

# The Casco Bay Bulletin

The Newsletter of Friends of Casco Bay / Casco BAYKEEPER®

Winter / Spring 2007

## A Small Investment for a Large Reward

It may still feel like winter, but there is a sure sign of spring: Friends of Casco Bay's Water Quality Monitoring Program is gearing up for the 2007 sampling season. New volunteers are needed to help supplement



*Citizen Stewards Coordinator Peter Milholland supervises a devoted team of water quality monitors of Casco Bay.*

the ranks of the 52 volunteers who sample at about 40 sites around the Bay.

Citizen Stewards Coordinator Peter Milholland says, "These citizen scientists are a critical part of our research staff. They sample simultaneously at all our sites to provide a coherent appraisal of the overall health of the

Bay. In addition to collecting baseline data, they now sample for a growing threat to our coastal waters: nutrient pollution. We want prospective volunteers to know that their work will help us better understand the extent of this issue."

Adds Research Associate Mike Doan, "Nitrogen is one of several nutrients that are essential to all living organisms and one of the most important in marine systems. Over the past half-century there has been a doubling in the amount of human-produced nitrogen. Now, excess nitrogen in coastal regions is considered to be one of the principal threats to the environmental health of the oceans worldwide. The water quality data and observations compiled by our staff and volunteers show this is becoming even more of an issue here in Casco Bay." ⚓

*Our water quality monitoring program has been able to expand thanks to Maura Thomas and David Townsend of the University of Maine School of Marine Sciences, who have been analyzing our nutrient samples.*



### VOLUNTEER PROFILE

## John Taxter

John Taxter of Falmouth has been sampling for Friends of Casco Bay (FOCB) for the past two years. We asked him for his perspective on volunteering.



#### ■ How did you get involved with Water Quality Monitoring?

I was driving into work a few years ago and heard a segment on Public Radio about studies being done on the health of Casco Bay by Friends of Casco Bay. I looked it up on the Internet and saw they were looking for volunteers to collect data. With my background in science and my appreciation for the Bay, it seemed like a good fit.

#### ■ What have been your most satisfying or challenging experiences as a Water Quality Monitor?

Doing this work appeals to my inner hippie—helping Mother Nature. Seriously, it's nice to think my efforts, in conjunction with that of many others, would help alert people to any adverse changes in the health and enjoyment of the Bay. On the downside, sometimes it's wet and cold!

#### ■ Do you have any advice for new volunteers?

It's a commitment. You need to show up when you're scheduled and be consistent with your sampling technique. But whenever you look at the Bay, you consider yourself a real friend; it's a small investment with a large reward. ⚓

### Does this sound interesting to you?

We are looking for new volunteers to sample Casco Bay on ten Saturdays from April through October. New volunteers will receive training in EPA-approved sampling methods on Saturday, April 7th from 9:00 a.m. to 2 p.m. at Southern Maine Community College. Contact Peter Milholland at [pmilholland@cascobay.org](mailto:pmilholland@cascobay.org) or (207) 799-8574.

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### Friends of Casco Bay

43 Slocum Drive  
South Portland, ME 04106

Tel: (207) 799-8574

Fax: (207) 799-7224

keeper@casco bay.org

www.casco bay.org



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# The Rise of Slime

## How Nutrients Are Overdosing Casco Bay

When Friends of Casco Bay Board member Joan Benoit Samuelson gazed at the cove below her house, she used to see brown mudflats dotted with crayon-colored kayaks from the L.L. Bean Outdoor Discovery School. Today, and in fact all year long, those kayaks fade in intensity against mats of bright green algae coating the clamflats, a disturbing sign that nutrient pollution is overtaking the far corners of Casco Bay.

## A Balanced Ecosystem

Over a century ago, scientists recognized that nutrients, those chemicals that plants and animals need but can't manufacture themselves, are critically important to the ocean food web. They discovered that nitrogen in particular jumpstarts the growth of single-celled algae—phytoplankton—that form the base of the ocean food chain.

