Maryland Coastal Zone Management
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MANAGEMENT PLANS FOR SIGNIFICANT PLANT AND WILDLIFE HABITAT AREAS OF MARYLAND'S EASTERN SHORE: WICOMICO COUNTY

APPENDIX B TO

FINAL REPORT

SUBMITTED TO:

Coastal Resources Division
Tidewater Administration

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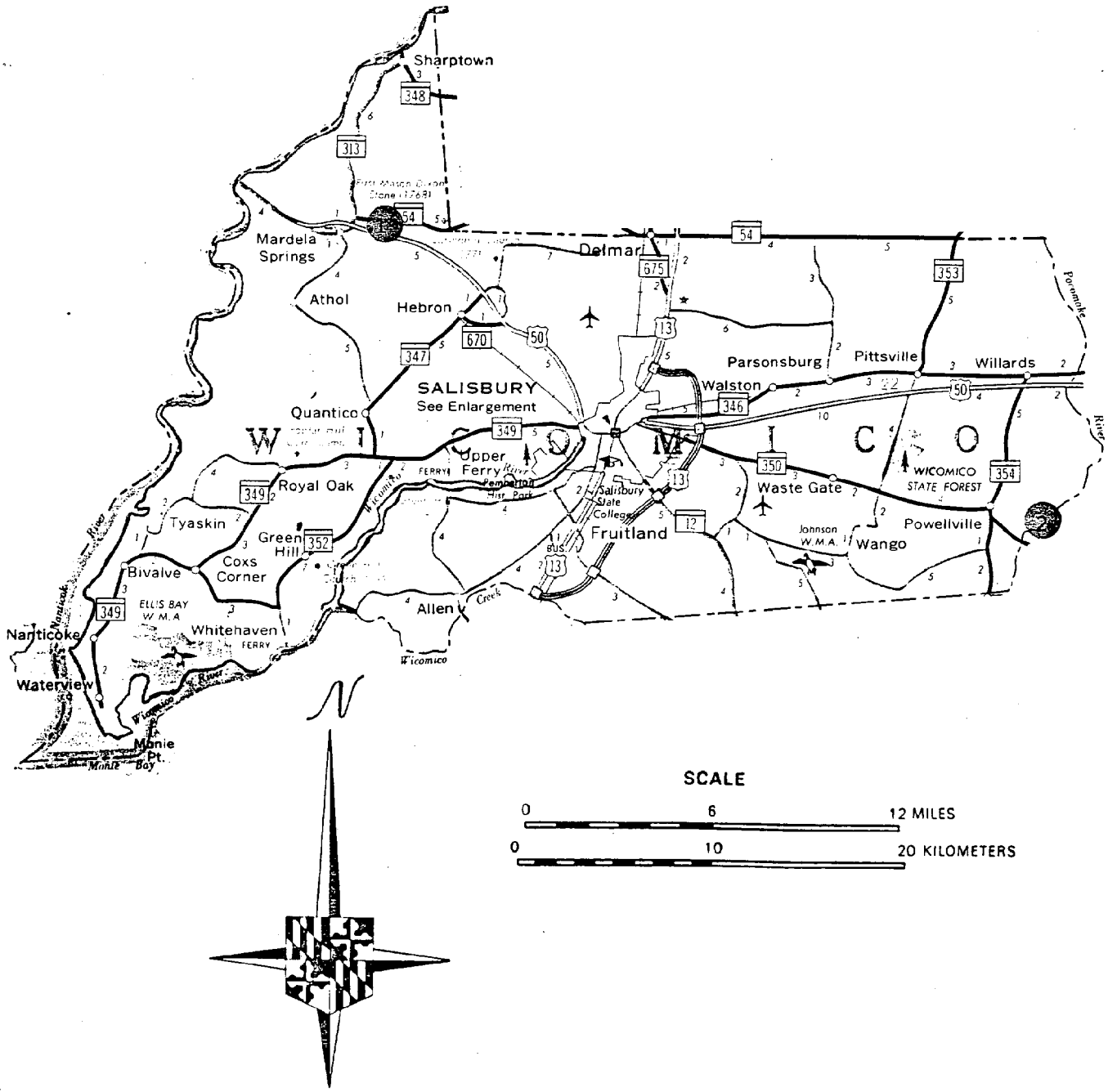

