered to the SBRC on the same days that the recyclables are brought to B's for redemption. The first trip to the SBRC to deposit the garbage was also done on June 28, 2011 with the help of Jill and Lara (below left).





On August 16, 2011 a presentation was made by Project Leader, Jill Parlee, to the SPF committee to present the progress since January 2011.

### September–December 2011

In September 2011 the BFSS 2011 group of McGill students arrived. This group continued to use the recycling system and make suggestions for improvements. As BFSS Program Assistant, Jill Parlee, liaised with the students and made further adjustments to the system as per the new suggestions from the student users.

A follow-up waste audit was conducted by the Hotel Waste Minimization and Recycling Strategies internship group and reported the findings for 2011. Their waste audit results are included in Figure 2 in the following Results section.



## January–June 2012

From January to June 2012 the project team members, Jill Parlee and Susan Mahon, and the Bellairs staff continued to improve implementation and promote the success of the Bellairs Recycling Program. We found that the barrels previously being used for sorting and storage of the recyclables in the shed were being misused. Because people could not see the items in the barrels, there was a lot of mixing between the streams. This meant that before each deposit to B's, the streams would have to be re-sorted. This was very time consuming and often required more than one person to assist (below left – being shown by Jill Parlee and Jill Merriman). The Bellairs staff suggested that the barrels could be cut into rings and serve as holders in place of each barrel. Then a clear plastic bag could be hung from the holder making it easy for a user to see the contents of each stream (below centre – being shown by Cindy). The new system has improved the efficiency for Mr. Jordan, who does the weekly re-sorting in preparation for the deposit trip to B's (below right – being shown by Mr. Jordan).



Furthermore, the records from each deposit made to B's from 2009 through 2011 were transferred from the paper receipts into a Microsoft Excel Worksheet created and filled in by the Project Leader. The results were analyzed and included in Figure 1 in the Results section. The findings showed that the implementation of the Bellairs Recycling Program made a direct impact on expanding the mix of recycled items which helped to move Bellairs towards an integrated solid waste management effort.

On January 28, 2012, the Project Leader was invited to the CoRe Network, Community Recycling Workshop "Recycling Made Easy". The Bellairs Recycling Program was featured in the workshop as an informative example of a CoRe Centre: "the CoRe Centre revolves around an actual structure – a shed or a room which can be kept locked that can store recyclables for up to two weeks." (excerpt from the Workbook, Community Recycling Made Easy).

On February 11, 2012, Bellairs Research Institute was invited by the Solid Waste Project Unit of the Ministry of Environment in Barbados to present at the nationwide '4Rs Fair'. Bellairs was asked to showcase the Bellairs Recycling Program as an excellent example of a participatory and effective recycling system. The Bellairs staff participated in this event which contributed to building more awareness about the 4Rs for the Bellairs staff (below left - being shown by Jill, Roshana (Esther's granddaughter) and Esther). Bellairs was featured in the local newspaper as a key exhibitor at the event (below right - with Bellairs in upper right corner).



On April 29, 2012 the Governor General of Canada made a special visit to Barbados. For his visit he made a special request to come to Bellairs Research Institute. He wanted to see all of the research being conducted at Bellairs and encourage the continuation of these efforts. The Bellairs Recycling Program was demonstrated as an ongoing example of student research into sustainability initiatives for Bellairs, Barbados and McGill.

Throughout Environment Month in



Barbados – June 2012 – the project team members, Bellairs staff, and two summer student interns at Bellairs continued to promote the Bellairs Recycling Program. On World Environment Day June 5, 2012, as well as during two school visits on June 18 & 19, 2012, visitors learned about the outstanding sustainability efforts at Bellairs (right).

The two summer student interns, Justin Barbati and Cara Foster, will continue to advance the progress of the Bellairs Recycling Program as the Project Leader, Jill Parlee, departs the project. Specifically Justin and Cara will help the Bellairs staff to update the records of recyclables deposited at B's since January 2012, using the Microsoft Excel Worksheet prepared by Jill. They will also continue to educate each incoming visitors about the recycling program at Bellairs.

