

PEP Talk

The Newsletter of the Peconic Estuary Program

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Seafloor Mapping of the Peconics

Scientists at Stony Brook University's Marine Sciences Research Center are creating maps of the Peconic seafloor to document bottom features, bottom types (*i.e.*, sand, mud), and natural resources. This effort will increase our knowledge of the range and variability of seafloor habitats. The results of the survey will assist in protecting biodiversity, and restoring eelgrass, as well as finfish and shellfish populations, among other applications. Funding for this initiative is provided by Suffolk County, The Nature Conservancy, Peconic Estuary Program, and New York State.

Geologists and ecologists have long understood the usefulness of aerial photography and satellite

images for mapping terrain and vegetation. In Figure 1, the Orient Harbor area's terrestrial landforms, land cover types, and the boundaries between different regions are readily apparent. Scientists can categorize and group areas that appear similar and then collect rock, soil, and vegetation samples at a limited number of locations to check their work. When this is all done, they have efficiently characterized the landscape (a procedure called groundtruthing).

The same aerial view of Orient Harbor that was so informative to terrestrial scientists reveals a comparatively featureless sea surface and provides no information about what's beneath it. As a result, seafloor studies in the past usually consisted of taking bottom samples

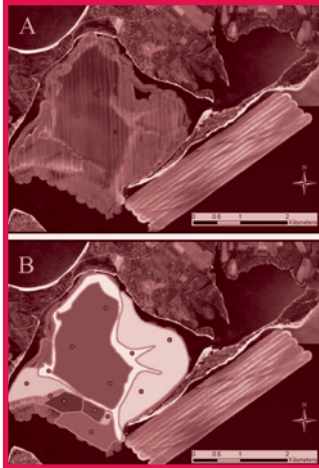


Figure 1. Courtesy of Stony Brook U, MSRC

See *BENTHIC* on Page 2

Fish On!

The fishing is not what it used to be in the Peconic Estuary, but that is true everywhere, it seems. Nevertheless, summer is a great time for a relaxing day of fishing. While catching fish isn't guaranteed, chances are pretty good you'll find a few for dinner, or maybe just for fun. From the calm brackish waters of the Peconic River to the open expanses east of Gardiners Island, there are fishing opportunities for anglers of nearly every ilk.

Scup, also known as porgies, flood the Peconics in spring to spawn. Larger fish arrive first, followed in waves by smaller fish. By summer, most of the big fish have moved out, replaced by small fish and juveniles. This year, scup season opened June 1st with fish "the

What's Inside?



- Red Tide.....4
- Fish Fairly.....5
- Events Calendar.....5
- PEP Mini-Grants.....5
- Species Snapshot:
Hairy Sea Cucumber.....6

See *FISHING* on Page 3

BENTHIC from Page 1

at arbitrarily selected locations. Even in small bays, sampling locations were hundreds of meters or more apart and afforded only a coarse description of seafloor structure.

Recently developed acoustic tools, such as side scan and multibeam sonar, can be used to provide remarkable detail about seafloor bathymetry (*i.e.*, water depth), morphology (*i.e.*, underwater landscape), and habitats and have become the underwater equivalent of aerial photography. These surveys are carried out by a boat using either a towed or hull-mounted sonar unit that transmits an acoustic signal. The boat runs a series of parallel tracks over the water surface, so-called “mowing the lawn,” and computers record acoustic return (*i.e.*, how long it takes for the signal to hit the seafloor and bounce back to the boat), position using satellites, and boat rocking movements. The collected data are later processed and combined to form a composite map image of the entire area (Figure 1A). Maps of bathymetry and backscatter (*i.e.*, reflection strength) are then produced. High backscatter generally indicates coarse-grained seabeds with sand, gravel, or shell, and low backscatter tends to indicate a muddy seafloor, but this must be verified by actual groundtruth sampling with a core or grab of the bay bottom.

Sonar maps in nearshore areas such as the Peconic Estuary show considerable variation, and the maps are used to generate an initial classification of the seafloor into provinces (Figure 1B). The groundtruth stage then consists of collecting bottom samples within each province. These samples

are used to better characterize the bottom sediment type and to identify the fauna (*e.g.*, crabs, clams, marine worms) living there. The overall goal is to identify seafloor provinces that have similar biological and environmental characteristics (called biotopes).

