

# PEP Talk

The Newsletter of the Peconic Estuary Program

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## The Pulse of the Peconics

*What is the environmental state of the Peconic Estuary? Is the water clean? Are animals and plants abundant? Are critical habitats and open spaces protected?*

From time to time it is important to put a finger on the pulse of the Peconics in an attempt to answer these basic questions and to get a sense of the health of the entire system. The Peconic Estuary Program did just this in its first *Environmental Indicators Report*, published in March 2005. The report examined 18 diverse environmental measures or “indicators,” including bay scallop landings, wetlands acreage, and Brown Tide blooms. By evaluating the various indicators, we can draw conclusions about the overall health of the estuary and make recommendations for future conservation and management efforts.

Compared to other estuaries nationwide, the Peconic Estuary is a relatively healthy system. Significant open space protects natural habitats, groundwater recharge areas, and surface water quality. Dissolved oxygen levels in most of the estuary support abundant animals and plants. Clean bathing beaches afford recreational opportunities for residents and visitors alike.

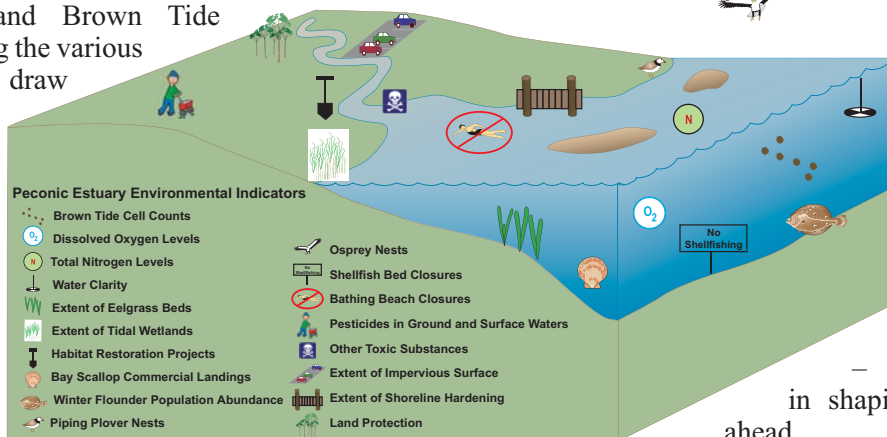
On the other hand, the Peconic Estuary shows signs of environmental stress, particularly in the more densely developed areas and in the tidal creeks. Low dissolved oxygen conditions occur in the tidal Peconic River, western Flanders Bay and many tidal creeks; eelgrass beds are now

virtually absent west of Shelter Island; numerous pesticides have been detected in ground and surface waters; and some local fisheries, most notably bay scallops and winter flounder, no longer support commercial harvests.

These stresses are likely to worsen as the population increases and land uses intensify, unless steps are taken to reduce pollution and protect habitats from fragmentation, degradation and total loss. It is possible to maintain and improve environmental quality through the combined efforts of citizens, government, businesses, and nonprofit organizations – everyone plays a role in shaping the future that lies ahead.

In this special edition of *PEP Talk*, we focus on 8 indicators: Brown Tide blooms; eelgrass coverage; bay scallop landings; osprey nesting; dissolved oxygen levels; pesticide contamination; the extent of shoreline hardening; and land protection. The Peconic Estuary Program, by way of implementing our *Comprehensive Conservation and Management Plan*, directly influences the status of some of these measures, such as land protection. Other indicators, including osprey nesting, are only indirectly affected by the environmental initiatives of the PEP. Please read on and put your finger on the pulse of the Peconics...

