



U.S. Fish & Wildlife Service

Muscatatuck *National Wildlife Refuge*

Summary Comprehensive Conservation Plan

November 2009

Comprehensive Conservation Plan Completed!

The Comprehensive Conservation Plan (CCP) for Muscatatuck National Wildlife Refuge (NWR) was signed on September 10, 2009, completing a planning process that began in 2007.

Management highlights include:

- The Refuge will be open longer each day. Instead of being open from sunrise to sunset, the Refuge will now open an hour before sunrise and close an hour after sunset.
- Habitat will include more forest and fewer constructed wetlands, with wildlife habitat created more by natural processes than human engineering.
- Opportunities to hunt rabbit, quail, squirrel, turkey and deer will increase.



Muscatatuck National Wildlife Refuge. Photo credit: U.S. Fish and Wildlife Service

- Access to the Refuge will remain free of charge.
- The West Entrance will be closed in an effort to reduce non-Refuge traffic and increase safety for wildlife viewing.

This summary includes a general description of management activities related to habitat, wildlife, and visitors, plus a table comparing previous management with management under the CCP.

Completing the CCP doesn't mean that we stop planning. Comprehensive conservation plans are revised at least every 15 years, and the U.S. Fish and Wildlife Service (Service) Manual requires refuges to update and revise

their plan sooner if habitat and wildlife monitoring suggest that revision is warranted.

A variety of people and organizations contributed their expertise and time to planning for Muscatatuck NWR. We are grateful to everyone who took the time to attend a meeting, review the Draft CCP, or comment on the plan. By participating in the planning process, you contributed to improving habitat for wildlife at Muscatatuck NWR and enhancing wildlife-dependent recreation for present and future generations.

Contents

CCP Completed	1
See the CCP	2
Why a CCP?	2
Vital Statistics	2
Refuge Vision and Goals	3
How the Refuge Will be Managed	3
Who We Are and What We Do	7
The Planning Process	7
Into the Future	7

See the CCP

You can view the full CCP on-line at: <http://www.fws.gov/midwest/planning/muscatatuck>

Paper copies of the CCP are available at several libraries, including:

- Jackson County Public Library, 303 West Second Street, Seymour, Indiana.
- Crothersville Library, 120 East Main Street, Crothersville, Indiana
- Medora Library, 27 West Main Street, Medora, Indiana.
- Jennings County Public Library, 2375 North Highway 3, North Vernon, Indiana.
- Monroe County Public Library, 303 East Kirkwood Avenue, Bloomington, Indiana.
- Ellettsville Branch, Monroe County Public Library, 300 West Temperance Street, Ellettsville, Indiana.

Copies of the plan are also available at the Refuge. You can request a copy in a variety of ways:

E-mail the Refuge at: Muscatatuck@fws.gov

Call the Refuge at: 812/522-4352

Mail a request to:

Muscatatuck NWR
Attention: CCP Request
12985 East U.S. Highway 50
Seymour, IN 47274

Why a CCP?

The U.S. Fish and Wildlife Service is completing a CCP for every refuge in the National Wildlife Refuge System. The plans outline how a refuge will fulfill its legal purpose and contribute to the Refuge System's wildlife, habitat and public use goals. Comprehensive conservation plans articulate management goals for the next 15 years and specify the objectives and strategies needed to accomplish these goals. CCPs

give a refuge's neighbors, the local community, Friends groups, outdoor recreation enthusiasts and others a clear picture of how a refuge will be managed and the reasoning behind that management direction.

Planning for national wildlife refuges has always occurred, but the planning process and products were not consistent throughout the Refuge System. This changed in 1997, when the National Wildlife Refuge System Improvement Act established the planning process refuges would use and specified the elements required in a CCP. The Improvement Act and Service policy now require the Refuge System to manage national wildlife refuges based on a CCP.

Many factors, such as funding and natural events like flooding or drought, will influence the Service's ability to fully implement the Muscatatuck NWR CCP. Comprehensive conservation plans outline management direction, but they do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.



Wood Duck. U.S. Fish and Wildlife Service photo.



Vital Statistics

Established in 1966, Muscatatuck NWR manages 7,802 acres in Jackson, Jennings, and Monroe Counties of Indiana. The Refuge also administers nine conservation easements totaling 130.5 acres in five Indiana counties.

The Refuge consists of wetland, grassland, woodland, and riverine communities. The Refuge provides habitat for many avian species including ducks, geese, Wild Turkey, non-game grassland and forest birds including many neo-tropical migrants, shorebirds, wading birds, and birds of prey. A variety of reptiles and mammals, including the copperbelly water snake, Kirtland's snake, river otter, and white-tailed deer, many fish species, and a broad range of terrestrial and aquatic invertebrates also inhabit the Refuge. In addition, several federally listed species, including the Indiana bat, and many more state-listed species, are found on the Refuge.



