



HIGHLIGHTS AND NEWS BITES FROM THE DOWNEAST SALMON FEDERATION



DSF NOTES

DRLT EYES VITAL LINK IN NARRAGUAGUS CORRIDOR

The Downeast Salmon Federation/Downeast Rivers Land Trust (DSF/DRLT) is in the midst of a campaign to expand protection of habitat along the West Branch of the Narraguagus River through acquisition of an eight-acre wooded lot in Township 10-SD. The property located in the "Crotch" (a wedge of land between the West Branch and Main Stem of the Narraguagus), is accessible via a 15-minute hike after driving down into the "Crotch" or 45-minute paddle upriver from the end of the Spragues Falls road in Cherryfield. The property abuts eight-thousand acres of remote forested lands protected by the Nature Conservancy, and is in close proximity to the 14,000+ acre Donnell Pond Public Land Unit managed by the State of Maine. It also adjoins over 200



The DSF/DRLT is in the midst of a campaign to protect an eight-acre parcel on the West Branch of the Narraguagus River that includes the Boar's Nest cabin.

acres of DSF/DRLT public reserves and easement holdings. The parcel is a vital link connecting DSF, State of Maine, and Nature Conservancy holdings to the main stem of

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MEANDERS

"Caution is a most valuable asset in fishing, especially if you are the fish."

Author Unknown

the Narraguagus River and the Maine Department of Inland Fisheries and Wildlife Narraguagus Wildlife Management Area in the "Crotch" creating an important wildlife travel corridor.

The property is being offered in a bargain sale (less than market value) by Randy
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EAST MACHIAS AQUATIC RESEARCH CENTER (EMARC) UPDATE

Over the last year, DSF has continued to make significant progress at the East Machias Aquatic Research Center (EMARC). This past May, 20,000 land-locked Atlantic salmon reared and hatched at EMARC were released into the East Machias watershed in coordination with the Maine Department of Inland Fisheries and Wildlife and Washington Academy. In 2010, we will raise our first batch of endangered wild Atlantic salmon at EMARC. The hatchery

will receive 20,000 fertilized eggs of East Machias River broodstock from the Craig Brook National Fish Hatchery. The salmon will be released into the East Machias River watershed in early spring as unfed fry.

As part of our continued dedication to "green design", we are in the process of installing a 1.2 kW, grid-tied wind turbine and solar hot water panels to complement our 6,000-watt, grid-tied solar power system. Hot water panels salvaged from the decommissioned Cutler Naval Station have been donated by a DSF member.

We are also currently in the final stages of design and planning for Phase II construction. DSF was recently awarded a \$100,000 USDA Rural Development Public Facilities Grant. The program requires that DSF raise an equal amount of cash for the project. Toward this goal, a \$25,000 challenge grant has been offered by the J.A.

Woollam Foundation – **meaning that every dollar we raise (up to \$25,000) for EMARC will now be matched by \$1 from USDA and another \$1 from the Woollam Foundation!** Recent donations ranging from \$25 - \$500 have been coming in from some of our local members and will be directed toward this matching program. Please help us reach this goal in 2010 – we need your help.

In addition to the USDA grant, DSF received \$215,500 in grant funding through the Maine Riverfront Community Development Bond last year and the Jane B. Cook 1992 Charitable Trust provided \$10,000 for our new wind turbine and solar energy system this year bringing funds raised to date to over \$800,000.

Once completed, the new, 7,262 sq. ft. East Machias Aquatic Research Center (EMARC)
(Continued on page 2)



The Windspire 1.2 kW turbine by Mariah Power of Michigan generates up to 2,000 kilowatts hours per year in average winds as low as 10-12 mph. Made in the USA with 80% recycled materials, the Windspire boasts ultra-quiet operation and a sleek compact design-just 4 feet wide and 30 feet tall.

