

What early spring means for lakes

BY ZACHARY WOOD
SPECIAL TO THE BDN

This has been a weird winter, even by Maine standards. There were cyclists on Mount Desert Island in December and robins in Bangor in February. Despite last week's two snowstorms, it feels like we may have gotten off easy with a mild winter and early spring.

Ice is already disappearing from many of Maine's lakes. This not only signals the end to a disappointingly short ice-fishing season; this year's early ice-out could cause significant changes to the biology of our lakes.

Shortly after ice-out, the water in a typical Maine lake mixes, powered by wind moving across the water surface. You can see a similar process by blowing across a cup of coffee or tea just after adding cream: a little breeze will quickly mix the beverage and cream. Most lakes also mix completely in mid-fall.

Between spring and fall, mixing lakes stratify, or break into layers, like a cake. During this time, a warm layer of water sits on top of a cold layer. You can usually notice this by diving off a boat or dock: if you dive deep enough, the water suddenly gets very cold. This is because colder, denser water sinks to the bottom, while warmer, less dense water rises to the surface.

So what does stratification have to do with ice-out? An early ice-out allows the upper reaches of a lake to warm faster, so lake stratification can happen earlier in the year. If an early spring is followed by a hot summer, lake stratifi-



Lisa Kingsbury takes off in her kayak for an afternoon trip on Brewer Lake in Orrington in September 2015.

BDN FILE

If a lake's lower layer of water runs out of oxygen, an army of chemicals can move from the lake bottom into the water. One of these chemicals — phosphate — can cause plenty of trouble.

cation will be stronger and last longer than in an average year.

During times of strong stratification, the two water layers of a lake become very different from each other. Waves on the surface mix oxygen into the upper layer of water, providing a steady supply for fish and other aquatic critters. The lower layer, however, is essentially sealed off on its own with no supply of oxygen. Therefore, any living critters in the lower layer will slowly use up oxygen without it being replaced. During a long period of stratification, the lower layer can eventually run out of oxygen completely.

If a lake's lower layer of

water runs out of oxygen, an army of chemicals can move from the lake bottom into the water. One of these chemicals — phosphate — can cause plenty of trouble. Phosphate is a common chemical in fertilizer. If you fertilize your lawn, then you have used phosphates to help things grow. When a lake is full of oxygen, phosphates stick to iron in the lake bottom. But when oxygen is absent, phosphates are free to run amuck in the water.

Once phosphates have been released into the lower water layer of a lake, they are eventually spread throughout the lake whenever the lake mixes — usually in the fall or spring. Just like lawn fertilizer,

phosphate stimulates growth, but in this case, it stimulates algae.

If algae are stimulated, they can sometimes reach unusually high numbers in a lake, causing an algal bloom. Algal blooms usually make a lake look strangely green or cloudy. While some algal blooms are relatively harmless, others can produce some toxic chemicals or take even more oxygen out of the lake, harming fish.

An early ice-out after a strange winter does not mean disaster for our lakes, but it could cause some noticeable changes. Lakes are often less constant than they appear to be; an early ice-out now could cause our lakes to look a little different by the end of the year.

Zachary T. Wood is a doctoral student in the ecology and environmental sciences program at the University of Maine.

Warden

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Col. Joel Wilkinson, chief of the Maine Warden Service, said McKenney has perennially been among the most productive wardens and is also very active in his community.

"Tom is always the first to give other people credit, and to not take it for himself," Wilkinson said.

During an interview, McKenney said that might be true. But in a small law enforcement service of 124 uniformed wardens, few things are accomplished alone, he said.

"Looking around the room, there's many people who are deserving of [this honor] every year," McKenney said. "I'm honored to receive it, but I work in a section of people and a lot of the successes that we have are a group effort."

Also receiving awards at the ceremony:

K9 search and rescue of the year: Warden Jeremy Judd and dog Tundra, for their rescue of a hypothermic man.

K9 case of the year: Warden Kris MacCabe and dog Morgan, for their work on a case involving a youth hunter shooting too close to a dwelling.

Exemplary service awards: Wardens Dave Chabot, Ethan Buuck, Kris MacCabe and Maine State Trooper Jason Wing, for their work on a case involving several illegally shot deer in Livermore Falls; Warden Tony Gray, for work on a trespassing case in Paris that eventually led to federal charges against three men; Warden Tim Coombs, who saved a man by interrupting an attempted suicide by overdose and drug trafficking arrests of those who provide the heroin; Warden Sgt. Aaron Cross and Warden Dave Ross, for their work on a case involving the theft of traps; Warden Joey LeFebvre, for an illegal hunting case that resulted in the return to prison of a convicted murderer who was out on parole; Wardens Kris MacCabe and Ethan Buuck, for their role in

the rescue of a lost snowmobiler; Wardens Joey LeFebvre and Kevin Anderson, for a long-term investigation that led to more than 50 charges; Warden Sgt. Alan Gillis and Warden Eric Rudolph, for rescuing a man on Phillips Lake in Dedham; Warden Rick Ouellette, for administering CPR to a fallen hunter who later died; Warden Dave Georgia, for his role in rescuing snowmobilers during a blizzard; Wardens Bruce Loring, Phil Richter, Bob Johansen and Tony Gray, for a dive team recovery of a missing boater in New Hampshire after that state's side-scan sonar boat became inoperable; Wardens Kyle Hladik, Troy Dauphinee and Bob Johansen, for their work investigating a double moose kill; Warden Chad Robertson, for his cooperative work with local law enforcement agencies on 12 deer-baiting cases and many other investigations; Investigator Bill Livezey and Investigator Josh Bubbier, for an investigation of illegal guiding for deer and sale of bear parts involving 50 defendants in southern Maine; Warden Andrew Smart, for his role in saving the life of a suicidal young man in Ashland; Warden Charles Brown, for a night-hunting case two years in the making; and a fishing case.

