



DELAWARE

Introduction and General Description

The Service, through the Partners for Fish and Wildlife Program, works with other Federal and State agencies, and non-government entities to provide technical assistance, financial support and construction supervision to private landowners who have a desire to improve their lands for fish and wildlife. In many cases landowners have a strong desire to leave a legacy of good land stewardship for their children.

The Partners for Fish and Wildlife Program in Delaware is administered from the Chesapeake Bay Field Office in Annapolis, Maryland. The program began in 1993 with a primary focus on wetland restoration. Since 1993, the program's focus has evolved into a holistic, ecosystem-based restoration mechanism. By partnering with other Federal and state agencies and non-government entities, the Partners Program has the ability to help private landowners to plan, design and implement wetland, forest, riparian (streamside) buffers and warm season grassland restoration projects throughout Delaware. Habitat

improvements, benefiting a myriad of fish and wildlife species, are being accomplished in the watersheds of Delaware's coastal bays and one of the largest estuaries in the world, the Chesapeake Bay.

The Partners Program also provides technical training to other Federal, State and county agency personnel through an Interagency Training Team.

Delaware Activities

- Wetland restoration
- Riparian (streamside) forest restoration
- Warm season grassland restoration
- Reforestation of agricultural lands
- Fish passage
- Technical assistance and training

Habitats of Special Concern

Wetlands

Wetland restoration remains a high priority for the Partners Program in Delaware. The geographic location of



Endangered Delmarva fox squirrel

Delaware makes wetlands extremely important to migrating waterfowl and shorebirds that depend on wetland habitats.

Riparian Forests

Riparian (streamside) forest buffer restoration and reforestation of agricultural lands is also a high priority due to historical and continued losses of these critical habitats for migratory birds.

Endangered Species Habitat

Endangered species habitat restoration has become a new focus for the Partners Program in Delaware. The Partners Program has been working with private landowners to reestablish forests on agricultural lands adjacent to existing forests to restore woodland habitat for the federally-listed Delmarva fox squirrel.

Warm-season Grasslands

Warm-season grassland restoration provides important habitat for grassland bird

species that have become imperiled due to habitat loss, primarily from “clean” farming. Restoration of these habitats also benefits aquatic habitats by reducing sediment and nutrient loads from agricultural operations.

Threats

Two physiographic provinces are located in Delaware, ranging from the outer Coastal Plain to the Piedmont. Delaware has lost in excess of 50 percent of its wetland acreage since European settlement. Also, in the past 300 years, Delaware has lost over 60 percent of its forests, primarily due to agriculture.

Urban sprawl represents a new threat to the remaining forests and wetlands due to the close proximity to three major urban centers (Washington, D.C., Baltimore and Philadelphia). As human populations increase in Delaware, especially in coastal areas, fish and wildlife habitats and the creatures that depend on them will continue to be stressed.

Invasive plant and animal species, such as nutria (a large rodent) and purple loosestrife (plant), are having a negative effect on the native wetland habitats.

Riparian habitats have been nearly eliminated in many agricultural areas in rural Delaware which has contributed to the decline in aquatic habitat quality in the Delaware Bays as well as the coastal inland bays. Endangered species such as the

Delmarva fox squirrels continue to lose habitat due to commercial forestry practices that convert native deciduous forests to more commercially valuable pine plantations.

Conservation Strategies

Wetland Restoration

Wetlands provide numerous functions that benefit humans as well as a myriad of aquatic and terrestrial wildlife species. Early restoration efforts focused primarily on restoring wetland hydrology. Cost effective methods such as crushing drainage tiles, constructing ditch plugs, and installing small berms and water control structures were used to complete these restoration projects.

Since 1998, the Partners Program has developed a more holistic system of wetland restoration including: the recreation of micro-topography to create more diverse soil moisture regimes; transplanting trees and sapling using convention excavating equipment; adding coarse woody debris that provides long term carbon sources and habitat structure. Straw or hay have been used extensively in restoration projects over the past 3 years to stimulate the denitrification process and to provide optimum substrates for aquatic invertebrates. These techniques are the product of a partnership between the Partners Program and the Delaware Department of Natural Resources and Environmental Control. Wetland restoration projects

have been focused in impaired watersheds in Delaware with a special emphasis on private lands that are in close proximity to State and Federal wildlife management areas and refuges. Wetland restoration projects cost approximately \$1,500 per acre.