DSF SPURS OPENING OF FIRST ORGANIC BLUEBERRY PROCESSOR IN STATE

The DSF/DRLT, in an effort to protect public access and riparian habitat (habitat along the river or stream), owns more than 30 acres of wild blueberry barrens. Two of these fields are close to the the Machias and Narraguagus Rivers, but rather than let the fields revert back to forest to protect the health of the rivers the DSF board decided to transition the fields to organic production. The board saw several advantages to this approach. Keeping the land in production provides jobs and supports the local economy, by transitioning to organic we set an example that can be followed by other producers (lessening the impacts of commercial production on local rivers) and at the same time providing an income stream to help fund our many important



In 2009, the DSF harvested 56,000 pounds of MOFGA-certified organic wild blueberries from 30 acres owned by DSF/DRLT in the Narraguagus and Machias River drainages.

conservation programs. To this end in 2008, 30 acres of DSF's blueberry land received organic certification through the Maine Organic Growers and Farmers Association

(MOFGA). The DSF was eager to harvest the berries to provide support for our programs, but Maine did not have a facility to freeze and process large quantities of organic blueberries.

At this same time, Maine Coast Heritage Trust had hired Charlie Hitchings of Cherryfield as a consultant to identify opportunities for marketing and development of organic berries (they also saw the ecological advantages of converting more blueberry land to organic production). During the same period, Merrill Blueberry Farms, Inc. of Ellsworth had been exploring getting their processing facility in Ellsworth certified to process and freeze organic berries to take advantage of that growing
(Continued on page 3)

PLEASANT RIVER HATCHERY UPDATE

The Pleasant River Fish Hatchery has had another successful year rearing salmon to stock into the Pleasant River and the liming research project is continuing to provide data on the impacts of low pH and pesticides on salmon growth and survival.

In January the DSF received approximately 47,000 fertilized Pleasant River Atlantic salmon eggs from Craig Brook National Fish Hatchery. The eggs were incubated and

young fish reared in our Columbia Falls facility throughout the winter and released by DSF staff and volunteers as unfed fry (juvenile fish) in early May. Following the exciting news in the fall of 2007 that at least five adult salmon had spawned in Eastern Little River, a major tributary into which DSF releases fry annually, we have been eagerly anticipating our annual spring stocking of Pleasant River fry. Because this

tributary saw higher returns than other salmon rivers in the region, this gives us hope that what we are doing here at the Pleasant River Fish Hatchery will improve adult return rates in the Pleasant River drainage.

Meanwhile, in the "experimental" half of the hatchery, the multi-year pH mitigation study continues. The project is a collaborative
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EMARC UPDATE CONT.



Local students Brittany and Malcolm Holmes assist with hatchery activities. Land-locked salmon raised at EMARC were stocked into the East Machias River this past spring.

will include a freshwater, flow-through research and fisheries enhancement hatchery, museum and visitors center, archival storage room, a wet laboratory/ classroom, a certified water quality laboratory, a GIS and technical resources center, and office space for staff and visiting researchers. Please consider a donation to EMARC now while the matching program is in place!

BWET FOR SALMON RIVERS

The Downeast Salmon Federation, in partnership with Project S.H.A.R.E. and Washington Academy, has submitted a proposal to NOAA Fisheries Bay-Watershed Education and Training (B-WET) Program to develop a comprehensive curriculum designed to provide meaningful watershed educational experiences for students in grades 7-12. NOAA B-WET is an environmental education program that promotes locally relevant, experiential learning for students in grades K-12.

The program will link hands-on classroom activities focusing on Atlantic salmon and other native diadromous species with on-the-ground restoration activities occurring regionally to explore the importance of habitat connectivity and the removal of in-

stream barriers for native species recovery. A variety of in-class preparation activities, evocative field-based experiences, and guided reflection will provide students with a comprehensive understanding of how in-stream barriers impact native sea-run species and the river continuum from the headwaters to the sea. The program will help students develop knowledge and skills while providing opportunities to contribute in a meaningful way to ongoing watershed restoration efforts in Downeast Maine.

For over a decade, our coastal rivers have been the epicenter of some of the most focused fish passage barrier removal projects in the eastern U.S. While rivers draining this region are relatively free of dams, they
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PLEASANT RIVER HATCHERY (CONT.)

effort of the DSF, University of Maine, and survival.

