

Fish Friends

*An Education Program developed by the
Atlantic Salmon Federation (ASF) and
delivered by Volunteers*

A Primer to support volunteer delivery
Of the Fish Friends Program



Preface

Fish Friends relies heavily on its volunteers to make the program a reality in the 600 schools across Atlantic Canada, Quebec, Maine, and New England. In some jurisdictions, volunteers are involved in every aspect of the program's delivery. Only with the support of such volunteers will the program flourish and have a strong future in our schools.

The Fish Friends program grows with the number of schools involved every year. To continue to make this program a success at the grass-roots level, it is essential that volunteers play an increased role in the delivery of the program. Every step, from collecting eggs at the hatcheries to classroom visits and fry releases in the spring, depend on individuals that can donate their time to this valuable educational program.

The rewards for volunteering for Fish Friends are many – personal satisfaction, giving back to the community, seeing interest in rivers and fish among the next generation – and seeing the smiles on children's faces as they release their fish into streams.

This guide gives an overview of the program, providing enough information to a potential volunteer to understand how Fish Friends operates, how he/she can help make it happen, and provides suggestions for interacting with students and teachers in a classroom setting.

The Atlantic Salmon Federation appreciates the efforts and hard work put forward by our network of volunteers that make this program possible in so many communities.

Consider volunteering. ASF staff will help get you started and support your efforts.

For further information on volunteering in Atlantic Canada, New England and Quebec and to speak with volunteers currently involved in the Fish Friends program, contact the Atlantic Salmon Federation at (506) 529-4581.



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What is Fish Friends? – A Background

Fish Friends is an education program developed by the Atlantic Salmon Federation (ASF) and largely delivered by volunteers. ASF is an international, non-profit organization that promotes the conservation and wise management of the wild Atlantic salmon and its environment. ASF has a network of seven regional councils (New Brunswick, Nova Scotia, Newfoundland, Prince Edward Island, Quebec, Maine and New England), which have a membership of more than 150 river associations and 40,000 volunteers. Many of these volunteers help to deliver Fish Friends.

Fish Friends is part of the curriculum of grades 4, 5 and 6 in schools throughout the wild Atlantic salmon's range in North America. This program introduces children to Atlantic salmon (*Salmo salar*) by means of the activities described in a curriculum guide and through the hands-on activity of raising salmon and trout eggs in classroom incubation units to fry stage, when students release their young fish into local streams. Students nurture their fish while learning about habitat, adaptation, biodiversity, life cycles, freshwater ecology, sustainability and stewardship.

Students and teachers have experienced Fish Friends since 1992 when ASF field tested it in 29 schools in the Atlantic Provinces. Today about 700 schools from Newfoundland through New England enjoy the program.



Fish Friends students and teachers gain a new appreciation for the importance of healthy rivers and fish populations, and an understanding of the threats to survival of all aquatic life and what action must be taken to overcome the threats. Atlantic salmon is one of the first species to be affected by environmental change, and thus act as an indicator of the health of our rivers and oceans.

Fish Friends Depends on Volunteers

ASF's staff provide support for delivery of Fish Friends. The success of the program though depends on volunteers situated in each school's community. ASF has regional staff, who serve as contacts in each region. At ASF headquarters in St. Andrews, N.B., an Education Coordinator manages the Fish Friends program. Contacts for ASF staff are listed on page ____.

The large number of participating schools and vast geographic areas they cover limit ASF's delivery. ASF is indebted to volunteers who service local schools. Visiting Fish Friends classrooms is a necessary component to the success of the Fish Friends program. In addition to classroom visits, there is a wide variety of other activities that volunteers can undertake to assist teachers and students.

Fish Friends volunteers enable Regional Directors to devote more of their time to ASF's many conservation programs. Volunteers help keep teachers on track and focused on the program, and act as the "spark" to keep interest up. Because volunteers are nearby, the school can call upon them for advice and when there are questions on the incubation process. Volunteer support allows teachers to enjoy the program fully, by helping them become comfortable with it. This leads to



teachers committing themselves to the program and its valuable lessons for years to come, incorporating the Fish Friends curriculum as a permanent part of their lesson plan.

In addition, the special skills of volunteers, such as fly tying and fly fishing and their own experiences with the environment provide unique perspectives to Fish Friends students that heighten their interest.