White-tailed deer doe. U.S. Fish and Wildlife Service photo.

Refuge Vision and Goals

Refuge Vision

The planning team considered past vision statements and emerging issues and drafted the following vision statement as the desired future state of the Refuge:

As the land of winding waters, treasured for generations, Muscatatuck National Wildlife Refuge honors its heritage and connects visitors with the natural environment by conserving a rich mosaic of sustainable habitat for a diversity of wildlife and plants.

Refuge Management Goals

Goal 1: Habitat – A dynamic mosaic of vegetation that includes an expanse of upland and floodplain deciduous forest similar to that historically present along with lakes, marshes, and moist soil units.

Goal 2: Wildlife – Support the maximum sustainable breeding and post-breeding populations of cavity-nesting waterfowl, neotropical

migratory birds, Indiana bats, and a diversity of migratory, rare wetland, and resident species.

Goal 3: People – Visitors understand and appreciate the natural environment and its processes through participation in high-quality, wildlife-dependent recreation and educational opportunities.

How the Refuge Will be Managed

The management direction adopted in the CCP will change habitat management and visitor services facilities on the Refuge, but for the most part those changes will be gradual. Maps on the next two pages illustrate management activities, and a table that begins on page 8 compares the previous management direction with the direction adopted in the CCP.

To implement the CCP, the Refuge proposes adding two new biological technician positions to the staff and filling an existing but vacant tractor operator position.

Habitat

As the Refuge implements the CCP over the next 15 years, management will reduce the focus on water manipulation on the Refuge and instead focus on restoring natural processes. That means fewer moist soil units on the Refuge and more bottomland and upland forest. There will be less agricultural cropland as forest converts through natural succession. Some ponds will revert to forested wetlands, but Stanfield Lake, the deep-

water portion of Richart Lake, and existing fishing areas will be maintained. Mallard and Display Ponds will be closed to fishing and allowed to revert to forested wetland. Greentree reservoirs will resume a more natural flow regime. Upland hardwood forest will be managed using timber stand improvement techniques and forest hydrology will be restored.

At the Restle Unit, the Refuge will maintain the existing 30-acre, seasonally flooded impoundment and 48 acres of bottomland hardwood forest, plus develop a water management plan to support water bird feeding, resting, and breeding through cycles in moist soil management.

