

Education on Water Conservation and Stormwater Management in the Shediac Bay Watershed

Final Report



By:

The Shediac Bay Watershed Association Inc.
Jolyne Hébert

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Acknowledgements

The Shediac Bay Watershed Association Board of Directors sends thanks to the numerous groups and individuals that contributed to making our programs a success again this year. In particular, the SBWA extends its appreciation to following individuals and organizations for their interest and involvement with the Shediac Bay Watershed Association during the 2017-2018 fiscal year.

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- New Brunswick wildlife trust fund
- Fisheries and Oceans Canada
- Environment Canada
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- TD friends of the Environment
- Shediac Market in the Park
- Groupe de développement durable du pays de Cocagne
- South-eastern Anglers Association
- Vision H2O
- Petitcodiac Watershed Alliance
- New Brunswick Environmental Network
- Town of Shediac
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- Pointe-du-Chêne Marina
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- Acadie-Nouvelle
- CBC News
- Times & Transcript
- Amis de la Kouchibouguacis
- Southern Gulf of St-Lawrence Coalition
- Bassin versant de la baie de Caraquet
- Home Hardware Grande-Digue
- Nature NB
- Club les ami(e)s de la nature du Sud-est
- Scoudouc River Canoë Club

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1 Introduction

1.1 Description of the Shediac Bay Watershed Association

The Shediac Bay Watershed Association (SBWA) was founded in 1999 as a result of growing concerns from local community residents over the ecological health of Shediac Bay. In order to establish a long-term water quality-monitoring program, a community-based association was formed.

The Shediac Bay Watershed Association vision and mission statements are as follows:

Our Vision – Communities working together to foster a healthy ecosystem that will sustain the quality of water for future generations.

Our Mission – The SBWA will accomplish its vision through education and community stewardship.

The Board of Directors is composed of the following members:

Mr. Armand Robichaud, President	Mr. Gerry Dionne	Ms. Petrina Ferris
Mr. Denis Haché, Vice-President	Mr. Léo-Paul Bourgeois	M. Louis Vallée
Mr. David Dunn, Past President	Mr. Claude Léger	M. Gilles Thibault
Ms. Helen Hall, Treasurer	Mr. Marc Fougère	M. Bill Belliveau
Ms. Frances Kelly, Secretary	Ms. Germaine Gallant	Ms. Sophie Landry
Mr. Pierre Landry	Mr Arthur Melanson	

The Shediac Bay Watershed Association gratefully receives guidance, donations and in-kind support from various organizations and interest groups consisting of business owners, industry, foresters, farmers, residents, cottage owners, recreation boaters and swimmers, conservation groups and community organizations within the Shediac Bay Watershed.

Public education has always been an integrated part of all the Shediac Bay Watershed Association's initiatives. Every year, the Association organizes activities meant to engage the public in environmentally friendly practices such as litter cleanup and tree planting, hoping to raise awareness and to build good habits.

Our strong presence in the public eye is a major factor to the success of many of our initiatives, and to keep the public informed of the great work being accomplished by the association.

1.2 Overview of the Shediac Bay Watershed

The Shediac Bay Watershed covers 420 km² of land area and stretches along 36 km of coastline, from Cap Bimet to Cap de Cocagne (Fig. 1). The Shediac Bay Watershed is composed of two major river systems emptying into Shediac Bay: the Shediac River and the Scoudouc River. The Shediac and the Scoudouc Rivers are characterized by small tributaries covering watersheds of 201.8 and 143.3 km², respectively. The Shediac River is composed of two major water arms. The northern water arm is created by the convergence of the McQuade Brook, the Weisner and the Calhoun Brook. The southern water arm of the Shediac River is the continuation of the Batemans Brook. Water velocity in both rivers is generally weak due to the gentle regional elevation. The watershed boundaries stretch into both Kent and Westmorland County and cross into both the Shediac and Moncton Parish.

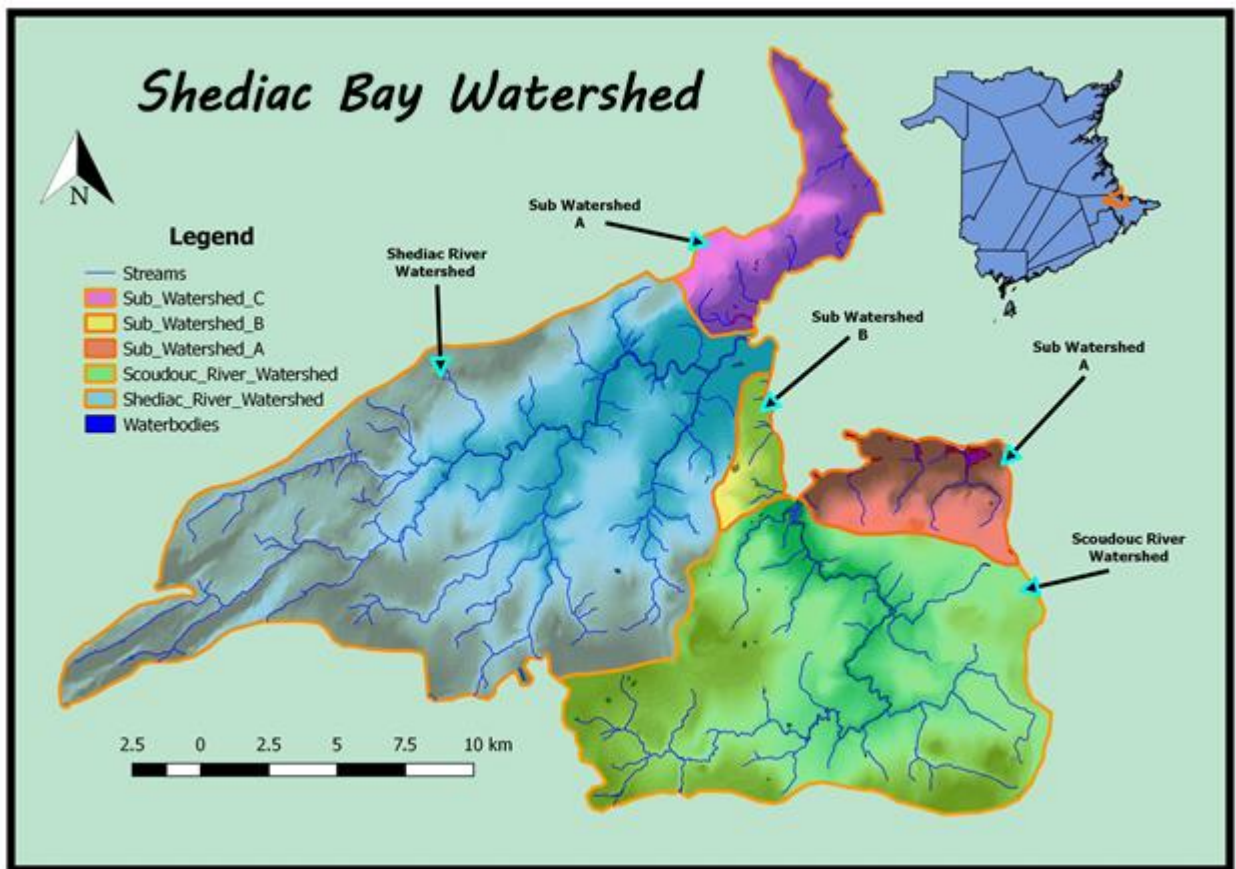


Figure 1: Map of Shediac Bay watershed boundaries

2 Water Conservation and Stormwater Management

The education program of the SBWA's has been focused on the theme "Water Conservation & Stormwater Management" over the last 2 years. Those two major categories revolves around the topic of climate change and the need for adaptation. The climate change predictions for the Maritime Provinces, as described by the Department of Environment and Local Government of New Brunswick; "Wetter, Warmer and Stormier". The predictions include an increase in the frequency and severity of heavy rainfall events, which will inevitably cause greater risk of erosion, stress on infrastructure, runoff and flooding. (Government of New Brunswick, 2018)

These changes in our climate brings the need for adaptation using various methods of stormwater management. An important component of this project is to speak about climate change, explain various methods to manage the increase of stormwater runoff at the municipal and domestic level, and implement concrete actions of stormwater management. The focus of these method has been on rainwater catchment systems (rain barrels) and rain gardens, being the most affordable and effective small scale actions.

