



Coordinated by the New Brunswick Salmon Council

Guiding Document

Overview

The Fish Friends program is an environmental education program focused on Atlantic salmon and delivered to students in New Brunswick schools. The program is supplemented by a comprehensive curriculum guide originally developed by the Atlantic Salmon Federation. It is generally geared towards students in grades 4, 5, and 6 and introduces such topics as habitat, the ecosystem and the life cycle of the wild Atlantic salmon. The program provides a context for understanding these topics as they relate to the importance of our dependence on healthy watersheds and their ecosystems.

History

Developed in the mid 1990s by the ASF, the program is designed to be a long term conservation program aimed at educating the next generation of environmental stewards. The NBSC took the lead role in delivering the Fish Friends program in NB in 2011. The NBSC continues to focus on maintaining the sustainability of the program by including new schools and re-involving schools that once participated. A number of First Nation communities have shown great interest in the program.

The Fish Friends program is integrated into the education system. It has achieved this level of success because it conveys a meaningful message and delivers it effectively to young students. Students will carry the knowledge gained with them as they venture into nature, into further studies, and eventually into society as young adults.

Project Location

Fish Friends is carried out throughout Atlantic Canada and Quebec; however, the scope of the NBSC's program is within New Brunswick. There are over 100 schools participating and these are distributed throughout the province of NB.

NOTE: We should consider an appendix that shows a list of schools by the Recreational Fishery Areas from the Angling Summary (See Outline at end of this document)

Carrying Out The Program

The delivery of the program is coordinated by the NBSC Chair of the Fish Friends Program and dependent on approximately 30 volunteers from across the Province. These dedicated volunteers make presentations to students and teachers about the program. They also help set up aquariums in classrooms and deliver eggs from various hatcheries around the province.

To carry out the program, genetically appropriate Atlantic salmon eggs for various regions are secured with local hatcheries. Program volunteers typically deliver the eggs to the classrooms from the participating hatcheries (Mactaquac, Miramichi, Charlo, and Thomaston Corner) in mid March.

Students learn about wild Atlantic salmon, their habitats, environment, and their life cycles in freshwater and marine environment through a comprehensive curriculum delivered by the teacher. During the process, they observe real eggs hatch and develop into alevin and fry in specialized incubation units in the classroom. The program provides a context for understanding these topics as they relate to our dependence on healthy ecosystems. Students raise the salmon from egg to the fry stage and by the end of the school year, while on a field trip, release the fry into local streams where they can continue their life cycle in the wild.

Identification or Recognition of the Fish Friends Program

The New Brunswick Salmon Council is responsible for the delivery of the Fish Friends Program. However, the NBSC recognizes that a few organizations, including non-affiliates to Council, request funding from granting institutions to deliver the program in a select number of schools. The NBSC supports this approach but these organizations and schools must acknowledge the connection to the parent program coordinated by the NBSC.

This acknowledgement will be confirmed by complying with the following requirements:

1. All aquariums used in the Fish Friends Program in all schools will clearly display the NBSC logo.
2. All arrangements for genetically correct eggs for the Fish Friends Program from participating Atlantic salmon hatcheries will be confirmed by the Chair of the NBSC Fish Friends Program
3. The applications for funding will clearly identify the NBSC proprietorship of the Fish Friends Program delivered in New Brunswick.

Source of Genetically Correct Eggs

Hatcheries participating as partners in the Fish Friends Program, up to and including 2017, are the Miramichi Salmon Conservation Centre, the Charlo Fish Hatchery, Thomaston Corner Hatchery and the DFO Mactaquac Biodiversity Facility.

The NBSC greatly appreciates the cooperation of these facilities and will annually confirm required egg numbers for the Fish Friends Program including those programs somewhat outside of Council's direct involvement.

DFO Introduction and Transfers Permit

The Fish Friends Program will comply with all DFO requirements in respect to the legal transfer of the eggs from the hatcheries to the school aquariums as well as subsequent release of the fry into natural watercourses.

Equipment

An essential component of the program is the repair and upgrade of older units, and purchase of new aquariums and chiller units. The ETF and NBSC decals are placed on the front of each replacement aquarium and incubation unit. Aquarium technology is continuously advancing and with the improvements, the NBSC aims to gradually replace Fish Friends units with more efficient systems that require less energy. Water temperature needs to be maintained at 3-4 degrees Celsius and old systems operate in a manner where they need to be covered by styrofoam insulation to minimize compressor operation. Even with insulation, old systems run continuously to maintain water temperatures necessary during early egg development. The new systems will cycle and the cover on the aquarium is only needed to darken the tank for alevin and fry to better emulate nature.

