TC 116-07 Jean duPont Audubon ← Shehan
Other 001 Sanctuary

51829-6839

STATE OF MARYLAND
CRITICAL AREA COMMISSION
CHESAPEAKE AND ATLANTIC COASTAL BAYS
1804 West Street, Suite 100, Annapolis, Maryland 21401
(410) 260-3460 Fax: (410) 974-5338
www.dnr.state.md.us/criticalarea/

March 15, 2007

Ms. Elisa DeFlaux
Talbot County Office of Planning and Zoning
11 N. Washington Street
Courthouse
Easton, Maryland 21601

Re: Jean Ellen duPont Shehan Audubon Sanctuary
ENV 001

Dear Ms. DeFlaux:

Thank you for providing information on the above Habitat Restoration Concept Plan. The applicant is planning to create thirteen habitat restoration, enhancement, and protection projects within the 100-acre Wells Point portion of the property. The size of the site is 950 acres, with 800 acres found within the Critical Area portion of the property. Currently, the site is designated as a Resource Conservation Area (RCA).

In general, the office supports this project. We also wish to provide the following comments on the restoration project.

1. The proposed Solar Powered Wet Lab/Visitor Center needs to be evaluated for compliance with the Talbot Code General Table of Land Use Regulations since the site is located in the RCA zone.
2. Please submit a site plan of the Wet Lab/Visitor Center prior to its approval.
3. Please replant any land that is disturbed for roads, walkways, or other disturbances that are to be used for the construction phase of this project.
4. As stated in COMAR 27.01.08, "Any plans developed for the use of parks should recognize that all natural terrain has a finite capacity to tolerate human disturbances and, therefore, should give utmost attention to limiting the number of park visitors in any park at any one time or in the course of a season." Please keep this aspect in mind in the future when attracting tourists to your site.

Elisa DeFlaux
ENV 001
March 15, 2007

Thank you for the opportunity to provide comments. Please include this letter in your file and submit it as part of the record for this site plan. If you have any questions, please contact me at 410-260-3483.

Sincerely,

Nick Kelly
Natural Resources Planner
TC 116-07

Sent to CA
Sent to Teresa
Soil Cons

Audubon MARYLAND-DC

Natural Communities Along the Chesapeake

– Concept Plan 2007 –

Jean Ellen duPont Shehan Audubon Sanctuary

Partners:

Current Partners:

Audubon Maryland–DC
U.S. Fish and Wildlife Service
Ducks Unlimited
Maryland Dept of Natural Resources

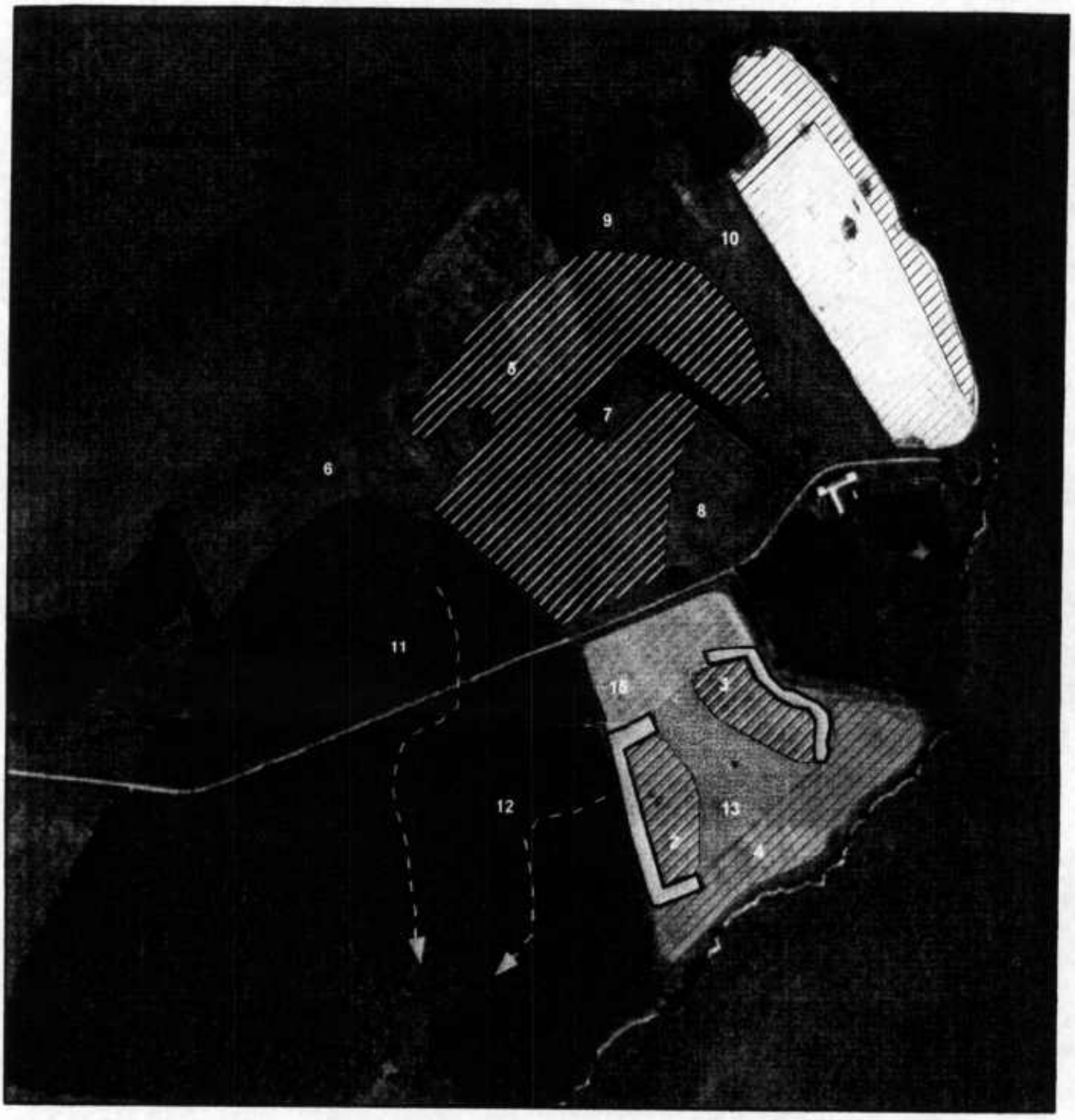
Proposed Additional Partners:

U.S. Department of Agriculture,
Natural Resources Conservation Service
Maryland Eastern Shore Resource, Conservation and Development Council
Chesapeake Bay Trust
National Oceanic and Atmospheric Admin.
National Fish and Wildlife Foundation
Fish America Foundation
Oyster Recovery Partnership

The Jean Ellen DuPont Shehan Audubon Sanctuary, Bozman, MD. Photo: Lindsey Goodwick, Audubon MD-DC 2006

The Jean Ellen DuPont Shehan Audubon Sanctuary
Habitat Restoration Concept Plan

Draft



Partners:
Audubon Maryland-DC
Ducks Unlimited
Maryland Department of Natural Resources
U.S. Fish and Wildlife Service

U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410-573-4584

Partners for Fish and Wildlife Program
Biologist: Rich Mason
January 25, 2007

250 125 0 250 500 750 1,000
Feet

Emergent Wetland
Forest
Meadow
Hedgerow
Food Plot
Berm
Ditch
Raised Viewing Blind

Project Summary:

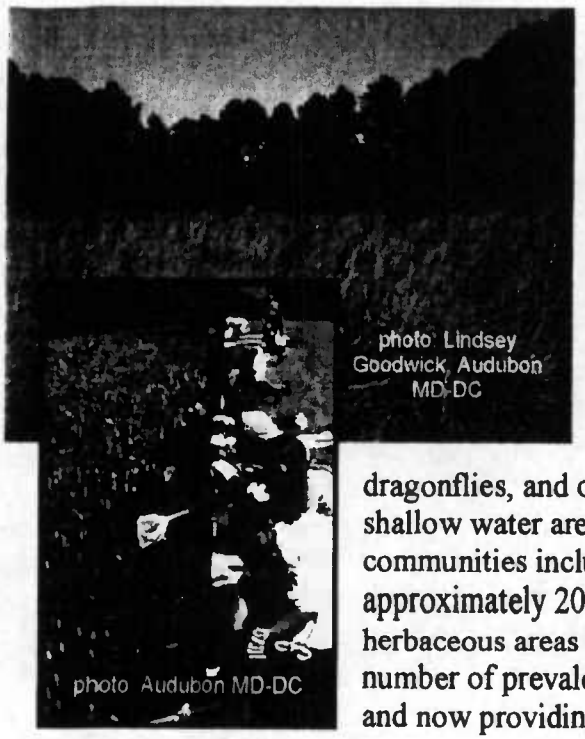
The Jean Ellen duPont Shehan Audubon Sanctuary is a natural treasure and outstanding model for protecting our region's rural, cultural, and natural heritage. This 950-acre property in the Choptank River watershed in Bozman (Talbot County), Maryland – formerly held as a family parcel – is protected by Audubon and managed for birds and other wildlife. In a region under incredible development pressure, the property stands as protected open space and an illustration of how well managed land can allow extensive public use and natural resource protection to exist together beneficially. All of the representative habitats of coastal Chesapeake Bay can be found here: tidal and nontidal wetlands, forests, grasslands, shoreline, and shallow water habitats. The Sanctuary serves as an environmental education facility for youth and adults from the community and far beyond. With long term plans to create an overnight facility on the property, the future will see even more comprehensive educational activities for schools and universities, environmental professionals, decision-makers, and citizens.

Working with the natural advantages of the site, we will create 13 habitat restoration, enhancement and protection projects within a 100-acre portion of the property known as Wells Point. The Point is surrounded on three sides by creeks that feed into the Choptank. This comprehensive approach to habitat restoration will aid the overall goal of protecting the property from erosion and decline in natural integrity and habitat value that would occur if left alone. The project will enhance water quality while providing exceptional habitat for the nearly 200 species of birds, at least 15 mammal species, and more than 20 species of reptiles and amphibians typically observed here throughout the seasons. Each individual project, as well as the collective, will be used as a teaching tool and long-term demonstration site for Bay region residents. Nine habitats will be featured along a one-half mile trail, all accessible for a walking field trip for everyone from elementary students to senior citizens. Education programs and displays at the planned solar powered visitor center will illustrate how wildlife species depend on the different habitats and demonstrate best practices in habitat restoration to encourage similar efforts throughout the region. The composite of so many habitat restoration measures in one location presents a unique opportunity to showcase emerging techniques with both current and future natural resources professionals, as well as with local landowners and decision-makers. Special attention will be placed on building the skill and volunteer base necessary to duplicate the habitat projects on Maryland and DC's Important Bird Areas. Featured education topics will include: Chesapeake Bay ecology, wetland zonation, forest succession, tidal vs. non-tidal wetlands, grassland management, "soft" (vegetated) shoreline protection, control of exotic plants and animals, erosion control, sea level rise, and bird migration. We anticipate involving various partner organizations as well as 135 volunteers contributing 7,000 hours of work to complete the projects and provide long-term monitoring and maintenance.

The mission of Audubon Maryland-DC is to conserve, restore and sustain the natural ecosystems of Maryland and the District of Columbia, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the Earth's biological diversity. We aim to influence and engage people to undertake conservation actions which ensure that the population of every native bird species in Maryland and DC is thriving in its natural habitat. To achieve these goals and contribute to reaching our mission, we will develop exceptional examples of habitat restoration, and use them as a tool to encourage citizens to participate in similar conservation measures. Further, we will offer these projects as models of best practices for conservation practitioners who will provide technical assistance for those citizens who choose to engage in on the ground conservation measures.

Timeline for Establishment: 2006-2010
Volunteers: 135 people contributing 7,000 hours
Draft Habitat Restoration Budget: $550,000 over four years
Draft Facility Budget: $200,000 for visitor center, displays, and boardwalk

Vision for the Future



Showcasing the Sanctuary and Growing Its Programs

The Jean Ellen duPont Shehan Audubon Sanctuary is a 950-acre peninsula bordered by three creeks that drain to the Choptank River: Leadenham Creek to the north, Balls Creek to the south, and Broad Creek to the east. The property includes over 200 acres of grass meadows, 340 acres of woodlands, 60 acres of tidal marsh, eight miles of shoreline and ten miles of walking trails. Due to the diversity of habitats, nearly 200 bird species frequent the Sanctuary throughout the year; the resident fauna comprises nearly two dozen reptiles and amphibians, 15 mammal species, and a lively array of butterflies, dragonflies, and other insects crucial to the food web; the tidal fringes and shallow water areas support fish, crabs, snails and shellfish. Plant communities include natural and human-affected areas displaying approximately 200 native species in predominantly forested and open herbaceous areas (such as grass meadows and tidal marsh), as well as a number of prevalent nonnative (non-invasive) species planted decades ago and now providing good wildlife cover.

The Sanctuary is used for outdoor science-based education, scientific research, wildlife and habitat conservation, and limited passive recreation. Its use and extent of programming have been growing since its inception in 1997; now it is time to boost the onsite restoration activity to a new level that will not only maximize the value of the site to wildlife but greatly enhance the site's ability to model and promote practices that can be applied throughout the region. This site boasts natural splendor and highly accessible opportunities for excellent professional development that are elsewhere unavailable. It is our desire that it be recognized widely as the quintessential "go to" place to learn about habitat restoration and similar conservation practices. Developing the Wells Point portion of the Sanctuary as an extraordinary assemblage of these model practices – and using the site for a full complement of proactive training programs, meetings and tours, along with monitoring to document results to support the practices and help them gain acceptance – will greatly increase the site's value as an educational facility, further its conservation goals on a broad landscape scale, and expand perpetual support from throughout the larger community.

Protecting the Sanctuary ... and Chesapeake Bay

Even if every citizen in the state comes to know and love the Sanctuary the way it's current supporters do, they cannot protect the property from the forces of nature without some intervention now on an ongoing basis and to some extent forever more. Conservationists put highest priority on maintaining land in its natural state and protecting natural succession, but with wild habitat in precipitous decline, we must also find ways to recover marginalized land and protect habitat that is overly threatened by the forces of wind and water. It is common for property owners to either unknowingly allow a property to deteriorate from purposeful neglect, in an effort to allow it to remain in a natural

state, or to "kill it with kindness" (i.e., too much management). It is the aim of Audubon Maryland-DC to assist the region's property owners by helping them to understand the proper balance of management and conservation practices; how to recognize and deal with nature's challenges in environmentally appropriate ways; and how to constructively allow agriculture, facility improvement, and conservation to be sustained in feasible harmony. This site provides the perfect venue to model such a program and make it readily available to meet the information demands of the professional community and citizens alike.