Historically, the abundant nutrients that converge here in the Gulf of Maine, including our part of it, Casco Bay, have made this region one of the most productive marine ecosystems in the world. Each spring, rivers wash melting snow and rain, and the nutrients they carry, into the ocean. From offshore, the waters of the North Atlantic Ocean sweep a banquet of decaying organisms toward the coast, delivering more nutrients to nearshore waters. This natural process provides the ocean food web with a balanced diet, an alphabet soup of nutrients: P, C, H, S, Si, K, and N, with N—nitrogen—as the key ingredient.

*Joan Benoit Samuelson takes a soil sample to send out for testing to find out what nutrients, if any, are needed for her yard.*



## Too Much of a Good Thing

Unfortunately, too much nitrogen threatens the health and diversity of coastal ecosystems. In recent times, excessive amounts of nitrogen have been pouring into Casco Bay from fertilizers from neighborhoods and farms, stormwater runoff, wastewater treatment plants, and sewage overflow pipes. Nitrogen also descends from the air from automobile exhaust and emissions from smokestacks, chimneys, and power plants in Maine and from as far away as Ohio.

## The Evidence of Nitrogen Pollution is Growing

We can compare nutrient over-enrichment in the ocean to humans overeating. We all need nutrients to sustain us, but when we gorge ourselves, we pay the price in obesity, disease, and shortened life span. In the ocean, overdosing on nitrogen threatens the health, ecology, and diversity of marine life. Too much nitrogen results in green mudflats, red tides, fish kills, marine mammal deaths, and clamflat closures. It doesn't take much detective work for one to find evidence of nutrient pollution along the Maine coast:

### ■ Algal mats suffocate coves and mudflats with slimy green algae.

Where there is an abundance of nitrogen in shallow areas of Casco Bay, green seaweeds such as sea lettuce and maiden hair grow, well, like weeds. A thick carpet of algae may smother clams and mussels living on the flats.

■ **Red tides are becoming more frequent and prolonged.**

Harmful algal blooms (red tides) can cause paralytic shellfish poisoning. Outbreaks sometimes close the entire coast of Maine to shellfish harvesting, causing severe financial hardships for Maine clam harvesters.

Other harmful algal blooms produce domoic acid, a toxin responsible for a recently diagnosed illness called amnesiac shellfish poisoning. These red tides caused the deaths of 21 large whales in the Gulf of Maine in July of 2003 and were suspected to have poisoned at least nine whales and dozens of seals along the Maine coast later that same year. Scientists first discovered domoic acid in 1988, after four Canadians died from eating contaminated mussels on Prince Edward Island. Some others who survived suffered permanent memory loss.

■ **Murky water clouds light-loving eelgrass beds.**

Two-thirds of all commercially-important marine species start life among the sheltering blades of eelgrass. Rooted in protected coves, eelgrass needs clean, clear water in order to thrive. Eelgrass beds can disappear when they are shaded out by phytoplankton and epiphytic algae (ones that grow on other plants).

■ **Low oxygen levels stress or kill marine life.**

Residents of eastern Casco Bay still vividly remember the sight and smell of millions of decaying menhaden in the early 1990s. This

die-off was caused at least in part by low oxygen levels in the upper reaches of the Bay.

■ **Nitrogen overdosing depletes diversity.**

Some scientists have compared nutrient-polluted waters to conditions in the primordial seas, when primitive life such as bacteria, algae, and jellyfish predominated. Our volunteer water quality monitors are reporting seeing jellyfish in Casco Bay earlier in the season and in greater numbers. This is a worldwide trend. In some places, jellyfish clog fishing nets where once fishermen caught shrimp, tuna, and swordfish. Even at the microscopic level, an increase of nitrogen favors the growth of the kinds of phytoplankton that cause red tides (dinoflagellates), which out-compete larger forms (diatoms) that better fuel the ocean food chain. †

■  
*Nitrogen pollution (euphemistically called “nutrient over-enrichment”) leads to green mudflats, red tides, fish kills, marine mammal deaths, and clamflat closures.*  
 ■