The final deliverable for the Bellairs Recycling Program is the educational video about the project. This video will be used by the SPF, Bellairs, and the Future Centre Trust to educate persons about the benefits of recycling at a small island research and learning institute.

## Results

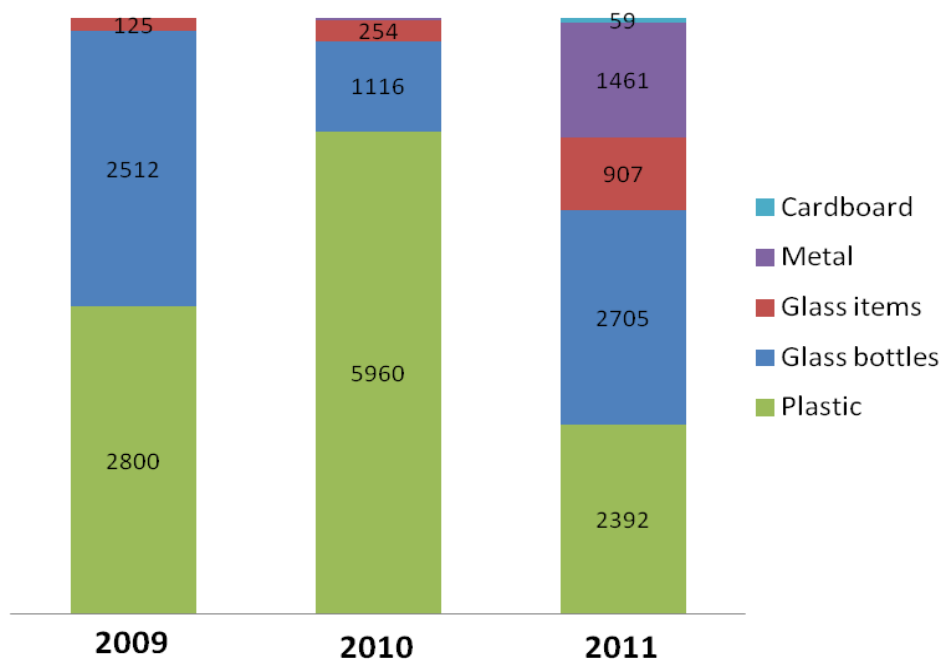
The new recycling system at Bellairs now boasts attractive and functional units. Both staff and visitors have been easily using the system for over six months. Tabulating the recycled items from 2009 to 2011 it can be seen that a greater mix of recyclables is now being recovered, with two new categories (**metal and cardboard**) which have been introduced in 2011 (Figure 1). Figure 1 was made from analyzing the records of each deposit made to B's.

There are five categories listed: **plastic, glass bottles, glass items, metal and cardboard.**

- For **plastic** there was no distinction made between plastic bottles (such as 2L soda bottles and 500ml water bottles) or plastic items (such as yogurt containers or dishwashing liquid bottles). The number on the graph represents the total number of plastics counted per year in 2009, 2010, and 2011.
- **Glass bottles** refers to all categories of beer and drink bottles. The number on the graph represents the total number of glass bottles counted per year in 2009, 2010, and 2011.
- **Glass items** refers to any other glass bottle that is not a beer or drink bottle (such as ketchup bottles, rum bottles and jam jars). The number on the graph represents the total number of glass items counted per year in 2009, 2010, and 2011.
- **Metal** refers to metal items (such as cans for beans or tomatoes, tuna cans, drink cans and aerosol cans). The number on the graph represents the total number of metal items counted per year, only recycled in 2011.

- **Cardboard** refers to all cardboard (such as cereal boxes, vegetable shipment boxes for the kitchen, and cardboard toothpaste packaging). The number on the graph represents the total weight of cardboard counted per year, only recycled in 2011.