2.1 Rain Garden

A new rain garden was built in a public park (Centennial Park) in the Town of Shediac, in the summer of 2017. The garden was placed in a strategic location for both filtration of runoff that eventually flows into the bay, and is also next to a path with heavy foot traffic heading towards the shopping centre of Shediac. The garden was built in a low level of the park where the surface water drains toward a ditch that feed into a small brook. This small brook gets channelled under the city and exists into a coastal wetland, before then being emptied into the Shediac Bay. The Centennial Park includes: a playground area for children (with sand surfaces), a paved skate park area, a paved walking path, a gazebo structure, and a gravel dog park. Based on the measurements taken, the total surface area that drain towards the rain garden is 1,318 square metres, within which 375 square metres is pervious (28%) and 942 square metres (72%) is impervious.

The new garden was made with the help of the Town of Shediac for disposal of the top soil, and *EOS Eco-Energy*, who was hired to plan the logistic of the construction of the garden. Plants, shrubs and trees were sources from local nurseries. An interpretation panel has been installed along the walking path.





Figure 2: Rain garden construction photos, 2017

2.2 Rain Barrel Giveaway

Since the beginning of this project in 2016, 100 collapsible rain barrels (200L) have been distributed to citizens living within the communities in the Shediac Bay watershed boundaries. In addition, a public workshop titled “How to build your own rain barrel” was held in 2016, and 16 food grade plastic barrels (200L) were given to the workshop participants.

The collapsible rain barrels were purchased in bulk through the local Kent. The kiosk at the Shediac Farmer’s market was a crucial tool for the recruitment of people interested in participating in the project. The conditions for receiving a rain barrel were:

- People must live in or near the boundaries of the Shediac Bay watershed
- They needed to sign an agreement confirming they understood the reasons for the project and promised to install the rain barrel

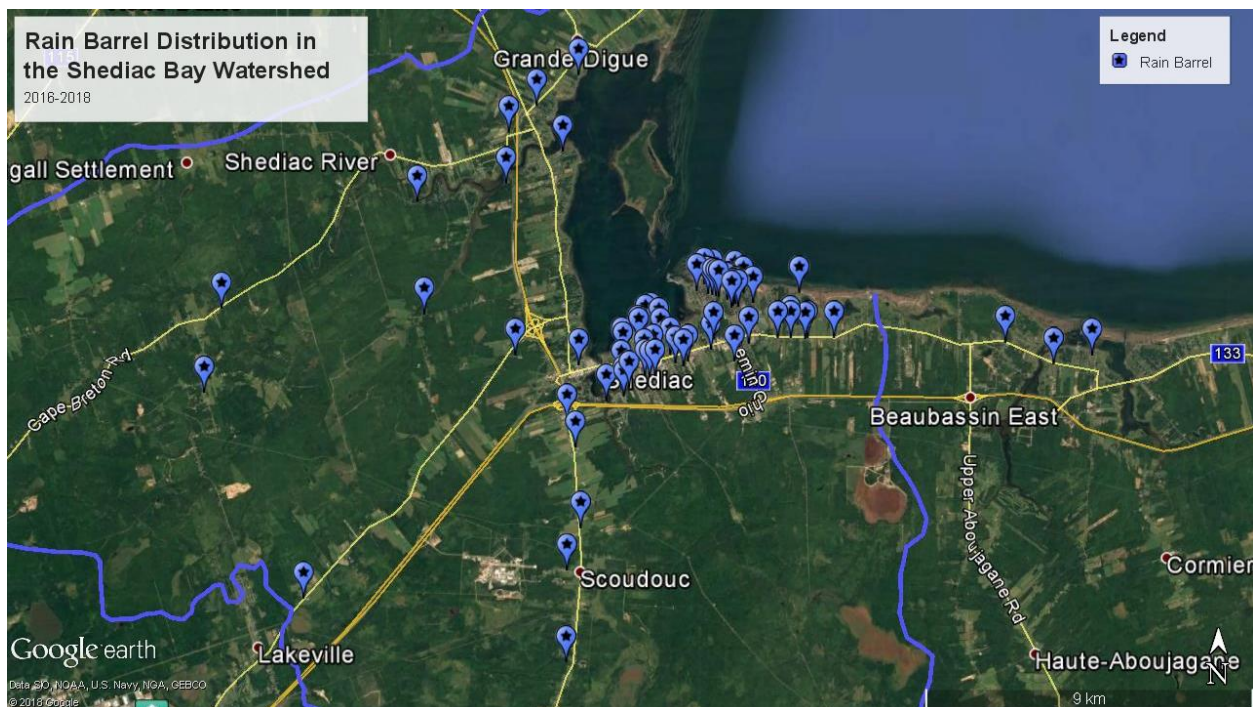


Figure 3: Map of rain barrel recipients within the Shediac Bay Watershed, 2016-2018

2.3 Water Conservation Kits

The SBWA has given out 100 water conservation kits in the first 2 years of the “Water Conservation and Stormwater Management” project; 43 in 2016 and 57 in 2017. The orders were placed with the local Kent store, who was able to provide bulk orders at reduced cost on products from the *EcoFitt* distributor. The items for the conservation kits include:

- 3 L toilet tank bank
- Faucet aerator for the kitchen sink
- Faucet aerator for the bathroom sink
- Leak detection tablet for the toilet reservoir
- Basic 5-minute shower timer (hourglass type)

The items were placed in a reusable bag with the SBWA logo, and included an instruction sheet and a pamphlet (section 2.4). They were given away at the Shediac Farmer’s Market to local residents only, to participants of the rain barrel workshop (2016), to recipients of rain barrels, and in schools following a presentation.



Figure 4: Water Conservation Kits given away in 2016-2018


2.4 Education Pamphlet

A bilingual educational pamphlet was produced in 2016 to hand out at any educational event. A local printing company was used to produce 250 copies. All pamphlets have been distributed, and another order will be placed for next year. The pamphlet information includes: statistics on water consumptions in Canadian households; information on climate change; the importance of managing the surface water; information on the Town of Shediac's source of drinking water; tips and tricks on how to conserve water at home; and information on Rain Barrels and Rain gardens.

Climate Change: Increased Rainfall Events

Climate models predict that by the year 2100, the average global temperature will increase by 1 to 6 degrees Celsius. A small shift in average temperature can cause extreme weather events to happen more often.
Environment and Local Government of New Brunswick

Due to our ever-changing climate, we are seeing an increase in the frequency of severe rainfall events, resulting in more flooding and wastewater system overflows. Rain barrels and rain gardens help reduce the demand of runoff evacuation.



Only 3% of Earth's water is fresh water, and contrary to what some may believe; this resource is limited.

Water on Earth

Category	Percentage
Salt Water	97%
Freshwater	3%

Freshwater

Category	Percentage
Rivers, brooks, lakes	1%
Glaciers	77.14%
Atmosphère	0.03%
océans/baies	22.84%

Did you know that the water distributed in the Town of Shediac's municipal system comes from 7 underground wells?

Tips for Water Conservation at Home

- Take quick showers: on average, standard showerheads uses 47.5 L during a 5 minute shower (9.5 Litres per minute).
- Install a low-flow showerhead distributing 5.7 LPM (reduces water consumption up to 40%).
- Install faucet aerators in the kitchen and bathroom (5.7 LPM). Water pressure won't be compromised.
- Install a toilet water reduction device like a dual flush or volume reducer in the toilet tank. Fix toilet leaks!
- Install rain barrels on downspouts of the house gutter system.

A faucet leak of one drop per second wastes 10,000 litres of water per year!

Rain Barrels


The demand for water nearly doubles during the summer season, making water conservation all the more crucial.

An excellent way to conserve water is to install rain barrels on the downspouts of the roof gutter system. That rain water can be reused for watering plants, washing vehicles, and for many more tasks!

Rain Gardens

A garden containing water tolerant plants, located at the lowest point on your property, will capture rainwater and reduce the load on water treatment systems and municipal drains. These gardens also allow ground water aquifers to gradually recharge.

