

On a Hunt for Fishless Lakes, Teeming With Life

By MURRAY CARPENTER
Published: April 27, 2009

WASHINGTON COUNTY, Me. — Many people scour the Maine woods for lakes with big trout, but just a few seek places like this unnamed four-acre lake near the Machias River. Like thousands of other Maine lakes, it is scenic and remote, but it claims a rare distinction: it has no fish.

[Enlarge This Image](#)



Murray Carpenter

HABITAT Amanda Shearin, a researcher at the University of Maine, setting a trap for amphibians in the shallows of a lake that Maine stocks with trout.

Multimedia

▶ Murray Carpenter interviewing Amanda Shearin at a fishless lake in Maine.

Amanda Shearin, a doctoral candidate at the [University of Maine](#), hiked in through mud and over ice one recent morning to set amphibian traps in the lake's shallows. Aside from the whistling wings of a pair of common goldeneyes in flight, it was utterly quiet. But Ms. Shearin cocked an ear. "I've heard wood frogs calling at this pond in years past," she said.

Far from barren, biologists say fishless lakes are hubs of biodiversity. Lacking piscine predators, they are home to a greater abundance and variety of invertebrates than lakes with fish, and provide breeding grounds for frogs, salamanders and waterfowl. But as fish are moved around — legally by fisheries agencies, illegally by anglers and bait growers — fishless lakes are becoming increasingly rare.

Rugged and sparsely populated, the Maine woods have some of the last fishless lakes in the Northeast. Some, like this one, are kettle lakes without inlets or outlets, excavated in the eastern Maine lowlands by melting blocks of glacial ice. Others are clear tarns in high mountains, with outlets too steep for fish to ascend. Still others are simply too acidic for fish. All probably have been fishless since the glaciers receded.

Ms. Shearin's research, comparing amphibians in lakes with and without fish, is part of a series of studies to find Maine's fishless lakes and assess their ecological roles. The studies began in 1999 when Phillip deMaynadier, a biologist with the Maine Department of Inland Fisheries and Wildlife, visited two fishless lakes that were to be stocked with brook trout.

[Next Article in Science \(5 of 26\) »](#)

Your Money E-Mail



Sign up for a preview of the week in finance, sent Monday. See [Sample](#)
amalauriec@gmail.com [Sign Up](#)
[Change E-mail Address](#) | [Privacy Policy](#)

E-MAIL

SEND TO PHONE

PRINT

REPRINTS

SHARE

ARTICLE TOOLS
SPONSORED BY

MOST POPULAR

- E-MAILED | BLOGGED | SEARCHED
- Op-Ed Contributor: End the University as We
 - More Atheists Shout It From the Rooftops
 - Shortage of Doctors an Obstacle to Obama Go
 - Paul Krugman: Money for Nothing
 - Corner Office: He Wants Subjects, Verbs and
 - W.H.O. Issues Higher Alert on Swine Flu, Wi
 - G.E.'s Breakthrough Can Put 100 DVDs on a I
 - Geithner, Member and Overseer of Finance C
 - Enlightenment Therapy
 - Op-Ed Contributor: What Happened to the B: Assault Weapons?

[Go to Complete List »](#)

Dr. deMaynadier found frogs, salamanders and damselflies that thrive only where fish are absent. Given the apparent rarity of fishless lakes — the department knew of just 30 among Maine’s 6,000 lakes — he recommended a moratorium on stocking them, pending further study.

The department enlisted Cynthia Loftin, an associate professor of wildlife ecology at the University of Maine, to find and do research on the lakes. Dr. Loftin and her students spent five years finding fishless lakes the hard way: poring over topographical maps, following hunches, and packing inflatable rafts and gill nets high into the mountains and far into the backwoods. Then they learned to apply biology and technology to find them faster.

They found an association of six invertebrates, including several beetles and a midge that swim boldly in open water, that is found only in fishless lakes. Using the bugs as indicators (they gathered them in glow-stick-baited traps), they could quickly assess which lakes were fishless. And they could analyze sediments from lakes with fish, painstakingly searching for mandibles of the phantom midge, to see if the lakes had once been fishless.

Dr. Loftin’s team then determined the physical features of fishless lakes — like smallish size and steep outlets — and used geographic modeling to find other fishless lakes. The modeling predicted that 101 of 3,281 appropriately sized lakes in likely areas would be fishless.