Protecting the Sanctuary from wind, weather, and waves – particularly with its at-sea-level topography in the face of global warming-caused sea level rise – is of primary importance, and one that is of common concern to others throughout the region. With eight miles of shoreline, there is ample opportunity to demonstrate emerging practices in vegetative alternatives to hardened shoreline – "living shorelines" using marsh plants and gentle slopes instead of rock (rip rap) or vertical walls (bulkhead). Above the shoreline, anywhere in the landscape, land is prone to erosion from wind and rain, animal activity, and human activity. Projects that improve habitat diversity will also help to armor the Sanctuary from loss of land due to these factors. Conservation measures such as enhancing non-tidal wetlands and forested buffer areas will help to stabilize the soil, slow runoff, and trap pollutants, while adding to the resources provided for birds and other wildlife. Showcasing the value and beauty of these areas once established will help landowners to see their use in their own landscapes; and Audubon staff can interpret the projects and help provide landowners with technical assistance for replicating the practices throughout the local area, the state, and ultimately the entire Chesapeake Bay watershed.

Demonstrating Conservation Practices – Walking the Talk

Audubon Maryland-DC strives to guide their audiences toward conservation actions that benefit birds and the environment in general. Leading the way, Audubon takes the same actions that it promotes, at its centers and properties throughout the state. The project at the Sanctuary will stand as not just a good model but an exceptional one. The site is enormous and challenging, and the message is, if we can do it, so can the average landowner.

The proposed projects will be incorporated into the management plan for the entire site, and will be interpreted through the future visitor center and the ongoing professional and public programs conducted there. Target audiences include:

- Local community members and decision-makers, so that on the ground conservation (both large and small scale) ultimately becomes general practice and is supported universally;
- Professionals and students working toward natural resources professions. The site will highlight developing technologies and best practices, providing a venue for research on outcomes of these practices, where professionals can share experiences and assess success of measures, thereby contributing to the technical aspects of the field as well as to the development of college and graduate students entering the field;
- Youth, through school field trips, unique outdoor experiential programs, extra-curricular clubs and activities that provide opportunities for student service that are also educational and fun.

Of Course, It's All About the Wildlife!

Benefits to wildlife at the Sanctuary are countless. Both upland and wetland woodlands and meadows, together with miles of shoreline along tidal creeks, provides a variety of food sources and cover and breeding space for a diversity of birds, mammals, reptiles, amphibians, insects, aquatic invertebrates, and fish. However, there is always room for improvement. Some additions need to be made in order to round out the habitat areas here, to attract an even greater array of wildlife, to make it a truly stellar model of *Natural Communities Along the Chesapeake* and to easily showcase these communities and their values for the public.

Wetlands: conversion of ag to wetlands

The Sanctuary currently boasts some limited tidal marsh fringes and beautiful seasonally flooded woodlands, though it lacks significant herbaceous emergent freshwater nontidal wetlands. Wetland soils are prevalent throughout the property, as is common in this region. In fact, mowing some of the fields now maintained in grasses or crops is difficult when the soil is holding water as it does much of the year – another common problem for area farmers and landowners. Converting these areas back to their wetland status will provide an example of one environmentally and economically beneficial alternative to the annual struggle farmers face in trying to grow plants in difficult soils. At the same time, adding nontidal wetland areas to the site's attributes, with a broad diversity of plant species and microtopography (little pits and hummocks), will allow for improved benefits for a number of bird species, as well as amphibians and reptiles that use shallow pools and puddles for breeding. But these new wetter areas, with their seasonal, human-controlled drawdown and resulting temporarily exposed mudflats, will be of particular benefit in attracting large numbers of bird species – wading birds (herons and egrets), shorebirds (sandpipers, yellowlegs, dowitcher), and gulls and terns.

The benefits to the environment provided by wetlands are numerous. Wetlands are nature's most productive ecosystems, providing critical habitat to hundreds of wildlife species, including several that are threatened or endangered. The various plant communities provide a diversity of niches for species with special requirements, nesting materials and structures, and unending natural food sources for wildlife – including plants (the basis of the food web) as well as the high protein yield of the shallow pools full of tadpoles, fish fry, snails and more. Wetlands improve the overall health of our environment by replenishing and purifying groundwater, moderating floods, reducing soil erosion, slowing and filtering rainwater runoff, trapping sediment and other pollution sources and thereby improving water quality. Yet nationwide, wetlands have been maligned for centuries as unbuildable waste places. Even today, with our more environmentally aware citizenry, wetlands are still not protected to the degree they should. The U.S. has lost more than half of its original wetlands and, in spite of their recognized benefits, continues to lose over 100,000 acres each year. Here on Maryland's Eastern Shore, where wetlands are ubiquitous, it is critical to the current and future health of our ecosystem that we demonstrate the value of these areas that we want the public to hold in high enough esteem that they protect and enhance them readily as a priority conservation measure.

Shorelines:

Shorelines in the Chesapeake Bay watershed include sandy beaches, tidal marshes, and forests. These areas are vital to the health of the Bay and its tributaries, and provide habitat – including important feeding and breeding areas – for many animals. Healthy shorelines harbor young and spawning fish, crabs, turtles and birds in shallow water and at its edges. The shallow water habitat, if kept free of high sediment loads from the adjacent land, can foster vibrant beds of submerged aquatic vegetation (SAV or bay grasses) that are important for the welfare of young fish and invertebrate organisms including shellfish like clams and oysters, softshell crabs, and more. This water's-edge ecosystem is dynamic and shifting, with tidal action constantly carving and depositing soils between the shallows and the shore. In its natural state, it is a resilient system in balance, able to recover from the stresses of weather events. The movement of these sediments is critical to maintaining stable shorelines and beaches, and productive shallow water habitat. But human activity (land and water uses such as development, agriculture, landscaping, and boating) can change the system, throwing the equation off its balance.

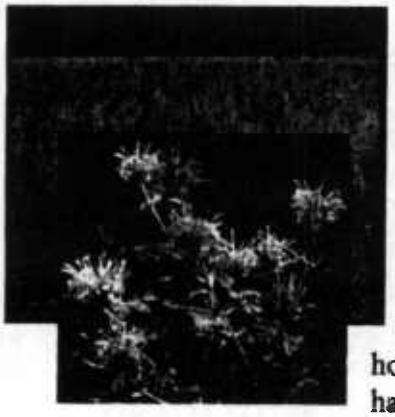
Many landowners wishing to protect their property from washing away turn to hard structures such as rock walls or bulkheads. While this hard edge to steels the vulnerable upland soil from the eroding forces of nature, we know now that it actually causes damage to the shoreline. In many areas of high fetch it remains the only practical solution, but there are many areas where a different alternative is possible. When the shoreline is reinforced with rock (rip rap), bulkheads, concrete walls, etc., not only is the habitat destroyed, but the natural ebb and flow of sediments is disrupted. The wave energy hitting the rock or vertical wall is amplified as it bounces back toward the waterway, and doubles back to the shore with even more force, causing greater erosion elsewhere down the line, often undercutting the very structures meant as protective measures.

Structural shore erosion control methods that "harden" the shoreline, such as rip rap, walls, stone breakwaters, and jetties may be necessary in areas with high rates of erosion or high wave energy. However, where the wave energy is moderate or low, vegetative alternatives of shoreline stabilization are strongly encouraged.

Non-structural shore erosion control methods – often called ***Living Shorelines*** – use vegetation and other natural materials to help protect shorelines from excessive erosion while allowing the shoreline to retain its dynamic nature and habitat features. The more gradual slope of the shore and its plants work to dissipate the forces of tide and waves, reducing their eroding forces and allowing deposition or accretion of sediments to occur. Marsh grasses provide shallow water habitat and the deep root systems and dense foliage hold soil in place, helping maintain the natural function of the shoreline. Properly vegetated shorelines will protect property from loss and subsidence while increasing property value by enhancing its natural beauty. Well planned buffers can even maintain and frame a desirable view to the water.