**Figure 1 - Composition of the amounts and types of materials being recycled at Bellairs, 2009, 2010, and 2011**

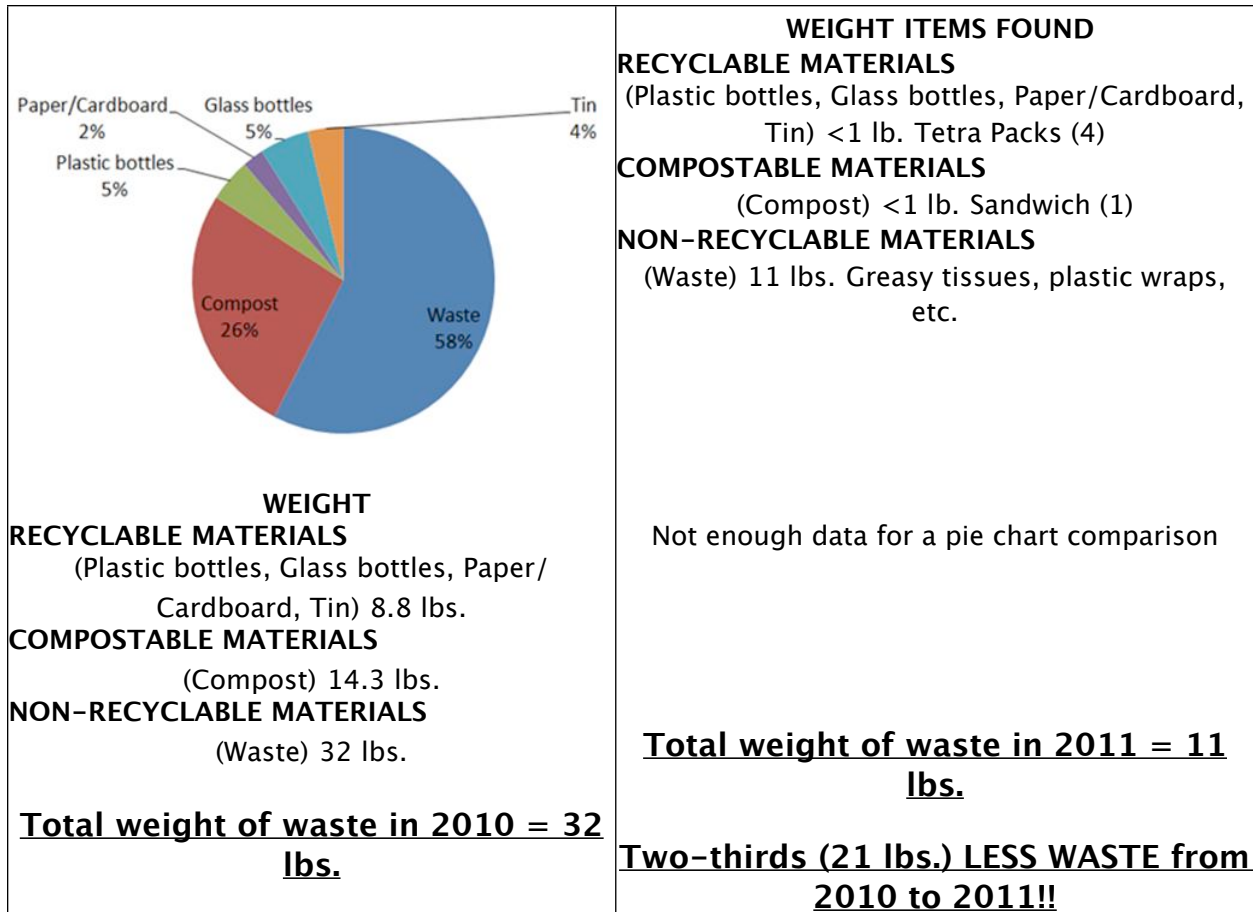


It is also clear through a comparison of the waste audits completed by the BFSS internship groups in 2010 and 2011 that Bellairs has seen a reduction in non-recyclable waste through its 4Rs efforts (Figure 2). The 2011 team found two conclusive results. Firstly, there was a near elimination in the amount of recyclables entering the waste stream since nearly all of the recyclables were now being deposited directly into the recycling receptacles and carried to the recycling shed. Secondly, there was a two-thirds reduction in non-recyclable waste from 2010 to 2011. This second observation is largely attributed to reduced packaging for the student lunches and better awareness among students. In 2010 the lunches were prepared by external caterers who used Styrofoam containers and bottled drinks. In 2011 the lunches were prepared by the Bellairs chef who used minimal amounts of plastic wrap for wrapping sandwiches. Tupperware containers were also bought for the students to use for transporting their lunches. Furthermore, the students were more aware of their own purchasing decisions because of the improved recycling system.

**Figure 2 - Bellairs waste audit results, 2010 and 2011**

2010	2011
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## Discussion

Through the Bellairs Recycling Program we achieved all of the anticipated outcomes:

1. Recycling facilities and a recycling program that are understood, constructed and used by the staff at Bellairs Research Institute and, understood and used by visitors at Bellairs Research Institute;
2. Reduction of waste entering the landfill;
3. Reduction in the ecological footprint of Bellairs; and,
4. Increase in public awareness and attention to sustainability efforts through leading by example.

We achieved all of these desired outcomes through adopting the “4Rs – **rethink, reduce, reuse, recycle**” approach. The first visitors to use the system have been the BITS and BFSS students so the main results pertain to interactions between these students and the staff members.

**Rethinking:** There was increased communication between the students and Sharon, the main kitchen chef, about ways to put out lunches in order to decrease packaging and waste.

**Reducing:** The students efficiently packed away leftovers after meal times and organized the common fridges so as to keep food fresh, use it up and not let it go to waste.

**Reusing:** The students reused their plastic bags when making trips to the grocery store for weekend meals.