What does a volunteer get out of the program?

Positive Impact for Students, Teacher, Communities and General Public

Fish Friends is a very popular program that instills responsibility to the environment in young people. Parents, teachers and the media constantly remark on its benefits. Volunteers have the satisfaction of making this program work, and experiencing first hand the enthusiasm that Fish Friends generates. A few hours spent with students and teachers will go a long way and spread beyond the classroom to parents and the public through the interest of media and publicity generated by ASF. What students learn from volunteers today will help shape the future of their communities.



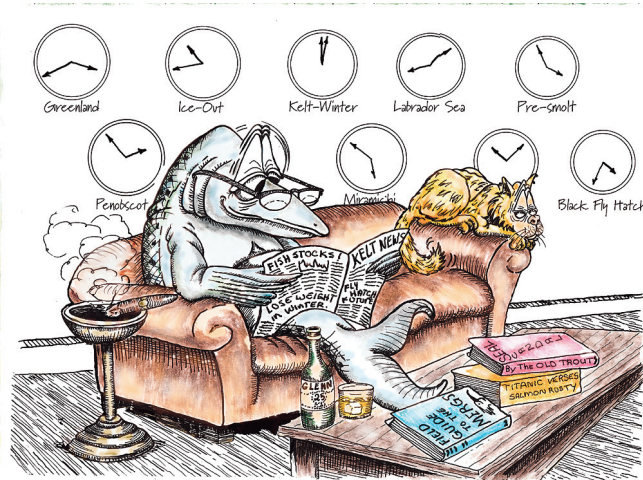
Help for the Volunteer

The Volunteer's Year: A Timeline

Fish Friends is

delivered from January to early June (this may vary from region to region). Volunteers are playing an increased role in the Fish Friends program. In some regions, volunteers handle much of the organization, including the pick up and delivery of the eggs, classroom visits, and involvement in fry release in the spring.

Volunteers can arrange a time with the teacher to visit the classroom during the following “key” activities of the program:



Visit	Activity	Time-Frame	Description
1	Introductory Visit	Mid-Autumn	General intro to the program, discuss some topics not covered in the curriculum.
2	Tank and Chiller set-up	2-4 weeks prior to egg delivery	Discuss aquarium, chiller and other components of the unit.
3	Egg Delivery	Varied (Jan. – mid March)	Make observations with the students using a Petri dish and magnifying glass
4	Egg Hatching and Feeding	3-5 weeks after receiving eggs	General observations of the newly emerged alevin, purpose of yolk sac, frequency of feeding the fry
5	Fry Release	4 weeks following first feeding	At the release site, encourage feedback from students on their experiences with the program; describe how to properly release fry.



➤ **VISIT 1: Introductory Visit to the Fish Friends Classroom.**

*Suggested time-frame: mid-autumn

Overview: Arrange a visit to the school(s) and meet the participating teacher(s), especially if the teacher is new to the program. By this time, participating schools will have introduced the program to the students. You might suggest topics that are not necessarily covered within the program – talk about the health of a nearby river, your experiences on the river, the art of fly tying etc.

➤ **VISIT 2: Tank and chiller set-up**

*Suggested time-frame: at least 2-4 weeks prior to egg delivery.

Overview: Visit the school 2-3 weeks prior to egg delivery. The aquarium system could be the subject of an interesting talk. With the teacher, ensure that the aquarium and chiller are set up properly, and temperature is regulated before the eggs arrive (eggs will be ready for distribution at variable times within the Atlantic provinces and Maine). Talk to the teacher about the equipment. Ask students to make observations on the appearance of the unit, the sounds that it makes, etc. Review the “Troubleshooting” section of the Fish Friends Curriculum Guide with the teacher and discuss with the students some do’s and don’ts with the incubation unit. ASF staff will contact volunteers when the eggs are ready for distribution. Notify the teachers of this as soon as a confirmed date has been given.

➤ **VISIT 3: Egg Delivery**

*Suggested Time Frame: Depending on the location of the schools, eggs are ready for distribution at varied periods. Some eggs are ready as early as January, or as late as March. * Consult the Regional Director.