In addition, Maryland law protects the Critical Area surrounding the Bay and its tidal wetlands and tributaries – within 1,000 feet of the waterway. In this zone of protection, regulations guide development and land management activities that could have negative environmental effects. The Critical Area Buffer zone, an area of even more strict regulation, is 100-foot wide area creating a transition from the water (from the mean high tide line) to the land above. The buffer's function is to slow rainwater runoff and filter and trap sediment, nutrients such as nitrogen and phosphorous, and toxic pollutants from the surrounding landscape. These riparian buffer areas also provide a safe travel corridor for wildlife to use to access the waterways.

Reducing water pollution, protecting the land, and providing wildlife habitat are conservation goals that Audubon actively promotes. The Sanctuary is in many ways demonstrative of the issues faced by land managers in the Bay watershed, and this is one of them. With eight miles of tidal shoreline, much with significant fetch, the property is a prime proving ground for effective shoreline protection measures. Just as with many waterfront properties, this one has unprotected and eroding areas as well as those previously hardened with rock. Audubon aims to convert as much of this shoreline as feasible to model Living Shorelines, and to use these to proactively promote effective and environmentally beneficial practices with the region's landowners and practitioners.



***Grasslands/Meadows*:**

Natural grasslands in the east are a disappearing treasure. Indeed, if left completely natural, they would succeed and become forest. Because they have high value to wildlife – particularly grassland birds, small mammals and raptors – they are well worth maintaining through human intervention. Practitioners do not seem to have come up with the perfect formula for successful, beautiful, beneficial and easy to manage grassland-wildflower habitats. The use of meadows as landscaping features in the built environment has become popular in the past 10 years, however the public expectation of what "flower meadows" should look like has led to misconceptions and missed opportunities for environmental benefit, and frustration on the part of the landowner. To help change expectations to be more realistic and improve management practices, this site will showcase best practices for preparing the soil, selecting species and establishing seed, managing to prevent and control encroachment by exotics, and to highlight the natural shifts in the plant community that may occur long term. For this project, we will add more plant diversity, particularly the forbs (wildflowers) to display the beauty and natural balance of these plant communities, while providing additional food sources for nectar and seed feeders (birds, insects, and bats). We will use these as models for proper site preparation for planting as well as management.

***Forests*:**

While the Sanctuary currently encompasses large tracts of woodlands, the property still lends itself as an appropriate site to demonstrate methods for reforesting where woodland are needed. The public and restoration practitioners need good examples of **afforestation**, including what to expect in terms of appearance while trees are young, successful protection from browse by deer, ground cover/soil stabilization while trees mature, and preventing or managing the inevitable encroachment by exotics. Audubon Maryland-DC will use various areas at the Point to model

responsible riparian buffer development and management – including widening the forested buffer along the shoreline surrounding the peninsula at Meeting House and Wells Point. This will further add benefits for stabilizing the property against erosion and to help improve water quality, while enhancing habitat and travel corridors for wildlife.

Invasive Species and Changing Attitudes:


Phragmites infestation.
photo Lindsey Goodrick, Audubon MD-DC

It is critical to conservation to ensure that the natural beauty and ecosystem value of native plants is widely understood. Native plants have an important role in practices from home gardens to commercial landscaping to large scale habitat management, because in each of these settings they provide valuable ecological services. Native plants provide food sources for birds and ecologically and economically vital pollinators. They help to reduce air and water pollution caused by over-management of the non-native landscape. They are a beneficial alternative to the use of imported exotic species, many of which are invasive in the landscape, spreading across the U.S. degrading natural areas and costing taxpayers billions of dollars annually. Even well-meaning property managers and some in the professional community use exotic species when developing conservation projects. It is essential to the sustainability of our natural heritage – for plant communities as well as wildlife – that we continue to educate about local species and their proper use in conservation practices.

Currently Maryland law (through the Department of Agriculture) requires that landowners manage only a few types of "noxious weeds," thistles, shattercane and Johnson grass. However, there are dozens of known invasive exotic species of concern plaguing the region and its landowners. The problem goes beyond general nuisance and expense to landowners; many people are not aware of the very real threat to and degradation of natural areas. Controlling or eliminating even the most commonly recognized invasives, such as Japanese honeysuckle, English ivy, multiflora rose, and *Phragmites*, is daunting to most property managers. The staff at the Sanctuary continue to do a good job of keeping these weeds at bay. By adding more demonstrations of conservation plantings that use native species, and modeling best practices for invasives management, we will use this site to educate others about ways they can help combat the spread of invasive plants.

The Chesapeake and its watershed are also faced with stresses from invasive exotic animals – pest insects such as hemlock wooly adelgid and gypsy moth; mute swans; the northern snakehead fish; Chinese mitten crab; and nutria, just to name a few. Even some native plants and animals, left uncontrolled, can become pests, such as resident Canada geese, cattail, and muskrats. It is a priority for Audubon to raise the public's awareness of these concerns and how to prevent their impacts, in order to ultimately protect the health of all habitats. Our role will be providing education, demonstrating practices for managing and preventing impacts of these invaders, and providing citizens with resources for technical support.

Conclusion

The mission of Audubon Maryland-DC is to conserve, restore and sustain the natural ecosystems of Maryland and the District of Columbia, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the Earth's biological diversity. This project's short term goals are to increase available habitat, improve water quality and protect the site from erosion. Long term, we aim to influence and engage people to undertake conservation actions which ensure that the population of every native bird species in Maryland, DC and the entire Chesapeake Bay region is thriving in its natural habitat, and that water quality and habitat value for our wildlife is improved Bay-wide. To this end, we will use the project to educate and encourage citizens to participate in similar conservation measures; and offer these models of best practices to conservation practitioners who will provide technical assistance for those citizens.

We anticipate involving various partner organizations, staff, and volunteers in planning, completing the projects, and providing long-term monitoring and maintenance. We have begun working with state and Federal partners to plan monitoring of wildlife populations before and after project construction, and in response to habitat management practices, in keeping with current wildlife and endangered species management programs. We recognize and appreciate that habitat restoration is not new; indeed it is in practice on many notable properties throughout the state, region, and U.S. We hope to show leadership on promoting these efforts and serve as a catalyst to bring these models together toward an even larger goal: to share knowledge and experiences, assess the most successful measures and document them, and use this information to improve conservation practices and promote their use with more landowners, in more communities, throughout the region. Surrounded by development pressure, and with environmental change such as global warming and sea level rise upon us, we recognize the urgency of taking proactive and widespread measures to change attitudes and behaviors toward conservation practices.

We have been given a priceless gift in this property and the means to protect it and use it for the greater good. We will honor this opportunity by using the Sanctuary – in all its current glory, and with responsible modifications – as a tool to bring about positive change in attitudes and practices for large scale environmental benefit.

