

A COMPREHENSIVE PLAN TO RESOLVE RESOURCE PROBLEMS

AT

PRIME HOOK NATIONAL WILDLIFE REFUGE

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INTRODUCTION

In October of 1981, the U.S. Fish and Wildlife Service (Service) sent out a questionnaire to all field stations. The stations were requested to identify all field station threats and conflicts.

All Service field stations reported threats and conflicts of various levels of occurrence and magnitude. These reports were summarized in a July, 1983 Report of Resource Problems on the National Wildlife Refuges, National Fish Hatcheries and Research Centers.

Nineteen resource problems were identified at Prime Hook National Wildlife Refuge. This comprehensive plan addresses current and planned actions to correct these problems by the staff of the Prime Hook Refuge.

Service Constructions Funds and the Accelerated Refuge Maintenance Management (ARMM) Program have made some progress possible in addressing these identified problems.

This plan was assembled in response to Mr. Stieglitz's memorandum of July 19, 1984. The management summary which follows the section on resource problems is intended to summarize current and planned actions utilizing discretionary funds to address these problems.

Prime Hook Refuge was established in 1963 primarily to preserve coastal wetlands for waterfowl habitat. The refuge is located on the west shore of Delaware Bay, east of Milton, Delaware.

Prime Hook contains 8,817 acres and has flowage easements over 884 acres. The refuge consists of freshwater and tidal salt marsh, open water, timber, brush and cropland.

Prime Hook is managed primarily to provide nesting, resting and feeding habitat for migratory waterfowl. Providing black duck wintering habitat is an important refuge objective. Waterfowl production, especially black ducks and wood ducks, is becoming increasingly important.

The refuge is transected by four public roadways. The southern boundary is the Broadkill River which flows into Delaware Bay. Slaughter Canal flows north through Units II and I, emptying into the Mispillion River then into Delaware Bay. Three private housing developments lie along the eastern boundary of the refuge adjacent to Delaware Bay.

01) Domestic Wastewater

PROBLEM

Three private developments lie adjacent to the boundary of the refuge, totaling several hundred homes. Each home has an individual septic system. Many may not have been built to State regulations. Soil maps indicate that the sandy soils there cannot properly treat sewage from such dense housing. The potential for overflow of sewage into the refuge exists. This is an external threat that cannot be directly addressed by the refuge in its management. However, future marsh management plans must consider the effect of management on the septic systems of the beach communities.

CORRECTIVE ACTION TAKEN

Refuge concerns for proper waste disposal were expressed during permit discussions for our Unit III marsh rehabilitation project. The State now appears to be more rigidly enforcing its 1968 septic system regulations for newly constructed homes. As this is an external threat, refuge personnel are alert to pollution problems along our eastern boundary.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Water quality tests should be conducted periodically by refuge staff to detect present or future evidence of pollution from domestic septic systems.

04) Fertilizer Runoff (biocides)

PROBLEM

Numerous large farms lie adjacent to the refuge and upstream from Prime Hook Creek, the Broadkill River and Slaughter Creek. The potential for runoff into these waterways is ever present. This is an external threat that cannot be addressed by the refuge in its management. Toxic chemicals such as Paraquat are frequently used for no till farming.

CORRECTIVE ACTION TAKEN

Since this is an external problem, there is little that the refuge can do about the problem. Refuge staff members are always alert to fish die off or vegetation changes in refuge waters.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Water quality tests should be conducted periodically by refuge staff to detect presence of high levels of toxic chemicals in refuge waters.

(05) Oil Spills or Seepage

PROBLEM

Delaware Bay is a major transportation highway for petroleum products to Philadelphia and Wilmington, Delaware refineries. The Big Stone Anchorage, just north of the Mispillion River, is used for lightering, increasing the chances of spills. Tankers frequently anchor off the refuge, awaiting tides or dock space upriver. Major spills could enter the refuge through the Roosevelt Inlet to the Broadkill River or Mispillion Inlet into the Mispillion River and Slaughter Canal. During major coastal storm, tides breach the undeveloped dunes on the northern part of the refuge. A major spill at that time could directly enter the refuge marshes.

CORRECTIVE ACTION TAKEN

This is an external threat that cannot be directly addressed by the refuge in its management, however refuge personnel are constantly alert to oil spills.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Refuge personnel will continue to be alert for oil spills during routine patrol and work.

(10) Soil Erosion/Sediments

PROBLEM

Upland farms produce sources of soil sediments following heavy rainfalls. Wind erosion is a potential problem in spring. In addition boat wakes cause erosion along the banks of refuge waterways.

