



BAYWATCH

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CITIZENS FOR THE PROTECTION OF WAQUOIT BAY CPWB

CPWB's first newsletter for 2010 is sharing with our members the research, education and staff news to keep you informed. We hope you are as excited about the material to continue your support and active participation in the coming year. Please join us at the next CPWB meeting at WBNERR on January 11th, 2010 at 7:00pm.

Our Barrier Beach – Nine Years of Shoreline Research

Chris Weidman, Research Coordinator

Most of us who live on Cape Cod are here because of the ocean that surrounds us. And, as a matter of physical fact here on the sand pile that is Cape Cod, there is always a beach somewhere between us and the ocean. The beaches are the buffer zones – the transitional territories – a stark nether world of sorts – not quite ocean and not quite land. Like the ocean they are not static, but very much in motion, though a kind of slow motion that we can, in our carelessness, mistake for permanence.

In a superficial way they can look the same from day to day and maybe even year to year – but it is not the same beach and it is not the same sand. What gives the beaches a facade of sameness is the similarity of hydrodynamic forces – waves, currents, tides and winds that act upon similar sized particles of rock – mostly small quartz spheroids between 0.01 and 0.04 inches in diameter here on Cape Cod. And, of course, there is a similarity in appearance forged by the very few species of plant life that can tolerate the salt spray and barren, humus-less, soils – mostly beachgrass – *Ammophila breviligulata*.

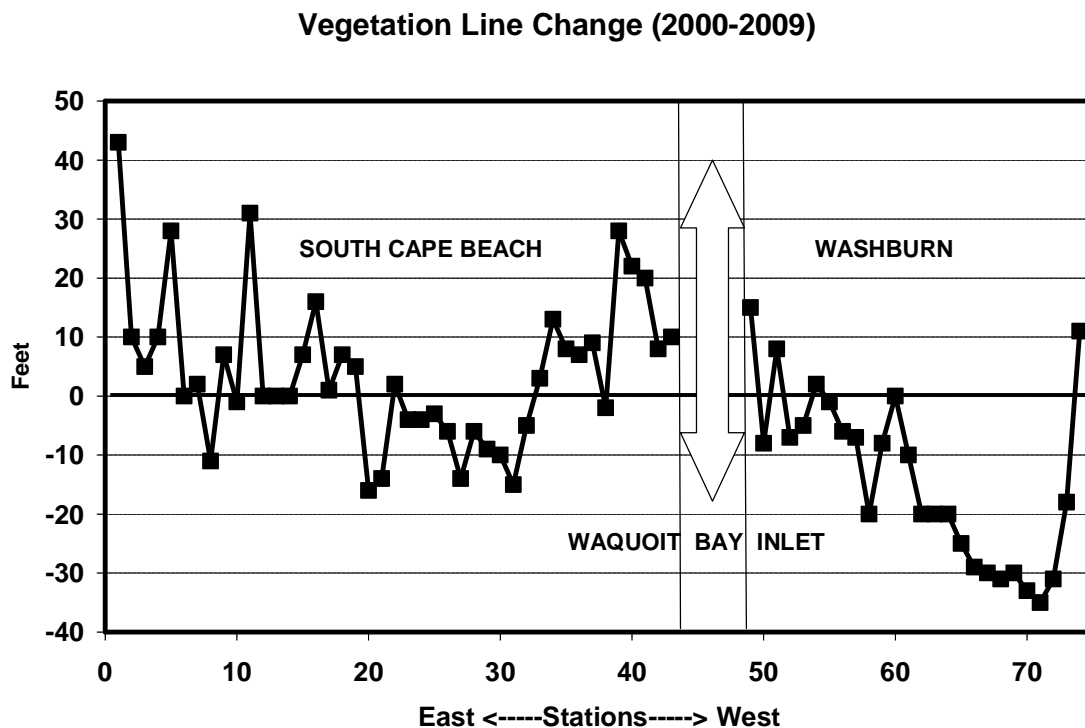
Waquoit Bay is fronted by two barrier beaches on its south side. Indeed, what makes Waquoit an enclosed bay – an estuary and refuge of relatively calm waters – are these sandy barriers that protect it from the higher wave and current energies of the more raucous Vineyard Sound. The eastern barrier is called South Cape Beach, or, on some maps, Dead Neck, which extends westwards about two miles from the headlands of Mashpee's Great Neck to the Waquoit Bay tidal inlet. The western barrier extends eastward about one mile from the headlands of Washburn Island to the Waquoit Bay inlet.