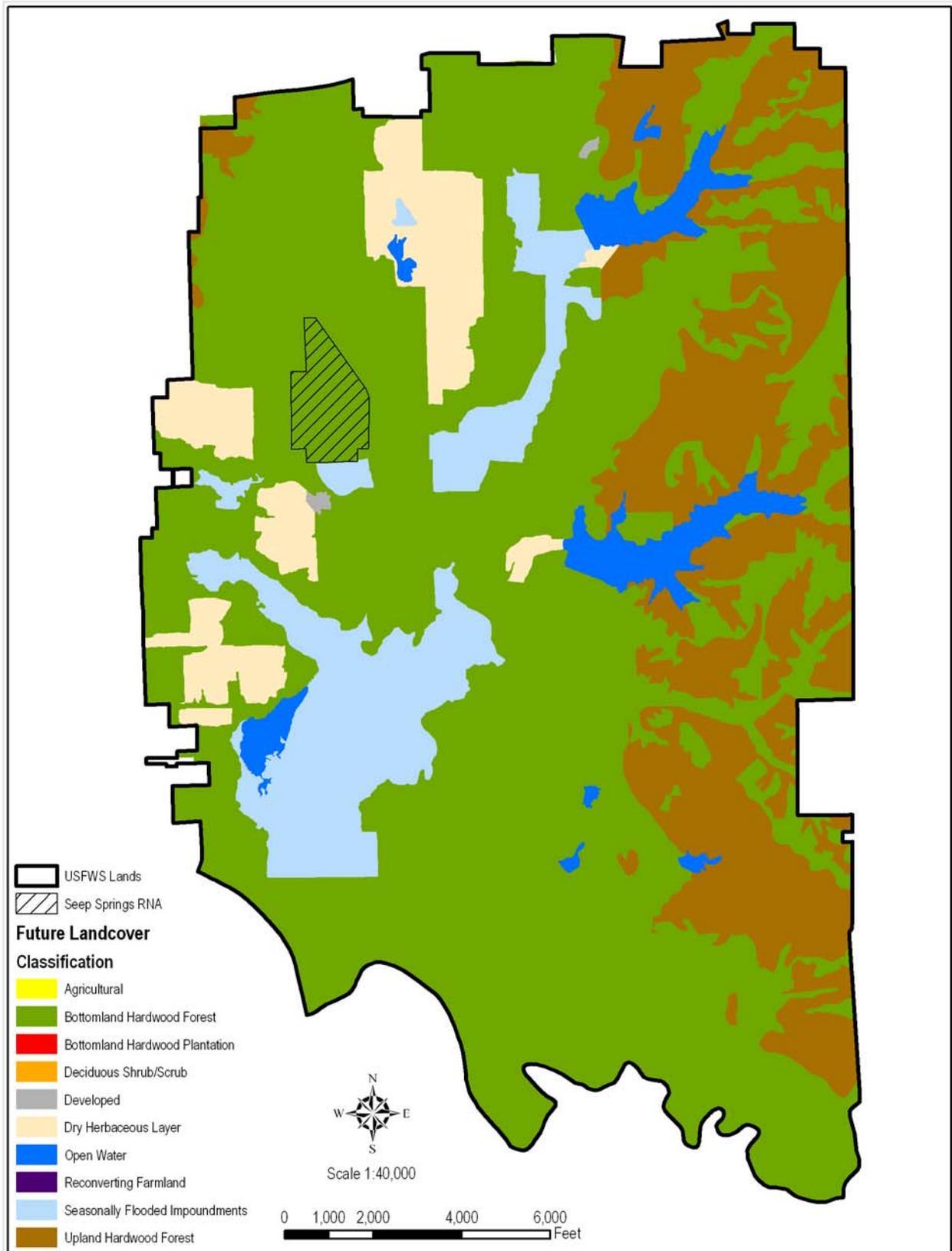
Wildlife

More wildlife and habitat monitoring and surveying activities will take place on the Refuge. Refuge staff will develop partnerships and seek grants to fund a baseline survey and studies of habitat use patterns for the Indiana bat. Regular waterfowl brood counts will be conducted on managed units and Moss Lake every 3 years, and brood habitat will be monitored every year. Staff will continue the annual May Day bird count and will conduct point counts every 5 years to more systematically document the effects of reforestation. Secretive marsh birds will be surveyed every 5 years to determine presence or

