Friends of Casco Bay
Casco BAYKEEPER

To: Joint Standing Committee on Marine Resources
Re: LD 493, An Act To Create the Ocean Acidification Council
March 11, 2015

Senator Baker, Representative Kumiega, and other Members of the Marine Resources Committee,

My name is Cathy Ramsdell and I am here today, representing Friends of Casco Bay/Casco Baykeeper, to speak in favor of LD 493, "An Act To Create the Ocean Acidification Council."

Friends of Casco Bay is a membership organization formed in 1989, and our mission for over 25 years has been to improve and protect the environmental health of Casco Bay.

We are pleased to support any effort that will further the recommendations of the report issued by the Ocean Acidification Commission in January 2015. As the waters of coastal Maine become more acidic, they become increasingly inhospitable to the marine animals that constitute our valuable marine resources, and as mud and sediments become more acidic, newly settled clams and other shellfish are at severe risk.

Should the Ocean Acidification Council be formed, we hope it will recognize the efforts of groups such as ours as well as other research and conservation organizations that are already tackling some of the recommendations of the report and encourage further collaboration.

Of six goals identified in the OA Commission report on page iii, our group is actively engaged in four of them:

- Goal 1 - Monitoring and Investigation:
    - We have 23 years of data on the **pH of seawater** in Casco Bay – pH is declining.
    - Since 2011, we began doing intensive studies to develop a protocol for monitoring the **pH of clamflats**. Our Research Associate Mike Doan is setting up sessions to train clammers and other stakeholders on how to use our protocol to assess the pH of mudflats in their regions, in hopes that acidified flats once identified, might be rehabilitated with buffering to be ready for reseeding. We have set baby clams into the mud for a week at a time and documented the pitting of their shells. This is not unlike what happens to the enamel on your teeth, except low pH in laboratory experiments by our colleague, Dr. Mark Green, has resulted in baby clams actually dissolving in mud with low pH – death by dissolution.

- Goal 3 - the identification and reduction of land-based nutrients:
    - We have been **monitoring nitrogen levels** in Casco Bay since 2005, and our work shows inshore concentrations which result from land-based sources.
- Goals 5 and 6 - informing the public and maintaining a sustained and coordinated focus:
    - We are educating stakeholders about actions they can take, through our **presentations** to the community.
    - Our **Bay Papers** educate our community about the origins of Ocean and Coastal Acidification and on Nitrogen Pollution, which I include here, along with ways You Can Make a Difference, which focuses in part on ways you can reduce carbon dioxide and nitrogen – the sources of acidification.
    - Our **BayScaping** program provides landowners with information about ways to reduce their reliance on fertilizers.
    - We have developed a **curriculum** for schools on the impacts of climate change on coastal Maine, with an emphasis on ocean acidification.
    - We are also **collaborating** with Conservation Law Foundation and Island Institute to explore other strategic steps to further the goals of the report.

As you refine LD 493 in your Work Session(s), we would encourage you to consider 5 things:

- Consider the **membership** makeup of the Council so it includes a variety of stakeholders.
- Identify specific tasks and outcomes to **focus** on over the coming three years.
- Recognize **efforts already underway and ongoing** that will further the goals of the Council, and incorporate these efforts into the Council's work plan.
- Align LD 493 with the $3 million **bond** also under consideration in this legislative session. Will the Council decide priorities and guidelines for awarding funding if the bond passes? Will the Council make those funding decisions, oversee the work, and receive reports on the results?
- Consider focusing applied research on **remediation** and **rehabilitation**. On clamflats, determine whether spreading shell hash on mudflats can reduce corrosive conditions so as to improve the chances for restoring clam production. In the seawater, investigate the role kelp farming may have on removing the excess nitrogen from our waters.

We urge you to recommend LD 493 for passage to implement the ambitious goals that the Ocean Acidification Commission has recommended. The role of the Council may be critical to helping Maine work to slow the effects of acidification on our important commercial resources and coastal ecology.

Thank you for your service to the people of Maine, and thank you for your time today.

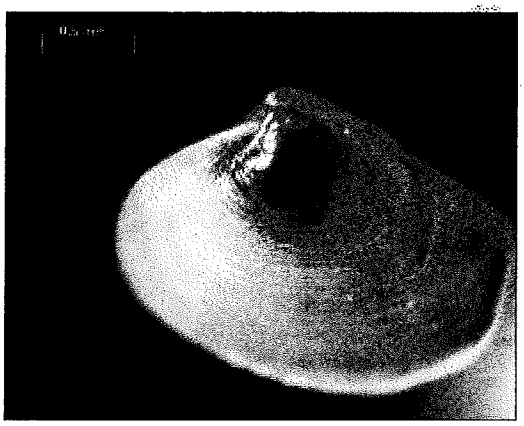
Sincerely,

Cathy L Ramsdell

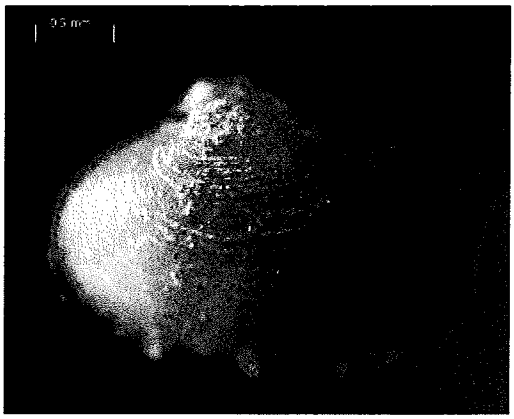
Cathy L Ramsdell, CPA, CGMA, Executive Director of Friends of Casco Bay/Casco Baykeeper