Warden of the year: Tom McKenney.

Supervisor of the year: Lt. Dan Scott.

Colonel's Award: David DeLorme.

Maine Warden Service Association merit awards: Chief Frank Roma, Lt. Chris Morretto and Erik Poland, for their role in the rescue of a person in the Androscoggin River.

Maine Warden Service Association legendary game warden award: Richard "Dick" Longley, who worked from 1945 to 1968.

Operation Game Thief recognition award: Michelle McAtee.

Operation Game Thief guardian award: Sgt. Aaron Cross.

Operation Game Thief board of director of the year: Peter Bartley.

Things to Do Outdoors

ADDISON — Group hike, 9 a.m. Saturday, April 16, Ingersoll Point Preserve. Trail network just under 3.5 miles. Wear sturdy hiking shoes; bring water, snack. Directions: From U.S. Route 1, turn south onto Route 187/Indian River Road at Wild Blueberry Land; turn right on Wescoog Road; turn left on East Side Road; turn right onto Moose-neck Road. Continue on Mooseneck Road to the Union Church, which will be on your left. Trailhead and parking is in back of the Union Church parking lot. 255-4500.

AUGUSTA — State of Maine Sportsman's Show, April 1-3, Augusta Civic Center, 76 Community Drive. Tickets \$8.

BATH — Annual meeting and membership celebration of Kennebec Estuary Land Trust, 5:30 p.m. Thursday, April 7, Maine Maritime Museum, 243 Washington St. Open to all. To attend, 442-8400, bkolak@kennebecestuary.org or kennebecestuary.org/annual-meeting-2016.

BREWER — Penobscot Fly Fishers' trolling streamer fly tying class, all day beginning 9 a.m. Sunday, April 3, Penobscot County Conservation Association club house. The class will be taught by PFF member Rob Dunnett. Five patterns will be tied. The \$40 class fee includes all materials and lunch. Participants should bring 6/0 (140) or 8/0 (70) black and white thread and a spool of red if you have it, and the normal fly tying equipment. To sign up, Rob Dunnett at classes@penobscotflyfishers.com. Class limited to 30 students. facebook.com/penobscotflyfishers/.

FAIRFIELD — Hunter safety course, 6-9 p.m. Aug. 3-4; 8 a.m.-4:30 p.m. Aug. 6, VFW Post 6924. Don Perrine, 238-0279.

FREEPORT — Screening of film footage of 1940 National Whitewater Championships held on Rapid River in western Maine, 7 p.m. Friday, April 8, L.L. Bean, 95 Main St. Commentary by Maine canoeist and author Zip Kellogg, who has been searching for this film for 30 years. Free. 877-755-2326.

NEWPORT — Eighth annual Big Pine Gun Club gun and knife show, 9 a.m.-5 p.m. Saturday, April 2, and 9 a.m.-2 p.m. Sunday, April 3, Newport Public Works Department building, Cemetery Road. \$5; free to children under age 14 accompanied by an adult.

ORONO — All-volunteer Orono Land Trust to celebrate 30-year anniversary at annual membership meeting, Friday, April 1, Keith Anderson Community House, 19 Bennoch Road. Social gathering, 6:30 p.m.; short annual membership meeting, 7 p.m.; followed by guest speaker professor David B. Field on the topic "The Appalachian Trail in Maine — What is it Supposed to Be?" Explorations in Maine from 1925 to 1933 focused on access and scenery. Today, the impact of greatly increased numbers of users threatens the integrity of the physical footpath and the social environment of the trail. Trail managers struggle to balance user freedom of choice and the responsibility to protect both natural resources and the user experience.

UNITY — Unity College's 12th annual Sportsmen's Conference and Wild Game Dinner, 5 p.m. Friday, April 8, Unity College Center for the Performing Arts, 42 Depot St. Appetizers, 4:15 p.m. Prepared by Unity College students and staff with Jamie Moffatt, head chef at 3Crow in Rockland, the main dinner is a five-course meal featuring fresh, wild game served with salad, bread and dessert. Appetizers will be served in the Leonard R. Craig Gallery inside the UCCPA and will include beaver, moose heart, wild turkey, pheasant, smoked trout and more. Ticket prices are \$32 for regular seating; \$50 for VIP tickets that include access to preferred seating, additional appetizers and two bottles of wine per table. Artwork by painter Barbara Peabody will be on display in the gallery. Proceeds benefit Operation Game Thief Maine, The Military Order of the Purple Heart and the Unity College Sporting Station. For tickets, Joe Saltalamachia, 509-7205 or jsalty@unity.edu.

For a complete listing of calendar items or to submit your event, visit www.bangordailynews.com.

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COMING SOON

4.2

Madama Butterfly (Met Opera)

4.3

Popovich Comedy Pet Theater - As seen on Jay Leno, David Letterman, and Animal Planet; finalist on America's Got Talent; voted Best Show in Las Vegas!

4.8

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4.10

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The Abbe Museum, in Bar Harbor, is a museum of Wabanaki art, history, and culture. On May 1, 2016, a new core exhibit, **People of the First Light**, will welcome you into the Wabanaki world, sharing the stories, culture, and history of the Abenaki, Maliseet, Micmac, Passamaquoddy, and Penobscot people.

abbemuseum.org