



Friends of Merrymeeting Bay (FOMB) is a 501(c)(3) non-profit organization. Our mission is to preserve, protect, and improve the unique ecosystems of the Bay through:

Education

Conservation & Stewardship

Research & Advocacy

Member Events

Support comes from members' tax-deductible donations and gifts.

Merrymeeting News is published seasonally and is sent to FOMB members and other friends of the Bay.

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THE SMELT SHACK

Every winter we at the Department of Marine Resources do a smelt camp survey in the tidal reaches of the Kennebec River basin. The purpose of the count is to get an idea of fishing effort over time. We count both private camps and commercial operations. In recent decades camp numbers haven't fluctuated much. Most changes come from weather driven events. Late ice up, early ice out seems to be a trend. Most recently, the massive rain event in early January coupled with decent snow pack led to a substantial ice jam in the Augusta-Gardiner reach. This caused two sizeable commercial smelt operations consisting of dozens of camps, to pull their assets off the ice for fear of losing them to flood flows. In the jam, some ice has got to be 25 feet thick. By the time you read this, we will know if Coast Guard icebreaker efforts were successful or not. When the tide goes out there are ten to twelve feet high flows stranded on cobble river bottom. A whole new channel is being developed on the Randolph side of things. The water has no place else to go!

The other survey we conduct with commercial smelt operations is a creel survey. This gives us an idea of fishery health. We'll rent a camp, fish, count smelt, measure smelt, determine smelt sex and either keep them or let them go depending on our desire to eat smelt. We also conduct interviews from one camp to the next. It is here things can get real interesting. Showing up at some of these places on a Friday or Saturday night ranks at the top of my entertainment list. You never know who you'll meet, what they'll say or what they'll do. For instance: Right next door to our camp was a camp stuffed full of teens. They were whooping it up big time. Country western music blaring from their radio. My compatriot and I sat huddled over our rigs attentively watching our lines. There were smelt to be caught and we contented ourselves with listening to the "teen channel" next door. Soon the whooping and hollering reached a crescendo. A smelt had been caught by the teens. One told the others it was tradition to bite the head off the first smelt you caught. "Bite its head off, bite its head off!" they chanted. "I will!" came a young male reply. A pregnant silence was followed by all the commentary you could imagine. "Oh, my God! Oh, my GOD! I can't believe you did that!" screeched a young woman. "Sick!" another voice chimed in. Ah, to be that young again.

It seems as though the Kennebec smelt population is declining. This follows a disturbing trend from Chesapeake Bay northward in recent times. Age distribution is bi-modal. One year, newly sexually mature two year olds dominate the fishery. The following year, fewer but older fish. We're not sure what's going on. We have our suspicions. Loss of spawning habitat, pollution, predation, ocean warming, and of course overfishing have all made their speculative rounds. I lean towards in-shore habitat degradation. Tons of salt and sand being spread on roads and all that run-off happening right when the smelt need the spawning grounds to be their cleanest. We've tried closing a snag fishery. First we set a two quart limit and then killed the fishery entirely. The protective measures didn't seem to generate a signal we could detect in the population. So, what is happening? It bugs me to no end not knowing. We're talking about an icon of winter fishing tradition. The smelt shack with all its storied lore is on the cusp of disappearing altogether. I wish I knew what to do, but meanwhile we have to complete the creel survey.

Knock, knock, knock, on the teens tent. "Hey, we're with Marine Resources doing a creel survey. Mind if we ask you some questions?" we ask politely. "Sure, go ahead!". "Did you catch any smelt tonight?" "Yeah, Bobby caught his first one and he bit its head off!" a young woman says. "Yeah, we heard. We were right next door. Let's have a look." Bobby dutifully hands over the bucket which contains, exactly one very unfortunate headless tomcod. *Nate Gray*

FROM THE CHAIR-2017 IN REVIEW

What a dismal year for the environment! From Washington on down to Augusta, just when we think things can't get worse, they do. Whether gutting the EPA and Fish & Wildlife Service or selling thousands of Maine acres for hard rock mining. What still gives me hope, are thousands of small environmental non-profits like FOMB with incredibly dedicated members and volunteers, working hard at local and regional levels not just to minimize our losses but actually continue improving our many unique ecosystems.