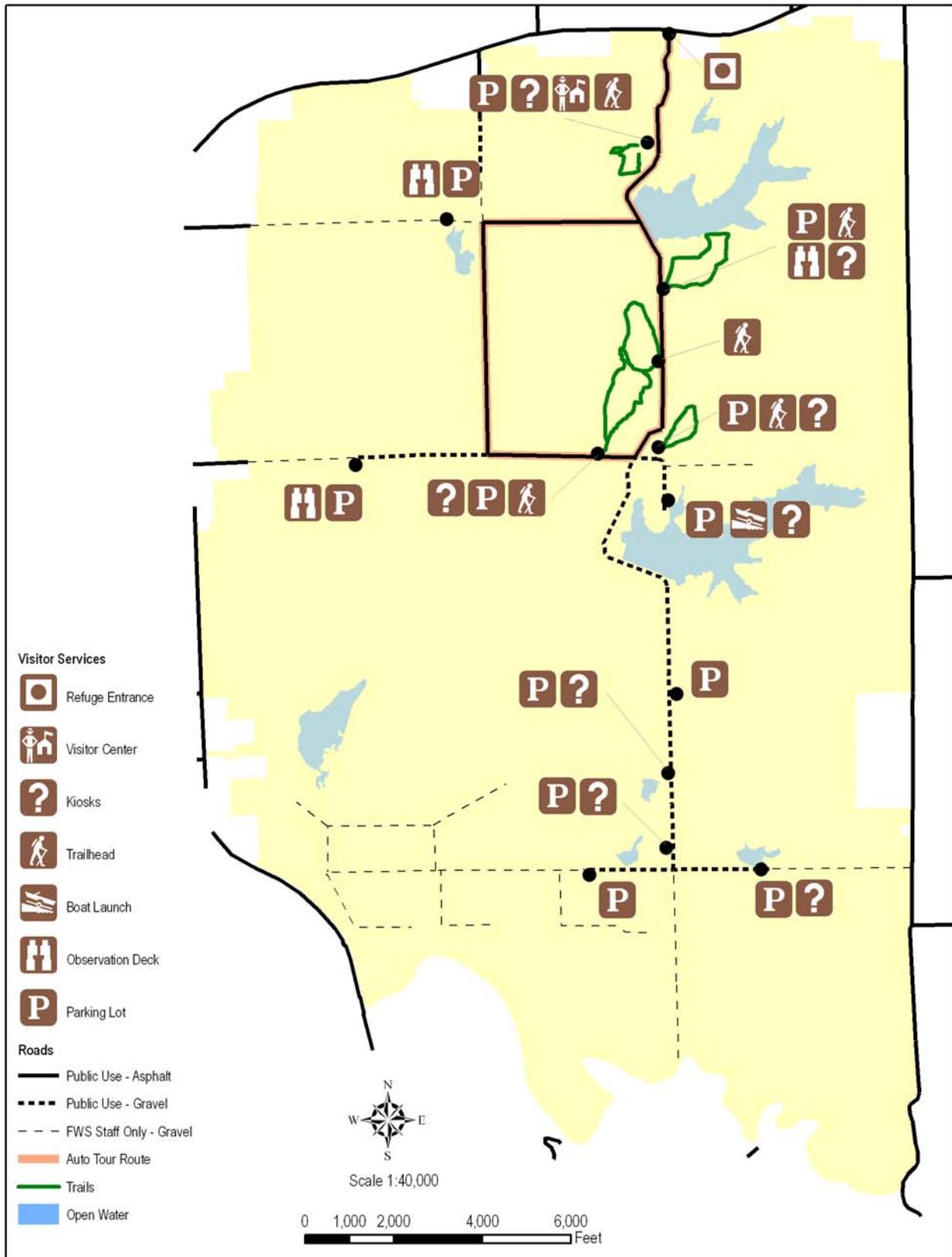


Richart Lake, Muscatatuck NWR. U.S. Fish and Wildlife Service photo.

Future Conditions Envisioned in the CCP, Muscatatuck NWR



Visitor Services in Future Management, Muscatatuck NWR



absence, and shorebird numbers and diversity will be monitored spring through fall. Existing waterfowl counts (weekly counts Labor Day to March, mid-winter counts, Great Blue Heron surveys every 5 years, and crane surveys as requested) will continue.

The deer population will be managed at numbers that support forest regeneration while still providing a quality hunting opportunity, with a goal of maintaining approximately 15 to 25 deer per square mile.

Staff will begin monitoring fish within 5 years of CCP completion and will monitor at 10 to 15-year intervals for heavy metal contamination.

Visitor Services

Hunting opportunities will expand at Muscatatuck NWR. The hours for rabbit, quail, squirrel and archery deer hunting will increase, and the program will be monitored for biological effects and safety. An early deer archery season based on the state season will start after National Wildlife Refuge Week. Squirrel, rabbit, and quail hunts will continue during deer hunting. A late deer archery season following the closure of the muzzleloader season will continue for the rest of the state season. Muzzleloader deer hunting will be allowed by special permit during the state season. Hunters will be required

to wear hunter orange for all hunting except turkey hunting.

Year-round fishing will continue much as it has in the past, with the exception that Mallard and Display Ponds will be removed from the fishing program. Fishing will still be permitted on Richart, Stanfield, Sheryl, and Linda Lakes and Sand Hill and Persimmon Ponds. Boating will continue to be allowed on Stanfield Lake, and float tubes will continue to be allowed in all fishing areas. Access to fishing locations will increase. The fishing event for children will be continued. To reduce disturbance of migrant waterfowl on northern seasonally flooded and managed units, public access will be limited during peak duck use periods.

Observation and photography opportunities will change somewhat under the direction adopted in the CCP. The Refuge will not maintain East and West River Trails and they will be allowed to revert back to habitat. Surfacing on other trails will be improved, and the auto tour route will be black-topped if funding permits. The Hackman Overlook will be evaluated and either removed or modified. Bicycling will continue to be permitted only on gravel and paved roads on the Refuge.

A new observation platform will be built to facilitate wildlife viewing near the Refuge's shop area.



Red-eared sliders. U.S. Fish and Wildlife Service photo.

An observation platform will be maintained at the Restle Unit and the rest of the Unit will remain closed to public access.

The interpretation program at Muscatatuck NWR will continue at the existing level, however the quality of interpretation will be improved at all current facilities and in Refuge publications. The Refuge's website will be improved and updated more frequently and will include downloadable versions of Refuge brochures, lists of current and upcoming events, and wildlife sightings. The existing environmental education program will be modified to meet the Service's definition of environmental education.

The Refuge will continue to support and expand volunteer programs as staff and resources permit. Staff will work to expand partnerships with non-governmental organizations.

In addition to existing outreach work, staff will expand efforts to reach under-represented populations.

The Refuge's hours will be expanded to open 1 hour before sunrise and close 1 hour after sunset.

The west entrance will be closed, which is expected to make Refuge roads safer, improve the Refuge experience for visitors, and reduce disturbance to wildlife.



Myers Cabin, Muscatatuck NWR. U.S. Fish and Wildlife Service photo.

