Adopt-A-Salmon Family

An Interdisciplinary Watershed Education Program

Sea Grant
New Hampshire Maine

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

NEW ENGLAND SALMON ASSOCIATION

The **U.S. Fish and Wildlife Service** provides leadership in habitat and wetlands protection, fish and wildlife research, and the conservation and protection of migratory birds, anadromous fish, certain marine mammals, and threatened and endangered species.

New Hampshire/Maine Sea Grant is part of the National Sea Grant College Program, a network of 29 research and education programs dedicated to the wise use and conservation of our marine and Great Lakes resources for the public benefit.

The **New England Salmon Association** is a nonprofit conservation organization dedicated to the restoration, preservation, and wise management of wild Atlantic salmon in their native rivers throughout New England.

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Dear Educators,

Welcome to the **Adopt-A-Salmon Family** watershed education program! You are about to participate in an educational adventure which incorporates newsletters, field trips, classroom visitors, activities, lessons, and rearing Atlantic salmon eggs in the classroom. There is a significant amount of structure to the program dictated by the development of the salmonid eggs, however there is plenty of room for creativity and expansion.

The ***Adopt-A-Salmon Family Teacher's Guide*** is organized by monthly **Units** that correspond to monthly issues of ***The Salmon Times*** newsletter. Check the **Calendar** to see an overview of the topics introduced each month. This ***Teacher's Guide*** is intended to supplement ***The Salmon Times*** newsletter by providing background information of a more technical nature on the watershed topics introduced through the newsletters. Teachers are encouraged to use this information, the chapter activities, and the references and resources to support their use of ***The Salmon Times***. While there is a strong science component to the program, there are many opportunities to use the program materials for lessons in language arts, fine arts, mathematics, social studies, technical education, ethics, and recreation.

Potential vocabulary words are emphasized in both documents and are listed all together in the **Word Power** section at the end of each chapter in the ***Teacher's Guide***. Words with an asterick are taken from the newsletters.

Following each chapter in the ***Teacher's Guide*** are **Activities and Demonstrations** that illustrate concepts related to the information in each chapter Most of these come from existing educational materials.

Following the Activities are **References and Resources**. These lists include the text and illustration references used for each chapter. They also include additional resources that could be used to supplement the chapter. The resource lists are far from comprehensive because of the vast amount of teaching material available on watershed topics. Please do not hesitate to contact the offices of UNH Sea Grant Extension or USFWS for additional information about the listed resources, other resources, or specific topics.

A copy of ***The Salmon Times*** appears at the end of each monthly unit.

After the monthly units is a copy of the **Certificate of Participation** that the students receive after stocking their fry in the spring.

Appendices are located at the end of the guide. They contain important support materials! Appendix A is called "Egg to Stream" and is a guide to the care and maintenance of your salmon eggs and incubator regardless of which method you use. Appendix B is a guide to brine shrimp culture which you may be using eventually to feed your salmon fry. Appendix C contains outlines facilitators may use during their interactions with students.

Please do not hesitate to contact UNH Sea Grant or USFWS with any extensions, additions, or improvements you would like to see put in future printings.

Enjoy this educational adventure!

Adopt-A-Salmon Family Calendar

MONTH	THEME	TOPICS	ACTIVITIES INVOLVING FACILITATOR
October	What's a Watershed?	Role of USFWS; water cycle; watershed definition and concepts (surface water, groundwater, where water flows, delineating watersheds, stream order, how water connects people, wildlife, and "mountains to the sea")	SITE VISIT #1: Student orientation to Adopt-A-Salmon Family; introduction to watershed concepts
November	What else is in a watershed?	Introduction to hatcheries; living things depend on water; watery habitats (uplands, wetlands, lakes, rivers, estuaries, oceans, riparian zones); river forms (geomorphology, parts of a river, instream habitats)	FIELD TRIP: Students visit a salmon hatchery for spawning demonstration OR hatchery brings fish to the school (or other location)
December	Aquatic Ecosystems	Energy sources; food chains and webs; predator-prey relationships; biodiversity = stability; survival strategies; examples of aquatic organisms	N/A
January	Atlantic salmon natural history Incubation of a "salmon family"	Atlantic salmon characteristics (physical, behavorial, natural history); anadromous fish life cycles; incubator as temporary/artificial habitat; incubator operation	SITE VISIT#2: Presentation about Atlantic salmon life cycle and incubator operation; salmon egg delivery NOTE: Facilitator sets up incubator about one week prior to date of presentation
February	Rivers: For people too	Settlement patterns; historical uses in New England (pre-colonial, European settlement, industrialization); present day uses (drinking water, hydropower, industry, waste disposal, irrigation, recreation, nature study)	N/A
March	Human threats and impacts on a watershed	Sources of pollution: non-point vs. point (siltation, run-off, septic, agricultural, acid rain, etc.); altering flow, temperature, and composition of stream bed; impacts on salmon (dams, overfishing, and pollution); other threats, including ENDANGERED SPECIES	SITE VISIT #3: Endangered species role-playing exercise
April	Water Quality Monitoring	Finding out about water by looking at physical characteristics (temp., depth, width, flow, turbidity); chemical characteristics (DO, pH); bio-indicators of water quality (macroinvertebrates, mussels, salmon)	N/A
May	Taking Action	Citizen stewardship actions (kids AND adults); professional stewards (environmental careers); role of government (legislation (ESA, etc.), habitat acquisition/protection (refuges), recovery efforts, environmental cleanup; values/benefits of a healthy environment (ecological, recreation, economic, aesthetic, philosophical)	SITE VISIT #4: Sportfishing demonstration and introduction to fry stocking field trip FRY STOCKING FIELD TRIP: Students visit a local stream to release their samon family