FB Environmental E-NEWS

January 2016
Volume 4, Issue 1

FB environmental

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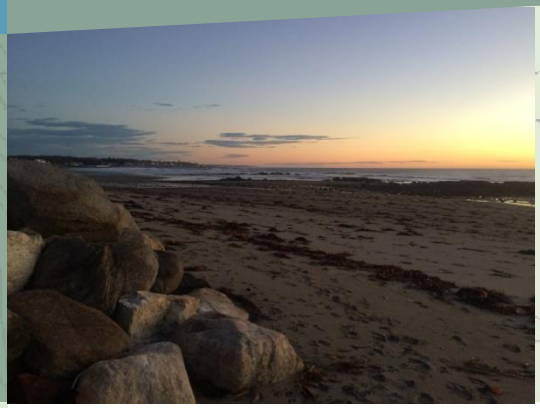

e-news in review

"Your identification and description of the streams, wetlands, forest, and soil types brings far greater clarity to what we have [at our property] than I have ever seen before."
-Former US Rep. Tom Allen, referring to FBE's NRI of his property in Maine

FBE NATURAL RESOURCES INVENTORY TO GUIDE MANAGEMENT OF CONSERVATION LAND

Ecological Services Division

Scarborough, ME - FB Environmental (FBE) recently completed a natural resources inventory (NRI) for the Scarborough Land Trust's (SLT) newly-acquired Pleasant Hill Preserve, a 135-acre former farm. The preserve is part of a conservation corridor from the Spurwink River in Cape Elizabeth to the Libby River in Scarborough. SLT purchased the land to permanently conserve it for scenic views, wildlife habitat, and low-impact public recreation.

The preserve includes wetlands, open fields, and patches of mature forest. Wetlands are particularly extensive, with one complex encompassing just over one-third of the property. As part of the NRI, FBE classified and mapped the terrestrial and wetland communities on the preserve, developed a list of vascular plants (including non-native invasive species), identified noteworthy natural features, and documented wildlife signs and sightings. FBE has completed similar inventories for a variety of land trusts and private land owners (see quote, left).

FEATURED PROJECT: KEZAR LAKE CLIMATE CHANGE OBSERVATORY (CCO) REPORT

Climate change is a real and imminent threat to our local, regional, and global ecosystems, most especially our treasured lakes. Lakes are recognized as "sentinels of climate change" because their physical, chemical, and biological responses can provide the first signal of the effects of climate change. In New England, we can expect warmer air temperatures, more intense/frequent precipitation events, and earlier lake ice-out. In reaction to these predications, a Climate Change Observatory (CCO) for the Kezar Lake watershed was established in 2014 with the objective to monitor and analyze the long-term effects of climate change on atmospheric, aquatic, and terrestrial ecosystems in the watershed. With the help of FBE, the CCO published their first Annual Report in fall 2015. *(continued on p. 2)*

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Project Manager Laura Diemer and field assistant Fritz inspect a data logger and stream gauge in a Kezar Lake tributary.

FEATURED PROJECT: KEZAR LAKE CCO *(continued)*

(continued from p. 1) The purpose of the 2015 report was to summarize CCO activities for the past year and to make recommendations based on the analysis of climate change-induced annual trends for available data. These data were presented by major ecological zone: water, atmosphere, and land. The CCO was busy in 2015 and accomplished a great deal to help protect their watershed, including the development of climate change webpages (klwa.us) with help from FBE and Level8, deployment by FBE of data loggers at 9 locations, completion of a culvert survey by FBE, Town of Lovell, and KLWA volunteers, and much more. We look forward to the 2016 CCO report!

OSSIPEE LAKE SHORELINE SURVEY

FBE, in cooperation with Green Mountain Conservation Group, is developing a Watershed Management Plan (WMP) for Ossipee Lake and the Lovell River Watershed. Part of this plan includes identifying sources of nonpoint source pollution throughout the watershed. On a beautiful day in September 2015, FBE staff and watershed volunteers surveyed 266 parcels with direct contributions to Ossipee Lake, evaluating parcels for extent of vegetative buffer, percent slope, and other metrics. These data will be used in the WMP to identify areas for improvement. Thank you very much to our survey volunteers (pictured at right).

FBE WELCOMES RETURNING STAFF

Jodi Federle Project Manager

Jodi Federle has re-joined FB Environmental as a project manager to assist with environmental projects throughout New England. Previously, Jodi assisted FBE on lake monitoring and assessment, watershed assessment, TMDL report writing, and stakeholder coordination. Jodi has a B.A. Degree in Environmental Science from the University of Southern Maine and an M.S. in Natural Resources Management from the University of New Hampshire. Jodi's current tasks include staff oversight, project budget tracking, Best Management Practice installation and maintenance, and assisting clients and stakeholders to help protect our valuable water resources.

Sabrina Vivian Project Assistant

Sabrina Vivian returns to join FBE as a project assistant. Sabrina was an intern for FBE during the summer of 2014 while she was attending the University of Maine in Orono as an undergraduate student. Since then, she has received a B.S. in Ecology and Environmental Science. Her studies and interests focus on natural resources, sustainability, energy, and environmental policy. Some of Sabrina's recent projects include researching and developing outreach material on New England wood banks, working as an energy analyst intern, and volunteering at a Costa Rican butterfly conservatory. Sabrina is excited to be a part of FBE to help with data quality review and to expand science communication and public engagement in natural resource protection.