Water Conservation & Stormwater Management



Conservation de l'eau & Gestion des eaux pluviales

Saviez-vous que les Canadiens sont les deuxièmes plus grands consommateurs d'eau par habitant dans le monde?

La conservation de l'eau contribue à réduire:

- La demande en eau provenant des aquifères souterrains et des bassins municipaux d'alimentation en eau
- L'usage des systèmes de traitement et de distribution de l'eau potable
- L'évacuation des eaux usées vers les systèmes d'épuration et les fosses septiques
- Le débordement d'eaux pluviales contaminées lors de fortes pluies
- La pollution des eaux usées déversées dans nos cours d'eau par des matières organiques, des produits chimiques, des bactéries, etc.

L'eau est une ressource essentielle et vitale pour nos besoins quotidiens, il est donc très important de mettre en pratique des méthodes pour conserver celle-ci.

Au Canada, chaque personne utilise en moyenne 250 litres d'eau par jour.


UTILISATION MOYENNE D'EAU PAR PERSONNE/JOUR

Category	Volume (L)	Percentage
Extérieur	27.0	12%
Washing	46.7	21%
Toilette	41.3	19%
Shower	33.0	15%
Leaks and others	33.2	15%
Baignoire	7.1	3%
Lave-vaisselle	3.0	1%

Changements climatiques: augmentation des événements de pluie

Les modèles climatiques prédisent que, d'ici l'an 2100, la température mondiale moyenne augmentera de 1 à 6 degrés Celsius. Nous observons déjà l'augmentation de la fréquence des événements météorologiques extrêmes.
Environnement et Gouvernement Local du Nouveau-Brunswick

En raison du changement de notre climat, nous constatons une augmentation de la fréquence des événements pluviaux importants, causant des inondations et le débordement des réseaux d'eaux usées. Les bords pluviaux et les jardins de pluie aident à réduire la demande d'évacuation des eaux de ruissellement.



Seulement 3% de l'eau sur Terre est l'eau douce, et contrairement à ce que certains pensent, cette ressource n'est pas infinie.

Eau sur Terre

Category	Percentage
Eau Salée	97%
Eau Douce	3%

Eau Douce

Category	Percentage
Rivers, ruisseaux, lacs	1%
Glaciers	77.14%
Atmosphère	0.03%
Sous-sol/baies	22.84%

Saviez-vous que l'eau distribuée dans le système municipal de la Ville de Shédiac provient de 7 puits souterrains?

Trucs et astuces pour conserver l'eau

- Prendre des douches rapides; les pommes de douches régulières utilisent en moyenne 47.5 L pendant une douche de 5 minutes (9,5 litres par minutes).
- Installer une pomme de douche à débit réduit de 5,7 LPM (réduit jusqu'à 40% de la consommation d'eau).
- Installer des aérateurs de débit de 5,7 LPM sur les robinets de cuisine et de salle de bain. Ils n'affectent pas la pression de l'eau.
- Installer un dispositif de réduction d'eau des toilettes, tel qu'une chasse double ou un coupe-volume dans le réservoir. Réparer les toilettes ayant des fuites!

Le robinet qui fuit au rythme d'une goutte par seconde entraîne un gaspillage annuel d'environ 10 000 litres d'eau!

Baril récupérateur d'eau de pluie

Pendant l'été, la demande en eau est presque le double de la norme annuelle, la conservation de l'eau pluviale est donc essentielle.

Un excellent moyen de conserver l'eau est de recueillir l'eau de pluie du toit de la maison à l'aide de bords installés sous la descente des gouttières. Cette eau peut être réutilisée pour arroser les plantes, laver les voitures, et pour bien d'autres tâches!

Les Jardins pluviaux

La création d'un jardin contenant des plantes tolérantes à l'eau, situés au niveau le plus bas d'un terrain, permet de retenir l'eau pluviale pour réduire la charge des systèmes de traitement et des égouts municipaux. Ils permettent aussi de recharger les aquifères.

Water Conservation helps to reduce:

- Demand on water from ground aquifers and municipal water reservoirs
- Wear and tear on drinking water treatment and distribution systems
- Discharge of wastewater to treatment systems or septic tanks
- Overflow of contaminated stormwater during heavy rains
- Discharged of wastewater containing pollutants such as organic materials, chemicals, bacteria, etc. into our waterways.

Water is an essential and vital resource for our daily needs, therefore it is very important to practice water conservation methods.

In Canada, each individual uses an average of 250 litres of water per day.

AVERAGE WATER USE PER PERSON/DAY

Category	Volume (L)	Percentage
Extérieur	27.0	12%
Washing	46.7	21%
Toilet	41.3	19%
Shower	33.0	15%
Leaks and others	33.2	15%
Bathtub	7.1	3%
Dishwasher	3.0	1%

Figure 5: Water Conservation & Stormwater Management pamphlet

3 Environmental Management, Outreach, Education and Engagement

The Shediac Bay Watershed Association has expanded its education program in 2016-17, thanks to the support of the Environmental Trust Fund and other funding partners. Regular annual activities such as public tree planting events were continued and new school programs and presentations have been developed. The result is that the Association has a greater presence in local schools and in the public eye. The SBWA was also available for special events and presentations when invited. The following describes these activities and a summary table can be found at the end of this report (section 5.7, Table 2).

3.1 Public Tree Planting Events

Every year, the SBWA organizes or assists in public tree planting events around the municipalities within the watershed boundaries, in either public parks or school grounds. This section provides a summary report on the trees planted in 2017.

3.1.1 TD Tree Day

For the third consecutive year, the SBWA has partnered with the TD Tree Day environmental fund and the Town of Shediac to organize a public tree planting event on October 15, 2017. With the help of approximately 25 wonderful volunteers and SBWA staff, 150 native trees were planted in the Ohio Road Marsh. At the beginning of the event, a quick word of introduction was given to the group about the history of the site, having received flooding damage in the past that effectively destroyed the buffer zone, and the importance of replenishing the lost trees to enhance the habitat and protect the sensitive ecosystem.



Figure 6: Group photo of TD Tree Day volunteers, 2017

3.1.2 Celebrating Canada’s 150th – Tree Canada

In celebration of Canada’s 150th anniversary, the Town of Shediac organized a public tree planting event in partnership with Tree Canada. The goal was to plant 150 native trees on the school grounds of the MFB elementary school. The SBWA was asked to assist with the facilitation of the event; ensuring proper planting of trees, providing shovels, placement of trees, etc—.



Figure 7: Volunteers planting trees, #Canada150

3.1.3 Tree Planting of the Grande-Digue Elementary School

The *Groupe de développement durable du pays de Cocagne* organized a tree planting event at the Grande Digue School on May 29 2017. The students from the 6th to the 8th grade all took turns coming outside to plant trees along their school yard. SBWA was asked to provide help in teaching kids how to plant trees, to provide equipment, etc.



Figure 8: Tree planting day Grande-Digue School, May 2017

3.2 Shediac's Trails Day

On June 3rd 2017, the Town of Shediac held its annual Trails Day event. The SBWA has a nesting platform for the common Tern colony of Shediac, located near a walking trail in Pointe-du-Chêne. For the second consecutive year, a lookout station was set up on the trail to hand out water and snacks provided by the Town of Shediac, and to have several pair of binoculars to look at the nesting birds.

People walking the trails that day got to stop and learn about the common tern, the artificial nesting habitat project, and to enjoy some refreshments.



Figure 9: Photos of the SBWA tern platform and Trails Day poster

4 General Presentations

The SBWA is always available to do presentations to the general public, organize workshops and meetings with various other groups. The following section will summarize the activities and meeting for the 2017 fiscal year.