**Recycling:** The students and staff continually adjusted the recycling shed to accommodate for new streams as the types of recyclables accumulated by the students and received by B's were monitored.

The most remarkable result from the Bellairs Recycling Program has been the increasing mix of recyclables. There are several reasons for this change that must be highlighted. This development is especially due to the support of staff members to develop new streams and the inclusion of the main kitchen in the recycling program. Furthermore, we know that the visiting groups play an important role in determining what and how much is consumed and ultimately recycled. Lastly, with increased security and timely redemption visits we predict that the numbers will increase as items are now less available to vagrants.

There are three valuable lessons we have learned:

**1. Communication**

- It is of vital importance to encourage communication between all users of the system. Mainly, staff, visitors and management at Bellairs. This communication keeps all channels open to discuss improvements and remedies blunders made in the process. Every visitor, staff member and affiliate of Bellairs can have something to contribute to this system.

**2. Updating**

- The practices of the guests can be completely different from one group to the next, and more often than not recycling is done in a different way in the guests' countries than here in Barbados. Furthermore, the recycled streams fluctuate even in Barbados depending on the recyclables market for B's. This means that signage and streams need to be monitored and adjusted to suit these changes as they arise in order to be proactive in communication.

**3. Public awareness**

- Bellairs has become one of the very few organizations in Barbados operating such an in depth approach to recycling and the 4Rs. We need to welcome the opportunities to showcase this system as a working example for other organizations in Barbados and McGill in order to broaden our culture of sustainability.

## Conclusion

The Bellairs Recycling Program has been a great opportunity to work on activities that directly contributes to building a culture of sustainability at



Bellairs Research Institute of McGill University and identifies Bellairs as a sustainability campus of McGill University. We thank the Sustainability Projects Fund for recognizing the unique challenges of Barbados and assisting us in this project. The lessons learned tell us that we need to consider the people part of any project and continually monitor, review and evaluate the project to bring it to its full potential.