Replanting Riparian Forest Buffers

Thousands of miles of riparian buffers have been eliminated in Delaware in the past 100 years. To reverse this trend, the Partners Program began purchasing tree seedlings from the Maryland State Nursery and International Paper Company and distributing these plants to private landowners so they can reestablish riparian forest buffers on their lands.

Since 1998 over 20 miles of riparian forest buffers have been restored with over 300,000 seedlings provided by the Partners Program. The cost for riparian forest buffers averages \$500 per acre.

Grasslands

Grasslands provide nesting cover and a protein source for a variety of migratory birds. The loss of native grasslands in the Northeast has contributed to the steady decline of grassland dependent birds such as the eastern meadowlark and grasshopper sparrow.

The Partners Program, working in concert with private landowners and other Federal, state and non-governmental partners, has developed a strategy to reverse the loss of grassland habitat in Delaware.

One strategy is planting warm season grasses and forbs (non-woody broadleaf plants) as buffers around wetland restoration projects. Also, warm season grasses and forbs are established as riparian buffers. Warm season grassland habitat restoration costs \$400 per acre.

Growing Forests

Delaware has lost over 60 percent of its forest lands since European settlement in the 1600s. In 2001, the Partners Program began a forest initiative to replant tree seedlings on marginal agricultural lands. With the help of the Natural Resources Conservation Service and the Delaware Forest Service, the Partners Program provided 300,000 native hardwood tree seedlings and the necessary technical assistance to landowners to replant 1,005 acres of agricultural lands. An additional 700 acres were planted in the spring of 2002. The cost for forest restoration is \$400 per acre.

Endangered Species

The Partners Program in Delaware is identifying potential threatened and endangered species habitat restoration opportunities and implementing restoration projects that directly benefit these species (e.g., Delmarva fox squirrel, bog turtle). The forest restoration and riparian forest buffer initiatives in Delaware will ultimately benefit the endangered Delmarva fox squirrel. Bog turtle habitat restoration costs \$1,000 per acre.

Fish Passage

Fish passage is a recent priority for the Partners Program in Delaware. The Partners Program has been successful in identifying potential sites for the installation of fish ladders or other less expensive restoration alternatives. Mill ponds represent the best potential for the restoration of historic spawning and nursery habitat in Delaware. Fish passage costs \$10,000-\$40,000 per structure.

Invasive Plant Species Control

Invasive plant species, such as purple loosestrife, are detrimental to the health of native fish and wildlife habitats. The Partners Program is beginning to focus on the challenges of invasive plant control. These projects cost \$100-600 per acre.

Farming for Wildlife and Profit

The Partners Program is actively involved in Delaware providing technical assistance to the USDA for their conservation programs, such as the Conservation Reserve Enhancement Program, Wetlands Reserve Program and Wildlife Habitat Incentive Program. As members of the USDA-State Technical Committee, the Partners Program helps guide the development and implementation of habitat technical standards. The relationship with USDA combines funding with biological expertise to provide maximum benefits to the private landowner and to fish

and wildlife resources. Partners Program biologists work with landowners in the agricultural community to discuss conservation practices that meet their financial needs and benefit fish and wildlife resources.

Partners

Natural Resources
Conservation Service
Farm Services Agency
Delaware Department of
Natural Resources and
Environmental Control
Delaware Department of
Agriculture Forest Service
Kent County Soil and Water
Conservation District
New Castle County Soil and
Water Conservation District
Sussex County Soil and Water
Conservation District
The Nature Conservancy
Delaware Wildlands, Inc.
Ducks Unlimited, Inc.
Chesapeake Bay Foundation
The Nanticoke River
Conservancy

Accomplishments

- Completed over 200 habitat restoration projects
- 4500 acres of forests have been reestablished
- 500 acres of warm season grassland have been restored

Natural Resource Conservation Service technical practices in Delaware have been revised to reflect specific recommendations that benefit U.S. Fish and Wildlife Service trust resources

Future Needs

Continued cooperation with partners to accomplish:

- Restore or enhance 10,000 acres of wetlands
- Restore 2,000 acres of forest habitat
- Restore 200 acres of grasslands
- Open 2 miles of streams to anadromous fish



Agricultural field prior to restoration



Same field 1 year after restoration

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