4.1 Shediac Bay Watershed Association's Annual General Meeting

The SBWA holds an AGM every year in the month of June. Members of the public are invited through our member's invite list, public announcement and social media. This year, the meeting was held at the Shediac Multipurpose Centre, on June 22, 2017. Including SBWA Board of Directors, Staff, Town of Shediac Council and members of the public, 54 people were in attendance at the meeting. This year was a larger event than usual, due to growing concerns for the health of the Shediac Bay. A new document was launched at the meeting "Status of the Shediac Bay and Its Watershed, Volume 2", prepared by DPG Communications in Caraquet. A presentation of the report was made by the Special Guest Speaker Pierre Saint-Cyr, Communication Specialist for DPG Communication. The report provides information on the watershed and the communities included within its boundaries, a history of the Shediac Bay Watershed Association, and environmental projects that have been done or are ongoing with the objective of improving water quality and aquatic ecosystems.

The meeting was continued by a presentation from the manager of the SBWA on the achievements of 2016-2017, and upcoming objective of 2018.

4.2 Annual meeting for non-profits of Southeastern NB

For the fourth consecutive year, the SBWA hosted a full-day workshop for non-profit organizations in southeastern NB. On November 23, 8 groups gave a presentation on their projects and activities in addition to the SBWA. The groups in attendance were the *Southeastern Anglers Association*, *Petitcodiac Watershed Alliance*, *Vision H2O*, *NB Environmental Network*, *EOS Eco-Energy*, "*Groupe de développement durable du pays de Cocagne*", *Bird Studies Canada*, and *Great Minds Think Outside Representative*.

The goal of these meetings is the sharing of information on the projects being done by our neighbouring groups, to see if any potential partnerships can be made to maximize the impacts of projects. These partnerships can be done by providing knowledge base and expertise to others, provide data, equipment and educational materials, or combine forces in joint projects.

4.3 Presentation to the Town of Shediac

On December 4, the SBWA Manager and President of the SBWA Board of Directors gave a presentation to the Town of Shediac Council members on the various projects of the SBWA. These meetings are important to maintain a good working relationship with the Town of Shediac. These annual presentations keep the council members educated and up-to-date on the strategy that the watershed group is taking to help protect the water quality in the Shediac Bay, mainly the focus on surface water management. These are also opportunities to talk about obstacles and challenges the Association faces, and opens the discussions for ways the Town’s employees may be able to help.



4.4 Rotary Club

The manager of the SBWA gave a presentation on the 2017 projects to the Shediac Rotary Club, on August 15. Approximately 20 people were in attendance.



<https://portal.clubrunner.ca/658/stories>

4.5 Nature NB’ “Nature Festival”

During Nature NB’s 2017 *Festival of Nature* at the Kouchibouguac National Park, the Manager of the SBWA was requested for a guided nature walk and a presentation on the Acadian Forest. The event took place on June 4th, and approximately 20 people participated in the activity, that were mainly families with children.



Figure 10: Festival of Nature poster, 2017

4.6 Biodiversity Day in Cocagne

In celebration of “International Day for Biological Diversity” on May 22, the *Pays de Cocagne Sustainable Development Group* organized an event at the Cocagne Marina. The activities included four guest speakers on the topic of biodiversity conservation and enhancement in the region. The SBWA was invited to set up its kiosk with displays on our own work on biodiversity.



Figure 11: Photos from the Biodiversity Day at the Cocagne Marina, 2017

4.7 Presentation to “Les Ami.e.s de la Nature du sud-est N-B”

The president of the SBWA Board of Directors gave a presentation on the rain garden project to the group “Les Ami.e.s de la Nature du sud-est du N-B” on November 1, 2017. His presentation contained photos of the construction of the rain garden. He spoke of the impact of stormwater on the bacterial levels in the Shediac Bay and the effort of the SBWA towards implementing water quality enhancement measures. Approximately 25 members of the group were present that evening.



Figure 12: Presentation to “Les Ami.e.s de la Nature du sud-est du N-B”

5 School Programs and Presentations

The SBWA has been working on strengthening the working relationship with local school teachers and on the development of yearly standardized programs. The working relationship with the teachers of the 6-8th grade of Shediac Cape School over the past 3 years has led to the development of a series of presentations that links science curriculum objectives and outcomes to local environmental issues. The main focus of these presentations revolves around water quality, water conservation, and climate change.

The annual educational programs includes; Fish Friends with the younger age groups (3-4th grade), and Adopt-A-River with the 6-8th grade students. A new program began in 2017 with MFB School, Shediac Cape School and Grande-Digue School, which includes the creation of 3 tree nurseries on school grounds or near school grounds (Greater Shediac Community Garden location for Shediac Cape School). The following sections report on activities and results for the 2017-2018 education program.

5.1 Fish Friends Program

In March of 2017, the “Fish Friends” program began with the 3rd graders at MFB and the 4th graders at Shediac Cape elementary schools. Both aquariums received 300 brook trout eggs from the Miramichi Salmon Conservation Centre (Miramichi Hatchery).

During the course of the program, from March to June, all four classes engaged in the program received various presentations on salmonids, various stages of their life cycle, habitat requirements, their great migration, etc.

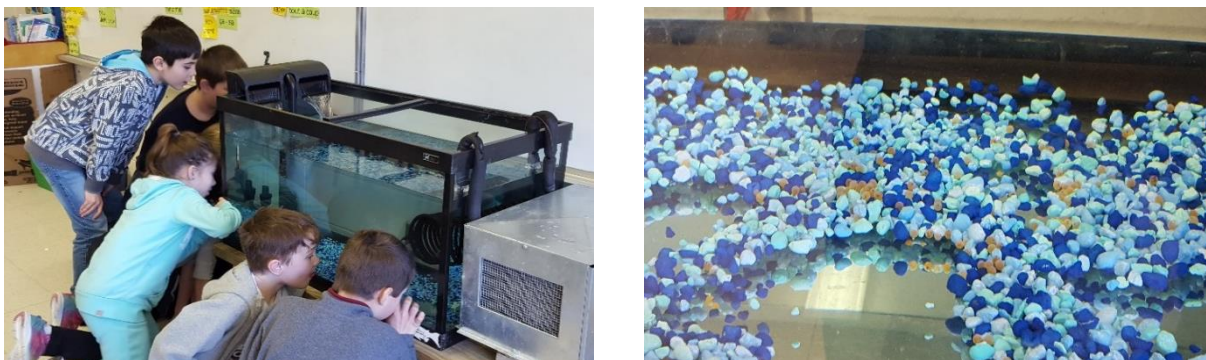


Figure 13: Photos of students observing the brook trout eggs in the aquarium

5.1.1 Fish Friends Field Trip

The Fish Friends field trip was organized to release the brook trout in the Dionne Brook, a small tributary of the Scoudouc River. The 4th graders of the Shediac Cape School went on June 6th, and the 3rd graders of MFB School went on June 15th. The first group released a total of 279 trout fry, and the second group released 279 trout fry. Each child was given a mason jar with 4-6 young trout to release themselves. This program has the added benefit of restocking brook trout in the Scoudouc River on a small scale. A transfer permit was acquired for the release (#NB2017-066)



Figure 14: Fish Friends field trip Shediac Cape School, release of brook trout in Dionne Brook, June 6, 2017



Figure 15: Fish Friends field trip MFB School, release of brook trout in Dionne Brook, June 15, 2017

5.2 Tree Nursery's Program

A new program began this year with local schools to build tree nurseries in the school yards, as an educational tool to teach kids about trees and to be used as a resource for tree planting for riverside restoration in the future. The SBWA contracted the “Groupe de développement durable du pays de Cocagne” (GDDPC), to get the program started due to their expertise and past experience.

Three nurseries were made in 2017: at the Mgr-François-Bourgeois elementary school in Shediac; at the community garden in Shediac Cape, in partnership with the Shediac Cape School; and at the Grande-Digue elementary school. Approximately 150 children from the age group of the 6th to 8th grade from the three schools participated in creating the nurseries, containing 415 young trees and seeds in total. These trees include a variety of native coniferous and deciduous species: balsam fir, white pine, black spruce, red oak, red maple, and yellow birch. Tools and accessories were provided in-kind by the MFB School, the Shediac Cape Community Garden and the GDDPC.

Presentations were given to each group that were engaged in this program. The themes of the presentations included:

- Recognizing species of the Acadian Forest
- The importance of indigenous trees in buffer zones, with a link to climate change adaptation
- The technical aspects of creating a tree nursery: choosing the right location, preparing the soil, selecting and obtaining tree stocks, ongoing care and maintenance.