Reflecting our diversity of mission, FOMB continued in 2017 with existing work (invasive plant control, Thwings Pt. archaeology, water quality monitoring and school outreach to 2,000 students) and new efforts (Dresden Falls Ground Penetrating Radar Survey, Androscoggin River upgrade proposal, Presumpscot River fish passage and completion of a new conservation easement). We take pride in bringing to members attention lesser-known but crucial issues like lamprey conservation and the unequalled toxic threat posed to humans and wildlife by wireless proliferation. FOMB continues with your support, providing a voice for those species without.

Approximately 35% of our members volunteered in some way this past year, whether at Bay Day, a dig, monitoring water quality, working the website and newsletter or addressing envelopes. On behalf of the Steering Committee I give you my deepest thanks. This participation is nothing shy of incredible and our accomplishments would be nothing without you. Our Steering Committee members Becky, Tom, Nate, Phil, Simon and Vance and interim staff Kathleen McGee (without whom our accomplishments over 20 years would be much diminished) get my deepest gratitude as they deserve yours. May former long-time Steering Committee member Steve Musica enjoy his move to Harpswell and break from the Board with our thanks for years of service. Stay strong!

Respectfully Submitted,
Ed Friedman, Chair

FOMB PRELIMINARY 2017 FINANCIAL STATEMENT

Paperwork is still coming in for the fiscal year, but I am pleased to present a preliminary summary of financial operations for FOMB during 2017. Income exceeded expenses by \$9,066 with key drivers of income deriving from membership dues and proceeds from the Annual Appeal. Staffing was the primary cash expense for the year.

At year-end, the statement balance of FOMB's checking account with Bath Savings Institute (BSI) was \$23,676. FOMB also maintains a number of savings accounts with BSI, carrying a total balance of \$157,968 at 12/31/17: approximately \$45K of this amount is restricted for protecting existing conservation easements. An additional \$95,671 of liquid assets is maintained by Wells Fargo Advisors: \$13,546 in Money Market Funds and \$82,125 in Calvert Social Investment vehicles (\$68.5K equity + \$13.6K in bonds). FOMB remains a 'passive' investor (i.e., all equity positions resulted from in-kind stock donations). The grand total of liquid funds at year-end was \$277,315.

It is important to note more than 90% of expense is devoted to programs, either directly or indirectly. FOMB remains ever vigilant in managing resources to maximize impact.

Respectfully Submitted,
Vance Stephenson, Treasurer

Income \$59,810	Expenses \$50,744
Membership 33%	Programs 83%
Annual Appeal 21%	Membership & Fundraising 11%
Grants 23%	Administration 6%
Other 23%	

2017 ACCOMPLISHMENTS

Media

Print: (Over 12), Archaeology, Kennebec dredging, Presumpscot River CWA, Education, Speaker Series, the Bay, Outings, etc.

Volunteers

Approximately 4009 volunteer hours (501 days)
150 volunteers

Membership

442 households
Speaker Series – (336 people)
Outside 2017 (Paddle Series, Walks, etc.) – 130 people.
Newsletters – 4

Grants

\$10,000- Staffing
\$3,400- Dresden Falls Archaeology-Ground Penetrating Radar Survey

Outreach Presentations

Maine Maritime Museum Cruises & Paddles (80 participants)

Education

Two Bay Days (363) students, 10 schools)
School Visits (69 visits, 1180 students, 43 teachers, 12 schools)
Non-School Visits (450 people): library summer series and science night
Web site updates

Conservation and Stewardship

Complete 46 acre easement
Additional easements in progress
Continuous landowner outreach
Ongoing stewardship activities
Control two phragmites stands in Bowdoinham
Monitor all easement & fee properties

Research

Water Quality Monitoring – 18 sites
Carp Tracking Study Completed
Thwings Pt. Archaeology Dig
Dresden Falls Ground Penetrating Radar Survey
Begin 10-year Vegetation and Land Use Update process

Advocacy (postings, letters, testimony, etc.)

Submit Lower Androscoggin Upgrade Proposal
Lawsuit-GMO Atlantic salmon
Healthy Rivers/Healthy Gulf promoting safe fish passage
Smart Meters
Posting Fish Consumption Advisories
Presumpscot R. CWA-FERC & agency comments



Credit: World Sturgeon Conservation Society

Primary Partners

Friends of Casco Bay
The Archaeological Conservancy
Kennebec Reborn
Avian Haven
Maine Coalition to Stop Smart Meters
Bowdoin College Environmental Studies
Bowdoin College Arctic Studies Center
Department of Inland Fisheries and Wildlife
Maine Maritime Museum
Department of Marine Resources
Bowdoinham Public Library
Maine Land Trust Network
Friends of Sebago Lake
Department of Environmental Protection
Patagonia Outlet, Freeport
Chops Point School
Piti Theatre Co.
Curtis Memorial Library

WHAT THE EXPERTS ARE SAYING ABOUT ELECTROSENSITIVITY & WIRELESS PROLIFERATION...