A list of the equipment required for each classroom includes (may not be complete):

- Curriculum Guide and other resource materials
- ASF Chiller Unit, major piece of custom produced equipment including compressor, cooling coil, motor and fan
- All-glass 33 US gallon (125 litre) fish tank
- Aquarium power filter
- Ammonia remover insert (to be replaced annually)
- Activated carbon insert (to be replaced annually)
- Foam filter insert (to be replaced annually)
- Power filter water intake screening (to prevent fish from entering the power filter)
- Enough pebbles to provide shelter on the aquarium bottom
- Nylon dip net
- Flexible tubing (6ft), 3/16"
- Thermometer
- Aquarium background poster

Teachers can easily adjust the classroom-tested curriculum materials to meet their own interests involving mathematics, science, writing, social studies and literature courses.

Equipment and Operational Costs

There are capital and direct/indirect operational costs associated each unit:

1. Capital Cost

- a. \$1150 + HST + Shipping (typically \$50) (unit price as of January 2017, quote from Refrigeration Specialists Inc. in PEI, email: rsimoble@gmail.com)

2. Direct Operational Costs

- a. Filters: \$30/year
- b. Electricity:

New unit operation = 24 KWH/month * 3 months * 0.0621/KWH = \$4.47/year
 Older unit operation = 72 KWH/month * 3 months * 0.0621/KWH = \$13.41/year

3. Indirect Operational Costs

- a. Volunteer mileage (3 trips/unit/year @ average 30 km/roundtrip = 90 km * \$0.41/km = \$36.90/unit/year)

4. Egg Supply

- a. Eggs are free from MSA, Mactaquac, and Thomaston Corner hatcheries
- b. Egg cost from Charlo hatchery is \$30/unit/year (100 eggs)

Table 1. Summary of Annual Costs

Cost Type	Description	Cost/Unit (\$)
Capital (Start Up)	\$1150 (unit) + 15% HST + \$50 Shipping	1,373.00
Operating (Direct)	Filters (carbon 70, foam 70, biomax 70)	20.00
	Other (dip nets, etc.)	10.00
	Electricity consumption (new unit @ 259 KWH/month * \$0.0621/KWH * 3 months)	48.29
Operating (Indirect)	Volunteer mileage (3 trips/unit/year @ 30 km/roundtrip = 90 km * \$0.41/km)	36.90
Egg Supply	Cost for eggs from Charlo per Aquarium	30.00
Total Start Up Cost		1,488.19
Annual Operating Cost	(add \$30 if eggs supplied by Charlo)	115.19

Program Funding

The primary source of required annual funding to support delivery of the program comes from three sources. The NBSC applies to the New Brunswick Environmental Trust Fund (ETF) and the New Brunswick Wildlife Trust Fund (WTF) for annual funding to assist with these costs. Council also receives dedicated funding from the proceeds of the Saint John ASF/MSA fundraising dinner.

Allocation of New and Refurbished Equipment

The financial and volunteer resources for the Fish Friends program have limits and therefore some guidance is required on determining priorities allocating new and repaired equipment to participating schools. The teachers involved will be contacted by the ~30 volunteers around the province in the early winter to discuss equipment. From this information, and based on the available funds, the Fish Friends Program Chair will select schools to receive assistance with their units which would be subsequently ordered and delivered in the winter prior to the commencement of the program.

Criteria for Allocating Financial Assistance for New and Refurbished Equipment

- 1. **Priority** – Priority will be given to existing participating schools (i.e., as opposed to new schools requesting to be part of the program) to receive new equipment, and to receive financial assistance to pay for refurbishments of old equipment, through the grant money available to Council (e.g., ETF).

2. **New Units** - In order to receive a new unit, the school/classroom is required to have been part of the program for at least 10 years. Once this time requirement is achieved, allocation of a new unit will be at the discretion of the local volunteer and Fish Friends Program Chair based on the condition of the equipment and need for a new unit.
3. **Refurbishing** – It will be at the discretion of the local volunteer and Fish Friends Program Chair to determine which equipment requires refurbishment, on an as-needed basis, with highest priority going to the most urgent cases (i.e., equipment that does not work). In such cases where refurbishment or partial unit replacement is necessary, financial assistance will be provided from available grant money through Council. In certain cases where grant money is not available, Council will request that the school pay for refurbishment. As a last resort, Council would consider paying for refurbishment.