Figure 16: Tree nursery planting Grande-Digue School, 2017

5.3 Adopt-A-River Program

Adopt-A-River is a school-based program designed to teach the concept of biomonitoring of a river's ecosystem using macroinvertebrate sampling. It also teaches water chemistry using water quality analysis kits for various physicochemical parameters. The program is designed to be integrated into the school's science curriculum.

The SBWA project manager became a certified project coordinator for the "G3E, Education and Water Monitoring Action Group", the organization that created and manages the Adopt-A-River program. The science teachers for grades 6 to 8, English and French Immersion of the Shediac Cape School, have agreed to integrate the program within their normal curriculum in partnership with the SBWA.

A classroom presentation was given before the field trip on the concept of biomonitoring using macroinvertebrates. It was explained how looking at the composition of the community can provide information on water quality, changes in water quality or habitat over many years, and overall aquatic health monitoring. A description of the field trip activities was given, along with a demonstration of the sampling using the equipment in the classroom.

5.3.1 Field Trip

Due to the large group of students, two separate days were organized for the field trip to the Scoudouc River; the first group went on October 16, and the second group on October 17, 2017.

The groups were divided into teams, each with a specific task. There were multiple tasks designed to complete the macroinvertebrate sampling, sorting the invertebrates using a sampling protocol, taking site measurements, filling out data sheets, drawing a sketch of the site, and taking habitat observations. The science teachers are always amazed with the various components of the activity, stating that a great portion of the curriculum's objectives and outcomes are being attained in one day. The duration of the field trip is about 3 hours, and the students as well as the teachers had a lot of fun.



Figure 17: Group Photo of Adopt-A-River Field Trip, 2017



Figure 18: Macroinvertebrate sampling



Figure 19: Macroinvertebrate sorting

5.3.2 Macroinvertebrate identification

The next classroom visit was to identify the macroinvertebrates caught during the field outing. On January 24, a short presentation was given on how to use the dichotomous key to identify in which order their insects belong. Using the identification key, magnifying glass and good teamwork, they managed to discover the species in their jars. They filled out an answer sheet indicating how many insects of each order they discovered.

A recap at the end was done to show pictures of the invertebrates associated with the proper order, as well as pictures of the adult version of the insect larvae. The kids were surprised to find out that most of their invertebrates would have eventually grown wings and left their aquatic habitat. A table showing which insects were very sensitive to pollution and which were very tolerant was shown, and given the high number of stoneflies and even the rare giant stonefly, the class was able to come to a conclusion that the Scoudouc River is relatively healthy.



Figure 20: Students using dichotomous key to identify macroinvertebrates

5.3.3 Water Quality Testing

The Adopt-A-Stream program will continue in March 2018, with a final presentation on water quality. The basic physicochemical parameters of water quality will be taught by relating these parameters to the recommendations for aquatic life. The presentation will be accompanied by an experiment using water quality analysis kits for pH, dissolved oxygen, phosphates, nitrates, and bacteria. The kit for bacteria also includes an ultraviolet light, to be able to see the fluorescent reflection of E. coli bacteria.

5.4 School Presentation Series

In addition to the presentation given throughout the school programs, presentations are given based on both the science curriculum's objectives and outcomes, and on local environmental issues and concerns. A strong working relationship with the science teachers of the 6-8th grade at Shediac Cape School, has led to the development of 2 new presentations that fits perfectly in the water unit and in the "Water Conservation & Stormwater Management" education program.

The first new presentation is entitled "WATER – Conservation and Climate Change", focuses on freshwater availability on earth, the problems associated with desalination, water consumption in an average Canadian household, how climate change can threaten availability of drinking water, and what they can do to reduce their consumption. Each child received a copy of the pamphlet, and 6 water conservation kits were given with a draw to all three groups, making a total of 18 kits given to the students.



Figure 21: Winner of the water conservation kits from one class (5 out of 6 agreed to a photo), Feb 2018

The second new presentation is entitled “WATER – Pollution, Stormwater Runoff and Water Purification Systems”. This presentation taught them the difference between “Point Source” and “Non-Point Source” pollution in a watershed. They learned how precipitations mobilizes bacteria and pollutants from various surfaces and lead to bacterial spikes in the Shediac Bay, and unfortunately, at Parlee Beach. Within the curriculum’s unit on water, they were given a project to build a water purification system. A section was added to explain how activated carbon works in filters. The SBWA made a child-friendly water filter using a recycled bottle, coffee filters, sand and activated carbon, as a demonstration and to give inspiration.

Presentations were finally given to the Environmental Science class at the local high school Louis-J.-Robichaud. The first presentation was an introduction of the SBWA’s projects and monitoring programs. The second presentation was on “Water Conservation & Stormwater Management”, where it really focused on the impacts of stormwater runoff on the bacterial contamination of the Shediac Bay. The second part of the presentation talked about how the Town of Shediac’s drinking water source is from the underground water table, and as we’ve seen in towns in New Brunswick and Nova Scotia in the last few years, longer drought periods have caused serious stress on water supplies. Each student received a water conservation kit at the end of the presentations. A total of 14 kits were given, one to the teacher and due to some absences, 13 students were in attendance and received a bag.



Figure 22: Presentation to LJR High School on Water Conservation and Stormwater Management, with distribution of a free water conservation kit, 2017

5.4.1 Classroom Presentations Summary

It has been a great year for school presentations and field outings. A stronger relationship with the Shediac Cape School was established in 2015, and continues to strengthen over the years. The science teachers for grades 6 to 8 have taken advantage of the presentations to complement the curriculum. It is also their intent to engage the students with various environmental subjects and concerns that impacts us locally. Students have become accustomed to the SBWA biologist, and are always excited to receive new presentations. The teachers and school principals are all very appreciative of our work.

Table 1: Summary of Classroom Seminar Series 2017-2018

Date	School	Language	Grade level	Topics	# Students
04/03/2017	Shediac Cape	French Immersion	6-7	Biodiversity	18
04/03/2017	Shediac Cape	English	6-7	Biodiversity	23
04/12/2017	Shediac Cape	English & French Immersion	4	Fish Friends: Alevin	40
04/21/2017	MFB	French	3	Fish Friends: Alevin	22
04/21/2017	MFB	French	3	Fish Friends: Alevin	24
04/21/2017	MFB	French	3	Fish Friends: Alevin	18
05/23/2017	Shediac Cape	English	4	Fish Friends: Salmonids, life cycle	(24)
05/23/2017	Shediac Cape	French Immersion	4	Fish Friends: Salmonids, life cycle	(16)
05/29/2017	Grande-Digue	French	6	Tree Planting Activity with GDDPC	Unknown
05/30/2017	Shediac Cape	English	4	Fish Friends; Salmon Migration	(24)
05/30/2017	Shediac Cape	French Immersion	4	Fish Friends; Salmon Migration	(16)
06/01/2017	MFB	French	3	Fish Friends: Salmonids, life cycle	(22)
06/01/2017	MFB	French	3	Fish Friends: Salmonids, life cycle	(24)
06/02/2017	MFB	French	3	Fish Friends: Salmonids, life cycle	(18)
06/6/2017	Shediac Cape	English & French Immersion	4	Fish Friends: Field Trip Day	(40)
06/08/2017	MFB	French	3	Fish Friends; Salmon Migration	(22)
06/08/2017	MFB	French	3	Fish Friends; Salmon Migration	(24)
06/08/2017	MFB	French	3	Fish Friends; Salmon Migration	(18)
06/15/2017	MFB	French	3	Fish Friends: Field Trip Day	(64)
New School Year					
09/21/2017	Grande-Digue	French	6	Presentation Tree Nurseries	Approx. 50
09/22/2017	MFB	French	7	Presentation Tree Nurseries	Approx. 50
09/26/2017	Shediac Cape	French Immersion	6-7-8	Presentation Tree Nurseries	Approx. 50
09/27/2017	Grande-Digue	French	6	Tree Nursery – Planning	(Approx. 50)
09/28/2017	MFB		7	Tree Nursery – Planning	(Approx. 50)