The approximately three miles of barrier beach are mostly within the WBNERR boundaries, and for the last nine years have been closely monitored for shoreline change by Reserve staff and volunteers as part of a program called Coastwatchers. Starting in October 2000, seventy-five stations were surveyed in every 200 feet, from the tip of the spit at Eel Pond Inlet near the Menauhant Yacht Club to WBNERR's eastern border next to Flat Pond and the New Seabury Golf Course. Beach measurements are made around the low-tide in the cool stormy part of the year, every two months from October to April – though often our February surveys are cancelled due to a frozen bay and snow-drift covered beaches.

The Coastwatcher measurements consist of two types. The first type carried out at each station is a simple tape measure laid out perpendicular to the shoreline from each site's permanent benchmark (a surveyed wooden post) situated back behind the dunes about 100 feet away from the ocean. Along this transect, we measure the distance to four key beach features (a geologist would say "morphological points"): 1) the "Foredune" – the crest of the most seaward dune, 2) the "Vegetation Line" – the edge of the beachgrass usually, 3) the "Berm" – the location of the sharp change in slope between the "wet" or intertidal part of the beach and the dry or above-tide portion of the beach and, 4) the "Toe" of the foreshore – the step-down feature that is located at the foot of the sloping intertidal beach.

The second type of measurement is a vertical one that measures the elevation at each of these same four beach features. Because they are a bit more time-consuming, these vertical surveys are only carried out about every 5th station or about every 800 feet. All four of these features mark the "shoreline" in their own way. The "Foredune" tends to mark the highest point on the beach – they only overwash during the most extreme storms. The "Vegetation Line" tends to mark the edge of the storm surge of the most intense storm over the previous year or so, which uproots all vegetation in its wave-wracked path. The "Berm" marks the most recent edge of high-tide plus the wave swash – it changes almost daily. The "Toe" marks the location of the most recent low-tide position – it also changes almost daily.

So, after nine years, what can we say about shoreline change on the Vineyard Sound-facing beaches of Waquoit Bay? Within the limits of this newsletter, let's look at just one fairly robust measure of change – the position of the “Vegetation Line” that separates the sandy beach proper from the vegetated dunes and upland banks. To repeat, this feature marks the limit of storm wave action over the last year or so. The graph below shows the change in the position of the “Vegetation Line” between October 2000 and October 2009. Positive values on the vertical axis indicate accretion or seaward growth of the beach, while negative values indicate erosion and retreat of the shoreline.



The graph shows that the almost two miles of South Cape Beach has, on average, not changed much. But within this stretch of barrier beach there are notable shifts. The easternmost section (about the first eighteen stations) shows beach accretion – about 9 feet on average (or a gain of 1 ft per year). Similarly, the westernmost section of South Cape Beach, nearest the inlet, (stations 33-43) also shows considerable growth – about 11 feet on average (about 1.3 ft/yr). On the other hand, the mid-section of South Cape Beach (stations 19-32) shows an average loss of about 7 feet (about -0.8 ft/yr). So, both gain and loss, more or less, balance each other on South Cape Beach.

The situation is quite different on Washburn where erosion is the rule. Only the first few easternmost stations near the inlet and the last westernmost station on the Eel Pond spit show any seaward gain at all. There is also a trend on the Washburn barrier beach. The farther west one goes along the beach – towards Menauhant -- the greater the erosion until the Eel Pond spit. The maximum erosion (about 35 feet) is located near the foot of Collins Hill, the geological glacial headland of Washburn. Here the rate averages almost 4 ft / year. It is interesting to note that this is greater than the rate of erosion of the sand cliffs at Eastham and Wellfleet on the outer Cape, which experience much greater wave action.

Where is all the sand going that is removed from Washburn? Don't forget that old law of physics: “Conservation of Mass.” For every loss there must be a compensating gain somewhere in the system. For now, most of the sand is going to build the Eel Pond spit and construct the sandbars both within and outside of the tidal inlet at Eel Pond. Erosion both destroys and creates beaches. You can't have one without the other.