Overview: Volunteers will be contacted when eggs are ready for distribution. The eggs are received from hatcheries and volunteers will distribute in individual wide mouth glass jars (“Mason Jars”) to



the schools. Ensure that the egg jars are placed immediately in a well-insulated cooler and each is marked with the total number of eggs, and the number of degree days.

Volunteers should review lessons 11 and 12 in the curriculum guide and discuss with the students the developmental changes that will take place as they develop. *Take a magnifying glass and a Petri dish to examine the eggs more closely. Any observations? Has anyone seen eggs like these? Liken them to a chicken egg which has to be cared for by the hen, cleanliness is very important etc. Tell the students that they have been put in charge of the eggs, describing the proper care and handling of them while they are in this fragile stage (e.g. removing the white/dead eggs, regulating the temperature, etc.) Use the “Guess the hatch time” game sheet on page 98 of the Curriculum Guide.*

**Note: The pattern of Fish Friends activities in the schools follow the water temperature regimes North to South of the Atlantic salmon’s range. In the Southern part of the Atlantic salmon’s range, winters are milder and spring comes earlier, thus warmer water temperature speeds up the development of the egg to alevin stage. Similarly, in the North, winters are colder and spring arrives 2-3 weeks later than in the south, thus slowing the process down.*

➤ **VISIT 4: Egg Hatching and Feeding**

Suggested Time Frame: 3-5 weeks after receiving the eggs.



Overview:

Once the eggs have hatched, alevin will emerge with a large sac on their stomach from which they will derive their nourishment for approximately one month, until the sac is absorbed. The fry will then be fed with a special feed sent either directly to the school or the

volunteer. *Talk about the alevin stage and the purpose of the yolk sac. How long will it last? What is the next stage? Explain how to properly feed the fry, (a pinch in the morning and afternoon) how to clean the tank*

once they begin to feed and the weekly cleaning of the foam and carbon filters.

➤ **VISIT 5: Splash Down!! (Fry Release)**

Suggested Time Frame: 4- 6 weeks after disappearance of yolk sac. Note: The release site water temperature should be comparable to that of the tank, 11 to 13 C.

Overview: *Explain how to properly release the fish. Where are they going now? What will they eat? Why is it important to release them into a particular river? How long will it take before they become full-sized adult salmon?* Mention the importance of Live Release. Fry are released before the last day of classes. Often this becomes a field trip to the release site, sometimes with nearby participating schools. Volunteers can coordinate fry releases with teachers, with the assistance of ASF support staff.

While in the Classroom...Possible Discussion Topics
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Make your visit to your local Fish Friends classroom a fun and rewarding experience. Talk to the teacher about what the students have already done and what they are currently working on. Simple and flexible is better as the students will likely have questions which could lead you into interesting discussions. A copy of the Fish Friends Curriculum Guide will be provided to you. It is a good idea to read it and become familiar with some of its key concepts.

1. Interesting salmon facts:

- *Salmon can leap up to 12 feet.* Bring in a measuring tape and measure this height, and if possible, mark it on the wall.
- *Salmon journey from their birth river to sea, some travelling thousands of miles to southwest Greenland to feed and back again to spawn.* Find a map or globe and ask students what is



the greatest distance they have ever traveled? How did they get there? Has anyone been to Greenland? Could they swim all that way and back again?

- *Salmon do not feed in freshwater - for up to 18 months.* How long can people go without eating? Salmon are pretty amazing!
- *The salmon's "lateral line".* Instead of having ears, salmon hear through a row of sensory pores, called a lateral line along their sides. Why would this be more helpful than having ears like humans?
- *Salmon actually have 2 sets of teeth!* They use very pointed teeth to eat while in the ocean, but when they migrate back to freshwater, their pointy teeth fall out and is replaced by triangular teeth. Why do you think that is? (*They do not need to eat when in freshwater, therefore there is no need for pointed teeth*)

2. Themes for talks. You may think of others! Consider stories related to a river with which you are familiar or current issues. Tailor it to your audience. *Be sure of your facts.*

- History of salmon – in general or in your area
- Wild versus farmed salmon – Why are they different?
- The decline of wild salmon, why? – Refer to the "Wild Atlantic Salmon" brochure for a background. What can we do to help bring them back?
- The effect of acid rain on salmon – what causes it and what are we doing to help reduce the damage it is doing to salmon
- What is an "Endangered Status" for a population of Atlantic salmon? What other species are endangered?
- Other local issues surrounding salmon