10/04/2017	Shediac Cape	French Immersion	6-7-8	Tree Nursery – Planning	(Approx. 50)
10/05/2017	Grande-Digue	French	6	Tree Nursery – Planting	(Approx. 50)
10/11/2017	MFB	French	7	Tree Nursery – Planting	(Approx. 50)
10/12/2017	Shediac Cape	French Immersion	6-7-8	Tree Nursery – Planting	(Approx. 50)
10/10/2017	Shediac Cape	English	6-7-8	Adopt-A-River- Presentation	58
10/11/2017	Shediac Cape	French Immersion	6-7-8	Adopt-A-River- Presentation	42
10/16/2017	Shediac Cape	English	7-8	Adopt-A-River Field Trip	(27)
10/17/2017	Shediac Cape	French Immersion	7-8	Adopt-A-River Field Trip	(26)
11/14/2017	L.-J.-R	French	12	SBWA – Protecting your Watershed; Who we are, what we do	19
12/21/2017	L.-J.-R	French	12	Water Conservation & Stormwater Management	(13) *Absences
01/24/2018	Shediac Cape	English	7-8	Adopt-A-River - Macroinvertebrate identification	(27)
01/24/2018	Shediac Cape	French Immersion	7-8	Adopt-A-River - Macroinvertebrate identification	(26)
01/30/2018	Shediac Cape	English	7-8	Water Conservation and Climate Change	(27)
02/01/2018	Shediac Cape	English	6-7	Water Conservation and Climate Change	(31)
02/01/2018	Shediac Cape	French Immersion	6-7-8	Water - Conservation and Climate Change	(42)
02/07/2018	Shediac Cape	English	7-8	Water – Pollution, Stormwater Runoff and Water Purification Systems	(27)
02/07/2018	Shediac Cape	English	6-7	Water – Pollution, Stormwater Runoff and Water Purification Systems	(31)
02/08/2018	Shediac Cape	French Immersion	6-7-8	Water – Pollution, Stormwater Runoff and Water Purification Systems	(42)
Upcoming Presentations					
02/23/2018	MFB	French	3	Introduction –About SBWA and announcement of 2018 Fish Friends	Unknown
02/26/2018	Shediac Cape	English & French Immersion	3-4	Introduction –About SBWA and announcement of 2018 Fish Friends	39
After March Break	MFB	French	3	Fish Friends: Alevin	Unknown
After March Break	Shediac Cape	English & French Immersion	3-4	Fish Friends: Alevin	(39)
March 2018	Shediac Cape	English	7-8	Adopt-A-River - Water Quality & Analysis	(27)
March 2018	Shediac Cape	French Immersion	7-8	Adopt-A-River – Water Quality & Analysis	(26)

5.5 Educational Kiosks

5.5.1 Shediac Farmer's Market

An education kiosk was displayed on Sundays at the Shediac Farmer's market, for 10 weeks out of the summer. The main objective was to speak on water conservation and stormwater management, and giveaway water conservation kits and rain barrels. SBWA staff and summer students talked to visitors of all ages on the various other projects of the year. In the summer of 2017, staff spoke to over 1,400 visitors about the watershed group, local environmental issues and projects realized to mitigate these issues. The market kiosk is always a great tool to find people interested in receiving free rain barrels and water conservation kits for their homes.



Figure 23: Shediac Farmer's Market in the Park

5.5.2 Lobster Festival

In partnership with the Homarus Eco-centre, a kiosk was set up for four days at the Shediac Lobster festival from July 5th to July 8th. Our summer students spoke of our projects in the same fashion as the Shediac Farmer's market in the Park.



Figure 24: Shediac Lobster Festival

5.6 Communications and Outreach

5.6.1 Newsletter

Two bilingual newsletters were produced during the 2017-2018 fiscal year. The newsletter display information and photos on the various projects that the SBWA has been doing in the year. The Association had 250 copies produced for each edition, printed on 100% recycled paper. The newsletters are distributed to various businesses, medical offices, hair salons, and anywhere else that had a waiting area or that was appropriate to leave newsletters for the public to take. The rest were distributed during the Shediac Market, during public presentations and other meetings. The newsletters can be found on the Shediac Bay Watershed Association website.

5.6.2 Socials Medias and Website

The SBWA is working to keep its website and social media up to date, posting photos and short description of activities and projects. The SBWA also attended a conference on social media for non-profit organizations, helping us to develop a social media communications strategy. The association is also working on the development of infographic and fact sheets, being professionally designed, to be posted to the website and social media.



www.shediacbayassociation.org



www.facebook.com/#!/shediacbaywatershedassociation

5.6.3 News Coverages

Tern Platform

CBC News article on the structure improvements to the SBWA's tern platform project, on July 28, 2017. A snapshot of the segment can be found in Appendix 1.

<http://www.cbc.ca/news/canada/new-brunswick/tern-birds-platform-colony-nest-shediac-bay-1.4225580>

5.7 Education Program Summary

The following table tallies approximate numbers of people that have attended events and viewed information organized by the Shediac Bay Watershed Association.

Table 2: Program Summary

Project	Deliverables	# People Reached
1) Water conservation & Stormwater management	Rain Barrel giveaway	100
	Water Conservation Kits	100
2) Public outreach activities	-1 Beach Sweep event aimed to combat marine litter	19
	-TD Tree Day 2017	25
	Shediac Trail Day	Unknown
3) Public Presentations	- SBWA Annual General Meeting	54
	-Presentation to the “Ami.e.s de la Nature du Sud-Est du NB”	25
	-Annual Meeting of Southeastern NB Non-profits	13
	- Town of Shediac Council	Unknown
	-Nature Festival Presentation	20
	-Presentation to the Rotary Club of Shediac	20
4) School Programs and Presentations	- Fish Friends Program in 2 local elementary schools	(104)
	- Adopt-A-Stream Program	(53)
	-Tree Nursery Program	(150)
	-Students receiving presentations but who are not included in any program	(107)
	-School Presentations Series and Program Totals: 13 presentation Subjects or Activity Types, 48 Presentations events	414+ (In Total)
	Tree planting activity Grande-Digue School	Unknown
5) Educational Kiosks	-Information Kiosk Market In The Park every Sunday for 10 weeks in 2017.	1,400+
	-Kiosk at the Shediac Lobster Festival for 4 days	Unknown
	-Kiosk at the Cocagne Marina for Biodiversity Day	Unknown
6) Communications and Outreach	-Educational Tools Developed – Facts Sheets, Infographics, Pamphlets	6
	-New interpretation panels developed 2017	2
	-1 televised news reports with CBC News on the Tern Platform	Unknown
	-Two bilingual newsletter to the public	500 or less
	-Photo albums on SBWA project and other posts shared on Facebook	2,000 views
	SBWA Website	Unknown

6 Educational Materials

The SBWA has been working on developing a communications strategy to help diffuse information to the local public on the health concerns of the Shediac Bay. Due to the sensitive nature of the issues, a professional designer was hired to develop new educational materials such as fact sheets, pamphlets, and infographics. The strategy involves using social media to direct more traffic to our website, where these new items will be displayed in a coherent and comprehensive for the laymen person. The goal is to have the scientific facts presented in a positive light, and offer tools for the improvement and protection of the water quality in the Shediac Bay.

6.1 Infographics, Fact Sheets, Pamphlets

Two infographics were designed on water conservation and stormwater runoff. Fact sheets were designed for rain gardens, water quality in a watershed, and stormwater runoff. A pamphlet was done on rain barrels. All produced materials are made in French and English.



Figure 25: Infographics and posters

WATER QUALITY IN A WATERSHED / QUALITÉ DE L'EAU DANS UN BASSIN VERSANT

The health of our watershed: Essential for water quality.

A watershed is a region in which common body of water, such as a river, lake, or bay.

Watersheds are home to a wide variety of ecosystems that give us habitat to numerous species of animals and plants. Our rivers, wetlands, and lakes are a watershed, and cities and towns are a part of them.

We depend on the water in this region for our drinking water, watering for livestock and agriculture. The quality of this water is greatly affected by activities that take place in the watershed. The health of aquatic ecosystems depends on good environmental practices from its population.