Phase I in the Peconics has consisted of acoustic mapping of the underwater portions of six PEP-designated critical natural resource areas (CNRAs): Robins Island, Shelter Island, Flanders Bay, Orient Bay, Northwest Harbor, and Gardiners Island. Underwater areas around Robins Island and Shelter Island were groundtruthed at 50 locations, and the other four CNRA areas were sampled at 7-15 locations each. Data analysis is continuing, but 266 different species have been identified so far. Bottom features that would have easily been overlooked in the past are being recorded and characterized in the study. In Orient Harbor, for example, a thin, 50-meter wide band of shelly sediments has been found that circles the entire central muddy deposit in the center of the harbor. These two provinces have less than half (42%) of their species in common. The possible remains of a river channel and delta system that flowed through the Peconics about 7,000 years ago has also been discovered.

Phase II of the mapping is just getting underway. It will extend mapping from nearly shore to shore (north to south) across four different reaches of the Peconic Estuary. Phase III is in the planning stage, and its goal is to complete seafloor coverage in all areas west of Shelter Island.

~Robert Cerrato, Ph.D. & Roger Flood, Ph.D.
Stony Brook University MSRC



A mud crab (Dyspanopeus sayi): 1 of the 266 species.




PEP Talk is published by the Peconic Estuary Program (PEP), a partnership of governments, environmental groups, businesses, industries, academic institutions, and citizens. The PEP's mission is to protect and restore the Peconic Estuary system. Learn more at www.peconicestuary.org.



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FISHING from Page 1

size of galvanized garbage can lids” being caught west of Robins Island, according to one captain. While that may be a slight exaggeration, the sight of a large, silvery porgy viewed at depth as it’s being brought to the boat would conjure up such an image. Fortunately, the local scup population seems to be holding its own. Scup can be caught at anchor, using clam chum and clams or pieces of sandworm for bait. Anchor downtide of rocks, such as the Robins Island Rock in Great Peconic. Look for them throughout Little Peconic Bay, off Nassau Point, in the deep hole between Robins Island and Nassau Point, or the Kingfish Hole near Buoy 4 northwest of Robins Island. Maybe you’ll catch a few kingfish as well.

There’s an old saying that goes, “when the lilacs bloom, the **weakfish** are running in the bays.” The lilacs are long gone, but there should still be weakfish in the Peconics. The big “tiderunners” are out to sea by late June, but if we’re fortunate, they’ve been replaced by the “summer weaks,” one-to-three year old fish that provide light-tackle fun and a few fish dinners into September. Try for them off Rose’s Grove by drifting a high-low rig with a sandworm on one hook and a strip of squid on the other. Look for depressions or “holes” and drift through them on a moving tide. Chances are you may catch kingfish and scup too. Weakfish may also be caught at different times by drifting the South Race, Jessups Neck and the waters around Shelter Island.

Bluefish can be found just about anywhere there’s a school of baitfish, typically menhaden (bunker). They

seem to arrive on the heels of the bunker in May. The big bunker seem to have moved out this year, but there are still many 3-4 pound blues around. Jessups Neck is typically the hotspot for bluefish fishing. Catch them with chunks of bunker or by diamond jiggging the rips at Jessups. It’s possible to pick up a striped bass or weakfish on the jigs as well. Blues are generally



Jim Miller with a striper caught on a fly. Photo by Joe Blados.

abundant to the east, in the Gut between Orient Point and Plum Island and beyond. Look for bird activity near the water’s surface and cast plugs to schools of breaking fish. In August and September, young-of-the-year bluefish, called snappers, make for fast action in all the creeks and coves throughout the system. Cast for them

with small spoons or a float rig with spearing.

One of the most popular of our local fisheries is the **summer flounder, or fluke**. Large fluke appear in May, with many anglers trying their luck in the waters of Shelter Island Sound near Greenport and Southold Bay. Fluke follow the squid, so whole squid are often used as bait for these early season giants. As summer rolls in, much of the fluke fishing takes place to the east, near Orient Beach or east of Gardiners Island. Some fluke will be found throughout the system all summer, however, even as far to the west as the Peconic River. In Little Peconic, try drifting just west of Jessups Neck on the incoming tide with a strip of squid and a spearing or live killie.