Who We Are and What We Do

The Refuge is administered by the U.S. Fish and Wildlife Service, the primary federal agency responsible for conserving, protecting, and enhancing the nation's fish and wildlife populations and their habitats. The Service oversees the enforcement of federal wildlife laws, management and protection of migratory bird populations, restoration of nationally significant fisheries, administration of the Endangered Species Act, and the restoration of wildlife habitat such as wetlands. The Service also manages the National Wildlife Refuge System, which was founded in 1903 when President Theodore Roosevelt designated Pelican Island in Florida as a sanctuary for Brown Pelicans.

Today, the Refuge System is a network of 550 national wildlife refuges and other Refuge System units covering more than 150 million acres of public lands and waters. Most of these lands are in Alaska, with approximately 16 million acres located in the lower 48 states and several island territories. Overall, the Refuge System provides habitat for more than 5,000 species of birds, mammals, fish, and insects.

Refuges also provide unique opportunities for people. When activities are compatible with wildlife and habitat conservation, refuges are places where people can enjoy wildlife-dependent recreation such as hunting, fishing, wildlife observation, photography, environmental education, and environmental interpretation.

The Planning Process

The planning process for the Muscatatuck NWR CCP began in March 2007. The first step was for members of the regional planning staff and Muscatatuck NWR staff to identify a list of issues and concerns associated with the management of the Refuge.

These preliminary issues and concerns were based on staff knowledge of the area and contacts with citizens in the community.

Refuge staff and Service planners then asked Refuge neighbors, organizations, local government units, and interested citizens to share their thoughts in an open house and through written comments. In May 2007, people were invited to an open house at the Refuge's visitor center through local papers and a project update sent to the Refuge's mailing list of 1,067 people. Twenty-five people attended the open house. Comments were received from approximately 35 individuals during the comment period, which ended June 30, 2007. Following the public comment period, an additional meeting was held in the Fish and Wildlife Service Regional Office to review the public comments and identify concerns from subject specialists.

The CCP for Muscatatuck NWR was prepared by a team consisting of Refuge and Regional Office staff. The CCP was published in two phases (draft and final documents) and in accordance with the National Environmental Policy Act (NEPA). The Environmental Assessment, published as Appendix A in the Draft CCP, presented four alternatives for future management and identified a preferred alternative.

The Draft CCP/EA was released for public review and comment on April 6, 2009. A Draft CCP/EA or a summary of the document was sent to more than 1,000 individuals, organizations, local, state, and federal agencies, and elected officials. An open house was held on April 23, 2009, at the Muscatatuck NWR Visitor Center following release of the draft document. Twenty-five people attended the open house. We received a total of 40 comment letters and e-mails during the 33-day review period. Appendix K of the CCP summarizes these comments and the Refuge's responses.



Common buckeye butterfly. U.S. Fish and Wildlife photo.

Into the Future

Throughout the comprehensive conservation planning process, many people have contributed time and ideas to make the Muscatatuck NWR CCP a better document. We are grateful to everyone who cared enough about the Refuge and its future to participate in this planning effort. We will continue to welcome your thoughts on Refuge management.

To succeed, a management plan has to adapt to nature's ever changing conditions. Although the plan is complete, we expect to review it and, if needed, update it every 5 to 10 years in response to conditions that could not be anticipated in planning.

Muscatatuck NWR is a place to use and enjoy for both wildlife and people, now and in the future. We hope that you will continue to care about and participate in conserving the Refuge's wildlife and habitat.

Comparison of Key Points in Previous and New Management Direction for Muscatatuck NWR