~Vito Minei, P.E., PEP Program Manager



Some symbols in figure are courtesy of Integration & Application Network ([www.ian.umces.edu](http://www.ian.umces.edu)) University of Maryland Center for Environmental Science

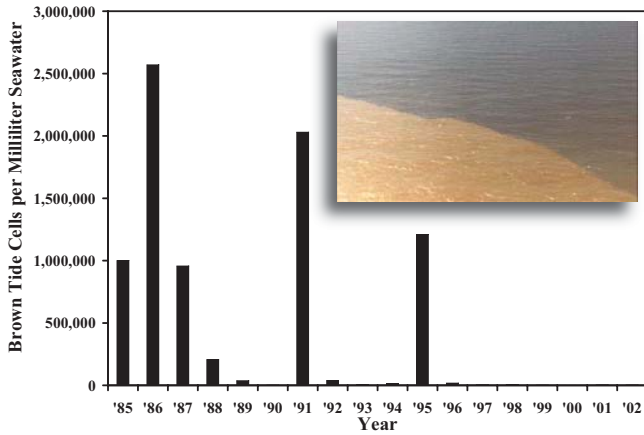


# Brown Tide Blooms

*Brown Tides have slowed, but where are the scallops & eelgrass?*

Brown Tides are caused by the excessive growth of a small, single-celled marine plant and are notable for their wide spatial extent and long duration. Known by scientists as *Aureococcus anophagefferens*, blooms of the Brown Tide organism turn the water deep brown, making it unappealing to swimmers and fishermen alike. While not harmful to human health, the presence of Brown Tide is a problem for bay scallops and eelgrass, due to starvation and light-shading, respectively, and to a lesser degree finfish and other shellfish. A massive Brown Tide bloom in the Peconics in 1985 is believed to have played a major role in the virtual collapse of the Peconic's nationally significant bay scallop fishery.

Brown Tide in Flanders Bay since 1985



As shown in the graph, major brown tide blooms occurred in 1985 through 1988 and then again in 1991 and 1995. There have been no significant Brown Tide blooms in Flanders Bay and the greater Peconics since then (localized blooms affected West Neck Bay in 1997 and 1998). Unfortunately, bay scallop populations and eelgrass have not rebounded in the absence of blooms.

Although there have been many scientific investigations looking at what causes and sustains Brown Tide, no definitive answers have been found. Some of the most promising research indicates that shellfish populations and nitrogen loads could be related to Brown Tide bloom initiation, but more study is required.

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## Eelgrass Coverage

*Eelgrass has declined by over 80% and is now rare west of Shelter Island.*

Eelgrass is a rooted plant that grows in shallow waters in temperate areas of the East Coast. Like other submerged aquatic vegetation (SAV), it stabilizes the bay bottom, produces oxygen, and provides an important nursery and feeding habitat for many estuarine species, including bay scallops and many types of fish.

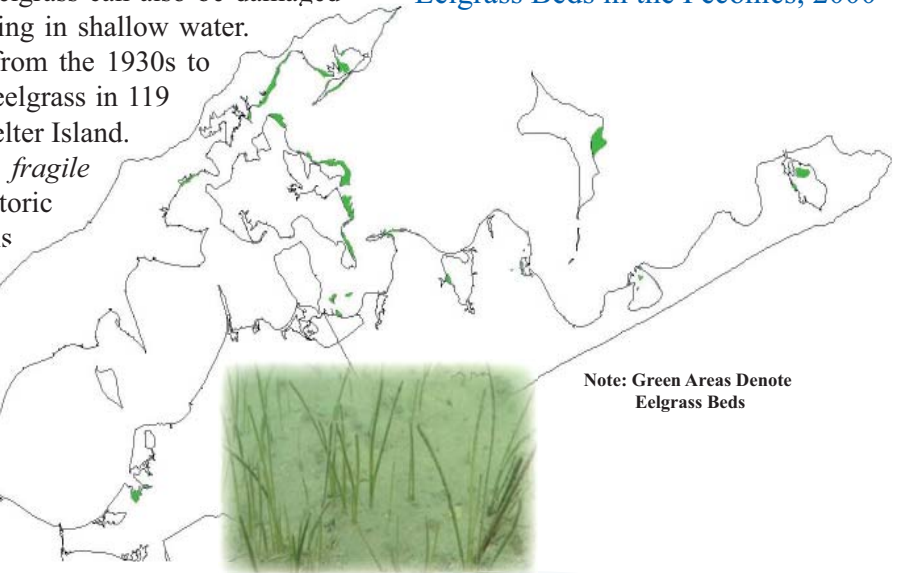
Eelgrass beds in the Peconics were decimated by a disease in the 1930s and further impacted by reduced light penetration due to the Brown Tide blooms of 1985-95. Eelgrass can also be damaged by excess nitrogen, anchor scarring, and boating in shallow water.