In our watershed, water that runs off the surfaces through farmers' fields, lawns, parking lots, and roads carries the many pollutants that you wish the Sheikwa and Sheikwan Rivers. These two major rivers flow directly into the Sheikwa Bay.

Water Quality Monitoring in Our Rivers

Water quality monitoring, conducted by the Sheikwa Bay Watershed Association (SBWA), involves:

- Selecting sources of contamination
- Conducting regular water quality tests to ensure the health of our rivers
- Confirming the results for river remediation
- Measuring the effectiveness of the work undertaken

With the help of the community and from its partners, the SBWA has a number of water quality monitoring stations in the Sheikwa and Sheikwan Rivers. You can help us by reporting any water quality issues to our website or Facebook page to learn more: www.sheikwabayassociation.org

La santé de notre bassin versant, essentielle pour la qualité de l'eau.

Un bassin versant est un territoire sur lequel les eaux de pluie et de la fonte des neiges s'écoulent vers un point d'eau commun comme une rivière, un lac ou une baie.

Les bassins versants abritent une grande variété d'écosystèmes qui servent d'habitat à de nombreuses espèces animales et végétales. Tout comme eux, nous sommes tous dans le bassin versant, puisque nos villes, villages ou foyers y sont.

Nous dépendons de l'eau présente sur ce territoire pour notre eau potable, l'arrosage des animaux, et l'élevage agricole. La qualité de cette eau est grandement influencée par les activités qui ont lieu dans le bassin versant. La santé des écosystèmes aquatiques dépend des bonnes pratiques environnementales de la population.

Dans notre bassin versant, l'eau qui ruisselle à la surface des terres des champs agricoles, des parkings, des aménagements et des routes, apporte les nombreux polluants qui circulent vers les Rivières Sheikwa et Sheikwan. Ces deux cours d'eau se jettent directement dans la Baie de Sheikwa.

Surveillance de la qualité de l'eau dans les cours d'eau

La surveillance de la qualité de l'eau dans les cours d'eau est effectuée par l'Association de la Baie de Sheikwa (ABS). Elle consiste à:

- Identifier des sources de contamination
- Effectuer des prélèvements réguliers de l'eau pour assurer la santé de nos rivières
- Confirmer les résultats de l'analyse
- Mesurer l'efficacité des travaux entrepris

Avec l'aide de la communauté et de ses partenaires, l'ABS dispose d'un certain nombre de stations de surveillance de la qualité de l'eau dans les Rivières Sheikwa et Sheikwan. Vous pouvez nous aider en nous signalant tout problème de qualité de l'eau sur notre site Web ou sur notre page Facebook pour en apprendre davantage: www.sheikwabayassociation.org

Sustainable Management

Despite certain challenges to our water today, we have a watershed that offers a common vision, our businesses, and groups responsible can work together to improve the health of our watershed.

The following conditions allow equilibrium between ecosystem development in our watershed:

- Reduction of pollution sources on residential and agricultural lands
- Prevention of stormwater drain runoff for runoff of pollutants
- Protection of aquatic ecosystems, rivers and riparian habitats
- Prevention of bank erosion and its harmful consequences
- Raising awareness on the effects of runoff
- Application of biodiversity in our watersheds
- Long-term planning of land use
- Climate change adaptation

La gestion durable de notre bassin versant

Malgré certains défis à relever sur notre territoire, nous avons la chance d'avoir un bassin versant avec des cours d'eau offrant une vision commune, nos entreprises, nos municipalités, nos citoyens, nos entreprises et nos groupes responsables du bassin versant peuvent travailler ensemble pour améliorer la santé de l'eau.

Les conditions suivantes permettent de trouver un équilibre entre la préservation des écosystèmes et le développement économique sur notre territoire:

- Réduction des sources de pollution causées par les résidences, les entreprises et les agriculteurs
- Minimisation des ruissellements d'eau pollués vers les cours d'eau
- Protection des écosystèmes aquatiques, des rivières et des habitats riverains
- Prévention des ruissellements des eaux de pluie et des dommages causés par l'érosion des berges et ses conséquences néfastes
- Prévention de l'érosion des berges et du ruissellement des polluants dans les cours d'eau
- Application de la biodiversité en respect des habitats riverains
- Planification à long terme de l'aménagement du territoire
- Adaptation aux changements climatiques

STORMWATER RUNOFF / LE RUISSELLEMENT DES EAUX PLUVIALES

The Impacts of Stormwater Runoff

In natural environments, most of the water from melting snow or heavy rainfall events gets absorbed by trees and plants. The excess water that has not been absorbed or evaporated runs off towards watercourses.

In our towns and villages, natural habitats have been replaced by non-absorbent surfaces, such as parking lots, paved parking lots and streets, and compacted lawns. Being heavily covered by snow melts, these surfaces prevent water from being absorbed into the ground.

The stormwater runoff picks up a wide range of pollutants based on the ground, such as nutrients from fertilizers, pesticides, road salt, petroleum products, and animal waste. During rain and snow melt, these pollutants are washed into streams, ditches, and lakes. This eventually makes their way into streams and rivers that flow into the Sheikwa Bay.

Non-point runoff also contributes to bank erosion and sediment transport into aquatic habitats, such as Fulham Bay, in our water bodies, which can lead to the loss of municipal and residential infrastructure.

Preventing Pollution

Water quality may be determined by many and include urban development, agriculture, and animal waste. It is important to take steps to prevent runoff from entering water bodies.

Here are 10 steps to prevent runoff:

1. Plant indigenous water loving plants.
2. Install rain barrels on your roof.
3. Reduce impervious surfaces.
4. Use mulch in gardens.
5. Use lawn care products.
6. Limit your use of lawn mowers.
7. Sweep your walkways with water.
8. Wash your car in a car wash.
9. Wash your vehicle.
10. Help us spread the word.

Un certain nombre de polluants sont entraînés dans les cours d'eau.

Prévention de la pollution dans les cours d'eau

La dégradation de la qualité de l'eau est surtout due aux polluants entraînés par le ruissellement. Les sources de cette pollution sont multiples et comprennent les activités industrielles, agricoles et le développement urbain. La pollution provenant des activités quotidiennes telles que l'application d'engrais, de pesticides, le lavage des voitures, etc.

Le ruissellement des eaux pluviales est responsable de l'érosion des berges et du transport de sédiments dans les habitats aquatiques. De plus, le ruissellement des eaux pluviales entraîne le ruissellement de polluants tels que les nutriments, les pesticides et les produits pétroliers.

Voici 10 actions clés pour prévenir le ruissellement des eaux:

1. Planter des plantes indigènes qui aiment l'eau.
2. Installer des bacs de récupération d'eau de pluie sur votre toit.
3. Réduire les surfaces imperméables.
4. Utiliser du paillis dans les jardins.
5. Utiliser des produits d'entretien pour pelouses.
6. Limiter l'utilisation des tondeuses à gazon.
7. Balayer vos allées avec de l'eau.
8. Laver votre voiture à un poste de lavage.
9. Laver votre véhicule.
10. Aider à diffuser le message en partageant nos actions préventives.

LE RUISSELLEMENT DES EAUX PLUVIALES

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8. Laver votre voiture à un poste de lavage.
9. Laver votre véhicule.
10. Aider à diffuser le message en partageant nos actions préventives.

Figure 26: Fact Sheets on Stormwater Runoff and Water Quality

LA RÉCUPÉRATION D'EAU PLUVIALE / COLLECTING RAINWATER FROM YOUR ROOF

LA RÉCUPÉRATION D'EAU PLUVIALE

Le baril de récupération d'eau de pluie est un moyen simple et efficace de recueillir l'eau de pluie qui s'écoule des toitures. L'eau accumulée peut être utilisée pour arroser les pelouses et les jardins ou pour laver votre véhicule.

CONSEILS PRATIQUES POUR L'INSTALLATION ET L'ENTRETIEN

Une fois rempli, le baril devient très lourd. Le placer sur une base solide comme deux blocs de ciment sur une dalle de patio.

Installer à une hauteur qui permet de remplir un arrosoir.