Maine DEP, and U.S. Geological Survey (USGS) to evaluate how the water quality of the Pleasant River may affect health and development of young Atlantic salmon. While water quality of the river is generally good, it contains low but detectable levels of the agricultural herbicide hexazinone (Velpar). In spring and fall, high rainfall levels and snowmelt contribute to a rise in acidity which, in turn, causes the release of toxic aluminum from soils and sediments. This combination of pesticide + acid + aluminum, creates a 'multiple stressor' environment for young salmon.

The study began in 2008 with 7,000 fry. A second cohort of fertilized eggs was added in 2009. Half of the fish from each group are being reared in untreated river water, the other in water buffered with calcium carbonate (CaCO₃). By buffering the pH we hope to control for several factors that may be negatively affecting early salmon growth

USGS researcher and UMaine professor Adria Elskus, PhD, has conducted preliminary feeding performance studies on each group. A fry whose health is compromised will likely capture less prey - perhaps due to poor eyesight, reflexes, or swimming ability. The success of the 2009 cohort, which has been exposed to Pleasant River ambient water since soon after fertilization, will be compared to that of the 2008 study group, which entered the study at the fry stage of development.

A portion of the study fish are sampled monthly for growth and every two months for physiological response to the different treatments, providing an opportunity for UMaine (Machias) undergraduate students interested in Atlantic salmon restoration to assist with sample collection. Stephen McCormick, fisheries physiology researcher with the USGS Conte Anadromous Fish Research Center (MA) conducts non-lethal



DSF staff and volunteers release salmon fry into the Pleasant River.

DSF TO DEVELOP FISHERIES HERITAGE SITE

The Pleasant River Basin stretches from where the river meets tidal flows below the falls adjacent to the Wild Salmon Resource Center in Columbia Falls to downtown Addison. This estuary is one of the most productive locations for a number of traditional fisheries-most notably the Rainbow Smelt. The Pleasant River smelt fishery constitutes the last remaining commercial fishery for this species in the U.S.

Historically, the commercial smelt fishery extended from Massachusetts to the Canadian border. NOAA Fisheries has designated the Rainbow smelt as a "Species of Concern" noting a dramatic collapse in stocks throughout its historic range. In 2008, Maine DMR proposed closures of the commercial fishery statewide. The Pleasant River has yet not seen the declines found elsewhere, and the DSF successfully lobbied to delay closure of the Pleasant River Fishery pending further study (see article beginning on page 4).

The Pleasant River smelt fishery offers a

unique opportunity for a community-based heritage site. Local records indicate that the smelt fishery had been sustained in the Pleasant River Basin since the earliest period of settlement. In fact, the transaction ledger from Buckman Store dating from 1776-1792 provides the earliest records of smelt catches and indicates that the same families engaged in the activity as continue to fish here today. Several small cedar-shingle fishing camps along the tidal high water line adjacent to the DSF's Wild Salmon Resource Center (WSRC) are still used today. We are in the process of developing plans to restore an abandoned camp in the Basin as part of a fisheries heritage site. It will serve as both an extension of our educational center (the WSRC) and as a working commercial and research feature emphasizing connections between water quality and habitat management and the sustainability of fisheries and the communities they support.

The primary focus of the heritage site will be the commercial smelt fishery as it offers a

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sampling of gill tissue from a small sample of the fish to analyze levels of exchangeable aluminum and of Na⁺/K⁺-ATPase, also known as the sodium-potassium pump. Found in all animal cells, this "pump" provides active transport of nutrients across cell membranes. The study will culminate with a salt water challenge whereby smolts will be put into salt water tanks and their physiological responses measured. The study will conclude in 2011 with release of the fish hatched in the spring 2009. Upon completion we hope to have a solid understanding of whether pH mitigation will improve fresh and saltwater growth and survival of Pleasant River salmon. 🐟

BLUEBERRIES (CONT.)

market. Hitching facilitated discussion between DSF and Merrills, and because the DSF had enough organic berries in the field to warrant running an organic processing line Merrills went through the certification process and was certified by MOFGA. In 2009, DSF harvested 60,000 pounds of blueberries 56,000 pounds of which were processed organically though Merrills. This successful partnership paves the way for organic blueberry growers from around the state to process their harvest organically and maintain MOFGA certification which brings them a better price for their berries (generally twice what commercial grower are paid) and benefits consumers and the ecology of the region with a reduction in use of pesticides and chemical fertilizers. 🐟