Eelgrass coverage declined by at least 82% from the 1930s to 2000; a 2000 inventory found 1,550 acres of eelgrass in 119 beds, the vast majority of which are east of Shelter Island.

Species of macroalgae, including *Codium fragile* and *Ulva lactuca*, have colonized many historic eelgrass areas. Unfortunately, macroalgae is inferior habitat for several important organisms, such as bay scallops.

Attempts to re-establish eelgrass have proven to be labor intensive, difficult and costly, though promising new methods are being pursued. Conserving existing eelgrass beds and re-establishing new ones will be most successful if there is good water quality and clarity, and minimal physical disturbance and predators.

Eelgrass Beds in the Peconics, 2000



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.



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# Bay Scallop Landings

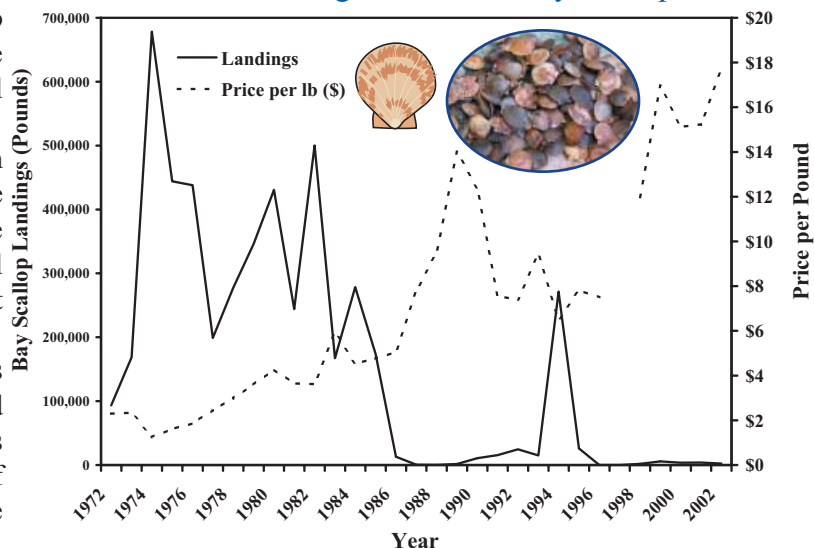
*700,000 pounds to 0: where have they gone, and when will they be back?*

For ecological, cultural, and economic reasons, the bay scallop is important to the Peconic Estuary. The Peconic catch once accounted for an astounding 28% of all U.S. commercial landings of bay scallops, with a dockside value of \$1.8 million in 1982. After the appearance of Brown Tide in 1985, the bay scallop fishery was decimated. There was a brief comeback in 1994, but since 1996, commercial landings have ranged from 0 to just under 6,000 pounds, a stark contrast to previous landings of up to 700,000 pounds. The figure at right illustrates the steep decline of the commercial fishery and resulting price for the limited harvest.

The bay scallop's short life span and single-spawn characteristic make them extremely susceptible to environmental stressors, including Brown Tide blooms. The loss of the recreational and commercial harvest has been greatly felt on Long Island's East End.

Good water quality can help support populations of bay scallops directly, as well as the habitats and food sources they need to survive. Stocking efforts and spawner sanctuaries may stimulate a rebound of the bay scallop population; a number of efforts are underway.