The Impact of Coastal Acidification

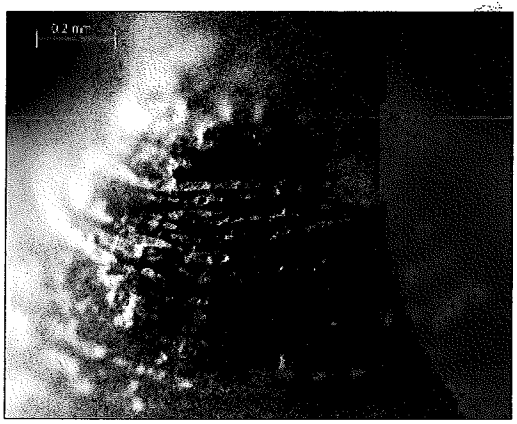
It Shucks to Be a Clam



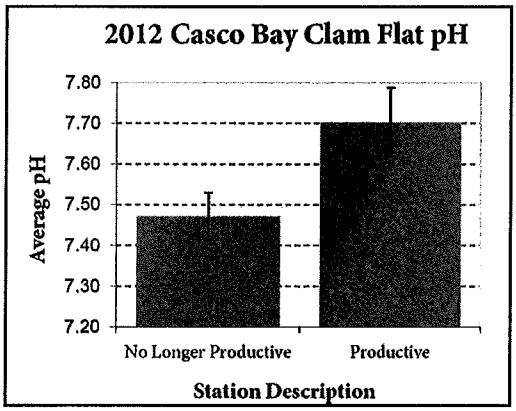
Clam A



Clam B



Clam C



Our research on mud pH on 30 clam flats around Casco Bay suggests that the more acidic the clam flat, the less hospitable it is for clams.

As our coastal waters become more acidic (as the pH decreases), clams, mussels, and other shellfish are having a harder time building and maintaining their shells. In the summer of 2014, Friends of Casco Bay placed hatchery-reared baby clams in the mud at Recompence clam flat in Freeport, Maine, where we measured very low pH levels. Image A shows a clam prior to deployment in the mud. Image B shows a clam after just one week in the mud, where it became heavily pitted due to the high acidity of the mud. Image C is a close-up of the same clam. All of the deployed clams exhibited obvious signs of pitting.

An excerpt from Friends of Casco Bay's upcoming report *A Changing Casco Bay*

Friends of Casco Bay
Casco BAYKEEPER

Sounding the Alarm on Ocean Acidification

A Bay Paper from Friends of Casco Bay

Friends of Casco Bay
Casco BAYKEEPER

Did you know that acidic mud could wipe out clam harvesting in Casco Bay?

Why? Sea water is becoming more acidic, which weakens or simply dissolves the shells of small clams, oysters, and other shellfish.

Carbon dioxide is the culprit.
Coastal waters like Casco Bay suffer a double whammy because of:

Ocean acidification: The burning of fossil fuels pumps carbon dioxide into the atmosphere. About a third of that carbon dioxide, scientists estimate, is absorbed by the ocean. It's a global problem.

Coastal acidification: Closer to home, the problem is runoff from shore. Stormwater pours excess nitrogen into the sea, where it fertilizes blooms of phytoplankton, tiny floating plants. As these algae blooms die and decay, they release carbon dioxide.

What does this mean for Casco Bay? Increased acidity can mean dissolution and death for young clams and other shellfish.

Background: Ocean Acidification

Friends of Casco Bay is measuring acidity levels at clamflats to see if there is a link between clam population vitality and the acidity of the mud into which clams burrow.

Friends of Casco Bay is informing the community, including clam harvesters, about coastal acidification and nitrogen pollution.

Scientists estimate that the ocean absorbs a third of the carbon dioxide released by the burning of fossil fuels. When water and carbon dioxide mix, they form carbonic acid, which makes seawater more acidic. Ocean acidification is negatively affecting oceans around the world.

Nitrogen pollution is making matters worse nearshore, such as on clamflats and in bays. Runoff from city streets and fertilized lawns, emissions from smokestacks and tail pipes, raw sewage overflows, and treated sewage all send excess nitrogen into coastal waters. This nitrogen bonanza fertilizes algae blooms; when the plants die and decay, carbon dioxide is released into the water and the mud.

Ocean scientists are finding that as seawater becomes more acidic, the shells of clams, corals, and tiny creatures at the base of the marine food web can weaken and actually dissolve. Ocean acidification impairs the ability of sea creatures, from fish and squid to sea urchins and copepods, to grow, reproduce, and fight off disease.

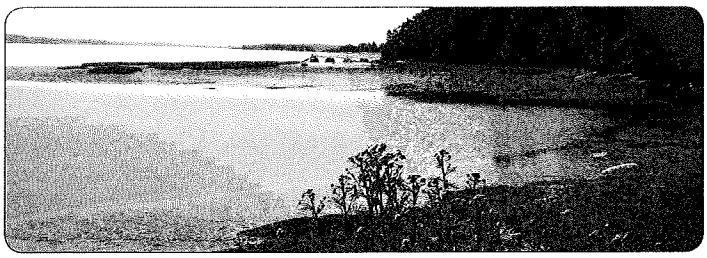
Interns Coutney Payne and Kalley Hansel worked with our Research Associate Mike Doan on our cutting-edge research on coastal acidification.

Sounding the Alarm on Ocean Acidification

A Bay Paper from Friends of Casco Bay

The speed at which ocean acidification is escalating has surprised and alarmed scientists. The acidity of the ocean has increased by 30% since the beginning of the Industrial Revolution. Casco Baykeeper Joe Payne worries that the impact of excess carbon dioxide will be evident in Casco Bay within the next decade, as harvesters see a decline in populations of clams, oysters, and other fisheries.