The researchers visited 21 of the lakes, set gill nets and found that 15 contained fish. But sediment sampling showed that nine were once fishless.

In a report to the Department of Inland Fisheries and Wildlife, Dr. Loftin and her colleague Emily Schilling estimated that 107 Maine lakes were historically fishless, and that half now contained fish. The agency is writing a policy for managing fishless lakes.

The impact of stocked trout on mountain yellow-legged frogs has prompted research on fishless lakes in California. And with international concern about amphibian declines, fishless lakes have been receiving more attention elsewhere. Dr. Schilling, an assistant research professor at the University of Maine, is now coordinating a broad analysis of fishless lakes, incorporating research from the United States, Europe and South America.

Mark McPeck, a professor at [Dartmouth College](#), has studied fishless lakes in Michigan, Florida and New England. In a telephone interview, he said they were fast disappearing. A decade ago, Dr. McPeck often visited a fishless lake on a steep bluff above the Connecticut River in Vermont. “All of the zooplankton, all of the insects, all of the amphibians that bred there were completely different than the lake with fish that’s half a mile down the road,” he said. But somebody has since stocked it with carp. “Now this lake is just ruined,” Dr. McPeck said.

Dr. Loftin said there was a continuum of fishless waters, with seasonally flooded vernal pools on one end and fishless lakes on the other. She said the lakes might act as refuges for some species as the climate changes. “It could be that these lakes serve as a sort of insurance policy,” she said, by providing breeding areas in times of drought.

A version of this article appeared in print on April 28, 2009, on page D2 of the New York edition.

[Next Article in Science \(5 of 26\) »](#)



Looking to buy a used car?

Also in Autos:

- [The Camaro is back](#)
- [An eco-racecar that runs on chocolate](#)
- [A Rolls-Royce knock-off from China](#)



Ads by Google

w

[Maine Lakefront Condos](#)

New luxury condos 45 ft. from shore White Mt., lake & views
www.kezarlakecondos.com

[Extreme Walleye Fishing](#)

Bag a Freezer Full of Walleye Every Time You Go Fish
WalleyeFishingSecrets.com

[Dr. Oz's Shocking Test](#)

Millions have already taken this amazing test. What's Your RealAge?
RealAge.com



[Click here to enjoy the convenience of home delivery of The Times for less than \\$1 a day.](#)

Ads by Google

what's this?

Maine Lakefront Property

On 3,000 Acre Cathance Lake Custom Homes Available
cathanceshoresllc.com

New England Pass 09-10

Sunday River, Sugarloaf & Loon from \$349. Less than 1 week left!
www.TheNewEnglandPass.com

Fryeburg Maine Inn

Friendly, casual lodging close to mountains, lakes and all activities
www.admiralpearyhouse.com

Related Searches

[Lakes](#)

[Fish and Other Marine Life](#)

[Amphibians](#)

[Maine](#)

[Get E-Mail Alerts](#)

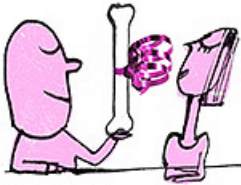
[Get E-Mail Alerts](#)

[Get E-Mail Alerts](#)

[Get E-Mail Alerts](#)

INSIDE NYTIMES.COM

SCIENCE »



Bone, a Masterpiece of Elastic Strength

U.S. »



A Memphis Mural Goes Beyond Stereotypes

WORLD »



Lacy Threads and Leather Straps Bind a Business

OPINION »

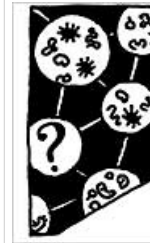
Op-Ed: Dirty Money
The government should take back the wealth that criminals have stolen from taxpayers.

ART & DESIGN »



Preservation Group Lists Most Endangered Places

OPINION »



Letters: Fighting Who's Winning?

[Home](#) | [World](#) | [U.S.](#) | [N.Y./Region](#) | [Business](#) | [Technology](#) | [Science](#) | [Health](#) | [Sports](#) | [Opinion](#) | [Arts](#) | [Style](#) | [Travel](#) | [Jobs](#) | [Real Estate](#) | [Automobiles](#) | [Back](#)

Copyright 2009 The New York Times Company | [Privacy Policy](#) | [Search](#) | [Corrections](#) | [RSS](#) | [First Look](#) | [Help](#) | [Contact Us](#) | [Work for Us](#) | [Site Map](#)