Commercial Landings & Value of Bay Scallops in NY

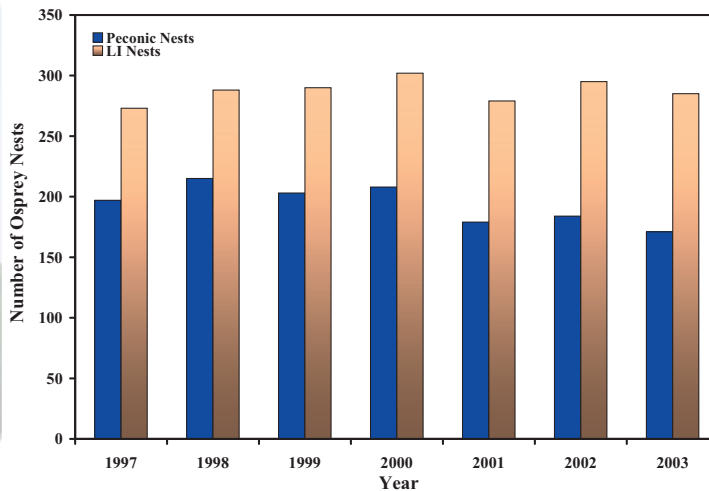


# Osprey Nesting

*The Peconic Estuary is home to more than half of Long Island's ospreys.*

The osprey is a large fish-eating hawk that is highly migratory and nests on Long Island from mid-March through September. The osprey is an environmental success story due to its resurgence since the banning of DDT, a pesticide which caused ospreys to lay eggs with thin, brittle shells that were vulnerable to breakage. Since 1980, the number of nests on Long Island has grown from 90 to nearly 300. The Peconic region is home to more than half of the ospreys found on Long Island.

Osprey Nest Distribution: Peconics & Long Island



the rest of Long Island (1.43 young per nest). This may be due to a number of factors, including a declining food base caused by overfishing, encroachment on breeding habitats, and/or competition with growing populations of double-crested cormorants. Peconic ospreys may also be more susceptible to catastrophic mortality of young since the area is more exposed to the elements during severe storms, particularly around Gardiners Island.

Preservation of open space, natural osprey habitats, and man-made nesting platforms (to account for habitat loss) are vital to the continued survival of this magnificent bird.



# Dissolved Oxygen Levels & Nitrogen

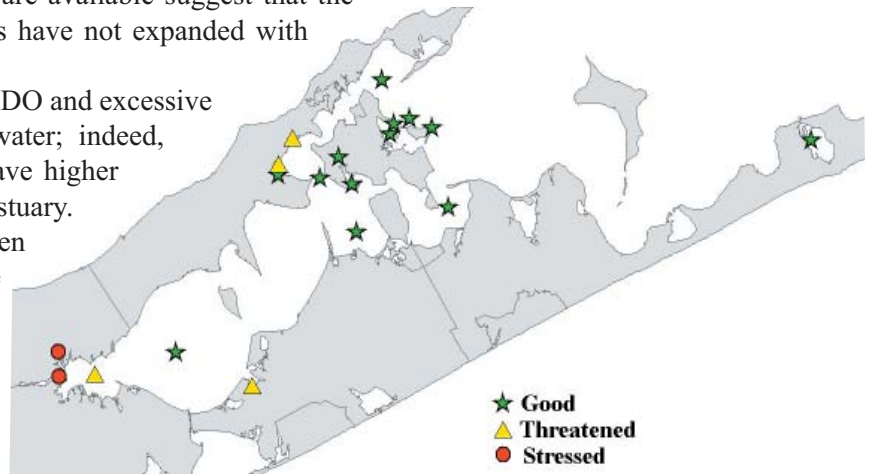
*Most of the estuary has healthy dissolved oxygen levels, but problem areas exist.*

Like humans, fish and other aquatic life need oxygen in order to live. If there is not enough dissolved oxygen (DO, the amount of gaseous oxygen in the water), fish and other aquatic life are forced to leave the area, become stressed, or die. Approximately 3% of the total surface area of the Peconic Estuary experiences dissolved oxygen stresses. The problem is most common in areas of the estuary where there is limited flushing by clean seawater, including the tributaries and western bays (see figure below). The limited data that are available suggest that the areas with extreme dissolved oxygen problems have not expanded with time.