Friends of Casco Bay is working with Dr. Mark Green, a national authority on ocean acidification. He has found that juvenile clams placed in sediments taken from mudflats in Casco Bay have a hard time building their shells; larval clams, called spat, often simply dissolve. Dr. Green, based at Saint Joseph's College in Standish, Maine, calls this "death by dissolution." He blames the acidity of the mud on the effects of excess nitrogen.



Green is experimenting with adding calcium carbonate, the component material in clam shells, to mudflats. Dr. Green, Friends of Casco Bay, and clammers are looking at "buffering the mudflats" as a way to preserve the health of clamflats.

Clammers have long known that returning empty clam shells to the mudflats fosters new generations of shellfish. One reason is that the shells help neutralize the acidity of the mud, creating more favorable conditions for tiny clams to grow.

What is Friends of Casco Bay doing about it?

Friends of Casco Bay is working to reduce nitrogen pollution through its BayScaping campaign to discourage homeowners' use of fertilizers.

Friends of Casco Bay fosters legislation to set nitrogen limits on discharges into coastal waters.

Friends of Casco Bay monitors pH and nitrogen levels throughout Casco Bay and works to limit nitrogen pollution through legislative action and community education.

Friends of Casco Bay has 20 years of data that shows that our coastal waters are becoming more acidic.

Friends of Casco Bay has upgraded our sampling equipment so that we can more precisely measure changes in the acidity of the sea water.

Friends of Casco Bay documents nitrogen pollution along the coast of Maine.

What can I do about it?

- ☐ Tell your neighbors about the threat of increased acidification in Casco Bay—and in the rest of the ocean.
- ☐ Help stop nitrogen pollution by reducing your input of harmful fertilizers into the ecosystem.
- ☐ Create buffer strips using shrubs and trees to hold back soil and stormwater runoff.
- ☐ Capture stormwater runoff from roofs and lawns with rain barrels and rain gardens.
- ☐ Drive fuel-efficient cars, walk or ride when possible, and burn less oil, wood, and coal.
- ☐ Reduce nitrogen pollution by picking up pet waste.

Friends of Casco Bay is a community-based nonprofit organization founded in 1989, to improve and protect the environmental health of Casco Bay. Home to the Casco BAYKEEPER®, we are a founding member of the international WATERKEEPER® ALLIANCE.

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keeper@cascobay.org

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Fighting Nitrogen Pollution in Casco Bay

A Bay Paper from Friends of Casco Bay

Friends of Casco Bay
Casco BAYKEEPER

Is your lawn polluting Casco Bay?

Yes, if you are using fertilizers on your property. Anything you put on your yard can be washed downstream and into Casco Bay. You don't have to live on the water for your actions to impact the Bay.

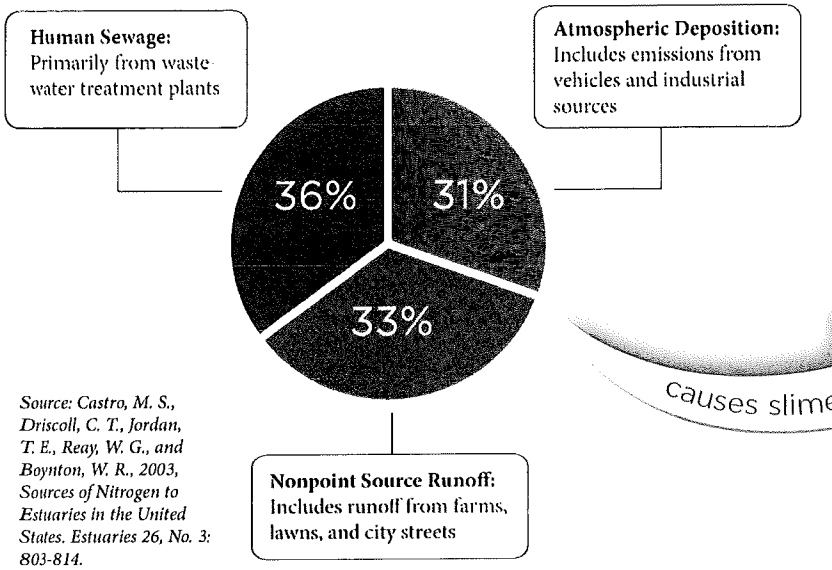
- Fertilizers that we put on our lawns can smother scenic coves with bright green slime.
- Lawn care fertilizers promote algae blooms that can choke out clams and other intertidal creatures.
- The chemical in fertilizers that is causing these problems is **nitrogen**. Other sources of nitrogen pollution are tailpipes, smokestacks, and sewage.

What you need to know about nitrogen

Nitrogen is essential for growing things, but too much nitrogen is bad! Nitrogen, one of the three components of fertilizer, can trigger algae blooms that coat coastal coves in ugly green slime. When these green plants die, decomposition sucks life-giving oxygen from the seawater. This process also releases carbon dioxide, creating acidic conditions that can make it harder for clams and mussels to build and maintain their shells. Friends of Casco Bay has found excess nitrogen at most of the coastal sites it tested.

Water quality sampling by Friends of Casco Bay has shown that nitrogen pollution is most severe in areas that are close to shore, near river mouths, at sewer overflow pipes, and other locations where stormwater runoff reaches the Bay. The further you go offshore, the better the water quality. This is an indication that what we are doing on land is impacting the Bay. We have work to do! Fortunately, unlike some environmental problems, there is a lot each person can do to fight nitrogen pollution.

Sources of Nitrogen Pollution to Casco Bay



Source: Castro, M. S., Driscoll, C. T., Jordan, T. E., Reay, W. G., and Boynton, W. R., 2003, Sources of Nitrogen to Estuaries in the United States. Estuaries 26, No. 3: 803-814.

These footprints show algae smothering a mudflat near Falmouth. This "rise of slime" is caused by nitrogen pollution in our coastal waters.