Striped bass fishing is a mainstay of local charter fishing and the growing flyfishing fleet. Stripers are abundant in all sizes throughout the Peconics from April into December. By mid-summer,

See FISHING on Page 5

Red Tide

Microscopic marine plants, called phytoplankton, are the base of the marine food chain. They come in various colors, courtesy of the fact that they all contain chlorophyll, the green pigment that enables plants to convert the energy of sunlight to cellular energy, and some contain “accessory” pigments that are responsible for the color differences. Often, discolored water results from a rapid proliferation, or “bloom” of phytoplankton.

Various bloom hues of red, green, and brown are most common and can often be quite striking (beautiful is a word I hesitate to use because of the potential for environmental damage posed by blooms). Local residents are undoubtedly familiar with the “brown tide” blooms that plagued the eastern and south shore bays of Suffolk County from the mid 1980s into the early 2000s, and which are currently afflicting the coastal bays of Maryland.

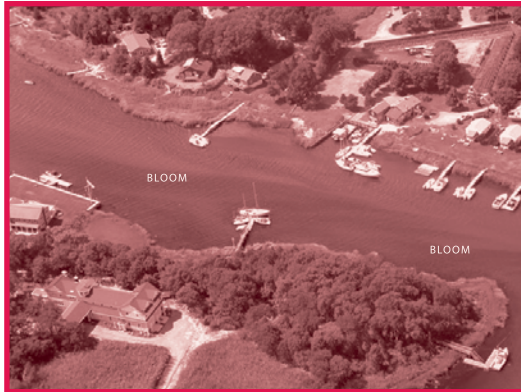
More recently, the Peconic Estuary has experienced a red tide caused by a phytoplankter called *Cochlodinium polykrikoides*. This organism is a member of a group of phytoplankton known as “dinoflagellates,” a group that is often responsible for plankton blooms – some relatively harmless, some quite toxic. The most well known red tides occur off the coast of Florida, where they are responsible for fish kills and human respiratory distress, and in New England, where they are responsible for paralytic shellfish poisoning (PSP).

The Florida red tide is caused by a bloom of the dinoflagellate *Karenia brevis* and, while generally not a

severe health problem for humans, it nonetheless wreaks havoc on the tourist industry when dead fish wash up onto beaches, and beachgoers experience respiratory distress. The New England red tide, on the other hand, does pose a serious risk to public health. Shellfish that feed on *Alexandrium fundyense* (tamarensis) cells concentrate a toxin that can be passed on to animals (including humans) that consume the shellfish. Symptoms of PSP include numbness and tingling of the lips and extremities

and, if sufficient toxin is consumed, respiratory paralysis and death can result.

Blooms of *Karenia brevis* appear to be limited to waters of the



Cochlodinium bloom in Reeves Creek (dark areas represent bloom).

Photo courtesy of K. Lessard.

and, until last year, PSP has been of concern only north of Cape Cod, Massachusetts. Unfortunately, unusual weather patterns over the last two years have resulted in *Alexandrium* blooms moving closer to the coast of Long Island, and in the closure of several shellfishing areas by the NYS Dept of Environmental Conservation this year, although not in the Peconics.

The *Cochlodinium* blooms noted in the Peconic Estuary do not appear to be a public health problem, but have been implicated in kills of shellfish and captive finfish elsewhere.

The Suffolk County Office of Ecology actively investigates plankton blooms in Suffolk County, and would appreciate hearing from anyone who might see unusual water coloration. Please call (631) 852-5806 to report bloom events.

~Robert Nuzzi, Ph.D.

Suffolk County Dept of Health Services

Estuary Explorers

Fish Fairly!

1. Be informed about, and comply with, recreational fishing regulations, permits, etc.
2. Practice catch and release.
3. Use circle hooks, and avoid stainless steel hooks.
4. Recycle monofilament fishing line in a designated receptacle (found at some tackle shops or marinas) or by contacting Berkley Fishing at 1-800-237-5539. Do NOT throw fishing line overboard!
5. Properly dispose of fish waste (*i.e.*, offshore or in the trash).