FIRST IN-STREAM ACID MITIGATION PILOT PROJECT UNDERWAY

In early 2009, Project S.H.A.R.E., in partnership with Maine Department of Environmental Protection (MDEP) and US Fish & Wildlife Service Maine Fishery Resources Office (MEFRO) was awarded funds NOAA Fisheries' Atlantic Salmon Conservation Grants program for a two-year pilot study utilizing clam shells as calcium carbonate sources for stream liming experiments relative to salmonid conservation. The DSF, an active S.H.A.R.E. partner, successfully lobbied the Bailey Wildlife Foundation for funds to cover the grant application fee for the proposal. Stream liming for acid mitigation has been successfully employed in Sweden, Norway, eastern Canada, and several states in the northeast U.S. to improve water quality conditions for fish in freshwater lakes and rivers impacted by acid precipitation. State and federal agencies charged with salmon management, the National Academy of Sciences review team, and many experts in the field agree that the combination of episodic low pH, high aluminum (exchangeable form), and low calcium in these river systems may have a significant negative impact on Atlantic salmon in the Downeast rivers. While limestone has been

successfully used as a buffering and calcium source for both in-stream and terrestrial applications, it is prohibitively expensive. Clam shells, a by-product and disposal liability for seafood processors, have been used successfully in Norway and Sweden to buffer acidic streams and improve salmon spawning areas. The success of this cost effective strategy made clam shell application the logical choice for the S.H.A.R.E. pilot project.

Three headwater streams with demonstrated acidification problems (low pH) in the Machias River watershed were selected for the two-year pilot project: Dead Stream – Bowles Lake, Crooked River, and



Clam shells, a by-product and disposal liability for seafood processors, have been used successfully in northern Europe to buffer acidic streams and improve salmon spawning areas.

Honeymoon Brook. Baseline data was collected in the 2008 and 2009 field seasons. In 2009 and 2010, clam shells donated by local processor Albert Carver, Inc. will be distributed at selected sites on the stream beds and along the stream banks below the high water line. Several application sites will be used to avoid abrupt transitions in water chemistry which could be harmful for fish. One-half of shells will be placed in mesh bags to facilitate removal as needed to keep the pH below 7.6 (the highest summer pH recorded in the Machias watershed). The remaining half will be scattered along the stream bed and stream banks so that redistribution of shells by stream currents can be observed. Limestone and shell will be added to the road bed and roadside ditches by road crossings within the project area. Aquatic applications will begin in this fall at Dead Stream and will likely have to be reapplied twice per year to replace shell mass that is lost to dissolution. The terrestrial applications of limestone gravel and shells are expected to last for decades.

Water chemistry field data will be collected monthly and remote data sondes will collect continuous field data above and below

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VOLUNTEERS KEY TO STEWARDSHIP



Volunteers from DSF and the Pleasant River Fish and Game Association recently completed construction of over two miles of trail in the Salmon Safe™ Community Forest in Columbia .

The DSF extends many thanks to our dedicated volunteers who have helped make things happen on the ground in 2009. This past spring, volunteers constructed two

miles of trails in our "Salmon Safe" Narraguagus, Pleasant, and Machias River Community Forest in Columbia. Dozens of volunteers from Washington County and beyond helped to make the 2009 Smelt Fry bigger and better than ever.

At the Wild Salmon Resource Center and EMARC, local students and community volunteers help keep the Pleasant and East Machias River hatcheries in operation throughout the winter months and assist with spring stocking efforts. In 2009, the Pleasant River Hatchery was tended by Peter Pund, a volunteer through the University of Maine Center on Aging's Retired Senior Volunteer Program.