Fighting Nitrogen Pollution in Casco Bay

A Bay Paper from Friends of Casco Bay

Nitrogen is one of the biggest threats to the health of our coastal waters. Yet the State of Maine has done nothing to regulate nitrogen. That is why it is important for each of us to manage our own nitrogen footprint.

Limits on nitrogen discharges are needed. In 2007, Friends of Casco Bay helped persuade the Maine Legislature to pass a law requiring the Maine Department of Environmental Protection (DEP) to establish a limit on how much nitrogen wastewater treatment facilities may discharge into coastal waters. The DEP has yet to fulfill that directive. Tell your state legislator to make the DEP take action.

What is Friends of Casco Bay doing about it?

Friends of Casco Bay is educating homeowners and lawn care providers on how to grow healthy lawns without applying nitrogen-laden fertilizers. Ask about our "neighborhood socials" at keeper@cascobay.org.

Friends of Casco Bay is working with the Maine Department of Environmental Protection to set a responsible limit on nitrogen discharges into coastal waters.

We are working with the City of Portland on projects that reduce nitrogen-laden sewage overflows into the Bay.

Friends of Casco Bay is testing the waters throughout Casco Bay to document nitrogen levels.

Our pumpout boat removes raw sewage from the holding tanks of recreational boats. Contact pumpout@cascobay.org.

Our scientists are exploring the possible impact of excess nitrogen on survival of shellfish, such as soft-shell clams.

What can I do about it?

- ☐ Stop using fertilizers.
- ☐ Grow your grass to 4 inches long. This promotes longer roots that penetrate deep into the soil and extract the nutrients they need themselves.
- ☐ Add clover to your lawn. Clover makes its own nitrogen, enriching the soil naturally.
- ☐ Go to cascobay.org/bayscaping for tips on how to grow a green yard to keep Casco Bay blue.
- ☐ Go to cascobay.org/bayscaping for ten questions to ask your lawn care professional before you hire.
- ☐ Burn less oil, wood, and coal to reduce pollution from smokestacks.
- ☐ Keep your car tuned up to reduce pollution from tailpipes.
- ☐ Empty your boat's holding tank at a pumpout facility to keep sewage out of the Bay.
- ☐ Pick up pet waste.
- ☐ Maintain your septic system.

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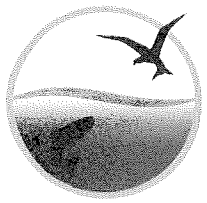


You Can Make a Difference in the Health Of Casco Bay

A Bay Paper from Friends of Casco Bay

Friends of Casco Bay
Casco BAYKEEPER

Confronting the consequences of climate change and the changing chemistry of our oceans—specifically, the carbon dioxide that threatens our coastal waters—may seem daunting, but Maine has many advantages to help it meet the challenge. Mainers are known to be resolute, resourceful, and committed to community. Our residents value the environment, understanding that our future prosperity is dependent on maintaining the state's beauty and natural resources. If any place can identify and implement solutions, it is Maine.

Even if you adopt only one or two of the suggestions below, you will be helping to improve the health of Casco Bay. Acting locally, ultimately, can have a global impact.

Think about Casco Bay as You Care for Your Lawn

Why? Nitrogen is public enemy #1. Nitrogen-laden fertilizers intended for lawns and fields can end up feeding phytoplankton instead. In addition to killing bugs, pesticides kill sea life.

- Do not use fertilizers and pesticides, which our testing has demonstrated can end up in the ocean.
- Adjust your lawn mower to its highest setting, preferably 3½-4 inches. This promotes vigorous root growth and healthier grass. Healthy grass needs less fertilizing.
- Leave grass clippings as you mow. (That's right—no raking!) These natural fertilizers return about 50% of the nitrogen back to the soil, where it belongs!
- Do a soil test to determine what, if any, amendments are needed.
- Find out more at cascobay.org/bayscaping.

BayScaping promotes green yards that keep Casco Bay blue.

Responsible Boaters Are Important Stewards of the Bay

Why? Because boaters are on the water, in the water, or next to the water working on their boats, they are the first line of defense in protecting Casco Bay. Those who enjoy the Bay have a special responsibility to keep pollutants out of the water, including sewage, urine, fuel, oily bilge water, cleaning supplies, paint, and varnish.

- Use a pumpout facility for your marine toilet. And don't pee over the side! Find a list of pumpout stations in Casco Bay at cascobay.org/boat-pumpout-program.
- When refilling your tank, avoid spilling fuel. Use a funnel and don't overfill.
- If you do spill fuel, don't squirt dishwashing liquid on it; sop it up with the fuel spill pads at the fuel dock.

Green up Your Ride

Why? Cars and trucks are huge sources of nitrogen pollution (nitrous oxides), carbon dioxide, and other greenhouse gases.

- Bike, walk, use public transportation, or carpool.
- Maintain your car so oil, antifreeze, and other toxic substances don't leak. By keeping your car tuned up, it will run cleaner, burn less fuel, and get better gas mileage.
- When you do drive, combine trips, reducing the distance you travel. For example, do errands on the way home from work.

Be kind to cyclists. They are keeping nitrogen pollution and carbon dioxide out of the Bay.

Reduce the Energy You Use in Your Home

Why? Burning less oil, wood, and coal to heat your home reduces the release of nitrogen, as well as your fuel bill. By conserving energy, you will lower both your carbon and nitrogen footprints.

- Get an energy audit.
- Lower your thermostat by 2 degrees in winter.
- Replace incandescent light bulbs with LEDs.
- Make it a habit to turn off lights when you leave a room.
- Unplug "vampire" electronics and appliances when not in use, such as cell phone chargers and cable or satellite TV boxes.