(Reprinted from <http://www.electrosensitivity.co/home2.html> - excepting the two wildlife quotes)

“I have no doubt in my mind that at the present time, the greatest polluting element in the earth’s environment is the proliferation of electromagnetic fields. I consider that to be far greater on a global scale, than warming, and the increase in chemical elements in the environment.” ...**Dr. Robert Becker, father of electromedicine and electrochemically induced cellular regeneration, in “The Body Electric” (1985)**

“Two hundred forty-one bird species are at mortality risk from both tower collisions and from exposure to the radiation towers emit. This includes birds that are endangered or threatened, Birds of Conservation Concern, migratory birds, and eagles. Studies of radiation impacts on wild birds documented nest abandonment, plumage deterioration and death. Birds studied included House Sparrows, White Storks, Collared Doves, and other species. Studies in laboratories of chick embryos documented heart attacks and death.” Comments to National Telecommunications & Information Administration in First Net Proceeding, Dockets 14/0001 & 14/0004. (2014) ... **Willie Taylor, Office of Environmental Policy & Compliance, U.S. Department of Interior**

“We have enough peer-reviewed scientific studies documenting the adverse effects, which include cancers, reproductive problems and symptoms of electrohypersensitivity, for governing bodies to promote practices, devices and legislation that reduce our exposure to these frequencies.” (2015)... **Dr. Magda Havas, Environmental and Resource Studies, Centre for Health Studies, Trent University, Canada**

“As a cardiac specialist, I am concerned that about 20% of people have detrimental cardiac rhythm sensitivity to electromagnetic radiation (EMR). It is imperative that the City of Toronto does not install WiFi in public parks and spaces.” (2013)... **Professor Hugh Scully, Professor of Surgery and Health Policy, University of Toronto, Canada**

“Smart meters’ should be abolished because they use short high-intensity pulses of microwave radiation. We know from studies, nanosecond pulses can be very damaging and act via VGCC (voltage-gated calcium channel) activation, with activation continuing long after the pulse has ceased.” (2013) ... “Limiting safety guidelines to heating effects [i.e. FCC] means that these guidelines allow exposures that are something like 7.2 million times too high. Why then does the FCC stick with these totally unscientific safety guidelines? The FCC is completely failing in its role of protecting the public and it is a major blunder, therefore, to depend on the FCC guidelines as a reliable predictor of impact of EMFs in humans.” When you look at the effects of EMFs on the brain and the reproductive system, they both develop slowly over time. Those are the things we’re not aware of, because they develop slowly despite the severity of the eventual effects.” (2017) ... **Professor Martin Pall, Professor Emeritus of Biochemistry and Basic Medical Sciences, Washington State University**

“Research shows that over time low-intensity radiowaves wear down the blood-brain barrier, which is essential for keeping out chemical toxins. We are playing with fire here,” (2017)... **Dr. Joel Moskowitz, Director, Center for Family and Community Health, School of Public Health, University of California, Berkeley**

“We’re in the midst of a grand experiment that’s being performed without our informed consent.” (2017)... **Dr. Allan H. Frey, who discovered ‘Microwave Hearing’ in 1960 and Blood Brain Barrier leakage in 1975**

“Wi-Fi in schools, in contrast to wired Internet connections, will increase risk of neurologic impairment and long-term risk of cancer in students. Promoting wireless technology in schools disregards the current health warning from international science and public health experts in this field. We recommend that your school district install wired internet connections and develop school curriculum that teaches students of all age’s safer ways to use their technology devices.” (2015)... **Prof. Dr. Lennart Hardell & Michael Calrberg, Department of Oncology, Orebro University Hospital, Sweden**

“Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children. It is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes.” (2013) ... **Thomas K. McInerney, MD FAAP, American Academy of Pediatrics**

“Some guidelines [e.g. ICNIRP heating Guidelines] may still not provide adequate protection for certain sensitive individuals nor for normal individuals exposed concomitantly to other agents, which may exacerbate the effect of the Non-Ionizing Radiation (NIR) exposure,” (2002)...*World Health Organization’s International Committee on Non-Ionizing Radiation Protection (ICNIRP)*