Topic	Previous Refuge Management	Refuge Management Under the CCP (Balance Natural Processes & Constructed Units; Increased Focus on High Quality Priority General Public Uses)
<i>Upland Hardwood Forest</i>	<ul style="list-style-type: none"> ■ Allow approximately 310 acres of former cropland to revert to upland forest through natural succession and limited tree planting. 	<ul style="list-style-type: none"> ■ Conversion of approximately 310 acres of former cropland to upland forest through natural succession and limited tree planting. ■ Active forest management that may include timber stand improvement and restoring hydrology and micro/macrotopography.
<i>Bottomland Hardwood Forest: Natural and Constructed</i>	<ul style="list-style-type: none"> ■ Allow approximately 500 acres of former cropland to revert to bottomland hardwood forest through natural succession and limited tree planting. ■ Water control on two greentree reservoirs and Moss Lake. 	<ul style="list-style-type: none"> ■ Conversion of former cropland (approximately 500 acres), current cropland (approximately 15 acres), and some water management areas (approximately 150 acres) to bottomland hardwood forest through natural succession and limited tree planting. (Total of approximately 660 acres). ■ Convert greentree reservoirs to naturally flowing. Active management of Moss Lake. ■ Includes reforestation, control of muskrats and beavers.
<i>Open Water</i>	<ul style="list-style-type: none"> ■ Maintain current acreage as depicted in Figure on page 4. 	<ul style="list-style-type: none"> ■ Maintain Stanfield Lake, the deepwater portion of Richart Lake, and existing fishing areas except for Mallard and Display Ponds, which will be closed to fishing and will be allowed to revert to natural cover types. Water levels in some areas of Richart Lake may vary. ■ Allow all other ponds to revert to forested wetlands.
<i>Seasonally Flooded Constructed Impoundments</i>	<ul style="list-style-type: none"> ■ Approximately 820 acres under moist soil management, which includes water and vegetation manipulation. 	<ul style="list-style-type: none"> ■ Fewer acres under moist soil management due to the conversion of moist soil units 8, 9, and 10 to bottomland forest. Moist soil units 1-6 are retained. ■ Moist soil unit 7 is retained to keep dual function of control and flow through the southern portion of the Refuge. Also, McDonald North and South, Sue, and Endicott North and South are managed as seasonally flooded impoundments. ■ Reduce disturbance to migrants on northern seasonally flooded and managed units through limitation of public access during peak duck use periods.
<i>Reconverting Farmland/early successional habitat</i>	<ul style="list-style-type: none"> ■ Allow natural succession and planting trees for conversion to forests. 	<ul style="list-style-type: none"> ■ Active conversion through planting, timber stand improvement, and natural succession. ■ The area surrounding the Endicott Marshes (75 acres), kept open to benefit bird viewing. Approximately 400 additional acres of wildlife viewing areas also kept open to benefit cranes and other species.
<i>Agricultural</i>	<ul style="list-style-type: none"> ■ Approximately 320 acres associated with agricultural use, 267 acres actively farmed. 	<ul style="list-style-type: none"> ■ No acres in agriculture. Mowing, haying, or prescribed fire are used to maintain open acres for wildlife viewing and crane habitat.

Comparison of Key Points in Previous and New Management Direction for Muscatatuck NWR (Continued)

Topic	Previous Refuge Management	Refuge Management Under the CCP (Balance Natural Processes & Constructed Units; Increased Focus on High Quality Priority General Public Uses)
<i>Invasive Plant Species</i>	<ul style="list-style-type: none"> ■ Approximately 220 acres treated per year. 	<ul style="list-style-type: none"> ■ Comprehensive inventory of all invasive plants within 5 years of plan approval. ■ Employ early detection and rapid response protocol for responding to new invasives. ■ Development of an IPM or section of HMP Requires additional annual funding and possibly a biological technician FTE.
<i>Seep Springs Research Natural Area</i>	<ul style="list-style-type: none"> ■ No change in management (some attempt to move water from area as time and resources permit). 	<ul style="list-style-type: none"> ■ Maintain optimum hydrology for the community. Requires detailed hydrological study. ■ In addition, take immediate action to reduce water levels in and adjacent to the Research Natural Area. Form a working group to assist in restoring and monitoring the hydrology of the seep springs habitat.
<i>Restle Unit</i>	<ul style="list-style-type: none"> ■ Maintain 30 acres of seasonally flooded impoundment and 48 acres of bottomland hardwood forest. Closed to all public use. 	<p>Same as previous management, plus:</p> <ul style="list-style-type: none"> ■ Develop a water management plan to support water bird feeding, resting, and breeding through cycles in moist soil management.
<i>Federally-listed Threatened and Endangered Species</i>	<ul style="list-style-type: none"> ■ Intermittent surveys initiated by various partners. 	<ul style="list-style-type: none"> ■ Indiana bat: Conduct baseline survey and study of habitat use patterns. Follow with monitoring at regular intervals. Develop partnerships and seek grants to fund monitoring studies.
<i>Cavity-nesting waterfowl</i>	<ul style="list-style-type: none"> ■ Annual brood surveys to estimate production. ■ Cavity surveys were conducted in 1984-5 and 2006. 	<ul style="list-style-type: none"> ■ Monitor number of cavities after 15 years of plan implementation. ■ Conduct brood counts on managed units and Moss Lake every 3 years. ■ Monitor brood habitat every year.
<i>Neotropical migratory birds</i>	<ul style="list-style-type: none"> ■ May Day count annually for presence-absence data to satisfy public interest. 	<p>Same as previous management plus:</p> <ul style="list-style-type: none"> ■ Point counts every 5 years to more systematically document the effect of reforestation.
<i>Secretive marsh birds and shorebirds</i>	<ul style="list-style-type: none"> ■ Limited study in past. 	<ul style="list-style-type: none"> ■ Marsh survey every 5 years to determine presence-absence, and distribution of species, with observations integrated into Annual Water Management Plan. ■ Monitor shorebirds numbers and diversity spring through fall.
<i>Rare wetland species</i>	<ul style="list-style-type: none"> ■ Periodic surveys of rare wetland species (examples include copperbelly watersnake, Kirtland's snake, four-toed salamander, and state-listed plants including rare orchid) by cooperators and volunteers. 	<p>Same as previous management, plus:</p> <ul style="list-style-type: none"> ■ An effort will be made to improve survey protocols.
<i>Migratory waterbirds</i>	<ul style="list-style-type: none"> ■ Weekly waterfowl count from Labor Day through March. Provide data to state partners. ■ Mid-winter waterfowl count to satisfy Service data request. ■ Conduct surveys for Great Blue Herons every 5 years. ■ Conduct annual Sandhill Crane surveys as requested by partners. 	<ul style="list-style-type: none"> ■ No change from past management.