Calculate Your Impact

Personal actions each of us take can ensure that the next generation inherits a cleaner and healthier Casco Bay. Calculate your **nitrogen footprint** at either of these sites:
http://www.cbf.org/news-media/multimedia/nitrogen-calculator
http://n-print.org/sites/n-print.org/files/footprint_java/index.html#/home
Find **carbon footprint** calculators online.

Use Less Water

Why? Up to a third of our electricity is used to move, clean, and dispose of water and wastewater. Every drop saved also saves electricity, reduces power plant emissions, and lowers demand on sewage treatment capacity.

- Turn off the water while shaving, doing dishes, and brushing your teeth.
- Install water-saving faucets, toilets, and showerheads.
- Fix your toilet if it tends to run after flushing—and fix that dripping faucet!
- Only run your dishwasher and washing machine when they are full.

Water your garden with the rainwater your rain barrel collects.

Manage Your Waste

Why? We're talking about sewage here. Even treated sewage, including urine, is loaded with nitrogen. Discharges into coastal waters can cause algae blooms and ocean acidification.

- Pick up pet poop.
- Have your septic system inspected yearly and pumped every 2-3 years to remove sludge.
- Don't dump anything down a storm drain because it may end up in Casco Bay.

Keep Water from Running off Your Property

Why? Prevent pollutants, such as nitrogen fertilizers and other chemicals, from being washed into the Bay. Plantings act as sponges, giving rainwater time to soak into the ground.

- Redirect your downspouts from hard surfaces to your lawn or garden.
- Position rain barrels to catch water that runs off roof and sheds.
- Cover bare soil with grass seed and compost to keep it from washing away—and to keep down weeds.
- Plant a buffer strip of bushes and trees between lawn and water's edge.

Buy and Eat Local

Why? An average plate of food travels over 1,300 miles. Frozen and processed foods, especially, require a lot of energy to produce and transport.

- Grow your own vegetables and buy fresh food from local farmers.
- Opt for meatless Mondays—or more. Eating meat generates 2½ times more greenhouse gas than eating vegan, but any reduction lowers greenhouse emissions.
- Compost food wastes.
- Bring reusable shopping bags. US consumers use 100 billion plastic bags per year.

Get Involved—What You Can Get Others to Do

Why? Volunteers and voters are vital in catalyzing changes in communities, businesses, and governments. Friends of Casco Bay, and other nonprofits, could not accomplish our work without the help of citizen scientists and community activists.

- Limits on nitrogen discharges are needed. In 2007, Friends of Casco Bay helped persuade the Maine Legislature to pass a law requiring the Maine Department of Environmental Protection (DEP) to establish a limit on how much nitrogen sewage treatment plants and other facilities may discharge into coastal waters. The DEP has yet to fulfill that directive. Tell your state legislator to make the DEP take action.
- Encourage your community to adopt ordinances to ban pesticides. Children and pets can come in direct contact with toxic chemicals in parks, school yards, and playing fields.
- If legislation is introduced to limit the application of pesticides and fertilizers on a state level, please support it.
- Support municipal actions and fees to reduce sewage and stormwater pollution.

Help Us Help the Bay!

Why? Friends of Casco Bay started as a grassroots community organization 25 years ago. Our success today continues because of the commitment of our volunteers and members!

Find out more at cascobay.org.

- Become a supporter of Friends of Casco Bay. Go to donate.cascobay.org.
- Learn about issues that pose a threat to the Bay and use our Bay Papers to educate friends and family.
- Invite a dynamic speaker to talk about issues impacting Casco Bay.
- Volunteer with us to pick up trash from beaches and marshes, test water quality, stencil storm drains, and lobby your public officials.

Friends of Casco Bay
Casco BAYKEEPER

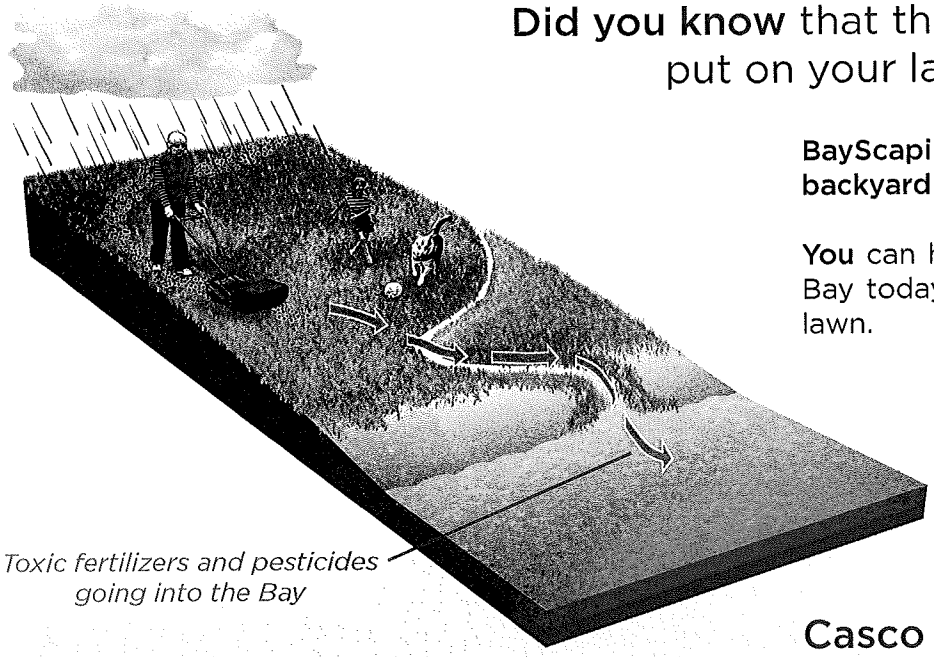
43 Slocum Drive, South Portland, ME 04106
(207) 799-8574 • keeper@cascobay.org
cascobay.org

Friends of Casco Bay's mission is to improve and protect the environmental health of Casco Bay.