## Appendices

### Appendix A – Thank you letter to Jill Parlee, Project Leader, Bellairs Recycling Program



**McGill**



**Bellairs Research Institute of McGill University**

**Holetown, St. James, Barbados**

**Tel (246) 422-2087 Fax (246) 422-0692**

**Email 1: [bellairs@caribsurf.com](mailto:bellairs@caribsurf.com)**

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**<http://www.mcgill.ca/bellairs>**

June 21, 2012

#### **Letter of Thanks for the Coordination of the Bellairs Recycling Program at Bellairs Research Institute of McGill University in Barbados.**

Dear Jill,

On behalf of Bellairs Research Institute of McGill University I wish to thank you for your contribution to Bellairs in coordinating the Bellairs Recycling Program project. In addition to pursuing your studies as a Master of Science student at the University of the West Indies you have committed your time to fulfilling the needs of this project. Because of your efforts, the project has gone above and beyond the original scope of the project as outlined in the SPF proposal in January 2011. I wish to recognize the specific contributions you have made as follows:

- Sourced and collected re-used and recycled materials in keeping with the project goal
- Managed the project finances and kept the project under budget by using re-used and recycled items
- Drew together and coordinated input from all project contributors including Bellairs' staff, visitors to Bellairs, students of Bellairs and the Barbadian community to ensure that the project kept momentum and built awareness within the broadest possible range of persons
- Helped with the physical aspects of project implementation -- installing receptacles and signage as well as sorting the recyclables and making deposits to B's
- Created a Microsoft Excel Worksheet for recording recycling deposits and input existing data
- Participated in and helped to coordinate all of the public outreach activities for the project
- Prepared the Final Project Report and created the Final Project Video over several days of work

I am very pleased to recognize these efforts as budgeted items of services (Report writing, Video creation and Administrative assistance) due to the fact that the project has come under budget overall from your work. I see these as important services without which the project would not have been such a success or have been reported on fully according to the requirements of our generous funder, the SPF. This gesture is in keeping with the SPF philosophy that the human contribution to sustainability projects must be appreciated equally

to the material needs of the project. As you have pointed out in this report, people are critical to making these projects happen.

Warm wishes.

A handwritten signature in purple ink that reads "Susan Mahon". The signature is written in a cursive, flowing style.

Susan Mahon  
Managing Director

## Appendix B – Letter of Support from Bellairs Research Institute



**McGill**



**Bellairs Research Institute of McGill University**

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### **Office of Sustainability**

Room 216, Ferrier Building, 840 Dr Penfield Avenue

Montreal, Quebec H3A 1A4

Sep 30, 2012

[rethink@mcgill.ca](mailto:rethink@mcgill.ca), [lilith.wyatt@mcgill.ca](mailto:lilith.wyatt@mcgill.ca)

VIA E-MAIL

For the attention of: Lilith Wyatt; Sustainability Projects Fund Administrator

### **Letter of Support for the Proposal to Implement a Comprehensive Recycling Program at Bellairs Research Institute of McGill University in Barbados.**

Dear Ms. Wyatt,

Thank you very much for considering Jill Parlee's proposal (attached) to implement a comprehensive Recycling Program at Bellairs Research Institute of McGill University in Barbados.

This letter is to commend Jill on taking the initiative to create this proposal and to say that we at Bellairs are 100 per cent in favour of implementing it.

Bellairs joins with all the other campuses of McGill, and with the Office of Sustainability, to create a culture of sustainability at McGill. On behalf of Jill and all the members of staff at Bellairs Research Institute, I give assurance that we are on board and committed to doing our part – and to encouraging all our visitors to Bellairs to also doing their part.

I also assure that we intend to allocate resources and funds to the Recycling Program at Bellairs so that it is operated and managed according to the principles of sustainability.

Warm wishes from Barbados,

Susan Mahon  
Managing Director

cc: Ms. Jill Parlee; Coordinator, Bellairs Research Festival

cc: Mrs. Celia Licorish, Administrator, Bellairs Research Institute of McGill University  
cc: Professor Martin Grant; Dean of Science; Faculty of Science; McGill University  
cc: Ms. Kathryn Peterson, Administrator, Faculty of Science; McGill University

## Appendix C – Letter of Support from Future Centre Trust



Educate. Conserve. Protect.