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Praying mantis found during early morning sampling in Rye, NH

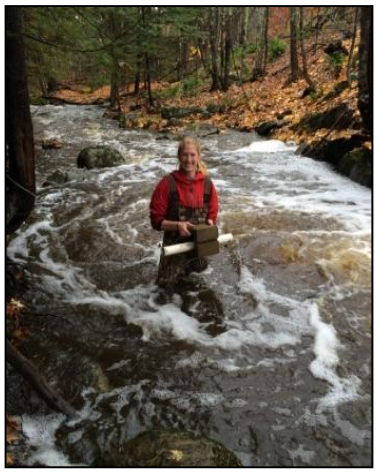
Young river lovers learning to fish on the Presumpscot River

Estuarine Assessment in Casco Bay near Portland, ME

Wetland in Pleasant Hill Preserve, Scarborough, ME

RECENT & ONGOING PROJECTS

Environmental Monitoring Division



Project Scientist Maggie Burns inspects a data logger deployed in Capehart Brook in Bangor, ME

At FBE, we work with a number of municipalities on a wide variety of water quality monitoring projects in both Maine and New Hampshire. These projects include **MS4 outfall sampling, compliance monitoring, investigative testing, and long-term site monitoring**. We typically work in impaired waterbodies, including freshwater, estuarine, and marine waters, to investigate sources of or monitor changes in pollutants over time. Pollutants range from fecal indicator bacteria to nutrients to salts and more. Often, we test sites through surface grab samples, but the advent of *in situ* data loggers provides an affordable alternative to long-term monitoring that allows greater detail in pollutant tracking over time. For example, we have worked with the Town of Kittery for nearly a decade on tracking and managing pollutants (especially fecal indicator bacteria) in tributaries and outfalls to Spruce Creek. Since 2012, we have also used YSI continuous sondes to monitor dissolved oxygen, specific conductivity, temperature, and turbidity along the main stem of Spruce Creek. We will continue to work with the Town of Kittery as they address potential fecal sources and work to reduce contamination in the creek. Only future monitoring will tell!

Watershed Management Division

In 2015, FBE worked with the Towns of Lovell and Kittery, ME to survey and assess their culverts for issues related to stormwater management. Ensuring that culverts are properly sized and positioned, as well as maintained, is important for the integrity of a watershed. Unstable culverts (e.g., undersized for incoming flow volumes, poor armoring along the inlet and outlet banks, not properly aligned with flow direction) can cause erosion of stream banks and road shoulders. This eroded material carries nutrients, which can then enter local waterbodies, fueling algal growth. In June 2015, FBE with the Town of Lovell and the Kezar Lake Watershed Association (KLWA) assessed 211 culverts within Lovell and the broader Kezar Lake Watershed. From the assessment, 15 culverts were prioritized for replacement or repair. Common problems identified included road washout, "pinched" streams, corrosion, and perched inlets and outlets. More recently, FBE worked with the Town of Kittery to locate and assess over 100 culverts in the Town, which is largely within the Spruce Creek watershed.

Wetland Scientist Kevin Ryan inspects a culvert near Kezar Lake in Lovell, ME

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FBE STAFF SCIENTIFIC PUBLICATIONS


Nutrient uptake along a fire gradient in boreal streams of Central Siberia

Three FBE staff scientists published articles in peer-reviewed journals in 2015 (FBE authors highlighted in bold).

Bizzari, L. E., C. D. Collins, L. A. Brudvig, and E. I. Damschen. 2015. Historical agriculture and contemporary fire frequency alter soil properties in longleaf pine woodlands. Forest Ecology and Management. 349:45-54. Link to abstract: http://dx.doi.org/10.1016/j.foreco.2015.04.006

Diemer, L. A, W. H. McDowell, A. S. Wymore, and A. S. Prokushkin. 2015. Nutrient uptake along a fire gradient in boreal streams of Central Siberia. Freshwater Science 34(4): 1443-1456. Link to abstract: http://www.journals.uchicago.edu/doi/abs/10.1086/683481

Ryan, K. J., A. J. K. Calhoun, B. C. Timm, and J. D. Zydlewski. 2015. Monitoring Eastern Spadefoot (*Scaphiopus holbrookii*) response to weather with the use of a passive integrated transponder (PIT) system. Journal of Herpetology 49(2): 257-263. Link to abstract: http://journalofherpetology.org/doi/abs/10.1670/12-230

BOARD APPOINTMENTS, WORKSHOPS, & LECTURES


Beautiful fall colors, Parsons Creek Rye, NH

Piscataqua Regional Estuaries Partnership (PREP)

- FBE Principal, Forrest Bell, was appointed to the PREP Management Committee in late 2014 and has been leading a committee on board recruitment and development throughout 2015.

Guest Lecturer at the University of New Hampshire – Nov. 17, 2015

- Project Manager, Laura Diemer, was a guest lecturer for a high-level undergraduate/graduate course at UNH: **Watershed Water Quality Management.** She discussed setting goals and objectives and evaluating watershed management practices.

9th Annual Lamprey River Symposium, Durham, NH – Jan. 8, 2016

- Laura Diemer and Project Scientist, Lauren Bizzari, presented on **current tools and challenges to tracking fecal contamination** in the NH Seacoast region.

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