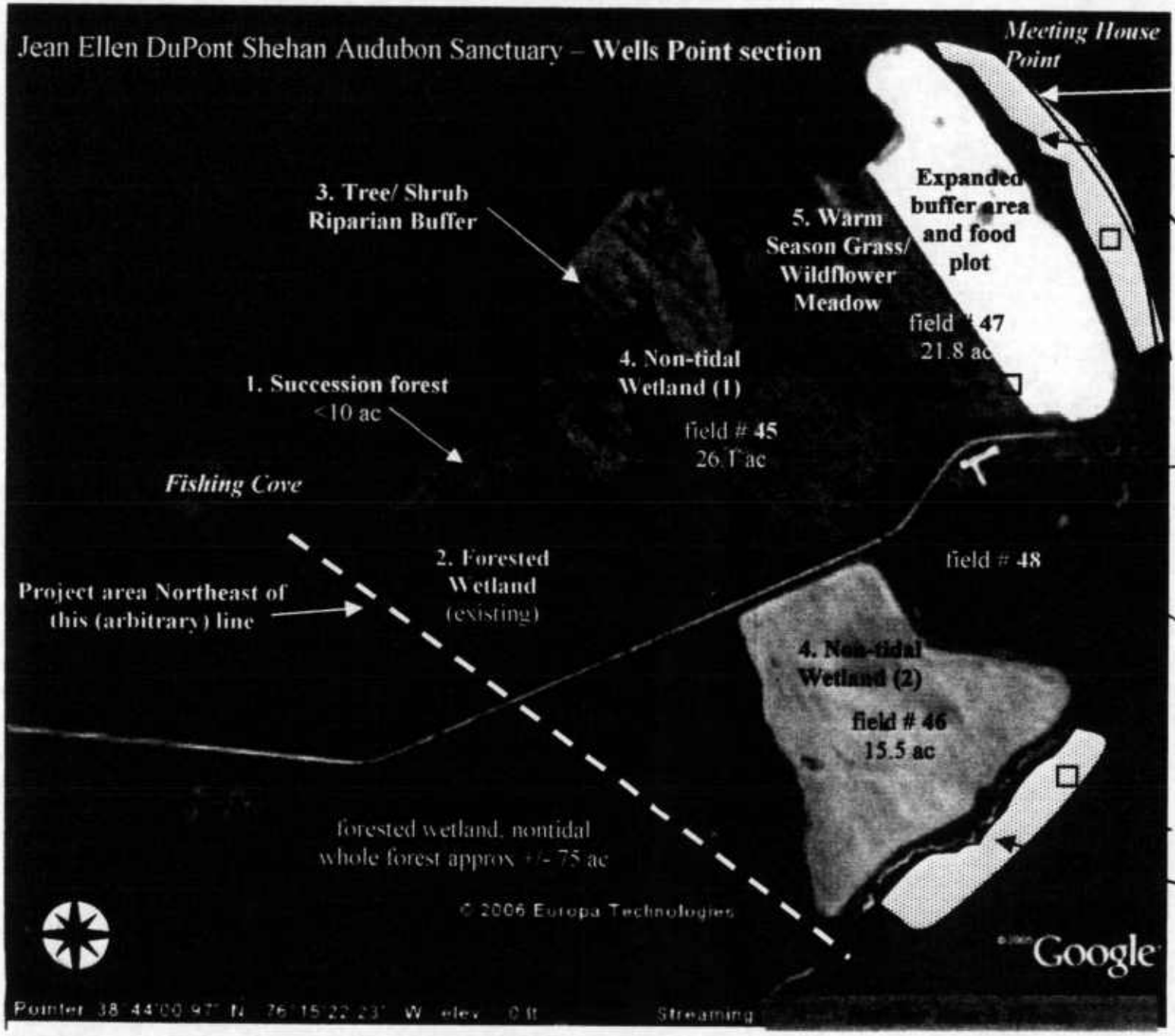
Project Partners

Audubon Maryland-DC, a state program of National Audubon Society, was established in 2000, preceded by the 20-year history of five area volunteer chapters. The organization encompasses a network of centers, professional staff, and volunteers: five chapter-owned sanctuaries statewide; 21-year-old Pickering Creek Center, in Easton; the Jean Ellen DuPont Shehan Audubon Sanctuary in Bozman; and the Patterson Park Audubon Center, in Baltimore. Our 21-member staff includes talented individuals with a cumulative 150 years experience in science education and natural resources conservation.

The **U.S. Fish and Widlife Service's Partners for Fish and Wildlife Program** (Partners) is a national program which began in 1987. Through the program, private landowners receive technical and financial assistance in order to complete voluntary habitat restoration and enhancement projects that benefit federal trust fish and wildlife species. To date 40,000 landowners have received assistance in restoring or enhancing two million acres of upland habitat, 800,000 acres of wetlands, and 7,000 miles of stream. The Partners staff at the Service's Chesapeake Bay Field Office (Annapolis, MD) have extensive experience with restoring wetland and upland habitat throughout Maryland and Delaware. The projects range in size from one acre to several hundred acres.

Ducks Unlimited:
Ducks Unlimited is a national organization with 70 years of experience as a leader in wetland and wildlife conservation. DU is the largest not-for-profit habitat conservation organization solely dedicated to the conservation of North American waterfowl and wetlands through partnerships, volunteers, and an expert staff, including biologists and engineers. DU is restoring and protecting habitats vital to waterfowl, wildlife and people in the Chesapeake Bay and Delaware Bay watersheds and across the mid-Atlantic region. Serving as the catalyst, Ducks Unlimited is bringing together private landowners, state and federal agencies, local governments, businesses, and other conservation organizations to augment and accelerate restoration efforts throughout the region. DU's conservation focus and activities include: restoring and protecting ecological functions of coastal watersheds; working toward long-term protection of already restored areas; concentrating conservation activities within targeted watersheds to restore buffers, via wetland restoration, to provide clean water; providing technical assistance and landowner education; identifying and prioritizing key research and evaluation needs; and establishing outreach programs on the importance of wetland values.

Figure 1. Illustration of Proposed Projects – *Natural Communities Along the Chesapeake*



Natural Communities Along the Chesapeake – Project Components

[Numbers correspond to map, figure 1; all costs are basic estimates and will be refined.]

1. Succession Forest

The field south of 45 and adjacent to the succession forest occurring northeast of field 44 will be allowed to return to forest through natural succession. Invasive exotic species will be controlled and perimeter trails will be maintained. Returning this field to forest, and connecting it to widened riparian buffers to the east-northeast along fields 45 and 47 as proposed, will create a large cohesive riparian forest extending from one shoreline of the property to the other. Enlarging the forest will increase food and habitat for wildlife and enhance nutrient filtration and soil stabilization.

Approximate size of area: ~ 10 acres.

Targeted Wildlife: field sparrow, prairie warbler, brown-headed nuthatch, wild turkey, American woodcock; Eastern box turtle.

Expenses: modest maintenance by existing farm staff.

Estimated volunteer hours for monitoring: 400 man hours per year.

Volunteer Involvement: Monitoring of wildlife activity, tree growth and diversity, encroachment by invasive plants, and impact of deer browse.

PROJECT STATUS: This area is currently in the process of succession, with invasives management by farm staff. This will be a continual, ongoing process for numerous years.

2. Forested Wetland

The vernal pool/forested wetland occurring naturally in the woods will remain undisturbed. The forested wetland is beneficial to wildlife by providing water, food, breeding ground, shelter, and a migration corridor.

Approximate size of area: The vernal pool area to be highlighted is 5-10 acres, part of a 75-acre forest tract that will continue to be protected.

Targeted Wildlife: American woodcock, wood duck; spring peeper, bullfrog, green frog, carpenter frog; Eastern painted turtle, spotted turtle.

Expenses: $500 initial expense for nest boxes and monitoring equipment.

Estimated volunteer hours for monitoring: 640 man hours per year.

Volunteer Involvement: Monitoring and maintenance of wood duck boxes, monitoring of forest interior bird use, research on amphibian and reptile populations.

PROJECT STATUS: The forested wetland already exists. Building and installing nest boxes could begin as early as summer/ fall of 2007, depending on volunteer interest and available funds.