BayScaping: Tips for green yards to keep Casco Bay blue

Friends of Casco Bay
Casco BAYKEEPER

We improve and protect the environmental health of Casco Bay



Toxic fertilizers and pesticides going into the Bay

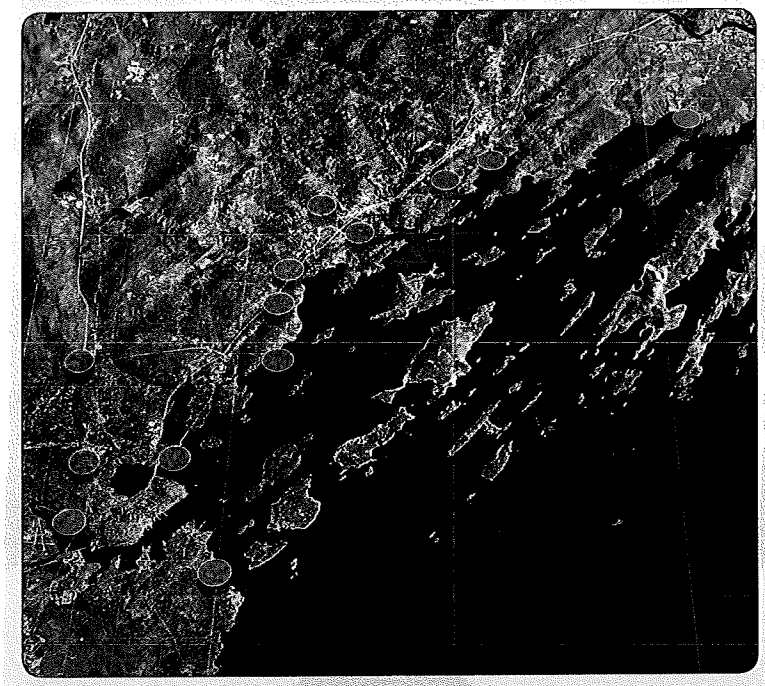
Did you know that the fertilizers and pesticides you put on your lawn may end up in Casco Bay?

BayScaping makes the connection between your **backyard** and **Casco Bay.**

You can have a **direct impact** on the health of the Bay today by changing how you take care of your lawn.

Casco Bay belongs to all of us!

Friends of Casco Bay has detected pesticides in stormwater running into Casco Bay.



Why should you be concerned?

Pesticides can harm aquatic animals (as well as children and pets)! When Friends of Casco Bay tested rainwater running into Casco Bay, we found pesticides at 13 coastal sites, some in amounts that the EPA has determined **can harm fish and other aquatic life.**

Nitrogen, one of the three components of **fertilizer,** can trigger **algae blooms** that coat coastal coves in **ugly green slime.** When these green plants die, decomposition sucks life-giving oxygen from the seawater. This process also releases carbon dioxide, creating acidic conditions that make it harder for **clams and mussels** to build and maintain their shells. Friends of Casco Bay has found excess nitrogen at most of the coastal sites it tested.

BayScaping will save you time, save you money, save your lawn, and save Casco Bay!
BayScape, because it will help you **reduce your use** of pesticides and fertilizers.
Learn more at *cascobay.org/bayscaping*

BayScaping year-round

Even if you do just one of these things each season, you can make a big difference for your lawn and for Casco Bay.

SPRING

- **Weed**
  It's easier to pull emergent weeds by hand while roots are short and the soil is moist.
- **Overseed**
  Seed thin or bare spots with endophyte-enhanced perennial ryegrass. It has the best chance of germinating before weeds take over.
- **Sharpen blades of the lawn mower**
  Take your mower into a hardware store or garden center to sharpen blades. A sharper cut prevents tearing, which can open the grass to fungal infection.
- **Look for shady areas with thinning grass**
  Grass has a hard time growing in areas that don't get 6 hours of direct sunlight. Don't fertilize; that just generates more weeds. Instead, plant shade-tolerant groundcovers such as bunchberry, partridgeberry, or Canada mayflower.

SUMMER

- **Cut little and often**
  Mow at least weekly in the growing season and remove just the top third of the blade every time. Adjust lawn mower to the highest setting, preferably 3½ - 4 inches.
- **Mulch grass clippings**
  For mature lawns (10+ years), grass clippings provide all the fertilizer they need. Leaving clippings returns about 50% of the nitrogen back into the soil.
- **Water deeply but infrequently**
  Water deeply, 1-1.5 inches of water per week. You can measure the amount of water from rainfall and your sprinkler with a rain gauge or a tuna can. Let the lawn go dormant in late summer; it will green up again in the fall.
- **Seed thin or bare spots**
  Use perennial ryegrass to fill in any bare spots or areas where you pulled weeds.

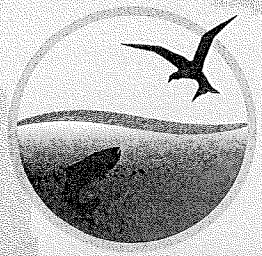
FALL

- **Aerate**
  Aerate the lawn in early fall to reduce thatch, improve drainage, and loosen the soil.
- **Overseed**
  Spread seed over freshly-aerated soil to fill in thin lawns or dead areas. Use seed mixes that include at least 70% fine fescue or tall fescue varieties for established lawns, ideally between mid-August and mid-September. Protect the seeds before they sprout with a 1/8 - 1/4 inch layer of well-seasoned compost.
- **Cut once more for winter**
  Once grass stops growing, usually by early November, cut grass a little shorter (2-3 inches) to reduce the chance of snow mold disease come winter.
- **Fertilize frugally**
  A soil test will tell you if you need to add fertilizer or adjust the pH (ideal pH is 6.0). Apply phosphorus-free, slow-release nitrogen fertilizer, preferably between Labor Day and Columbus Day. Test kits are available at keeper@cascobay.org.