### What Friends of Casco Bay is doing

- Collecting more water quality data from sites where nutrients enter the Bay
- Keeping pressure on municipalities to remove combined sewer overflows (CSOs), which mix stormwater with raw sewage
- Encouraging the State of Maine to engage wastewater treatment operators, scientists, conservationists, and community members in identifying criteria and costs for establishing limits on marine nutrient pollution
- Being a watchdog to make sure large passenger ships comply with Casco Bay’s newly-designated “No Discharge Area,” which prohibits discharging partially-treated sewage
- Supporting legislation to establish nutrient standards for Maine’s coastal waters

#### What you can do —

- Practice BayScaping, which provides alternatives to fertilizers and pesticides for our yards.
- Have your furnace, wood burning stove, and chimney checked and cleaned annually so they operate as cleanly as possible.
- Ensure your car is well tuned to run at peak efficiency.
- When purchasing a new car, opt for the one with the best gas mileage.
- When boating, use shoreside pumpout facilities to empty marine toilets.



*Footprints across Mussel Cove reveal the depth of green slime on this Falmouth mudflat.*

# Launching a Campaign to Control Nutrient Pollution

**Casco BAYKEEPER®** Joe Payne shared his views on the challenges and opportunities for Maine's busiest bay at the Annual Meeting of Friends of Casco Bay (FOCB) last November.



Aptly titled, "Things That Keep Me Awake at Night," Joe's presentation to more than 100 FOCB members and friends outlined his concerns about current problems and nightmarish possibilities for Casco Bay. One member of the

audience, Representative Herbert Adams of Portland, pulled Joe aside immediately after the presentation. He offered to submit a bill to the State Legislature to address these gathering threats to Maine's coastal waters. Since we'd been considering recommending such a strategy, Joe agreed in principle to support a resolve to establish nutrient standards to reduce nitrogen pollution in Maine's bays and estuaries.

Holding true to Friends of Casco Bay's well-established "work with" approach, Joe asked the Maine Department of Environmental Protection (DEP) to sit down to discuss how to collaborate to achieve marine nutrient standards for the state. Happily, DEP officials welcomed Joe's overture.

FOCB staff met with DEP scientists in January. Joe began by discussing the results of our water quality monitoring of marine nutrients. Frequent, almost daily, sampling off South Portland provided the clearest picture of nutrient pollution in the bay; nearly half of 655 samples collected were above levels that the EPA has determined can impact marine life. In addition to our data, red tide blooms, fish kills, and slimy mudflats provided ample anecdotal evidence of increasing nutrient pollution in Casco Bay. Citing our six years of nutrient data for Casco Bay, Cathy Ramsdell, FOCB Executive Director, suggested, "Shouldn't we focus first on Casco Bay, where we have the greatest need and the most data?"

Joe advocated taking a proactive approach, before the problem becomes insurmountable. "Nutrient standards will provide the State with a tool to have in place before a crisis happens. You are right to deal with this issue before it gets out of control. In places like Chesapeake Bay, for instance, it's probably too late to turn back the tide on nutrient pollution." Joe and Cathy urged the Department of Environmental Protection to work with communities and industries that release nutrients into the ocean to determine realistic costs and timelines for implementing standards. DEP Deputy Director Andy Fiske invited Joe to meet with licensed dischargers in Casco Bay along with his staff to engage in a dialogue about their concerns and possible solutions.

Representative Adams has submitted a resolve to the Legislature that directs the DEP to develop a work plan to establish state limits on nutrient pollution. The State would first identify the varied sources of nutrient pollution, including industrial, municipal, residential, and non-point sources. Working with interested stakeholders, the DEP will develop a work scope and timeline for establishing nutrient criteria for coastal waters and prepare a brief report on possible technological approaches for nutrient reduction. ⚓



*South Portland has been a leader in improving its water treatment system.*

■  
*"Nutrient standards will provide the State with a tool to have in place before a crisis happens."*

—  
**Joe Payne**  
 Casco BAYKEEPER®

■  
**Diane Gould**, a marine scientist with the U.S. Environmental Protection Agency, received the 2006 Friend of Casco Bay Award at Friends of Casco Bay's Annual Meeting in November. Dr. Gould is the chief author of the recently released environmental report, *Toxic Pollution in Casco Bay: Sources and Impacts*.