3. Tree/ Shrub Riparian Buffer

The riparian buffer area will be an intermediary level of a filtration system that removes excess nutrients from the land before it enters the Bay and helps to stabilize soils. The plants that will compose the shrub and understory tree layer will consist of native species in a variety of sizes, for example: flowering dogwood, Virginia willow, black chokeberry, swamp azalea, winterberry holly, sweetbay magnolia,

sweet pepperbush, and others based on soil conditions. Canopy-forming trees will also be planted, such as red maple, sweet gum, black gum, ash, and others appropriate to the site. The forested buffer that exists along this area of the shoreline would function more successfully as a buffer and as a wildlife corridor if it were wider and continuous along the perimeter of the property. We intend to improve this area through afforestation, and to use the site to further demonstrate to the public what to expect as a project such as this develops – in terms of growth rate/ length of time for establishment, how to manage deer impacts, invasive species, etc.

Approximate size of area: +/- 5 acres.

Targeted Wildlife: field sparrow, Eastern towhee, brown thrasher; Eastern cottontail.

Establishment expense: $12,000 for plants.

Annual expense: $2,000 for replacement plants and invasive control.

Estimated volunteer hours: 240 man hours for initial planting, 400 hours per year for maintenance and monitoring.

Volunteer Involvement: Initial planting of trees and shrubs. Monitoring: wildlife activity (before/after planting), establishment and growth of new trees and shrubs, and invasive species.

PROJECT STATUS: This is currently being planned and will be conducted as part of the nontidal wetlands project described in #4. It will be planted as a Phase 2 part of the project, in fall 2007 or 2008.

4. Nontidal Wetland

A depression in field 45 is connected to the vernal pool/forested wetland. After rain the depression fills with water and becomes habitat for breeding frogs and other wildlife. The expansion of the depression with modest grading (and into a portion of field 47) will allow for the creation of a nontidal wetland. To improve and enhance this wetland, the eradication of *Phragmites* is essential. The area will be allowed to grow up naturally from the existing seed bank (soils indicate historical presence of wetlands), and some areas will be planted by volunteers with herbaceous native species such as sedges and rushes, cardinal flower, blue flag iris, rose mallow, pickerelweed and a variety of wetland shrubs, to attract birds and butterflies and provide habitat and food for a variety of wildlife. This is planned as a mosaic of various wetland types, all very shallow or only seasonally wet, but with a variety of areas of different micro-topography. This will allow for the greatest diversity of plant species, and will provide some small wet puddles even in the driest part of summer; hence it will bring more benefit to wildlife. In addition, part of field 46 that also contains wetland soils will be graded to restore its wetland hydrology, and low berms will be created to contain water and allow for water control to benefit shorebirds.

Approximate size of area: ~ 18 acres in fields 45-47, plus ~ 3 acres in field 46.

Targeted Wildlife: shorebirds (pectoral, solitary, and least sandpipers, greater and lesser yellowlegs), egrets (great, snowy), herons (great blue, green, etc.); bullfrog, green frog; Eastern painted turtle.

Establishment expense: $60,000 for grading, plants, seed, and signage.

Annual expense: $2,000 for replacement plants and invasives control.

Estimated volunteer hours: 240 man hours for initial planting, 320 hours per year for maintenance and monitoring.

Volunteer Involvement: Initial planting of wetland plants. Monitoring productivity of wetland through bird surveys (before and after wetland establishment). Research projects on fresh and

brackish water wetlands and/or tidal and non-tidal wetlands – monitoring of wildlife activity, succession pace, and amount of deer browse.

PROJECT STATUS: We are in the process of planning and designing the proposed wetland areas with partners U.S. Fish and Wildlife Service (FWS), Ducks Unlimited (DU), and Maryland Department of Natural Resources (DNR). Funds are available through DNR / DU; we are seeking additional funds to support the project and its educational components including volunteer planting events and interpretive signage. ***Concept plans are included here, see Figure 2.*** The target dates for construction and planting: begin summer 2007 with Phase 1 (area north of the road, in field 45 and part of 47), and continue developing the projects, Phase 2 south of the road (wetland and meadow in field 46), and possibly a Phase 3, as necessary, to plant the riparian buffers adjacent to these projects (edges of fields 45, 46, and 47). The phasing of these projects is pending approvals, and as timing and funds allow (into 2008). Baseline wildlife surveys will begin spring 2007.

5. <u>Warm Season Grasslands</u>

Warm season grass fields have been disappearing due to the increase of human development. These fields are invaluable to wildlife by providing nesting habitat, cover, and food sources. Field 47 will be eradicated of *Phragmites*, to prevent development of a monoculture of the invasive plant, and increase the overall biodiversity of the area. It will then be developed into an extensive warm season grass meadow that also includes wildflowers and other forbs (herbaceous plants) beneficial to desirable insects and birds (this will also be done in a small adjacent part of field 45). A portion of field 47 may be retained for an agricultural crop demonstration area, planted as a food plot for wildlife.

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Approximate size of area: ~ 10 acres in fields 45 - 47, plus ~ 3 acres in field 46.

Targeted Wildlife: vesper sparrow, Eastern meadowlark, wild turkey, American woodcock; red fox.

Establishment expense: $15,000 for seed and planting.

Annual expense: $8,000 for burning, bush-hogging, or discing on a three year rotation, as well as annual invasive species control.

Estimated volunteer hours: 240 hours per year for monitoring.

Volunteer Involvement: Bird counts to monitor bird density and productivity of the field.

PROJECT STATUS: This project is being planned in conjunction with the nontidal wetland project (#4) as it will be adjacent to portions of the wetland areas and will provide an expanded buffer zone for the wetlands.

6. <u>Off-shore Rock Sill</u> (1 of 2, ***see also #11, below*****)**

To protect against erosion on the northeast shoreline of field 47, an offshore rock sill will be created approximately 30 feet parallel to the shoreline and extending for 300 feet. The sill will buffer the shoreline by reducing the energy of waves, resulting in a decrease of impact on the shoreline and a decline of shoreline erosion. A similar sill will be created off of field 46 (see #11 below). The sills will be backfilled and planted with salt marsh species (see #7 and 12, below). The sill will have openings allowing access to the created fringe marsh for wildlife. Existing shoreline riprap will be left in place.

Approximate size of area: to be determined based on feasibility and funding.

Establishment expense: $165,000 (federal and state matching support is available).

PROJECT STATUS: see #7 below, as these areas will be developed together, as will areas 11 and 12.

7. **Tidal Marsh / Living Shoreline** **(1 of 2,** *see also #12, below*)
Sand will be deposited between the off-shore rock sill and the shoreline. Saltmarsh cordgrasses will be planted in the sand to provide a thick root coverage that will stabilize the ground and increase the habitat value for wildlife. The introduction of the marsh vegetation will complement the offshore rock sill's protection of shoreline erosion by stabilizing the shoreline and filtering excess nutrients. The marsh will also provide habitat for saltmarsh and shore birds, fish, horseshoe crabs and turtles.

Approximate size of area(s): to be determined based on funding and feasibility.

Targeted Wildlife: Virginia and clapper rails; horseshoe crab; Northern diamondback terrapin.

Establishment expense: ~$10,000 for plants *[figure may be updated depending on project size]*

Annual expense: $800 for replacement plants.

Estimated volunteer hours: 480 man hours for initial planting and 400 annual hours for monitoring and maintenance.

Volunteer Involvement: Cordgrass planting. Monitor the species use and participate in research projects involving wildlife use and comparing wildlife use of brackish vs freshwater wetlands and tidal vs non-tidal wetlands. Annual trash removal and plant replacement.