WINTER

- **Don't pile snow on the lawn**
  This promotes snow mold disease in the grass.
- **Plan your ideal yard**
  How much lawn do you need? Think about alternatives to grass in areas that receive little sunlight, experience a lot of foot traffic, or are poorly drained. In wet areas, consider planting ornamentals that tolerate wet soil better than grass does.
- **Search for places where rainwater and snowmelt run off**
  Identify areas where rain barrels, rain gardens, or bushes can help prevent runoff.

Learn more at
cascobay.org/bayscaping



Funded in part by Maine Community Foundation and Maine Outdoor Heritage Fund

Does your lawn care professional BayScape?

BayScaping: Tips for green yards to keep Casco Bay blue

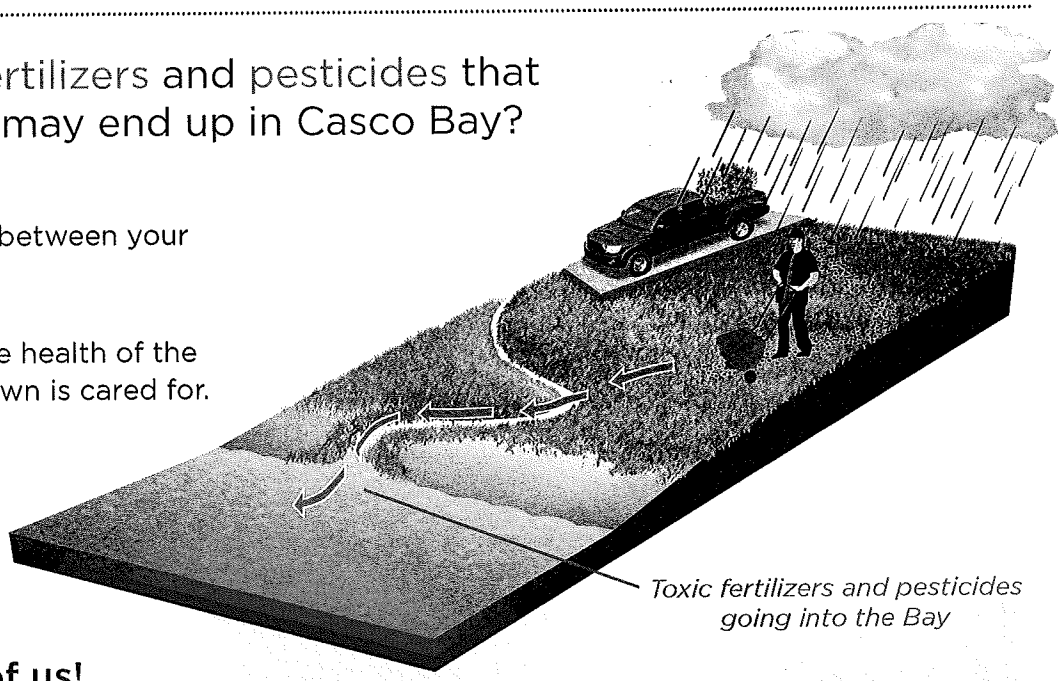
Friends of Casco Bay
Casco BAYKEEPER

We improve and protect the environmental health of Casco Bay

Did you know that the fertilizers and pesticides that are applied to your lawn may end up in Casco Bay?

BayScaping makes the connection between your **backyard** and **Casco Bay**.

You can have a **direct impact** on the health of the Bay today by changing how your lawn is cared for.



Toxic fertilizers and pesticides going into the Bay

Casco Bay belongs to all of us!

Ten questions you should ask your lawn care professional ***before you hire!***

1. ***Do you follow a fixed timetable for applying pesticides and fertilizers, including Weed'n'Feed products?***
   If the answer is Yes, stop the interview and keep looking!

2. ***Will you give me advice on mowing, watering, aeration, and seeding?***

3. ***Do you mow the grass to 3½ - 4 inches in height and leave the clippings?***

4. ***Do you try to mow when the lawn is dry?***
   This makes for a cleaner cut.

5. ***How often do you sharpen your mower blades?***
   Many professionals sharpen their mower blades daily!

6. ***Do you practice Integrated Pest Management or follow the Maine Board of Pesticides Control's Best Management Practices?***
   If the landscaper doesn't know about the Board of Pesticides Control, which certifies landscapers who apply pesticides, direct them to *www.state.me.us/agriculture/pesticides.*

7. ***If you detect a problem that requires the use of pesticides, do you (1) spot treat pests or (2) treat the whole lawn?***
   The correct answer is 1!

8. ***Do you do a soil test before applying fertilizer?***

9. ***What do you use for fertilizer?***
   Preferably use one without phosphorus, with slow-release nitrogen and with potassium only when needed.

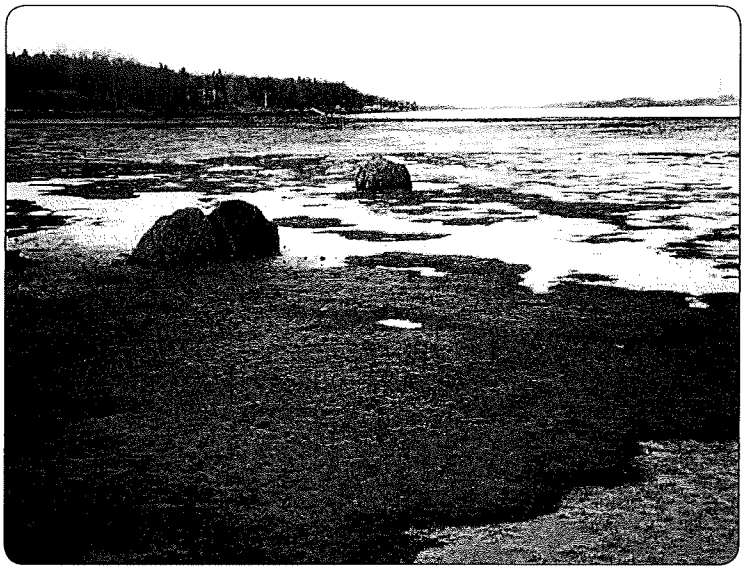
10. ***Will you provide me with a written contract that spells out a description of services for a fixed period of time?***

Why should you be concerned?

