



The Coastal Program

Success in Delaware Bay



Caring for Our Coastal Habitats



Pileated woodpecker. Corel Corp. photo

Conserving Habitat at Milford Neck

The U.S. Fish and Wildlife Service is working with partners to protect the largest remaining piece of coastal forest in Delaware. The Milford Neck area is one of the most important waterfowl staging areas in North America. During fall and winter, tens of thousands of waterfowl utilize this area for feeding and resting. Shorebirds stopping at Delaware Bay between South America and the Canadian Arctic represent the second largest concentration in North America.

True Partners

By assisting The Nature Conservancy (TNC) in applying for a North American Wetlands Conservation Act Challenge Grant, the Service's Delaware Bay Coastal Program, along with the Delaware Division of Fish and Wildlife and Delaware Wild Lands, is helping TNC acquire what had previously been the longest contiguous section of unprotected shoreline in Delaware at over 11 miles. The Milford Neck Habitat Conservation project brought together many other partners, including Ducks Unlimited, the U.S. Natural Resources Conservation Service, the Sussex Conservation District, Kent Conservation District, and American Forests.

Large Scale Protection

The geographic scope of this effort is impressive. Over 10,500 acres have already been acquired in the North American Waterfowl Management Plan Focus Area, with an additional 15,000 acres planned for acquisition. These acreages consist primarily of forested uplands, wetlands, farmland, and marsh habitat. Habitat restoration, including reforestation of cleared farmland, is planned or underway for hundreds of acres at Milford Neck.

Value of Coastal Forests

Coastal forests provide much needed habitat for several extremely rare neotropical migrant birds, such as the northern parula and the hooded warbler. In one area of the coastal forest at Milford Neck, there is a remnant old-growth loblolly pine forest which—according to the Natural Heritage Program's bird ranking

system—provides habitat for some of the rarest birds in Delaware, including: the pileated woodpecker; pine warbler; scarlet tanager; and yellow-throated warbler. The area is also important

"As I left the site on the last day I planted, I looked back at what was an old farm field. I imagined the same landscape, but grown in with a variety of native trees. I imagined myself a gray fox sniffing through the leaf litter; in the center of a woodland that could provide for all of my needs. It felt right."

Matt Bailey, Volunteer

for the production of black duck, mallard, and wood ducks; shorebird species such as clapper, king and black rails, willets, killdeer, least terns, and oystercatchers; numerous songbirds, wild turkey and bald eagles.

Volunteers Join In

The partner organizations joined forces with numerous volunteers from the University of Delaware's Wildlife Conservation Club and other environmental groups. Volunteers have helped reduce overall restoration costs and have gained valuable knowledge and experience along the way: "Volunteers feel a sense of ownership and pride in the project as they anticipate visiting the planted area in the future when it has developed into a forest," says Faith Zerbe, with Entrix Inc., a local environmental consulting company. In the future, project partners will continue to reduce forest fragmentation, expand riparian buffers, restore wetlands, reestablish native plant and animal communities, and manage Milford Neck as a system of preserves for the long-term conservation of this unique coastal area.

Horseshoe Crab Eggs Saved for Migrating Birds

The future of the shorebirds and horseshoe crabs along Delaware's coast is more secure today than it was prior to October 1998 thanks to a partnership of State and Federal agencies that worked proactively to craft a timely, adaptable management plan. Delaware Bay is a resource of international importance for migratory shorebirds. It is designated as a wetland site of international importance (Ramsar Site) and is part of the Western Hemisphere Shorebird Reserve Network. An annual series of natural phenomena make this area truly unique.

The Story Begins...

In early spring, a female horseshoe crab wiggles her way out of the mud 50 miles offshore where she has spent the winter. Her primitive biological clock has gone off, and she moves at its insistence to join others of her species in the shallows of Delaware Bay. As it has been for the last 350 million years—it is time to repeat their ancient spawning ritual. As a full moon appears, and the tide becomes high, she and millions of other female horseshoe crabs lay billions of pale green eggs on the beach. Digging down into the sand with her back legs, she lays clutches of 4,000 eggs, then drags a male crab across to fertilize them. At the next full-moon high tide, the eggs will hatch.

Enter... the Birds

Flocks of red knots, ruddy turnstones, sanderlings, and semipalmated sandpipers on the way to their Arctic breeding grounds are famished after flying for thousands of miles. They are looking for food, and the beaches of Delaware Bay—as in many years past—are filled with it. Essential to the



The spectacle of thousands of shorebirds feeding on hundreds of tons of horseshoe crab eggs draws over 100,000 tourists each year, contributing millions of dollars to local economies. Photos by Gregory Breese/USFWS

birds' survival, many of the newly-laid horseshoe crab eggs have been kicked to the surface of the sand by successive waves of competing female crabs. Billions of eggs are left exposed for the hungry birds. In less than two weeks, the birds will double their weight, each eating thousands of horseshoe crab eggs. This nourishment sustains them as they continue on the last leg of their 10,000 mile journey to the Arctic.

Now It Gets Complicated

Over the past several years, many people and organizations have become concerned that the increased harvesting of horseshoe crabs may be reducing the food available to shorebirds. Calls for harvest reductions brought together a variety of stakeholders, each dependent on the continued existence of some number of horseshoe crabs.

Plan Today for Security Tomorrow

Public concern about the reduction of spawning crabs prompted the States of New Jersey, Delaware and Maryland to put temporary restrictions on the harvest of crabs and the Atlantic States Marine Fisheries Commission (ASMFC) to put temporary restrictions on the harvest of crabs in some member

states. In an unprecedented move, the ASMFC promised to fast track a Fishery Management Plan for the crabs.

The management plan became reality in October 1998 and allows for three very important things: (1) the horseshoe crab population is to be managed as an ecological unit across state lines to balance the needs of shorebirds, fishermen, and society; (2) it provides the ASMFC with the authority to stop harvest if necessary; and (3) it mandates a monitoring program that should result in a better understanding of the interaction between horseshoe crabs and the larger system in which they live.

The Human Connection

Medicine and Safety: Of all marine species, horseshoe crabs have contributed the most to medical research. Instead of many types of blood cells, horseshoe crabs have primitive large blood cells called amoebocytes. Research on these cells has played a crucial role in unraveling the mysteries of how higher mammals fight disease. These amoebocytes are being used to differentiate between bacterial and viral meningitis. A clotting agent in the amoebocytes cuts down testing time for this acute disease from 48 hours to 15 minutes. All drugs manufactured by pharmaceutical companies are tested for contamination by bacterial toxins using this clotting agent.