“The guidelines of ICNIRP are irrelevant to present situation when majority of population over the world is chronically exposed to non-thermal RF from mobile communication.” (2017) ...*The Russian National Committee on Non-Ionizing Radiation Protection (RNCNIRP)*

“Evidence is emerging that the health hazards associated with wireless microwave are at least comparable to, if not worse than, those associated with cigarette smoking. Now that smoking bans are in place all over the world, there is no reason not to do the same with wi-fi. All wi-fi networks in public places should be dismantled, especially in schools and universities, and a ban imposed. For the same reasons, citywide networks should not be installed.” (2007) ...*Dr. Mae-Wan Ho, Late Director, Institute of Science in Society, UK*

“Electro-Sensitivity is an epidemic and not 3% of the population. We are now in the double digits in terms of ES. The public must be told. WiFi in schools is a disaster and as a person who spends 2-4 hours every day on the phone with people and children who got sick, with many contemplating committing suicide, I urge you all to be uncompromising. The truth, and all of it, must be told.”...*Dafna Tachover MBA, Attorney (New York & Israel)*

“The reported incidence of the syndrome is increasing. The weight of evidence indicates that EHS is a real syndrome induced by exposure to either ELF or RF EMF.”...*Dr. David Carpenter MD, Director, Institute for Health and the Environment, State University, Albany, NY*

“The reduction of EMF exposure should also be extended to public spaces such as schools, hospitals, public transport, and libraries to enable persons with EHS an unhindered use” (2016)...*EUROPAEM (European Academy of Environmental Medicine)*

“I became electrically sensitive. People who have electrical sensitivity show that we do take some risk. Until we know more, we cannot say this is no problem.”...*Dr. Gro Harlem Brundtland, MD, former Prime Minister, Norway, former Director-General, World Health Organization*

This is a major problem in public health. We know with certainty that electro-hypersensitivity is not psychosomatic” ... *Prof. Dominique Belpomme, Descartes University, Paris, President, Association for Research and Treatments against Cancer*

“I think it’s becoming the disaster of the 21st century” ...*Dr. William Rea, MD, Director, Environmental Health Centre, Dallas, Texas*

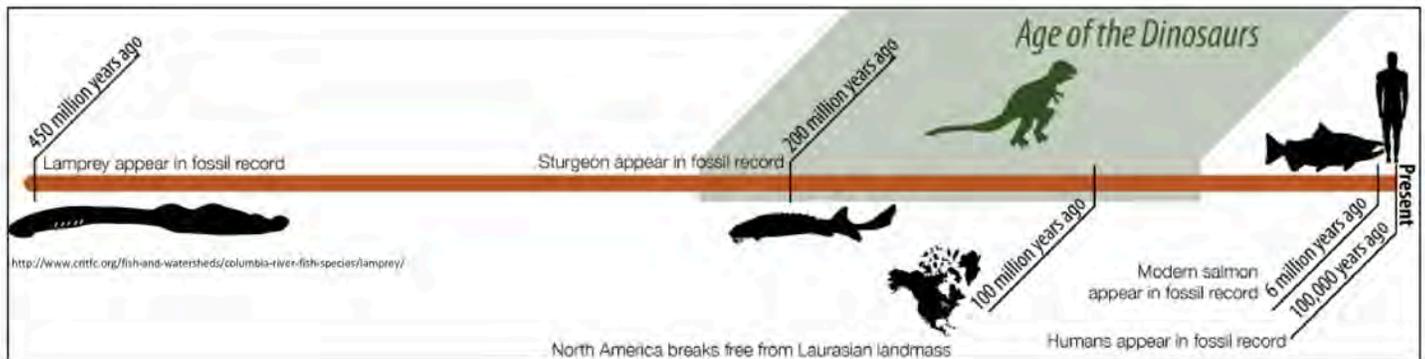
“The radiation effects on wildlife need to be addressed by the Federal Communications Commission (FCC), the Environmental Protection Agency (EPA), Department of Commerce, U.S. Fish and Wildlife Service (FWS) and other governmental entities... The issue represents a growing and troubling concern since migratory birds are in decline (at least 36% of which are in trouble species-wide in North America [USFWS 2008]), and which face additional uncertain impacts from non-ionizing, thermal and non-thermal radiation.” ... “Practically, as Levitt and Lai (2010) concluded, we do not actually need to know whether RFR effects are thermal or non-thermal to set exposure guidelines. Most of the biological-effects studies of RFR that have been conducted since the 1980s were under non-thermal conditions, including the most recent NTP (2016) studies. In studies using isolated cells, the ambient temperature during exposure was generally well controlled. In most animal studies, the RFR intensity used usually did not cause a significant increase in body temperature in the test animals. Most scientists consider non-thermal effects as well established, even though the implications are not fully understood.” (Public Briefing Memo 2016)...*Albert M. Manville, II, Ph.D., C.W.B., Principal, Wildlife and Habitat Conservation Solutions, LLC. Adjunct Professor, Johns Hopkins University. Former U.S. Fish and Wildlife Service agency lead on avian-structural impacts — including from radiation.*