There is a definite relationship between low DO and excessive nutrients – nitrogen, in particular – in the water; indeed, the Peconic’s western bays and tidal creeks have higher nitrogen levels than other areas of the estuary.

Nutrients can cause nuisance algal blooms; when these algae die and decay, they use the DO in the water. Nitrogen can be introduced to the estuary from excessive agricultural and residential fertilizer use, septic systems, stormwater runoff, and from the atmosphere (as a result of burning fossil fuels), among other sources. Overall, nitrogen levels in surface waters do not appear to be increasing and may even be decreasing due

to unknown factors that may include reduced inputs (due to treatment upgrades at sewage plants, conversion of farmland to residences, etc.) and increased uptake by the food web (in seaweed, shellfish, etc.). Reducing nutrient loads can go a long way towards maintaining dissolved oxygen levels sufficient to support abundant animal life.

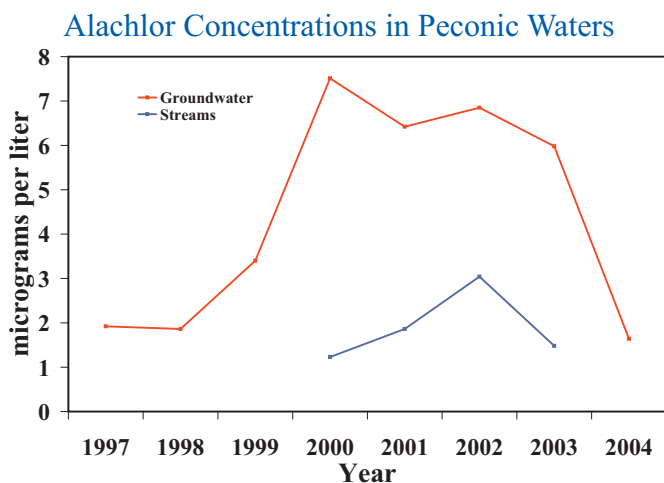


Dissolved Oxygen Water Quality Conditions

## Pesticide Contamination

*Pesticide residues are found in local bays, streams, and groundwater.*

Pesticides are an emerging concern in the Peconic Watershed. Some chemicals used to control unwanted plants and insects in suburban landscaping, agricultural operations and golf courses persist in the environment. The Suffolk County Department of Health Services monitors area waters for the presence of pesticides. The goal is to identify potential problems



early, so they can be addressed and corrected. Both Federal and New York State agencies establish contaminant safety levels for pesticides to protect human health and the environment; when detection levels approach or exceed levels deemed safe, action is taken. For example, the herbicide alachlor was detected in the county’s groundwater at concentrations of concern and was removed from the Suffolk County market in 1999. The figure at left shows the median total concentrations of alachlor when detected in groundwater and in streams on the North Fork. Note how levels went down after it was banned, but that trace amounts still are detectable. The pesticide concentrations in the streams closely parallel the concentrations detected in groundwater. This is expected, because groundwater discharge feeds into streams.

Since 1997, the Suffolk County pesticide monitoring program has identified 63 pesticide-related chemicals in groundwater in Suffolk County, including many in the Peconic Watershed. Most of these compounds have been found at levels well below the standards set by regulatory agencies. However, 13 have been detected at concentrations that exceed New York State drinking water standards. Thirty-seven pesticide-related compounds have been found in streams that feed the Peconic Estuary.

Though no causal link has been identified, pesticides may be affecting the biota of the Peconic Estuary, especially during sensitive early life stages. To reduce potential adverse consequences, pesticides must be used only when necessary, and instructions for proper use and disposal must be strictly followed.