WICOMICO COUNTY: Protection Area Locations

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PROTECTION AREA SUMMARY

Protection Area Name: Barren Creek

County: Wicomico

USGS Quad: Hebron, Mardela Springs

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

This protection area encompasses most of the length of Barren Creek, from the headwaters of its main branch to its mouth at the Nanticoke River. The downstream portion of the site has been designated as a Habitat Protection Area for Locally Significant Habitat (#WI 0-4) in the Chesapeake Bay Critical Area Program. This protection area summary will focus on the upstream portion of Barren Creek (east of Mardela Springs), which also merits protection.

Upper Barren Creek contains at least four former millponds, one of which remains as an open-water pond, and several of which have been partially drained due to destruction of their dams. All of the ponds support a rare woody species along their banks or in the moist, exposed soils of the formerly flooded ponds. This rare species is found in only two locations worldwide -- on the Delmarva peninsula and in two counties in Oklahoma. In Maryland, it is limited to the upper reaches and tributaries of three rivers: the Nanticoke, Pocomoke, and Wicomico. The population along Barren Creek is extensive and includes young trees as well as mature, fruiting individuals, indicating that the population is reproducing successfully.

Two high-quality, freshwater seeps occur at the southeastern edge of one of the former millponds which is no longer flooded. They contain typical Coastal Plain bog vegetation, as well as two rare herbaceous plant species. One of these species is known from only six other locations in Maryland.

OTHER VALUES AND SIGNIFICANCE:

The unique distribution of the rare woody species poses questions about its evolution and biogeography. If several populations can be protected, genetic and ecological research may be conducted to clarify the reasons for its disjunct and narrowly limited range. A study examining the effect of increasing canopy closure on the rare species (in the ponds where natural succession is occurring due to destruction of the old millpond dams) might provide insights concerning the limited distribution of the species.

The large, open-water ponds within this protection area provide excellent resting, feeding, and breeding habitat for numerous birds and amphibians.

Protection of the upper portion of Barren Creek will help to maintain water quality in the adjacent Critical Area site, which also supports the rare woody species.

THREATS AND MANAGEMENT NEEDS:

Threats

In several locations along Barren Creek, there is little or no buffer of forest or shrub vegetation adjacent to the creek or its ponds. Farm fields abut portions of the former millponds that support the rare species. Where forested buffer is lacking, weedy species such as Phragmites and Japanese Honeysuckle are encroaching and may inhibit growth of seedlings of the rare species. Insufficient buffer may also allow agricultural runoff of fertilizers and pesticide residues to reach the creek or ponds.

Further clearing of the forests adjacent to the ponds for would disrupt the hydrology of the wetlands by altering groundwater level and would lower water quality by causing increased sedimentation. Both alterations would be harmful to populations of rare species in the wetlands.

Sand and gravel operations near several of the ponds could pose potential threats, although the mining company seems to maintain an adequate forested buffer around ponds on their property. If sand were allowed to flow into the ponds, it could alter the habitat by increasing sedimentation and, in effect, lowering the water table of the ponds and wetlands. Extensive pumping of water out of the open-water ponds could cause excessive drying of the ponds, hastening natural succession and potentially eliminating the rare species.

Natural succession may threaten the rare species even in the absence of further human-induced changes to the habitat. The rare woody species grows in successional and ecotonal habitats, and is likely to be outcompeted as trees and shrubs begin to dominate its habitat in the former millponds.

The rare species is susceptible to beetle predation. Trees in some subpopulations along Barren Creek have been partially defoliated. The long-term effects on the population are not known.