27 January 2011

### **TO WHOM IT MAY CONCERN**

Dear Sir/Madam

#### **RE: CONSTRUCTION OF RECYCLING COLLECTION CENTRE AT BELLAIRS RESEARCH STATION**

The Future Centre Trust has experience in the development of Community Based Recycling Collection Centres and is currently undertaking an expanded project to initiate more centres across the country in local communities.

The work completed at the Bellairs Research Station during the implementation of the project Streamlining Hotel Waste, highlighted the ability for Bellairs to become one of these active community collection points – both from a locally supported initiative and for the benefit of guests who would find recycling a regular daily activity.

We are pleased to share our knowledge with Bellairs and support the application for construction of a collection centre on site to reduce the Station's impact to the local ecological footprint and certainly to reduce the impact to the islands overfilled landfill site.

Thank you again for your support and consideration of this application. Should there be any questions, please don't hesitate to contact the undersigned.

Kindest regards,

NICOLE GAROFANO  
Administrative Director

***"We do not inherit the earth from our fathers; we borrow it from our children"***

*Chairman: Mrs Vivian-Anne Gittens Patron: Mr Harold Hoyte GCM*

Little Edgehill, St Thomas, Barbados, WEST INDIES

P: (246) 625 2020 F: (246) 620 2021 E: [info@futurecentretrust.org](mailto:info@futurecentretrust.org) W: [www.futurecentretrust.org](http://www.futurecentretrust.org)

## Appendix D – Press Releases from the Future Centre Trust

### [Bellairs Research Institute receives recycling funding](#)

**Posted By:** nicole on February 28, 2011

Thanks to the involvement with in the **Bellairs** Field Studies Semester from September to December 2010, the Future Centre Trust was invited to meet with Ms Lilith Wyatt, Sustainability Projects Fund Administrator at The Office of Sustainability of **McGill University** in Montreal on February 25.

The office has provided funding to the **Bellairs Research Institute** to implement the recycling programme outlined as part of the project mentored by Jill Parlee as representative of the FCT last year.

Jill is now working with the **Bellairs Research Institute** to develop the inaugural Research Fair to take place at the end of May this year and as part of that display, the Institute wanted to engage the visitors to see a recycling system in place and working with the residents of the facility.

These funds will assist in the setup of the systems and the bins, along with educational material for those who stay at the institute all year round.

Congrats to Susan and Jill for your efforts and its great to see the second project now being fully implemented from the project which Colleen, Genevieve and Alicia worked on for their Internship! Nice work!!

### [Bellairs Interns link with FCT](#)

**Posted By:** nicole on December 10, 2010



The **McGill University** students arrived in Barbados, most for the first time, at the beginning of September and set about deciding on their intern projects under the **Bellairs Research Institute** Barbados Field Studies Semester. The FCT put forward a total of four project concepts – three more developed and one as a concept note.

The three projects accepted as areas of focus were two related to Waste Management and one on Environmental Education.

Streamlining Hotel Waste Management was accepted by Colleen Gosse, Alicia Dery and Genevieve Paquin, with the project mentored by Jill Parlee under the auspices of the FCT. The girls set about inviting hotels to be involved in the pilot project thanks to a previous presentation to the members of the Barbados Hotel and Tourism Association (BHTA) by FCT's Nicole Garofano in August.

One of the project's objectives was to assist hotels in their efforts of sorting waste in house with an aim to increase the amount of recyclable materials that could be recovered. Four locations were selected for waste audits, to see exactly what each location created in terms of waste products on a daily basis, with each location proving very different. Some ten hotels were interviewed to understand their current process and assess how such a streamlining could assist their own goals of introducing or increasing recycling.

Partners to the project, Sustainable Barbados Recycling Project (SBRC), were keen to participate and see the results to assist in the reclamation of clean recyclable materials from the current stream of waste that heads to their facility at Vauclose daily.

The aim now is the expand this pilot project to a longer term project with additional partners who appreciate the benefits such a project can bring – both to the hotels, their visitors and the reduction of landfill that enters Mangrove Pond every day.