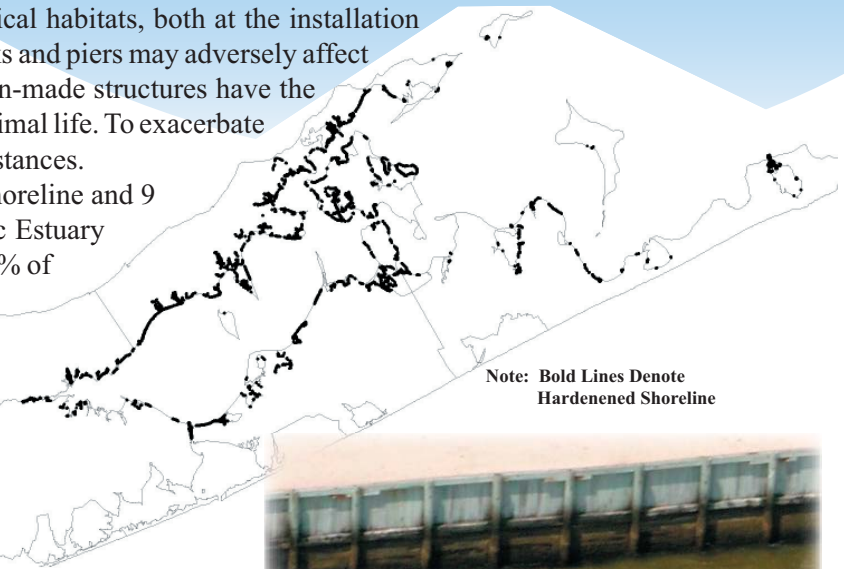
# Shoreline Hardening

*Nearly 30 miles of shoreline in the Peconics have been artificially hardened.*

The shoreline, or intertidal zone, is home to a variety of plants and animals that are specially adapted to the twice-daily rising and falling tides. The installation of hard structures, including bulkheads, seawalls, and jetties, along the shoreline has led to the loss of wetlands, beaches, and other critical habitats, both at the installation site and in adjacent areas due to scouring. Even docks and piers may adversely affect habitats by shading the waters below them. All man-made structures have the potential to alter the naturally occurring plant and animal life. To exacerbate the issue, some structural materials leach toxic substances.

In 2000, approximately 29 miles of hardened shoreline and 9 miles of docks were inventoried across the Peconic Estuary coastline (see figure at right). This represents over 6% of coastline that has lost its natural, vegetated state and the filtering capacity that accompanies it.

Eliminating existing and limiting new shoreline hardening structures are important steps in protecting habitats, and therefore the wildlife and plants, of the Peconic Estuary. Natural shoreline stabilization techniques should be pursued and encouraged. Where hardened shoreline does exist, non-toxic or low toxicity materials should be used.

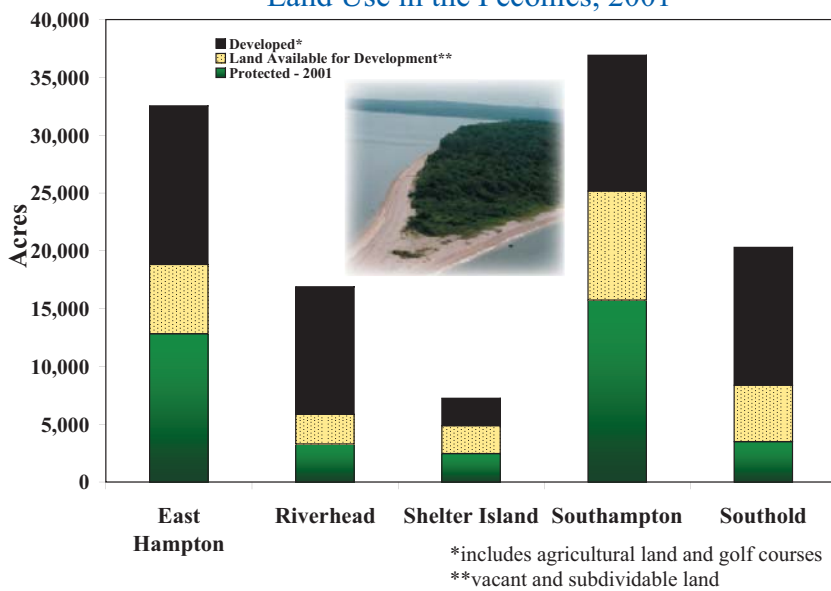


# Land Protection

*Over 33% of the Peconic Watershed is protected, but development continues.*

Ever-increasing development continues to result in the loss and fragmentation of open space and natural habitats, degraded ground and surface water quality, and population declines of local plants and wildlife. Land protection counters these trends and guards the quality of life, aesthetics and amenities that make the East End special, and its ecosystems vibrant.