CORRECTIVE ACTION TAKEN

For the most part, the problem is an external one that cannot be addressed by the refuge in its management. State and Federal agencies are working with farmers to lessen or eliminate run-off. On-refuge, we have been monitoring erosion along Prime Hook Creek and the Broadkill River cause by boat wakes.

ADDITIONAL CORRECTIVE ACTION NECESSARY

The refuge will continue to voice its concern to State and Federal agencies concerning sediments entering refuge waters. No till farming will be used where spring wind erosion has been significant. Future refuge boating regulations on Prime Hook Creek may set a slow speed to reduce the effect of boat wakes.

15) Water Rights

PROBLEM

Several adjacent private landowners retained easements to permit construction of pumping stations for irrigation, although to date none have chosen to exercise these rights. If these rights were exercised, during a severely dry summer, pumping from the refuge marsh could help further dry the marsh, negating the value of the water control structures built in 1983.

CORRECTIVE ACTION TAKEN

one. No action has been taken at this time as the problem is only a potential one.

ADDITIONAL CORRECTIVE ACTION NECESSARY

If one or more of the persons holding rights to install pumping stations were to exercise that right, he would require a permit from the State Department of Natural Resources for pumping allocation (gallons per hour). At that point the Service would express its concern for the marsh to insure that the pumping allocation would not severely impact on refuge marsh management.

17) Flow Decrease

PROBLEM

When the initial threats report was written in 1981, the refuge was unable to practice any water management because of a lack of control structures. Water entering the refuge was lost by evaporation, transpiration or uncontrolled drainage through Slaughter Canal and Prime Hook Creek and its smaller ditches.

CORRECTIVE ACTION TAKEN

In 1981, two small water control structures were built in Unit IV to provide management capability for 100 acres of marsh within that unit. In 1983 and 1984 two large water control structures, a gut plug and about one-mile of low dike were built in Unit III to prevent loss of water during the summer and dry winter months, and to provide us with water level management capability. Service construction monies funded both projects.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Water control will be necessary to rehabilitate about 1000 acres of marsh in Unit II which has reverted to a jungle of phragmites. Construction of an additional control structure will be necessary to achieve this rehabilitation and allow future management.

(24) Poaching

PROBLEM

Prime Hook's 8,817 acres are spread out over a narrow band 8 miles long with four public highways transecting the refuge. Only two staff members have law enforcement authority. Illegal hunting includes deer poaching, shooting ducks and geese from highway rights-of-way and firing line situations from adjacent farms.

CORRECTIVE ACTION TAKEN

A gate was erected across the entrance road in 1982. A private individual has been contacted to close and lock the gate at sunset and to open it at sunrise. This has reduced the illegal deer hunting in the office area. Along Fowler Beach Road, hedgerows of bicolor lespedeza have been planted to deter spot-lighting- with excellent results. During hunting seasons preventive enforcement in the form of aggressive patrol of the refuge boundaries is performed. Word of mouth from one violator to another has helped to reduce our problems.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Bicolor lespedeza will also be planted along Prime Hook Beach Road to deter spotlighting there. Aggressive patrolling will continue.

(27) Land Development

PROBLEM

Three private developments lie adjacent to the refuge on our eastern boundary. A potential conflict exists with refuge water quality, vandalism, dog violations and encroachment. The problem is an external conflict.

CORRECTIVE ACTION TAKEN

The problem is external in nature, and cannot be addressed by the refuge in its management.

ADDITIONAL CORRECTIVE ACTION NECESSARY

As the problem is external, there is little we can do to control private development along our refuge boundaries. We will continue to monitor water levels, encroachment, trespassing and pollution from these areas.

(28) Wildfires

PROBLEMS

Drying of the marsh due to a lack of water control capability, has resulted in dense stands of phragmites in all refuge units. Most of the marsh in Units II and III is completely dominated by phragmites. The dead canes present a severe fire problem during the winter and spring, particularly along the Stat

roads transecting the refuge. The private developments close to the marsh on the eastern boundary are particularly vulnerable during marsh fires.

CORRECTIVE ACTION TAKEN

In 1981, two small water control structures were built in Unit IV to permit management of 100 acres of marsh. In 1984, construction was completed in the marsh rehabilitation project in Unit III. One mile of dike, two large water control structures and a smaller gut plug were built to permit management of water levels in that unit. All of this work will help reduce the wildfire danger.

Also, in 1983, 500 acres of phragmites in Unit III and a firebreak behind the Prime Hook Beach Development and along Fowler Beach was sprayed with the chemical Rodeo to kill the phragmites. An additional 1000 acres in Units III and IV will be treated in 1984. We have already seen a greatly reduced fire danger due to the combination of the two projects. Service construction funds provided monies for the projects described above.