Management Needs

Voluntary cooperation should be sought from landowners within the protection area boundary to prevent land use activities that would be deleterious to the Barren Creek floodplain or the rare species. Harmful agricultural runoff should be stopped. Where farm fields abut the ponds directly, a buffer of trees and shrubs should be allowed to develop. No further clearing of forest within the protection area should be conducted.

A management agreement with the sand and gravel mining company should be implemented in order to avert activities which might alter water quantity or lower its quality.

A program should be implemented to monitor the size and extent of the rare species' populations. As natural succession proceeds in the former millponds, its effects on the rare woody species should be assessed. The effects of beetle predation and the encroachment of weedy species into the rare species' habitat should also be monitored. If either problem appears to seriously threaten the rare species' populations, then control measures should be considered.

BOUNDARY RECOMMENDATIONS:

The protection area boundary encompasses the creek and old millponds inhabited by the rare species, as well as the adjacent floodplain and a narrow buffer on the nearby slopes. Much of the buffer is forested, but some agricultural land is included where it abuts the floodplain or ponds. The boundary extends upstream to the headwaters of the main branches of Barren Creek in order to protect potential rare species habitat and ensure high water quality downstream.

SITE DESCRIPTION SUMMARY:

The inclusion of upper Barren Creek in the protection area adds 495 acres to the 675 acre site previously designated by the Chesapeake Bay Critical Area Program as site WI 0-4. Upper Barren Creek is a clear and free-flowing stream which meanders through a floodplain. It is about 15 ft. wide at its widest, and has a sandy bottom. Aquatic vegetation is minimal, although some Wild Celery grows in slow-moving spots. The floodplain is swampy, with thick, organic soils. The forest soils on the slopes above the floodplain are sandy.

The creek was formerly dammed in four locations to create millponds. Only one of these, Barren Pond, remains impounded as an open-water pond. The dams creating the other three ponds have

all been destroyed. The easternmost pond exhibits an emergent vegetation zone surrounded by wetland shrubs. Proceeding downstream, the next pond is Mockingbird Pond (also known locally as Devil's Mill Pond.) This former pond was the most thoroughly surveyed for this report.

Wetland shrubs and herbaceous species now grow in the area that was once flooded. Sedges and rushes are abundant near the stream, but the dominant vegetation is composed of dicots. Alders, spirea, and Buttonbush are the major shrubs, while False Stinging Nettle and jewelweed are abundant herbaceous species. Phragmites is a common weedy species. A rare woody species grows as a tall shrub or small tree scattered throughout the formerly-flooded zone. It is represented by some of the tallest, and possibly the oldest plants in this zone, suggesting that this species may have occurred here even when the area was inundated.

On the southeast side of the pond are two rich, boggy, freshwater seeps. They are small (less then 100 square yds.) and are surrounded by mixed hardwoods-pine forest. They have a mucky substrate covered with grasses, sedges, club moss, and two rare herbaceous species. Red Maple, pine, and Smooth Alder are encroaching and may eventually crowd out the herbaceous species.

Narrow forested buffers border the ponds. On the south side of Mockingbird Pond the forest covers a 10-30 ft. wide slope and is dominated by Red Maple, oaks, Black Gum, Mountain Laurel, pine, and greenbrier. On the north side the buffer is predominantly pine forest, with dense thickets of greenbrier and Japanese Honeysuckle in some areas. The uplands on both sides of the stream are primarily agricultural fields. A large sand and gravel operation borders Mockingbird Pond to the south.

Between the old millponds, much of the creekside vegetation is shrubby and open. Where the tree canopy is not closed, the rare woody species is common along the creek.

Downstream from Mockingbird Pond is Barren Pond, the only remaining impounded, open-water wetland along Barren Creek. It is located above the tidal zone and was created more than 50 years ago to provide power for a mill. The pond is now half covered with Spatterdock and contains Bur-reed as well as submerged aquatic plants. Its margins are lined with Swamp Milkweed, Buttonbush, Sweet Pepperbush, and other wetland shrubs. The rare woody species inhabits open areas all along the edge of the pond, often growing next to a more widespread species of the same genus.