3. Questions to Stimulate Discussion:

- Where do the salmon live near the school?
- Where do the eggs come from and where do they go?
- Why is it important to have them released in a particular river?
- How many eggs are they receiving, and how many are likely to survive (*from 8000 eggs laid, only 2 adults survive – in an “ideal” world*)
- Explain the importance of a clean tank, and compare this value to our river systems

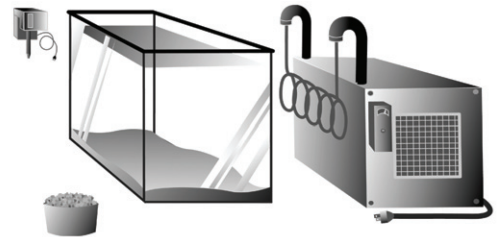


Resources Available to You

- **Colouring sheets:** Make enough copies of the coloring sheets (available from ASF) for all the students. Perhaps choose one, such as the life cycle and focus on it. What colours are the fish at their different stages? Why would this be? Talk about camouflage, habitat, predation, etc. Perhaps, begin with the life cycle coloring page and incorporate the other page by asking the students about their diet/predation at each life stage

- **ASF website –**
 - *Fish Friends* web page: http://asf.ca/fish_friends.php
 - click on “Online Special Resources”. Included in this section is: *How to Set up a Fish Friends Tank, Troubleshooting Guide, Atlantic Salmon Life Stage Posters, Transparent Salmon*. Also check out *Atlas of Atlantic Salmon Rivers* <http://asf.ca/docs/uploads/rivers/introduction.html>
 - More resources at: <http://asf.ca/education.php>
 - **Issues** Affecting Atlantic salmon: <http://asf.ca/issues.php>
 - view backgrounder pages and reports on issues such as *Aquaculture, Endangered Species, Acid Rain* and the *Penobscot Restoration Project*

- **ASF Brochures –**
 - **“The Wild Atlantic Salmon”** – *available in English and French, has the latest information on the natural history, biology and status of the wild Atlantic salmon*
 - **“Trout of Atlantic Canada”** – *a bilingual overview of the 3 native and 2 introduced species of trout including up-to-date distribution maps*
 - **“Fish Friends”** - *explains how the Fish Friends program works*



- **“Atlantic Salmon Federation”** – *details the work of the Atlantic Salmon Federation in understanding the species and safeguarding its future*
- **“Acid Rain – the Silent Killer”** for the impact on Nova Scotia Rivers of coal-fired power plants and other sources of SO₂.
- **Fish Friends – A Curriculum Supplement for Grades 4, 5, and 6:** Classroom – tested and teacher approved, spiral-bound curriculum in both English and French, which comes as part of the ASF Fish Friends Classroom Kit. The kit includes all the components needed to operate the ASF Fish Friends program in a classroom (see appendix)



Remuneration for the Volunteer

In some jurisdictions, regional and local funding programs have allowed volunteers to claim mileage and meals related to Fish Friends activities. This support will vary over time depending on available resources. Currently, the Fish Friends program does not have funding built-in to reimburse volunteers.

ASF Contacts

The contacts for Fish Friends are as follows:

NB: Trish Edwards
Tel: (506) 536-3051
Cell: (506) 364-5324
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(506) 529-1022
e-mail: asfcc@nb.aibn.com
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NL: Don Ivany
Tel: (709) 632-5100
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e-mail: donivany@swgc.mun.ca

QC : Charles Cusson
Tel : (514) 926-1412
e-mail : fsamtl@globetrotter.net

Maine : Mary-Jo Barrett
Tel : (207) 725-2833
e-mail: asfme@blazenetme.net



Appendix

The ASF FISH FRIENDS Classroom Kit contains the following:

- 1 Douse Chiller unit
- 1 Hagen® all-glass 33 US gallon fish tank
- 1 Aquaclear® 300 aquarium power filter
- 1 Aquaclear® 300 amrid ammonia remover insert
- 1 Aquaclear® 300 activated carbon insert
- 1 Aquaclear® foam filter insert
- 1 power filter water intake screening
- 1 nylon dip net
- Flexible Tubing
- 1 thermometer
- Turkey baster (for egg picking)
- 1 ASF aquarium background poster
- Fish Friends Curriculum Guide
- Initial visit and technical support from designate
- Fish Food
- Coordination of egg delivery and permitting requirements

Installation Materials:

Insulating foam board to maintain temperature within the aquarium, and provide a darkened environment for the salmon eggs and alevin
Duct tape to “assemble” the foam pieces around the aquarium.