Criteria for Accepting New Schools

1. Equipment

- a. Upon the request from a new school/classroom to participate in the program, Council will look into used equipment availability from schools or classrooms that are no longer using that equipment. Council may allocate available used equipment to the new school/classroom.
 - b. Should used equipment require refurbishment, Council will first ask the requesting school to pay the costs. If that is not possible, Council will consider using grant money allocated for equipment refurbishment to pay for the costs. As a last resort, if no grant funding is available, Council would consider paying the refurbishment costs.
 - c. Should there be no used equipment available, the requesting school/classroom will be responsible for purchasing a new aquarium and chiller unit to begin participation in the program.
2. **Volunteer Assistance** – There must be a volunteer available and willing to assist the new school/classroom (i.e., assistance setting up the equipment, delivering eggs, working with the teacher to deliver curriculum materials)
 3. **Egg Supply** – There must be sufficient eggs available at the local hatchery to supply Atlantic salmon eggs to the new school/classroom (Council will enquire with the appropriate hatchery).

Contract for Equipment/Liability with Schools

- N/A to date

Criteria for Volunteer Appreciation

Fish Friends relies on its many dedicated volunteers. In some instances, volunteers are involved in the program for many years and provide an outstanding contribution. This may come in various forms, including: looking after many schools, volunteering for many years, being particularly helpful to teachers and students, etc.

In such exceptional circumstances or based on years of volunteer service, Council Executive may deem it appropriate to honour or acknowledge a volunteer with a gesture of appreciation, such as a lapel pin, plaque, engraving, gift certificate, or another item deemed appropriate as long as it is not a significant cost to Council (i.e., \$50 or less). Consideration for such an acknowledgment shall only be given to those volunteers who are retiring from their volunteer position or on years of service (5 year intervals) in the program. Council Executive shall consider special recognition on a case by case basis, which may not occur every year.

CONTACT: NBSC Fish Friends Chair: Debbie Norton (adventures@upperoxbow.com)

Master List of Fish Friends Schools

Region	Volunteer	School	
Inner Bay of Fundy	Charlie Leblanc	Sussex Elementary Sussex High Salisbury High Queen Elizabeth Elementary Lewisville Middle Champlain Elementary Riverview Middle Beaverbrook Elementary Hillsborough Elementary	
		Parks Canada	Riverside Albert Elementary
		Wendy Epworth	Sackville Elementary
		Heather Loomer	St. Martins Elementary
Outer Bay of Fundy	Sylvie Malo-Clark	Barkers Point Chipman Ecole Arc-en-Ciel Ecole des Batisseurs Ecole des Eclaireurs Gibson-Neill Memorial Kewswick Ridge Minto Elem. Middle Nashwaak Valley New Maryland Priestman Street School Stanley Elementary Wulastukw	
	Andy Smith	Assiniboine Cambridge Narrows Geary Lincoln Gesner Hubbard Sunbury-west Arc-en-Ciel	
	Lee Robinson	Fairvale Elementary Fairvale Elementary Hampton Middle School Lakefield Elementary School Sussex Elementary School Island View School Inglewood School Hampton Elementary Prince Charles School Hammond River Valley McDonald Consolidated Saint Rose School	
	Charlie McLuskey	Florenceville Elementary Fraser Memorial School Ecole Regional de Saint Andre Andover Elemenatry Perth-Andover Middle School Mah-Sos-School Tobique Reserve St. Mary's Academy Edmunston	
	Ahslee Polchies	Woodstock First Nation Nackawic Elementary	

Master List of Fish Friends Schools (continued)

Chaleur	Yvon Cormier/ Roland Lavallee	École La-Rivière de (Pokemouche) École la Villa des Amis (Tracadie Beach) École Marguerite-Bourgeoys (Caraquet) École Terre-des-Jeunes (Paquetville) École Ola-Léger (Bertrand) École Léandre-LeGresley (Grande-Anse) École La Relève-de-Saint-Isidore (Saint-Isidore) École L'Escale-des-Jeunes (Bas-Caraquet) École La Passerelle (Pont-Landry) École la Source (Tracadie-Sheila) École la Ruche (Tracadie-Sheila) École l'Étincelle (Ste-Marie-St-Raphaël) Centre scolaire communautaire La fontaine
	Wayne Clowater (NSA)	Janeville Elementary Carrefour Etudiant Academie Assomption de Bathurst Jacquet River Elementary
Miramichi	Grant Hendry	North and South Esk Elementary Gretna Green Elementary Max Aitken Academy (2 tanks) NBCC-Miramichi Daycare (Trout) Elsipogtog First Nation Bonar Law Memorial (Trout) Nelson Rural School Miramichi Valley High School
Southeast NB	Darlene Elward (SEAA)	Grand-Digue Margerite Michaud (Bouctouche) Notre-Dame Camille Vautour (St-Antoine) Mont Carmel (Ste-Marie) Calixte Savoie (Ste-Anne) Blanche Bourgeois (Cocagne)