ADDITIONAL CORRECTIVE ACTION NECESSARY

The arrival of a tracked marsh tractor, ordered in August will provide us with the capability of mowing phragmites for additional fire control. A small slip-on pumper will also provide limited suppression capability. The tractor was funded with fire management funds.

30) Rights-of-Way

PROBLEM

We lack access to large portions of the refuge. Unit I is fully accessible only by boat along Slaughter Canal, however two access points to the western boundary are possible through private landowners. Acquisition also left us without access to the Oak Island portion of Unit II, nor to the northern side of Prime Hook Creek. The lack of access has limited habitat management, surveys, posting and fencing, and law enforcement.

CORRECTIVE ACTION TAKEN

The Regional Realty Office has started background work toward acquiring much needed rights-of-way.

31) Acid Rain

PROBLEM

Acid rain has been identified as a major problem in northeastern states.

The potential for an acid rain problem exists here, however this is an external problem which cannot be addressed by the refuge in its management.

CORRECTIVE ACTION TAKEN

Acid rain has not been identified in this area so far, however, refuge staff are forever alert to potential environmental changes which may be caused by acid rain.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Tests of pond pH levels should be conducted periodically to monitor whether or not acid rain is effecting refuge waters.

(45) Exotic Species of Plants

PROBLEM

Johnsongrass has been declared a noxious weed by the Delaware Department of Agriculture. Landowners are required to prevent the plant from going to seed. Phragmites has encroached on most of our freshwater marsh and along the edges of the tidal marsh. This plant crowds out excellent food species, helps dry the marsh through a high evapo-transpiration rate and creates a severe fire problem.

CORRECTIVE ACTION TAKEN

Johnsongrass control is incorporated into our cooperative farming program. The chemical Roundup is sprayed for account in other areas to control the plant. ARMY funding has been provided for additional control work.

In 1983, 500 acres of phragmites were sprayed aerially by helicopter using the chemical Rodeo. Excellent results were achieved with good regrowth of valuable aquatic species. In 1984 an additional 1,000 acres will be sprayed. Funding is from Service construction monies.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Additional areas of phragmites will be sprayed as funding becomes available. Funding will be needed periodically to spot treat areas where phragmites has re-invaded. Johnsongrass control will also be an annual problem.

(51) Vandalism

PROBLEM

Vandalism regularly occurs to refuge boundary signs, gates and entrance signs. The motives for vandalism of government property are varied and therefore not easily rectified. Usually, vandalism stems from some form of negative reaction to the refuge, its regulations, public use activities or facilities or a general adverse attitude toward signs.

CORRECTIVE ACTION TAKEN

Increased enforcement activities would be an effective deterrent to vandalism. At this time our staff is too small to adequately protect the refuge from vandalism, especially with four public highways crossing the refuge.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Additional funding for a trainee position would provide additional staff for enforcement activities.

53) Littering

PROBLEM

The littering problem is basically related to public use activities, particularly fishing and crabbing, and vehicular use along state highways transecting the refuge. The present refuge staff cannot devote sufficient time to reduce littering. The problem is expected to become worse next year when fees for using local dumps and transfer stations become effective. Many will choose to save money by dumping along back roads like those on Prime Hook.

CORRECTIVE ACTION TAKEN

The State has erected "No Littering" signs along roadways and advertises stiff fines for littering. Litter containers have been placed at beach communities and along State Route 1, however these cans are filled and overflow with household garbage from weekend cottage users.

ADDITIONAL CORRECTIVE ACTION NECESSARY

The States "bottle" bill will include cans by 1986. This should help eliminate part of the problem. Additional trash receptacles should help reduce the problem, however enforcement will be needed to prevent the deposit of household garbage which leaves Broadkill Beach looking like a dump each Monday morning, and which requires 2 trips by the State truck to pick it all up.

56) Vista

PROBLEM

Phragmites, up to 14 feet high, growing along roadways and along the boardwalk trail, obstructs the view of visitors and reduces the ability to observe wildlife.

CORRECTIVE ACTION TAKEN

The chemical Rodeo has been sprayed along roadways to reduce the fire potential and also restores the public view of ponds and wildlife along these

roads. Funding has been through Service construction monies and ARMM funds.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Future ARMM funds will be used for spot spraying to maintain treated areas free of phragmites and to maintain the vista for the public.

(57) Urban Encroachment

PROBLEM

Three housing developments lie along our eastern boundary (Broadkill, Prime Hook and Slaughter Beach). As these communities continue to build, the entire barrier island will be developed. The potential of pollution from septic systems, trash, and demands for refuge recreational facilities are expected to increase. The mosquito populations originating from the refuge already cause public relations problems on the beach areas.