The second project also focused on Waste Management, this time from a commercial use perspective. Jill Merriman and Nola Kilmartin, Graduate Students in Planning, took on the task to design a waste management facility for commercial users in Barbados which will now become the blueprint for larger sites wishing to streamline their waste practices and again reduce the amount of waste heading to our ever expanding landfill. Through commercial waste sorting, companies can increase the amount of cardboard, paper, plastics, glass and light metals which would be available for recycling.



Our Education focused team was made up on Laura Gapski, Benan Berhan and Kaitlin Koshurba who assisted their Mentor, Krystal Boyea, with the development of curriculum for the Mobile Learning Centre now being designed under the auspices of the FCT. Krystal of course came to the FCT in May of 2010 with the intention of becoming our

Programme Assistant, however with a large interest in the development of our Mobile Learning Centre.

Thanks to Laura, Benan and Kaitlin for accepting this project, Krystal was given a wonderful opportunity to further develop what has become the basis of the design and the content for the centre moving forward. More on the Mobile Learning Centre in the New Year, but it will be a great contribution to the environmental learning of the Barbadian public.



Thank you also to Susan Mahon, Field Studies Coordinator and Managing Director of the **Bellairs Research Institute** for her support of the Future Centre Trust and allowing these project areas to be included for consideration by the students for the 2010 Field Studies Semester.

For those interested, reports are available on all 3 projects, so please contact the FCT if you would like more information from these reports.

Good luck girls and on behalf of the FCT and your mentors, we thank you for your work! It has helped immensely!

## [Travel Foundation selects FCT for Barbados Hotel Waste Project](#)

**Posted By:** nicole on May 31, 2011 in [news](#) – **Comments:** [No Comments](#) »

Thanks to the Pilot Project initiated last year between September and December with the assistance of the **Bellairs** Field Studies Semester Students from **McGill University**, the Mentorship of Jill Parlee and the Contribution of the Sustainable Barbados Recycling Centre, the FCT has been awarded the contract to assist the Travel Foundation in the next phase of their Caribbean Wide Hotel programme focused on Waste Management in the Hotel Industry.

“The Travel Foundation has been working with hoteliers in the Caribbean since 2009 on a project to save water and energy, called ‘Switch off, Save Big’. This

project assisted hoteliers in reducing their water and energy consumption and, to date, collectively the hotels have saved close to £1 million on their water and energy bills. This has resulted in them being able to utilize the savings in other areas of their businesses, including retention of staff.

In May 2011, the Travel Foundation partnered with The Future Centre Trust, Barbados, and extended the programme to include waste prevention and reduction. The partnership aims to ensure that hoteliers receive the relevant tools required to implement a waste prevention programme in their hotel. This project will run until May 2012, providing training on implementing waste reduction measures and recommendations.

It is estimated that by implementing the reduction measures, hoteliers can reduce their overall waste by 10%. This can also have a positive impact in terms of reduction on the hotel's overall expenditure. All hotels involved in the project will receive a final waste audit report, along with their reduction comparisons over the one year period.

Hoteliers interested in reducing their water, waste and energy consumption should visit [www.thetravelfoundation.org.uk/greener-accommodations](http://www.thetravelfoundation.org.uk/greener-accommodations) for free online tools.

This project is part of a range of water, energy and waste reduction initiatives run by the Travel Foundation. The Travel Foundation is a UK charity that cares for the places we love to visit. You can find out more at [www.thetravelfoundation.org.uk](http://www.thetravelfoundation.org.uk)

The Project Consultant for this project is Lani Edghill, who has already worked with one small hotel under the Green Business Barbados Programme being Rostrevor Hotel. She is being assisted by a group of interns from UWI and from **McGill University** who are assisting in data collection and waste audits which are both so critical to the measurement of success of a project such as this. The project has an aim to work with up to 30 hotels in Barbados throughout the course of the year.

This project is a partnership of the Travel Foundation and the FCT with the funding assistance provided by CDE.