BEFORE THE DINOSAURS: THE AMAZING SEA LAMPREY

Most of us think of our sturgeons as living dinosaurs, and in fact at about 250 million years old, they are. Anadromous sea lamprey (*Petromyzon marinus*), one of our lesser known native diadromous fish species, at 450 million years old, make sturgeon seem like infants. The jawless sea lamprey, one of about 44 lamprey species worldwide, are, along with hagfish, sole survivors of this oldest group of vertebrates. Jawless vertebrates (agnothans) were however, once a diverse group on the evolutionary ladder. Of existing lamprey species, nine are anadromous and parasitic after metamorphosis, nine are freshwater residents and parasitic and 26 are freshwater residents and non-parasitic.



Lamprey have no bony skeleton, no jaws, no paired fins, no gill cover, seven external gill slits, no scales, cartilaginous notochord, braincase and vertebrae, unique suctorial disc and filter-feeding larvae. Some are parasitic for a portion of their life cycle and some are not. As with most species, in regions where they are native, they coexist well with other co-evolved species but when introduced, as lampreys have been to most of the Great Lakes, severe ecosystem problems can occur. Lamprey distribution is worldwide in waters below a 20 degree C isotherm. It appears intolerance of lamprey larvae (ammocoetes) to warmer water is their limiting factor.



While sturgeons are sometimes referred to as “King of Fish”, lampreys have certainly been a “Fish of Kings”, highly appreciated by the Romans of 2,000 years ago and the English monarchy and upper classes since medieval times. In 1200, King John fined the city of Gloucester 40 marks (\$578,000 in present day dollars) for forgetting to send him a lamprey pie at Christmas. In 1242, King Henry III paid 12 pounds, 7 shillings and 3 pence (\$268,000) for 188 lampreys. Baked lamprey continues to be served the ruling British monarch on special occasions. Since the 18th century, exploitation of lamprey by “lower” European classes became more common both for food and angling bait. In recent years as lamprey catch in Europe declined, efforts were made to import problematic lamprey from the Great Lakes. This effort was aborted because levels of mercury in US lamprey exceed European consumption standards.

Scientists have studied lamprey for years because of their primitive physiology. Historically this was mostly for anatomy, primarily a better understanding of vertebrae. In more recent years studies have expanded to neurology, evolutionary biology, endocrinology and biomedical studies including anti-coagulants, biliary atresia, iron loading, spinal cord regeneration and biomimetics. A search of the Web of Science research database using the key word “lamprey” yields 22,239 records from 1864-2013. While lampreys represent only .14% of all 28,000 fish species, they disproportionately tally .95% of all published fish research. Nevertheless, what we know about them probably wouldn’t fill a teaspoon.



Most of the lamprey life cycle is spent in their larval phase buried in stream sediments. These ammocoetes play an important role in stream ecology largely through nutrient recycling as they dine on algae, bacteria and mostly detritus. After metamorphosis, juvenile out-migrating lamprey act to prey buffer Atlantic salmon and other species and in their brief parasitic phase as adults in the ocean, lamprey can act as important predators. Coming into streams to spawn, adults are no longer parasitic and have been referred to as “ecosystem engineers” because of the incredible rock moving they do in creating spawning beds. This activity adds valuable oxygen to the substrate and often a used lamprey spawning site provides the basis for a subsequent salmon redd, saving the salmon valuable energy otherwise used for their own construction efforts. As spawned out adults, lampreys die adding back valuable nutrients to the freshwater ecosystem.

WE NEED YOU! PLEASE SUPPORT OUR IMPORTANT WORK

FOMB Leadership

Our accomplishments are due to the hard work of dedicated volunteers, especially those who serve on our committees. If you want to get involved and serve, please contact the committee chair or Ed Friedman. We always welcome member input and we'd love for you to join us!