Message from Reserve Manager - Alison Leschen

The CPWB Steering Committee would like to introduce WBNERR's new Reserve Manager, Alison Leschen. Alison has a great background with the state of Massachusetts in projects dealing with eel grass restoration, wastewater treatment facilities and community education. Her experience as a biologist and management of issues facing WBNERR will bring strong leadership. To our members:

In November I had the chance to attend a CPWB Board meeting and introduce myself, now I'd like to do the same for all the members. I come to WBNERR from the MA Division of Marine Fisheries (DMF), so I'm familiar with many workings of the state system. I received my Masters in Marine Science at the Boston University Marine Program (BUMP) in Woods Hole in 2004 studying the fecundity of horseshoe crabs in Pleasant Bay. As Dr. Ivan Valiela's student, I was acutely aware of the issues of nutrient enrichment and the research going on at WBNERR. At DMF, I was the lead biologist for three years on a successful eelgrass restoration project in Boston Harbor. The Harbor was a good example of an estuary that had been extremely degraded by excessive nutrients, but has since made a miraculous recovery after a new secondary wastewater treatment facility and ocean outfall went online. For the past two years I returned to my roots as the state horseshoe crab biologist. We started the state- and region-wide annual spawning surveys, which were described in a previous newsletter. WBNERR staff participated in these, along with multiple state and federal agencies, universities, and NGOs, along with a great deal of help from dedicated volunteers. I have been on the Board of FACES (Falmouth Associations Concerned with Estuaries and Salt ponds) for several years. The issues of wastewater management facing the town are very familiar to me, and I have a personal interest in seeing these issues addressed since I live in Falmouth.

Before going back to school at BUMP, I received a Masters in Public Health with a focus on community health education on environmental health issues. I was a Senior Planner for the Pioneer Valley Planning Commission, working with towns in western MA on issues such as zoning, combined sewer overflow management, wetland protection, and solid waste management. I then became the Solid Waste and Recycling Coordinator for the City of Northampton, where I started and directed the municipal recycling program, regular household hazardous waste collections, etc.

Since arriving at WBNERR just a week ago, I have been amazed and inspired by the excellence and dedication of the staff. The high quality research, education, and stewardship programs and projects that are generated here are truly an asset to the region. I am thrilled to be here and look forward to learning more and helping WBNERR continue to thrive.

Reserve Pilots Green Team Idea for DCR

Joan Muller, Education Coordinator

Waquoit Bay Reserve is one of three pilot DCR Green Teams formed in response to the Governor's Leading By Example Executive Order which directs state entities to substantially reduce greenhouse gas emissions over the next few years (go to www.mass.gov and type in Executive Order 484). Last fall, the whole staff committed to the "10 Steps to a Successful Green Team" and brainstormed ways the reserve could improve its practices.

Last winter, we enlisted the help of Jamie Smith, a junior at Massachusetts Maritime Academy, to collect baseline energy use data which volunteer Peter Wells is now keeping up to date. Since energy efficiency is the most cost effective way to reduce emissions, staff members divided into teams to make recommendations for each building at our headquarters. Reserve staff contacted long-time education partner Cape Light Compact for help to reduce our own building energy use. The Compact arranged for an all-staff training on building envelope and insulation concepts followed by hands-on weatherization of one of the Reserve buildings. Many staff members were excited to hear about the Compact's free energy audits and rebates for homeowners and rushed home to sign up for free audits or try some of the techniques on their own homes. (www.capelightcompact.org)

The Reserve is offering workshops to community members on topics such as energy efficiency, renewable energy, organic vegetable gardening and the Buy Fresh, Buy Local program as well as hands-on weatherization workshops as part of the Community Energy Corps weatherization program (a CIRenew project). Mary Kay Fox led the team in starting a demonstration organic vegetable garden with interpretive signs to point out the virtues of a backyard garden (a tasty way to reduce emissions from transportation of food).

The Reserve was awarded a Leading by Example grant to install boiler managers on their oil boilers (these have a very quick pay back), complete air sealing and insulation measures recommended for the Gate House and Boat House, and have a complete, professional energy audit done on the Main House. The Reserve is currently working on implementing these recommendations. Reserve Manager Alison Leschen recently secured funds from DCR to seal and insulate the Main House which consumes the most energy of all the buildings.

The Reserve is committed to modeling more sustainable practices and educating others about them. These actions will ultimately help to protect coastal environments.