Prepared by: Judith L. Robertson

Date: December 1988

PROTECTION AREA SUMMARY

Protection Area Name: Pocomoke Oxbow

County: Wicomico, Worcester USGS Quad: Ninepin Branch

SUMMARY OF ECOLOGICAL SIGNIFICANCE:

Pocomoke Oxbow is a 1/4 mile long meander of the Pocomoke River that is permanently isolated from the main branch as a result of river channelization in the 1940's. The oxbow receives hydrologic input only from precipitation and from periodic flooding of the Pocomoke River at times of heavy winter flow.

The hardwood swamp forest adjacent to the oxbow is old and diverse. Portions of the forest have not been cut for approximately 70 years or more and therefore support some very large trees (especially cypress, Willow Oak, and maple). Except in areas which have been opened up naturally as a result of windthrow, there are few weedy species. Older growth forests provide specialized habitat for many animals, such as forest interior breeding birds. Such forests are becoming increasingly rare due to timber management practices in the region.

Two rare species grow in the rich floodplain forest east of the oxbow. One species is known from fewer than ten locations in Maryland, where it is at the northeastern limit of its range. The other species is known from only three other sites in the State.

OTHER VALUES AND SIGNIFICANCE:

An outcrop of ferric rock forms a ridge running parallel to the stream channel about 100 yds. east of the oxbow. It is similar to the ferric material smelted in the old Nassawango iron furnaces and may represent the only remaining natural outcrop in the area that has not been mined.

The old oxbow functions as a pond which provides feeding, resting and breeding habitat for a variety of wildlife species, especially amphibians.

THREATS AND MANAGEMENT NEEDS:

Threats

Timber management within the protection acre would threaten the rare species' survival due to physical destruction,

alteration of the hydrologic regime, and invasion by weedy, non-native plant species.

Other threats to the oxbow and to the rare plant populations are limited because of the inaccessibility of the site. The only signs of unnatural disturbance are old, overgrown, hunter's trails leading from the road to the oxbow, and deer blinds in a few of the trees. Hunting does not pose a threat to the rare plant species.

Management Needs

No timber management or other removal of forest vegetation should be conducted within the protection area. No specific management is necessary other than allowing the old growth forest to succeed naturally.

BOUNDARY RECOMMENDATIONS:

The protection area boundary includes the oxbow, the rare species habitat, and the older growth floodplain forest on either side of the oxbow. On the west the boundary extends to the channelized Pocomoke River. On the east it extends to a road just above the edge of the floodplain. Inclusion of the broad floodplain forest contiguous with the rare species habitat provides adjacent potential rare species habitat, a forested buffer, and habitat for forest interior dwelling species.

SITE DESCRIPTION SUMMARY:

Pocomoke Oxbow Protection Area is a 95 acre site containing a narrow, crescent-shaped body of water located approximately 100 yds. east of the channelized Pocomoke River. During the growing season the oxbow receives little hydrologic input except from precipitation. The only floating vegetation consists of a few small patches of Spatterdock and some duckweed along the pond margins.

To the east of the oxbow is a 300 yd. wide hardwood swamp forest which is dominated by large Red Maples, Bald Cypresses, Willow Oaks, Black Gums, and Sweet Gums. Spicebush and Pawpaw are thick in the understory. Grasses and the two rare species occupy a zone about 30 yds. wide east of the oxbow. Jewelweed and Blackberry are abundant in several natural openings in the forest canopy. A narrow ridge of ferric rock outcrop runs in a north-south direction for an undetermined length, approximately 100 yds. east of the oxbow.

Along the eastern border of the protection area is a 100 ft. wide slope which rises about 18 ft. from the floodplain and contains a mixed hardwood forest on sandy soils.

Prepared by: Judith L. Robertson

Date: November 1988

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