CORRECTIVE ACTION TAKEN

The threat is from off-refuge and cannot be addressed in refuge plans. Through interpretive programs and personal contacts, the refuge is explaining its purpose and management to people in beach communities.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Refuge personnel will continue to educate the public on the values and programs of the Refuge. Service personnel should continue to express concern for additional beach development and its effect on the refuge.

(61) Facilities/Equipment Maintenance and Rehabilitation

PROGRAM

Maintenance of our limited facilities and equipment is below Service standards. Annual funding is insufficient to replace vehicles and to properly maintain roads. Our 0.5 mile paved entrance road badly needs resurfacing - tar and chip. Most gravel roadways have been worn to the extent that the roadbed lies below the surrounding land surface.

CORRECTIVE ACTION TAKEN

Through ARMM funding we have started to work on the backload of road maintenance. ARMM funding has also provided monies for vehicle and equipment maintenance and replacement.

ADDITIONAL CORRECTIVE ACTION NECESSARY

ARMM funding should continue to be available for maintenance of buildings, roads, vehicles and equipment. Service construction funds are needed to properly upgrade and rehabilitate the gravel roads.

(63) Employee Training/Education

PROBLEM

Funding has been inadequate for proper employee training, advanced education, or on-the-job training.

CORRECTIVE ACTION TAKEN

Funding has been provided for fire training for all personnel and refresher training for two staff members with law enforcement authority.

(65) Other Facilities

PROBLEM

Refuge facilities are inadequate for current or future operations. The office is a small converted milk house. Space for administration, storage and meetings is lacking. The shop is a small building constructed by YACC. It serves both as a shop and storage area. Most of our equipment must sit outside, exposed to the elements and vandalism.

CORRECTIVE ACTION TAKEN

ARMC funding in FY85 will permit construction of a small addition to the refuge office.

ADDITIONAL CORRECTIVE ACTION NECESSARY

Service construction funding will be needed to construct a modern office, shop and storage complex. At this time the projects have not been identified for funding in the next five year planning period.

FUNDING MANAGEMENT SUMMARY

The following summary addresses current and future funding, other than operation dollars, that relates to correction of Resource Problems at Prime Hook National Wildlife Refuge.

FY 84 Construction and Anadromous Fish \$458,000

Construct water control structures and dikes, marsh rehabilitation through chemical control of phragmites, firebreak construction.

A lack of water control structures results in a severely dry marsh during the period of mid-summer to fall. These conditions have resulted in dense stands of phragmites taking over the marsh, crowding out desirable plant species, reducing waterfowl use and reducing muskrat populations.

This project restores water management to 2500 acres of wetland in Unit III of the refuge by construction of water control structures and one-mile of low dike. In addition, the chemical Rodeo is used to treat the dense phragmites stands and restore desirable plant species. This project will influence or support corrective action for the following Resource Problems:

- 17 Flow Decrease
- 28 Wild Fires
- 45 Exotic Plant Species
- 56 Vistas

FY 84 Accelerated Refuge Maintenance Management(ARMM) \$46,000

ARMM funding provided monies for boundary maintenance, maintenance of equipment and facilities and increased funding for personnel training. This funding will influence or support the following Resource Problems:

- 24 Poaching
- 27 Land Development
- 28 Wildfires
- 45 Exotic Plant Species
- 61 Facility and Equipment Maintenance
- 63 Employee Training

FY 84 Fire Funding \$81,000

A tracked vehicle with rotary mower has been purchased for use in the marsh for fire control, construction of firebreaks and boundary maintenance. This project will influence or support the following Resource Problems:

- 27 Land Development
- 28 Wildfires
- 45 Exotic Plant Species
- 56 Vistas

FY 85 Accelerated Refuge Maintenance Management (ARM) \$67,200

Rehabilitation of Refuge Office \$15,000
Road Maintenance and Rehabilitation \$12,400
Maintenance of Dikes and Water Control Structures \$12,000
Vehicle and Equipment Maintenance \$13,600
Routine Small Maintenance Projects \$14,200

Rehabilitation of the office will add additional work and storage space. Road maintenance funds will be used to rehabilitate four refuge roadways totaling over two miles. Monies for dike and water control structure maintenance will be used for routine preventive maintenance and installation of a safety rail on the water control structures. Equipment and vehicle maintenance funds will be used to improve maintenance of vehicles and equipment which support other refuge programs. This funding will directly influence the following Resource Problems:

- 17 Flow Decrease
- 24 Poaching
- 27 Wildfires
- 45 Exotic Plant Species
- 51 Vandalism
- 53 Littering
- 56 Vistas
- 61 Facility and Equipment Maintenance
- 63 Employee Training
- 65 Facilities