OUR ANNUAL RAFFLE UPDATE

Toni Grady, Fundraiser Chairwoman

The CPWB Steering Committee wishes to thank all of our members who supported our Annual Raffle this summer. The proceeds from the Raffle go toward education programs at the Reserve, especially the Summer school programs. This year the raffle netted almost \$1,400.00, somewhat less than more recent years. Because the weather was so rainy and windy this year, we were not able to sell tickets at Mahoney's or at Kenyon's Market as often as we have in other years. The Steering committee not only regrets the fact that we made less money for WBNERR but that we missed our opportunity to tell the community the goals of CPWB and WBNERR. We feel this action is as important as the selling of the raffle tickets and the Committee hopes the CPWB membership will continue to volunteer time to help achieve our quest! Thank you for returning the raffle tickets mailed to you in our June newsletter.

We are looking for new fundraising ideas. In the planning for 2010 events is a garden tour with the opportunity to have dessert and refreshments at the Visitor Center on the bluff. Please if you have a suggestion of a way to raise funds please contact Toni Grady, toniatcape@aol.com / 508-545-9457 or Maureen Jankauskas, loumoej@yahoo.com. Often an idea needs more than a year to plan and execute, no idea is too small or too big to be considered.

CALENDAR Notes:

In March - WBNERR will host the Research and Coastal Training Program Coordinator Meeting

The Waquoit Bay Research Reserve facilitates research on coastal ecosystems and the impacts of human activities on them. The priority research areas include: Water quality/ eutrophication/watershed land-use; Climate change / sea level rise / shoreline change and

assessment of ecosystem response to natural variability and human impacts. The Coastal Training Program (CTP) is a national initiative administered by the National Oceanic and Atmospheric Administration, National Estuarine Research Reserve System (NOAA/NERRS). Its purpose is to provide training and technical assistance for coastal decision-makers that fosters sound science-based coastal management. The CTP model is implemented in most of the twenty seven (27) research reserves around the country. While the programs share common goals, each is distinct and has unique dimensions determined by regional and local concerns and the priority coastal issues of the biogeographical region. These meetings allow our staff to collaborate with their colleagues from the other Reserves to compare and improve upon the programs we offer currently.

CPWB Meeting – January 11th at 7:00pm, in WBNERR meeting room – please join us.

Coffee House, Earth Day event in April watch the Reserve calendar for date and time

Washburn Island Cleanup – date will be announced for a Saturday in June.

Tuesday Nights on the Bluff, will start July 13th

Block Party – August 10th

Spring Happenings:

Coming this spring at the Reserve - Nature walks, Lecture, Ecological landscaping/gardening courses in April and May, Earth Day events, Teacher training, Coastal Training Programs, Horseshoe crab count starting in May and much more!

Please check the website at www.waquoitbayreserve.org for up-to-date information.

SEASIDE GARDEN TOUR and TEA

CPWB will sponsor a fundraiser this coming August: Seaside Garden Tour and Tea

Date: August 4th, 2010

The tour will consist of local gardens in the Waquoit, East Falmouth and Maravista area.

Volunteers are needed to assist at the gardens to welcome visitors and mark tickets. A few people may want to help with seeing that parking is done without disturbing the neighborhood. There will be committee to help select the gardens. Posters and tickets will need to be distributed to merchants that have always supported WBNERR. Please contact Toni Grady, toniatcape@aol.com / 508-545-9457 or Maureen Jankauskas, loumoej@yahoo.com.

Mark your webpage to make the waquoitbayreserve.org a favorite site to visit.

What you can find at www.waquoitbayreserve.org under the following headings

Supporters: CPWB objectives/mission

Education: Current programs for community training, teachers and summer camp opportunities

Volunteer: Requests for coastal watchers, horseshoe crab count dates

RENEW MY MEMBERSHIP: (Please make checks payable to CPWB, P.O. Box 3021, Waquoit, MA 02536))

\$ 10.00 Membership

\$ _____ Contribution

Names: _____

Address: _____

Phone: _____

Email Address _____

Summer Address: _____

Contact me to volunteer for a few hours to help with CPWB's fundraising for the Seaside Garden Tour and/or 2010

Raffle: _____

Membership CPWB

Our membership year runs from July 1st through June 30th. Please check to see if your membership is current.

Your \$10.00 membership fee supports educational programs. CPWB thanks the members who give additional contributions. We are committed to providing critical support through our membership base to support WBNERR.

BAYWATCH

CITIZENS FOR THE PROTECTION OF WAQUOIT BAY CPWB

CPWB is a non-profit organization concerned with the health of the area's waters. CPWB serves as the Friends Group for the Waquoit Bay National Estuarine Research Reserve, supporting their educational programs and seminars.

CPWB MEMBERS JANUARY 2010 NEWSLETTER

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