PROJECT STATUS: We are in the process of planning proposed living shoreline project(s) with partners. We have begun discussions and have scheduled site visits with Eastern Shore RC&D Council (also National Oceanic and Atmospheric Administration [NOAA] and Chesapeake Bay Trust [CBT]) and the Campbell Foundation, regarding feasibility, costs, timelines, and funding sources. We will work with these partners and potentially others to secure details late winter 2007 and develop grant proposals as appropriate for funding, aiming to begin work on the ground by summer 2008.

8. **Oyster Reef**
An oyster reef will be created on the eastern side of the offshore rock sill to provide additional support and stabilization for the shoreline areas. The oyster reef will contribute to the reestablishment of oyster populations in the Chesapeake Bay watershed. Oysters are a key element in the watershed as they filter excess nutrients and support other species living in the marine environment.

Establishment expense: $15,000 for oyster shells and placement.

Annual expense: addition of oysters spat as needed.

Estimated volunteer hours: 60 man hours to assist with placement and 100 annual hours for monitoring.

Volunteer involvement: Assistance with shell placement, monitoring of the reef for production and growth of the oysters.

PROJECT STATUS: We will begin seeking project partners in late 2007, aiming to plan and begin work in 2008-2009, after completion and establishment of the rock sills and living shorelines.

9. **Solar Powered Wet Lab/Visitor Center** site plan review
The farm building located at the point will be converted into a solar powered wet lab/visitor center that will provide a setting to explain the different habitat communities. Displays and programs will illustrate how people can make a difference in their environment by taking an active role from growing marsh

grasses for "living shorelines" to participating in scientific studies that will further the knowledge about what can be done to protect and improve the Chesapeake Bay Watershed.

Establishment expense: $180,000 for solar power system, water cistern, building enhancements and rustic interpretive/educational displays.

Annual expense: $5,000 for maintenance.

Volunteer hours: 1,000 man hours for initial work followed by 480 hours per year for maintenance, display creation and assistance with education programs.

Volunteer Involvement: Light construction, painting, and display creation. Docent duty and monthly maintenance.

PROJECT STATUS: We are in the process of seeking funding support. Work on the facility will be a late phase of this full proposed project, once habitat restoration work is well under way. The target date for use of the facility is 2010.

10. <u>Phragmites Control Demonstration Project and Tidal Salt Marsh Enhancement</u>

The tidal salt marsh located between field 46 and 48 will be a working demonstration of the constant battle with the invasive species *Phragmites australis*, or common reed. People will be educated on the effect of invasive species and the danger of not continuously managing for control. Combating the *Phragmites* at the western end of the marsh will allow for an improvement in the density and quality of the existing tidal marsh and increase the biodiversity. A boardwalk will be constructed through the tidal salt marsh so visitors can get an up-close look at this environment.

Approximate size of area: 10 acres

Targeted Wildlife: Virginia and clapper rails; horseshoe crab; Northern diamond back terrapin.

Establishment expense: $80,000 for phragmites control; $20,000 for the boardwalk.

Annual expense: $15,000 for phragmites control.

Volunteer hours: 400 hours annually.

Volunteer Involvement: Monitoring of wildlife activity, research of the species using the marsh, monitoring the phragmites, modest planting to enhance marsh.

PROJECT STATUS: *Phragmites* management is an ongoing process, already under way to some degree. For this to be a valuable demonstration, aggressive *Phragmites* control measures will need to be employed once funding is secured – with the intent of eradicating the plant, but because seeds and propagules travel with wind, water, and wildlife movement, annual control measures must still be in place to remove new occurrences. The target date for the control (eradication) phase is fall of 2007.

11. <u>Off-shore Rock Sill</u> (2 of 2)

As a result of the erosion occurring on the east shoreline of field 46, an offshore rock sill will be created approximately 30 feet parallel to the shoreline and extending for 300 feet. ***See 6 above.***

Approximate size of area: to be determined.

Establishment expense: $165,000 (federal and state matching support is available)

PROJECT STATUS: ***See # 7, above.***

12. Tidal Marsh / Living Shoreline (2 of 2)
Sand will be deposited between the offshore rock sill and the shoreline. Cordgrasses will be planted in the sand to provide a thick root coverage that will stabilize the ground and increase the habitat value for wildlife. *See #7 above.*

Approximate size of area: to be determined.

Establishment expense: ~$10,000 for plants *[figure may be updated depending on project size]*

Annual expense: $800 for replacement plants.

Estimated volunteer hours: 480 man hours for initial planting and 400 annual hours for monitoring and maintenance.

PROJECT STATUS: *See # 7, above.*

13. Bird blinds
The placement of four large bird blinds will allow visitors to get an exceptional view of the wildlife habitats and make long term monitoring more effective.

Establishment expense: $9,000 for materials

Estimated volunteer hours: 900, 300 hours per blind

Volunteer Involvement: Building of the bird blinds.

PROJECT STATUS: Blinds will be developed as a final component of each of the corresponding habitat areas is developed. Their use and maintenance will be an ongoing volunteer effort, with staff oversight.

Additional Features:

Food plots:
A portion of fields 46 and 47 may be retained for agricultural crop demonstration areas, planted as a food plots for wildlife (~ 3 acres in field 46 and ~6 acres in field 47).

Additional Riparian Forested and Vegetated Buffers:
The entire end of the peninsula will be further protected by widening the vegetative buffer areas adjacent to the shorelines. As feasible, afforestation (planting new trees) will be used, possibly with temporary groundcover of native grasses to stabilize soils and prevent invasives encroachment. Along the shoreline of field 46, herbaceous plants may be used as an alternative buffer demonstration. These areas, combined with the Succession Forest area, will provide approximately 20 acres of buffer zone and wildlife corridor.

Hedgerow:
A 1-acre hedgerow area with a bird blind will be created along the road bordering field 45, to give birds using the new habitat area a sense of protection and provide for best wildlife viewing by visitors. This area will help connect existing hedgerows for maximized wildlife benefits.

TIMELINE
(preliminary draft –all is dependant upon approvals, funding, feasibility, environmental permits, etc.)

2006
Preliminary planning for projects.
Succession forest under development.
Forested wetland designated for protection.
Fields surveyed for soils, topography and existing plants; and photographed for documentation.
Early partnership development; initial funding inquiries.

2007
January-March: Planning for habitat mosaic complex for fields 45, 46, and 47, including nontidal wetlands, meadows, riparian areas and food plot demonstrations. Draft concept plan developed and refined, engineering survey completed. Seek approvals and permits as necessary.
Assessment of shoreline areas/ feasibility and cost estimates of living shorelines completed.
Partnership building and fundraising/grantwriting for wetlands complex and shoreline.
Work with shoreline project partners to secure details and begin project design process.

April-July: Finalize site plans and engineering/grading plans; begin construction on Phase 1 wetland areas (fields 45-47); renovate grassland area in field 47 (enhance species seeded). Volunteer wildlife survey(s) – spring "Bio-Blitz" event (similar to 1-day bird count but for multiple types of wildlife).

August-December: Develop planting design and plan for volunteer event(s) – trees/shrubs in wetland area, October. Begin planning for Phase 2 for fields 45-47.
Volunteer wildlife survey(s) – fall "Bio-Blitz" event.
Planning for rock sills and living shoreline projects.
Phragmites control/ eradication occurs.
Begin seeking project partners for oyster reef project. Write and submit grants for additional funding for entire project.

2008
Late winter/ early spring – develop grant proposals as appropriate for funding for shoreline, oyster reef.
Spring – Volunteers – wetland planting (herbaceous material) for fields 45-47; spring Bio-Blitz event.
Summer – Phase 2 or 3 of wetlands/meadows/riparian areas as necessary; begin work on rock sills/ shoreline project construction and planting(s) with volunteers.
Begin oyster reef work in 2008-2009, after completion and establishment of rock sills/ living shorelines.
Fall / Winter – Volunteer wildlife survey(s) – bird count(s) and "Bio-Blitz" event(s); other monitoring.
Planning for wet lab/ visitor center underway.
Begin education and training programs using the habitat areas as demonstration sites.