Fish Friends Roles and Responsibilities: Atlantic Salmon Federation (ASF), Sponsor/Volunteer, and Participating School*

ASF's Fish Friends program is a collaborative program in which schools, volunteers, supporting organizations and the Atlantic Salmon Federation work together to see that highly rewarding hands-on learning takes place in classrooms.

These guidelines provide a framework on the responsibilities in the delivery of the program.

**participating school includes teacher and student.*

Responsibilities of Participating School:

- Keeping the tank and equipment clean:
 - Picking out dead eggs;
 - Clean out the bottom of the tank using siphon tubing if an accumulation of crud is present;
 - For optimal results, clean foam and carbon filter, alternately, every two weeks during feeding time.
- Replacing the Foam(#1), Carbon (#2), and Ammonia (#3) filters every year (these can be purchased at any pet store - Aquaclear® A616, A617, A618).
- Feeding the fish as per prescribed amount (feed when yolk sacs have disappeared- refer to page 98 of the *Fish Friends Curriculum Guide*).
- Ensuring that all measures are taken to prevent foreign objects from entering the tank.
- Informing the school personnel about the importance of leaving the tank undisturbed, and requesting help in feeding the fish on the weekends and over breaks if necessary. Working with the sponsor/volunteer or ASF to troubleshoot any equipment problems (***Please note that the chiller has a one-year warranty only; after this point any costs relating to repairs to the chiller or other equipment is the responsibility of the participating school or sponsor/volunteer***).
- Currently the English version of the Fish Friends Curriculum Guide will be available from ASF Education Coordinator in CD format (pdf document, approximately 6 megabytes).
- The *Fish Friends* Program is intended to teach important lessons about Atlantic salmon as outlined in the *Fish Friends Curriculum Guide* in conjunction with an Incubation Unit. The program is **not** intended to have an aquarium as a stand-alone item with no lessons involved. Teachers are encouraged to use the Curriculum Guide to effectively deliver the learning objectives of the program.

- Organizing transportation to the release site.
- Releasing the salmon fry to your designated release site.
- Cleaning the tank and its components at the conclusion of the program year.
- Storing the tank and its components in a cool, dry place.
- Informing the ASF Education Coordinator and/or Regional Director if school contact information changes, or if equipment is being passed along to another teacher at the school (Tel. 506-529-1384 or asfcc@nb.aibn.com)
- Abiding by the program restrictions (while participating in the program, the tank may only be used to rear the provided Atlantic salmon eggs (and in some areas, trout eggs).

Responsibilities of the Atlantic Salmon Federation (ASF):

- Ordering and organizing shipping arrangements for the aquarium, chiller, and accompanying equipment to the participating school or the sponsor/volunteer.
- Providing guidance, and advice about maintenance, problems with equipment, and release of fish.
- Providing a *Fish Friends Curriculum Guide*, and other related learning materials. (English version of the Curriculum Guide is in CD format as a pdf document; replacement French Guides are available in hard copy at a cost of \$20.00 + HST).
- Coordinating all permits and fish release information as per Department of Fisheries and Oceans requirements.
- Arranging pick – up locations and/or delivery schedules for eggs (either with Participating School or Sponsor/Volunteer)
- Where applicable, helping to set-up and organize “group fry releases” in coordination with sponsor/volunteer or participating school.

Responsibilities of Sponsor/Volunteer:

- Monitoring the assembly of the aquarium, or undertaking the task.
- Working with the school to troubleshoot any equipment problems (Please note that the chiller has a one-year warranty only; after this point any cost relating to repairs to the chiller or other equipment is the responsibility of the participating school or sponsoring organization).
- Working within the guidelines of the “Volunteer Primer”, a sponsor/volunteer should make at least 2 visits during the course of the program.
- Arrange the pick up and delivery of eggs to the school, with prior notification to the teacher.