## Hook & Slice



Seventy-two participants from as far away as California and Georgia converged on Casco Bay on Saturday, August 26th for the **Hook & Slice Tournament**, hosted by Friends of Casco Bay board member Adam Taylor. The competition began with a shotgun-start golf scramble at Nonesuch River Golf Club. After stowing their golf clubs, they took up fishing rods and boarded 19 charter boats in pursuit of striped bass, bluefish, and trophies. At the end of the day, as Kelly Dufour of Portland grilled their catch on the deck of Sunset Marina in South Portland, competitors swapped fish tales and lamented putts they should have made. Over \$6,000 in entry fees, prizes, and

auction sales from the event were donated to Friends of Casco Bay. Adam made sure that the golf course and all the charter boats that he had recruited for the event would adhere to ecological practices that reinforced our message of improving and protecting Casco Bay. ⚓



Competitors vying for the Hook and Slice Trophy tested their skills on the golf course and on Casco Bay.



## Bay Caper for the Casco Baykeeper

**M**ore than 200 friends, volunteers, and colleagues assembled on the oceanfront campus of Southern Maine Community College on September 10th to celebrate



Joe Payne's 15th Anniversary as Casco **BAYKEEPER**®. They sampled seafood chowder, steamed mussels, and smoked salmon prepared by SMCC Culinary Arts Department and enjoyed music by Cathy Stebbins Peterson and Friends.

WCSH 6 TV personality Bill Green introduced several friends of the Casco Baykeeper, including Cathy Ramsdell, Executive Director of Friends of Casco Bay, and its founder, Don Perkins, who hired Joe Payne in 1991. David Littell, Commissioner of the Maine Department of Environmental Protection, and Olympian Joan Benoit Samuelson spoke of the collaborative work they have done with Joe. Former Governor Angus King cited the "Four P's" that have made Friends of Casco Bay successful: planning, perseverance, partnership, and passion.

The event was underwritten by *Navigator* level sponsors, TD Banknorth, Cole Haan, Pierce Atwood, *Portland Press Herald/Maine Sunday Telegram*, and WCSH 6, and by *Beacon* level sponsors, DiMillo's Floating Restaurant and Marina, Oakhurst Dairy, Macdonald Page & Co., and Smith Barney. ⚓

## Comings & Goings



Above:  
Heather  
McLennan

Right:  
Crosby  
Kennett



We recently said good-bye to **Heather McLennan**, who had been with Friends of Casco Bay for nearly five years, first as a volunteer for our annual auction and then as our Administrative Associate. She is putting her considerable people and computer skills to use as a team member on a high-tech papermaking machine with one of Maine's premier papermakers in Jay.

The next time you call Friends of Casco Bay, please say welcome to our new Office Manager, **Jeff Fetterer**, who has considerable experience in

bookkeeping and office administration through his work with the Maine Democratic Party and the Maine Citizen Leadership Fund & Dirigo Alliance. He seemed a good fit not only because of his background in fundraising and organizing special events, but he has that essential skill for our front office octopus: multi-tasking.

Jeff also assumes the responsibilities of **Crosby Kennett**, our part-time bookkeeper. Though only here one day a week since summer, Crosby contributed much to the smooth running of the office. ⚓



Jeff Fetterer

## The Bay Thanks You!

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Although the **Casco Bay Estuary Partnership** is sometimes confused with Friends of Casco Bay, they are two separate but complementary organizations. The Estuary Partnership receives federal funds through the Clean Water Act that it distributes to support projects throughout the Casco Bay watershed. The Partnership has helped to support our vessel pumpout program and several water quality monitoring projects, including the Citizen Stewards Volunteer Program, analysis of our water quality data, Casco Bay health index, and stormwater monitoring.

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