“Forget not that the earth delights to feel your bare feet and the winds long to play with your hair.”

~Kahlil Gibran

Mark Your Calendars!

August 19, 2006: Join us for our 2nd invasive plant pull on the Peconic River. Thanks again to the 60 volunteers who turned out on June 10th!

September 1, 2006: PEP Mini-Grant proposals due.

September 29, 2006: Tune in to EstuaryLive, broadcast live via satellite from Mashomack Preserve, Shelter Island.

See www.peconicestuary.org or call 631-852-5750 for more details.

FISHING from Page 3

striper fishing is generally a nocturnal exercise conducted in the turbulent waters off Orient and Montauk Points using bucktail jigs or live eels. Early on, stripers can be caught in the daytime, sometimes while porgy fishing near Robins Island or when jigging for blues off Jessups Neck. Early summer is also the best time for the flyfishing crowd. Sight-casting to striped bass in shallow water is an exciting experience. Sandy flats near points or the entrance to creeks often hold fish. Popular flies include shrimp and crab imitations and clouser minnows.

With the advent of global positioning systems (GPS) and fishfinders, there are very few places left for fish to hide. Veteran fly-fishing guide Joe Blados tells me there are still **secret spots** out there, at least for striped bass. “Sometimes you find them. I don’t know whether it’s a freshwater seep or what, but something will hold them in a small spot, maybe only 25 yards wide...And they’re there every day, same spot.” Joe’s not telling where, either.

~Steve Heins, NYS Dept of Environmental Conservation

See www.peconicestuary.org/Boaters.html for more local fishing info.

2006 PEP Mini-Grants!



We are pleased to announce the availability of \$20,000 for the 2006 Peconic Estuary Program Mini-Grant Program. Grants will be awarded for projects that increase public awareness of the estuarine environment and/or encourage active public participation in protecting and restoring the Peconic Estuary. Habitat restoration projects will be given priority consideration. Put your thinking caps on - proposals are due **September 1, 2006!**

Go to www.peconicestuary.org/MiniG.html for more information.

Species Snapshot

Hairy Sea Cucumber (*Sclerodactyla briareus*)

Ever been in a tough spot and just couldn't come up with a way out? Sea cucumbers are able to do just this! In response to a threat or attack, a sea cucumber can create a diversion by throwing up its internal organs (mostly digestive, but sometimes respiratory and reproductive). This drastic action may deter, distract, or provide a meal for a predator while the sea cucumber escapes. Sea cucumbers are able to regenerate their organs, although death sometimes results.



Photo by Shana Miller, NY Sea Grant

Found in marine waters from Cape Cod to Texas, hairy sea cucumbers (*Sclerodactyla briareus*) are four to five inches long, about two inches thick, and resemble the shape of a sweet potato. Covered with slender tube feet, their skin surface can range from olive, black, or brown, to purple. Hairy sea cucumbers spend their days lying almost completely buried in mud or sand in shallow water (low tide line to 60 feet deep), with only their branchlike tentacles that surround their mouths in the water column. The tentacles are covered with a sticky slime to which particles adhere. Cucumbers put one tentacle after another into their mouths and scrape off the food that was stuck to it. If a cucumber loses a tentacle, it can be regenerated in about three weeks. Hairy sea cucumbers move using their tube feet and extending and contracting their body. While hairy sea cucumbers have a well developed sense of touch, they are relatively insensitive to light.

If you are not convinced that hairy sea cucumbers are the most unique sea creature in the Peconic Estuary, consider the way hairy sea cucumbers breathe. Hairy sea cucumbers breathe through their anus, as well as discharge waste from it. Water is drawn in through a series of muscle contractions, and oxygen is absorbed into the walls of the two respiratory trees (similar to lungs) lining the anus before it is expelled.

Did you know? Hairy sea cucumbers have been found in the Peconic Estuary but have not yet been found in Long Island Sound or the South Shore Bays.

~Laura Bavaro, Suffolk County Dept of Health Services

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