Land Use in the Peconics, 2001



Of the 113,892 acres of land in the Peconic Watershed's five eastern towns, over 33% (37,771 acres) is protected, while a little more than 22% (25,271 acres) is still available for development (as of 2001). A significant amount of additional open space has been protected since 2001, but development is also taking place – on average 600 acres are developed each year.

The towns, County, State and private land trusts have been instrumental in acquiring and protecting open space. However, additional funding is needed to acquire properties before they are lost to development. Even the 2% real estate transfer tax, also known



as the Community Preservation Fund, is not enough; it can only purchase an estimated 5-10% of remaining land available for development. Reasonable requirements for new development, such as specifying the percentage of property that must remain in its natural state, can significantly augment land acquisition programs.

# Protect & Restore the Peconics - Do Your Part!

*We need YOU to help us achieve the PEP's goals of clean water,  
abundant wildlife and healthy bays . . .*

- 1. Eliminate or reduce your use of fertilizers to help prevent the introduction of excessive nitrogen to the estuary.** Preserve all existing native landscapes, and minimize lawn areas. Select native or other low maintenance plants. If you have to fertilize, choose organic fertilizers with slow-release nitrogen and apply according to label directions.



- 2. Use and handle toxic substances, especially pesticides, oils and gasoline, judiciously and carefully, at home, at work, and on the water.** Always follow instructions on label. Take advantage of your Town's STOP days for safe disposal. Consider non-toxic alternatives to pesticides, such as allowing a mixture of grasses and non-grasses in your lawn.

- 3. Help to conserve eelgrass beds.** Avoid disturbing eelgrass while boating, anchoring and shellfishing.

- 4. Properly use and maintain your septic system or cesspool to minimize groundwater contamination.** Don't dispose of toxic substances or pharmaceuticals in a septic system. Have your system inspected regularly, and get your tank pumped when necessary.

- 5. Reduce the spread of invasive plant and animal species.** Don't plant non-native plants that spread aggressively (e.g., bamboo, purple loosestrife), and don't release pets or aquarium plants into the wild.



- 6. Obey zoning laws and fishing regulations.** One transgression may not be significant, but the cumulative effects across the estuary and watershed can be devastating.

- 7. Eliminate or reduce stormwater runoff that leaves your property.** Keep runoff free of contaminants such as fertilizers, automotive fluids, animal waste, and even soil and leaves. Never pour anything down a storm drain.

- 8. Maintain and/or restore natural shorelines, wetlands and other critical habitats on your property.** Use vegetation to naturally stabilize shorelines instead of bulkheading.



- 9. Use pump-out boats and stations to dispose of onboard sewage.** The entire Peconic Estuary is a Federally recognized Vessel Waste No Discharge Zone.

- 10. Learn more about the estuary, and encourage others to do their part to protect & restore the Peconics!** Join the PEP Citizens Advisory Committee. Visit [www.peconicestuary.org/WhatUCanDo.html](http://www.peconicestuary.org/WhatUCanDo.html) for more stewardship tips.



For the full text of the Peconic Estuary Program Environmental Indicators Report, go to [www.peconicestuary.org](http://www.peconicestuary.org) or call the PEP Program Office at 631-852-2077.



**Interested in learning more about YOUR estuary?**

Sign-up for a FREE subscription to PEP Talk! Public summaries of the PEP Comprehensive Conservation and Management Plan (CCMP) are also available.

Contact us at 631-852-2077 or [peptalk@peconicestuary.org](mailto:peptalk@peconicestuary.org).