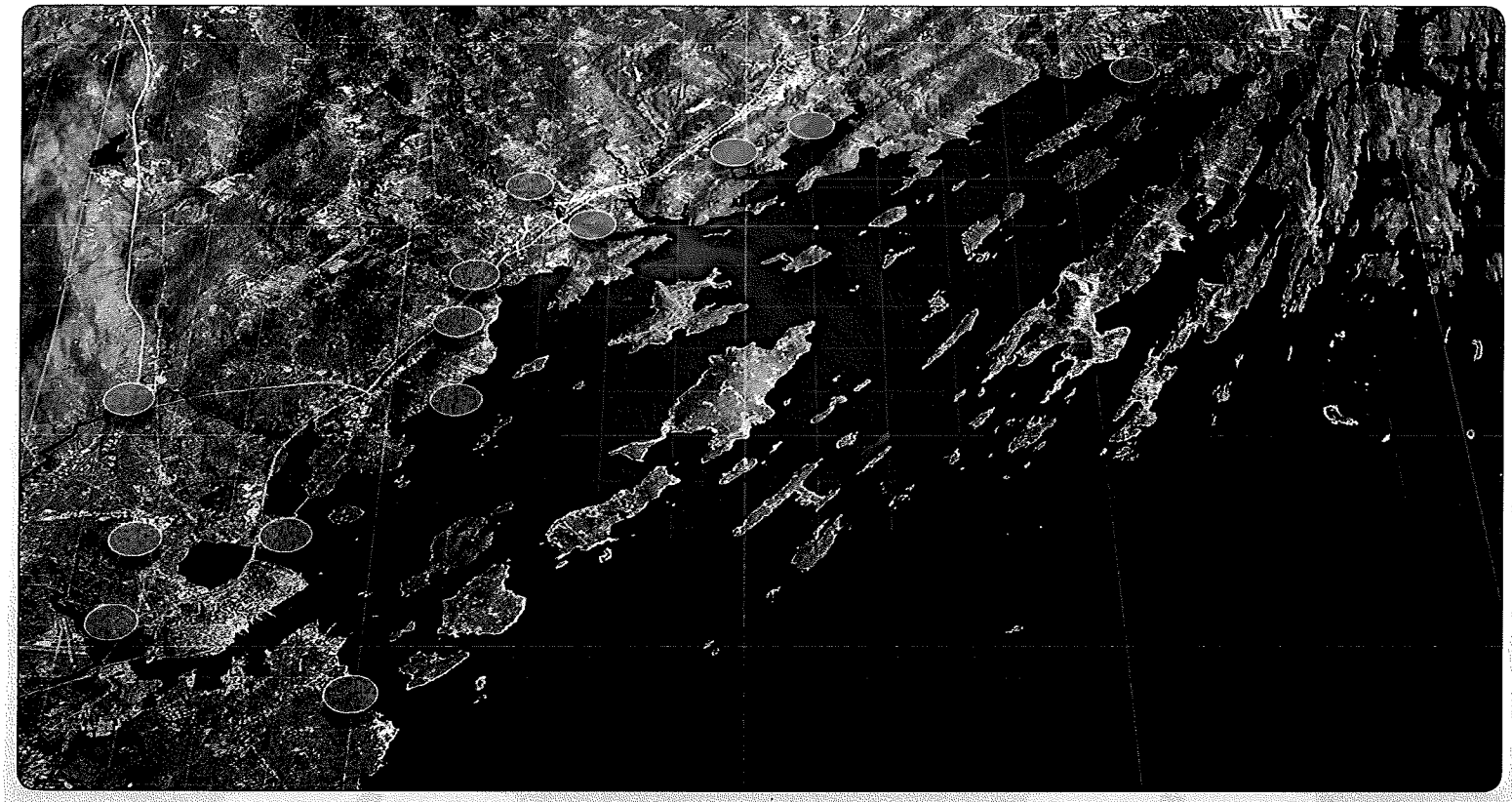
Pesticides can harm aquatic animals (as well as children and pets)! When Friends of Casco Bay tested rainwater running into Casco Bay, we found pesticides at thirteen coastal sites (see map below), some in amounts that the EPA has determined **can harm fish and other aquatic life.**

Nitrogen, one of the three components of **fertilizer**, can trigger **algae blooms** that coat coastal coves in **ugly green slime**. When these green plants die, decomposition sucks life-giving oxygen from the seawater. This process also releases carbon dioxide, creating acidic conditions that make it harder for **clams and mussels** to build and maintain their shells. Friends of Casco Bay has found excess nitrogen at most of the coastal sites it has tested.

An algae bloom smothers a mudflat in Casco Bay.



Friends of Casco Bay has detected pesticides in stormwater running into Casco Bay.



The right landscaper will reduce your need for pesticides and fertilizers and in the long run, save you time, save you money, save your lawn, and save Casco Bay!

You can find a list of Sustainable Landscapers certified by the Maine Landscape & Nursery Association at *melna.org*.

Learn more at Friends of Casco Bay's website: *cascobay.org/bayscaping*

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