Comparison of Key Points in Previous and New Management Direction for Muscatatuck NWR (Continued)

Topic	Previous Refuge Management	Refuge Management Under the CCP (Balance Natural Processes & Constructed Units; Increased Focus on High Quality Priority General Public Uses)
<i>Native resident and other wildlife</i>	<ul style="list-style-type: none"> ■ Variety of studies being conducted. 	<ul style="list-style-type: none"> ■ No change from past management.
<i>Fish and other aquatic species</i>	<ul style="list-style-type: none"> ■ Periodic surveys to monitor diversity of species. 	Same as previous management, plus: <ul style="list-style-type: none"> ■ Monitor diversity, distribution and rough abundance on a 10-year cycle.
<i>Deer</i>	<ul style="list-style-type: none"> ■ No objective specified. 	<ul style="list-style-type: none"> ■ Maintain deer population between 15 and 25 per square mile to balance between forest regeneration and quality hunting. ■ Monitor deer population and habitat to determine if population level is achieved and not harmful to Refuge habitat.
<i>Beaver; muskrat, raccoon</i>	<ul style="list-style-type: none"> ■ No objectives specified. 	<ul style="list-style-type: none"> ■ Control raccoon population as prescribed by monitoring to facilitate Wood Duck production. ■ Beaver and muskrat are monitored and controlled to facilitate water management. ■ Identify, monitor, and control any other species identified as causing damage due to high population levels.
<i>Heavy metal contamination in fish</i>	<ul style="list-style-type: none"> ■ Surveys conducted in 2006, results pending. 	<ul style="list-style-type: none"> ■ Fish will be used as indicator species. Conduct first survey within 5 years. Monitor at 10-15 year intervals.
<i>Hunting</i>	Hunt rabbit, quail, squirrel, turkey, and deer. (Portions of the state season; portions of the Refuge). No waterfowl hunting allowed. No hunting of any kind in the Waterfowl Sanctuary.	Same as past management, and in addition: <ul style="list-style-type: none"> ■ Expand hunt times for rabbit, quail, squirrel, and archery deer hunting. ■ Hunting program will be monitored for biological and safety effects. ■ Early archery by state season starting after National Wildlife Refuge Week. Squirrel, rabbit, and quail hunts continue during deer hunts. Late archery following closure of muzzleloader season for the remainder of the state season. ■ Muzzleloader by special permit drawing during state season. ■ Hunter orange required for all hunts except turkey. ■ Reduce disturbance to migrants on northern seasonally flooded and managed units through limitation of public access during peak duck use periods. ■ In collaboration with partners, offer state youth hunting programs, and recruit under-represented populations to participate in hunting programs.

Comparison of Key Points in Previous and New Management Direction for Muscatatuck NWR (Continued)