The DSF/DRLT owns or maintains thousands of acres of critical habitat in the

Narraguagus, Pleasant, and Machias River watersheds through fee or conservation easement. Consistent monitoring and stewardship of these properties are essential to protect sensitive areas and provide ongoing public access and sustainable resource use. Stewardship volunteers like Bob Costa of Machias, a licensed pilot who donates flying time to provide aerial monitoring of DSF/DRLT holdings and easements, help keep these areas protected and available for public enjoyment.

The list goes on and on, and the Downeast Salmon Federation would not be nearly as effective without all of you who lend a hand. Thanks to all of you for your continued support!

NARRAGUAGUS CORRIDOR CONT.



The Boar's Nest parcel abuts eight-thousand acres of remote forested lands protected by the Nature Conservancy, the 14,000+ acre Donnell Pond Public Land Unit managed by the Maine Department of Conservation, and several acres of DSF/DRLT public reserve and easement holdings.

Fairbanks, a retired fisheries biologist from Cape Cod, Massachusetts and includes a circa-1930 hunting cabin known locally as the "Boars Nest". The well-maintained structure is a classic Maine hunting camp and is a piece of history itself; an interior wall is inscribed with the words: "Came to deer camp last night. Roosevelt was elected yesterday."

The DSF/DRLT needs to raise a total of \$10,000 for acquisition and stewardship of the Boar's Nest property. To date, the Trust has raised approximately \$2,500 and needs your help to raise the remaining \$7,500 before year's end. The cabin sleeps four and will be available for public use by donation on a first-come-first-served basis. For more information or to support this project, please call, e-mail, or stop by the Wild Salmon Resource Center in Columbia Falls.



The Boar's Nest. The well-maintained cabin preserves a piece of history itself; an interior wall is inscribed with the words: "Came to deer camp last night. Roosevelt was elected yesterday."

DSF PETITIONS STATE TO RECONSIDER CLOSURE OF TRADITIONAL SMELT FISHERY

The DSF has succeeded in its efforts to convince Maine Department of Marine Resources (MDMR) to reconsider regulations intended to close down the last remaining commercial gill net and bag net smelt fishery in Washington County. According to MDMR, survey data collected since the 1970's from Massachusetts to Maine show population declines steadily advancing northward. Several rivers and streams have experienced total loss of annual smelt runs. MDMR cites several factors contributing to smelt decline, including spawning habitat degradation, inadequate fish passage, harvesting and acid precipitation. The DSF maintains that the Pleasant River, which supports the last remaining and longest running traditional smelt fishery in the country, and other nearby Downeast rivers have not yet shown the decreases observed to the south and therefore should be excluded from the new rules. DSF members and staff met with the Maine DMR commissioner and other staff several times over the past nine months to urge the department to allow traditional fisheries Downeast to remain open pending

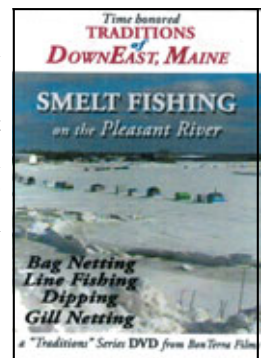
joint study of these populations over the next five to seven years. As a result, MDMR has agreed to continue to allow bag and gill net harvesting of smelt from January 1 through April 1 in the estuaries of four "salmon rivers" in western Washington County and up to April 10th in the "non-salmon river estuaries" identified by DSF. Changes in dates and locations reflect the timing of out-migrating salmon smolts, which had overlapped with the smelt season, and reduce potential for accidental salmon "by catch". The new regulations will likely be enacted in late December 2009. No major changes will be enacted in eastern

Maine relative to the hook and line or dip net fishery. Commercial smelt fisheries in these waters have persisted since the 1700's and early records cited by DSF show that many of the individuals and families involved in the fishery today are descendents of these early settlers – and continue to fish using very similar techniques. DSF maintains that local level initiatives to protect the fishery over the past two+ centuries can serve as a model, case study and inspiration for other communities. In testimony and correspondence to MDMR, DSF has maintained that the smelt fishery in these

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NEW FILM FEATURES PLEASANT RIVER SMELT FISHERY

Mark Launer of Addison has just released a new documentary in his "Traditions of Downeast, Maine" series (Bon Terra Films) titled "Smelt Fishing on the Pleasant River." The 30-minute DVD video features a brief history of the centuries-old Pleasant River smelt fishery-the last of its kind in the country-along with first-hand accounts from local fishermen. Purchase your copy through DSF today for \$15.00 and \$5 from the sale of each video will go directly to support our programs and activities. If you would like to purchase "Smelt Fishing" call (207)483-4336 or stop by the WSRC.