2009
Oyster reef work in 2008-2009, after completion and establishment of rock sills/ living shorelines.
Renovations for wet lab/ visitor center underway; exhibits planned and constructed.
Continue developing and conducting education and training programs.
Continue seasonal volunteer wildlife surveys.

2010
Solar Powered Wet Lab/Visitor Center completed and open to visitors and full complement of education and training programs.

Figure 2. Concept Plan for Wells Point Habitat Complex Restoration and Enhancement

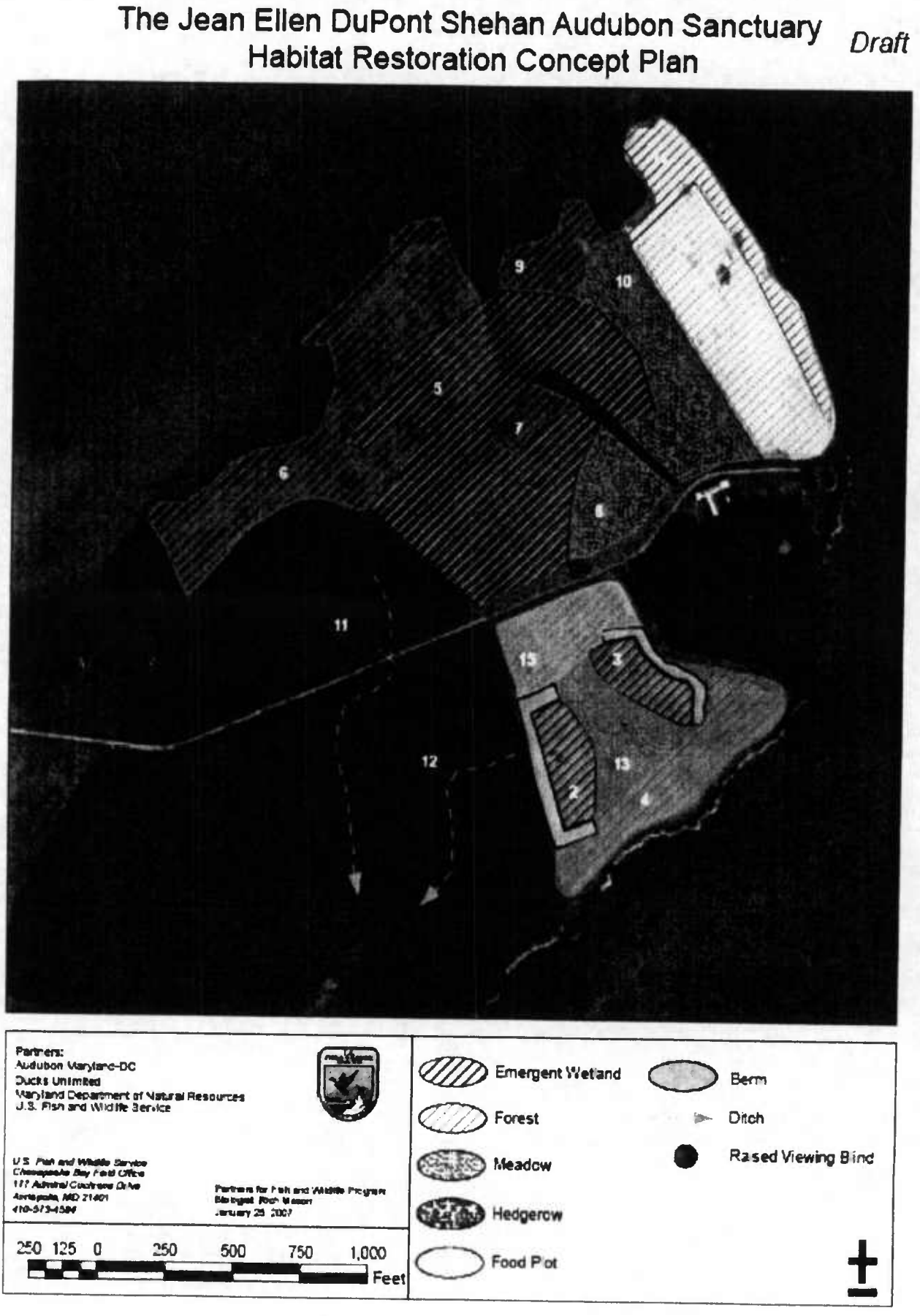
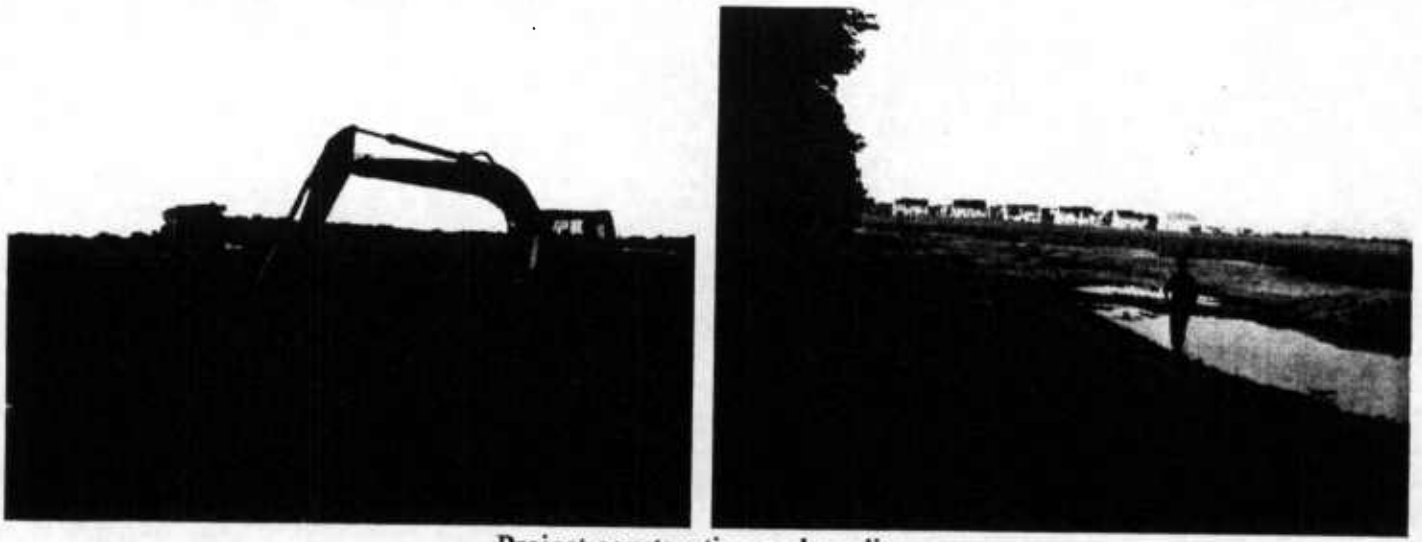


Figure 3. **Wetland project development** – ***sample photos from similar projects***.
[Project photographs courtesy of U.S. Fish and Wildlife Service]



Project construction and grading.

Early vegetation. Birds are attracted to the site quickly.

photos: heron sunset, Aaron Foster; green heron, Diana Whiting; pectoral sandpiper, Roger Clark

Herbaceous emergent wetlands with some open puddles and mudflats provide many benefits.