Steering Committee

Ed Friedman, Chair (Bowdoinham)
 Vance Stephenson, Treasurer (Kettering, OH)
 Tom Walling, Secretary (Bowdoinham)
 Simon Beirne (Bowdoinham)
 Becky Bowes (Brunswick)
 Phil Brzozowski (Pittston)
 Nate Gray (Vassalboro)

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Betsy Steen, Co-Chair, 666-3468
 Tom Walling, Co-Chair, 666-5837

Conservation and Stewardship Committee

Chair Vacancy

Membership and Fundraising Committee

Nate Gray, Chair, 446-8870

Research and Advocacy Committee

Ed Friedman, Chair, 666-3372

Friends of Merrymeeting Bay • PO Box 233 • Richmond, Maine 04357

Membership Levels

- | | | |
|---|---|-------------------------------------|
| <input type="checkbox"/> \$1,000+ Sturgeon | <input type="checkbox"/> \$250 Striped Bass | <input type="checkbox"/> \$20 Smelt |
| <input type="checkbox"/> \$750 American Eel | <input type="checkbox"/> \$100 Shad | <input type="checkbox"/> Other |
| <input type="checkbox"/> \$500 Wild Salmon | <input type="checkbox"/> \$50 Alewife | |

Name _____

Address _____

Town/State/Zip _____

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Email _____

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> Renewal | <input type="checkbox"/> Send information about volunteer opportunities |
| <input type="checkbox"/> New Member | <input type="checkbox"/> I would like a sticker |

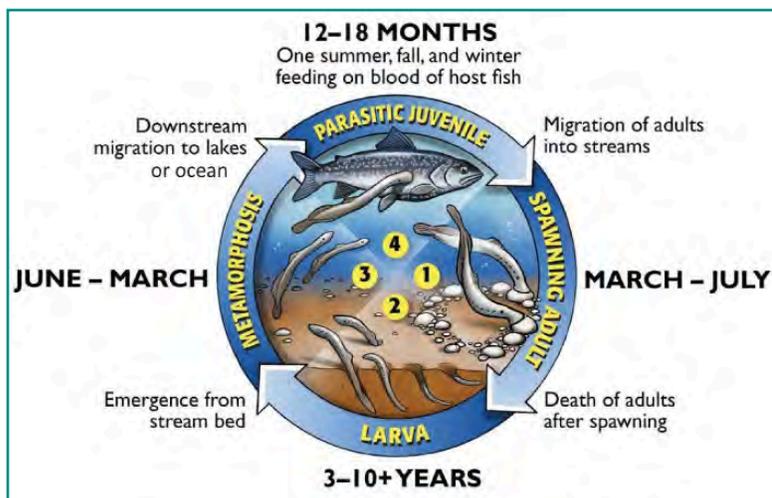
\$7 Enclosed (optional) for a copy of *Conservation Options: A Guide for Maine Land Owners* [\$5 for book, \$2 for postage].



Thanks to Will Zell and Zellous.org for newsletter layout.

LAMPREY (CONTINUED)

There are many threats to lampreys (i.e. pollution, dredging, over-fishing, habitat loss) and upstream passage through dams is one of the biggest. Until relatively recent years, the Department of Marine Resources used to actively prevent lamprey passage where possible. We've often discussed alewives on these pages, considered the "devil's spawn" by some in Maine. But, compared with sea lamprey, alewives are well off in the sphere of public opinion. Still, it's tough to argue with a 450 million year old evolutionary success story which just goes to show, quality never goes out of style.



Notes:

This article draws in large part from: *Lampreys: Biology, Conservation & Control*, Margaret Docker, ed., Vol.1, 2015 and our December 13, 2017 FOMB Speaker Presentation, *The Amazing Sea Lamprey*, by Steve Coghlan, UMO.

Photos:

Ed Friedman
 Page 6, top: The Wise Old Lamprey
 Page 6, bottom: Suctorial Oral Disk (mouth and teeth)

Illustrations:

Steve Coghlan presentation
 Page 6, Living Fossils Timeline
 Page 7, Lamprey Life Cycle



Friends of Merrymeeting Bay
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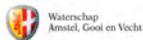
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partners



FOMB Office Help Wanted

Occasional administrative help wanted. Start immediately. Fluency with or good working knowledge of Microsoft Access and Excel is necessary. Vertical Response also used. \$15/hour. Call Ed @ 666-3372.



Photo: Robin Zimmerman, Hudson River Eagle