Topic	Previous Refuge Management	Refuge Management Under the CCP (Balance Natural Processes & Constructed Units; Increased Focus on High Quality Priority General Public Uses)
<i>Fishing</i>	<ul style="list-style-type: none"> ■ Year-round fishing by state regulations on designated lakes and ponds – Richart, Stanfield Sheryl, and Linda Lakes, and Sand Hill, Persimmon, Mallard and Display Ponds. ■ Boating allowed on Stanfield Lake. No motors allowed. ■ Float tubes allowed in all fishing areas. ■ Three accessible fishing facilities. ■ Kids’ fishing event once a year. 	<p>Same as previous management except:</p> <ul style="list-style-type: none"> ■ Mallard and Display Ponds are removed from the fishing program and allowed to revert to bottomland forest. ■ Additionally, create more accessible sites around current fishing locations. ■ Reduce disturbance to migrants on northern seasonally flooded and managed units through limitation of public access during peak duck use periods. ■ Improve quality of fishing areas.
<i>Observation & Photography</i>	<ul style="list-style-type: none"> ■ Auto tour route (4 miles). ■ Seven hiking trails. ■ Observation deck at Endicott Marsh. ■ Overlook structure on Richart Lake. ■ Nine miles of roads. ■ Two annual photo contests. ■ Annual migratory bird days. ■ Refuge week activities. ■ Maintain observation platform at Restle Unit with the rest of the unit closed to all public uses. ■ Bicycling is permitted on gravel/paved roads. Riding on hiking trails is prohibited. 	<ul style="list-style-type: none"> ■ East and West River Trails not maintained and allowed to revert back to habitat. ■ Improve surfacing of all remaining trails. Blacktop auto tour route (contingent on funding). ■ Build an observation structure to facilitate wildlife viewing near the shop area. ■ Modify or remove Hackman Overlook structure. ■ Reduce disturbance to migrants on northern seasonally flooded and managed units through limitation of public access during peak duck use periods. ■ Maintain observation platform at Restle Unit with the rest of the unit closed to all public uses. ■ Bicycling is permitted on gravel/paved roads. Riding on hiking trails is prohibited.
<i>Interpretation</i>	<ul style="list-style-type: none"> ■ Provide 25 interpretive programs per year to schools and the public. ■ Interpretation on auto tour route, Chestnut Ridge Trail and at the Myers Cabin site. ■ Keep six brochures updated and stocked at visitor contact points. ■ Maintain website. 	<p>Same as previous management, plus:</p> <ul style="list-style-type: none"> ■ Improve quality of interpretation at all current facilities and throughout all Refuge fliers, brochures, and other documents. ■ Improve website and update more frequently.
<i>Environmental Education</i>	<ul style="list-style-type: none"> ■ Partnership with special group at Hayden School and annual internship program. ■ Host annual Indiana Junior Duck Stamp Program and contest. ■ Host annual Conservation Field Days for Jackson and Jennings County Schools’ third-graders. 	<p>Same as previous management, plus:</p> <ul style="list-style-type: none"> ■ Modify current program to satisfy the Service’s definition of environmental education.
<i>Recreational fees</i>	None.	None.
<i>Coop Association/ Friends / Partnerships</i>	<ul style="list-style-type: none"> ■ One active, membership-based Friends Group, the Muscatatuck Wildlife Society (400 members). ■ Other partnerships include the National Wild Turkey Federation, Ducks Unlimited, and the Audubon Society. 	<p>Same as previous management, plus:</p> <ul style="list-style-type: none"> ■ Expand partnerships to include other non-government organizations.

Comparison of Key Points in Previous and New Management Direction for Muscatatuck NWR (Continued)

Topic	Previous Refuge Management	Refuge Management Under the CCP (Balance Natural Processes & Constructed Units; Increased Focus on High Quality Priority General Public Uses)
Volunteer Program	<ul style="list-style-type: none"> ■ Approximately 11,000 hours contributed by 200 volunteers. 	Same as previous management, plus: <ul style="list-style-type: none"> ■ Continue support and expand programs as staff and resources permit
Law Enforcement	<ul style="list-style-type: none"> ■ One shared position with Big Oaks and Patoka River NWRs. ■ Cooperative support from State Police, sheriff's departments, and IDNR. ■ Additional support through zone resources. 	Same as previous management..
Public Access / Roads	<ul style="list-style-type: none"> ■ Open from sunrise to sunset. ■ Entire Refuge open to the public except closed areas. Nine miles of roads and two public entrances. 	<ul style="list-style-type: none"> ■ Entire Refuge open to the public except closed areas. ■ Open 1 hour before sunrise to 1 hour after sunset. ■ Close west entrance. Blacktop auto tour route. Improve maintenance of gravel roads and parking lots. ■ West Entrance may have to remain open, or be reopened to use during the Highway 50 widening project, which will begin sometime during the period covered by this CCP.
Outreach	<ul style="list-style-type: none"> ■ Maintain a website. ■ Staff a booth at the annual FFA Career Fair. Refuge newsletter published three times a year. ■ Staff provide a limited number of off-site programs to schools and organizations. 	<ul style="list-style-type: none"> ■ Same as previous management plus: ■ Expand work to target under-represented populations. ■ Improve website to increase participation and environmental stewardship.
Cultural Resources Management	<ul style="list-style-type: none"> ■ Meet Service regulations 	Same as previous management..
Implementation Requirements		
Staffing	No change.	<ul style="list-style-type: none"> ■ Two biological science technicians. ■ Fill existing vacant tractor operator position.
Facilities	No change.	<ul style="list-style-type: none"> ■ Dikes removed from Moist Soil Units 8, 9 and 10. ■ Pave the auto tour route. ■ Improve existing gravel roads and parking lots. ■ Close the west entrance to the Refuge. ■ Allow the East and West River Trails to revert to natural land cover. Improve the surface of the remaining trails. ■ Build a wildlife observation structure near the Refuge shop area. ■ Evaluate the Hackman Overlook structure for modification or removal. ■ Develop additional accessible fishing sites at current fishing locations to supplement existing facilities.