ACID MITIGATION PILOT (CONT.)

treatment sites for the duration of the two-year study. Water samples will also be collected quarterly for laboratory analysis. Biomonitoring will include macroinvertebrate surveys and rock scrapings sampling for algae. DSF will coordinate local volunteers and student groups to assist with monitoring efforts.

The pilot study is based on the hypothesis that clam shell application will increase fish density and health (fish condition index) and diversity and abundance of aquatic macroinvertebrates in and below application areas. If the pilot project proves successful,

S.H.A.R.E. will apply for new or amended permits to expand the projects downstream.

2009 SALMON RETURNS

2009 salmon returns have reported by Maine DMR Bureau of Sea Run Fisheries and Habitat. The Narraguagus and Dennys Rivers saw 8 fish each; Penobscot River has seen over 2,000 returns, with 1,958 counted at Veazie Dam and 345 Weldon Dam. For counts on other rivers visit <http://www.maine.gov/dmr/searunfish/index.shtml>.

FISHERIES HERITAGE SITE (CONT.)

“living history” and an is an example of a successful and sustainable commercial fishery that may motivate community support for protection and enhancement of all native fisheries. The heritage site will also offer outreach materials on other species and

fisheries, including tom cod, American eel, Atlantic salmon, alewives, shad, lamprey, and sturgeon. In addition, DSF anticipates conducting stock and habitat assessment, habitat restoration and other smelt fisheries management research.

SMELT FISHERY (CONT.)

waters appears healthy and sustainable – in part due to dam removals and habitat restoration conducted by DSF and our partners. In 2010, DSF will work with MDMR to document smelt abundance, restore degraded habitat and engage in public outreach to build upon local knowledge about these tasty and important little fish.

NEW! DSF ON DVD



The DSF has released “Community Based River Conservation in Eastern Maine,” a 14-minute video highlighting DSF’s mission and local river habitat conservation initiatives. The label features an original painting by Bangor-area biologist and artist Mark McCollough for an interpretive kiosk at DSF’s “Salmon Safe” Community Forest in Columbia. Produced with support from the Bunting Foundation, the FREE educational video is available on DVD or via download directly from our website: <http://www.mainesalmonrivers.org>.

THE DSF / DRLT MISSION:

To conserve wild Atlantic salmon and its’ habitat, restore a viable sports fishery and protect other important river, scenic, recreational and ecological resources in eastern Maine.



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BWET (CONT.)

are dissected by a vast network of commercial roads and associated crossings. The impact of roads and poorly designed stream crossings remains one of the most significant barriers to recovery of native fish populations such as Atlantic salmon, brook trout, and alewives. These road networks are an important environmental issue to introduce students to because though they represent relatively small in-stream barriers (compared to mainstem dams), they have clear observable effects on stream ecosystems and can be used to safely introduce students to field techniques and concepts such as the river continuum.

The collaborative educational program will focus on locally important native fish species and on-going restoration activities, lead by Project S.H.A.R.E., to provide students with meaningful watershed educational experiences that tie together land use activities taking place in the upper watersheds to the ecological health of our estuaries and food web dynamics in the Gulf of Maine.

Washington Academy (WA) located in East Machias, is a regional high school with long-standing experience in diadromous species conservation and restoration, on-the-ground fish passage barrier removal, and place-based environmental education programs. WA’s strengths, combined with Project S.H.A.R.E.’s on-the-ground restoration program and DSF’s experience in the classroom create the perfect platform to provide youth with meaningful watershed educational experiences that highlight the ecological importance of connectivity of riverine systems from their headwaters to the sea. The DSF and its project partners are seeking funding support NOAA’s Bay-Watershed Education and Training (B-WET) Program to implement the program at Washington Academy for a two-year period beginning in June 2010.