Brancher un tuyau de débordement au drain de gouttière ou le diriger loin de la fondation vers une plate-bande.

In addition to conserving water, rain barrels also help to reduce surface water runoff. This runoff transports pollutants into storm drains, streams, and rivers.

Runoff can also cause flooding and erosion-related damage.

The impact of reducing runoff is considerable when the barrels are used by a high percentage of the population. Keep the conversation going!

COLLECTING RAINWATER FROM YOUR ROOF

Rain barrels are a simple and effective way to collect rainwater that runs off from rooftops. The water collected can be used to water lawns and gardens, or to wash your vehicle.

TIPS AND TRICKS FOR RAIN BARREL INSTALLATION AND MAINTENANCE:

- When filled, the barrel becomes very heavy. Place it on a solid base, such as two cement blocks on a patio slab.
- Install at a height that allows you to fill a watering can.
- Connect an overflow pipe to your waterspout or redirect it from the foundation and into a flowerbed.
- Cover the lid hole with a fine-mesh screen to prevent debris and bugs from entering.
- Add a pump to connect a watering hose.
- Clean the screen regularly to allow the flow of water.
- Before winter, empty the barrel completely in order to avoid damage caused by freezing.

Safety tips:

- Keep the lid secure at all times to protect small children and keep out insects, pets, and wildlife.
- Never use barrels that have previously been used to store toxic substances.
- Never use collected water for drinking, cooking, or bathing.

Figure 27: Rain Barrel Pamphlet

6.2 Interpretation Panels

Since 2015, several interpretation panels of various themes have been professionally designed and placed in public parks, along walking trails, and in other green spaces around the Town of Shediac. The collection of panels; The Acadian Forest, Biodiversity, Tree Swallows, The Common Terns, Salt Marshes, Freshwater Marshes, Eelgrass and Rain Garden.



Figure 28: Interpretation panels developed in 2017



Figure 29: Interpretation panel collection developed in 2015

7 Conclusion

To conclude, the first rain garden was built in a functional and public area, along with an interpretation panel explaining the functions in managing stormwater. One hundred rain barrels and 100 water conservation kits have been given away between 2016 and 2018. The SBWA plans to continue to build rain gardens and give away rain barrels, and begin to build bioswales to control surface runoff in its watershed.

The school program for 2017-2018 has been pretty diverse. The fish friends program was successful with two schools involving 104 young students. The Adopt-A-Stream program targeted 53 students in the 7-8th grade at Shediac Cape School.

A total of 38 classroom presentations were given, involving 13 different subjects, adapted to each grade level, and 10 field trips and/or activity. The total number of students reached for 2017-2018 is 414 kids or more. It is always a rewarding to see students get excited about the environment during those activities and seminar series.

Education has always been an important part of every project realized by the Shediac Bay Watershed Association. When dealing with local environmental issues, creating dialogue with various members of the community, of any age group, is essential to raise awareness that these issues exist. These issues need to be known and discussed in order to spark interest and change thinking patterns. As they say, knowledge is half the battle.

School based presentations and outdoor activities are essential to teach good habits and to increase awareness in youth to protect our fragile environment. This will create a ripple effect, whether it is by the children telling their parents what they've learned in schools, which may change a parent's perspective, or by creating a more environmentally conscious generation that will continue to pay forward the knowledge as they go through life.

Public presentations are also very important, because people do have the ability to change their points of view when presented with new information and new scientific evidence. When their local environment changes around them, it may impact some aspect of their life; either financially, recreationally or personally. Many citizens understand this, and many of them are willing to make changes and take actions for the better of the environment.

The Shediac Bay Watershed Association is becoming more and more known for its good work in enhancing the overall health of the Shediac Bay, and that would not be possible without our maintained presence in the public eye through our education programs.

The support from the NB Environmental Trust Fund is essential for our group to be able to accomplish the quantity and variety of activities for the community. We hope to continue expanding our programs in future years.

Annexe 1 – Tern segment in CBC News

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Common terns return with the help of Shediac group

Group says tern colony is rebuilding after a devastating predator attack last summer

By Olivia Chandler, CBC News | Posted: Jul 28, 2017 11:32 AM AT | Last Updated: Jul 28, 2017 1:12 PM AT



Jolyne Hébert, an environmental technician with the Shediac Watershed Association, says the local tern colony is making a comeback after nests were destroyed last year by an unknown predator. (CBC News/Olivia Chandler)

Annex 2 – Newsletter English



Number 18
Winter 2018

Tern platform

In its fourth year of operation, the common tern platform continues to successfully provide nesting grounds for terns during the summer months. Following a predator attack in 2016, this year, predator guards were added around the perimeter of the platform to reduce predation from terrestrial predators and to increase the survivability of tern hatchlings. In total, there were 50 nests and 99 eggs for 2017. The adding of predator guards was financed by the New Brunswick Wildlife Trust Fund.



Invasive Species: European Green Crab

Since 2013, the SBWA has been monitoring the invasive green crab using specially designed traps at ten different sites in the Shediac Bay. In 2016, there was an enormous spike in the green crab population compared to 2015. During the 2017 sampling season, the sampling counts are similar to 2016, except for a slight increase in numbers. The SBWA plans to continue this monitoring programs for the next several years. Project details will be posted in the annual report on our website in the coming months. The NB Wildlife Trust Fund supported this project along with eelgrass monitoring.



Eelgrass Monitoring

In partnership with the Southern Gulf of Saint Lawrence Coalition on sustainability and with funding from the NB wildlife Trust fund the monitoring of eelgrass health program was expanded. In addition to our site established in 2016 at the mouth of the Scoudouc River a new site was added at the mouth of the Shediac River. At each site, different measures are taken on the



density and health of eelgrass using the Seagrass.net international protocol. These measures will help better understand the state of eelgrass with the arrival of the green crab and climate change. A few years of monitoring is necessary before obtaining results.



This project was undertaken with financial support of the Government of Canada.



Annex 3 – Newsletter French



Plateforme de nidification des sternes

La plateforme de nidification des sternes communes, qui en est à sa quatrième année d'existence, continue d'être un lieu de reproduction privilégié pour les sternes durant les mois d'été. À la suite d'une attaque de prédateurs en 2016, cette année, on a ajouté des dispositifs de protection contre les prédateurs sur le périmètre de la plateforme afin de réduire la prédation des prédateurs terrestres et d'augmenter la capacité de survie des poussins. En 2017, on a dénombré 50 nids et 99 œufs. L'ajout des dispositifs de protection contre les prédateurs a été financé par le Fonds en fiducie pour la faune du Nouveau-Brunswick.



Espèces envahissantes : crabe vert européen

Depuis 2013, l'Association du bassin versant de la baie de Shediac (ABVBS) effectue la surveillance du crabe vert européen à l'aide de pièges spécialement conçus placés à dix différents endroits de la baie de Shediac. En 2016, la population de crabes verts européens a augmenté considérablement par rapport à 2015. Durant la saison d'échantillonnage de 2017, les chiffres de l'échantillonnage sont semblables à ceux de 2016, sauf pour une légère augmentation du nombre. L'ABVBS souhaite continuer ce programme de surveillance au cours des quelques prochaines années. Les détails du projet feront partie du rapport annuel qui sera affiché sur notre site Web au cours des prochains mois. Le Fonds en fiducie pour la faune du N. B. a appuyé ce projet et le programme de surveillance des zostères marines (herbe à outardes).



Surveillance de l'herbe à outardes

En partenariat avec la Coalition pour la viabilité du sud du Golfe du Saint-Laurent et grâce au financement du Fonds en fiducie pour la faune du N.-B., on a élargi le programme de surveillance de la santé des zostères marines (herbe à outardes). En plus de notre site établi en 2016 à l'embouchure de la rivière Scoudouc, nous avons ajouté un nouveau site à l'embouchure de la rivière Shediac. À chaque site, on effectue différentes mesures sur la densité et la santé



de l'herbe à outardes à l'aide du protocole international Seagrass.net. Ces mesures aideront à mieux comprendre l'état de l'herbe à outardes à la suite de l'arrivée du crabe vert et des changements climatiques. Il faudra quelques années de surveillance avant d'obtenir des résultats.



